ENVIRONMENTAL IMPACT ASSESSMENT REPORT VOLUME II MAIN REPORT



PROPOSED RESIDENTIAL, RETAIL, SPORTS HALL & COMMUNITY CENTRE DEVELOPMENT

AT

Athlumney, Navan, Co. Meath

Prepared by



In Conjunction with

HRA Consulting Engineers/Enviroguide/Byrne Environmental/CSR/ACSU Archaeology May 2024

TABLE OF CONTENTS

| 1.0 | |
|------|---|
| 1.1 | |
| 1.2 | |
| 1.3 | |
| 1.4 | SCREENING – REQUIREMENT FOR EIA |
| 1.5 | SCOPING |
| 1.6 | INFORMATION TO BE CONTAINED IN AN EIAR |
| 1.7 | PURPOSE OF THIS EIAR |
| 1.8 | OBJECTIVES OF THIS EIAR |
| 1.9 | FORMAT AND STRUCTURE OF THIS EIAR |
| 1.10 | EIAR PROJECT TEAM |
| 1.11 | NON-TECHNICAL SUMMARY |
| 1.12 | DESCRIPTION OF THE OPERATION STAGE OF THE PROJECT |
| 1.13 | RELATED DEVELOPMENT AND CUMULATIVE IMPACTS |
| 1.14 | DIRECT AND INDIRECT EFFECTS RESULTING FROM USE OF NATURAL RESOURCES |
| | 1-23 |
| 1.15 | DIRECT AND INDIRECT EFFECTS RESULTING FROM EMISSION OF POLLUTANTS, |
| | CREATION OF NUISANCES AND ELIMINATION OF WASTE |
| 1.16 | FORECASTING METHODS USED FOR ENVIRONMENTAL EFFECTS |
| 1.17 | TRANSBOUNDARY IMPACTS |
| 1.18 | LINKS BETWEEN EIA AND APPROPRIATE ASSESSMENT/NIS |
| 1.19 | AVAILABILITY OF EIAR DOC |
| 1.20 | IMPARTIALITY1-24 |
| 1.21 | STATEMENT OF DIFFICULTIES ENCOUNTERED |
| 1.22 | EIA QUALITY CONTROL AND REVIEW |
| 1.23 | ERRORS 1-25 |
| 2.0 | DESCRIPTION OF THE PROJECT AND ALTERNATIVES |
| 2.1 | INTRODUCTION AND TERMS OF REFERENCE |
| 2.2 | DESCRIPTION OF THE LOCATION OF THE PROJECT |
| 2.3 | DESCRIPTION OF THE PHYSICAL CHARACTERISTICS OF THE WHOLE PROPOSED |
| | DEVELOPMENT |
| 2.4 | DESCRIPTION PROPOSED DEVELOPMENT |
| 2.5 | DEMOLITION |
| 2.6 | RESIDENTIAL DEVELOPMENT |
| 2.7 | SPORTS HALL AND COMMUNITY BUILDING (BLOCK 4) |
| 2.8 | NEIGHBOURHOOD CENTRE (BLOCK 3) |
| 2.9 | LANDSCAPING STRATEGY |
| 2.10 | ACCESS |

| 2.11 | PARKING STRATEGY | , |
|------|--|---|
| 2.12 | SURFACE WATER AND SUDS | 3 |
| 2.13 | FOUL SEWER |) |
| 2.14 | WATER SUPPLY |) |
| 2.15 | UTILITIES |) |
| 2.16 | DESCRIPTION OF THE MAIN CHARACTERISTICS OF THE CONSTRUCTION PHASE 2.23 | 3 |
| 2.17 | ENERGY STATEMENT AND CLIMATE ACTION PLAN | |
| 2.18 | EMISSIONS AND WASTE | 5 |
| 2.19 | ALTERNATIVES EXAMINED | 3 |
| 3.0 | POPULATION & HUMAN HEALTH | |
| 3.1 | INTRODUCTION | l |
| 3.2 | STUDY METHODOLOGY | I |
| 3.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | 2 |
| 3.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | 2 |
| 3.5 | POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT | 2 |
| 3.6 | POTENTIAL CUMULATIVE IMPACTS |) |
| 3.7 | 'DO NOTHING' IMPACT |) |
| 3.8 | AVOIDANCE, REMEDIAL & MITIGATION MEASURES | I |
| 3.9 | PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT | I |
| 3.10 | MONITORING | } |
| 3.11 | REINSTATEMENT | } |
| 3.12 | DIFFICULTIES ENCOUNTERED IN COMPILING | } |
| 4.0 | BIODIVERSITY 4-1 | |
| 4.1 | INTRODUCTION | I |
| 4.2 | METHODOLOGY | } |
| 4.3 | THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | I |
| 4.4 | DESCRIPTION OF THE PROPOSED DEVELOPMENT | ; |
| 4.5 | POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT | I |
| 4.6 | AVOIDANCE, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES 4-48 | } |
| 4.7 | INTERACTIONS | I |
| 4.8 | REINSTATEMENT | ? |
| 4.9 | RESIDUAL IMPACTS | ? |
| 4.10 | DIFFICULTIES ENCOUNTERED IN COMPILING 4-1 | I |
| 4.11 | REFERENCES | l |
| 5.0 | LAND AND SOILS | I |
| 5.1 | INTRODUCTION | I |
| 5.2 | METHODOLOGY | I |
| 5.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | ŀ |
| 5.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | I |
| 5.5 | POTENTIAL EFFECTS OF THE PROPOSED DEVELOPMENT | ? |

| 5.6 | MITIGATION MEASURES |
|------|---|
| 5.7 | PREDICTED IMPACT FOLLOWING MITIGATION (RESIDUAL IMPACT) |
| 5.8 | "WORST-CASE" SCENARIO |
| 5.9 | MONITORING |
| 5.10 | REINSTATEMENT |
| 5.11 | DIFFICULTIES ENCOUNTERED |
| 5.12 | CUMULATIVE IMPACTS |
| 5.13 | DIFFICULTIES ENCOUNTERED |
| 5.14 | INTERACTIONS |
| 5.15 | REFERENCES |
| 6.0 | WATER AND HYDROLOGY6-1 |
| 6.1 | INTRODUCTION |
| 6.2 | METHODOLOGY6-1 |
| 6.3 | RECEIVING ENVIRONMENT (BASELINE SCENARIO) |
| 6.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT |
| 6.5 | POTENTIAL LIKELY SIGNIFICANT EFFECTS OF THE PROPOSED DEVELOPMENT . 6-16 |
| 6.6 | AVOIDANCE, REMEDIAL & MITIGATION MEASURES |
| 6.7 | PREDICTED EFFECTS FOLLOWING MITIGATION (RESIDUAL IMPACT) |
| 6.8 | WORST CASE SCENARIO |
| 6.9 | MONITORING |
| 6.10 | CUMULATIVE IMPACTS |
| 6.11 | INTERACTIONS |
| 6.12 | DIFFICULTIES ENCOUNTERED6-25 |
| 6.13 | REFERENCES |
| 7.0 | AIR QUALITY AND CLIMATE |
| 7.1 | INTRODUCTION |
| 7.2 | STUDY METHODOLOGY |
| 7.3 | BASELINE ENVIRONMENT7-5 |
| 7.4 | DO NOTHING SCENARIO |
| 7.5 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT |
| 7.6 | POTENTIAL SIGNIFICANT EFFECTS |
| 7.7 | CUMULATIVE EFFECTS |
| 7.8 | MITIGATION |
| 7.9 | RESIDUAL IMPACT ASSESSSMNET |
| 7.10 | RISK TO HUMAN HEALTH |
| 7.11 | MONITORING |
| 7.12 | REINSTATEMENT |
| 7.13 | DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION |
| 7.14 | REFERENCES |
| 8.0 | NOISE AND VIBRATION |

| 8.1 | | |
|-------|--|-------|
| 8.2 | STUDY METHODOLOGY | |
| 8.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | |
| 8.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | |
| 8.5 | POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT | |
| 8.6 | CUMULATIVE NOISE IMPACTS | |
| 8.7 | AVOIDANCE, REMEDIAL AND MITIGATION MEASURES | |
| 8.8 | PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT | |
| 8.9 | MONITORING | |
| 8.10 | REINSTATEMENT | |
| 8.11 | INTERACTIONS | |
| 8.12 | DIFFICULTIES ENCOUNTERED IN COMPILING | |
| 8.13 | REFERENCES | |
| 9.0 | LANDSCAPE AND VISUAL IMPACT ASSESSMENT | |
| 9.1 | | 9-1 |
| 9.2 | METHODOLOGY | 9-1 |
| 9.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | |
| 9.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | |
| 9.5 | POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT | |
| 9.6 | AVOIDANCE, REMEDIAL & MITIGATION MEASURES | 9-22 |
| 9.7 | PREDICTED LANDSCAPE IMPACTS | |
| 9.8 | PREDICTED VISUAL IMPACTS | |
| 9.9 | MONITORING | |
| 9.10 | REINSTATEMENT | |
| 10.0 | MATERIAL ASSETS - TRAFFIC AND TRANSPORTATION | 10-1 |
| 10.1 | | 10-1 |
| 10.2 | BACKGROUND | 10-1 |
| 10.3 | METHODOLOGY | 10-2 |
| 10.4 | RECEIVING ENVIRONMENT | 10-3 |
| 10.5 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | 10-30 |
| 10.6 | POTENTIAL IMPACT OF THE PROPOSAL | 10-53 |
| 10.7 | CAR PARKING | 10-69 |
| 10.8 | REMEDIAL OR REDUCTIVE MEASURES | 10-76 |
| 10.9 | PREDICTED IMPACT OF THE PROPOSAL | 10-78 |
| 10.10 | MONITORING | 10-80 |
| 10.11 | REINSTATEMENT | 10-80 |
| 10.12 | POTENTIAL CUMULATIVE IMPACTS | 10-80 |
| 10.13 | INTERACTIONS | 10-80 |
| 10.14 | RISKS TO HUMAN HEALTH | 10-81 |
| 10.15 | 'DO-NOTHING' IMPACT | 10-81 |

| 10.16 | DIFFICULTIES ENCOUNTERED IN COMPILING THE CHAPTER | 10-81 |
|-------|--|-------|
| 10.17 | REFERENCES | 10-81 |
| 11.0 | MATERIAL ASSETS – WASTE | |
| 11.1 | INTRODUCTION | |
| 11.2 | STUDY METHODOLOGY | |
| 11.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | |
| 11.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | |
| 11.5 | THE "DO NOTHING SCENARIO" | 11-7 |
| 11.6 | POTENTIAL SIGNIFICANT EFFECTS | 11-7 |
| 11.7 | MITIGATION | 11-11 |
| 11.8 | RESIDUAL IMPACT ASSESSMENT | 11-13 |
| 11.9 | WORST CASE SCENARIO | 11-14 |
| 11.10 | INTERACTIONS | 11-15 |
| 11.11 | MONITORING | 11-15 |
| 11.12 | SUMMARY OF MITIGATION AND MONITORING | 11-16 |
| 11.13 | SUMMARY | 11-17 |
| 11.14 | REFERENCES | 11-17 |
| 12.0 | MATERIAL ASSETS - UTILITIES | 12-1 |
| 12.1 | INTRODUCTION | 12-1 |
| 12.2 | METHODOLOGY | 12-1 |
| 12.3 | EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO) | 12-2 |
| 12.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | 12-7 |
| 12.5 | POTENTIAL EFFECT OF THE PROPOSED DEVELOPMENT | 12-11 |
| 12.6 | MITIGATION MEASURES | 12-13 |
| 12.7 | CUMULATIVE IMPACTS | 12-14 |
| 12.8 | PREDICTED (RESIDUAL) IMPACTS OF THE PROPOSED DEVELOPMENT | 12-15 |
| 12.9 | MONITORING | 12-16 |
| 12.10 | REINSTATEMENT | 12-16 |
| 12.11 | INTERACTIONS | 12-16 |
| 12.12 | DIFFICULTIES ENCOUNTERED IN COMPILING | 12-16 |
| 13.0 | CULTURAL HERITAGE | 13-1 |
| 13.1 | INTRODUCTION | 13-1 |
| 13.2 | LEGAL AND PLANNING FRAMEWORK | 13-1 |
| 13.3 | METHODOLOGY | 13-4 |
| 13.4 | RECEIVING ENVIRONMENT | 13-9 |
| 13.5 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT | 13-24 |
| 13.6 | PREDICTED EFFECTS OF THE PROPOSED DEVELOPMENT | 13-24 |
| 13.7 | AVOIDANCE, REMEDIAL, AND MITIGATION MEASURES | 13-26 |
| 13.8 | RESIDUAL EFFECTS | 13-29 |
| 13.9 | CUMULATIVE EFFECTS | 13-29 |

| 13.10 | MONITORING |
|-------|--|
| 13.11 | REINSTATEMENT |
| 13.12 | DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION |
| 13.13 | REFERENCES |
| 14.0 | RISK MANAGEMENT FOR MAJOR ACCIDENTS AND/OR DISASTERS |
| 14.1 | INTRODUCTION |
| 14.2 | STUDY METHODOLOGY 14-4 |
| 14.3 | RECEIVING ENVIRONMENT 14-4 |
| 14.4 | CHARACTERISTICS OF THE PROPOSED DEVELOPMENT |
| 14.5 | POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT |
| 14.6 | MITIGATION MEASURES 14-6 |
| 14.7 | PREDICTED IMPACTS - RISK OF MAJOR ACCIDENTS AND/OR DISASTERS |
| 14.8 | INTERACTIONS14-10 |
| 14.9 | CUMULATIVE IMPACTS |
| 14.10 | RESIDUAL IMPACTS |
| 15.0 | INTERACTIONS OF THE FORGOING 15-1 |
| 15.1 | INTRODUCTION |
| 15.2 | INTERACTIONS |
| 16.0 | SUMMARY OF EIA MITIGATION AND MONITORING MEASURES |
| 16.1 | INTRODUCTION |
| 16.2 | MITIGATION STRATEGIES |
| 16.3 | PROJECT DESCRIPTION & ALTERNATIVES EXAMINED |
| 16.4 | POPULATION AND HUMAN HEALTH |
| 16.5 | BIODIVERSITY |
| 16.6 | LAND AND SOILS |
| 16.7 | WATER, HYDROLOGY, HYDROGEOLOGY 16-24 |
| 16.8 | AIR QUALITY AND CLIMATE |
| 16.9 | NOISE AND VIBRATION |
| 16.10 | LANDSCAPE AND VISUAL |
| 16.11 | MATERIAL ASSETS – TRAFFIC AND TRANSPORTATION |
| 16.12 | MATERIAL ASSETS – WASTE MANAGEMENT 16-40 |
| 16.13 | MATERIAL ASSETS – UTILITIES |
| 16.14 | CULTURAL HERITAGE |
| 16.15 | RISK MANAGEMENT FOR MAJOR ACCIDENTS 16-47 |

LIST OF FIGURES

| Figure 1.1: Chart showing typical classifications of the significance of impacts | 1-13 |
|---|------------|
| Figure 2.1: Subject Lands – Location of Project | 2-2 |
| Figure 2.2: Site Layout | 2-3 |
| Figure 2.3: Site Location | 2-6 |
| Figure 2.4: CGI Neighbourhood Park | 2-8 |
| Figure 2.5: Duplex Units Lavout | |
| Figure 2.6: Ground Floor Layout of Proposed Creche | |
| Figure 2.7: Ground Floor Community Building | |
| Figure 2.8: Community Centre and Neighbourhood Centre South Elevation | |
| Figure 2.9: Community Centre / Neighbourhood Centre and District Park | 2-11 |
| Figure 2.10: CGI Neighbourhood Centre looking east. | 2-12 |
| Figure 2.11: Ground Floor Neighbourhood Centre | 2-12 |
| Figure 2.12: District Park | 2-14 |
| Figure 2.13: Neighbourhood Park | 2-15 |
| Figure 2.14: Public Open Space Areas | 2-15 |
| Figure 2.15: Landscape Open Space Strategy | 2-16 |
| Figure 2.16: Site Location and Local Road Network (Source: Google Earth) | 2-17 |
| Figure 2.17:ESB Network in the Area | 2-21 |
| Figure 2.18: Eir network | |
| Figure 2.19: Telecom Mast Map of surrounding area | |
| Figure 2.20: Construction Compound | |
| Figure 2.21: Indicative Outline Construction Timeline | |
| Figure 2.22: Envisaged Phasing | |
| Figure 2.23: Alternative no. 1 Sketch Layout | |
| Figure 2.24. Alternative no. 2 Shome Submitted for LPD Opinion to MCC | |
| Figure 2.25. Layout Alternative no. 5 Scheme Submitted for LRD Opinion to MCC | |
| Figure 3.2: Upemployment during O4 2019 to O4 2023 | 3-3 3_1 |
| Figure 3.3: Subject Lands in Athlumney, Navan | 3_10 |
| Figure 3.4. Land Use Zoning Map (Meath County Development Plan) | |
| Figure 3.5: Yearly housing completions for the State | |
| Figure 4.1: Location of designated sites considered with the Source-Pathway-Receptor (S-P | -R) method |
| in relation to the Proposed Development. | |
| Figure 4.2: Map of habitats present at the Proposed Development Site. | |
| Figure 4.3: Bat Landscape Suitability Model | |
| Figure 4.4: Bat Activity Map | 4-27 |
| Figure 4.5: Approximate sett entrance location within the Site | 4-32 |
| Figure 4.6: Site Location | 4-39 |
| Figure 4.7: Proposed overall Site Layout plan (Wilson Hill Architects, 2024) | 4-40 |
| Figure 4.8: Landscape Design Plan | 4-44 |
| Figure 4.9: Examples of suitable amphibian and reptile hibernacula and refugia | 4-59 |
| Figure 4.10: Examples of solitary bee habitat. | |
| Figure 5.1: Subject Lands | 5-3 |
| Figure 5.2: Site Topography | 5-4 |
| Figure 5.3: Bedrock Unit | 5-5 |
| Figure 5.4: Leagasc Soils | |
| Figure 5.5: Quaternary Sediments | |
| Figure 5.6: Radon RISK Map | 5-7 |
| Figure 5.7. Groundwater Vulnershility | |
| Figure 5.0. Groundwater vulnerability Figure 5.9: Δαμifer Data | ט-9 ב_0 |
| Figure 6.1: Significant Effect Matrix | |
| Figure 6.2: Subject Lands | |
| Figure 6.3: Site Topography | 6-5 6-6 |
| Figure 6.4: EPA Watercourses | 6.7 |
| Figure 6.5: Extract from GSI Online Mapping Service (Groundwater Resources) | |
| Figure 6.6: Extract from GSI Online Mapping Service (Groundwater Vulnerability) | |
| Figure 6.7: Extract of CFRAMS Data from OPW Floodinfo.ie | 6-10 |
| | |

| Figure 8.1: ProPG Stage 1 Initial Risk Assessment | |
|---|-------|
| Figure 8.2: Baseline Noise Monitoring Locations $N1 - N2$ | 8-9 |
| Figure 9.1: River Boyne and River Blackwater Valley SAC & SPA | 9-9 |
| Figure 9.2: Landscape Character Areas | 9-10 |
| Figure 0.3: Land Use Zoning (extract from MCDD) | 0_13 |
| Figure 9.5. Land Use Zohling (extract from MCDF) | |
| Figure 9.4. MP12 Masterplan | |
| Figure 9.5. Planning History and Relevant Projects in the Area (site boundary in red) | |
| Figure 9.5: Site and immediate surroundings (site boundary in red) | |
| Figure 9.6: Location of medium-long range viewpoints | |
| Figure 9.7: Location of close-range viewpoints | |
| Figure 10.1: Site Location and Local Road Network (Source: Google Earth) | 10-4 |
| Figure 10.2: R153 Kentstown Road (Facing East at Moor Park GC) | 10-5 |
| Figure 10.3: Old Athlumney Rd West of Tubberclaire Meadows (Facing East) | 10-6 |
| Figure 10.4: Old Athlumney Rd East of Tubberclaire Meadows (Facing East) | 10-6 |
| Figure 10.5: Navan Transport Plan 2014-2019 Proposed Cycle Network | 10-8 |
| Figure 10.6: Bus Eireann Services to Navan | |
| Figure 10 7 Navan Town Centre Bus Service | 10-10 |
| Figure 10.8: Plot of RSA Recorded Collisions 2005-2016 | 10-11 |
| Figure 10.0: Traffic Survey Sites | 10 22 |
| Figure 10.9. Manie Survey Siles | 10-23 |
| Figure 10.10. Old Attitutiney Road (East) Daily Traine Flow by Direction | |
| Figure 10.11: Old Athlumney Road (East) Average weekday Houny Trainc Flow | |
| Figure 10.12: Old Athlumney Road (West) Daily Traffic Flow by Direction | |
| Figure 10.13: Old Athlumney Road (West) Average Weekday Hourly Traffic Flow | |
| Figure 10.14: Boyne Road Daily Traffic Flow by Direction | 10-26 |
| Figure 10.15: Boyne Road Average Weekday Hourly Traffic Flow | 10-27 |
| Figure 10.16:R153 Kentstown Road/Metges Road Daily Traffic Flows 2023 | 10-28 |
| Figure 10.17: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2023 | 10-29 |
| Figure 10.18: R153 Kentstown Road/Metges Rd Evening Peak Hour Flows 2023 | 10-29 |
| Figure 10.19: Traffic Forecast Phase 1A (Planning Reg. Ref. 21/1046; ABP-312746-22) | 10-43 |
| Figure 10.20: Traffic Forecast Phase 1B (Proposed) | 10-44 |
| Figure 10.21: Traffic Forecast Phase 1A + Phase 1B – No Boyne Road Link | 10-45 |
| Figure 10.22: Traffic Forecast Phase 1A + Phase 1B – With Boyne Road Link | 10-46 |
| Figure 10.23: Traffic Forecast Other MP12 Residential – No Boyne Road Link | 10-47 |
| Figure 10.24: Traffic Forecast Other MP12 Residential With Boyne Road Link | 10-48 |
| Figure 10.25: Traffic Ecrosost, Masterplan 12 Enterprise, No Boyne Link Pood | 10-40 |
| Figure 10.25. Traffic Forecast Masterplan 12 Enterprise - No Boyne Llink Road | |
| Figure 10.26. Trainc Forecast- Masterpian 12 Enterprise – With Boyne Link Road | |
| Figure 10.27. R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2023 | |
| Figure 10.28: R153 Kentstown Road/Metges Rd Evening Peak Hour Flows 2023 | |
| Figure 10.29: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2031 | |
| Figure 10.30: R153 Kentstown Road/Metges Rd Evening Peak Hour Flows 2031 | 10-58 |
| Figure 10.31: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2041 | 10-58 |
| Figure 10.32: R153 Kentstown Road/Metges Rd Evening31 Peak Hour Flows 2041 | 10-59 |
| Figure 10.33: Assessment Signal Staging at LDR6/Kentstown Road | 10-61 |
| Figure 10.34: Assessment Signal Staging Sequence LDR6/Kentstown Road | 10-61 |
| Figure 10.35: LDR6/Boyne Road Junction – Signal Phases and Stages | 10-67 |
| Figure 10.36: LDR6/Boyne Road Junction – Signal Stage Sequence | 10-68 |
| Figure 11.1: The Circular Economy | |
| Figure 11.2: The Waste Hierarchy (Ref. Waste Framework Directive) | 11-3 |
| Figure 12.1: Subject Lands | 12-2 |
| Figure 12.2: Evisting Drains Sketch | 12-3 |
| Figure 12.3: Existing foul sowers | 12_1 |
| Figure 12.3. Existing four sewers | 12-4 |
| Figure 12.4.ESD Network III the Alea | 12-0 |
| Figure 12.5. Ell'hetwork | |
| Figure 12.6. Telecom Mast Map of surrounding area | |
| Figure 12.7: Surface Water Design | |
| Figure 13.1: Location of site | |
| Figure 13.2: Down Survey Map of County Meath, Barony of Skreen (1654-56), | 13-10 |
| Figure 13.3: Extract from the 1st Edition Ordnance Survey (OS) 6-inch map (1836) | 13-11 |
| Figure 13.4: Interpretation of geophysical survey (20R0115), Fields 1 and 2 | 13-19 |
| Figure 13.5: Interpretation of geophysical survey (20R0115), Fields 3 and 4 | 13-20 |

| Figure 13.6: Kilns/pits (C8.1, C8.2), burnt mound area (C9.1), pit (C7.1) and kiln/pit (C8.1) | 13-21 |
|---|-------------|
| Figure 13.7: Kiln 95A exposed in Test Trench 95 (23E0553). | 13-22 |
| Figure 13.8: Test trenching result, showing trenches excavated, including identified archaec | ology 13-23 |
| Figure 16.1: Examples of suitable amphibian and reptile hibernacula and refugia | |
| Figure 16.2: Examples of solitary bee habitat. | 16-19 |
| LIST OF TABLES | 07/06/ |
| Table 1.1: EIA Guidelines Consulted as Part of the Preparation of this EIAR | |

LIST OF TABLES

| | × |
|--|----------------------|
| Table 1.1: EIA Guidelines Consulted as Part of the Preparation of this EIAR | |
| Table 1.2: Description of Effects | 1-17 |
| Table 1.3: Structure of this EIAR | 1-15 |
| Table 1.4: Methodology Employed to Evaluate Environmental Topic | 1-16 |
| Table 1.5: EIAR List of Competent Experts | 1-18 |
| Table 2.1: Summary of Key Site Statistics | 2-4 |
| Table 2.2: Overall Mix of Units | 2-7 |
| Table 2.3: Overall Mix of Units | 2-9 |
| Table 2.4: Car and Bicycle Parking | 2-18 |
| Table 2.5: Total weekly Domestic waste generation | 2-37 |
| Table 2.6: Total weekly Commercial waste generation | 2-37 |
| Table 3.1: Population at State, County and Local Level, 2016-2022 | 3-0 |
| Table 3.2. Age Profile at State, County and Local Level, 2011-2016-2022 | 0-5 |
| Table 3.4: Persons by Educational Attainment, 2022 | 3-7 3-7 |
| Table J.1: Field surveys undertaken at the Site | ۲-3 ۸-6 |
| Table 4.1. Field surveys undertaken at the Site. | 4-0 4 - 11 |
| Table 4.2. ETA momoning stations and assigned & values | |
| Table 4.4: Designated sites considered with the Source-Pathway-Recentor (S-P-R) method to ex | stablish |
| notable links between the sources of effects arising from the Proposed Development and any r | elevant |
| designated sites, those sites with notable S-P-R links that are further assessed in this rep | ort are |
| highlighted in green (if any). | 4-16 |
| Table 4.5: Records of invasive species of flowering plant for the surrounding 2km (N86Y and N86 | 6Z) grid |
| squares associated with the Site from the NBDC | 4-22 |
| Table 4.6: Records of bats for the surrounding 10km grid squares (N86) associated with the Si | te from |
| the NBDC | 4-23 |
| Table 4.7: Landscape Suitability Index for individual bat species | 4-24 |
| Table 4.8: Details of amber and red listed bird species within the 10km grid square (N81) | 28 |
| Table 4.9: Bird species recorded during walkover surveys on the October and November 2022 a | nd July |
| 2023 | 29 |
| Table 4.10: Records of terrestrial mammals (native and non-native) for the surrounding 10km (Native and non-native and non-native) for the surrounding 10km (Native and non-native and n | 86) grid |
| square associated with the Site from the NBDC. | 30 |
| Table 4.11: Evaluation of Designated Sites, Habitats, Flora and Fauna recorded within the Site | and the |
| surrounding area. Those identified as Key Ecological Receptors (KERs) are highlighted in greer | 14-34 |
| Table 4.12: Assessment of potential in-combination effects of the Proposed Development | 4-46 |
| Table 4.13: Embedded design features and their potential to act to avoid or mitigate negative i | mpacts |
| Table 4.14: Summary of Post Program Standards and Mitigation outlined in the OCEMD (Handrid | 4-49 |
| Consulting Engineers 2024b) Where specific details relating to protection of Key Ecological Re- | contors |
| is required under these measures, reference is made to the appropriate section in this report | <i>Leptors</i> |
| Table 4.15: Seasonal restrictions on vegetation removal Red hoxes indicate periods | when |
| clearance/works are not permissible | 4-56 |
| Table 4.16: Monitoring and pre-works inspections for the identified mitigation measures | durina |
| Construction Phase of the Proposed Development. | 4-61 |
| Table 4.17: Summary of potential impacts on KER(s), mitigation proposed and residual impacts | 4-63 |
| Table 5.1: Estimation of the Importance of Land, Soil and Geological Environment | 5-11 |
| Table 5.2: Preliminary Estimated Topsoil Volumes (Approximate) | 5-12 |
| Table 5.3: Estimated Cut/Fill Volumes (Approximate) | 5-13 |
| Table 6.1: Guidance Documents | 6-1 |
| Table 6.2: Summary Table of Receptor Sensitivity and Importance | 6-13 |
| Table 6.3: EPA monitoring stations and assigned Q values | 6-14 |
| Table 6.4: WFD Risk and Water Body Status | 6-14 |

| Table 7.1: Air Quality Standards | 7-3 |
|---|-------|
| Table 7.2: EPA Zone C 2022 Air Quality Data | 7-5 |
| Table 7.3: Meteorological Data for Dublin Airport 2019-2023 | 7-6 |
| Table 7.4: Total National Greenhouse Gas Emissions 2022 | 7-6 |
| Table 7.5: Sensitivity to Dust Soiling on People and Property | 7-7 |
| Table 7.6: Risk of Dust Impacts Earthworks | 7-9 |
| Table 7.7: Risk of Dust Impacts - Construction | 7-10 |
| Table 7.8: Risk of Dust Impacts - Trackout | 7-10 |
| Table 7.9: Dust Risk Assessment to Define Site-Specific Mitigation Measures | |
| Table 8.1: BS5228-2014 Construction Phase Noise Limit Criteria | 8-3 |
| Table 8.2: Transient vibration guide values for cosmetic damage | 8-4 |
| Table 8.3: Guidance on the effect of construction vibration levels on humans | 8-5 |
| Table 8.4: Likely impact associated with change in traffic noise level | 8-6 |
| Table 8.5: ProPG Recommended Internal Noise Levels | 8-7 |
| Table 8.6: BS8233:2014 Recommended Internal Noise Levels | 8-8 |
| Table 8.7: Baseline noise measurement locations | 8-9 |
| Table 8.8: Location N1 Northern site boundary | 8-10 |
| Table 8.9: Location N2 Southern site boundary | 8-10 |
| Table 8.10: Indicative construction noise predictions associated with Site Enabling works | 8-13 |
| Table 8.11: Indicative construction noise predictions associated with building construction works | 8-13 |
| Table 9.1: Categories of Landscape Sensitivity | 9-3 |
| Table 9.2: Categories of Landscape Change | 9-4 |
| Table 9.3: Guide to Classification of Significance of Landscape Effects | 9-4 |
| Table 9.4: Categories of Viewpoint Sensitivity | 9-5 |
| Table 9.5: Categories of Visual Change | 9-6 |
| Table 9.6: Categories of Visual Change | 9-7 |
| Table 9.7: Selected Viewpoints for Visual Assessment | 9-26 |
| Table 9.8: Summary of Visual Effects | 9-36 |
| Table 10.1: Bus Eireann Services to Navan | 10-9 |
| Table 10.2: RSA Collision Records 2005-2016 | 10-12 |
| Table 10.3: Recorded Vehicle Speeds | 10-24 |
| Table 10.4: Receiving Road Traffic Flows 18-Apr-2023 | 10-28 |
| Table 10.5: Morning Peak Hour Flows on Receiving Road Network (Two-way) | 10-28 |
| Table 10.6: Evening Peak Hour Flows on Receiving Road Network (Two-way) | 10-29 |
| Table 10.7: TRICS Based Peak Hour Traffic Generation – Residential | 10-35 |
| Table 10.8: Forecast Peak Hour Traffic Generation – Anchor Retail (Phase 1B) | 10-35 |
| Table 10.9: Forecast Peak Hour Traffic Generation – Ancillary Retail (Phase 1B) | 10-37 |
| Table 10.10: Forecast Peak Hour Traffic Generation – Creche (Phase 1B) | 10-37 |
| Table 10.11: Forecast Peak Hour Traffic Generation – Masterplan 12 Residential | 10-38 |
| Table 10.12: Forecast Peak Hour Traffic Generation – Masterplan 12 Employment | 10-39 |
| Table 10.13: Forecast Peak Hour Traffic Generation – Warehousing Potential | 10-40 |
| Table 10.14: Enterprise Park Forecast Daily Traffic Generation | 10-41 |
| Table 10.15: Enterprise Park Forecast Peak Hour Traffic Generation | 10-41 |
| Table 10.16: Masterplan 12 Forecast Daily Traffic Generation | 10-41 |
| Table 10.17: Masterplan 12 Forecast Peak Hour Traffic Generation | 10-41 |
| Table 10.18: Forecast Morning Peak Hour Flows on Receiving Road Network | 10-52 |
| Table 10.19: Forecast Evening Peak Hour Flows on Receiving Road Network | 10-52 |
| Table 10.20: Boyne Road Forecast Peak Hour Traffic Flows (Weekdays) | 10-55 |
| Table 10.21: Old Athlumney Road Forecast Peak Hour Traffic Flows (Weekdays) | 10-56 |
| Table 10.22: Modelling Output - Kentstown Signal Junction (Opening 2026) | 10-62 |
| Table 10.23: Modelling Output - Kentstown Signal Junction (Future Years) | 10-63 |
| Table 10.24: Modelling Output - Kentstown Signal Junction (2041 Sensitivity Test) | 10-64 |
| Table 10.25: Capacity Assessments Old Athlumney Road Roundabout | 10-65 |
| Table 10.20: Capacity Assessments LDR6 Southern Development Roundabout | 10-66 |
| Table 10.21: Capacity Assessments LDR6 Northern Development Roundabout | 10-67 |
| Table 10.20: Capacity Assessments Boyne Road Signal Controlled Junction 2041 | 10-68 |
| Table 10.29: Relevant Car Parking Standard and Guidance – Phase 1 Masterplan | 10-69 |
| Table 10.30: Parking Provision at Neighbourhood Centre | 10-70 |
| Table 10.31: Parking Provision at Residential – Combined Phase 1A plus Phase 1B | 10-71 |
| Table 10.52. Dicycle Parking Provision | 10-73 |

| Table 10.33: Parking Provision at Phase 1B Neighbourhood Centre |
|---|
| Table 10.34: Parking Provision at Phase 1B Residential Excl. Neighbourhood Centre |
| Table 10.35: Bicycle Parking Provision – Phase 1B |
| Table 11.1: Construction Waste Composition EPA 2020 Waste Statistics |
| Table 11.2: Predicted construction waste tonnages |
| Table 11.3: Total weekly Domestic waste generation |
| Table 11.4: Total weekly Commercial waste generation |
| Table 11.5: Summary of cumulative Likely Significant Effects of construction and operational vaste |
| effects |
| Table 11.6: Summary of Construction Phase Likely Significant Effects in the absence of mitigation . To |
| Table 11.7: Summary of Operational Phase Likely Significant Effects in the absence of mitigation 11-10 |
| Table 11.8: Summary of Construction Phase Effects Post Mitigation 11-14 |
| Table 11.9: Summary of Operational Phase Effects Post Mitigation 11-14 |
| Table 11 10: Summary of cumulative residual construction and operational waste effects 11-14 |
| Table 11.11: Summary of Construction Phase Mitigation and Monitoring |
| Table 11.12: Summary of Operational Phase Mitigation and Monitoring |
| Table 12.1: Attenuation Facility Volumes |
| Table 13.1: Previous archaeological investigations in the environs of the study area 13-13 |
| Table 13.2: Recorded Monuments in the environs of the study area 13-16 |
| Table 13.3: Protected Structures and National Inventory of Architectural Heritage (NIAH) structures in |
| the environs of the site |
| Table 13.4: Stray Archaeological Finds listed in the Topographical Files of the National Museum of |
| Ireland |
| Table 13.5: Summary of predicted impacts on cultural heritage assets within study area and mitigation |
| measures |
| Table 14.1: Risk Classification |
| Table 14.2: Risk Likelihood |
| Table 14.3: Risk Matrix |
| Table 14.4: Strategy for tackling potential risks |
| Table 14.5: Risk Evaluation |
| Table 15.1: Matrix of Summary of interactions between the environmental factors |
| Table 16.1: Embedded design features and their potential to act to avoid or mitigate negative impacts |
| on the local ecology and environment |
| Table 16.2: Summary of Best Practice Standards and Mitigation outlined in the OCEMP (Hendrick Ryan |
| Consulting Engineers, 2024b). Where specific details relating to protection of Key Ecological Receptors |
| is required under these measures, reference is made to the appropriate section in this report 16-9 |
| Table 16.3: Seasonal restrictions on vegetation removal. Red boxes indicate periods when |
| clearance/works are not permissible16-15 |
| Table 16.4: Monitoring and pre-works inspections for the identified mitigation measures during |
| Construction Phase of the Proposed Development |
| Table 16.5: Strategy for tackling potential risks |
| |

DOCUMENT CONTROL SHEET

| Client: | Albert Developments Ltd. | |
|---------------------------|------------------------------------|--|
| Project Title: | Boyne Village LRD Athlumney, Navan | |
| Document Title/Job No: | EIAR Volume II | |

| Rev. | Status | Author(s) | Reviewed By | Approved By | Issue Date |
|------|--------|-----------|--------------------|-------------|------------|
| DV1 | DV1 | EIAR Team | AT | RK | 20-4-2024 |
| F01 | F01 | EIAR Team | RK | RK | 30-5-2024 |

1.0 INTRODUCTION AND METHODOLOGY

1.1 INTRODUCTION



John Spain Associates, Planning & Development Consultants, have been commissioned by Albert Developments Ltd., to prepare an Environmental Impact Assessment Report (EIAR) for the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 20 years of experience of Environmental Impact Assessment and urban development.

Rory has acted as lead planning consultant on a range of high-quality complex planning applications across the country over an extended period. Rory has wide-ranging experience in the management and review of Environmental Impact Assessment Reports (EIAR) for major residential and mixed use development and redevelopment projects.

The subject site forms part of the Masterplan 12 strategic landbank and comprises c.13.26 hectares of undeveloped, greenfield land, surrounded by residential development to the west. The site is located approximately 2.5km from Navan Town Centre, which currently provides a wide range of facilities and services such as retail, education, civic, social, and healthcare. Access to the site will be provided via the LDR6 road, a LIHAF funded road that is now complete.

The central purpose of the Environmental Impact Assessment Report (EIAR) is to undertake an appraisal of the likely and significant impacts on the environment of the proposed development in parallel with the project design process, and to document this process in the EIAR. This is then submitted to the competent/ consent authority to enable it to assess the likely significant effects of the project on the environment.

A full description of the proposed development lands together with a description of the proposed development is provided in Chapter 2 of this EIAR document.

This EIAR document has been prepared in accordance with Directive 2011/92/EU of the European Parliament and Council of the 13th of December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) as amended by Directive 2014/52/EU of the European Parliament and Council of the 16th April 2014 (*'the EIA Directives'*), as well as relevant national implementing legislation, i.e. Part X of the Planning and Development Act 2000, as amended (*'the 2000 Act'*), and Part 10 of the Planning and Development Regulations 2001, as amended, (*"the 2001 Regulations"*). A description of the methodological approach to the preparation of this EIAR is provided in the following sections of this chapter. A description of the methodological approach to the preparation of the preparation of this EIAR is provided in the following sections of this chapter.

1.2 EIA LEGISLATION, DEFINITION OF EIA AND EIAR

Certain public and private projects that are likely to have significant effects on the environment are subject to EIA requirements derived from the codified European Union Directive 2011/92/EU as amended by Directive 2014/52/EU (EIA Directive), The purpose of these Directives to ensure that projects likely to have significant effects on the environment are subject to a comprehensive and systematic assessment of environmental effects prior to development consent being given.

Directive 2014/52/EU defines '*environmental impact assessment*' as a process, which includes the responsibility of the developer to prepare an Environmental Impact Assessment Report (EIAR), and the responsibility of the competent authority to provide reasoned conclusions following the examination of the EIAR and other relevant information.

Article 1(2)(g) of Directive 2011/92/EU, as amended by the 2014 Directive states that "*environmental impact assessment*" means a process consisting of:

"(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."

A definition of "*environmental impact assessment*" is also contained under Section 171A of the 2000 Act, as amended as follows:

'environmental impact assessment' means a process-

(a) consisting of—

(i) the preparation of an environmental impact assessment report by the applicant in accordance with this Act and regulations made thereunder,

(ii) the carrying out of consultations in accordance with this Act and regulations made thereunder,

(iii) the examination by the planning authority or the Board, as the case may be, of-

(I) the information contained in the environmental impact assessment report,

(II) any supplementary information provided, where necessary, by the applicant in accordance with section 172(1D) and (1E), and

(III) any relevant information received through the consultations carried out pursuant to subparagraph (ii),

(iv) the reasoned conclusion by the planning authority or the Board, as the case may be, on the significant effects on the environment of the proposed development, taking into account the results of the examination carried out pursuant to subparagraph (iii) and, where appropriate, its own supplementary examination, and (v) the integration of the reasoned conclusion of the planning authority or the Board, as the case may be, into the decision on the proposed development, and

(b) which includes—

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this Part and regulations made thereunder, that identifies, describes and assesses, in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following: (I) population and human health;

(II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and (ED: 01/06) the Birds Directive:

(III) land, soil, water, air and climate;

(IV) material assets, cultural heritage and the landscape;

(V) the interaction between the factors mentioned in clauses (I) to (IV),

and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development;

The amended Directive (Directive 2014/52/EU) uses the term environmental impact assessment report (EIAR) rather than environmental impact statement (EIS). Where current national guidelines and regulations refer to an environmental impact statement or an EIS, this can be taken to be the same as an environmental impact assessment report (EIAR).

A definition of Environmental Impact Assessment Report (EIAR) has not been included in the revised directive. However, the EPA Guidelines (2022)1 (and the Planning and Development Act 2000 as amended) provide the following definition:

"A report or statement of the effects, if any, that the proposed project, if carried out, would have on the environment."

The information to be included in an EIAR is specified in Article 5(1) and Annex IV of the EIA Directives (see section 1.7 below for more). The EIAR is prepared by the developer (in this instance Albert Developments Ltd.,) and is submitted to a Competent Authority (CA) (in this instance Meath County Council) as part of a consent process.

The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to inform its decision as to whether consent should be granted. The information in the EIAR is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA.

The EIAR presents a systematic analysis and evaluation of the potentially significant effects of a proposed project on the receiving environment. Article 3 of the amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment, and which must be addressed in the EIAR:

"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

population and human health;

biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

land, soil, water, air and climate;

material assets, cultural heritage and the landscape; the interaction between the factors referred to in points (a) to (d)."

¹ Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022

The EIAR should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign.

Where significant and likely environmental effects are identified, the EIA process aims to quantify and minimise the impact development projects have on the environment through appropriate mitigation measures. The preparation of an EIAR requires site-specific considerations and the preparation of baseline assessment against which the likely impacts of a proposed development can be assessed by way of a concise, standardised and systematic methodology.

EIA practice has evolved substantially since the introduction of the EIA Directive in 1985. Practice continues to evolve and takes into account the growing body of experience in carrying out EIARs in the development sector. Table 1.1 sets out the relevant key EIA Guidance which has been consulted in the preparation of this EIAR document. In addition, the individual chapters of this EIAR should be referred to for further information on the documents consulted by each competent expert.

We would also note that the pre-application discussions with the Planning Authority informed the content of the EIAR.

Table 1.1: EIA Guidelines Consulted as Part of the Preparation of this EIAR

Irish

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022
 Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems Key Issues Consultation Paper, Department of Housing, Planning, Community and Local Government, 2017.
- Circular letter PL 1/2017 Advice on Administrative Provisions in Advance of Transposition (2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoECLG, March 2013).
- Development Management Guidelines (DoEHLG, 2007).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003).
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).

European Union (in addition to Directives referenced above)

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017
- Environmental Impact Assessment of Projects Guidance on Screening (2017).
- Environmental Impact Assessment of Projects Guidance on Scoping (2017).
- EU Commission Notice on changes and extensions to projects (2021)
- Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 2002).

The content of this Environmental Impact Assessment Report has been prepared in accordance with the provisions of Article 5(1) and Annex IV of Directive 2014/52/EU and Article 94 and Schedule 6 the 2001 Regulations as amended.

1.3 EIA PROCESS OVERVIEW

The main purpose of the EIA process is to identify, describe and assess the direct and indirect significant impacts of the proposed project on the environment, and specifically on the following factors:

- (a) population and human health;
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- (c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape; the interaction between the factors referred to in points (a) to (d)."

The EIAR presents the results of the analysis and assessment of the significant effects of the proposed development on the receiving environment undertaken by the competent experts appointed by the developer to prepare the EIAR and sets out measures to be incorporated into the project to eliminate or minimise these impacts.

Several interacting steps typify the early stages of the EIA process and include:

- Screening;
- Scoping;
- Assessing Alternatives; and
- Assessing and Evaluating.

Screening: Screening is the term used to describe the process for determining whether a proposed development requires an EIA.

Scoping: This stage firstly identifies the extent of the proposed development and associated site, which will be assessed as part of the EIA process, and secondly, it identifies the environmental issues likely to be important during the course of completing the EIA process having regard to the nature of the proposed development and the receiving environment and through consultation with statutory and non-statutory stakeholders. Scoping request letters were issued to a range of stakeholders at the commencement of this EIA process and the responses received have been considered as part of the compilation of the EIAR.

Assessing Alternatives: This stage describes the reasonable alternative approaches to the proposed development and sets out the main reasons for the chosen approach having regard to the effects of the respective alternatives on the environment. Consideration of alternatives is set out in Chapter 2 of this EIAR.

Assessing and Evaluating: The central steps of the EIA process include baseline assessment (desk study and field surveys) to determine the status of the existing environment, impact prediction and evaluation, and determining appropriate mitigation measures where necessary. This stage of the EIAR is presented in Chapters 3 to 15.

1.4 SCREENING – REQUIREMENT FOR EIA

Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment.

Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein.

Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case-by-case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001 (as amended). Schedule 5 (Part 2) of the Planning & Development Regulations 2001 (as amended) set mandatory thresholds for each project class.

Paragraph 10((b)(i) refers to Infrastructure projects comprising the construction of more than 500 dwelling units. The proposed development which comprises 131 no. dwellings is below the threshold.

Paragraph 10(b)(iv) refers to 'Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.' The site is c. 10.70 hectares which includes surface water upgrades along the Hazelhatch Road and is therefore considered to require an EIA.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the project and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR is to provide information to allow the competent authority to conduct the Environmental Impact Assessment (EIA) of the proposed development.

1.5 SCOPING

The EPA Guidelines state that '*scoping*' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the EC guidance² as:

"The process of identifying the content and extent of the information to be submitted to the Competent Authority under the EIA process."

The EIAR team has extensive professional experience on undertaking similar EIAR projects on similar sites and elsewhere over an extended period.

The provisions included in the revised EIA Directive and all of the issues listed in Schedule 6, Sections 1, 2 and 3 of the Planning and Development Regulations 2001 (as amended) and in recent guidance documents have been addressed in the EIAR.

In this context the following topics/issues have been reviewed and addressed in the context of the proposed development:

- Introduction and Methodology,
- Project Description and Alternatives Examined,
- Population and Human Health,
- Biodiversity,
- Land and Soils,
- Water,
- Air Quality and Climate,
- Noise and Vibration,
- Landscape and Visual Impact,
- Material Assets Traffic,
- Material Assets Waste
- Material Assets Utilities,
- Cultural Heritage Archaeology,
- Risk Management for Major Accidents and or Disasters,
- Interactions of the Foregoing,
- Summary of EIA Mitigation and Monitoring Measures,
- Non-Technical Summary.

² Environmental Impact Assessment of Projects Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

In addition to the above a series of standalone reports have been prepared to accompany the application and which have helped inform the above chapters of the EIAR where relevant. Chapter 2 provides details of the envisaged phased delivery of development on the lands.

In addition, consultation has taken place with the technical staff of Meath Council and a consultation meeting has taken place between the Applicant.

1.6 INFORMATION TO BE CONTAINED IN AN EIAR

The content of this Environmental Impact Assessment Report has been prepared in accordance with the provisions of Article 5(1) and Annex IV of Directive 2014/52/EU. Article 5(1) states:

"The information to be provided by the developer shall include at least:

(a) a description of the project comprising information on the site, design, size and other relevant features of the project;

(b) a description of the likely significant effects of the project on the environment;

(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

Annex IV states:

"1. A Description of the project, including in particular:

(a) a description of the location of the project;

(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;

(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;

(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.

2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia: (a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenbouse gas emissions) and the vulnerability of the project to climate change;

(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium- term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. W here appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report."

Article 94 and Schedule 6 of the Planning and Development Regulations 2001, as amended, transpose into Irish law the EIA Directive requirements in relation to information to be contained in an EIAR.

Article 94 states:

"An EIAR shall take into account the available results of other relevant assessments under European Union or national legislation with a view to avoiding duplication of assessments and shall contain—

(a) the information specified in paragraph 1 of Schedule 6,

(b) any additional information specified in paragraph 2 of Schedule 6 relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected, and methods of assessment,

(c) a summary in non-technical language of the information required under paragraphs (a) and (b),

(d) a reference list detailing the sources used for the descriptions and assessments included in the report, and

(e) a list of the experts who contributed to the preparation of the report, identifying for each such expert— (i) the part or parts of the report which he or she is responsible for or to which he or she contributed, (ii) his or her competence and experience, including relevant qualifications, if any, in relation to such parts, and (iii) such additional information in relation to his or her expertise that the person or persons preparing the EIAR consider demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality."

Schedule 6 provides for the following information to be furnished:

1. (a) A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development.

(b) A description of the likely significant effects on the environment of the proposed development.

(c) A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development.

(d) A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment.

2. Additional information, relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected, on the following matters, by way of explanation or amplification of the information referred to in paragraph 1:

(a) a description of the proposed development, including, in particular-

(i) a description of the location of the proposed development,

(ii) a description of the physical characteristics of the whole proposed development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases,

(iii) a description of the main characteristics of the operational phase of the proposed development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used, and

(iv) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases;

(b) a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;

(c) a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge;

(d) a description of the factors specified in paragraph (b)(i)(l) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act likely to be significantly affected by the proposed development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape;

(e) (i) a description of the likely significant effects on the environment of the proposed development resulting from, among other things—

(I) the construction and existence of the proposed development, including, where relevant, demolition works,

(II) the use of natural resources, in particular land, soil, water and biodiversity considering as far as possible the sustainable availability of these resources,

(III) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of pulsances, and the disposal and recovery of waste,

(IV) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters),

(V) the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources,

(VI) the impact of the proposed development on climate (for example

the nature and magnitude of greenhouse gas emissions) and the vulnerability of the proposed development to climate change, and

(VII) the technologies and the substances used, and

(ii) the description of the likely significant effects on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium-term and long-term, permanent and temporary, positive and negative effects of the proposed development, taking into account the environmental protection objectives established at European Union level or by a Member State of the European Union which are relevant to the proposed development;

(f) a description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved;

(g) a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development;

(h) a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events.

Annex IV of the EIA Directive and Article 94 of the 2001 Regulations, also require that the EIAR shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under Union or national legislation. The available result of other such assessments, where relevant, have been considered in each of the chapters.

The likely significant effects in this EIAR are, unless otherwise indicated in a particular Chapter, described using the terminology in Table 3.4 in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022 (the EPA Guidelines 2022), which are presented in the Table below. The use of these terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across most disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

| Table 1.2: Description | on of Effects | | |
|---|---|--|--|
| Quality of Effects | Definition | | |
| Negative /Adverse Effects | A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance). | | |
| Neutral | No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. | | |
| Positive | A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). | | |
| Significance of Effects on the Receiving Environment | Description of Potential Effects | | |
| Imperceptible | An effect capable of measurement but without significant consequences. | | |
| Not Significant | An effect which causes noticeable changes in the character of the environment but without significant consequences. | | |
| Slight | An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. | | |
| Moderate | An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. | | |
| Significant | An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment. | | |
| Very Significant | An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment. | | |
| Profound | An effect which obliterates sensitive characteristics. | | |
| Extent and Context of Effects | Describing the Extent and Context of Effects | | |
| Extent | Describe the size of the area, the number of sites and the proportion of a population affected by an effect. | | |
| Context | Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?) | | |
| Probability of Effects | Describing the Probability of Effects | | |
| Likely Effects | The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented. | | |
| Unlikely Effects | The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented. | | |
| Duration of Impact | Definition | | |
| Momentary | Effects lasting from seconds to minutes | | |
| Brief | Effects lasting less than a day | | |
| Temporary | Effects lasting one year or less | | |
| Short-term | Effects lasting one to seven years | | |
| Medium-term | Effects lasting seven to fifteen years | | |
| Long-term | Effects lasting fifteen to sixty years | | |

Table 1.2: Description of Effects

| Permanent | Effects lasting over sixty years | | |
|--|---|----|--|
| Reversible | Effects that can be undone, for example through remediation or restoration | | |
| -requency of Effects Describe how often the effect will occur (once, rarely, occasional frequently, constantly – or hourly, daily, weekly, monthly, annually | | Ox | |
| Types of Effect | Effect Describing the Types of Effects | | |
| Indirect Effects (a.k.a. Secondary Effects) | ct Effects Effects on the environment, which are not a direct result of the Secondary project, often produced away from the project site or because of a complex pathway. | | |
| Cumulative Effects | nulative Effects The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects | | |
| 'Do-Nothing Effects' | othing Effects' The environment as it would be in the future should the subject project not be carried out. | | |
| Worst case' Effects The effects arising from a project in the case where mitigation measures substantially fail. | | | |
| Indeterminable Effects | When the full consequences of a change in the environment cannot be described | | |
| rreversible Effects When the character, distinctiveness, diversity or reproductiv capacity of an environment is permanently lost. | | | |
| Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect. | | | |
| Synergistic Effects | Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SOx and NOx to produce smog). | | |

Source: Table 3.4 EPA Guidelines 2022

The diagram below shows how comparison of the character of the predicted impact to the sensitivity of the receiving environment can determine the significance of the impact.



Figure 1.1: Chart showing typical classifications of the significance of impacts

Source: Figure 3.4 of EPA Guidelines 2022

1.7 PURPOSE OF THIS EIAR

The EPA Guidelines 2022 state that the main purpose of an EIAR '*is to identify, describe and present an assessment of the likely significant effects of a project on the environment*'. This informs the competent authority's assessment process, its decision on whether to grant consent for a project and, if granting consent, what conditions to attach. The EIAR focuses on:

- effects that are both likely and significant; and;
- description of effects that are accurate and credible.

In addition to identifying and predicting the likely predicted significant environmental impacts resulting from the proposed development, the EIAR should describe the means and extent by which they can be reduced or ameliorated, to interpret and communicate information about the likely impacts and to provide an input into the decision making and planning process.

The EIAR documents the consideration of environmental effects that influenced the evaluation of alternatives. It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction, or amelioration; to explain how significant adverse effects will be avoided.

It is intended that this EIAR will assist Meath County Council (the competent authority) statutory consultees and the public in assessing all aspects of the application proposals.

1.8 **OBJECTIVES OF THIS EIAR**

The EPA guidelines (2022) list the following fundamental principles to be followed when preparing an S. ONOGROZZ EIAR:

- Anticipating, predicting, avoiding and reducing significant effects; .
- Assessing and mitigating effects;
- Maintaining objectivity; •
- Ensuring clarity and quality; •
- Providing relevant information to decision makers; and •
- Facilitating better consultation. •

The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and the environmental impact assessment should identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the prescribed environmental factors which are:

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC:

- (c) land, soil, water, air and climate;
- (d) material assets, cultural heritage, and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).

This EIAR documents the analysis, evaluation, and assessment of the likely significant effects of the proposed development on each of these environmental factors.

Pursuing preventative action is the most effective means by which potential negative environmental impacts can be avoided. Avoidance of impacts has been principally achieved through the consideration of alternatives and through the review of the project design in light of identified key environmental constraints. This is outlined in greater detail in Chapter 2.

The EIAR document enables Meath County Council, as competent authority, to reach a decision on the acceptability of the proposed development in the full knowledge of the project's likely significant impacts on the environment, if any.

Decisions are taken by competent/consent authorities through the statutory planning process which allows for public participation and consultation while receiving advice from other key stakeholders and statutory authorities with specific environmental responsibilities.

The structure, presentation, and the non-technical summary of the EIAR document as well as the arrangements for public access all facilitate the dissemination of the information contained in the EIAR. The core objective is to ensure that the public and local community are aware of any likely environmental impacts of projects prior to the granting of consent.

FORMAT AND STRUCTURE OF THIS EIAR 1.9

The structure of the EIAR is laid out in the preface of each volume for clarity. It consists of three volumes as follows:

Volume I: Non-Technical Summary

This is a non-technical summary of the information contained within Volume II.

• Volume II: Environmental Impact Assessment Report.

This is the main volume of the EIAR. It provides information on the location and scale of the proposed development, details on design and impacts on the environment (both positive and negative) as a result of the proposed development.

Each of the environmental aspects as listed below are examined in terms of the existing or baseline environment, identification of potential construction and operational stage impacts and where necessary proposed mitigation measures are identified. The interaction of the environmental aspects with each other is also examined. Each chapter below includes an assessment of potential cumulative impacts with other existing and planned developments, where relevant. Environmental aspects considered include:

- Chapter 3 Population and Human Health;
- Chapter 4 Biodiversity;
- Chapter 5 Land and Soils;
- Chapter 6 Water;
- Chapter 7 Air Quality and Climate;
- Chapter 8 Noise and Vibration;
- Chapter 9 Landscape & Visual;
- Chapter 10 Material Assets Traffic;
- Chapter 11 Material Assets Waste Management;
- Chapter 12 Material Assets Utilities;
- Chapter 13 Cultural Heritage Local History, Archaeology;
- Chapter 14 Risk Management for Major Accidents and or Disasters;
- Chapter 15 Interactions of the Foregoing;
- Chapter 16 Summary of EIA Mitigation and Monitoring Measures;
 - Volume III: Technical Appendices

Volume III contains specialists' technical data and other related reports.

1.9.1 EIAR VOLUME II STRUCTURE

The preparation of an EIAR document requires the assimilation, co-ordination, and presentation of a wide range of relevant information in order to allow for the overall assessment of a proposed development. For clarity and to allow for ease of presentation and consistency when considering the various elements of the proposed development, a systematic structure is used for the main body of this EIAR document.

The structure used in this EIAR document is a Grouped Format structure. This structure examines each environmental topic³ in a separate chapter of this EIAR document. The structure of the EIAR document is set out in Table 1.3 below.

| Chapter | Title | Content |
|---------|--|--|
| 1 | Introduction and Methodology | Sets out the purpose, methodology and scope of the document. |
| 2 | Project Description and Alternatives Examined | Sets out the description of the site, design and scale of development, considers all relevant phases from construction through to existence and operation together with a description and evaluation of the reasonable alternatives studied by the developer including alternative locations, designs and processes considered; and a |

Table 1.3: Structure of this EIAR

³ In some instances similar environmental topics are grouped.

| Chapter | Title | Content |
|---------|-------------------------------|---|
| | | justification for the option chosen taking into account the |
| | | effects of the project on the environment. |
| | | Describes the demographic and socio-economic profile of |
| 3 | Population and Human Health | proposed development on population i.e. human beings |
| | | and human health |
| | | Describes the existing ecology on site and in the |
| | | surrounding catchment and assesses the potential impact of |
| 4 | Biodiversity | the proposed development and mitigation measures |
| | | incorporated into the design of the scheme and includes |
| | | mitigation measures. |
| | | impact of the proposed development on the site's soil and |
| 5 | Land and Soils | geology and impacts in relation to land take and includes |
| | | mitigation measures. |
| | | Provides an overview of the baseline position, the potential |
| 6 | Water | impact of the proposed development on water quality and |
| | | quantity and includes mitigation measures. |
| | | environment, the potential impact of the proposed |
| 7 | Air Quality and Climate | development the vulnerability of the project to climate |
| | | change, and includes mitigation measures. |
| | | Provides an overview of the baseline noise environment, |
| 8 | Noise and Vibration | the potential impact of the proposed development and |
| | | includes mitigation measures. |
| | | impact of the proposed development on the landscape |
| 9 | Landscape & Visual Impact | appearance and character and visual environment and |
| | | includes mitigation measures. |
| | | Describes the existing traffic, waste management and |
| | | services and infrastructural requirements of the proposed |
| 10-12 | Material Assets | development and the likely impact of the proposed |
| | | development on material assets and includes mitigation |
| | | Provides an assessment of the site and considers the |
| 10 | Archaeology and Architectural | potential impact of the proposed development on the local |
| 13 | and Cultural Heritage | archaeology, architectural and cultural heritage; and |
| | | includes mitigation measures. |
| 14 | Dick Management | Provides a review of the potential vulnerability of the project |
| | Risk wanagement | to the project concerned |
| 45 | | Describes the potential interactions and interrelationships |
| 15 | Interactions of the Foregoing | between the various environmental factors. |
| 16 | Summary of Mitigation and | Sets out the key mitigation and monitoring measures |
| 10 | Monitoring Measures | included in the EIAR Document for ease of reference. |

This systematic approach described above employs standard descriptive methods, replicable assessment techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration. An outline of the methodology employed consistently in each chapter to examine each environmental topic is provided below:

Table 1.4: Methodology Employed to Evaluate Environmental Topic

- Introduction:
- Study Methodology:
- The Existing Receiving Environment (Baseline Situation):
- Do Nothing Scenario:
- Characteristics of the Proposed Development:

- Potential Impact of the Proposed Development:
- Avoidance, Remedial and Mitigation Measures: Avoidance:
- Predicted Impacts of the Proposed Development (Assessing the significance of residual effects, taking account of any mitigation measures):
- Monitoring:
- Reinstatement:
- Interactions and Cumulative Impacts:
- Difficulties Encountered in Compiling:
- References.

1.10 EIAR PROJECT TEAM

1.10.1 EIAR PROJECT MANAGEMENT

The preparation of this EIAR was project managed, co-ordinated and produced by John Spain Associates. John Spain Associates role was to liaise between the design team and various environmental specialist consultants. John Spain Associates were also responsible for editing the EIAR document to ensure that it is cohesive and not a disjointed collection of disparate reports by various environmental specialists. John Spain Associates does not accept responsibility for the input of the competent specialist consultants or the design team.

1.10.2 EIAR COMPETENT EXPERTS/ENVIRONMENTAL SPECIALISTS

Recital 33 of the amended EIA Directive (Directive 2014/52/EU) states the following in relation to the persons responsible for preparing the environmental impact assessment reports:

'Experts involved in the preparation of environmental impact assessment reports should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality'.

Article 5(3) of the EIA Directive (Directive 2014/52/EU) obliges the project developer to *"ensure that the environmental impact assessment report is prepared by competent experts*". To demonstrate compliance with this, Article 94(e) of the Planning and Development Regulations 2001 to 2021 requires the developer to include the following information in the EIAR:

a list of the experts who contributed to the preparation of the report, identifying for each such expert-

- (i) the part or parts of the report which he or she is responsible for or to which he or she contributed,
- (ii) his or her competence and experience, including relevant qualifications, if any, in relation to such parts, and
- (iii) such additional information in relation to his or her expertise that the person or persons preparing the EIAR consider demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality.

Each environmental specialist engaged in the preparation of this EIAR was commissioned having regard to their previous experience in EIA; their knowledge of relevant environmental legislation relevant to their topic; familiarity with the relevant standards and criteria for evaluation relevant to their topic; ability to interpret the specialised documentation of the construction sector and to understand and anticipate how their topic will be affected during construction and operation phases of development; ability to arrive at practicable and reliable measure to mitigate or avoid adverse environmental impacts; and to clearly and comprehensively present their findings.



Each environmental specialist was required to characterise the receiving baseline environment; evaluate its significance and sensitivity; predict how the receiving environment will interact with the proposed development and to work with the EIA project design team to devise measures to mitigate any adverse environmental impacts identified.

The relevant specialist consultants who contributed to the EIAR and their inputs are set out in Table 1.5 below.

Table 1.5: EIAR List of Competent Experts

| Organisation | EIAR Specialist Topics / Inputs |
|--|--|
| John Spain Associates, Planning & Development Consultants, 39 Fitzwilliam Place, Dublin 2, D02 ND61 T: 01 662 5803 Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt | Introduction and Methodology Project Description and Alternatives Examined Population and Human Health Interactions of the Foregoing Principal Mitigation and Monitoring Measures Non-Technical Summary |
| Shannen O'Brien has a B.A. in Zoology from Trinity College Dublin and a M.Sc. Hons. in Wildlife Conservation and Management from University College Dublin. Brian McCloskey is an experienced Ornithologist with a BSc in Planning and Environmental management from the Technological University of Dublin (TUD) and 12 years of bird survey experience, including three years of professional Ornithology work | Biodiversity |
| Patrick McStay BEng MSc CEng MIEI MIStructE is a Chartered Consulting Civil & Structural Engineer with 30 years' experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments and | Land and Soils/ Population and Human Health |
| Patrick McStay BEng MSc CEng MIEI MIStructE is a Chartered Consulting Civil & Structural Engineer with 30 years' experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments and Richard Langford has a degree in geology from Trinity College Dublin and MSc Applied Hydrogeology from Newcastle-upon-Tyne. Richard is a hydrogeologist with 23 years' experience working as a geologist / hydrogeologist in environmental and groundwater consultancy. | Water and Hydrogeology |
| Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd | Air Quality and Climate (Population and Human Health) |
| Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd | Noise and Vibration (Population and Human Health) |

| Organisation | EIAR Specialist Topics / Inputs |
|---|--|
| Declan O'Leary holds B.Agr Sc. Land. Hort., Dip LA., CLI, MILI., Declan has over 30 years' experience in the design and analysis of landscape and the impacts of change, and the preparation of assessments for inclusion in assessment reports. Prithvi Gowda holds B.Arch., MScUD&P. Prithvi Gowda has over 5 years working in a multi- disciplinary role within landscape and planning teams. | Landscape and Visual Impacts |
| Julian Keenan whose primary degree (BE hons) is held in Civil Engineering from University College Galway. A Director of Trafficwise Ltd., a member of the Institution of Engineers of Ireland and the Chartered Institution of Highways and Transportation, Julian Keenan has over 30yrs engineering experience with 25yrs specialising in Roads Design and Transportation Planning | Material Assets-Traffic |
| Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd | Material Assets (Waste Management) |
| Patrick McStay BEng MSc CEng MIEI MIStructE. Pat is a Chartered Consulting Civil & Structural Engineer with 30 years experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments. Daniel Lynch of Metec, who has a degree in Building Services Engineering from DIT Bolton Street (BEng (hons). BEng (Tech), CIBSE, MIEI.) and has over 15 years' experience | Material Assets (Utilities) |
| Patrick McStay BEng MSc CEng MIEI MIStructE. Pat is a Chartered Consulting Civil & Structural Engineer with 30 years experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments. | Risk Management |
| Magda Lyne (MA, MIAI) and Donald Murphy (MA, MIAI) of Archaeological Consultancy Services Unit Ltd. | Archaeology, Architectural and Cultural Heritage |

1.11 NON-TECHNICAL SUMMARY

One of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. Article 5(1)(e) requires the developer to include a non-technical summary in the EIAR.

The EPA guidelines 2022 note that the non-technical summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by the Competent Authority.

The 2018 EIA Guidelines (paragraph 4.6) prepared by the DHPLG state that the Non-Technical Summary "should be concise and comprehensive and should be written in language easily understood by a lay member of the public not having a background in environmental matters or an in-depth knowledge of the proposed project."

A Non-Technical Summary of the EIAR has therefore been prepared which summarises the key environmental impacts and is provided as a separately bound document in Volume I.

1.12 DESCRIPTION OF THE OPERATION STAGE OF THE PROJECT

Pursuant to the EIA Directive an EIAR document is required to set out a description of the project processes, activities, materials, and natural resources utilised; and the activities, materials and natural resources and the effects, residues and emissions anticipated by the operation of the project.

The proposed development is a residential development including associated roads and services infrastructural works, areas of open space. The primary direct significant environmental effects will arise during the construction stage. As a result, post-construction, the operation of the proposed development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on population and human health, biodiversity, soils, water, air, climate, or landscape.

The primary likely and significant environmental impacts of the operation of the proposed development are fully addressed in the EIAR document; and relate to Population and Human Health, Landscape and Visual Impact and Noise and Air impacts associated with the traffic generated.

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic – which in many instances – are often difficult to quantify due to complex inter-relationships. However, all cumulative secondary and indirect impacts are unlikely to be significant; and where appropriate, have been addressed in the content of this EIAR document.

1.12.1 DESCRIPTION OF CHANGES TO THE PROJECT

The Guidelines on the information to be contained in environmental impact assessment reports were published by the EPA in May 2022.

The EPA EIAR Guidelines 2022 state in relation to change:

"Very few projects remain unaltered throughout their existence. Success may bring growth; technology or market forces may cause processes or activities to alter. All projects change and – like living entities – will someday cease to function. The life cycles of some types of projects, such as quarries, are finite and predictable. Such projects often consider their closure and decommissioning in detail from the outset, while for most projects a general indication of the nature of possible future changes may suffice. While the examination of the potential consequences of change (such as extension) does not imply permission for such extension, its identification and consideration can be an important factor in the determination of the application. Descriptions of likely changes may cover:

- Extension
- Decommissioning
- Other Changes."

As per the EPA guidelines and in the interests of proper planning and sustainable development it is important to consider the potential future growth and longer-term expansion of a proposed development in order to ensure that the geographical area in the vicinity of the proposed development has the assimilative carrying capacity to accommodate future development.

Given the proposed site layout extent and the limitations of physical boundaries, adjoining land uses and land ownership the potential for growth of the proposed development is considered limited and confined primarily to potential minor domestic extensions which will have a negligible impact.

The parameters for the future development of the area in the vicinity of the subject site are governed by the Meath County Development Plan 2021-2027. Any adjacent undeveloped lands will be the subject of separate planning applications in the future, where they are identified as being suitable for development, and where the provision of the requisite physical and other infrastructure is available.

1.12.2 DESCRIPTION OF SECONDARY AND OFF-SITE DEVELOPMENTS

No significant secondary enabling development is deemed necessary to facilitate the proposed development. The planning application includes details of the necessary road works, which are required to facilitate this development. These works are assessed within this Environmental Impact Assessment Report.

1.12.3 RISKS OF MAJOR ACCIDENTS AND/OR DISASTERS

The surrounding context consists of a mix of residential, agricultural, employment, educational and open space public amenity lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

Article 3 of the Environmental Impact Assessment (EIA) Directive 2014/52/EU requires the assessment of expected effects of major accidents and/or disasters within an EIA. Article 3(2) of the Directive states that:

"The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned".

Chapter 15 of the EIAR provides further detail and an assessment.

1.12.4 CONSTRUCTION PHASE MITIGATION

With reference to the construction phase of the proposed development, the objective of the *Resource & Waste Management Plan,* included with the application, is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 (as amended) are complied with.

During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant or adverse effects to the existing public road network. The vast majority of the works (save for the Old Road) are away from the public road in a controlled environment.

There will be some short-term impacts during the construction phase as the pipes are laid, particularly in respect of traffic management with regards to sensitive receptors. This may cause local short-term inconvenience and disturbance to residents and business in the vicinity of the works. However, the works would normally be undertaken in sections on a phased/rolling programme so that the number of persons experiencing local inconveniences at any one time is kept to a minimum.

Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.

With reference to the operational phase of the development the design of the scheme has had regard to DMURS during its design. This will promote a pedestrian friendly environment, promoting sustainable

development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

With reference to natural disasters (e.g. flooding), the proposed development has undergone a Site-Specific Flood Risk Assessment, prepared by DBFL Consulting Engineers. The main area of the site where development is proposed is not at risk of fluvial, pluvial or groundwater flooding.

1.13 RELATED DEVELOPMENT AND CUMULATIVE IMPACTS

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. All cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been addressed in the content of this EIAR document.

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other permitted projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposes.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other planned developments will be minimal.

For the noise impact assessment in Chapter 8 the potential noise emissions arising from the proposed development during construction and operation are combined (using cumulative AADT figures from Traffic chapter) with background noise levels (predominantly road traffic) were assessed.

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments, where relevant. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

Should any other developments be under construction or planned in the vicinity of the site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented.

Relevant developments have been identified with regard to their size and scale, their use mix and composition, and their proximity to the proposed development, within the settlement of Navan, in particular to identify any substantial / strategic residential development or larger scale commercial development. Applications of a minor nature were discounted from the planning history search, for example applications for under 5 no. dwellings, or applications relating to minor extensions, works to existing dwellings, and change of use applications. The planning history search focussed on relevant permitted developments in the last 5 years, with a search also undertaken for permitted longer term permissions (i.e. with a 10 year permission).

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

CENED. 07 As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other permitted developments will be minimal.

To determine traffic impacts in Chapter 10 the traffic generated by the proposed development is combined with the baseline traffic generated by the traffic on the road network in the area. The potential traffic impacts from other developments were also considered in the assessment (e.g. sites adjacent as well as the wider MP12 lands).

For the noise impact assessment in Chapter 8 the potential noise emissions arising from the proposed development during construction and operation are combined (using cumulative AADT figures from Traffic chapter) with background noise levels (predominantly road traffic) were assessed.

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

1.14 DIRECT AND INDIRECT EFFECTS RESULTING FROM USE OF NATURAL RESOURCES

Details of significant direct and indirect effects arising from the proposed development are outlined in Chapters 3-16 which deal with 'Aspects of the Environment Considered'. No significant adverse impact is predicted to arise from the use of natural resources.

1.15 DIRECT AND INDIRECT EFFECTS RESULTING FROM EMISSION OF POLLUTANTS. **CREATION OF NUISANCES AND ELIMINATION OF WASTE**

Details of emissions arising from the development together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined in the relevant in Chapters 3-16 which deal with 'Aspects of the Environment Considered'. There will be no significant direct or indirect effects arising from these sources.

1.16 FORECASTING METHODS USED FOR ENVIRONMENTAL EFFECTS

The methods employed to forecast, and the evidence used to identify the significant effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the "loading" placed on the various aspects of the environment by the development, to put forward amelioration measures, to lessen or remove an impact and thereby arrive at net predicted impact.

Where specific methodologies are employed for various sections of the EIAR they are referred to in the Receiving Environment (Baseline Scenario) sections in the EIAR. Some of the more detailed/specialised information sources and methodologies for several the environmental assessments are outlined hereunder.

1.17 TRANSBOUNDARY IMPACTS

Large-scale transboundary projects⁴ are defined as projects which are implemented in at least two Member States or having at least two Parties of Origin, and which are likely to cause significant effects on the environment or significant adverse transboundary impact.

Having regard to the nature and extent of the proposed development, which comprises a residential development, located in development boundary of Navan, within the administrative area of Meath County Council, transboundary impacts on the environment are not considered relevant, in this regard.

1.18 LINKS BETWEEN EIA AND APPROPRIATE ASSESSMENT/NIS

Article 6(3) of the Habitats Directive (92/43/EEC) provides that any project not directly connected with or necessary to the management of a Natura 2000 site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to an Appropriate Assessment of its implications for the site in view of the site's conservation objectives.

In January 2010 the DoEHLG issued a guidance document entitled '*Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*'. This guidance document enshrines the '*Source-Pathway-Receptor*' into the assessment of plans and projects which may have an impact on Natura 2000 sites.

An Appropriate Assessment screening by Enviroguide was carried out in accordance with 'Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance on the Provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC)' - Brussels, 28.9.2021 C(2021) 6913 final. The AA Screening and NIS is included with the LRD application.

In accordance with these Guidelines, the Appropriate Assessment may be a separate document or form part of the EIAR. In the case of the proposed development a separate Appropriate Assessment Screening Report is submitted with this application as a standalone report and referenced in the Biodiversity Chapter, prepared by Enviroguide.

Article 5(1) of the Directive also states that the EIAR shall include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. The developer shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under Union or national legislation, in preparing the environmental impact assessment report.

In this regard a brief account of how the results of other relevant assessments considered in the preparation of this EIAR is included as Appendix B Volume III of the EIAR.

1.19 AVAILABILITY OF EIAR DOC

A copy of this EIAR document and Non-Technical Summary of the EIAR document is available for purchase at the offices of Meath County Council (Planning Authority) at a fee not exceeding the reasonable cost of reproducing the document. It can also be viewed on the LRD website: <u>https://boynevillagelrd.ie</u> set up by the applicant.

1.20 IMPARTIALITY

This EIAR document has been prepared with reference to a standardised methodology which is universally accepted and acknowledged. Recognised and experienced environmental specialists have been used throughout the EIA process to ensure the EIAR document produced is robust, impartial and objective.

⁴ The definition is based on Articles 2(1) and 4 of the EIA Directive and Article 2(3) and (5) of the Espoo Convention, respectively. <u>http://ec.europa.eu/environment/eia/pdf/Transboundry%20EIA%20Guide.pdf</u>
1.21 STATEMENT OF DIFFICULTIES ENCOUNTERED



No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this statement, such that that the prediction of impacts has not been possible. Where any specific difficulties were encountered these are putlined in the relevant chapter of the EIAR.

1.22 EIA QUALITY CONTROL AND REVIEW

John Spain Associates is committed to consistently monitoring the quality of EIAR documents prepared both in draft form and before they are finalised, published and submitted to the appropriate competent authority taking into account latest best-practice procedure, legislation and policy. The EPA published draft guidelines on information to be contained in Environmental Impact Assessment Report⁵ and the Department of Housing, Planning, Community and Local Government have published a consultation paper⁶, which have been consulted in the preparation of this EIAR. This document includes a detailed EIAR Review Checklist which has been used to undertake a review of this EIAR document.

1.23 ERRORS

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

 ⁵ Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022
 6 Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper, Department of Environment, Community and Local Government, 2017.

2.0 DESCRIPTION OF THE PROJECT AND ALTERNATIVES

2.1 INTRODUCTION AND TERMS OF REFERENCE

This section of the EIAR has been prepared by John Spain Associates, Planning & Development Consultants, and provides a description of the proposed development and also explains the evolution of the scheme design through the reasonable alternatives examined. This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates, and approved by John Spain, Managing Director.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 20 years of experience of Environmental Impact Assessment and urban development.

Rory has acted as lead planning consultant on a range of high-quality complex planning applications across the country over an extended period. Rory has wide-ranging experience in the management and review of Environmental Impact Assessment Reports (EIAR) for major residential and mixed-use development and redevelopment projects. Inputs to this chapter have also been provided by Wilson Hill Architects, HR Consulting Engineers, Byrne Environmental Consulting and Metec Consulting Engineers.

The description of the proposed development is one of the two foundations upon which an EIAR is based (the other being the description of the existing environment described in this chapter and by each of the specialist consultants in the subsequent chapters). It is also a requirement of the EIA Directive (as amended) to present "a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment."

2.2 DESCRIPTION OF THE LOCATION OF THE PROJECT

The location of the project is within the administrative area of Meath County Council. The lands are situated within the development boundary of Navan as identified in the Meath County Council County Development Plan 2021-2027. The proposed development site is situated in the townlands of *'Ferganstown and Ballymacon'* and *'Athlumney'*, Navan, Co. Meath, located to the north of the R153 and 'Old' Road, relating to a site of c. 13.26 hectares.

2.2.1 TOPOGRAPHY

The location of the overall site can be seen on the aerial photograph below. The wider Masterplan 12 lands are bordered by the Kentstown Road to the south and the Boyne Road to the northwest. There are agricultural lands to the north east and south east of the site. The site is in the catchment area of the River Boyne. All storm-water from the area is collected in a Millrace (Farganstown & Ballymacon Stream) running through the site prior to discharging to the River Boyne adjacent to the north western boundary of the site. The existing site levels at the location of the proposed Phase 1B development varies from approximately 51.0m to 44.0m. The level of the River Boyne is approximately 31.0m.

A topographical survey of the site is provided on 1816 - (P)002 - Existing Overall Site Layout Plan, prepared by WHA.

Several geotechnical investigations were carried out on site since 2005. The sequence of strata encountered was generally consistent and comprised of Topsoil over Sand/Gravel or Topsoil over Clay over Sand/Gravel. In a recent investigation, 12No. soakaway tests were carried out by Ground Investigations Ireland in accordance with BRE 365 in February & March 2023 (additional tests have been

carried out throughout the overall site to the north & south of the LDR 6, with a high degree of consistency in test results). The final site investigation report is included in Appendix D Volume III of this EIAR.

Several geotechnical investigations were carried out on site since 2005. The sequence of strata encountered was generally consistent and comprised of Topsoil over Sand/Gravel of Topsoil over Clay over Sand/Gravel. In a recent investigation, 12No. soakaway tests were carried out by Ground Investigations Ireland in accordance with BRE 365 in February & March 2023 (additional tests have been carried out throughout the overall site to the north & south of the LDR 6, with a high degree of consistency in test results). Trial pits were excavated to the proposed formation level of SuDS components (e.g. to formation level of permeable paving) and infiltration rates calculated in accordance with BRE 365. No groundwater was encountered during the site investigation.

A Geotechnical Investigation was carried out on site which identified the presence of clays with low permeability in some localised areas of the site. Large areas of the site contain sands & gravels with good / very good infiltration rates. The use of infiltration systems (e.g. detention basins, soakaways, permeable paving etc) has been maximised in areas where sands and gravels are present.

Figure 2.1: Subject Lands – Location of Project



Source: CSR – Note Red line approximate – refer to Wilson Hill Site Location Map.

The proposed development is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares site, which is the subject of a masterplan development proposal.

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.

Figure 2.2: Site Layout



Source: WHA

The Site Layout Plan shows the main development site.

DESCRIPTION OF THE PHYSICAL CHARACTERISTICS 2.3 OF THE WHOLE **PROPOSED DEVELOPMENT** HILED.

2.3.1 DEMOLITION

There is no demolition of habitable or any other structures relating to the proposed development.

MAIN CHARACTERISTICS OF THE OPERATIONAL PHASE OF THE PROJECT 2.3.2

In summary, the proposed development comprises

Table 2.1: Summary of Key Site Statistics

| Key Site Statistic | Detail |
|----------------------|--|
| Site Area | 13.26 ha (Gross) |
| Land Use Zoning | A2 – New Residential C1 – Mixed Use F1 - Open Space E1 / E3 – Strategic Employment Zones A2 Phasing -Residential Land Post 2027 (proposals relate to surface water connection only) |
| No. of Dwellings | 322 dwellings (212 no. houses & 110 no. duplex apartments/apartments) 177 no. 3-bedroom houses 35 no. 4-bedroom houses and 26 no. apartments/duplex apartments (13 no. 2- bedroom apartments and 13 no. 3-bedroom duplex apartments) 35 no. 1-bedroom apartments and 49 no. 2- bedroom apartments. |
| Community Centre | 1,778 sq. m. (Sports Hall c.837 sq. m.) & 4 no. community rooms c.432 sq. m. |
| Neighbourhood Centre | Convenience Retail unit (net floor space 1,000 sq. m [GFA 1,390 sq. m.]), takeaway, c. 82 sq. m, café, c. 210 sq. m, pharmacy c. 88 sq. m and General Practice Surgery c. 232 sq. m) |
| Creche | 512 sq.m creche at ground floor of Block 2 |
| Open Space | 3.72 ha comprising: 1.65 ha. District Public Park, 1.62 open space and 0.45 landscaped public spaces 743 sq. m communal open space (518 sq. m required) 17.2% of A2 Zoned lands Phase 1B 28% of Gross Phase 1B site (including F1 zoned lands) |
| Building Heights | 2 and 3-storeys (houses and duplexes) 5 and 6-storeys (Apartments over Neighbourhood Centre and Community Centre) |
| Dual Aspect | 73.8% (including duplex apartments units) |
| Car Parking | 693 |
| Bicycle Parking | 289 |
| Vehicular Access | New LDR6 Roadway. |
| Floorspace | 37,089 sq. m. |

2.4 DESCRIPTION PROPOSED DEVELOPMENT

The (Phase 1B) development will consist of the construction of a mixed-use development comprising 322 no. dwellings, a Community Centre and Sports Hall, a Neighbourhood Centre, and a district public park as follows:

- A) 212 no. houses consisting of 177 no. 3-bedroom houses and 35 no. 4-bedroom houses (all houses 2-storeys except House Types F1, F2, F3 [corner], E1, E2, and E3 [corner];
- B) 26 no. duplex units comprising, 13 no. 2-bedroom units and 13 no. 3-bedroom units (in 2 no. 3storey blocks [with 8 no. duplex units abutting Apartment Block 2 in a 3-storey configuration];
- C) 84 no. apartments across 3 no. apartment buildings (Block 2 [5-storeys] comprises 24 no. apartments consisting of 12 no. 1-bedroom apartments and 12 no. 2-bedroom apartments), Block 3 [5-storeys above neighbourhood centre 6-storeys in total] comprising 36 no. apartments consisting of 14 no. 1- bedroom apartments and 22 no. 2-bedroom apartments and Block 4 [4-storeys above community centre 5-storeys in total] comprising 24 no. apartments consisting of 9 no. 1-bedroom apartments and 15 no. 2-bedroom apartments (all apartments with balconies).
- D) Series of landscaped/Public Open Space areas of c.3.72 hectares including playground areas and a Public Park of c.1.65 ha of open space as well as additional communal open space for the apartments and duplex apartments;
- E) Provision of a c. 512 sq. m creche at ground floor of Block 2 as well as a 1,778 sq.m. Community Centre and Sports Hall (including a c.837 sqm sports hall, ancillary changing rooms, 4 no. community rooms and ancillary administration/office space rooms/ESB Substation);
- F) Provision of an anchor retail unit (net floor space 1,000 sq. m [GFA 1,390 sq. m.]), takeaway, c. 82 sq. m, café, c. 210 sq. m, pharmacy c. 88 sq. m and General Practice Surgery c. 232 sq. m) as well as ESB substation and bins, all accommodated within the ground floor level of the neighbourhood centre to the north-west of the site;
- G) 693 no. car parking spaces, 289 no. bicycle parking spaces throughout the development;
- H) Provision of a temporary foul water pumping station (and associated storage) located within the district public park to service the scheme;
- Surface water attenuation measures as well as all ancillary site development works (reprofiling of site as required) as well as connection to the public water supply and drainage services (including culvert along the Old Road frontage);
- J) ESB sub-station, hard and soft landscaped areas, public lighting, bin stores, all ancillary landscape works including planting and boundary treatments and the provision of cycle paths, and all ancillary site development works.

Figure 2.3: Site Location

Source: Wilson Hill Architects

2.5 DEMOLITION

There is no demolition of habitable or any other structures relating to the proposed development.

2.6 RESIDENTIAL DEVELOPMENT

The overall mix of houses, duplex apartments and apartments within the proposed scheme is noted as follows:

| Table 2.2: Overall N | lix of Units | | | | .07 | _ |
|----------------------|--------------|-------|-------|-------|---------|-----|
| | 1-bed | 2-bed | 3-bed | 4-bed | Overall | 220 |
| Houses | | | 177 | 35 | 212 | |
| Duplex Apartments | | 13 | 13 | | 26 | |
| Apartments | 35 | 49 | | | 84 | |
| Total | 35 | 62 | 190 | 35 | 322 | |
| Overall Mix % | 10.9% | 19.2% | 59% | 10.9% | 100% | |

Source: Wilson Hill Architects

The proposal will include significant areas of open space and landscaping in accordance with the objectives of the Meath County Development Plan 2021-2027. These will include a combination of pocket parks, neighbourhood park and interlinked shared surfaces which will enhance pedestrian movement and permeability. The primary point of access is proposed from 2 no. locations at the site's eastern perimeter.

2.6.1 HOUSES

The 212 no. houses are designed as two and three-storey family dwellings, in a wide mix of units comprising 177 no. 3-bedroom houses and 35 no. 4-bedroom houses in detached, semi-detached, or terraced configurations (in 14 no. house types).

Individual plot layouts provide good separation to ensure privacy and minimise overlooking. The end-row and end terrace house types have been used to turn corners, with front doors and windows giving activity and passive supervision to the sides and avoiding large blank gables.

All houses are either two or three-storey with private amenity space in the form of a rear garden. Dwellings are provided as detached, semi-detached and terraced units. Individual plot layouts provide good separation to ensure privacy and minimise overlooking.

The variety of house types (14 no.) provides for a wide choice to suit all potential occupiers and many household types, as well as permitting a very efficient site layout. The mix of house type in the street frontage creates visual interest and contribute to the specific character of the development, both overall and in each street. The overall provision of 14 no. house types adds positively to the variety for potential occupiers and contributes to a development which provides high quality family homes in a legible and efficient layout which is easily navigable.

Figure 2.4: CGI Neighbourhood Park



Source: 3-D Design Bureau.

2.6.2 DUPLEX UNITS

It is proposed to provide 26 no. duplex units (13 no. 2-bedroom and 13 no. 3-bedroom duplex units) contained in 3 no. separate 3-storey duplex buildings located to the south of the main roundabout entrance and close to the neighbourhood centre. 743 sq.m of Communal Open Space is provided to serve the 26 no. duplex units and exceeds the minimum requirement as per the Meath County Development Plan requirements (518 sq.m).



Figure 2.5: Duplex Units Layout

Source: CSR

The three-storey duplex blocks (in conjunction with Apartment Block 2) provide a tocal point at the entrance point to the scheme from the LRD6 road.

2.6.3 APARTMENTS

The proposed development will provide for 84 no. apartment units across 3 no. apartment buildings. Block 2 comprises 24 no. apartments consisting of 12 no. 1-bedroom and 12 no. 2-bedroom apartments and will be 5-storeys in height. Block 3 comprises of 36 no. apartment units consisting of 14 no. 1-bedroom and 22 no. 2-bedroom units. Block 3, located above the neighbourhood centre will be 5-storeys (6-storeys in total). Block 4 will comprise of 24 no. apartment units and consist of 9 no. 1-bedroom units and 15 no. 2-bedroom units. Block 4, which is located above the community centre, will be 4 storeys in height (5-storeys in total when the community centre is taken into consideration). All apartment units proposed as part of this development are provided with private open space in the form of balconies. 743sq.m of Communal Amenity Space is also provided for residents of the apartments.

Table 2.3: Overall Mix of Units

| | 1-bed | 2-bed | 3-bed | Overall |
|-------------------|-------|-------|-------|---------|
| Duplex Apartments | | 13 | 13 | 26 |
| Apartments | 35 | 49 | | 84 |
| Total | 35 | 62 | 13 | 110 |

2.6.4 CRECHE

A new 512 sq.m Childcare Facility is proposed as part of the development. The proposed creche is located adjacent to the main entrance to the site and the access road and will be capable of accommodating up to 105 no. children (based on c. 4-5 sq. m per child).





Source: Wilson Hill Architects

The proposed creche will be located at ground floor level in the apartment block to the east of the main central access road. It will face the Neighbourhood Centre and contain its own enclosed outdoor play space. It will be easily accessible to residents of the proposed development and surrounding local area.



Source: Wilson Hill Architects

The proposed development includes a substantial community building which comprises 1,778 sq. m community centre including a c.837 sq. m. sports hall, ancillary changing rooms, 4 no. community rooms (c.432 sq.m) and ancillary administration/office space rooms.

The Community Building (Block 4) also includes 24 no. apartments at first floor as well as communal open space.

Figure 2.8: Community Centre and Neighbourhood Centre South Elevation



Source: Wilson Hill Architects



Figure 2.9: Community Centre / Neighbourhood Centre and District Park

Source: Wilson Hill Architects

2.8 NEIGHBOURHOOD CENTRE (BLOCK 3)

The Neighbourhood centre will comprise a convenience anchor retail unit (net floor space 1,000 sq. m [GFA 1,390 sq. m.]), takeaway, c. 82 sq. m, café, c. 210 sq. m, pharmacy c. 88 sq. m and General Practice Surgery c. 232 sq. m) as well as ESB substation and bins, all accommodated within the ground floor level.

In addition, the Neighbourhood Centre will include 36 no. apartment units above ground floor rising to 6storeys at the corner of the main entrance roundabout fronting onto the LDR6 road.

Figure 2.10: CGI Neighbourhood Centre looking east.



Source: 3-D Design Bureau

Figure 2.11: Ground Floor Neighbourhood Centre



Source: Wilson Hill Architects

PECEN

2.9 LANDSCAPING STRATEGY

2.9.1 KEY ELEMENTS OF LANDSCAPING STRATEGY

As set out in the Cunnane Stratton Reynolds Landscape Design Statement included with the LRD application, the proposed scheme is set within an open agricultural landscape on the eastern edge of Navan. The existing rural context on the edge of a growing town provides an ideal setting for a new residential area with a large district park and a series of connected green spaces.

The layout of the neighbourhood is set out as one of the initial phases within a wider adopted masterplan. Adjoining the Tubberclaire Meadows residential area to the southwest, the site forms a natural extension to this residential area. The strategy for the site will ensure that a multifunctional parkland is created as a first phase of a larger district park, connected to a series of smaller green spaces using green links (tree lined streets with segregated footpaths) The parklands and peripheral green spaces will create habitat for wildlife and provide opportunities for sustainable drainage and amenity for residents.

The key aspects of the design are summarised below:

- 1. Introduce natural materials and elements integrated throughout the public spaces;
- 2. Maximise the potential of the open space for habitat, sustainable drainage and recreation;
- 3. Retain and enhance the existing character of the wider landscape;
- 4. Develop a new native tree belt along the northern edge of the development to create a green buffer to the distributer road and connect and enhance the existing wider green network;
- 5. Develop more formal pocket parks within the parcels of housing to ensure that all residents are within a short walk of public open space and play facilities;
- 6. Ensure all local streets are sufficiently planted with street trees.

To the west of the development site, a c.1.65 ha green space will be created as a first phase of a much larger district park, connecting directly to the Neighbourhood Centre via a public open space.

Green Links provide pleasant routes between the District Park and neighbouring amenities and residential areas and on to a series of public green spaces. At the centre of the residential area will be a neighbourhood park with equipped play facilities and a kickabout area. It will be an amenity space for local residents and will aim to form the heart of the future community.

Green Links provide pleasant routes between the District Park and neighbouring amenities and residential areas and on to a series of public green spaces.

At the centre of the residential area will be a neighbourhood park with equipped play facilities and a kickabout area. It will be an amenity space for local residents and will aim to form the heart of the future community.

On the periphery of the development site, a series of more natural green spaces will perform a range of functions including ecosystem services, sustainable drainage and amenity uses like footpaths and social spaces.

The design of roads and streets has been considered in terms of hierarchy, providing a range of street types that differ in width and treatment to create a variety of character areas throughout the site.



Figure 2.12: District Park

Source: Cunnane Stratton Reynolds

The new urban park will be a valuable resource for future neighbouring residents as well as the wider community. Once all phases are completed, the park is intended to be a new destination for Navan and will perform a range of functions from amenity to drainage, to ecosystem service.

The design of the district park, including its surface finishes, fittings, and features, will have a grand formal parkland character, appropriate to the scale of the space and the urbanising character of the proposed development within Navan. A strong visual and physical ink will be created between the neighbourhood centre and the park, using an axial design with low level water features, semi-mature tree planting and straight lines.

The large parkland will link to the neighbourhood using a generous tree lined route. The neighbourhood Park, within the residential area, will be more intimate in character and less grand and formal in its design. The design of this space will include play facilities, a kick-about space, drainage, and informal footpaths. It will form an important node within the northsouth green route through the site.

The landscape design of public green spaces provides attractive, functional, and usable spaces for residents and visitors, whilst ensuring buildability, ease of maintenance and durability over time.

rygin into norgination unit

Figure 2.13: Neighbourhood Park

Source: Cunnane Stratton Reynolds

Figure 2.14: Public Open Space Areas

| Public open space Areas | | | | |
|--------------------------------------|--------|--|--|--|
| Central Park 4,753 | | | | |
| Green Link East 1,464 | | | | |
| Green Link West 691 | | | | |
| Old Athlumney Road Park 9,326 | | | | |
| | | | | |
| Total Public Open Space | 16,234 | | | |
| | | | | |
| Additional High Quality Public Realm | | | | |
| Landscaped Public Spaces 4,513 | | | | |

| West Park area | | |
|----------------------|--------|--|
| West (District) Park | 16,521 | |

Source: WHA

The proposed development will also provide for a connected series of public open spaces and amenity Green Infrastructure areas measuring c.3.72 hectares (on F1, and A2 zoned lands), which is c. 28% of the gross site area (of 13.26 ha).

The proposed open space on A2 zoned lands comprises 16,234 sq. m resulting in 17.2% open space on the gross A2 zoned lands for Phase 1A which exceeds the open space requirements as set out in the County Development Plan (15%) as it relates to the A2 zoned land. Taking the combined permitted Phase 1A and Phase 1B LRD developments, the open space is 16.7% of the net site area of A2 zoned lands (as allowed for in the Compact Settlement Guidelines).

The gross Phase 1 site (phases 1A and 1B equates to c. 14.42 hectares which would result in an overall open space of 25% across the 2 phases (including the F1 zoned area).





2.9.2 **BOUNDARY TREATMENT**

Low stone walls with railings will define the front gardens along Distribution Road, providing a defensible boundary for residents while also providing clear definition and overlooking of the streetscape, and creating active high quality frontages. This boundary will be 1.5m high (0.6m stone wall & 0.9m high flat bar metal railing) a dwarf stone wall with flat bar metal railings.

Within the overall Phase 1B scheme, proposed brick walls (2.0m high) will define all public-facing boundaries. Back gardens (back to back) are enclosed with a 2.0m high concrete post & concrete panel fence. Timber panel fences with concrete posts will form the side fences to gardens. The 0.9m high metal estate railings and clipped hedge will define the front private gardens, creating simple active high-quality frontages.

2.10 ACCESS

The application site is located within Meath County Council Masterplan 12 lands located to the east of Navan town. The area is largely rural in character consisting of fields in agricultural use, bounded by field hedgerows. To the north-west is the Navan to Drogheda commercial rail line which is crossed by one level crossing and beyond it, low density residential development as well as a graveyard. To the north-east and east the character is essentially rural, and the land is in agricultural use. The south of the area is characterised by low density residential development along two existing roads.



Figure 2.16: Site Location and Local Road Network (Source: Google Earth)

The site will be accessible from 2 no. entrances from the LIHAF (LDR6) Road.

The figure above highlights the receiving roads and local landmarks and shows the general location of the Masterplan 12 lands shaded violet. Phase 1 is outlined cyan whilst Phase 1B lands are shaded Cyan. Phase 1A for which Meath County Council by decision dated 21-Jan-2022 issued a notification of its decision to grant permission under Planning Reg. Ref. 21/1046 is outlined red and is shaded red. Planning Reg. Ref. 21/1046 has been appealed under An Bord Pleanála Case Ref. ABP-312746-22. Local Distributor Road LDR6 is shown with the dashed magenta lines with signal junctions at either end with roundabouts at the internal nodal points within Masterplan 12.

2.11 PARKING STRATEGY

Reference has been made to Meath County Development Plan 2021-2027, Chapter 11, Section 9 'Parking Standards' in which Table 11.2 'Car Parking' outlines car parking standards. Notwithstanding that complex developments may be assessed separately regarding the circumstances of each case, the standard parking requirements that apply for the following development types are noted:

- Dwellings, 2 per conventional dwelling:
- Flats/Apartments, 2 per unit in all cases plus 1 visitor space per 4 units:
- Food Retail, 1 per 20m2 GFA (<1,000m2) else 1 per 14m2 GFA (provision for taxi):
- Non-food Retail, 1 per 20m2 GFA:

Source: TrafficWise

- Creches, 1 per employee & dedicated set-down area 1 per 4 children:
- Sports Clubs, 2 per court, 5 per 100m2 GFA.

As set out in the Traffic Report and Mobility Management Plan prepared by Traffic Vise, reference has been made to Meath County Development Plan 2021-2027, Chapter 11, Section 9 'Parking Standards' in which Table 11.4 'Cycle Parking Standards' outlines cycle parking standards.

| Table 2.4: Car and Bicycle Parking | TO2 |
|---|-----|
| 1.6C Totals for Carparking / Bike storage | × |
| | |
| Residential Spaces for dwelling houses (units A-F incl.) | 422 |
| Off Street Spaces for duplexes | 34 |
| Off Street Spaces for Apartments (Block 2) | 32 |
| Off Street Spaces for Creche and Visitors | 14 |
| | |
| Residential Spaces at the Neighbourhood centre (Blocks 3 & 4) | 75 |
| Off Street Spaces (for retails and community centre) | 116 |
| Total Carparking Spaces | 693 |
| | |
| Bike storages for Retails, Community Centre & Creche | 80 |
| Bike storages for apartments & duplexes (apartments & visitors) | 209 |
| Total Bicycle Spaces | 289 |

Source: Wilson Hill Architects SOA

2.11.1 DISABLED CAR PARKING

Meath County Development Plan 2012-2027 states that parking facilities for mobility impaired drivers and their vehicles are required to be provided at the general rate of 5 per 100 spaces and such spaces shall be proximate to the entry points of the proposed buildings they serve. Trafficwise Drawing No. TWL/30104/PL/06 shows spaces provided near the entrance points to the apartments, the retail units and community centre.

2.12 SURFACE WATER AND SUDS

All field drains and water courses within the area currently flow to the River Boyne. The River Boyne will remain the eventual recipient of excess surface water. The development on the Athlumney lands will discharge to the Millrace that runs through these lands and connects to the River Boyne. Existing field drains on the lands will generally be maintained or diverted to the Millrace.

The proposed surface water system has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works.

The following criteria have been considered in relation to the treatment / disposal of storm-water runoff from the developed site.

• Re-Use Maximise the use of rainwater harvesting where opportunities arise. Rainwater harvesting tanks (RWHTs) are to be provided at the neighbourhood centre. These can be used to for irrigation during prolonged dry periods with little rainfall.

- Infiltration A Geotechnical Investigation was carried out on site which identified the presence of clays with low permeability in some localised areas of the site. Large areas of the site contain sands & gravels with good / very good infiltration rates. The use of infiltration systems (eg detention basins, soakaways, permeable paving etc) has been maximised in areas where sands and gravels are present.
- Watercourse Surface water which does not infiltrate into the ground is to be directed towards the Millrace through drainage channels and swales.

The proposed Sustainable Drainage System includes the following elements:

- Wet/dry detentions basins / ponds
- Bio-retention areas including tree pits
- Permeable paving (including porous asphalt)
- Rainwater harvesting tank is to be provided at the neighbourhood centre.

Flow control through the system will generally be achieved by the use of hydro-brakes and orifice control devices in detention basins / ponds etc.

2.12.1 SURFACE WATER DRAINAGE STRATEGY

The surface water drainage strategy is described below:

 More than 40% of the site area is to remain in an un-developed green-field state (public open space). An additional 25-30% of the site area will be left as private gardens on completion of the development. These areas will not be connected to the drainage system. Rain falling onto the ground within these areas will percolate into the ground and will not contribute to an increase in pre-development run-off.

Roads will be drained using a number of methods including

- Roads and footpaths will be drained using road gullies with underground drainage pipes to convey run-off to local detention basins dispersed around the site which have been designed to encourage infiltration.
- Parking spaces will be constructed using permeable paving. Water falling onto roads adjacent to these spaces will be directed towards the permeable paving to facilitate infiltration with excess water directed towards the piped drainage system.
- Roads within the neighbourhood centre which are not subject to use by heavy vehicles will be constructed using porous asphalt.

The roofs of building will be drained using a number of methods including:

- Rainwater harvesting tanks are to be provided at the neighbourhood centre. These may be used for irrigation during prolonged dry periods and / or for grey water use in buildings.
- Houses will be provided with rainwater butts and soakaways (in areas of good percolation) to minimise the volume of rainwater entering the Millrace.

2.13 FOUL SEWER

There is existing spare capacity in the foul and water supply system to cater for both Phase 1A & Phase 1B of the Boyne Village development. Later phases of the Boyne Village development may demand an upgrading of both the distributor network and wastewater treatment plant at Farganstown. Wastewater from Navan and its immediate environs is pumped to the Navan Wastewater Treatment Works at

Farganstown, on the Southern shore of the River Boyne. Although there is a 250 mm diameter gravity foul sewer in the Boyne Road, running to the WWTW, it does not have the capacity to cater for the flow from the overall Phase 1 Masterplan of Boyne Village development. However, Phase 1B (subject of this application) can be accommodated within the existing infrastructure and a temporary pumping station.

The temporary pumping station will operate until the primary pumping station and twingising mains to Farganstown WWTW have been constructed and commissioned.

These infrastructural services are illustrated in the Hendrick Ryan drawings Nos 2135/101, 104, 105, 107 & 108.

For later phases of the Boyne Village development, the area will be serviced by a new Irish Water owned and operated pumping station located within a later phase of the development. A 750mm gravity foul sewer has been laid in the LDR6 road to facilitate future discharge to the Irish Water pumping station. Two rising mains from the Irish Water pumping station (250mm & 300mm rising mains) will transport waste water directly to the waste water treatment plant at Farganstown. The rising mains will exit the site along the road reservation adjacent to St Mary's graveyard on the Boyne Road. The rising mains will run under the railway and along the Boyne Road to the Fargenstown WWTW. The primary pumping station and rising mains as well as the upgrade at Fargenstown WWTW are to be carried out by Irish Water.

It is noted there is a current planning application (PRR 2460066), lodged by Irish Water with Meath County Council on the 30th of January 2024, for a new wastewater pumping station, which is subject to a further information request.

The Foul gravity system has been designed to cater for the foul discharge from the overall Masterplan Phase 1 development (Phases 1A & 1B) and also the discharge from the future development of the lands to the east of Phase 1, up to the LDR 6.

2.14 WATER SUPPLY

Existing water mains in the area of the development include a 150 mm diameter main in the Kentstown Road and a 100mm diameter mains in the old Athlumney Road and a 150mm main in the Boyne Road. There is a 225 mm diameter main in the Forfás Road, at the Kentstown Road roundabout at the start of the LDR6. The water supply system serving the area will shortly be upgraded with the completion of a 500mm main from the Cairn Hill reservoir. This main runs in the new LDR 6 road. As the completion of this upgrade work is not due until 2022-2023, a new 150mm (1800D) main will also be installed on the LDR 6. This temporary main will be connected to the 150mm main in the Kentstown Road. For further phases on the development, another 150mm (1800D) main will be brought into the site from the Boyne Road and connected to the 150mm main in the LDR6. These two water mains will provide adequate water supply for the initial phases of the development and until the 500mm main is active. In the future the 500mm main will continue under the railway to the Boyne Road.

Water supply for the development will comply with all the Irish Water details and specifications. Irish Water have issued a Confirmation of Feasibility and a Statement of Design Acceptance for the proposed development.

2.15 UTILITIES

2.15.1 ESB POWER

The existing ESB network maps indicate an existing 10 kV Medium Voltage overhead electricity line traversing the proposed site. This overhead line may need to be diverted for the development. The ESB planners will review the capacity of the existing electrical infrastructure and advise the extent of upgrade works to comply with their infrastructural requirements.



Figure 2.17:ESB Network in the Area

Source: Metec

New infrastructure connections have been considered in the design of the proposed development and there are no known issues with local infrastructure to supply the new development at this time. A new ESB sub-station (630kVA) at the retail/commercial units and 3 No. additional ESB sub-station (630Kva) units are proposed within the footprint of the development. The ESB will be the final arbiters of the electrical configuration within the site.

Main cable ducting shall comply with the requirements of the ESB Networks Housing Schemes Guidebook for ESB Networks Standards for Electrical Services. ESB Networks will specify the route, size and purpose of all ducts on the site layout plan. For all ducting which lies within the housing scheme/development, the trench cross-section and ducting requirements set out in the guidebook shall apply.

2.15.2 EXISTING GAS INFRASTRUCTURE

The Gas network's infrastructure map does not indicate any existing gas pipework connection serving the proposed development at Boyne Village (Phase 1B), Navan. The two closest mains to the proposed development is on Old Road outside of Old Athlumney Manor and TubberClaire Meadows Estate. There is no requirement for gas on the proposed development site as the new buildings will be provided with alternative methods for generation of heating and hot water, as per the Sustainability Report/Energy Statement, included with the application.

2.15.3 TELECOMMUNICATIONS – EIR

EIR infrastructure to the surrounding area is sufficient to service the development subject to final agreement with EIR. An existing Eir network map is shown below.

Figure 2.18: Eir network





Source: Metec

2.15.4 TELECOMMUNICATIONS – OTHER

Virgin Media had confirmed they had no underground services adjacent to the proposed development location as of June 2022, with confirmation on current network status pending. Colt Technologies have confirmed they currently have no apparatus in this area as have Enet how have also confirmed they currently have no plant in this area.

2.15.5 TELECOMS – MAJOR TELECOMMUNICATION MASTS

As part of the design process the impact on the development on major telecommunications links has been considered. There are no foreseen issues with the proposed development as there are no visible telecommunication masts in the immediate surrounding area. A map of telecom masts in the greater surrounding area can be seen below, with proposed site boundary indicated in pink.



Figure 2.19: Telecom Mast Map of surrounding area

Source: Metec

2.16 DESCRIPTION OF THE MAIN CHARACTERISTICS OF THE CONSTRUCTION PHASE

2.16.1 INTRODUCTION

The development of the lands will occur for up to 7 years having regard to the nature of the project and the need for flexibility to respond to market demand. The anticipated duration of construction within the 7 years is envisaged at between 0-48 months. An Outline Construction Environmental Management Plan has been prepared by HR Consulting Engineers and is included with the LRD application. The OCEMP will be developed and submitted to Meath County Council prior to commencement of development and will include the mitigation measures set out in this EIAR and to comply with any relevant conditions attached to a grant of permission.

This EIAR presents proposed mitigation measures to ensure that the planned development of the lands does not generate significant adverse impacts for residential and working communities in the vicinity of the site.

In the event that the phases were not developed (due to unforeseen circumstances) the construction period may extend, having regard to the nature of the project and the need for flexibility, contractor pricing etc. It is important to note that the mitigation measures outlined in the EIAR will ensure that an extension to the construction period will not have a negative impact on the receiving environment.

The proposed development, as described, is detailed on the planning application drawings and particulars which accompany the application.

2.16.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The Contractor's CEMP will implement the measures contained in this EIAR and the OCEMP (included with the application in Appendix D Volume III of this EIAR). The OCEMP presents the approach and application of environmental management and mitigation for the construction phase of the proposed Project. It aims to ensure that adverse effects from the construction phase of the proposed Project, on the environment are avoided or minimised. It broadly replicates the construction stage mitigation included in Chapters 3-14 of this EIAR and as summarised in Chapter 16.

Post planning, the appointed contractor will take ownership of the Outline Construction Environmental Management Plan (OCEMP). Prior to any demolition, excavation or construction, the Outline Construction Environmental Management Plan (OCEMP) will be updated by the successful contractor. The CEMP will set out the Contractor's overall management and administration of the construction project. The CEMP will be treated as a live document and communicated to all relevant personnel on site.

The Contractor's CEMP will:

- Be maintained and the procedures implemented by the contractor for the duration of the construction period.
- Manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages.
- Detail measures to be carried out to avoid environmental incidents,
- Detail reporting procedures to be followed if incidents occur including details of responsible person in the construction team.
- Include details of training for all site personnel in the implementation of these procedures as part of the site induction process.
- Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact
 numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental
 Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent
 position within the site compound. These agencies will be notified immediately in the event of a
 pollution incident.

In addition to the EIAR mitigation measures already included in the OCEMP (and mitigation contained in this EIAR and the Enviroguide NIS), the Contractor will be required to include additional details under the following headings:

- Working hours and days;
- Emergency planning in the event of a fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services;
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage, temporary offices and site security arrangements, measures will need to be identified in relation to security of the various sites during construction e.g. controlled access onto site, measures to secure rear gardens, access, etc;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);
- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and construction), Work practices, equipment noise control and screening shall be in compliance with BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise, and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction control on construction and open sites Part 2: Vibration (together referred to as B.S. 5228);

• Landscape management;

Construction of the development involves the following principal elements:

- Site strip. Earthworks associated with the construction of the houses and roads in the development.
- Construction of new buildings houses, duplex units & creche.
- Construction of roads, footpaths & hard/soft landscaping.
- Buried site services installation. New foul pumping station. Connection to public services.
- Works to the Cookstown Road along the site boundary, and a new footpath along the southside of the road as far as the existing school crossing.

2.16.3 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

In general, the impact of the construction period will be short-term in nature and less significant than the operational stage of the proposed development due to the reduced traffic volumes generated during the construction stage compared to the operational stage. In addition, the peak construction arrivals / departures will be outside of the road network peak hours and therefore will not exacerbate any existing delays encountered during peak times. It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day, and such will not impact significantly during the peak traffic period.

Legislation and guidelines relevant to maintaining the safety of the public adjacent to construction works includes:

- Safety, Health & Welfare at Work (Construction) Regulations 2013
- Traffic Signs Manual Chapter 8 Temporary Traffic Measures and Sign Roadworks (2009), Department for Transport/Highways Agency
- Traffic Management Guidelines (2019), Department of Transport

2.16.3.1 Site Access Routes

Transporting materials to and from site could potentially create nuisance to road users and residents living adjacent to haul roads. To minimise this risk, it is important that the location of site access points for use by construction vehicles is agreed with the Local Authority. It is proposed that local access to the site will generally be provided from the existing roundabout on the LDR 6.

The condition and width of all access roads shall be assessed by the Contactor to ensure that they are suitable for use by heavy construction traffic and delivery of over-sized loads.

2.16.3.2 Construction Traffic

Routing In general, materials will be delivered to site using the public road network. Local access points will be required to enter the construction site from the LDR 6. These access points may require local traffic management.

2.16.3.3 Construction Parking

Parking for construction operatives will be provided within the construction compound. Traffic Management Plan The Contractor shall establish a Traffic Management Plan for the construction works.

The applicant will seek to avoid, wherever possible, bringing construction traffic through areas where there are existing residents. Phases 3 and 4 could have an impact on newly occupied residences constructed in earlier phases.

Old Athlumney Road will not be used as a haul route during construction and will be used only in relation to works along the Old Athlumney Road which include the culverting of the existing open water channel and provision of footway etc.

The TMP shall:

- Address the movement of vehicles, machinery, and pedestrians within the site boundary and on adjacent public roads & footpaths
- Ensure that the safety of construction operatives, public road users and pedestrians is not compromised as a consequence of the works.

This shall be achieved through the effective implementation of traffic mitigation measures. When considering mitigation measures, the Contractor shall pay particular attention to sensitive and vulnerable users (e.g. children, elderly etc) and take account of stakeholders whose activities may be affected by the proposed works (e.g. local schools, residents, businesses etc)

All construction related parking will be provided on site. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff anticipated to be 40 no. staff car trips daily. The proposed on-site car parking area will be designed to have the capacity to accommodate this parking demand in addition to an element of visitor parking spaces.
- Excavation plant and dumper trucks involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.

On-site employees will generally arrive before 08:00, thus avoiding morning peak hour traffic. These employees will generally depart after 18:00 and avoid the PM peak hour.

To minimise disruption to the surrounding environment, the following mitigation measures will be implemented:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- A dedicated 'construction' site access / egress junction will be provided during all construction phases. This will be via the existing accesses constructed on the LRD6.
- Provision of sufficient on-site parking for staff and visitors (as described above) and compounding through the construction of temporary hardstanding areas to ensure no potential overflow of construction generated traffic onto the local network.
- A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.
- A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
- A dedicated construction haul route has been identified and will be agreed with the local authority prior to the commencement of constructions activities on-site.
- Truck wheel washes will be installed at construction and discharge from wheel wash area will be directed to on-site settlement ponds.

- On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.
- Measures will be put in place to minimise the risk of road traffic accidents during the construction phase including;
 - o appropriate temporary traffic management as required,
 - strict adherence to the proposed construction vehicle haul route, and
 - Wayfinding signage so all visitors can navigate to the designated visitor parking and sign in areas.

2.16.4 LIAISON WITH NEIGHBOURING PROPERTIES

A monitoring regime will be put in place to protect neighbours & neighbouring properties with a full and detailed vibration, noise, dust, and groundwater monitoring regime put in place for the duration of the works.



The Contractor will appoint a competent person to be referred to as the Surveying, Instrumentation and Monitoring Subcontractor (MSC) who will implement the monitoring measures during the construction phase described in this EIAR.

The MSC will be responsible for preparing or organising the preparation of condition surveys of surrounding buildings, walls, hardstanding area etc. prior to the carrying out of any works on site. Extent of surveys to be agreed. The condition surveys will be carried out to a level of detail, suitable to the nature and extent of conditions encountered in order to obtain an understanding of the general structural condition of the property/structure and/or external environments.

It is proposed that vibration monitoring will be conducted at properties adjacent to or within 50m of the site as required using calibrated vibration monitors and geophones capable of transmitting live text and email alerts to ensure that if vibration levels approach or exceed specified warning and limit values.

2.16.5 EXISTING GROUND CONDITIONS

Information taken from the ground investigation report indicates that cohesive deposits were encountered beneath the topsoil and were described typically as brown sandy gravelly CLAY with many cobbles and occasional boulders overlying a brownish grey sandy gravelly CLAY. Bedrock was not encountered during these investigations and there was no contamination identified in the site investigation report.

2.16.6 DEMOLITION

There are no demolition works required on the subject lands.

2.16.7 CONSTRUCTION COMPOUND

A construction compound will be required adjacent to the construction site – See Figure below. It is intended that the primary construction compound will be located adjacent to the neighbourhood centre. Smaller secondary compounds may be located within the green space in the centre of the site. The main compound will have an approximate area of 2,500 – 3,000m2 in size and will include stores, offices,

material storage areas, plant storage and parking for site and staff vehicles. This site is proposed to remain in place for the duration of the construction works but may be scaled up or down during particular activities on site. The construction compound will need to incorporate any protection and control measures outlined in the Construction & Environmental Management Plan, Environmental Report, and comply with requirements outlined in the Construction Erosion and Sediment Control Plan (CESCP) and planning conditions. These areas will be incorporated into the development on completion of the works. Temporary buildings and containers, parking areas and material such as rubble, aggregates and un-used construction materials will be removed and disposed appropriately. The location of the construction compound may be relocated during the course of the works.



Figure 2.20: Construction Compound

Note: Indicative to be agreed with MCC

- The construction compound will include adequate welfare facilities such as washrooms, drying rooms, canteen and first aid room as well as foul drainage and potable water supply.
- Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established
- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials
- The construction compound will be enclosed by a security fence
- Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure
- A permeable hardstand area will be provided for staff carparking
- A separate permeable hardstand area will be provided for construction machinery and plant
- The construction compound will include a designated construction material recycling area
- A series of way finding signage will be provided to direct staff, visitors and deliveries as required

- All construction materials, debris, temporary hardstands etc. in the viginity of the site compound • will be removed off-site on completion of the works
- Site security will be provided by way of a monitored infrastructure systems such as site lighting and (ED: ON OGNOR T CCTV cameras, when deemed necessary.

2.16.8 MAIN STAGES/PHASES OF CONSTRUCTION

In summary the construction of the development will involve the following:

- Site strip. Earthworks associated with the construction of the houses, duplex units, creche and roads • in the development.
- Construction of new buildings houses, duplex units & creche, including ancillary buildings such as . bike stores, bins stores and an ESB substation.
- Construction of roads, footpaths & hard/soft landscaping. •
- Buried site services installation.

Figure 2.21: Indicative Outline Construction Timeline

| Activity | Duration |
|-----------------------------|----------|
| Site clearance and set-up | 8 Weeks |
| Install site services | 26 Weeks |
| Substructures (foundations) | 26 Weeks |
| Superstructures | 26 Weeks |
| Roads & paving | 26 Weeks |
| Landscaping | 16 Weeks |

2.16.8.1 Site Accommodation & Site Parking

On site accommodation will consist of:

- Staff welfare facilities (toilets, canteen, offices/meeting rooms,) •
- Materials storage areas and drop off Temporary water supply, electricity supply and foul drainage will • be required for the new facilities.
- Connections to electricity & water are available close to the site boundary. •
- Foul drainage with need to be taken to a vented holding tank for regular removal by suction tanker. •
- Limited parking (c. 40-60 spaces depending on stages of construction) for construction personnel will be provided within the site for the period of construction.
- The site is within walking distance of the main street which is served by a Dublin Bus route. The • contractor parking areas will be contained within the construction compound.

2.16.8.2 Hours of Working

It is proposed that standard construction working hours should apply i.e.:

- 7am 7pm Monday to Friday •
- 8am 2pm Saturdays (or as permitted by Meath County Council) •
- No works Sundays or on Public Holidays •
- Work outside of normal hours shall only take place where written permission has been received from Meath County Council. The location of any works anticipated to be undertaken outside normal working hours shall be limited and strictly defined

Any works proposed outside of these periods shall be strictly by agreement with the Local Authority in advance (such as Concrete pouring, foul or water main connections). Deliveries of material to site will be planned to avoid high volume periods. There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. There may be occasions where it is necessary to have deliveries within these times. The Contractor will develop, agree, and submit a detailed Traffic Management Plan, to MCC, for the project prior to commencement. The TMP will implement the relevant mitigation measures contained in the EIAR.

2.16.8.3 Construction of Services

Following on from completion of site clearance, demolition, site re-profiling works construction activities will focus on the installation of underground utilities to provide the infrastructure required for storm water drainage, foul water drainage, water supply, power and building utility systems.

2.16.8.4 Temporary Construction Works

During the construction phase it will be necessary to provide contractor welfare facilities for the workers. A site office and staff welfare facilities will be installed at a suitable location centrally within the overall site as part of the construction compound. All surplus plant and materials shall be stored in this location when not in use. Welfare facilities will include a canteen, drying room, toilets and first aid. Power will be provided using a small petrol generator. The petrol generator and fuel storage containers used for various items of plant will be located within a sealed containment bund.

Temporary portable toilet facilities will be provided on site. These units will be maintained and the waste collected therein will be disposed of using an appropriate contractor. Storage areas will be clearly identified and agreed with all relevant parties in advance of construction.

2.16.8.5 Cranes Tower

Cranes will not be required on site. Mobile cranes may be used for some activities. All materials being lifted by crane will be controlled by guide ropes and will only be carried out under the strict supervision of appropriately qualified and experienced banksmen.

2.16.8.6 Hoarding and Site Segregation

The new works will be hoarded off or fenced off from the public at all times. A 2.4m minimum high plywood painted timber hoarding will be provided along the Cookstown Road boundary after tree/hedge removal here and at any other areas around the site where the perimeter fence/hedge is not deemed sufficient for safety and security reasons. Heras type fencing will be used on short term site boundaries where appropriate to suit the works. The hoarding alignment and specification are to be confirmed by the Contractor prior to commencement. Controlled access points to the site, in the form of gates or doors/turnstiles, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). During working hours, a gateman will control traffic movements and deliveries at any active site access to ensure safe access and egress to & from site onto the public roads. All personnel working on site must have a valid Safe Pass card and be inducted by the Main Contractor with regard to site specific information.

2.16.9 NOISE AND DUST MANAGEMENT

The main contractor will be required to be accredited with ISO14001 Environmental Management Systems. The main contractor will be required to mitigate the impact of the construction works and the mitigation measures set out in this EIAR.

2.16.10 CONSTRUCTION TRAFFIC MANAGEMENT PLAN (CTMP)

A Construction Traffic Management Plan (CTMP) will be developed by the main contractor and agreed with the Planning Authority and An Garda Siochana prior to commencement of development in the event of a grant of permission. The CTMP will implement the mitigation measures contained in this EIAR including the OCEMP, (which includes a CTMP – section 4 refers), contained in Appendix D volume III of this EIAR.

2.16.10.1 Traffic Management & Construction Access

In general, the impact of the construction period will be temporary in nature and less significant than the operational stage of the proposed development (HGV vehicle movements not expected to exceed 4 vehicles per hour during the busiest period of construction works).

The works associated with the new development will result in additional traffic on the road network with the vehicles for the importation of earthworks fill material and the delivery of new materials for construction – concrete, concrete blocks, pipes, timber, roof tiles, glazing, road surfacing materials etc. Construction traffic access to the site will be via the LDR6 (with some minor construction traffic related to the construction of the residential cell at the Old Road. It is proposed that unloading bays should be provided for deliveries to the site within the hoarding perimeter. Appropriately demarcated storage zones will be used to separate and segregate materials. All deliveries to site will be scheduled to ensure their timely arrival and avoid the need for storing large quantities of materials on site. The storage area is to be located at least 50m from the site access to allow for the possibility of traffic queueing inside the site without any interference with the public road.

The mitigation will include the following matters:

- The contractor shall be responsible for and make good any damage to existing roads or footpaths caused by his own contractor's or suppliers transport to and from the site.
- The contractor shall at all times keep all public and private roads, footpaths entirely free of excavated materials, debris, rubbish, provide vehicle wheel wash and thoroughly clean all wheels and arches of all vehicles as they leave the site.
- The contractor shall confine his activities to the area of the site occupied by the works and the builders' compound, as far as practicably possible, during any particular phase of the development.
- Properly designed and designated entrance and egress points to the construction site for construction traffic will be used to minimize impact on external traffic.
- Flagmen shall be used to control the exit of construction vehicles from the site onto the public road, if required.
- Existing fire hydrants are to remain accessible as required.

Construction vehicle movements will be minimised through the implementation of the following measures contained in the OCEMP, which forms part of the mitigation in this EIAR (See Appendix D2 Volume III of this EIAR):

- Consolidation of delivery loads to/from the site and scheduling of large deliveries to site to occur outside of peak periods;
- Use of precast/prefabricated materials where possible;
- 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works.
- Adequate storage space on site will be provided;
- Construction staff vehicle movements will also be minimised by promoting the use of public transport.
- Car sharing among the construction staff following Covid-19 safety guidelines may be used to reduce traffic numbers. Public Transport: An information leaflet to all staff as part of their induction

on site highlighting the location of the public transport services in the vicinity of the construction ECENED. site.

2.16.11 REINSTATEMENT / ROAD CLEANING

Prior to the works commencing, detailed photographic surveys (condition schedules) of adjoining walls, roads, footpaths, fences etc. is to be prepared. Copies of the relevant parts are to be made available to adjoining owners and MCC. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause. Roadways are to be kept clean of muck and other debris. A road sweeping truck is to be provided as necessary, to ensure that this is so.

Reinstatement at completion of the works will involve:

- Testing and cleaning of all watermains in the development to the requirements of the IW / MCC prior to connection to the public watermain. This will reduce the risk of contamination to the public water supply when the new network is connected to the system.
- Repair of any damage to any adjacent public roadways, kerbs, grass verges etc. in accordance with MCC requirements.
- Reinstatement of all excavations to the requirements of MCC.
- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.

2.16.12 CONSTRUCTION PHASING

As set out in the public notices and having regard to the scale of the proposed development, the proposed phasing, the fact that the application is subject to an EIAR, a seven-year permission is sought for this development having regard to the provisions of Section 41 of the Planning and Development Act 2000, as amended.

The proposed development is to be constructed in phases. The proposed phasing is shown above. Phasing has been designed to ensure that occupied areas of the site where people are living have been fully separated from undeveloped areas of the site where construction works are to be carried out. Roads used by construction traffic will be separated from areas of the site which are occupied. The construction works are to be separated from the residential development using 2.4m high hoarding. The figure shows the proposed phasing for the development.

Phase 0

Phase 0 which is located adjacent to the LDR6 relates to an area of the site which previously received planning permission (Planning Ref: 211046 / ABP-312746-22) for 98 housing units including a 4-storey apartment building, duplex units and housing.

This phase of the development will require some works within the main parkland including the construction of an attenuation pond and the installation of a waste water pump station (WWPS). Some underground services (surface water, wastewater etc) will need to be installed under the road which provides access to the parkland & Neighbourhood Centre (Phase 2 & 4) during construction of Phase 0.

This area of the site is currently under construction and is accessible from the eastern roundabout (Roundabout 2) on the LDR 6. Roads A - D will be constructed at this stage and accessible to residents.

Phase 1

Phase 1 is also located adjacent to the LDR 6. This area of the site consists of a 4-storey apartment building, duplex units, and housing (approx. 85 no residential units). A crèche is contained within the apartment building and will be constructed within this phase of the development.

The attenuation pond in the parkland will be enlarged during the construction of Phase 1 to provide additional storage for surface water runoff. A section of the road from the western roundabout (Roundabout 3) on the LDR6 will be constructed at this stage to provide access to Phase 1 Internal roads will be constructed between Phase 0 & Phase 1 which can now be accessed from both roundabouts (Roundabouts 2 & 3) on the LDR6. Roads A - G will have been constructed at this stage and be accessible to residents.

Phase 2

Phase 2 will consist of the development of the parkland adjacent to the proposed neighbourhood centre. The size of the attenuation pond will be increased to its full capacity for the proposed development at this stage.

Phase 3

Phase 3 will consist of the development of approx. 58 no houses. Additional access roads and surface water detention basins will be provided at this stage of the development. Roads A - L will have been constructed at this stage and be accessible to residents.

Phase 4

It is hoped that a critical mass of residents in the area would now allow the development of the Neighbourhood Centre in Phase 4 which contains retail units, approx. 60 no residential units and associated parking. The development of the neighbourhood centre at an earlier stage would be considered premature and the lack of a substantial number of residents would potentially result in an inability to occupy retail units for a long period of time.

Phase 5

Phase 5 will consist of the development of approx. 64-70 no houses. Additional access roads and surface water detention basins will be provided at this stage of the development. Roads A - L will have been constructed at this stage and be accessible to residents.

A number of houses on the eastern site boundary of Phase 5 will not be constructed at this stage. This area of land will be used to provide temporary access to Phase 6 of the works.

Phase 6

Phase 6 will consist of the development of approx. 21 no houses. Additional access roads and surface water detention basins will be provided at this stage of the development. The new culvert at the Old Athlumney Road will be installed at this stage. All roads will have been constructed at this stage and be accessible to residents. A new entrance from the Old Athlumney Road will provide access for nine houses.

Phase 7

Phase 7, which completes the development, consists of the construction of the houses at the eastern boundary of Phase 5 which were omitted to provide access to Phase 6.





Source: WHA Drawing no. P1068 - note to be agreed with MCC prior to commencement of development

2.17 ENERGY STATEMENT AND CLIMATE ACTION PLAN

The Metec Sustainability Report/Energy Statement included with the LRD application sets out to demonstrate a number of methodologies in Energy Efficiency, Conservation and Renewable Technologies that will be employed in part or in combination with each other for this development.

The plan is to follow the requirements of the E.P.B.D. (Energy Performance of Buildings Directive), Building Regulations Technical Guidance Document (TGD) Part L and the Meath County Development Pan 2021-2027 which are the current drivers for sustainable building design in Ireland. The design team plan to achieve building envelope and HVAC performance that is an improvement on the statutory requirements contained in the Irish Building Regulations by using the latest and greatest technologies and design practices.

The design team will achieve TGD Part L 2022 Nearly Zero Energy Buildings (NZEB) for the proposed development. A preliminary DEAP analysis has been undertaken on the residential units within the development to inform the design strategy, demonstrate compliance with the domestic Building Regulations Part L and to ensure that the targeted Building Energy Ratings (BERs) of A3 (or better) will be achieved.

A Thermal Dynamic Simulation Model of the communal areas has been constructed to demonstrate compliance with the non-domestic Building Regulations Part L and to ensure that the targeted BER of a A3 (or better) will be achieved using the SEAI-approved NEAP methodology. This simulation model will be used to generate heating loads in an energy conscious manner and will also be used to inform key decisions in the building design such as the fabric performance metrics. NZEB will be achieved for these areas.

2.17.1 ENVIRONMENT / GLOBAL ISSUES

Increasing levels of greenhouse gases have been linked with changes in climate and predicted global warming. By far the biggest human contribution to the greenhouse gases is in emissions of carbon dioxide. The development is likely to increase carbon dioxide levels in the atmosphere by the embodied emissions in the building materials used, and in the operational energy consumed during the life of each building.

To minimise the embodied emissions impact, materials will be sourced locally where possible (reducing carbon dioxide emissions associated with transportation), and preference will be given to reusing materials, and using materials in their natural state (reducing the emissions associated with processing). Chapter 7 of the EIAR sets out the potential impacts and mitigation in respect of Air Quality and Climate.

2.18 EMISSIONS AND WASTE

2.18.1 EFFLUENTS

Effluent arising from foul drainage from the proposed development will be discharged through piped systems to the local authority sewers. Operation of the development will involve the discharge of uncontaminated surface water from the impermeable areas to a proposed network all linking into the established public system in the environs. Details of the impacts and mitigation measures for surface water and foul drainage are recorded at Chapter 6 of this Environmental Impact Assessment Report.

The envisaged foul flow calculations are 157,106 litres per day (157 cubic metres per day or 1.82 litres per second).

Mitigation measures include measures designed to avoid, reduce, remedy, or offset impacts.
2.18.2 CONSTRUCTION WASTE DISPOSAL MANAGEMENT



Chapter 11 of the EIAR (Material Assets – Waste Management) and the Construction and Demolition Waste and By-Product Management Plan, prepared by Byrne Environmental (included with the LRD application in Appendix E Volume III of the EIAR), provides detail on the construction related waste management for the proposal.

The Objective of the Waste Management Plan is to minimise the quantity of waste generated by construction activities, to maximise the use of materials in an efficient manner and to maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for off-site recycling.

The Waste Management Plan shall be implemented throughout the construction phase of the development to ensure the following:

- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials are segregated into different waste fractions and stored on-site in a managed and dedicated waste storage area.
- To ensure that all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Act 1996 and all associated Waste Management Regulations.

The calculated construction waste tonnage has been derived from the Building Research Establishment Environmental Assessment Method (BREEAM) which specifies that 11.1 tonnes of construction waste is generated for every 100m² of development area. Based on the combined building area contained in the Schedule of Accommodation for the development of c.37,237m², it has been calculated that up to c. 4,133 tonnes of construction waste may be produced.

2.18.3 CONTAMINATED SOIL

Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the 2002 Landfill Directive (2003/33/EC) for contamination, and pending the results of laboratory WAC testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

2.18.4 DOMESTIC MUNICIPAL WASTE/WASTE MANAGEMENT

Chapter 11 of the EIAR (Material Assets – Waste Management) and the Operational Waste Management Plan, prepared by Byrne Environmental, provides detail on the domestic waste management for the proposal.

The Objective of the Waste Management Plan is to maximise the quantity of waste recycled by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information to the residents of the development. The Goal of the Waste Management Plan is to achieve a residential recycling rate of 50% of managed municipal waste by 2020 in accordance with The Eastern-Midlands Region Waste Management Plan 2015-2021.

The subject development includes 843 no. bedrooms in 322 no. residential units. The total domestic waste generated per week is detailed below.

| Scenario | # | Factor | Weekly Waste litres |
|-----------------------------|-----|------------------------------|------------------------|
| Bedrooms | 843 | 70 Litres per week / bedroom | 59,010 |
| Units | 322 | 30 litres per week / unit | 9,660 |
| Total Weekly Domestic Waste | | | 68,670 |

Table 2.5: Total weekly Domestic waste generation

The volume of commercial waste that will be generated has been calculated with regard to British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice as detailed below.

 Table 2.6: Total weekly Commercial waste generation

| Unit | Area (m²) | Weekly Waste litres | |
|------------------|-----------|------------------------|--|
| Anchor Retail | 1000 | 10,000 | |
| GP Surgery | 232 | 600 | |
| Cafe | 210 | 4500 | |
| Take Away | 82 | 3300 | |
| Pharmacy | 88 | 2200 | |
| Creche | 512 | 3600 | |
| Community Centre | 1848 | 500 | |
| Totals | - | 24,700 | |

The Facilities Management Company shall employ an appropriately qualified and experienced staff member who will be responsible for all aspects of waste management at the development. All accommodation units shall be provided with a Waste Management Information document, prepared by the Facilities Management Company, which shall clearly state the methods of source waste segregation, storage, and recycling initiatives that shall apply to the Management of the development. This Information document shall be issued to all residential units on an annual basis.

2.18.5 EMISSIONS

The principal forms of air emissions relate to discharges from motor vehicles and heating appliances. With regard to heating appliances, the emission of nitrogen oxides and carbon monoxide will be minimised by the use of modern, efficient heating appliances and as a result, the potential impact is estimated to be negligible. Exhaust gases from motor vehicles will arise from car parking areas and will be discharged directly to the atmosphere. Car parking for motor vehicles is provided at surface level. Chapter 7 of the EIAR sets out the potential impacts and mitigation in respect of Air Quality and Climate.

Noise may be considered in two separate stages, during construction, and when the development is operational. Construction related noise impacts are an inevitable short term limited inconvenience feature which, in general, is accepted by members of the public, subject to the standard controls typical of planning conditions attached to urban based development projects. These impacts can be reduced in a number of ways. It is standard practice to limit construction to normal working hours during the day. In addition,

there are a number of regulations relating to noise during construction which the contractor will be expected to adhere to throughout the construction phase. Chapter 8 of the EIAR sets out the potential impacts and mitigation in respect of Noise and Vibration.

2.18.6 ELECTRICITY DEMAND

The demand on power supply and telecommunications supply will all increase due to the development of the lands. The total increase in the capacity of the local electrical infrastructure as a result of the proposed development will be approximately 2.8MW. The infrastructure of both networks in the in the immediate vicinity of the site is adequate to meet these anticipated demands and there will be no adverse effect on the ability of the respective network to meet the existing demands in the areas surrounding the site. The development of the lands will be constructed in phases, with the final phase being due for completion circa 2029.

2.19 ALTERNATIVES EXAMINED

The EIA Directive (2014/52/EU) requires that Environmental Impact Assessment Reports include:

"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

Article 94 and Schedule 6, paragraph 1(d) of the Planning and Development Regulations 2001, as amended, requires the following information to be furnished in relation to alternatives:

"(d) A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment."

The presentation and consideration of various alternatives investigated by the project design team is an important requirement of the EIA process. This section of the EIAR document provides:

"a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment."

This serves to indicate the main reasons for choosing the development proposed, taking into account and providing a comparison the environmental effects. Alternatives may be described at three levels:

- Alternative Locations.
- Alternative Designs.
- Alternative Processes.

The DHPLG 2018 EIA Guidelines state:

"Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. <u>A</u> 'mini- EIA' is not required for each alternative studied." (Emphasis added).

This approach above is reflected in section 3.4.1 of the EPA EIAR Guidelines 2022 which state:

"The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."⁷

Pursuant to Section 3.4.1 of the EPA EIAR Guidelines 2022, the consideration of alternatives also needs to be cognisant of the fact that *"Clearly, in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location' …"*

The EPA EIAR Guidelines 2022 are also instructive in stating:

"Analysis of high-level or sectoral strategic alternatives should not be expected within a project level EIAR... It should be borne in mind that the amended Directive refers to 'reasonable alternatives... which are relevant to the proposed project and its specific characteristics.".

The consideration of the main alternatives in respect of the development of the subject lands was undertaken by the Design Team and has occurred throughout an extensive and coordinated decision-making process, over a considerable period of time. The main alternatives considered are identified below.

2.19.1 ALTERNATIVE LOCATIONS

The application site is zoned for residential development, commercial development and community development, under the Meath County Development Plan 2021-2027 within the ownership of Albert Developments Ltd., and the proposed uses are permitted in principle with the land use zoning objectives pertaining to the project site.

There are further Phase 2 (post 2027) residentially zoned lands located to the north, which are not possible to develop for residential lands until after 2027.

The 2018 DHPLG Guidance on the preparation of EIARs notes specifically that the consideration of some types of alternatives, such as alternative locations, may not be appropriate in all cases. EIA is concerned with projects and the Environmental Protection Agency's guidelines (2022) state that, in some instances, neither the applicant nor the competent authority can realistically be expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure which are examined by means of a Strategic Environmental Assessment (SEA), the higher tier form of environmental assessment. As the subject site has been identified to accommodate the uses proposed, it is not considered appropriate to evaluate alternative locations in the EIAR.

A *"do-nothing*" scenario was considered to represent an inappropriate, unsustainable, and inefficient use of these residential zoned lands; particularly having regard to the opportunity to provide much needed housing for both the key town of Navan and the wider Greater Dublin Area (GDA). The suitability of the lands for development has been confirmed as it is located within an area identified for development under the MP12 for the Farganstown area.

The EIAR Guidelines 2022 also note that:

"Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that level is likely to have taken account of

⁷ Ref CJEU Case 461/17

environmental considerations associated, for example, with the cumulative impact of an area zoned for industry on a sensitive landscape."

This is of relevance to the application site at Athlumney. The lands on which the application is made are zoned A2, C1 and F2 in the Meath County Development Plan 2021-2027.

The issue of alternatives is a critical function of the Strategic Environmental Assessment (SEA) process and is necessary to evaluate the likely environmental consequences of a range of alternative development strategies for the settlement within the constraints imposed by environmental conditions. The SEA for the MP12 Masterplan considered alternatives at an early stage of the process and through an iterative process, most appropriate scenario was selected.

The site provides opportunities for the coherent integration, consolidation, and sustainable development of this new residential precinct within Navan, as designated in the MP12 Masterplan area, and provides opportunities for improved permeability. The site and proposed development provide significant opportunities to deliver a substantial quantum of housing in the form of the sustainable urban expansion of the key town of Navan and thereby contribute in a sustainable manner to meet strategic planning objectives at a local and regional level. On the basis of the foregoing, no alternative sites were considered or assessed for the purposes of preparing this EIAR, nor is it considered necessary to do so.

2.19.2 ALTERNATIVE USES

The subject site is zoned for residential and supporting uses as referenced above. The subject site will provide new social and community infrastructure with a wide mix and variety of uses, in tandem with the development of the MP12 lands. In addition to residential use, there are other land uses which are permitted in principle on these lands such as convenience, community facility etc.

It is not considered that an alternative comprising one of the alternative uses would result in the best use of these lands, particularly having regard to the generally acknowledged requirement for housing. The environs of the subject site are to the west are predominantly residential and the proposed mixed use area which includes retail and other uses, will provide much needed retail floorspace to cater for day to day needs. In this context, the proposal now the subject of this application comprises appropriate land uses in accordance with the proper planning and sustainable development of the area.

In light of these nearby uses, the sites zoning, and current demand for high quality residential units, it is put forward that other land uses on site would not be considered viable alternatives or would not be in accordance with the planning policy context pertaining to the lands.

2.19.3 DESCRIPTION OF ALTERNATIVE PROCESSES

The relevance of alternative processes and technologies is limited in the case of this EIAR having regard to the nature of the proposed development, which is primarily for a residential development. The Energy Statement prepared by Metec Consulting Engineers identifies the energy standards with which the proposed development will have to comply and also sets out the overall strategy that will be adopted to achieve these energy efficiency targets. The dwellings will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L 2022, Conservation of Energy & Fuel.

The building fabric has been selected to meet the requirements of Part L building Regulations. The incorporation of these elements and technologies into the scheme will ensure higher performance and improved building sustainability when compared to alternative out-dated, less energy efficient materials and technologies.

It is noted the proposed construction works comprise relatively standard building construction processes, which comprise some timber frame elements which are more sustainable compared to 100% block work.

With reference to the operational phase, no new, unusual, or technically challenging operational techniques are required, as such no alternative operational processes have been considered.

2.19.4 ALTERNATIVE DESIGNS AND LAYOUTS

The proposed mixed use residential development has been prepared in accordance with the requirements of the National Planning Framework, the Regional Spatial and Economic Strategy for the Md-East area as well as the relevant Section 28 Guidelines including those relating to Urban Development and Building Height Guidelines (2018), Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities July 2023 and the Sustainable Compact Residential Development and has been the subject of a pre-application meetings with the Planning Authority, prior to lodgement of the LRD application with MCC.

A number of alternative layouts for the proposed development were considered over the design process. In addition, the proposals for the development were subject to detailed discussion with the Planning Authority prior to the principles of the proposed layout being finalised. The significant environmental issues and potential effects which informed the proposed layout included population and human health, biodiversity, cultural heritage, transportation and visual impact. Other factors which were fundamental to informing and directing detailed design included the land use zoning objectives under the Meath County Development Plan 2021-2027 and the principles of the agreed MP12 Masterplan for the wider lands.

In this respect, the design team considered a number of options in terms of overall layout as follows:





Source: AHA

2.19.4.2 Comparison of Environmental Effects

The sketch layout didn't respond appropriately to the LRD6 road. This iteration resulted in a relatively unsustainable low density development comprising of 3/4/5 bedroom houses. It was considered that Alternative no. 1 would result in an unsustainable density of development, along with a series of cul de sacs, which would result in a suboptimal layout discouraging sustainable modes of transport (Walking and cycling). The proposal would have resulted in the removal of the hedgerow along the western boundary leading to a negative impact on hedgerows and biodiversity. The proposals would have entailed the use of large scale underground attenuation, which would be negative in terms of water and soils. The impacts to Cultural Heritage would be neutral as the development of the lands would result in the preservation of archaeological features in all alternatives. Alternative no. 1 did not include a sports hall and community centre or a neighbourhood centre, which would be negative from a transport perspective as residents would have to travel greater distances to meet their day to day shopping and leisure needs.

The layout failed to provide a clear hierarchy of roads and streets in accordance with the requirements of DMURS. Furthermore, the over provision of streets resulted in the inefficient use of zoned land. Based on the foregoing a number of alternative iterations were explored, which deviated from Alternative no. 1

2.19.4.3 Alternative no. 2 – Scheme Submitted for SHD Opinion to An Bord Pleanal

Alternative no. 2 related to a residential development of 446 no. dwellings on a site of c. 13.9 hectares comprising 253 houses and 193 apartments and duplexes, Public Open Space of c. 2.02 nectares including playground areas; all ancillary landscape works with public lighting, planting and boundary treatments including regrading/re-profiling of site where required as well as provision of cycle paths;, A Public Park of c. 1.62 ha of open space; Provision of a 512 sqm creche; The inclusion of a 1,128 sqm community centre and a total of 2,837sqm of retail floor space across 4 no. retail units of 151 sqm, 224 sqm, 284 sqm, and 2,178 sqm in size, all accommodated within the ground floor level of the neighbourhood centre building, with an overall height of 5 to 7 no. storeys to the north-west of the site; 943 no. car parking spaces, (506 no. car spaces for the retail units and community centre and 210 no. cycle parking spaces throughout the development; A temporary pumping station located within the park to service the scheme;

Figure 2.24: Alternative no. 2 SHD Opinion Stage

The Opinion recommended further consideration of the proposals as they related to the creation of active and architecturally appropriate urban street frontages having regard to the site context and the creation of a strong urban edge along the LDR6, landscaping plan and the hierarchy, function, and usability of public open spaces and to ensure an appropriate urban edge and treatment along the New Farganstown road (LIHAF road).

With reference to the above, the overall Phase 1 (phase 1a and phase 1b [this LRD application] Masterplan scheme was amended to respond the commentary from An Bord Pleanála whereby the proposal presents a strong urban frontage, as well as including additional open space areas along the western boundary of the subject lands.

2.19.4.4 Alternative no. 3 – Scheme Submitted for LRD Opinion to Meath County Council

Alternative no. 3 presented to MCC at LRD opinion stage provided a sustainable level of development which includes a mixture of apartments, houses, and duplex units, as well as the necessary social and retail infrastructure for the emerging new community at Fargenstown/Athlumney. The internal layout was revised (compared to the SHD scheme) so as to improve the layout to a more DMURs compliant scheme as well as presenting a strong frontage to the LRD6 Road.



Figure 2.25: Layout Alternative no. 3 Scheme Submitted for LRD Opinion to MCC

Source: MOLA

With reference to archaeology the environmental effects are considered to be groadly neutral as are the impacts on Material Assets – Traffic. Similarly, the environmental effects relating to air quality are similar, as is noise.

In relation to the Landscape and Visual impact, the perceived comparison is anticipated to be slight negative, while also noting that the subject site is to be developed and subject to change (as a residential zoned site), and that the setbacks to the lands to the east and west, along with the high-quality design including landscaping will ensure that the proposed development will sit comfortably into its immediate and wider context.

With respect to archaeology and biodiversity the environmental effects are considered to be broadly neutral while the impacts on Material Assets – Traffic, whereby the traffic generated is greater due to the additional number of units proposed leading to a slight negative impact. Similarly, the environmental effects relating to Air Quality (Climate) are similar, as is noise/vibration.

This alternative was reviewed following the pre-application discussions with MCC and the subsequent opinion from MCC. Responses to each of the listed items have been provided as part of this LRD Planning Application. The scheme has been updated and improved as a result from an environmental perspective (such as additional SUDs measures).

2.19.5 PROPOSED PREFERRED ALTERNATIVE (NO. 3) LRD APPLICATION- MAIN REASONS FOR THE OPTION CHOSEN, INCLUDING A COMPARISON OF THE ENVIRONMENTAL EFFECTS

The final layout proposed is not considered to give rise to any significant adverse environmental impacts. Mitigation measures to be implemented at construction and operational phases of the project are summarised in Chapter 16 (Summary of Mitigation and Monitoring Measures).

2.19.5.1 Population and Human Health

The alternatives examined would result in similar effects as the design is set within the parameters of the zoning for the subject lands. Alternative no. 1 did not include any retail or community uses. Through improvements to the mix of uses and providing community and retail development in tandem with development of residential uses, the preferred alternative would be a positive effect at a local context and the effect would be permanent.

2.19.5.2 Biodiversity

With reference to Biodiversity the implementation of the preferred alternative would be the proposed development will not result in the loss of habitats or species of high ecological significance and will not have any significant effects on the ecology of the wider area. Similar effects would arise from the other alternatives examine. The preferred alternative includes additional SUDs and native planting which will improve the biodiversity of the project site compared to the other alternatives.

2.19.5.3 Land and Soils

Development of the land would require site clearance and minor excavations to facilitate the construction of the buildings and services. The effect would be not significant and negative due to the loss of underlying soils. However, this is consistent with achieving compact growth. The effect is locally negative, with a significance rating of imperceptible to not significant and of permanent duration. Similar effects would arise from the other alternatives examined. Alternative no. 3 includes additional surface water SUDs measures (and includes detention basins for attenuation) which is long term positive, slight.

2.19.5.4 Water/Hydrology

The implementation of the preferred alternative would require sustainable urban drainage (SuDS) measures in line with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS). The preferred alternative includes additional surface water SUDs measures which is long term positive, slight.

The significance of the identified impacts will be reduced to a "Not significant" residual impact on the identified hydrological/ hydrogeological receptors. Similar effects would arise from the other alternatives examined.

2.19.5.5 Air Quality and Climate

The construction phase of the development would result in slight, local negative effects on the air quality for the preferred alternative. With reference to the operational phase the preferred alternative would result in a not significant, local, negative, long-term effects. Similar effects would arise from the other afternatives examined for both the construction and operation phases.

2.19.5.6 Noise and Vibration

The impact of the construction phase will result in an increase in daytime noise levels at the closest receptors to the site and slight, local negative effects. The operational phase of the development will not adversely impact the existing noise climate at local receptors. The effects are similar across all the alternatives examined.

2.19.5.7 Landscape and Visual

Any proposed viable development will give rise to impacts of a similar nature. While the intensification of land use, as it changes from now agricultural into a residential development is a change that cannot be mitigated, the proposals reflect best practice in residential area layout, reflect the concepts in the wider masterplan and will consolidate the urban area here with an overall beneficial effect locally and to the wider surrounding area.

2.19.5.8 Material Assets

All of the alternatives would place additional demand on existing infrastructure including drainage and water supply. Irish Water have confirmed the feasibility of the proposed development and the effect is neutral, imperceptible, and permanent.

2.19.5.9 Cultural Heritage

Ground disturbances associated with the construction of the proposed development have the potential to have a direct negative impact on the unrecorded sites. All alternatives examined would be similar in terms of impacts.

2.19.5.10 Risk Management

All alternatives relate to the construction of a residential development and therefore the comparison of alternatives is similar.

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

2.19.5.11 Summary

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

The proposed development provides for new residential development on lands zoned for residential use under the Meath County Development Plan which was subject to the SEA process. As such, consideration of alternative sites for the construction of houses and apartments proposed in this residential development was not considered necessary.

Based on a comparison of the environmental effects, as described for each Iteration above, together with the regulatory requirements of the Development Plan, it is considered the proposed development has been selected for the following reasons:

- Includes additional SUDs features (and exclusion of underground attenuation tanks) within the scheme which is positive from a water/biodiversity perspective.
- The proposed development results in a high degree of permeability, resulting in a highly connected neighbourhood with strong connections which will have positive impacts on population and human health.
- Avoids significant environmental impacts on the receiving environment.

In summary, the overall design of the proposed development considers all environmental effects and provides for a sustainable development that has been optimised to emphasise positive environmental effects whilst reducing negative environmental impacts wherever possible. The preferred alternative is not considered to give rise to any significant adverse environmental impacts following the mitigation measures to be implemented at the construction and operational phases. The final proposed scheme also responds to the characteristics and constraints of the subject site vis a vis the previous iterations of the scheme and the alternative layouts considered.

3.0 POPULATION & HUMAN HEALTH

3.1 INTRODUCTION



The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has replaced '*Human Beings*' with '*Population and Human Health*'. This chapter also meets the requirement for assessment of 'Human Beings' as per Schedule 6 of the Planning and Development Regulations 2001-2023.

This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates who has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has 21 years of experience of Environmental Impact Assessment and urban development.

In preparing this chapter, consideration has been given to the other inputs to this EIAR including, in particular, the chapters addressing Air Quality and Climate, Noise and Vibration, Traffic as well as Risk Assessment Chapter (accidents or disasters) and the separate reports addressing Construction and Demolition Waste Management, and the Construction and Environmental Management Plan.

Population and Human Health comprise an important aspect of the environment to be considered. Any significant impact on the status of human health, which may be potentially caused by a development proposal, must therefore be comprehensively addressed.

Population and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or '*populations*'. While most developments by people will affect other people, this EIAR document concentrates on those topics which are manifested in the environment, such as new land uses, more buildings, or greater emissions.

3.2 STUDY METHODOLOGY

At the time of writing there is no specific guidance from the EU Commission on the 2014 EIA Directive to indicate how the term 'Human Health' should be addressed. However, the European Commission's *Guidance on the preparation of the Environmental Impact Assessment Report* (2017) does reference the requirement to describe and, where appropriate, quantify the primary and secondary effects on human health and welfare. Moreover, the European Commission guidance states the following in relation to the assessment of Human Health:

"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

EU Commission's SEA Implementation Guidance from 2003, as it gives an indication of how 'human health' should be considered in terms of environmental assessment and notes:

"The notion of human health should be considered in the context of the other issues mentioned [in the list of factors to be identified, described and assessed] and thus environmentally related health issues such as exposure to traffic noise or air pollutants are obvious aspects to study." (para 5.26).

In accordance with this approach to Human Health espoused in the Commission Guidance, this chapter addresses human health in the context of other factors addressed elsewhere in further detail within the EIAR where relevant. Relevant factors identified include inter alia water, air quality noise, and the risk of major accidents and disasters.

In addition, this chapter of the EIAR has been prepared with reference to recent national publications which provide guidance on the 2014 EIA Directive including the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) and the Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in May 2022.

A site visit was undertaken to appraise the location and likely significant potential impact upon human receptors. Published reference documents such as Central Statistics Office Census data, the National Planning Framework 2040, the Regional Spatial and Economic Strategy for the Eastern and Midland Regional Assembly 2019-2031 and the Meath County Development Plan 2021-2027 were also examined.

The 2022 EPA Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA states that 'In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc..'.

This chapter of the EIAR document focuses primarily on the potential likely and significant impact on Population, which includes Human Beings as required under the Schedule 6 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, and Human Health in relation to health effects/issues and environmental hazards arising from the other environmental factors. Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. The reader is directed to the relevant environmental chapter of this EIAR document for a more detailed assessment.

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);

The impact assessment section of this chapter follows the terminology (where applicable) used in the EPA Guidelines as set out in Chapter 1 of this EIAR.

3.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

3.3.1 INTRODUCTION

A description of the relevant aspects of the current state of the environment (baseline scenario) in relation to population and human health is provided below. Specific environmental chapters in this EIAR provide a baseline scenario relevant to the environmental topic being discussed. Therefore, the baseline scenario for separate environmental topics is not duplicated in this section; however, in line with guidance provided by the EPA and the Department, the assessment of impacts on population and human health refers to those environmental topics under which human health effects might occur, e.g. noise, water, air quality etc.

.01061201×

An outline of the likely evolution without implementation of the project as regards natural changes from the baseline scenario is also provided.

The existing environment is considered in this section under the following headings:

- Economic Activity;
- Social Patterns;
- Land-Use and Settlement Patterns;
- Employment; and
- Health & Safety.

The proposed development is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 13.26 hectares site, which is the subject of a masterplan development proposal.

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.





Source: Google Maps

The subject site forms part of the Masterplan 12 strategic landbank and comprises c.13.26 hectares of undeveloped, greenfield land, surrounded by residential development to the west. The site is located approximately 2.5km from Navan Town Centre, which currently provides a wide range of facilities and services such as retail, education, civic, social and healthcare. Access to the site will be provided via the LDR6 road, a LIHAF funded road that is now complete.

The subject site is located within the boundaries of the Electoral Division (ED) of Navan Ruch as defined by the Central Statistics Office. This ED comprised the immediate catchment area of the subject site, encompassing the Navan Urban ED found further west from the subject lands.

The ED's comprising the wider study area of the Navan local electoral area include the Navan Urban ED, Ardbraccan and Bective. Figure 3.1 indicates the geographical extent of the immediate local electoral area catchment in relation to the subject site.

3.3.2 EMPLOYMENT & ECONOMIC ACTIVITY

The CSO's Labour Force Survey for Q4 2023, states there was an annual increase in employment of 3.4% or 89,600 in the year to the fourth quarter of 2023, bringing total employment to 2,706,400. This has been mainly due to the large rebound in economic activity post the effects of the COVID-19 pandemic on the Irish economy and workforce.

The survey also confirms that the number of persons aged 15-74 years who were unemployed in Q4 2023 stood at 117,700, with an associated Unemployment Rate of 4.2%. The Youth Unemployment Rate (15–24-year-olds) stood at 9.4% in Q4 2023, up from the rate of 9.1% recorded 12 months earlier. There were 29,500 people in long-term unemployment (unemployed for 12 months or longer) in Q4 2023. This was a decrease of 4,900 people from Q4 2022. The corresponding rate of long-term unemployment was 1.1%, down from 1.3% a year earlier.

The total number of persons in the labour force in the fourth quarter of 2023 was 2,824,100, representing an increase of 94,700 (3.5%) over the year. The participation rate of the labour force in Q4 2023 stood at 65.4%, an increase of 0.8% from 64.6% over the year.



Figure 3.2: Unemployment during Q4 2019 to Q4 2023

Source: CSO

The CSO Monthly release (6th March 2024) notes that *"The seasonally adjusted unemployment rate for February 2024 (for all persons aged 15-74 years) was down to 4.2%, from the rate of 4.5% recorded in January 2024 and up from 4.1% in February 2023. In February 2024, the unemployment rate for males was 3.9%, and for females it was 4.5%."* The seasonally adjusted number of persons unemployed was

119,300 in February 2024, compared with 112,800 in February 2023. There was a slight increase of 6,500 in the seasonally adjusted number of persons unemployed in February 2024 when compared with a year earlier.

The Economic Social Research Institute (ESRI) quarterly economic commentary for Spring 2024 notes that 'While MDD (Modified Domestic Demand) and headline indicators such as GDP (Gross Domestic Product) and GNP (Gross National Product) reported differing accounts of the direction of change in Irish economic activity in 2023, we expect growth across all main indicators of activity in 2024 and 2025.' It also states that 'We now believe MDD will grow by 2.3 per cent in 2024 and by 2.5 per cent in 2025. The unemployment rate, another key indicator of underlying growth in the economy, is set to fall to 4.3 per cent in 2024 and to 4.2 per cent in 2025.'

The ESRI commentary outlines that "The labour market continues to perform robustly and is now operating close to capacity. In addition, inflation is expected to decline throughout 2024 with a return to growth in real incomes."

Nevertheless, the steady increases in national levels of employment, and the decreases in the number of unemployed is as a result of the significant revival of the Irish economy after the influence of the COVID-19 pandemic on the Irish economy and workforce. The magnitude and extent of the national economic rebound speaks to the resilience and efficiency of the Irish economy and workforce which could have a beneficial effect heading into the unknown economic future starting to arise following inflationary pressures on energy and food markets and the increased levels of in-migration following Russia's war in Ukraine. Therefore, Ireland must prepare to cope with this unknown and must ensure that adequate provision of social and affordable housing is available to facilitate the potential additional influx of individuals and families in search of such housing options due to the economic shock and downturn experienced as a result of the cost-of-living crisis. The proposed development will aid in this endeavour through its provision of a high-quality residential mix at a strategic location, which will deliver sustainable economic development, will significantly contribute to the development of the area and will positively impact on the existing and future population of the region, through its housing, connections, amenity provision and potential future employment opportunities.

The Central Bank of Ireland Quarterly Bulletin Q1 2024 released in March 2024 forecasts for economic growth in Ireland for the remainder of the year and beyond. This document states that the "domestic economy continues to grow in early 2024, but weak external demand and domestic capacity constraints are expected to weigh on the pace of growth over the forecast horizon. Exports produced in Ireland declined in 2023 but should recover in 2024 and beyond, driven by a return to growth in pharmaceutical trade. Modified Domestic Demand (MDD) is forecast to grow from 2024 to 2026 by 2 per cent per annum on average, underpinned by continuing growth in consumer spending and residential construction."

As such, the above sources demonstrate that the national economy will continue to remain steady and improve overall towards returning to the levels of growth experienced pre-inflation and pre-COVID. This, in turn, results in increased levels of economic activity, increases in investment and employment therefore, results in a demand for increased housing provision to accommodate a growing workforce and population.

3.3.3 SOCIAL PATTERNS

For the purposes of this EIAR, a review has been carried out of data from the 2016 and 2022 Census of Population in order to identify any significant changes in population levels and age profile at national, regional, county and local levels. The 2022 Census results provide for an overview of the current population, employment and economic statistics and trends of the State.

A review was also carried out of the census data relating to social class and household size at each of these levels. The following section provides a summary description of the existing environment in terms of each of these indicators.

3.3.3.1 Population

The census data illustrates that the population of the Irish State increased between 2016 and 2022 by 7.59%, bringing the total population of the Irish State to 5,123,536 persons. The rate of growth between 2016 and 2022 increased from 3.8% to 7.59% compared to the previous census, attributable to the higher economic activity in the early part of the census period. The economy has recovered in recent years following the COVID-19 pandemic with consequent population growth predominantly attributed to natural increase, greater economic activity, increased job opportunities and continued immigration.

Growth within County Meath was significantly higher than the national average with a growth rate of 13.21%. Growth within Navan was found to be at 6.77%.

The most recent census of population by the CSO was undertaken in 2022. The census provides demographic trends for the Country, region, county, town and local levels. The CSO population statistics relevant to this EIAR are set out in Table 3.1 below.

Table 3.1: Population at State, County and Local Level, 2016-2022

| | Number of Persons | | |
|-----------------|-------------------|-----------|--------------------|
| Area | 2016 | 2022 | % Change 2016-2022 |
| Ireland - State | 4,761,865 | 5,123,536 | 7.59% |
| County Meath | 195,044 | 220,826 | 13.21% |
| Navan | 31,736 | 33,886 | 6.77% |

Source: Census of Population 2016 and 2022

3.3.3.2 Age Profile

Table 3.2 shows the age profile (%) of the population of the State, County Meath and Navan 2011, 2016 and 2022.

| Area | 0-14 | 15-24 | 25-44 | 45-64 | 65+ |
|-------------------|-------|-------|-------|-------|-------|
| State 2011 | 21.3% | 12.6% | 31.6% | 22.7% | 11.7% |
| State 2016 | 21.1% | 12.1% | 29.5% | 23.8% | 13.4% |
| State 2022 | 19.7% | 12.5% | 27.6% | 25.1% | 15.1% |
| County Meath 2011 | 25.2% | 11.4% | 33.1% | 21.4% | 8.9% |
| County Meath 2016 | 25.1% | 11.4% | 29.4% | 23.4% | 10.7% |
| County Meath 2022 | 22.8% | 12.8% | 26.8% | 25.4% | 12.2% |
| Navan 2011 | 26.8% | 11.1% | 37.7% | 17.5% | 6.9% |
| Navan 2016 | 27.0% | 11.3% | 33.2% | 20.2% | 8.3% |
| Navan 2022 | 23.5% | 13.5% | 29.1% | 24.4% | 9.5% |

Table 3.2: Age Profile at State, County and Local Level, 2011-2016-2022

Source: Census of Population 2011, 2016 and 2022

The table indicates that the highest percentage of populations in the study area relates to the working age group (25-44). It is considered that the available working population in the immediate vicinity of the proposed development will enhance the attractiveness of investors to locate in this area to benefit from the significant available workforce. In addition, the following statistics further indicate the appropriateness of the proposed development in relation to the highly skilled and educated work force in the surrounding area.

3.3.3.3 Social Class

The Census of Population determines social class by the nature of employment and is therefore useful as a guide to the principal types of occupation in which the population is employed or in which the population is capable of being employed. Table 3.4 shows the number and percentage of people in each of the 11 socio-economic groups identified in the 2022 Census of Population for both County Meate and Navan.

| Table 3.3: Persons by Socio-Economic Group, 2022 | | |
|--|-------------------|------------------|
| Socio-Economic Group | County Meath | Navan |
| A. Managers, Directors and Senior Officials | 9,911 (9.2%) | 1,210 (7.3%) |
| B. Professional Occupations | 19,813 (18.4%) | 2,600 (16%) |
| C. Associate Professional and Technical Occupations | 13,220 (12.2%) | 1,766 (7.4%) |
| D. Administrative and Secretarial Occupations | 11,373 (10.5%) | 1,648 (10%) |
| E. Skilled Trade Occupations | 15,290 (14.2%) | 2,027 (15.2%) |
| F. Caring, Leisure and Other Service Occupations | 7,946 (7.4%) | 1,347 (8%) |
| G. Sales and Customer Service Occupations | 6,484 (6.0%) | 1,296 (8%) |
| H. Process, Plant and Machine Operatives | 8,218 (7.6%) | 1,576 (10%) |
| I. Elementary Occupations | 8,383 (7.8%) | 1,655 (10%) |
| J. Not Stated | 7,302 (6.7%) | 1,429 (8%) |
| Total | 107,940 | 16,554 |

Source: Census of Population 2022

Table 3.4 indicates that the wider study area of Navan is predominantly in tune with the norms of the Meath region with a high percentage of people being employed in skilled and professional jobs.

3.3.3.4 Educational Attainment

Advancing from second level education to third level assists the ability of the population to gain access to employment and enter the labour market for higher earnings. Table 3.5 contains CSO data from 2022 relating to the educational attainment of people at county and local level.

 Table 3.4: Persons by Educational Attainment, 2022.

| Education | County Meath | Navan |
|---|--------------|---------|
| No Formal Education | 3,173 | 561 |
| | (2.3%) | (2.9%) |
| Primary Education | 9,150 | 1,318 |
| | (6.6%) | (6.7%) |
| Lower Secondary | 18,771 | 2,630 |
| Lower Secondary | (13.6%) | (13.2%) |
| Unner Seconderr | 27,445 | 4,292 |
| opper Secondary | (19.8%) | (21.5%) |
| Technical or Vegetional qualification | 11,303 | 1,935 |
| | (8.16%) | (9.8%) |
| Advanced Cort / Completed Apprenticeship | 9,276 | 1,191 |
| Advanced Cert. / Completed Apprenticeship | (6.7%) | (6%) |
| Higher Cortificate | 8,657 | 1,205 |
| | (6.3%) | (6%) |

| Ordinary Bachelor Degree or National Dinloma | 11,949 | 1,646 |
|--|---------|---------|
| Ordinary Bachelor Degree of National Diploma | (8.6%) | (8.2%) |
| Honours Bachelor Degree, and/or Professional | 17,899 | 2,226 |
| Qualification | (12.9%) | (11.2%) |
| Postaroduoto Diplomo or Dogroo | 13,814 | 1,685 |
| Posigraduate Dipionia of Degree | (10%) | (8.5%) |
| Destarate (Ph.D.) or higher | 1,003 | 115 |
| Doctorate (Ph.D.) of higher | (0.7%) | (0.6%) |
| Not Stated | 5,986 | 1,1062 |
| Not Stated | (4.3%) | (5.5%) |
| Total | 138,426 | 19,910 |

Source: Census of Population 2022

Table 3.5 indicates that the educational attainment levels of the people living in Navan is similar to those achieved at county level. A high proportion of people living in the areas identified have obtained an upper secondary qualification (19.8% at county and 21.5% at local level). A high proportion of people have also progressed to obtain a higher level of education including an ordinary bachelor's degree/national diploma or greater.

Only a small percentage of the study area have left school with no formal education (2.9%) or at primary school level (6.7%) while 5.5% of the study area have not provided information on their educational qualifications.

Overall, Table 3.5 indicates that Navan, when compared to the rest of county Meath, is characterised by generally high levels of educational attainment.

3.3.4 LAND USE & SETTLEMENT PATTERNS

The site is located within the administrative area of Meath County Council at the edge of the existing built up area. In this respect, the policies and objectives found within the existing Meath County Development Plan 2021-2027 form the relevant plan for the area. The subject lands are primarily zoned 'A2 - New Residential' in the Development Plan with an objective *"to provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate."*

In addition, the following land use zoning objectives are contained in the site area:

- C1 Mixed Use Objective: To provide for and facilitate mixed residential and employment generating uses.
- F-1 Open Space Objective: To provide for and improve open spaces for active and passive recreational amenities.
- E1 / E3 Strategic Employment Zones (High Technology Uses) / Warehousing & Distribution (relating to adjoining LIHAF Road).

The subject lands are located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares site, which is the subject of a masterplan development proposal.

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The subject lands and environs have been identified for significant development as per the agreed Masterplan MP12 for the area. The Masterplan 12 lands are bounded generally by the Navan-Drogheda commercial railway line to the north, existing residential areas to the west, existing agricultural lands to the east and the R153 Navan-Kentstown Road to the south.

The objectives of the MP12 Framework include:

- To cater for the increased growth of the population of the town and the provision of quality residential accommodation;
- To provide a coherent and co-ordinated approach for the development of a large tract of Greenfield lands of various uses and landownerships;
- To provide opportunities for expansion of the employment base of Navan;
- To provide an urban design framework of real quality;
- To provide for a good social mix including the provision of residential units which cater for the requirements of different user types;
- To provide good amenity space at appropriate strategic locations which would be of a high design quality;
- To develop an appropriate network for pedestrians, cyclists, public transport and motorists and in particular to develop the main distributor road the LDR 6 which is a specific objective of the Navan Development Plan;
- To ensure adequate provision for appropriate retail, community, educational and any other amenities required to service the new population including the provision of a neighbourhood centre.

The proposed development comprises the first phase of development within the MP12 Masterplan lands and has been designed in accordance with the principles and layouts established in the masterplan, as previously agreed with Meath County Council. The subject lands will include a Neighbourhood Centre and public park (1.65 ha) as part of the development of Phase 1 of the agreed Athlumney Masterplan MP12.

The Planning Report which accompanies this application addresses the planning context issues in more detail.





Figure 3.4: Land Use Zoning Map (Meath County Development Plan),



Note: with approximate outline of subject site in black.

3.3.5 HOUSING

The 'Housing For All' plan by the Irish Government and Department of Housing, local Government and Heritage states that *"right now, Ireland's housing system is not meeting the needs of enough of our people".*

Over the last few years, the steady growing demand in combination with the critical undersupply of quality housing provision has led to significant problems of homelessness, unaffordability and vacancies amongst others.

There is a significant and established housing need in Dublin and the State as a whole, as recognised within Government housing and planning policy, including the 2016 Rebuilding Ireland Plan for Housing and Homelessness and Housing for All, published in September 2021, which reinforces the critical and strategic need for new dwellings where it is a target to provide 300,000 housing units by the year 2030. The government's vision for the housing system over the longer term is to achieve a steady supply of housing in the right locations with economic, social and environmental sustainability built into the system. The proposed development will allow for a new residential community, built to a high standard and quality, adjacent to existing settlements, with a range of amenities and services provided, in close proximity to public transport services.

While the number of residential units being completed nationally has rebounded following the COVID-19 pandemic the level of completions remains significantly lower than the estimated equilibrium demand for housing (recently increased from 35,000 units to 50,000 units per annum by the ESRI) in the State. Moreover, the current level of housing need and demand is not at equilibrium, being significantly augmented by the low level of housing completions with 29,851 new dwellings completed in 2022 and 32,700 no. units completed in 2023.

It is further noted that the number of housing completions in the state reduced significantly (falling well below projected completions) since 2020, due to the impact of the COVID-19 public health crisis. There had been a gradual increase (see figure below) in the number of completions over the past decade as supply increased to meet the level of structural demand, estimated by the ESRI to be in the region of 35,000 new homes a year (ESRI, 2022).



Figure 3.5: Yearly housing completions for the State

Source: Figure 10 ESRI Spring Commentary 2024

The ESRI Spring Commentary 2024 notes that the "output in 2023 rose to just under 33,000 units which is the highest level since the onset of the financial crisis in 2007. However, given the extent to which housing is acting as a constraint on the economy, and the fact that new household formations are likely to be well in excess of 33,000 units, substantial additional investment is going to be required in the housing sector in the coming years. While the volume of new housing is critically important, the type of accommodation also matters in an Irish context..."

In terms of increasing future housing delivery, the proposed development will facilitate the construction of 322 no. dwellings in a mixture of apartments, duplex units and houses, a Community Centre and Sports Hall, creche, Neighbourhood Centre and all associated site development works on lands that have been zoned for development and identified as being within a Masterplan area (MP12).

3.3.6 HEALTH & SAFETY

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west. It does not include any significant man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

3.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Consideration of the characteristics of the proposed development allows for a projection of the 'level of impact' on any particular aspect of the proposed environment that could arise. For this chapter the potential impact on Populations and Human Health is discussed.

A full description of the proposed development is provided in Section 2 of this EIAR document. In summary, the proposed development consists of the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

Based on the mix and potential occupancy the proposal could potentially result in a population of c. 995 when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit+).

3.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

3.5.1 INTRODUCTION

This section provides a description of the specific, direct and indirect, impacts that the proposed development may have during both the construction and operational phases of the proposed development. As stated, guidance documents from the EPA and the Department outline that the assessment of impacts on population and human health should focus on health issues and environmental hazards arising from the other environmental factors and does not require a wider consideration of human health effects which do not relate to the factors identified in the EIA Directive. Additionally, this section addresses the socio-economic and employment impacts of the proposed development.

The specific chapters of the EIAR (4-15) assess the environmental topics outlined in the EIA Directive.

3.5.2 WATER

3.5.2.1 Construction Phase



Provision of water infrastructure for the proposed development would involve construction activities within the subject lands mainly involving trench excavations conducted in parallel with the other services. The potential impact on the local public water supply network would be short term and imperceptible. Therefore, the impact on human health and population in this regard is considered to be not significant.

During the course of the construction phase of the proposed development, there is potential, in the absence of mitigation, for surface water runoff to suffer from increased levels of silt or other pollutants, in addition to potential pollution from spillages, wheel washing and water from trucks on site. The Preliminary Construction and Environmental Management Plan, and the Resource Waste Management Plan (RWMP) included with the application (see Appendix E Volume III of the EIAR), set out how all materials will be managed, stored and disposed of in an appropriate manner, mitigating the potential negative effects as outlined.

Potential impact on water is addressed in Chapter 6 (Water) and a number of mitigation measures are outlined in that chapter of the Environmental Impact Assessment Report. These mitigation measures will serve to minimise potential adverse impacts of the construction phase to the water environment, thereby minimising any associated risk to human health from water contamination. Therefore, the impact of construction of the proposed development in relation to water is likely to be short-term and imperceptible with respect to human health.

3.5.2.2 Operational Phase

Once the development is completed, the operational impacts on the water & hydrology aspects of the site would be minimal. The biggest risk item is cross contamination of surface water from the operational phase of the development from accidental oil spillages, refer to the Mitigation section below for proposed remedial issues. A positive impact from the development will be the reduction in storm water runoff experienced during extreme storm events, as the flow from the development will be restricted. The downstream water course will be at a reduced risk from flooding during extreme storm events.

Potential operational phase effects are addressed in Chapter 6 of this EIAR.

3.5.3 NOISE AND VIBRATION

3.5.3.1 Construction Phase

Noise and Vibration are addressed in Chapter 8 (Noise and Vibration) which was prepared by Byrne Environmental.

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site, and construction traffic, which will all generate noise. The highest noise levels will be generated during the general construction activities and during rock excavation. The construction noise levels will only occur during daytime hours which will serve to minimise the noise impacts at local existing receptors over the course of the construction phase.

Chapter 8 of this EIAR sets out mitigation measures in relation to noise.

Any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Chapter 8. Following the implementation of mitigation and based on the standards which will be maintained, Chapter 8 predicts that vibration impacts during the construction stage will be negative, not significant, and temporary.

3.5.3.2 Operational Phase

The noise impact generated by additional traffic movements associated with the development is predicted to be of an imperceptible impact on existing ambient noise levels at receptors along the local road network.

It may be concluded that during daytime and night-time periods, acceptable internal noise evels can be achieved in all residential units as defined in *BS 8233* with windows closed, using the measures detailed above in Section 8.7.2 above.

With regard to the recommended mitigation by design measures as specified above, it may be concluded that residential properties located within the proposed development can be appropriately designed and constructed to achieve acceptable internal noise levels and to ensure the required acoustic performance of adjoining residential units.

Noise will be generated by the operation of the retail units and will primarily relate to goods deliveries and the operation of vents and fans. With regard to the fact that the retail units will be located to the northeast of the site at the furthest point away from existing residential receptors it is predicted that their operation will not result in a negative noise impact on existing residential development to the southwest or south of the site.

All vents and fans associated with the retail units will be required to be acoustically attenuated to ensure that their operation does not have a negative noise impact on residents within the development.

3.5.4 AIR QUALITY & CLIMATE

3.5.4.1 Construction Phase

During the construction phase, site clearance and ground excavation works have the potential to generate dust emissions rising from the operation and movement of machinery on site. This could have a potential impact on population and human health.

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, human health and climate. However, the potential construction phase impacts shall be mitigated as detailed above to ensure there is no adverse impacts on ambient air quality for the duration of all construction work phases. It is predicted that the construction phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or on local human health or on the local micro-climate or the wider macro-climate.

The predicted construction phase residual impacts on air quality will be negative, short-term and imperceptible with respect to human health.

3.5.4.2 Operational Phase

Operational traffic emissions as a result of the proposed development are compliant with all National and EU ambient air quality limit values which are set for the protection of human health and therefore, will not result in an adverse or harmful impact on human health.

It is predicted that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health, as stated in Chapter 7 – Air Quality and Climate.

3.5.5 LANDSCAPE & VISUAL IMPACT

3.5.5.1 Construction Phase

The construction phase will have short term landscape and visual impacts. The impacts are not considered significant on population and human health.

3.5.5.2 Operational Phase

The operational phase will result in landscape and visual impacts, as set out in Volume II of this EIAR. The impacts are not considered significant on population and human health.

3.5.6 ECONOMIC ACTIVITY

3.5.6.1 Construction Phase

The construction phase of the proposed development is likely to result in a positive net improvement in economic activity in the area of the proposed development site, particularly in the construction sector and in associated and secondary building services industries. The sector has grown strongly in recent years and this development will help to further enhance growth and reduce the increasing pressure on the housing market. This development will help to sustain and promote employment and short term slight positive impacts.

The construction of the development and all associated infrastructure will precipitate a short term slight positive impact on construction-related employment for the duration of the construction phase. The phased construction of the proposed residential units, neighbourhood centre, childcare facility alongside associated physical infrastructure will result in a construction period of up to 48 months and will consequently enhance economic activity during this period, which is considered to be a slight temporary positive impact. A considerable amount of the work will be undertaken by sub-contractors who will also work elsewhere on a phased basis over the construction phase.

The construction phase will also have secondary and indirect 'spin-off' impacts on ancillary support services in the wider area of the site, such as retail services, together with wider benefits in the aggregate extraction (quarry) sector, building supply services, professional and technical professions etc. These benefits will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the phased construction period.

3.5.6.2 Operational Phase

The operational phase of the proposed development will result in the provision of 322 no. dwellings, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c.2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works. Based on the mix and potential occupancy the proposal could potentially result in a population of c. 995 when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit +). This increase in occupancy in the area will enhance local spending power and will assist with the delivery of a critical mass of population which will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities, which will accrue as the development of the Planning Scheme progresses. The proposal will provide much needed residential accommodation and accords with National Policy on delivering Sustainable Residential Communities and is considered a positive permanent slight impact.

With reference to employment during the operational phase, it is estimated that the proposed development could generate c. 145 no. Full Time Equivalent positions⁸.

⁸ Employment Densities Guide 3rd Edition

3.5.7 SOCIAL PATTERNS

3.5.7.1 Construction Phase



The construction phase of the proposed development is unlikely to have any significant impact on social patterns within the surrounding area. Some temporary additional local populations may arise out of construction activity. However, these impacts are imperceptible, temporary in nature and therefore not considered significant.

It is acknowledged that the construction phase of the project may have some short-term negative impacts on local businesses and residents. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction access requirements. These impacts are dealt with separately and assessed elsewhere in the EIAR, including Chapter 2 - Project Description and Alternatives Examined, Chapter 10 - Air Quality and Climate and Chapter 11 - Noise and Vibration. Any disturbance is predicted to be commensurate with the normal disturbance associated with the construction industry where a site is efficiently and properly managed having regard to neighbouring activities. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts to nearby residents. A Preliminary Construction Environmental Management Plan (prepared by HRA) has been prepared and is submitted with this application under separate cover. The mitigation contained in Chapter 16 of this EIAR and OCEMP will be contained in the contractor's CEMP.

3.5.7.2 Operational Phase

The addition of new residents and additional employment opportunities to the area will improve the vibrancy and vitality of the area and will help to support existing community and social infrastructure. This is an imperceptible positive long-term impact.

The proposed development includes the provision of a childcare facility with a GFA of 512 sq.m. This childcare facility will accommodate the likely demand arising from the proposed development.

Once operational, the proposed development will give rise to much needed additional residential accommodation. Residents will spend a portion of their income locally which would not happen without the proposed development. The creche and neighbourhood centre will provide some employment opportunities in the operational phase of the development.

The proposal includes an element of Part V provision in accordance with the requirements of the Planning Authority, which will provide for an enhanced mix of tenures, and add to the existing social housing stock in the local area. The overall benefit to the social patterns of the surrounding area resulting from the development can be considered slight, long term, and positive.

Having regard to the fact that the area within which the development is situated benefits from a good level of social and community infrastructure and noting the elements of the proposed development which will improve and strengthen this infrastructure, it is concluded that the proposed development will precipitate a slight positive, long-term impact on social patterns in the operational phase.

3.5.8 LAND-USE & SETTLEMENT PATTERNS

3.5.8.1 Construction Phase

The construction phase of the proposed development will primarily consist of site clearing, excavation and construction works, and the erection of the proposed new buildings on site and has the potential to impact adversely and result in the temporary degradation of the local visual environment on a short-term basis. The visual impacts precipitated by the proposed development are assessed in greater detail in Chapter 9 of the EIAR 'Landscape and Visual Impacts'.

Secondary land use impacts include off-site quarry activity and appropriate disposal sites for removed spoil and other materials transported off site. Chapter 11 Material Assets - Waste considers these potential impacts in more detail and Chapter 14 – Risk Management (as well as the Construction and Demolition Waste Management Plan) describes the relevant mitigation measures.

The construction phase may result in a marginally increased population in the wider area due to increased construction employment in the area, however, this would be temporary in nature and the marginal be imperceptible.

3.5.8.2 Operational Phase

The operational phase of the proposed development will result in the introduction of a sustainable density of residential development, delivering wider public realm improvements, in accordance with national and local planning policy objectives which seeks to deliver compact growth at suitable locations. Adequate provision of high-quality housing to serve the existing and future population of the county and the wider Greater Dublin Area is an important contributor to the establishment and maintenance of good human / public health. The high-quality design of the proposed development will contribute to a positive impact on the well-being of future residents.

3.5.9 HOUSING

3.5.9.1 Construction Phase

The proposed development will not result in any impact in terms of loss of housing stock during the construction stage.

3.5.9.2 Operational Phase

The operational phase of the proposed development will see the delivery of 322 no. residential units, in a range of housing typologies (houses, apartments, duplex apartments).

The proposed development will respond to established housing need and demand in the area of the proposed development, and the wider region. The proposed residential units will assist in addressing the significant shortfall of residential development.

The proposed development delivers a range of housing unit sizes and types, including one-, two-, and three-bedroom apartments. The scheme also benefits from a high level of good quality public open space and new linkages provided through the site.

The delivery of 322 no. well-designed high-quality residential units at an appropriate location and on appropriately zoned lands will have a direct, positive, and significant impact on the future residents of the proposed development.

3.5.10 EMPLOYMENT

The impact of the proposed development in relation to employment has been discussed under economic activity.

3.5.11 HEALTH & SAFETY

The surrounding context consists of a mix of residential, employment and recreational lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which might result in a risk to human health and safety. It is not within the consultation zone of a SEVESO site as defined by the Health and Safety Authority. Chapter 14 – Risk Management addresses the potential health and safety aspects of the proposed development during the construction and operational phases.

In the absence of mitigation, the proposed development could have a slight negative, short-term impact on the surrounding area during construction phase due to traffic and associated nuisance, dust and noise. These issues and appropriate mitigation measures are addressed in Chapters 7, 8 and 12 of the EIAR, in the Traffic and Transportation Assessment, Construction Management Plan and the Waste Management Plan which accompany the application. The Traffic and Transportation Chapter recommends that a Construction Traffic Management Plan be implemented for the site which will minimise discuption to the surrounding road network, which will be submitted and agreed with the Planning Authority.

No significant health and safety effects are envisaged during either the construction or operational phases of the proposed development. The standard Health and Safety policy, procedures and work practices of the proposed development will conform to all relevant health and safety legislation both during the construction and operational stages of the proposed development. The proposed development will be designed and constructed to best industry standards, with an emphasis being placed on the health and safety of employees, local residents and the community at large.

3.5.11.1 Construction Phase

The construction methods employed, and the hours of work proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced. A Construction Management Plan has been prepared by HRA Consulting Engineers and the measures specified therein will be complied with during the construction phase of the project.

3.5.11.2 Operational Phase

The operational stage of the development will not precipitate long term negative impacts in terms of health and safety. The design of the proposed development has been formulated to provide for a safe environment for future residents and visitors alike. The paths, roadways and public areas have all been designed in accordance with best practice and the applicable guidelines including DMURS. Likewise, the proposed residential units and childcare facility accord with the relevant guidelines and will meet all relevant safety and building standards and regulations, ensuring a development which promotes a high standard of health and safety for all occupants and visitors.

The Air Quality & Climate Chapter (i.e. Chapter 7) of the EIAR predicts that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health and that there will be a negligible impact on local air quality generated by increased traffic movements associated with the development.

The proposed development will not cause significant impacts on human health and safety once completed and operational, and any impact will be imperceptible, and unlikely.

3.5.12 RISK OF MAJOR ACCIDENTS OR DISASTERS

Chapter 14 – Risk Management addresses the potential risks of major accidents or disasters relating to the proposed development during the construction and operational phases.

3.5.13 CONSTRUCTION PHASE

The location of the proposed development is within Flood Zone C and it is unlikely there will be any impacts related to a major accident or disaster during the construction phase of the proposed development, stemming internally from within the development, or externally.

The works proposed in proximity to roadways will be governed by best practice and appropriate safety procedures, ameliorating any risk of a major accident in those contexts.

3.5.14 OPERATIONAL STAGE



The proposed development will be located on land which is not at any significant risk of flooding. The Eastern CFRAM (Catchment Flood Risk Assessment and Management) study details the predicted risk for a variety of fluvial and coastal flood scenarios. The mapping does not include the watercourse reaches affected by the proposed scheme and only maps downstream flooding. The proposed development is therefore outside of the Q100 and Q1000 flood extents and is therefore within Flood Zone C which indicates a low risk of flooding. The proposed development is appropriate for the application site's flood zone categories and that the proposed development is considered to have the required level of flood protection.

Therefore, it is considered that there is no likely significant risk related to major accidents or disasters, external or internal, man-made or natural in respect of the proposed development.

3.6 POTENTIAL CUMULATIVE IMPACTS

The potential cumulative impacts of the proposed development on population and human health have been considered in conjunction with the ongoing changes in the surrounding area. Visits to the subject site and surrounding area and desk-based review of online planning files have been undertaken to identify the existing pattern of development, nearby uses, and any permitted / ongoing developments of relevance to the current proposals in the context of population and human health.

The development of the masterplan lands will influence demographic change, population growth, and the intensity of commercial use in this area, cumulatively contributing to increasing population and employment growth in the wider area which represents a positive cumulative impact which accords with the planning policy context for the area.

An increase in local housing, and some increase in employment opportunities and service provision (crèche, retail and employment) has the potential to generate direct, indirect impacts. The visual appearance of the landscape will be altered with the introduction of the proposed built elements including infrastructure, in cumulation with other development in the area. Implementation of the remedial and reductive measures in respect of noise/traffic management etc. in the EIAR would ensure a minimal impact on the existing communities of this area during the construction phase.

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area. This will have a moderate positive long-term impact on the population in the immediate area of the project lands and a slight positive long term impact in the wider area of Navan, a key town.

Relevant developments have been identified with regard to their size and scale, their use mix and composition, and their proximity to the proposed development, within the settlement of Navan, in particular to identify any substantial / strategic residential development or larger scale commercial development. Applications of a minor nature were discounted from the planning history search, for example applications for under 5 no. dwellings, or applications relating to minor extensions, works to existing dwellings, and change of use applications. The planning history search focussed on relevant permitted developments in the last 5 years, with a search also undertaken for permitted longer term permissions (i.e. with a 10 year permission).

Other projects in the wider area comprise:

- Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) 98 no. residential units (Phase 1A Boyne Village).
- Meath County Council Reg. Ref. 22/1703 Phase 1 of the Boyne Village Enterprise Park comprising construction of: 3 no. commercial high-bay warehouse units.

- Meath County Council Reg. Ref. 21/21 (ABP-311673-21) 95 no. residential units.
- ABP Reg. Ref. JP17.309332 (L.A. Dev. AA Application) 84 no. unit development
- Meath County Council Reg. Ref. 221008 (ABP-315806-23) 93 no. residential units.
- Planning Reg. Ref. 2460066 Pumping Station. (Uisce Eireann)

Chapter 7 (Air Quality) states that the operational phases of the subject development and other permitted residential developments in the local area will not generate cumulative air emissions that will have an adverse impact on local ambient air quality. Measured baseline air quality and national published air quality data confirm that the existing air quality is good and that the operational phases of the subject development and other local proposed developments will have a long-term imperceptible impact on existing air quality.

Chapter 8 (Noise and Vibration) states that once the subject development is completed and if the lands to the east and west are developed there will be no residual adverse noise impact on the receiving environment associated with their operation. Increased traffic movements associated with both developments will generate a long-term, not significant impact on the local noise climate during peak hour times.

The overall cumulative impact of the proposed development will therefore be long term and positive as residents will benefit from a high quality, visually attractive living environment, with strong links and pedestrian permeability. Having regard to the assessment of cumulative impacts, it is not considered that any additional mitigation measures are required further to those which are outlined above.

3.7 'DO NOTHING' IMPACT

In order to provide a qualitative and equitable assessment of the proposed development, this section considers the proposed development in the context of the likely impacts upon the receiving environment should the proposed development not take place.

A 'do nothing' scenario would result in the subject lands remaining fallow and undeveloped. This would be an under-utilisation of the subject site from a sustainable planning and development perspective, also noting the lands being designated as a masterplan area in the County Development Plan.

In the do-nothing scenario, the absence of the proposed development would perpetuate the housing shortfall in the local area, contrary to the aims and objectives of national, regional, and local planning and housing policy, all of which promote the delivery of additional housing at strategic locations such as the subject site.

The local economy would not experience the direct and indirect positive effects of the construction phase of development, including employment creation. The local construction sector and associated industries and services would be less viable than they might otherwise be.

The 'do-nothing' scenario would result in the status of the environmental receptors described throughout this EIAR document remaining unchanged. The potential for any likely and significant adverse environmental impacts arising from both the construction and operational phases of the proposed development would not arise. In terms of the likely evolution without implementation of the project as regards natural changes from the baseline scenario, it is considered there would be limited neutral change from the baseline scenario (human beings) and human health.

3.8 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential likely and significant environmental impacts.

3.8.1 CONSTRUCTION PHASE

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided. Readers are directed to Chapter 16 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

In order to protect the amenities enjoyed by nearby residents, premises, and employees a Construction Environment Management Plan will be submitted by the contractor and implemented during the construction phase. The content of the OCEMP will be based on the mitigation set out in this EIAR.

With reference to the construction phase of the proposed development, the objectives of the Resource Waste Management Plan prepared by Byrne Environmental Consulting Ltd., contained in Appendix E Volume III of the EIAR (and also detail in Chapter 11 of the EIAR) is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.

3.8.2 OPERATIONAL PHASE

The operational phase is considered to have likely positive impacts on population in relation to the provision of additional residential units, open space, childcare provision, to cater for the demands of a growing population in accordance with the residential zoning objectives pertaining to the subject site.

During the operational phase of the development the design of the scheme has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

For the operational phase, no further specific mitigation is required having regard to the mitigation included within the other chapters of this EIAR.

3.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section provides a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium, and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied. It should be noted that in addition to remedial and mitigation measures, impact avoidance measures have also been built into the EIAR and project design processes through the assessment of alternatives described in Chapter 2 of this EIAR document. Impact interactions are considered further in Chapter 15.

There are numerous inter-related environmental topics described throughout this EIAR document which are also of relevance to Population and Human Health. For detailed reference to the residual impacts of environmental topics please refer to the relevant corresponding chapter of the EIAR (land and soils, water and hydrology, air quality and climate, noise and vibration, traffic, and risk management).

3.9.1 CONSTRUCTION PHASE

The construction phase of the proposed development will primarily consist of site clearance, excavation and construction works, which will be largely confined to the proposed development site (including haul routes). Notwithstanding the implementation of remedial and mitigation measures there will be some minor temporary residual impacts on population (human beings) and human health most likely with respect to nuisance caused by construction activities, predominantly related to noise and traffic as detailed in chapters, 8 and 10.

It is anticipated that subject to the careful implementation of the remedial and mitigation measures proposed throughout this EIAR document, and as controlled through the Construction and Environmental Management Plan any adverse likely and significant environmental impacts will be avoided. The overall predicted likely impact of the construction phase will be short-term not significant, and neutral. A CEMP (with the mitigation contained in this EIAR) will be developed by the contractor and submitted to the Local Authority.

Imperceptible, positive short-term impacts are likely to arise due to an increase in employment and economic activity associated with the construction of the proposed development.

3.9.2 OPERATIONAL PHASE

The proposed development will result in a generally positive alteration to the existing undeveloped site in terms of the provision of residential units, a creche, Sports Hall and Community Centre, and neighbourhood centre to serve the growing residential and working population of the area in accordance with the objectives of the Meath County Development Plan. Positive impacts on population and human health will include health benefits associated with the provision of a significant quantity of open space, pedestrian and cyclist/green routes and a highly permeable layout. The provision of creche and neighbourhood facilities enhances the quality of the development and helps to create sustainable communities.

The implementation of the range of remedial and mitigation measures included throughout this EIAR document is likely to have the impact of limiting any adverse significant and likely environmental impacts of the operational phase of the proposed development on population and human health (as set out in relevant chapters land and soils, water and hydrology, air quality and climate, noise and vibration, traffic, and risk management).

This chapter of the EIAR has provided an assessment of the likely impact of the proposed development on population and human health. As set out above, the proposed development will result in a long-term positive impact on housing and is not likely to result in any significant negative effects on population and human health, and will result in some other positive impacts, including settlement patterns of a sustainable density at an appropriate location and economic benefits derived from the employment opportunities within childcare facility and employment hub proposed. Through generating additional economic activity in the area, and providing for a high standard of residential accommodation, there will be a slight positive impact arising from the proposed development in the short-term (for economic activity) and in the long term for residential accommodation.

3.9.3 CUMULATIVE

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area. This will have a moderate positive long-term impact on the population in Navan.

Chapter 7 (Air Quality) states that the operational phases of the subject development and other permitted residential developments in the local area will not generate cumulative air emissions that will have an adverse impact on local ambient air quality. Measured baseline air quality and national published air quality

data confirm that the existing air quality is good and that the operational phases of the subject development and other local proposed developments will have a long-term imperceptible impact on existing air quality.

Chapter 8 (Noise and Vibration) states that the cumulative noise and vibration impacts associated with the proposed development and future local developments will not result in an increased impact on the closest receptors to the proposed development site.

3.9.4 'WORST-CASE' SCENARIO

The failure of the proposed development to proceed will mean that there would be no resulting new housing or local employment generated. However, failure of the proposed development to proceed or failure of any proposed mitigation measures, will not lead to any profound, irreversible or life-threatening consequences. In these circumstances no further consideration of this scenario is necessary in respect of health, community, employment or population issues.

3.10 MONITORING

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in this EIAR in regard to the other environmental topics such as water, air quality and climate and noise and vibration sufficiently address monitoring requirements.

3.11 REINSTATEMENT

While not applicable to every aspect of the environment considered within the EIAR, certain measures may be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.

There are no reinstatement works proposed specifically with respect to population and human health.

3.12 DIFFICULTIES ENCOUNTERED IN COMPILING

No significant particular difficulties were experienced in compiling this chapter of this EIAR document.

4.0 **BIODIVERSITY**

4.1 INTRODUCTION



This Chapter describes the Biodiversity of the Site and surrounding environs, in relation to a Proposed Development at Boyne Village (Phase 1B), Athlumney, Navan, Co. Meath, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This Chapter assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site and proposes measures for the mitigation of these impacts, where appropriate.

This Chapter will describe the ecology of the Site, with emphasis on habitats, flora, and fauna, and will assesses the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The report follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes together with the guidance outlined in the Environmental Protection Agency documents *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022) and *Advice Notes for Preparing Environmental Impact Statements* (Draft, September 2015). The purpose of this Ecological Impact Assessment (EcIA) is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

4.1.1 QUALITY ASSURANCE AND COMPETENCE

Enviroguide Consulting is wholly Irish Owned multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training, and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. Shannen O'Brien and Brian McCloskey, Ecologists with Enviroguide, undertook the bat activity surveys for this Report. Shannen O'Brien undertook the remaining ecological surveys and desktop research for this Report.
Shannen O'Brien has a B.A. in Zoology from Trinity College Dublin and a M.Sc. Hons. in Wildlife Conservation and Management from University College Dublin, and has experience in desktop research, report writing, and literature scoping-review, as well as practical field and laboratory experience (Pollinator surveying, sampling and identification, habitat surveying, invasive species surveying, etc.). Shannen has prepared Stage I and Stage II Appropriate Assessment (AA) Reports, Invasive Species Surveys, Ecology Statements, and EcIA.

Brian McCloskey is an experienced Ornithologist with a BSc in Planning and Environmental management from the Technological University of Dublin (TUD) and 12 years of bird survey experience, including three years of professional Ornithology work. Brian is a longstanding and active member of Bird Watch Ireland and is also the author of several articles in UK birding publication *Birdwatch Magazine*. Brian is highly experienced in survey methodologies and with surveying all species groups of Irish birds and migrants, having provided a range of ornithology survey work for ecological consultancies, e.g., vantage points surveys of gulls, terns, raptors, waders, and wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds.

4.1.1.1 Relevant Legislation and Policy Context

This Chapter is a process of identifying, quantifying, and evaluating potential effects of developmentrelated or other actions on habitats, species, and ecosystems (CIEEM, 2018). The Proposed Development is a sub-threshold for an Environmental Impact Assessment (EIA) under the Planning and Development Regulations 2001-2021, as amended.

When an EcIA, in the form of this Chapter, is undertaken as part of an EIA process it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2024). An EcIA is not a statutory requirement, however it is a best practice evaluation process. This EcIA is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

There is a number of pieces of legislation, regulations, and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- Directive 2009/147/EEC, hereafter the 'Birds Directive'.
- Directive 2011/92/EU, hereafter the 'EIA Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.
- Convention on the Conservation of European Wildlife and Natural Habitats 1982, hereafter the 'Bern Convention'
- The Convention on the Conservation of Migratory Species of Wild Animals 1983, hereafter the 'Bonn Convention'.
- Ramsar Convention on Wetlands 1971, hereafter referred to as 'Ramsar'.
- Water Framework Directive 2000/60/EC, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2015.

- The Planning and Development Act 2000 (as amended).
- National Biodiversity Plan 2017-2021.



Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- Meath County Development Plan 2021 2027.
- Meath Biodiversity Action Plan 2015 2020.

The Meath County Development Plan 2021 – 2027 has directly addressed the protection of European sites and local biodiversity through specific policies. The relevant recommendations and mitigation measures have been integrated into the plan. The County Meath Biodiversity Action Plan 2015 – 2020 is set out to protect and improve biodiversity, and as such will not result in negative in-combination effects with the Proposed Development.

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix G Volume III of this EIAR.

This chapter has been prepared having regard to the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2022); and
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2012).

4.2 METHODOLOGY

This EcIA has been undertaken to support and assess the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an ecological impact assessment of the Proposed Development.

4.2.1 SCOPE OF ASSESSMENT

The specific objectives of the study were to:

• Undertake baseline ecological surveys and evaluate the nature conservation importance of the Site;

- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the Proposed Development during its lifetime; and
- Where possible, propose mitigation measures to remove or reduce these impacts at the appropriate stage of the development.

4.2.2 DESK STUDY

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in May 2024, relied on the following sources:

- Information on species records⁹ and distributions, obtained from the National Biodiversity Data Centre (NBDC) at <u>maps.biodiversityireland.ie;</u>
- Information on Floral Protection Order (FPO) Bryophytes database at <u>dahg.maps.arcgis.com;</u>
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at <u>gis.epa.ie;</u>
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at <u>www.gsi.ie;</u>
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at <u>www.npws.ie</u>;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at:

https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e931 6a3d3a4d3a8de; and

• Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 4.11, References.

4.2.3 ZONE OF INFLUENCE

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

⁹ The Site of the Proposed Development lies within the 10km grid square N86, and the 2km grid squares N86Y and N86Z. Records from the last 20 years from available datasets are given in the relevant sections of this report.

"The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying interests of a European site. This should be established on a case-by-case basis using the Source-Pathway Receptor framework and not by arbitrary distances (such as 15 km)."

4.2.4 IDENTIFICATION OF RELEVANT DESIGNATED SITES

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of EcIA reports such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that "*This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance*". Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.
 - Water catchment data from the EPA (<u>www.epa.ie</u>) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
 - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
 - Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
 - Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources;
 - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
 - Ramsar sites from the Irish Ramsar Wetland Committee (<u>https://irishwetlands.ie/irish-sites/</u>);
 - Other internationally designated sites e.g., UNESCO Biosphere's; and
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

4.2.5 FIELD SURVEYS

A range of field surveys have been carried out at the Site to date. These are summarised in Table 4.1.

| Table 4.1. Field Sulveys underta | \sim | |
|--|---------------------------------------|--|
| Survey | Surveyor | Dates 0 |
| Preliminary Habitat and Invasive Flora Survey | Enviroguide Consulting (SOB) | 28 th of October 2022 |
| Updated Habitat Baseline Survey | Enviroguide Consulting (SOB) | 14 th of July 2023 |
| Invasive Flora Survey | Enviroguide Consulting (SOB) | 28 th of October 2022 14 th of July 2023 |
| Bat Survey | Enviroguide Consulting (SOB) | Bat activity surveys: 21 st of September 2022 4 th of October Daytime inspections: 21 st of September 2022 14 th of July 2023 |
| Bat Activity Survey | Wildlife Surveys Ireland (BK) | 9 th of May 2021 18 th of September 2019 |
| Bird Scoping Survey | Enviroguide Consulting (SOB) | 21 st of September 2022 28 th of October 2022 |
| Barn Owl Survey | BirdWatch Ireland (JL) | 2 nd of July 2020 |
| Mammal Survey | Enviroguide Consulting (SOB) | 28 th of October 2022 4 th of November 2022 21 st of June – 26 th of June 2023 |
| Amphibian Survey | Enviroguide Consulting (SOB) | 28 th of October 2022 |
| Ecological Impact Assessment and associated ecological surveys | OPENFIELD Ecological Services (PF) | 1 st of October 2019 5 th of June 2020 27 th of November 2020 |

Table 4.1: Field surveys undertaken at the Site.

4.2.6 HABITAT SURVEYS

Habitat surveys of the Site were conducted by Enviroguide on the 28th of October 2022, with a follow up survey carried out on the 14th of July 2023. Habitats were categorised according to the Heritage Council's '*A Guide to Habitats in Ireland*' (Fossitt, 2000) to level 3. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2010) published by the Heritage Council. Any incidental observations of evidence for rare and/or protected flora were recorded.

In addition, the Site was searched for invasive flora with a particular focus on those listed on the Third Schedule of SI No. 477/2011. No invasive floral species were recorded on Site.

4.2.7 HEDGEROW SURVEY

A hedgerow assessment of the Site was conducted by Enviroguide on the 14th of July 2023. Hedgerows were categorised on their ecological value as ascertained from current research from Hedgerow Appraisal System (HAS) (Foulkes et al, 2013) and the Hedgerow Evaluation and Grading System (HEGS) (Clements and Toft, 1993). In addition, there was a Tree Survey undertaken by CSR, included in the application, (updated in February 2024). These systems follow a standardised methodology that grades hedgerows based on their overall structure, connectivity, botanical diversity, and the presence of hedgerow features such as banks and ditches. Each hedgerow is then assigned a grade based on the results.

4.2.8 BAT SURVEYS

4.2.8.1 Preliminary Bat Roost Assessment

- Negligible No suitable features observed;
- Low A structure with one or more roost features as used by individual bats or a tree of sufficient size to contain roost features but none observed from the ground;
- Moderate A structure or tree with one or more roost features and able to support one or more bats but unlikely to support a roost of high conservation status.
- High A structure or tree with one or more roost features that are obviously suitable for use by a larger number of bats on a regular basis, and potentially for longer periods of time.

4.2.8.2 Preliminary Bat Habitat Suitability Assessment

A Bat Habitat Suitability Assessment was carried out in conjunction with the roost assessment on the 21st of September 2022, along with a ground-truthing survey on the 14th of June 2023. This assessment evaluated the habitats present on site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible No suitable foraging or commuting habitats on site
- Low Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.
- Moderate Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

4.2.8.3 Bat Landscape Suitability

The Bat Conservation Ireland Landscape Suitability Model (Lundy *et al.*, 2011) provides a habitat suitability index for bat species across Ireland. The model divides the country into 1 km grid squares and ranks the habitat within the squares according to its suitability for various bat species. The scores are divided into five qualitative categories of suitability, namely:

- 0.0000000 13.000000: Low
- 13.000001 21.333300: Low Medium
- 21.333301 28.111099: Medium
- 28.111100 36.444401: Medium High
- 36.444402 58.555599: High

4.2.8.4 Bat Activity Surveys

The Site was assessed by an experienced ecologist in relation to the potential bat foraging habitat and commuting routes. The surveys were undertaken to best practice guidance at the time of survey (Collins, 2016 and Marnell et al., 2022) during times of suitable weather conditions, as detailed below;

A dusk bat activity survey was undertaken at the Site on the evening of the 21st of September 2022, focussing on the barn and treeline habitats that run along the various field boundaries of the Site. Sunset was at 19:28 on the night and the survey commenced at 19:00 and ended at 21:00. Temperature remained at 17°c throughout the survey, with calm relatively overcast conditions.

A dusk bat activity survey was undertaken at the Site on the evening of the 4th of October 2022, again focussing on the barn and treeline habitats that running along the various field boundaries of the Site. The bat activity survey commenced at 18:25 and finished at 20:27. Sunset on the night was 18:53. Temperatures were of 15°c throughout the survey, with periods of intermittent drizzle throughout the survey.

The surveyor was equipped with a Elekon Batlogger M2 detector and powerful L.E.D. torch and head torches.

4.2.8.5 Data Analysis

Species were identified from recordings using Elekon's BatExplorer software (Version 2.1.10.1). Bat data was analysed and species assigned to each record with reference to species identification guides such as Russ (2012).

Each record i.e., a sequence of bat calls/pulses, is noted as a bat pass; to indicate the level of bat activity for each species recorded. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some bats such as *Pipistrelle* species may continuously fly around a habitat or feature, therefore, it is possible that a series of bat passes within a similar time frame is representative of an individual bat. On the other hand, Leisler's bats (*Nyctalus leisleri*) tend to travel through an area quickly, and as such, an individual sequence or bat pass is more likely to be indicative of individual bats.

4.2.9 BIRD SCOPING SURVEYS

The survey methodology employed was based on that recommended in standard literature used by for example the British Trust for Ornithology (BTO) (Gillings et al, 2007; Bibby et al, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group. (2022). During the scoping surveys, the Site was walked slowly, approaching all habitat within and adjacent to the Proposed Development and scanning and listening for birds.

4.2.10 BADGER SURVEY

A systematic search for signs of badgers (*Meles meles*) was conducted on 28th of October 2022, with additional survey works carried out on the 4th of November 2022 and the 21st of June – 26th of June 2023. Furthermore, any incidental observations of evidence for badgers were recorded whenever on site. The surveys followed standard guidelines (Harris, Cresswell & Jeffries, 1989 and NRA, 2005) and included a thorough search for setts or for signs of badger activity, including tracks, latrines, hairs and snuffle holes.

4.2.11 OTHER FAUNA

A general fauna survey of the Site was carried out in conjunction with the other field surveys during the October and November 2022 surveys. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey considers protected or notable fauna that may occur within the Site or in the

adjacent lands, but for which no historical records from the relevant grid square(s) exist or for which no targeted surveys were carried out.

4.2.12 ECOLOGICAL ASSESSMENT

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018); and with reference to the National Roads Authority 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009) and the Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

4.2.12.1 Evaluation of Ecological Features

The value of the ecological features, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation at different geographical scales (NRA, 2009), presented in Appendix G Volume III of this EIAR. This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EcIA.

4.2.12.2 Impact Assessment

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs). The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022), presented in Appendix G Volume III of this EIAR. These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include;

- Positive, neutral, or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat.

4.2.12.3 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies (see section 1.2) were reviewed to identify any potential for negative cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

4.2.12.4 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

It is important for the EcIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EcIA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ.
- Compensation describes measures taken to offset residual effects, i.e., where mitigation *in situ* is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

4.2.12.5 Limitations

Every effort has been made to provide a comprehensive description of the site; however, the following specific limitations apply to this assessment:

- An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.
- Surveys were carried out outside bird breeding season, and as such no breeding bird surveys were carried out on site. Therefore, some cryptic species may have been missed during the scoping surveys. However, the measures outlined in Section 4.6 below, which are based on a precautionary approach, will mitigate potential impacts to breeding birds on site.
- Bat activity surveys were carried out during the Autumn months of 2022 under guidelines that have now been superseded by Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th)

Edition) (Collins, 2023). However, as there are no significant differences between these guidelines, or significant changes from the baseline of the Site, the measures outlined in Section 4.6.2.2.1 will act to mitigate potential impacts to bats utilising the Site.

4.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

4.3.1 HYDROLOGY, GEOLOGY, AND HYDROGEOLOGY

The Site is located in the Boyne Catchment (Catchment I.D 07) and in the Boyne_SC_110 Sub-catchment (Sub-catchment I.D.07_1) (EPA, 2024).

The Ferganstown and Ballymacon Stream (EU Code: IE_EA_07B041900) is located along the south and west boundaries of the Site and flows northwest to the River Boyne (EU Code: IE_EA_07B041900) 285m west of the Site. This river discharges to the Irish Sea via the Boyne Estuary (EU Code: IE_EA_010_0100) 28km northeast of the Site (EPA, 2024).

Both the Ferganstown and Ballymacon Stream and River Boyne are currently under review as to whether they will meet their Water Framework Directive (WFD) objectives and were designated a "*Moderate*" ecological status during the most recent 2016-2021 survey period (EPA, 2024). The EPA water quality monitoring data for the stations on the River Boyne located closest to the Site is summarised in **Error! Reference source not found.**. The reported Q-value results indicate that water quality in the River Boyne in the vicinity of the Site is poor to moderate.

| EPA Monitoring Station name | Station Code | Location from Site | Distance from Site | Assigned Q value |
|--------------------------------|--------------|-----------------------|-----------------------|---------------------|
| 2km d/s Navan (LHS) | RS07B041900 | North downstream | 550m | 3-4 "Moderate" |
| Slane Rd Br Navan | RS07B011800 | West upstream | 1.34km | 3 "Poor" |

Table 4.2: EPA monitoring stations and assigned Q values

The Site of the Proposed Development is situated on the Trim (EU Code: IE_EA_G_002) groundwater body. The bedrock aquifer identified beneath the Site is mapped as "Locally Important Aquifer - Bedrock which is Generally Moderately Productive" (Lm) (GSI, 2023). The Groundwater Vulnerability Rating assigned to groundwater beneath the Site is mapped as "High" (H) (GSI, 2024).

The soil beneath the Site is mapped as "*Elton*" described as "*Fine loamy drift with limestones*" (GSI, 2023), and the subsoil is primarily "Limestone till (Carboniferous) (TLs), with areas of "*Lake sediments undifferentiated*" (L) and "*Sandstone and shale till (Lower Paleozoic*)" (TLPSsS) within the northwest of the Site (GSI, 2024).

The Waterbody Status for river, groundwater, and transitional water bodies relevant to the Site as recorded by the EPA (2024) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 4.3.

| Waterbody Name | Water body; EU code | Location from Site | Distance from Site | WFD water body status (2016-2021) | WFD 3 rd cycle Risk Status | Hydraulic Connection to the Site |
|----------------------|------------------------|-----------------------------------|-----------------------|---|---|--|
| Surface Water Bodies | | | | | | |
| Ferganstown and | IE_EA_07B0 41900 | Abutting the south and west | N/A | Moderate | Review | Surface water drainage from the Site |

Table 4.3: WFD Risk and Water Body Status

| Waterbody Name | Water body; EU code | Location from Site | Distance from Site | WFD water body status (2016-2021) | WFD 3 rd cycle Rtsk Status | Hydraulic Connection to the Site |
|----------------------|------------------------|------------------------|-----------------------|---|---|---|
| Ballymacon Stream | | boundaries of the Site | | | | ED. |
| River Boyne | IE_EA_07B0 41900 | Northeast | 285m | Moderate | Review | Downstream of the Site via the Ferganstown and Ballymacon Stream |
| Transitional Wate | er Bodies | | | | | ×. |
| Boyne Estuary | IE_EA_010_ 0100 | Northeast | 28km | Moderate | At Risk | Downstream of the River Boyne |
| Groundwater Bodies | | | | | | |
| Trim | IE_EA_G_00 2 | N/A | N/A | Good | At Risk | Underlying groundwater-body |

4.3.1.1 Water Framework Directive (WFD)

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The WFD was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles; the second cycle ran from 2016 – 2021, and the current (third) cycle runs from 2022-2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

Considering all requirements for compliance with the WFD, the Proposed Development will not cause a deterioration in status in any water body, will not prevent it from achieving Good Ecological Status (GES) or Good Ecological Potential (GEP); there are no cumulative impacts with other Schemes; and it complies with other environmental legislation.

It can be concluded that the Proposed Development complies with all requirements of the WFD. Taking into consideration the impacts of the Proposed Development on the biological, physio-chemical and hydromorphological quality elements, it is concluded that following the implementation of design and mitigation measures, it is concluded that it will not compromise progress towards achieving GES or GEP or cause a deterioration of the overall status of the water bodies that are in scope; it will not compromise the qualifying features of protected areas and is compliant with other relevant Directives. It can therefore be concluded that the Proposed Scheme is fully complaint with WFD and therefore does not require assessment under Article 4.7 of the WFD.

4.3.2 DESIGNATED SITES

All European sites potentially linked to the Proposed Amendments have been identified and fully assessed in the AA Screening Report (Stage 1 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below in section 4.3.2.1.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 4.3.3.

4.3.2.1 European sites – Appropriate Assessment

The following conclusions are extracted from the AA and NIS accompanying this application under separate covers:

"The Proposed Development at Boyne Village (Phase 1B), Athlumney, Navan, Co. Meath has been assessed taking into account:

- The nature, size and location of the proposed works and possible impacts arising from the 16.D. 01/06/201 construction works.
- The QIs and conservation objectives of the European sites.
- The potential for in-combination effects arising from other plans and projects.

In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility cannot be excluded that the Proposed Development will have a significant effect on any of the European sites listed below:

- River Boyne and River Blackwater SAC (002299).
- River Boyne and River Blackwater SPA (004232). •

In carrying out this AA screening, mitigation measures have not been taken into account. Standard best practice construction measures which could have the effect of mitigating any effects on any European Sites have similarly not been taken into account.

On the basis of the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available and objective information, that the possibility of any significant effects on the above listed European sites, whether arising from the project itself or in combination with other plans and projects, cannot be excluded in light of the above listed European sites' conservation objectives. Thus, there is a requirement to proceed to Stage 2 of the Appropriate Assessment process; and a NIS has been prepared and accompanies this submission under separate cover."

"This NIS details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect impacts of the Proposed Development at Boyne Village (Phase 1B), Athlumney, Navan, Co. Meath, on the following European Sites:

- River Boyne and River Blackwater SAC (002299).
- River Boyne and River Blackwater SPA (004232).

The above sites were identified by a screening exercise that assessed likely significant effects of a range of impacts that have the potential to arise from the Proposed Development. The Appropriate Assessment investigated the potential direct and indirect effects of the proposed works, both during construction/infill and operation, on the integrity and qualifying interests of the above European Site, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives.

Where potentially significant effects were identified, a range of mitigation and avoidance measures have been suggested to avoid them. This NIS has concluded that, once the avoidance and mitigation measures are implemented as proposed, the Proposed Development will not have an adverse effect on the integrity of the above European site(s), individually or in combination with other plans and projects. Where applicable, a suite of monitoring surveys have been proposed to confirm the efficacy of said measures in relation to ensuring no adverse impacts on the habitats of the relevant European sites have occurred.

As a result of the complete, precise, and definitive findings in of this NIS, it is considered, beyond reasonable scientific doubt, that the Proposed Development will have no significant adverse effects on the QIs, SCIs and on the integrity and extent of River Boyne and River Blackwater SAC (002299) and River Boyne and River Blackwater SPA (004232). Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site."

As such, European sites are not considered further in this report.

4.3.3 **OTHER DESIGNATED SITES**

4.3.3 OTHER DESIGNATED SITES
4.3.3.1 S-P-R links to Designated Sites
Potential impact pathways are discussed in the following sections in the context of the Proposed 10106101× Development as described in Section Error! Reference source not found.

Direct Pathways

Hydrological pathways

The Site of the Proposed Development is currently served by surface water drainage ditches that discharge to the Ferganstown and Ballymacon Stream and then ultimately to the River Boyne. The existing streams on site will be maintained or diverted to the Ferganstown and Ballymacon Stream (also referred to as the Millrace), and as such the surface water discharge from the Site will continue to flow to the River Boyne. Therefore, there is a hydrological pathway from the Site to designated sites located along the River Boyne; the Boyne Woods pNHA (001592), Slane Riverbank pNHA (001591), Crewbane Marsh pNHA (000553), Rossnaree Riverbank pNHA (001589), Dowth Wetland pNHA (001861), Boyne River Islands pNHA (001862), and Boyne Coast and Estuary pNHA (001957).

However, the potential for surface water generated at the Site of the Proposed Development to reach these downstream pNHAs and cause significant effects, during both the Construction and Operational Phase, is negligible due to the distances along the River Boyne, as outlined below, over which any potential pollutants that may enter this watercourse via drainage from the Site would become diluted to indiscernible levels. Potential impacts to this hydrological pathway would also be influenced and mitigated by the embedded standard best practise surface water protection measures outlined in the Outline Construction Environmental Management Plan (OCEMP) (Hendrick Ryan Consulting Engineers, 2024b) and NIS (Enviroguide, 2024) put in place on site during the Construction Phase, and the SUDS measures outlined in the Engineering Services Report (Hendrick Ryan Consulting Engineers, 2024a) during the Operational Phase of the Proposed Development. Surface water discharges would have to travel:

- 3.6km along the River Boyne before reaching the Boyne Woods pNHA, •
- 11.2km before reaching Slane Riverbank pNHA,
- 13.2km before reaching Crewbane Marsh pNHA,
- 16.4km before reaching Rossnaree Riverbank pNHA, •
- 21.6km before reaching Dowth Wetland pNHA, •
- 24.9km before reaching Boyne River Islands pNHA, and
- 32.7km before reaching the Boyne Coast and Estuary pNHA.

As such, the potential impact to these downstream pNHAs as a result of the Construction Phase of the Proposed Development is considered to be negligible.

No other designated sites are linked to the Site via hydrological means.

Hydrogeological pathways

Potential discharges to ground could potentially migrate vertically downward to the underlying bedrock aguifer and laterally within the aguifer to the downgradient receiving surface waterbodies, i.e., Ferganstown and Ballymacon Stream and the River Boyne, contributing to the hydrological pathway to designated sites downstream of the Site. However, no direct hydrogeological pathways to any designated sites exist due to the considerable distance and intervening watercourses in between the Proposed CEINED ONC Development and the designated sites along the River Boyne.

No other designated sites are linked to the Site via hydrogeological means.

Air and land pathways

Air and land pathways are considered to be limited to surrounding areas within approx. 200-300m from the site boundary for any noise and dust sources, depending on prevailing weather conditions. Addigonally, light spill is considered to be limited to areas within the Site and habitats immediately adjacent to the boundaries.

No air or land pathways from the Proposed Development to any European sites were identified, as the distance between the main area of the Site and the nearest designated site (Boyne Woods pNHA (001592) approx. 2.8km northeast) is deemed sufficient to exclude any potential for impacts from increases in noise, lighting and/or dust or other airborne pollutants.

Indirect pathways

The Site will be served by a proposed foul sewer network first by the temporary pumping station, and then the permanent pumping station as the Boyne Village Phase 1 is completed. Therefore, there is an indirect hydrological link between the Site and the downstream designated sites listed above via discharges from Navan WWTP during the Operational Phase.

The potential for foul water generated at the Site of the Proposed Development to reach designated sites within the River Boyne and cause significant effects, during the Construction and Operational Phases, is negligible due to:

- Separation of foul and surface water pipes in the design of the proposed project.
- The inclusion of SUDs measures (and petrol interceptors) and potential for dilution in the surface water network during heavy rainfall events during the operational phase of the project.
- The Navan WWTP is currently compliant with the Emission Limit Values set in the Wastewater Discharge Licence (Irish Water, 2022).
- The discharge from Navan WWTP does not have an observable impact on the water quality (Irish Water, 2022.
- The discharge from Navan WWTP does not have an observable negative impact on the WFD status (Irish Water, 2022).
- The Navan WWTP has additional hydraulic capacity and organic capacity, as the current annual max hydraulic loading is slightly below 87% of the peak hydraulic capacity as constructed, and the collected organic load is 85% of the organic capacity as constructed (Irish Water, 2020).

4.3.3.2 Relevant Designated Sites

A designated site will only be at risk from likely significant effects where an S-P-R link of note exists between the Proposed Development and the designated site. All designated sites considered as part of the S-P-R method (excl. European sites) are listed in Table 4.1 and shown in Figure 4.3. There are no sites with notable S-P-R links to the Proposed Development and will therefore not be assessed further in this report as KERs of 'National Importance' (pNHAs and NHAs) or 'International Importance' (SACs/SPAs, UNESCO sites, Ramsar sites).

や

Table 4.4: Designated sites considered with the Source-Pathway-Receptor (S-P-R) method to establish notable links between the sources of effects arising from the Proposed Development, and any relevant designated sites. those sites with notable S-P-R links that are further assessed in this report are highlighted in green (if any).

| Site Name & Code (Receptor) | Distance to Site of Proposed Development | Designation Rationale / Site Description | Potential Pathway to receptors |
|---|--|--|---|
| | · | Proposed Natural Heritage Areas | 020 |
| Boyne Woods pNHA (001592) | 3.6 river km | None available, assumed to overlap with River Boyne and River Blackwater SAC (002299) (NPWS 2021) and River Boyne and River Blackwater SPA (004232) (NPWS 2022): Habitats [7230] Alkaline fens [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [1099] <i>Lampetra fluviatilis</i> (River Lamprey) [1106] <i>Salmo salar</i> (Salmon) [1355] <i>Lutra lutra</i> (Otter) Birds [A229] Kingfisher (<i>Alcedo atthis</i>) | |
| Slane Riverbank pNHA (001591) | 11.2 river km | A small area along the southern bank of the River Boyne home to rare rush species. | Ballymacon Stream and the River Boyne, deemed insignificant due to distance and dilution. |
| Crewbane Marsh pNHA (000553) | 13.2 river km | A small area of freshwater marsh, which occurs on a very wet alluvial floodplain along the northern bank of the River Boyne. The south-facing valley slope above the marsh is covered by deciduous woodland dominated by ash and sycamore. Animal life in the wood is relatively rich with badgers, stoat and red squirrel. | No other potential pathways identified. |
| Rossnaree Riverbank pNHA (001589) | 16.4 river km | A single field beside the River Boyne. This grassland habitat often floods in winter time and contains a colony of the rush <i>Juncus compressus</i> . | |
| Dowth Wetland pNHA (001861) | 21.6 river km | A small herd of red deer graze within the site. This site is the best remaining example of a floodplain marsh on the River Boyne. | |

| | | | Pro- |
|---|--|--|--------------------------------|
| Site Name & Code (Receptor) | Distance to Site of Proposed Development | Designation Rationale / Site Description | Potential Pathway to receptors |
| Boyne River Islands pNHA (001862) | 24.9 river km | Site Synopsis (NPWS, 2014) The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build-up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, willow (<i>Salix spp.</i>) woodland, with the following species occurring: osier (<i>S. viminalis</i>), crack willow (<i>S. fragilis</i>), white willow (<i>S. alba</i>), purple willow (<i>Salix purpurea</i>) and rusty willow (<i>S. cinerea subsp.</i> <i>oleifolia</i>). | D. OHOGRODE |
| Boyne Coast and Estuary pNHA (001957) | 32.7 river km | None available, assumed to overlap with Boyne Coast and Estuary SAC (001957) (NPWS 2012) and Boyne Estuary SPA (004080) (NPWS 2013): Habitats [1130] Estuaries [1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] Salicornia and other annuals colonising mud and sand [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) Birds [A048] Shelduck (<i>Tadorna tadorna</i>) [A130] Oystercatcher (<i>Haematopus ostralegus</i>) [A140] Golden Plover (<i>Pluvialis apricaria</i>) [A141] Grey Plover (<i>Pluvialis squatarola</i>) [A142] Lapwing (<i>Vanellus vanellus</i>) [A143] Knot (Calidris canutus) | |

| | | | P _K |
|--------------------------------|--|---|--------------------------------|
| Site Name & Code (Receptor) | Distance to Site of Proposed Development | Designation Rationale / Site Description | Potential Pathway to receptors |
| | | [A144] Sanderling (<i>Calidris alba</i>) [A156] Black-tailed Godwit (<i>Limosa limosa</i>) [A162] Redshank (<i>Tringa totanus</i>) [A169] Turnstone (<i>Arenaria interpres</i>) [A195] Little Tern (<i>Sterna albifrons</i>) [A999] Wetland and Waterbirds | 0.01062024 |



4.3.4 HABITATS

The habitats present within the Site, as recorded in the survey area during the field survey, are described in this section and summarised below. Site photographs of these habitats are included in Appendix G 10.0106102× Volume III of this EIAR and a map of the habitats is presented in below.

- Improved Agricultural Grassland (GA1);
- Arable Crop (BC1); •
- Treeline (WL2); •
- Hedgerow (WL1);
- Drainage Ditch (FW4);
- Buildings and Artificial Surfaces (BL3); and
- Spoil and Bare Ground ED2.

The predominant habitat on site is Improved Agricultural Grassland (GA1) (Error! Reference source not found.), with dock (Rumex sp.), dandelion (Taraxacum officinale agg.), nettle (Urtica dioica), clover (Trifolium sp.), rosebay willowherb (Chamaenerion angustifolium), buttercup (Ranunculus sp.), and cocksfoot (Dactylis glomerata) observed throughout this habitat. A field Arable Crop (BC1) habitat was recorded within the central and west areas of the Site (Error! Reference source not found.). The arable field is separated from the south and north grasslands by mature Treeline (WL2) habitat comprised of ash (Fraxinus excelsior), elder (Sambucus nigra), sweet briar (Rosa rubiginosa), and bramble (Rubus fruticosus agg.), with ivy (Hedera helix) cover throughout (Error! Reference source not found.). The remaining fields are separated and bordered by Hedgerow (WL1) habitat, primarily consisting of hawthorn (Crataegus monogyna), along with the shrub and tree species observed within the treeline (Error! Reference source not found.).

A Drainage Ditch (FW4) was recorded beneath the hedgerow along the south of the Site and the hedgerow extending north from the arable crop field (Error! Reference source not found.), with dry ditches present beneath most of the linear vegetation on site. Buildings and Artificial Surfaces (BL3) habitat was recorded on site in the form of the newly constructed roundabout on the LDR 6 road to the north of the Site. Spoil and Bare Ground Habitat (ED2) was present within the southeast of the Site as an access pathway extending southwards.



4.3.5 SPECIES AND SPECIES GROUPS

4.3.5.1 Flora

4.3.5.2 Rare and Protected Flora

The Site of the Proposed Development is located within the Ordnance Survey 10km Grid Square (N86), and 2km Grid Squares (N86Y and N86Z). Species records from the NBDC online database show these grid squares were studied for the presence of rare and/or protected species within the last 20 years. This database contained no records of protected flora within the last 20 years, however, one vulnerable plant species occurred within the 10km Grid Square (N86), namely meadow crane's-bill (*Geranium pratense*) 33.7km southwest of the Site. The FPO Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development. No rare and/or protected bryophyte records exist within the immediate vicinity of the Proposed Development.

4.3.5.3 Invasive Species

There are records for six species of flora considered to be invasive within the 2km grid squares which encompass the Site of the Proposed Development. Details of these records are listed in Table 4.5.

| Table 4.5: Records of inv | vasive s | pecies of | flowering | plant for | the | surrounding | 2km | (N86Y | and | N86Z) | grid |
|---------------------------|----------|------------|-----------|-----------|-----|-------------|-----|-------|-----|-------|------|
| squares associated with | the Site | from the M | NBDC | | | | | | | | |
| | | | | | | | | | | | |

| Species | Grid squar e | Date of last record | Source | Designations |
|---|--------------------|--------------------------|--|--|
| Butterfly-bush (<i>Buddleja davidii</i>) | N86Y | 09/01/2021 | Vascular plants: Online Atlas of Vascular Plants 2012 Onwards | Medium Impact Invasive Species |
| Cherry Laurel (<i>Prunus laurocerasus</i>) | N86Y N86Z | 13/01/2023 27/09/2005 | Vascular plants: Online Atlas of Vascular Plants 2012 Onwards. Species Data from the National Vegetation Database | High Impact Invasive Species |
| Indian Balsam (<i>Impatiens</i> glandulifera) | N86Z | 20/07/2021 | Vascular plants: Online Atlas of Vascular Plants 2012 Onwards | High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) |
| Japanese Knotweed (<i>Reynoutria japonica</i>) | N86Y | 15/10/2009 | National Invasive Species Database | High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) |
| Sycamore (<i>Acer pseudoplatanus</i>) | N86Y N86Z | 21/09/2013 27/09/2005 | Irish Vascular Plant Data - Paul Green. Species Data from the National Vegetation Database | Medium Impact Invasive Species |
| Three-cornered Garlic (<i>Allium triquetrum</i>) | N86Y N86Z | 22/03/2023 05/04/2022 | Vascular plants: Online Atlas of Vascular Plants 2012 Onwards | Medium Impact Invasive Species |



| Species | Grid squar e | Date of last record | Source | Designations |
|---------|--------------------|------------------------|--------|---------------------------------------|
| | | | | Regulation S.I. 477/2011 (Ireland) |
| | | | | 0 |

No invasive floral species were recorded on site, including those listed in the Third Schedule of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended).

4.3.5.4 Bats

4.3.5.4.1 Desk Study Results

A total of six bat species have been recorded within the 10km (N86) grid square which encompasses the Site (Table 4.6).

| Table 4.6: Records of bats f | ior the surro | unding 10km grid | squares (N86) | associated with th | e Site from the |
|------------------------------|---------------|------------------|---------------|--------------------|-----------------|
| NBDC. | | | | | |
| | | | | | |

| Species | Date of last record | Database | Designation |
|---|---------------------------|--|--|
| Brown Long-eared Bat (<i>Plecotus auritus</i>) | 19/05/2015 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |
| Daubenton's Bat (<i>Myotis daubentonii</i>) | 23/08/2013 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |
| Lesser Noctule (<i>Nyctalus leisleri</i>) | 19/05/2015 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |
| Natterer's Bat (<i>Myotis nattereri</i>) | 02/10/2011 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |
| Common Pipistrelle (Pipistrellus pipistrellus) | 19/05/2015 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |
| Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>) | 19/05/2015 | National Bat Database of Ireland | EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended) |

The Site (indicated in the black box in Figure 4.5 is located in an area with an overall Medium-High (35.89) suitability for bats in general. The suitability index for specific bat species is presented in Table 4.7. The landscape suitability index is high for six species of bats; soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (Plecotus auritus), common pipistrelle (Pipistrellus pipistrellus), lesser noctule (Nyctalus leislerii), Daubenton's bat (Myotis daubentonii), and Natterer's bat (Myotis nattereri). 01/06/202*

| Table 4.7: Landscape Suitabi | lity Index for individual bat species |
|------------------------------|---------------------------------------|
|------------------------------|---------------------------------------|

| Bat Species | Suitability Index (2km Grid Square) |
|--|--|
| Soprano pipistrelle (Pipistrellus pygmaeus) | 45 (High) |
| Brown Longed-eared bat (Plecotus auritus) | 45 (High) |
| Common pipistrelle (Pipistrellus pipistrellus) | 51 (High) |
| Lesser horseshoe bat (Rhinolophus hipposideros) | 0 (Low) |
| Lesser Noctule (Nyctalus leisleri) | 51 (High) |
| Whiskered bat (Myotis mystacinus) | 32 (Medium-High) |
| Daubenton's bat (Myotis daubentonii) | 40 (High) |
| Nathusius' pipistrelle (Pipistrellus nathusii) | 17 (Low-Medium) |
| Natterer's bat (Myotis nattereri) | 41 (High) |

(Source: NBDC). Those species that have been recorded in the NBDC database within the N86 10km grid square are highlighted in green.)

Figure 4.3: Bat Landscape Suitability Model



(All bats) surrounding the Site (Adapted from NBDC).

4.3.5.4.2 Wildlife Surveys Ireland Survey Results

Moderate to high levels of bat activity were recorded on site on the 9th of May 2021, with bats foraging around the agricultural shed and along the hedgerows, particularly where they intersect close to the shed. No bats were recorded roosting within the shed. Three bat species were recorded commuting through and foraging on site, namely common pipistrelle, soprano pipistrelle, and lesser noctule. Common pipistrelle and soprano pipistrelle were recorded foraging around shed, and lesser noctule was recorded less frequently.

Moderate to high levels of bat activity were recorded on site on the 18th of September 2020, with common pipistrelles observed roosting within at least two places within the timber joints in the agricultural shed. Over 500 bat passes were recorded within the area surrounding the shed. Three bat species were recorded commuting through and foraging on site, namely common pipistrelle, soprano pipistrelle, and lesser noctule. Several mature trees were found to have bat roost potential.

4.3.5.4.3 Field Survey Results

Bat Roost Assessment and Habitat Suitability

Although presenting limited roosting suitability, the barn structure, while outside the boundary of the Site, has been used as a bat roost in previous years, with common pipistrelle (*Pipistrellus pipistrellus*) recorded roosting in at least two places within the barn in September 2019 (Wildlife Surveys Ireland, 2019). Surveys carried out by Wildlife Surveys Ireland in May 2021 however recorded no roosting within the barn. It is noted that the barn is open to the elements due to its typical livestock shed design i.e., large entrance and wall voids.

It is noted that the barn and associated demolition works are included as part of a separate permitted phase (Phase 1A Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) of the overall masterplan for the Athlumney area surrounding the Site (i.e., not part of the Proposed Development (Phase 1B of the Boyne Village)), however are included here to provide further context in terms of likely bat usage of the Site and surrounding lands. The daytime PBR assessments of the site focused on the hedgerows and treelines that run along the various field boundaries at the Site. No confirmed bat roosts were noted during surveys.

Overall, the trees in the vicinity of the Site provide little roost potential due to the general lack of PRFs. The majority of the field boundaries comprise of hawthorn hedgerows with scattered semi-mature ash trees. The trees were noted as having negligible to low roost potential as per Table 4.1 of the *Bat Conservations Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016) during both the September 2022 and July 2023 ground-based roost assessments.

The treelines and hedgerows provide a linear vegetated structure for bats to commute and forage along. These features encountered on site were assigned a moderate commuting/foraging suitability as per Table 4.1 of Collins (2016), due to their connectivity with other field boundary treelines/hedgerows in the surrounding landscape, and the presence of the Boyne River corridor to the northwest.

Bat Activity Survey

The dusk bat activity survey conducted on the 21st of September 2022 focussed on the treeline and hedgerows that make up the various field boundaries at the Site and surrounding lands. The barn adjacent to the Site (which is permitted for demolition under Phase 1A) was also included in the survey. Three bat species were recorded: lesser noctule, common pipistrelle, soprano pipistrelle. Soprano pipistrelle was the most common bat species recorded on the night and accounted for 45% (52) of all records, followed by common pipistrelle at 44% (50) and lesser noctule at 10% (12).

Most activity was focused along a treeline to the north of the Site, within a separate phase of the masterplan area. Common pipistrelle in particular exhibited high foraging activity along the ength of this treeline with "feeding buzzes" (rapid calls emitted before capturing prey) and social calls recorded (as per Russ, 2012).

Low levels of bat activity were recorded along the field boundaries in the south and central parts of the Site. A high level of bat activity was also recorded in and around the barn during both Enviroguide dusk surveys in 2022, but no confirmed emergence or evidence of roosting was recorded. Lesse poctule was also recorded overhead in the vicinity of the barn during the survey on the September survey with five records of individual bats between 20:36 and 20:38 (call shape indicative of bats foraging in the open).

Soprano pipistrelle foraging activity was high within and around the barn during both surveys, with multiple bats picked up by the bat detector and social calls and feeding buzzes present.

Soprano pipistrelle was the only species recorded during the 4th of October 2022 survey, with high foraging activity recorded (evidenced by feeding buzzes and visual observations) within and around the barn and low activity within the field to the north of the barn. During the October survey, surveyors noted at least 3-4 bats flying in and out of the barn.

4.3.5.4.4 Evaluation

The treelines and hedgerows running through the Site represent high value foraging and commuting habitat within the context of the Site and surrounding lands. As such it is considered likely that the Site and the habitats connected to the Site via ecological corridors of linear vegetation may support regularly occurring populations of the more common Irish bat species.

Figure 4.4: Bat Activity Map



43 species are all green listed and are detailed in Table 4.8

4.3.5.5 Birds

4.3.5.5.1 **Desk study Results**

RECEIL A total of 77 bird species have been recorded within the N86 10 km grid square. Of these, 24 are amber listed birds and ten are red listed birds as identified on the Birds of Conservational Concern in Ireland (BoCCI) (Gilbert et al. 2021). Details of amber and red listed species are detailed in below. The remaining

Table 4.8: Details of amber and red listed bird species within the 10km grid square (N81)

| Species | Date of record | BoCCI Status |
|---|----------------|-----------------|
| Barn Owl (<i>Tyto alba</i>) | 02/11/2020 | Red |
| Kestrel (Falco tinnunculus) | 31/12/2011 | Red |
| Snipe (Gallinago gallinago) | 13/12/2020 | Red |
| Swift (Apus apus) | 16/05/2022 | Red |
| Grey Wagtail (Motacilla cinerea) | 04/02/2023 | Red |
| Meadow Pipit (Anthus pratensis) | 08/01/2023 | Red |
| Lapwing (Vanellus vanellus) | 31/12/2011 | Red |
| Redwing (Turdus iliacus) | 15/12/2022 | Red |
| Stock Pigeon (Columba oenas) | 31/12/2011 | Red |
| Yellowhammer (Emberiza citrinella) | 31/05/2021 | Red |
| Swallow (Hirundo rustica) | 02/04/2021 | Amber |
| Black-headed Gull (Larus ridibundus) | 03/01/2023 | Amber |
| Brambling (Fringilla montifringilla) | 31/12/2011 | Amber |
| Coot (Fulica atra) | 31/12/2011 | Amber |
| Kingfisher (Alcedo atthis) | 01/01/2023 | Amber |
| Linnet (Carduelis cannabina) | 31/12/2011 | Amber |
| Common Sandpiper (Actitis hypoleucos) | 24/04/2010 | Amber |
| Starling (Sturnus vulgaris) | 07/01/2023 | Amber |
| Tree Sparrow (Passer montanus) | 31/12/2011 | Amber |
| Greenfinch (Carduelis chloris) | 01/01/2023 | Amber |
| Goldcrest (Regulus regulus) | 29/11/2020 | Amber |
| Cormorant (Phalacrocorax carbo) | 06/02/2023 | Amber |
| Hen Harrier (Circus cyaneus) | 31/12/2011 | Amber |
| Herring Gull (Larus argentatus) | 07/01/2023 | Amber |
| House Martin (Delichon urbicum) | 06/06/2020 | Amber |
| House Sparrow (Passer domesticus) | 01/01/2023 | Amber |
| Lesser Black-backed Gull (Larus fuscus) | 25/02/2023 | Amber |
| Mallard (Anas platyrhynchos) | 28/02/2023 | Amber |
| Mew Gull (<i>Larus canus</i>) | 31/12/2011 | Amber |
| Mute Swan (Cygnus olor) | 07/06/2020 | Amber |
| Sand Martin (Riparia riparia) | 19/05/2020 | Amber |

| Species | Date of record | BoCCI Status |
|---|-------------------|-----------------|
| Sky Lark (Alauda arvensis) | 31/12/2011 | Amber |
| Spotted Flycatcher (Muscicapa striata) | 31/12/2011 | Amber |
| Willow Warbler (Phylloscopus trochilus) | 13/06/2020 | Amber |

4.3.5.5.2 **Field Survey Results**

SCEINED: ON OGINOR During the site walkovers carried out in October and November 2022 and July 2023, 20 species of birds were recorded (see table 4.9). Of these, yellowhammer (Emberiza citrinella), meadow pipit (Anthus pratensis), and snipe (Gallinago gallinago) are red listed, goldcrest (Regulus regulus), linnet (Linaria cannabina), and herring gull (Larus argentatus) are amber listed, and the remaining 14 species are green listed (Gilbert et al. 2021). Additionally, a barn owl (Tyto alba) breeding habitat assessment was carried out in July 2020 by John Lusby of BirdWatch Ireland and it was determined the derelict agricultural shed adjacent to the central area of the Site (located in Phase 1A outside of this project site) did not hold potential breeding features for barn owls. However, barn owl was also noted on site by Wildlife Surveys Ireland during the bat surveys in September 2021.

| Species | BoCCI Status |
|---------------------------------------|-----------------|
| Yellowhammer (Emberiza citrinella) | Red |
| Meadow Pipit (Anthus pratensis) | Red |
| Snipe (Gallinago gallinago) | Red |
| Goldcrest (Regulus regulus) | Amber |
| Linnet (<i>Linaria cannabina</i>) | Amber |
| Herring Gull (Larus argentatus) | Amber |
| Song Thrush (Turdus philomelos) | Green |
| Buzzard (Buteo buteo) | Green |
| Blackbird (Turdus merula) | Green |
| Hooded Crow (Corvus cornix) | Green |
| Chaffinch (Fringilla coelebs) | Green |
| Stonechat (Saxicola torquatus) | Green |
| Goldfinch (Carduelis carduelis) | Green |
| Woodpigeon (Columba palumbus) | Green |
| Robin (Erithacus rubecula) | Green |
| Blue Tit (Cyanistes caeruleus) | Green |
| Wren (Troglodytes troglodytes) | Green |
| Goldcrest (Regulus regulus) | Green |
| Long-tailed Tit (Aegithalos caudatus) | Green |
| Pheasant (Phasianus colchicus) | n/a |

4.3.5.5.3 Evaluation

The Site of the Proposed Development does not offer significant *ex-situ* habitat for wintering bird species as it is comprised primarily of grassland habitat of varying sward height, is subject to disturbance due to adjacent construction works to the south of the Site, and the and the abundance of similar habitats within the landscape surrounding the Site.

Considering the variety of bird species recorded both in the historical records and during the various field surveys, it is considered that the Site contains resident and regularly occurring, locally important populations of breeding bird species protected under the Wildlife Act.

4.3.5.6 Mammals (excl. bats)

4.3.5.6.1 Desk Study Results

Records for terrestrial mammals were obtained from the NBDC online database. Table 4.10 lists these species, their date of last record and summarises their protected status/designation. In total, 12 mammal species (nine native and three non-native or invasive) were recorded within the grid squares which encompass the Site.

| Table 4.10: Records of terrestrial mammals | (native and non-nativ | ve) for the surrounding | 10km (N86) grid |
|---|-----------------------|-------------------------|-----------------|
| square associated with the Site from the NB | DC. | - | |

| Species | Date of last record | Source | Designation |
|--|------------------------|--|--|
| | Ν | IATIVE SPECIES | |
| Eurasian Badger (<i>Meles meles</i>) | 31/12/2016 | Badger Setts of Ireland Database | Wildlife Act 1976 (as amended) |
| Eurasian Pygmy Shrew (Sorex minutus) | 30/11/2014 | Atlas of Mammals in Ireland 2010- 2015 | Wildlife Act 1976 (as amended) |
| Eurasian Red Squirrel (<i>Sciurus vulgaris</i>) | 29/11/2015 | Atlas of Mammals in Ireland 2010- 2015 | Wildlife Act 1976 (as amended) |
| European Otter (<i>Lutra</i> <i>lutra</i>) | 14/06/2015 | Atlas of Mammals in Ireland 2010- 2015 | Wildlife Act 1976 (as amended) EU Habitats Directive – Append II & IV |
| | | | |
| Irish Hare (Lepus timidus subsp. hibernicus) | 20/07/2017 | Mammals of Ireland 2016-2025 | Wildlife Act 1976 (as amended) EU Habitats Directive – Annex V |
| Pine Marten (<i>Martes martes</i>) | 01/06/2021 | Mammals of Ireland 2016-2025 | Wildlife Act 1976 (as amended) EU Habitats Directive – Annex V |
| Red Deer (<i>Cervus elaphus</i>) | 26/03/2017 | Mammals of Ireland 2016-2025 | Wildlife Act 1976 (as amended) |
| Red Fox (Vulpes vulpes) | 20/12/2022 | Mammals of Ireland 2016-2025 | Not legally protected |

| Species | Date of last record | Source | Designation |
|--|------------------------|--|--|
| West European Hedgehog (<i>Erinaceus</i> <i>europaeus</i>) | 22/12/2022 | Mammals of Ireland 2016-2025 | Wildlife Act 1976 (as amended) |
| NON-NATIVE AND INVAS | SIVE SPECIES | | .07 |
| American Mink (<i>Mustela vison</i>) | 30/09/2010 | Atlas of Mammals in Ireland 2010- 2015 | High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) |
| Eastern Grey Squirrel (<i>Sciurus carolinensis</i>) | 01/01/2023 | Mammals of Ireland 2016-2025 | High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) |
| European Rabbit (<i>Oryctolagus cuniculus</i>) | 27/05/2018 | Mammals of Ireland 2016-2025 | Medium Impact Invasive Species |

4.3.5.6.2 Field Survey Results

Evidence of badger was recorded on site on the 28th of October and 4th of November 2022 in the form of large mammal trails, latrines, snuffles holes and sett entrances. A sett was recorded within the southern treeline of the arable field, and showed signs of recent excavation with old bedding next to the entrance. It is presumed this is the sett that was identified during the previous surveys carried out by Wildlife Surveys Ireland in February 2020 and May 2021. Snuffle holes were recorded along the margins of the bare ground access road close to the sett, and latrines were observed along the hedgerow and drainage ditch within the north of the Site. Mammal trails were recorded throughout the grassland habitat on site.

A trail camera was placed at the entrance of the sett, under license from NPWS, from the 21st of June to the 26th of June 2023. An adult badger was recorded commuting along the treeline several times and carrying fresh bedding from a hay pile deposited in the northern area of the treeline to another suspected entrance further south along the treeline.

A fox (*Vulpes vulpes*) was observed mousing (pouncing from above to hunt rodents) within the south field of the Site. Fox scat was also observed throughout the Site.

The habitats available at the Site also have the potential to support pygmy shrew (*Sorex minutus*), hedgehog (*Erinaceus europaeus*), and Irish hare (*Lepus timidus subsp. hibernicus*).



4.3.5.6.3 Evaluation

The Site could potentially support resident and regularly occurring and locally important populations of native mammals, such as badger, hare, hedgehog, Irish stoat, and pygmy shrew. D. ONOGIAOR

4.3.5.7 Other Fauna

4.3.5.7.1 Amphibians

Both common frog (Rana temporaria) and smooth newt (Lissotriton vulgaris) have been recorded in the 10km (N86) grid squares encompassing the Site of the Proposed Development.

No amphibians were recorded in the wet drainage ditches on site during the surveys in October and November 2022 and July 2023. However, it is likely that any pooling areas of water within the ditch or stream may support spawn, and that both common frog and smooth newt could be present at the Site and the immediately adjacent habitats. As no targeted surveys for amphibians were carried out, it is assumed under the precautionary principle that locally important populations of these species may be present at the Site.

Common Lizard 4.3.5.7.2

No records of common lizard (Zootoca vivipara) exist for the relevant 10km grid square. However, there is suitable habitat for this species within the Site of the Proposed Development, such as beneath hedgerow vegetation and brash piles. As no targeted surveys for common lizard were carried out, it is assumed under the precautionary principle that a locally important population of this species may be present at the Site as this species is ubiquitous throughout Irish landscapes and is likely to be present where suitable habitats are present.

4.3.5.7.3 Fish

There is a record of European eel (Anguilla anguilla) within the River Boyne in the relevant 10km grid square. The main channel of the River Boyne is a designated salmonid river under the EU Freshwater Fish Directive (78/659/EEC) and the Boyne Woods pNHA (001592), therefore it is assumed Atlantic salmon (Salmo salar) and brown trout (Salmo trutta) are present within this watercourse. As the Site is hydrologically linked to this river, the fish assemblage of the River Boyne will be considered as part of this EcIA. The drainage ditches on site are not considered suitable for the above mentioned fish species.

4.3.5.8 Protected and/or Notable Species Unlikely to Occur at the Site

Other notable and/or rare species and species listed on Annex IV of the Habitats Directive that were considered but that are unlikely to occur at the Site include:

- Flora
 - Marsh saxifrage (Saxifraga hirculus) Known populations only in Co. Mayo. 0
 - Killarney fern (Vandenboschia speciosa) Nearest known populations in Co. Wicklow, not 0 recorded at the Site, no suitably sheltered and moist habitats available.
 - Slender naiad (Najas flexilis) A clear water, lowland lake species. No suitable habitat 0 available at the Site.

- Fauna
 - White-clawed crayfish (*Austropotamobius pallipes*) Not recorded within the relevant 10km grid square or within the River Boyne downstream of the Site, adjacent ditches and streams not considered suitable for this species due to low quality.
 - Freshwater pearl mussel (*Margaritifera margaritifera*) Not recorded within the River Boyne, which is not listed as a *M. margaritifera* sensitive area.
 - Natterjack toad (*Epidalea calamita*) Distribution restricted to few coastal sites.
 - Kerry slug (Geomalacus maculosus) Distribution restricted to south and west of Ireland.

4.3.6 EVALUATION OF ECOLOGICAL FEATURES

Habitats have been evaluated for their conservation importance, based on the NRA evaluation scheme (NRA, 2009b). Those selected as KERs are those which are evaluated to be of at least local importance (higher value).

Fauna that has the potential to utilise the Site and immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated for their conservation importance. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009b).

The impacts of the Proposed Development on the identified KERs are assessed in section 4.7 below which summarises the evaluation rating assigned to each ecological feature and the rationale behind these evaluations is also provided.

| Table 4.11: Evaluation | of Designated | Sites, Habitats, | Flora and | Fauna rec | corded within | the Site | and the |
|------------------------|---------------------------|------------------|--------------|-------------|----------------|----------|---------|
| surrounding area. Tho: | se identified as k | Key Ecological R | leceptors (H | KERs) are I | highlighted in | n green. | |
| | | | | | Kov | | |

| Species / Species Group | Evaluation | Rationale | Key Ecological Receptor (KER) |
|--|---------------------------------------|---|--|
| | | | |
| Improved Agricultural Grassland (GA1) | Local Importance (Lower Value) | Low diversity grassland habitat of low biodiversity value. | No |
| Arable Crop (BC1) | Local Importance (Lower Value) | Man-made monoculture of low biodiversity value. | No |
| Treeline (WL2) | Local Importance (Higher Value) | Linear mature habitat which acts as an ecological corridor to the wider landscape and offers foraging, commuting, and nesting habitat for local wildlife. | Yes |
| Hedgerow (WL1) | Local Importance (Higher Value) | Linear mature habitat which acts as an ecological corridor to the wider landscape and offers foraging, commuting, and nesting habitat for local wildlife. | Yes |
| Drainage Ditch (FW4) | Local Importance (Higher Value) | Hydrologically linked to the Site via potential surface water run-off and flows to the River Boyne. Also acts as an ecological corridor for aquatic species. | Yes |

| Species / Species Group | Evaluation | Rationale | Key Ecological Receptor (KER) | |
|---|---------------------------------------|---|--|--------|
| Buildings and Artificial Surfaces (BL3) | Local Importance (Lower Value) | Man-made habitat of negligible biodiversity value. | No On | |
| Spoil and Bare Ground ED2 | Local Importance (Lower Value) | Man-made habitat of negligible biodiversity value. | No | C'LOLX |
| | | FLORA | | |
| Rare & Protected Flora | Local Importance (Lower Value) | No rare or protected flora were recorded during the field surveys. Unlikely to be present in notable numbers/densities. | No | |
| Invasive Species | Negligible value | No invasive species were recorded during the field surveys. | No | |
| | | NATIVE FAUNA | | |
| Bat Assemblage | Local Importance (Higher Value) | Three Annex IV bat species were recorded foraging and commuting within the Site. | Yes | |
| Potential Breeding Bird Assemblage | Local Importance (Higher Value) | Variety of red, amber and green listed species recorded at the Site during the surveys, with suitable breeding habitat for a few notable species (e.g., Meadow Pipit). Due to lack of breeding bird surveys, assemblage evaluated as potentially locally important. | Yes | |
| Potential Wintering Bird Assemblage | Local Importance (Lower Value) | While one snipe was recorded at the Site, due to the abundance of suitable and similar agricultural habitats throughout the surrounding landscape, the Site is not considered to contain significant <i>ex-situ</i> habitat for SCI birds. | | |
| Badger | Local Importance (Higher Value) | An active badger sett was recorded within the Site of the Proposed Development. This species is protected under the Wildlife Act 1976 (as amended). | Yes | |
| Fox | Local Importance (Lower Value) | This species is not considered to be of conservation concern and is not afforded legal protection in Ireland. | No | |
| Irish Hare | | | | |
| Pine Marten | Local | Suitable habitats present for these small | | |
| Hedgehog | Local Importance (Higher Value) | Site has potential to support locally important populations of any of these | Yes | |
| Pygmy Shrew | (0,12, 1,2,2,0) | species. | | |
| Irish Stoat | | | | |

| Species / Species Group | Evaluation | Rationale | Key Ecological Receptor (KER) | |
|----------------------------|---------------------------------------|--|--|-----|
| Amphibians | Local Importance (Higher Value) | Suitable habitats in areas of the drainage ditches on site. Therefore, the Site has potential to support locally important populations of any of these species. | Yes | 503 |
| Common Lizard | Local Importance (Higher Value) | Suitable habitats present particularly within hedgerow habitat. Therefore, the Site has potential to support locally important populations of this species. | Yes | X |
| Fish assemblage | International Importance | No suitable habitat present within the Site, however may be present in the River Boyne, which is hydrologically linked to the Site. The main channel of the River Boyne is a designated salmonid river under the EU Freshwater Fish Directive (78/659/EEC) and may support international important populations of salmonoid species. | Yes | |

4.4 DESCRIPTION OF THE PROPOSED DEVELOPMENT

4.4.1 SITE LOCATION

The Site of the Proposed Development, as seen in below is 13.26 hectares, and is accessed via the Old Road, 290m north of the Athlumney Road (R153). The River Boyne is located 175m northwest of the Site. The south of the Site is bound by the Old Road, with residential properties neighbouring the southwest and southeast of the Proposed Development. Agricultural land bounds the remaining of the Site, with Saint Mary's Cemetery and Glenveigh Housing abutting the northwest area of the Site extending to the Boyne Road. The west and south of the Site are primarily urban in nature, with an agricultural landscape surrounding the north and east of the Proposed Development.

4.4.2 PROPOSED DEVELOPMENT DESCRIPTION

The (Phase 1B) development will consist of the construction of a mixed-use development on a site of c. 13.26 hectares comprising 322 no. dwellings, a Community Centre and Sports Hall, a Neighbourhood Centre, and a district public park as follows:

- A) 212 no. houses consisting of 177 no. 3-bedroom houses and 35 no. 4-bedroom houses (all houses 2-storeys except House Types F1, F2, F3 [corner], E1, E2, and E3 [corner] (with variations to finishes);
- B) 26 no. duplex units comprising 13 no. 2-bedroom units and 13 no. 3-bedroom units (in 2 no. 3storey blocks [with 8 no. duplex units abutting Apartment Block 2 in a 3-storey configuration];
- C) 84 no. apartments across 3 no. apartment buildings (Block 2 [5-storeys] comprises 24 no. apartments consisting of 12 no. 1-bedroom apartments and 12 no. 2-bedroom apartments), Block 3 [5-storeys above neighbourhood centre 6-storeys in total] comprising 36 no. apartments consisting of 14 no. 1- bedroom apartments and 22 no. 2-bedroom apartments and Block 4 [4-storeys above community centre 5-storeys in total] comprising 24 no. apartments consisting of 9 no. 1-bedroom apartments and 15 no. 2-bedroom apartments (all apartments with balconies).
- D) Series of landscaped/Public Open Space areas of c.3.72 hectares including playground areas and a Public Park of c.1.65 ha of open space as well as additional communal open space for the apartments and duplex apartments;

- E) Provision of a c. 512 sq. m creche at ground floor of Block 2 as well as a 1,778 sq.m. Community Centre and Sports Hall (including a c.837 sqm sports hall [double height] ancillary changing rooms, 4 no. community rooms and ancillary administration/office space rooms/ESB Substation);
- F) Provision of a convenience anchor retail unit (net floor space 1,000 sq. m [GFA 1,390 sq. m.]), takeaway, c. 82 sq. m, café, c. 210 sq. m, pharmacy c. 88 sq. m and General Practice Surgery c. 232 sq. m) as well as ESB substation and bins, all accommodated within the ground floor level of the neighbourhood centre to the north-west of the site;
- G) 693 no. car parking spaces, 289 no. bicycle parking spaces throughout the development
- H) Provision of a temporary foul water pumping station (and associated storage) located within the district public park to service the scheme;
- Provision of surface water attenuation measures as well as all ancillary site development works (reprofiling of site and field drain diversions as required) as well as connection to the public water supply and drainage services (including culvert along the Old Road frontage);
- J) Hard and soft landscaped areas, public lighting, bin stores, all ancillary landscape works including planting and boundary treatments and the provision of cycle paths, and all ancillary site development works.

More detail on the project is set out in chapter 2 of this EIAR. The proposed layout can be seen in Figure 4.2.

4.4.3 DRAINAGE AND WATER SUPPLY

4.4.3.1 Surface water

The Site of the Proposed Development is currently served by surface water drainage ditches that discharge to the Ferganstown and Ballymacon Stream and then to the River Boyne. As outlined in the Engineering Services Report (Hendrick Ryan Consulting Engineers, 2024a) accompanying this application, the Site has been split into small zones (sub-catchments) to take account of both the topography and proposed phasing of the works. Surface water will be attenuated within each zone prior to discharging to the Ferganstown and Ballymacon Stream (also referred to as the Millrace) at three locations, and as such the surface water discharge from the Site will continue to flow to the River Boyne.

More than 40% of the site area is proposed to remain as green-field state in the form of public open space, with an additional 25-30% of the site area to be left as private gardens on completion of the Proposed Development. These areas will not be connected to the proposed surface water drainage system. Rain falling onto the ground within these areas will percolate into the ground and will not contribute to an increase in pre-development surface water run-off.

Roads and footpaths will be drained using road gullies with underground drainage pipes to convey surface water run-off to local detention basins dispersed around the Site which have been designed to encourage infiltration. Parking spaces will be constructed using permeable paving, with the rainwater falling onto roads adjacent to these spaces to be directed towards the permeable paving to facilitate infiltration and excess water directed towards the piped drainage system. Roads within the neighbourhood centre which are not subject to use by heavy vehicles will be constructed using porous asphalt.

Rainwater harvesting tanks will be provided at the neighbourhood centre to collect drainage from the roofs of the proposed buildings on site. These may be used for irrigation during prolonged dry periods and / or for grey water use in buildings. Houses will be provided with rainwater butts and soakaways (in areas of good percolation) to minimise the volume of rainwater entering the Ferganstown and Ballymacon Stream.

Sustainable Urban Drainage Systems (SUDS) have also been included as part of the Proposed Development, namely permeable paving, wet and dry detention basins and ponds, rainwater harvesting tank, hydrobrakes, and bio-retention areas, including tree pits.
4.4.3.2 Foul Drainage

As outlined in the Engineering Services Report (Hendrick Ryan Consulting Engineers, 2024a) a gravity foul water sewer is present along the Boyne Road that carries foul water from Navar and the surrounding environment to the Navan Waste Water Treatment Plant (WWTP) at Farganstown 1km north of the Site. While it does not have the capacity to cater for the flow from the overall Phase 1 Masterplan of Boyne Village development, Phase 1B (subject of this application) can be accommodated within this existing infrastructure and a temporary pumping station.

For later phases of the Boyne Village development, the area will be serviced by a new Irish Water owned and operated pumping station located within a later phase of the development. A 750mm gravity foul sewer has been laid in the LDR6 road, which extends along the north of the Site, to facilitate future discharge to the Irish Water pumping station.

Two rising mains from the Irish Water pumping station (250mm & 300mm rising mains) will transport waste water directly to the WWTP at Farganstown. The rising mains will exit the Site along the road reservation adjacent to St Mary's graveyard on the Boyne Road. The rising mains will run under the railway and along the Boyne Road to the Fargenstown WWTW. The primary pumping station and rising mains as well as upgrade works at Fargenstown WWTW are to be carried out by Irish Water. These works have already been designed for Irish Water by Mott McDonald, Consulting Engineers. Irish Water lodged a planning application (PRR 2460066) on 30th January 2024 for a new wastewater pumping station. This application is currently subject to a further information request.

After the above future upgrade works are completed, waste water from the Johnstown area and the adjacent environs will be pumped from those lands to the future primary pumping station in the development, using a new 125mm and 250mm rising mains already laid in the new LDR6 road. These rising mains will discharge to a 750mm gravity sewer at the high point in the LDR6 and this gravity sewer will flow to the future primary pumping station. Foul flow from later phases of Boyne Village will flow by gravity to the future primary pump station.

As the primary Irish Water pumping station will not have been constructed before the upgrade works noted above have been completed, a temporary pumping station will be constructed within the Boyne Village Phase 1 development. This temporary pumping station will cater only for the overall Phase 1 Masterplan (Phases 1A-1B) of the Boyne Village development. The rising main from this temporary pumping station will connect to a 100mm rising main already laid in the LDR 6 road. This rising main will forward waste water further down along the LDR 6 road to where it will connect to a 225mm gravity foul sewer laid in the LDR 6 road. This 225mm gravity sewer will discharge to the existing 600mm foul sewer in the Kentstown Road at the opposite end of the LDR 6.

Another 100mm rising main in the LDR 6 road will provide services for another part of the lands being developed by Meath County Council. This second rising main will follow the other rising main and will connect to the same 225mm foul gravity sewer that discharges to the 600mm sewer in the Kentstown Road. The temporary pumping station will operate until the primary pumping station and twin rising mains to Farganstown WWTW have been constructed and commissioned.

Enviroguide a DNV company 3D Core C, Block 71, The Plaza Park West, Dublin 12 D12F9TN а www.enviroguide.ie w info@enviroguide.ie +353 (0)1 565 4730 е t Legend: Site Boundary Special Areas of Conservation Special Protection Areas EPA River Network (Stream Order) Boyne And River Blackwater SAC 1 0 250 500 m © OpenStreetMap Applicant: rojection Project: Location: Figure Title: Drawn By: SOB IRENET95 / Irish Transverse Mercator Boyne Village (Phase 1B), Albert Developments Ltd Proposed Development Site location Checked: LT Athlumney, Navan, Co. Meath Date: 20/05/2024 Scale @ A4: 1:20000 Notes: Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries



Figure 4.7: Proposed overall Site Layout plan (Wilson Hill Architects, 2024)

4.5

4.5.1

4.5.1.1 Impacts on Habitats and Flora

- Treelines (WL2) •
- Hedgerow (WL1) •
- Drainage Ditches (FW4) •

The internal hedgerow and treeline habitat on site will be removed to facilitate the Proposed Development. The drainage ditches within these areas of linear vegetation will therefore also be removed. The removal of these habitats is considered to have negative, permanent, moderate impacts on the local ecology during the Construction Phase of the Proposed Development.

4.5.1.2 Impacts on Native Fauna

4.5.1.2.1 Bats

There will be a loss of foraging, commuting and potential roosting habitat for local bats through the removal of the treeline and hedgerow habitats on site. These habitat features provide important feeding resources and navigational features for common pipistrelle and soprano pipistrelle, species that tend to avoid crossing open areas (Marnell, Kelleher & Mullen, 2022). Linear vegetation also acts as windbreaks where insects tend to congregate, thus providing a food source for bats. The central treeline and hedgerows link the lands to the west and north of the Site, in what is an agricultural landscape with very limited tree cover. As such, the loss of this treeline and hedgerow will result in a negative, permanent, significant effect on bats a local scale in the absence of mitigation/compensation.

The increased lighting, noise and dust levels associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, short-term, slight impacts to local bat populations through disturbance.

4.5.1.2.2 Birds

There will be some loss of breeding habitat for birds at the Site through the removal of the treeline habitat on site, and disturbance of species during the Construction Phase is possible. This could have a *negative*, permanent, moderate impact on breeding birds in the locality.

The increased lighting, noise and dust levels associated with the Construction Phase of the Proposed Development may have the potential to cause negative, short-term, slight impacts to local bird populations through disturbance.

4.5.1.2.3 **Badger and Small Mammals**

Badgers are protected species under national and international legislation in Ireland, and no actions may be carried out that may impact badger without a suitable licence/consent being received from the NPWS.

The treeline in which the badger sett is currently located will be removed to facilitate the Proposed Development. In the absence of mitigation, excavation of badger setts could lead to death or injury of badgers and would represent a negative, permanent, significant effect at a local scale.

Any vegetation clearance within the predetermined buffer zones of the active badger sett entrances would represent a *negative*, *permanent*, *significant* impact on badger in the absence of mitigation.



The Proposed Development could have a potential *negative*, *permanent*, *moderate* impact at a local level on small mammals utilising the Site, such as hedgehog, in the absence of mitigation measures, through the habitat loss of the treeline and hedgerow habitat within the Site.

Disturbance of species due to lighting, noise and dust generated during the Construction Phase, although unlikely, is possible and, as such, a precautionary approach is adopted with these disturbances representing potential *negative*, *short-term*, *slight* impacts at a *local scale*.

Small mammal species, such as hedgehog, have the potential to become trapped in trenches and entangled in construction materials such as netting and plastic sheeting, as well as other waste materials, causing entrapment and injury or death. This constitutes a *negative*, *short-term*, *moderate* impact at a *local* level.

4.5.1.2.4 Amphibians

There will be some loss of foraging, commuting and hibernacula habitat for amphibians potentially present at the Site of the Proposed Development through the removal of the treeline, hedgerow and wet drainage ditch habitat on site, and disturbance of species during the Construction Phase due to increase in noise and dust is possible. This could have a *negative, permanent, moderate* impact on this species in the locality.

Surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *moderate impacts* to amphibians which may be present within the drainage ditches on site in the absence of suitable mitigation.

4.5.1.2.5 Lizard

There will be some loss of foraging and suitable refuge habitat for lizards at the Site of the Proposed Development through the removal of the treeline, hedgerow bases and brash piles habitat on site, and disturbance of species during the Construction Phase due to increase in noise and dust is possible is possible. This could have a *negative, permanent, moderate* impact on this species in the locality.

4.5.1.2.6 Fish

The OCEMP (Hendrick Ryan Consulting Engineers, 2024b) accompanying this application has been prepared to ensure all works associated with the Construction Phase of the Proposed Development comply with relevant legislation and best practice guidelines, including:

- European Union Water Framework Directive WFD (2000/60/EC).
- European Communities (Water Policy) Regulations, 2003.
- European Communities Environmental Objectives (Surface Water) Regulations 2009.
- The EU Floods Directive 2007/60/EC.
- European Communities (Assessment and Management of Flood Risks) Regulations 2010.

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of Meath County Council in this regard.

The standard best practice measures outlined in the OCEMP (including silt fences, settlement ponds, drainage channels, no direct discharge to local watercourses, silt traps, and temporary cut off wall)

contained in Appendix D of this EIAR which will be updated by the contractor to also include the mitigation contained in the EIAR, will protect the surface water networks surrounding the Site, and subsequently the Ferganstown and Ballymacon Stream and River Boyne. As such, the potential impact to fish species within the River Boyne as a result of surface water discharge during the Operational Phase of the Proposed Development is considered to be *imperceptible*.

4.5.2 OPERATIONAL PHASE

4.5.2.1 Impacts on Habitats and Flora



No negative significant impacts on KER habitats are anticipated during the Operational Phase of the Proposed Development.

Attenuation ponds will be included within the neighbourhood and district parks of the Proposed Development, creating freshwater habitats. Semi-mature woodland and parkland tree planting and shrub planting, including species listed in the All-Ireland Pollinator Planting Code (NBDC, 2022), such as wild cherry (*Prunus avium*), lime varieties(*Tilia x europaea*), hawthorn, and rowan (*Sorbus acuparia*), will also be included as part of the Proposed Development within these parks, and the majority of the west and south boundaries of the Site will be bordered by treeline and native hedgerow habitat.

Pollinator-friendly native wildflower and bulb planting, including crocus species (*Crocus tommasinianus*), snowdrop (*Galanthus nivalis*), and bluebell (*Hyacinthoides non-scripta*), which are listed in the All-Ireland Pollinator Planting Code (NBDC, 2022), are proposed within areas of the amenity grassland habitat of the Proposed Development. This has the potential to result in a *positive*, *permanent*, *moderate* impact after a period of establishment. This positive impact will act to offset some of the negative impacts from habitat loss.

Figure 4.8: Landscape Design Plan



(Cunnane Stratton Reynolds Land Planning and Design, 2024)

4.5.2.2 Impacts on Native Fauna

4.5.2.2.1 Bats

Given the current agricultural context of the site, which has no artificial lighting within the area of the site, the increase in lighting could have a *negative, permanent, significant* impact on bats in the locality during the Operational Phase through the loss of dark foraging and commuting corridors.

4.5.2.2.2 Birds

No significant impacts on birds are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on site will offer potential commuting, foraging, and nesting habitat for local birds. As such, the likely impact is considered *positive*, *permanent*, *slight* at a *local* level due to habitat loss.

4.5.2.2.3 Badger and Small Mammals

Noise, increase in light, and potential physical disturbance due to increased human presence associated with the Operational Phase has the potential to cause a *negative, permanent, moderate* impact to badger and small mammals in the absence of suitable mitigation.

4.5.2.2.4 Amphibians



No significant effects on amphibians within the drainage ditches, Ferganstown and Ballymacon Stream or River Boyne are anticipated during the Operational Phase. SUDS measures, including permeable paving, detention basins and ponds, swales, and bio-retention areas, have been incorporated into the design to treat and minimise surface water runoff from the Site. Therefore, the potential impact to amphibians on site or within Ferganstown and Ballymacon Stream or River Boyne during the Operational Phase of the Development via water quality deterioration is considered to be *neutral*.

The attenuation ponds included within the amenity parklands of the Proposed Development will offer potential foraging, commuting, and breeding habitat for local amphibians. As such, this is likely to result in a *positive, permanent, moderate* impact at a *local* level, if appropriate planting is provided within the ponds to provide shelter.

4.5.2.2.5 Lizard

No significant impacts on lizards are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on site will offer potential commuting, foraging, and nesting habitat for local reptiles. As such, the likely impact is considered *positive*, *permanent*, *slight* at a *local* level due to habitat creation.

4.5.2.2.6 Fish

No significant effects on fish within the River Boyne are anticipated during the Operational Phase. SUDS measures, including permeable paving, detention basins and ponds, swales, and bio-retention areas, have been incorporated into the design to treat and minimise surface water runoff from the Site. Therefore, the potential impact downstream fish species within the River Boyne during the Operational Phase of the Development via water quality deterioration is considered to be *neutral*.

4.5.3 DO NOTHING IMPACT

Under the do-nothing scenario, most of the habitats at the Site would continue to evolve, while the arable land would continue to be utilised as such. The treeline and hedgerow habitats would continue to serve as biodiversity corridors, providing habitat connectivity, along with nesting/roosting and foraging habitat for birds and mammals, albeit that the Ash trees would continue to deteriorate as identified in the Tree Survey due to Ash dieback. The grassland would also continue to provide foraging and commuting habitat for local wildlife and pollinators.

4.5.4 POTENTIAL FOR CUMULATIVE EFFECTS

4.5.4.1 Relevant Plans and Policies

The following plans and policies were reviewed and considered for possible in-combination effects with the Proposed Development.

- Meath County Development Plan 2021 2027.
- Meath Biodiversity Action Plan 2015 2020 (current).

No specific projects or plans within the Meath County Development Plan (CDP) 2021 – 2027 were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this report. Additionally, the CDP has directly addressed the protection, enhancement, and incorporation of biodiversity through specific Policies and Objectives, as well as through its Development Management Standards (see Appendix G Volume III of this EIAR for details). The Meath

Biodiversity Action Plan 2015 – 2020 is set out to protect and improve biodiversity in the Navan area, and as such will not result in negative in-combination effects with the Proposed Development.

Therefore, on examination of the above it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects to nearby ecological sensitivities.

4.5.4.2 Existing Planning Permissions

There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to some larger-scale developments. The larger existing developments identified within 500m of the Site which may also discharge to the Ferganstown and Ballymacon Stream and the River Boyne are identified below and the potential for possible in-combination effects with the Proposed Development are assessed.

Table 4.12: Assessment of potential in-combination effects of the Proposed Development

| Planning Reference | Planning Authority | Status | Location | | | | |
|--|---|---|---|--|--|--|--|
| ABP-318533-23 | An Bord Pleanála | Granted Permission | Immediately adjacent to the Site | | | | |
| Development Description The development will consist of Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units (each c. 15.81m in height) with ancillary office accommodation as follows: Unit A2 (approx. 2,570 sq. m. gross floor area including 254 sq. m. of reception/office/ancillary areas at ground and first floor levels), Unit A3 (approx. 2,058 sq. m. gross floor area including 200 sq. m. of reception/office/ancillary areas at ground and first floor levels) & Unit A4 (approx. 2,570 sq. m. gross floor area including 254 sq. m. of reception/office/ancillary areas at ground and first floor levels); New road and pedestrian access extending north from the existing LDR 6 distributor road, and a total of 73 No. car-parking spaces and 84 No. bicycle-parking spaces serving the three proposed units; Totem sign at the south-east corner of the site approx. 12.Sm tall providing c. 47.76 sq. m. of internally Illuminated signage; Relocation of existing overhead ESB power lines at the LDR 6 to new underground ducts and provision of new ESB sub-station and switch room accessed from new estate road; Road infrastructure works to the north-east side of the LDR 6 to include new cycle lane, footpath, bus stop lay-by etc.; Planting & landscaping, new boundary treatments; Waste storage units serving each unit. drainage & infrastructure (including temporary foul pumping station) and all other associated works to facilitate the proposed development. A Natura Impact Statement will be submitted to the planning authority with the application. | | | | | | | |
| ABP-313276-22 | An Bord Pleanála | Granted Permission | Immediately adjacent to the Site | | | | |
| Development Description The development (Phase 1A) will consist of the demolition of existing agricultural structures (c. 530sqm) and the construction of 98 no. residential units comprising 41 no. houses (40 no. 3 bedroom and 1 no. 4 bedroom house - House Types A1,A2,B1,B2,C1,C2,D - 2 storeys; House Types F1, F2, F3, 3 storeys), facades of houses to have brick/render options in finish; 23 no. apartments (12 no. 1 bedroom apartments & 11 no. 2 bedroom apartments) in a 4 storey apartment building, along with adjoining 3 storey duplex element (block 1) comprising 10 no. duplex apartments (5 no. 2 bed apartments and 5 no. 3 bed duplex apartments) and 3 storey duplex building (block 2) fronting onto the recently constructed 'LDR6' Road comprising 24 no. duplex apartments (12 no. 2 bed apartments and 12 no. 3 bed duplex apartments), 151 no. car parking spaces & 46 no. bicycle spaces, open space and all associated infrastructure, foul and water supply (including a temporary pumping station) site development, attenuation and landscape works as well as roads to facilitate the development with vehicular and pedestrian access to be provided from the recently constructed LDR6 Road which connects to the R153 (Kentstown Road) to the south. A Natura Impact Statement will be submitted to the Planning Authority with the | | | | | | | |
| NA200611 | Meath County Council | Granted Permission | 265m W | | | | |
| Planning permission f sqm) at Boyne Road, will comprise; the de construction of 91 no. | Dev or the development of 91 Athlumney, Navan, Co. N molition of an existing sin residential units (two sto | elopment Description no. residential units and a compl Meath, a site of circa 2.58 hectare gle storey dwelling (121 sqm) an rey houses and three storey apa | ementary creche facility (173.5 es. The proposed development d associated outbuildings; the rtment/duplex), comprising: 20 | | | | |

no. one-bed apartments, 8 no. two-bed duplex units, 7 no. two-bed apartments, 10 no. two-bed houses, 36 no.

| three-bed houses and dedicated car parkir | l 10 no. four-bed houses; fo Ig spaces, 7 no. of which p | ormation of 5,448 sqm of landsca rovide for the operational require | aped open space areas: 162 no. ments of the associated 173.5 | | | | | | |
|--|--|--|---|--|--|--|--|--|--|
| sqm creche facility; n | sqm creche facility; new primary vehicular and pedestrian access to the proposed development will be provided | | | | | | | | |
| from a new access lo | cated on the Boyne Road a | and associated residential estate | roads, with a secondary access | | | | | | |
| via the L34003 loca | al road with associated roa | d widening and improvement woi | rks. The proposal includes all | | | | | | |
| associated hard an | d soft landscaping, bounda | ary treatments, footpaths and and | illary works above and below | | | | | | |
| ground. The p | lanning application is acco | mpanied by Natura Impact State | ment. Significant further | | | | | | |
| с . | information/revised | plans submitted on this application | on. | | | | | | |
| 221008 | Meath County Council | Granted Permission | 300m NW 0 | | | | | | |
| | Deve | elopment Description | X | | | | | | |
| Full planning permis | sion for the construction of | 8 no. dwellings comprising of 4 r | no. 3 bed semi-detached and 4 | | | | | | |
| no. 3 bed terraced/e | nd of terrace houses, toget | ther with new garden boundary w | alls and connection to existing | | | | | | |
| site services and all | associated site works at Tu | ubberclaire Meadows. Athlumney | V. Navan, Co Meath, Access to | | | | | | |
| new dwellings will b | e via the existing residentia | al access road within Tubberclair | e Meadows Estate Significant | | | | | | |
| | Further information/Rev | ised plans submitted on this appl | lication | | | | | | |
| NA181528 | Meath County Council | Granted Permission | 335 W | | | | | | |
| 11/10/1320 | | alopment Description | 555 W | | | | | | |
| The proposed days | lonment will comprise: the | demolition of an existing single s | torey dwelling (121 sam) and | | | | | | |
| accoriated outbuilding | sopheric will comprise, the | a 2 storov bouses comprising 4 | no two bod torraced bouses 4 | | | | | | |
| associated outbuilding | rraac house 10 no. three | bod somi detected and detected | d houses and 26 no. four had | | | | | | |
| no. Intee-bed end le | stacked houses, 19 no. Intee | tion of 4.426 nam of landscaped | ed houses and 36 ho. four-bed | | | | | | |
| semi-detached and d | 675 agm of ranad anon an | uon of 4,450 sqift of lanuscaped | open space areas, the retention | | | | | | |
| | 675 sqm of zoned open sp | ace forming a riparian blodiversit | ly area, 126 no. dedicated car | | | | | | |
| parking spaces; prin | ary venicular and pedestria | an access to the proposed develo | opment will be provided from a | | | | | | |
| new access located | on the Boyne Road (servi | ng 50 no. units) and associated h | esidential estate roads, with a | | | | | | |
| secondary access v | la the L34003 local road (S | erving 13 no. units) with associat | ed widening and improvement | | | | | | |
| works. The propos | al includes all associated h | ard and soft landscaping, bound | ary treatments, footpaths and | | | | | | |
| ancillary works a | bove and below ground. S | ignificant further information/revis | sed plans submitted on this | | | | | | |
| | | application. | | | | | | | |
| | | | | | | | | | |
| 21144 | Meath County Council | Granted Permission | 150m W | | | | | | |
| 21144 | Meath County Council | Granted Permission | 150m W | | | | | | |
| 21144 The proposed deve | Meath County Council Deve lopment will comprise; the | Granted Permission elopment Description demolition of an existing single s | 150m W storey dwelling (121 sqm) and | | | | | | |
| 21144 The proposed deve associated outbuilding | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and d | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the formation | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detache tion of 4,436 sqm of landscaped | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servi | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo ng 50 no. units) and associated r | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located secondary access v | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo ng 50 no. units) and associated r erving 13 no. units) with associat | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located secondary access v works. The propos | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s al includes all associated h | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and | | | | | | |
| 21144 The proposed dever associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located secondary access v works. The propos ancillary works a | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servit ia the L34003 local road (s al includes all associated h bove and below ground. S | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo- ing 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda- ignificant further information/revis | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this | | | | | | |
| 21144 The proposed dever associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located secondary access v works. The propos ancillary works a | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bebed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda ignificant further information/revis application. | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this | | | | | | |
| 21144 The proposed dever associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propos ancillary works a 2121 | Meath County Council Deve elopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bebed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda ignificant further information/revis application. Granted Permission | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propos ancillary works a 2121 | Meath County Council Deve of the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 t-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda ignificant further information/revis application. Granted Permission elopment Description | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve | Meath County Council Deve plopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (servin ia the L34003 local road (servin al includes all associated h bove and below ground. Servin Meath County Council Deve lopment will comprise; the | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundat ignificant further information/revise application. Granted Permission elopment Description construction of 95 no. residential | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 b | Meath County Council Deve plopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 e-bed semi-detached and detache tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundat ignificant further information/revis application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 to duplex units, 71 no | Meath County Council Deve plopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached . three-bed units (57 no. ho | Granted Permission demolition of an existing single s o. 2-storey houses, comprising 4 bebed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundat ignificant further information/revise application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 to duplex units, 71 no 4,313 sqm of landsca | Meath County Council Deve plopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached . three-bed units (57 no. ho aped open space areas, as | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 be-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develo- ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revise application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f incorporates a riparian biodiversit | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 to duplex units, 71 no 4,313 sqm of landsca open water course; 2 | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detacher . three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 be-bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversitian an access to the proposed develor ng 50 no. units) and associated ri- erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revision application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format bouses & 14 no. duplex) & 11 no. for a incorporates a riparian biodiversion basis application, and a social and a soft and a soft a social | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 te duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp hary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached . three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bebed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversitian access to the proposed develor ng 50 no. units) and associated ri- erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revision application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format bouses & 14 no. duplex) & 11 no. for incorporates a riparian biodiversion and pedestrian access to the pro- riand pedestrian access to the pro- stand pedestrian access to the pro- and pedestrian access to the pro- detached permission and pedestrian access to the pro- detached permission and pedestrian access to the pro- construction of 95 no. residential, 7 no. for and pedestrian access to the pro- pro- detached permission and pedestrian access to the pro- pro- and pedestrian access to the pro- pr | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1 parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 te duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detacher . three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular access junction located or | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, bounda ignificant further information/revis application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f incorporates a riparian biodiversing spaces (187 residential, 7 no. f and pedestrian access to the pro- tion the Old Road with associated re- solution of the spaces of the pro- tion the Old Road with associated re- solution of the spaces of the pro- tion the Old Road with associated re- construction of the spaces of the pro- tion the Old Road with associated re- solution of the spaces of the pro- tion the one of the space of the space of the pro- tion the one of the space o | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be pad widening and improvement | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 k duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new works. The proposal | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servin ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached . three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular access junction located or includes all associated har | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revise application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f a incorporates a riparian biodiversion for and pedestrian access to the pro- to the Old Road with associated re- rd and soft landscaping, boundary | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB | | | | | | |
| 21144The proposed developmentassociated outbuildingno. three-bed end termsemi-detached and developmentand dedication of 1,parking spaces; primnew access locatedsecondary access vworks. The proposeancillary works an2121The proposed developmentstoreys in 2, 3 & 4 bduplex units, 71 no4,313 sqm of landscaopen water course; 2cycle parking spaprovided from a newworks. The proposalSub-Station, a foul-w | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve lopment will comprise; the bed (terrace, semi-detached three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkir ces, new primary vehicular access junction located or includes all associated har vater pumping station and a | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revis application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f a incorporates a riparian biodivers ng spaces (187 residential, 7 no. f and pedestrian access to the pro- n the Old Road with associated ro all other ancillary works above ar | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB nd below ground. The planning | | | | | | |
| 21144 The proposed deve associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed deve storeys in 2, 3 & 4 k duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new works. The proposal Sub-Station, a foul-v application is acc | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n grace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (servir ia the L34003 l | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated ri- erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revisi application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. fi incorporates a riparian biodiversion and pedestrian access to the pro- n the Old Road with associated rich and soft landscaping, boundary all other ancillary works above ar act Statement. Significant Further | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB nd below ground. The planning r information/Revised plans | | | | | | |
| 21144 The proposed development associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed development storeys in 2, 3 & 4 k duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new works. The proposal Sub-Station, a foul-v application is acc | Meath County Council Deve lopment will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s al includes all associated h bove and below ground. S Meath County Council Deve lopment will comprise; the bed (terrace, semi-detacher . three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular access junction located or includes all associated har vater pumping station and a ompanied by a Natura Imp submit | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated ri- erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revisi application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. for and pedestrian access to the pro- n the Old Road with associated ric d and soft landscaping, boundary all other ancillary works above ar act Statement. Significant Further tted on this application. | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB nd below ground. The planning r information/Revised plans | | | | | | |
| 21144 The proposed development associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim new access located secondary access v works. The propose ancillary works a 2121 The proposed development storeys in 2, 3 & 4 k duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new works. The proposal Sub-Station, a foul-w application is acc | Meath County Council Deve propriet will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servir ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve topment will comprise; the bed (terrace, semi-detacher three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular access junction located or includes all associated har vater pumping station and a ompanied by a Natura Imp submit Meath County Council | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated ri- erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revisi application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. for and pedestrian access to the pro- to the Old Road with associated ric of and soft landscaping, boundary all other ancillary works above ar act Statement. Significant Further tted on this application. Granted Permission | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and sed plans submitted on this <u>80m SE</u> units over two, three and four s, comprising: 13 no, two-bed four-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB nd below ground. The planning r information/Revised plans | | | | | | |
| 21144 The proposed development associated outbuilding no. three-bed end te semi-detached and de and dedication of 1, parking spaces; prim- new access located secondary access v works. The propose ancillary works and 2121 The proposed development storeys in 2, 3 & 4 te duplex units, 71 no 4,313 sqm of landsca open water course; 2 cycle parking spa provided from a new works. The proposal Sub-Station, a foul-w application is acc NA181229 | Meath County Council Deve propriet will comprise; the gs; the construction of 63 n errace houses, 19 no. three etached houses: the format 675 sqm of zoned open sp nary vehicular and pedestria on the Boyne Road (servit ia the L34003 local road (s al includes all associated h bove and below ground. Si Meath County Council Deve topment will comprise; the bed (terrace, semi-detacher three-bed units (57 no. ho aped open space areas, as 00 no. dedicated car parkin ces, new primary vehicular access junction located or includes all associated har vater pumping station and a ompanied by a Natura Imp submit Meath County Council | Granted Permission elopment Description demolition of an existing single s o. 2-storey houses, comprising 4 bed semi-detached and detached tion of 4,436 sqm of landscaped bace forming a riparian biodiversit an access to the proposed develor ng 50 no. units) and associated r erving 13 no. units) with associat ard and soft landscaping, boundar ignificant further information/revis application. Granted Permission elopment Description construction of 95 no. residential d, townhouse and duplex) format buses & 14 no. duplex) & 11 no. f incorporates a riparian biodiversit and pedestrian access to the pro- to the Old Road with associated ro of and soft landscaping, boundary all other ancillary works above ar act Statement. Significant Further ted on this application. Granted Permission elopment Description | 150m W storey dwelling (121 sqm) and no. two-bed terraced houses, 4 ed houses and 36 no. four-bed open space areas; the retention ty area; 126 no. dedicated car opment will be provided from a esidential estate roads, with a ed widening and improvement ary treatments, footpaths and adoptation submitted on this 80m SE units over two, three and four s, comprising: 13 no, two-bed gour-bed houses; formation of sity corridor associated with the creche and 6 no. visitor); 64 no. oposed development will be bad widening and improvement y treatments, footpaths an ESB d below ground. The planning rinformation/Revised plans | | | | | | |

Development with 31 no. residential units as follows: 24no. 2 storey 3 bedroom houses, 6no. 2 storey 4 bedroom houses, and 1no. 1 storey 2 bedroom house; all of the units have solar panels on the roof; all ancillary site development and landscape works, including 62no. on curtilage car parking spaces. These units are in lieu of 54 no. residential units (36no. 3-bed duplex units and 18no. 2-bed apartments) previously permitted at this location

as part of a larger residential development now known as Dunville (Reg. Ref. NT/130058). There are minor modifications to the road layout and drainage layout in this particular area previously permitted to accommodate this development. Pedestrian and cycle access is proposed to the adjoining site to the west (existing Athlumney Centre). Vehicular access to the development remains via the internal road network at Durville which in turn is accessed from the south by the new access road from Johnstown Wood to the new school development, and from the east via the old Johnstown Road (L5050) that connects to the Kentstown Road (R153) to the north.

| Siç | Significant further information/revised plans submitted on this application. | | | | | | | |
|---|--|---|--|--|--|--|--|--|
| 2460066 | Meath County Council | Request for Further | Within the Site of the | | | | | |
| | | Information | Proposed Development | | | | | |
| Development Description | | | | | | | | |
| The development will | consist of a new wastewa | ater pumping station that discha | arges to the inlet pipework of the | | | | | |
| Navan WWTP via tv | wo new rising main sewera | age pipes. The pumping station | development also includes an | | | | | |
| underground 924m3 | B emergency storage tank | with a further 427m3 provided | within the pumping station inlet | | | | | |
| chamber, wet wells, | and upstream sewerage n | etwork. The pumping station co | ompound includes underground | | | | | |
| valve, inlet, wet well | and flow meter chambers | ; and above ground structures | including a control panel kiosk, | | | | | |
| operator welfare unit | klosk, wet klosk, ESB sub | station, surge vessels with stair | access, overhead gantry crane; | | | | | |
| and other tanks, plant, | and equipment. The com | pound also contains set down s | space for an emergency electrical | | | | | |
| generator, site lightin | g and hard surfaced intern | har circulation space and will be | enclosed by 2.4m high security | | | | | |
| the LDR6 distributor | cood Other water and sow | nu wiii be accesseu by a lefice | the provision of a gravity sower | | | | | |
| and a watermain fr | om the roundahout on the | I DR6 distributor road to the p | conosed numning station The | | | | | |
| proposed develop | ment also includes for a tr | enchless crossing under the N | avan to Drogheda rail line all | | | | | |
| landscaping and re | instatement works and an | cillary site development works. | A Natura Impact Statement is | | | | | |
| | included wi | th the planning application. | | | | | | |
| 0000040 | Maath County Coursel | Request for Further | | | | | | |
| 2360342 | weath County Council | Information | 50III SE | | | | | |
| | Deve | lopment Description | | | | | | |
| The proposed dev | relopment will consist of: (a | a) The demolition of 2 no. single | e storey dwelling houses and | | | | | |
| detached domestic | garage. (b) Construction of | of a residential development of | 53 no. units, comprising: 1 no. | | | | | |
| detached two-store | ey, 4 bedroom house; 6 no | o. semi-detached two-storey 4 b | edroom houses; 15 no. semi- | | | | | |
| detached (end terrace |) two-storey, 4 bedroom h | ouses; 3 no. semi-detached (ei | nd terrace) two storey 3 bedroom | | | | | |
| nouses; 17 no. mid-te | errace two-storey, 3 bedro | om nouses; 3 no. detached sin | gie-storey 3-bedroom nouses; 4 | | | | | |
| no. ground floor, 2-bedroom, duplex apartments, with 4 no., 3-bedroom, duplex maisonettes over. (c) Single | | | | | | | | |
| ctorov biovolo ctoro o | nd hin store to conve duple | x unite (d) Vahiaular antronaa | onto the P152 Kentetown Peed | | | | | |
| storey bicycle store a | nd bin store to serve duple | ex units. (d) Vehicular entrance | onto the R153 Kentstown Road. | | | | | |
| storey bicycle store a (e) Pedestrian and c | nd bin store to serve duple yclist-only entrance onto C poundary treatment works | ex units. (d) Vehicular entrance Did Athlumney Road. (f) Interna and all associated site works | onto the R153 Kentstown Road. I road and paths, parking, open and services provision to facilitate | | | | | |
| storey bicycle store a (e) Pedestrian and c spaces, landscaping, b the development A N | nd bin store to serve duple yclist-only entrance onto C poundary treatment works, atura Impact Statement (N | ex units. (d) Vehicular entrance DId Athlumney Road. (f) Interna , and all associated site works a IIS) has been prepared in respe | onto the R153 Kentstown Road. I road and paths, parking, open and services provision to facilitate act of the proposed development | | | | | |
| storey bicycle store a (e) Pedestrian and c spaces, landscaping, t the development. A Na Note: and other development | nd bin store to serve duple yclist-only entrance onto C poundary treatment works, atura Impact Statement (N velopments, pending, o | ex units. (d) Vehicular entrance DId Athlumney Road. (f) Interna , and all associated site works a IIS) has been prepared in respe- r granted permission in t | onto the R153 Kentstown Road. I road and paths, parking, open and services provision to facilitate ect of the proposed development. the last 5 years (2019-2024) | | | | | |
| storey bicycle store a (e) Pedestrian and c spaces, landscaping, l the development. A Na Note: and other de Developments along t | nd bin store to serve duple yclist-only entrance onto C poundary treatment works, atura Impact Statement (N velopments pending o the same impact pathwa | ex units. (d) Vehicular entrance DId Athlumney Road. (f) Interna , and all associated site works a <u>IIS) has been prepared in respe</u> r granted permission in t avs as the Proposed Develo | onto the R153 Kentstown Road. I road and paths, parking, open and services provision to facilitate ect of the proposed development. he last 5 years (2019-2024). | | | | | |

The above listed planning applications were all accompanied by the relevant environmental assessments that detail the potential impacts and the mitigation measures required to ensure the developments do not have a significant effect on local biodiversity, alone or in-combination with other developments. In addition, the relevant Planning Authority (Meath Council and/or An Bord Pleanála) granted permission for the above planning applications following evaluations of the potential ecological and environmental impacts of each application.

It is considered that there is no potential for the Proposed Development to act in-combination with other permitted developments in the vicinity that could cause likely significant effects on any nearby KERs.

4.6 AVOIDANCE, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES

4.6.1 AVOIDANCE AND MITIGATION EMBEDDED IN PROJECT DESIGN

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the

Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed below.

Table 4.13: Embedded design features and their potential to act to avoid or mitigate negative impacts on the local ecology and environment.

| Embedded Design Feature | Avoidance / Mitigation Potential | |
|---|---|------|
| SUDS: Permeable parking; Swales; Bio-retention areas; and Detention basins and ponds. | The SUDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield runoff rates during the Operational Phase. These features will be implemented as part of the surface water drainage design. | POLX |
| Landscape Design: District and neighbourhood parks. Strips of native wildflower meadow planting. | Pollinator-friendly trees, hedgerows, and wildflowers will provide foraging opportunities to local birds. | |
| Lighting Design Bat-friendly lighting measures will be included as part of the Proposed Development. | Bat-friendly lighting measures will be put in place to reduce light- spill to internal potential bat habitat and external habitat within the surrounding environment. | |

4.6.2 CONSTRUCTION PHASE

Table 4.14 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development. The measures listed are outlined in more detail in the OCEMP (Hendrick Ryan Consulting Engineers, 2024b) accompanying this application under separate cover. The OCEMP will be developed and submitted to Meath County Council prior to commencement of development and will include the mitigation measures set out in this EIAR and to comply with any relevant conditions attached to a grant of permission.

Table 4.14: Summary of Best Practice Standards and Mitigation outlined in the OCEMP (Hendrick Ryan Consulting Engineers, 2024b). Where specific details relating to protection of Key Ecological Receptors is required under these measures, reference is made to the appropriate section in this report.

| Theme | Best Practice Standards and Mitigation | Ecology Specific Mitigation |
|-------------------|---|--------------------------------|
| Soils and Geology | Appropriate measures to store and handle stripped topsoil and subsoil; consideration of weather conditions to minimise silt/sediment entering surface water network and dust control; and appropriate fill material import, storage, and handling away from surface water features. A discharge permit shall be obtained for the disposal of any water arising from pumping. Appropriate storage of fuels, oils and other chemicals, designated refuelling and | No. |

| Theme | Best Practice Standards and Mitigation | Ecology Specific | | |
|---|---|--------------------------------|----|--|
| | maintenance area, and preparation of emergency response procedure. | CEILED. OTO | | |
| | | | 2× | |
| Water - Hydrogeology | Drainage channels and streams shall be clearly identified on site and shown on site plans. A discharge permit shall be obtained for the disposal of any water arising from pumping. Accidental oil or fuel spills shall be immediately cleaned with appropriate adsorbent materials. | No. | | |
| Water - Water Supply, Drainage & Utilities | Appropriate use of settlement ponds, foul water to be tankered off site for treatment until connection to foul network made, and all connections (waste water, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people. | No. | | |
| Site Compound Facilities and Parking | Location to be agreed with MCC prior to works. Appropriate measures to handle foul water generated, protect potable water supply, health and safety, separate areas for (i) machinery and plant; (ii) concrete batching; and (iii) staff parking. | No. | | |
| Construction Waste Management | Managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'. | Yes – See section 4.6.2.2.4 | | |
| Landscape and Visual Impact | Appointment of an Arborist to oversee works relating to trees, establishment on Tree Protection Zones in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'; and post-construction tree assessment. | No. | | |
| Noise and Vibration | To comply with the requirements of BS 5228- 1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (Code of Practice for Noise and Vibration Control on Construction and Open Sites) as well as Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration. | No. | | |

| Theme | Best Practice Standards and Mitigation | Ecology Specific Mitgation |
|-------------|--|-------------------------------|
| Air Quality | Dust Management Plan (as set out in Appendix E) to include suppression via watering of areas identified as potential dust source; road sweeping to remove aggregate materials; appropriate cover of transported materials; wheel washing; maintenance of public roads in relation to dust; and appropriate monitoring. | No. No. |

In addition, to ensure the OCEMP remains 'fit for purpose' for the duration of the project it should be reviewed and updated by the Project Manager in consultation with the Contractor's Ecologist during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project's environmental commitments. The Contractor shall also designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). This Plan will be prepared upon appointment of the Main Contractor and will contain the mitigation set out in this EIAR and associated appendices.

Additional mitigation measures required for sufficient protection of the KERs identified in this report, and/or details for the specific implementation of the mitigation measures as per the above table are given in the below sections and will be included in a Biodiversity Management Plan (BMP) for the Proposed Development.

4.6.2.1 Protection of Habitats

4.6.2.1.1 Mitigation 1: Tree Protection

Protective tree fencing in compliance with BS 5837:2012 'Trees in relation to design, demolition, and construction – Recommendations' will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees to be retained at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stockpiling or machinery movement will be undertaken within these areas. Tree Protection measures are outlined in drawing no. 20306-T-103, prepared by CSR, included with the application.

4.6.2.1.2 Mitigation 2: Construction Phase Lighting

No overnight lighting will be directed to the natural habitats along the western boundary (i.e., the hedgerow habitat). Where overnight lighting cannot be avoided in these areas due to health and safety concerns, the lighting within the Proposed Development will be designed and installed to minimise the impact on local wildlife and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT 2018):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).

- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

4.6.2.1.3 Mitigation 3: Biosecurity/Invasive Species

The following best practice site hygiene and biosecurity measures will be in place to avoid the potential introduction of invasive floral species at the Site:

- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.
- All vehicles entering or leaving the Site will have been suitably checked and pressure-washed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate.
- Designated wash-down area to be located away from sensitive receptors such as watercourses, ditches, drains etc.
- Material/water left after vehicles have been pressure-washed must be contained, collected, and disposed of appropriately (These waters <u>must not</u> under any circumstances be discharged to drains or the eastern ditch).

4.6.2.2 Protection of Fauna

4.6.2.2.1 Mitigation 4: Bats

Tree Removal

Prior to the felling, an updated ground-based roost assessment will be carried out by a suitably qualified ecologist. Should any signs of roosting bats or Moderate to High suitability roost features be observed then no works can take place until an aerial assessment or emergence surveys are conducted. Should bats be present a derogation licence shall be sought from the National Parks and Wildlife Services to facilitate the works.

Specifically, where the felling of Low roost potential trees are absolutely necessary, the following protocol should be followed:

• Tree-felling should be undertaken in the period late **August to late October/early November**. During this period bats are capable of flight and this may avoid risks associated with tree-felling.

- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree will be pushed ightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats/other wildlife to escape. Trees felled should never be sawn up or mulched immediately in case protected wildlife is present.

Should any signs of roosting bats or suitable roost features be observed, or the trees to be removed are deemed to have Moderate or High roosting potential, then no works can take place until an aerial assessment or emergence surveys are conducted and bat absence is confirmed. Should bats be found at any stage of the works, a derogation licence shall be obtained from the National Parks and Wildlife Services to facilitate the works.

Lighting

To minimise potential disturbance to local bats due to lighting during the Construction Phase, construction works will be carried out during normal daylight working hours as follows:

- 7.00am to 7.00pm Monday to Friday
- 8.00am to 2.00pm Saturday.
- No Sunday work will generally be permitted.
- Work outside of normal hours shall only take place where written permission has been received from Meath County Council. The location of any works anticipated to be undertaken outside normal working hours shall be limited and strictly defined.

4.6.2.2.2 Mitigation 5: Badger

Further dedicated badger surveys will be carried out on site prior to the commencement of works to determine all entrances to the active sett on site. Works close to an active badger sett or the removal of vegetation within the vicinity of these setts will only be conducted under the supervision of the badger specialist under licence from the NPWS. During the breeding season (December to June inclusive), no works should be undertaken within 50m of active setts. Badger sett tunnel systems can extend up to 20m from sett entrances. As there is the possibility that tunnels would be destroyed by the movement of heavy plant over the ground above the tunnel system, it is essential that no heavy plant cross within 30m of a sett entrance. This will ensure that setts are not damaged and that badgers are not inadvertently crushed during construction. Lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance, and light works such as digging by hand or scrub clearance will not take place within 10m of a sett entrance unless under licence.

Potential Sett Removal

While the retention of the sett *in-situ* is preferred, alongside the re-design of the Proposed Development to facilitate this retention, primarily regarding the landscape design. However, this is not possible due to spatial constraints, the footprint of the Proposed Development, and the sett will need to be safely removed in consultation with the NPWS (following confirmation that badgers still present and a subsequent derogation licence obtained). A suitably qualified badger specialist will be instructed prior to the

Construction Phase to prepare an exclusion plan for the decommissioning of the setts and their destruction once all badgers have been confirmed to have vacated. The objective is to allow the badgers to remain within their territory, even though a portion of their current territory will be lost as a tesult of the Proposed Development. The provision of an artificial sett within the Site will also be incorporated into the landscape plan.

The existing active setts will not be excluded or destroyed until the artificial replacement sett has been constructed. The existing sett will not be destroyed until the artificial replacement sett is confirmed to be in use by badgers through the use of trail cameras and regular site visits.

Artificial Sett Provision

In the case where the setts on site cannot be retained as part of the Proposed Development, an artificial main sett will be provided as compensation for the loss of the existing main sett. The new sett will be constructed and established before the badgers are excluded from the existing setts and the existing setts are destroyed.

The location of the artificial badger sett will be advised by a qualified ecologist and incorporated into the landscaping masterplan during consultation and derogation licence application with NPWS during the construction phase.

A dense section of scrub vegetation (e.g., bramble, elder, hawthorn, blackthorn) will be planted within the designated artificial sett area yet to be confirmed within the wider landscape contained within the Masterplan of the Proposed Development; the goal being to connect the sett with the boundary hedgerow and treelines and provide cover, shelter and protection for the badgers and minimise human and/or dog related disturbance from the Proposed Development, maximising the setts chances of being adopted. Wildlife friendly lighting will ensure the artificial sett is not illuminated.

Construction of the artificial sett must not place existing setts in danger. All construction equipment must remain a minimum of 30m (up to 50m during breeding season) from all existing (naturally constructed) active sett entrances during the creation of the new sett. The artificial sett will be constructed several months in advance of the closure of the active setts. In this interval, the affected badgers will be encouraged to utilise the artificial sett by means of attractive food baits (peanuts etc.) and materials from the active sett added to the new artificial sett (bedding, discarded spoil). The constructed tunnels and chamber system will be located in well-drained soils and be landscaped and planted to ensure adequate cover and lack of disturbance.

Exclusion of Badgers from Active Setts

Exclusion of badgers from active setts will only be carried out during the period of July to November (inclusive) to avoid the badger breeding season. As per the TII guidelines (NRA, 2005), the removal of badgers from affected setts and subsequent destruction of these setts will only be conducted with NPWS permission/approval and by experienced badger specialists. The exclusion process will include monitoring to ensure that badgers have fully evacuated the setts prior to their destruction. The NPWS grant permission/approval to the experts undertaking the badger operations and not to the development or contractor. A badger sett exclusion plan and method statement will be prepared by the badger specialist and provided to the NPWS prior to final application for their approval. No works will take place in the vicinity of the active setts without the supervision of the badger specialist.

Measures to ensure the sett has been vacated and is devoid of all badgers will be designed by the badger specialist, involving a combination of:

• One-way badger proof gates on active entrances.

- Badger proof fencing.
- Soft and hard blocking of inactive entrances, and
- Recurring inspections.



Gates will be left installed, with regular inspections over a minimum period of 21 days before the sett is deemed inactive. Any badger activity at all will require the procedures to be repeated or additional measures taken. No exclusion will commence in advance of the completion of the artificial sett. All setts should be assessed on a case-by-case basis by a suitably qualified experienced badger expert, with measures adapted to suit the situation as per the expert's direction.

Sett Destruction

The existing sett will not be destroyed until it is confirmed the badgers have become established in the artificial sett. Five consecutive days of inactivity must be recorded after this minimum 21-day period to confirm the badgers are not utilising the sett. Sett destruction should then commence immediately, provided that all badgers have been excluded. Should a badger be discovered during this operation, the NPWS will be advised immediately, and all excavation will cease until it is agreed with the NPWS that it may continue. The destruction of a successfully evacuated badger sett may only be conducted under the supervision of qualified and experienced personnel with approval/permission from the NPWS. The possibility of badgers remaining within a sett must always be considered; suitable equipment should be available on hand to deal with badgers within the sett or any badgers injured during sett destruction.

TII guidelines recommend that sett destruction is usually undertaken with a tracked 12-25 tonne excavator, commencing at ca. 25m from the outer sett entrance and working towards the centre of the sett, cutting ca. 0.5m slices in a trench to a depth of 2m. Exposed tunnels may be checked for recent badger activity with full attention paid to safety requirements. A report detailing the evacuation procedures, sett excavation and destruction, location of the new sett, and any other relevant issues will be prepared by the badger specialist and submitted to the NPWS.

4.6.2.2.3 Mitigation 6: Vegetation Clearance

As the Site has been deemed suitable for breeding birds, small mammals (hedgehog, hare, pygmy shrew), amphibians and reptiles, vegetation clearance of the hedgerow and treeline habitat will need to be cognisant of any potentially present fauna. Table 4.15 provides guidance for when vegetation clearance is permissible in relation to wintering, hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*. The preferred period for vegetation clearance is within the months of September and October to avoid the main wintering bird season, breeding bird and bat maternity and roosting season as well as mammal and reptile hibernation. Where this seasonal restriction cannot be observed, a check for active roosts and/or nests, will be carried out immediately prior to any site clearance by a qualified Ecologist or and repeated as required to ensure compliance with legislative requirements. Where a breeding bird and an active nest is found, the nest will be protected, and no further works will take place in the vicinity of the nest until the young have fledged. Where continuance of works is critical, the NPWS will be consulted, and a derogation license obtained <u>prior to continuing works</u>.

| Ecological Feature | January | February | March | April | May | June | July | August | September | October | Shovember | December |
|--|---|---|--|--|---|------|------|---|-----------|--------------|--|--------------------------------------|
| Breeding Birds | Veget cleara permis | ation Ince ssible | Nesti No clo releva confir an ec | ng biro earanc ant stru med to cologist | g bird season arance of vegetation or works to nt structures permitted unless ned to be devoid of nesting birds by plogist. | | | | | ance permiss | ible | |
| Hibernating mammals (namely Hedgehog) | Mamn hibern seaso No cle vegeta works structo permit confin devoid hibern mamn ecolog | nal nation n earance ation of to rele ures tted un med to d of nating nals by gist. | e of vant less be an | Vege | Vegetation clearance permissible | | | | | | Mammal hibernation season No clearand vegetation of works to relevant structures permitted un confirmed to devoid of hibernating mammals b ecologist. | ce of br hless b be y an |
| Amphibians (namely Common Frog) | Frog Hiberr Seasc No ha cleara permis | nation on bitat ince ssible | Com | mon F | non Frog breeding season Vegetation / Site clearance permissible | | | Frog Hibernation Season No habitat clearance permissible | | | | |
| Common Lizard | Lizard Hiberr Seasc No ha cleara permis | l nation on bitat ince ssible | | Active period Habitat (scrub, tall sward grass) clearance permissible | | | | Lizard Hibernation Season No habitat clearance permissible | | | | |

Table 4.15: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible.

Additionally, all vegetation clearance will be carried out in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog, pygmy shrew, common frog, and common lizard). A phased cutting approach under the supervision of a suitably qualified ecologist will be used to allow wildlife (small mammals, amphibians and reptiles) to move away from any suitable habitat that will be removed. This will take place during weather that is suitable for reptiles to be active (above 10°C with little rain):

- Phase 1 Cutting vegetation to 150-200 mm and removing the arisings;
- Phase 2 After a minimum of one hour, hand-searching the cut areas (conducted by a qualified ecologist) and removing any sheltering habitat (e.g. logs or debris) then cutting vegetation to ground level and removing the arisings; and
- Phase 3 Soil scrape.

Should any suitable refugia or day nesting habitats need to be removed, this will be carried out <u>outside the</u> <u>most vulnerable breeding periods for reptiles and hedgehogs wherever practicable</u> (reptile gravid period May to July, main Hedgehog birthing months June and July) and will be supervised by a qualified ecologist.

4.6.2.2.4 Mitigation 7: Waste Management

As best-practice, all construction-related rubbish on-site e.g., plastic sheeting, netting etc. should be kept in a designated area on-site and kept off ground level so as to protect small fauna (such as small mammals, amphibians and reptiles) from entrapment and death.

4.6.3 OPERATIONAL PHASE

4.6.3.1 Protection of Habitats

4.6.3.1.1 Mitigation 8: Invasive Species Management

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Despite the measures identified in the OCEMP for the importation of only clean materials, there is the potential for the inadvertent import of invasive species to the Site. If established, there is a risk of further spread both within and out of the Site.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread during the construction of the remaining Boyne Village phases associated with this Proposed Development.

4.6.3.2 Protection of Fauna

4.6.3.2.1 Mitigation 9: Disturbance Limitation to the Badger Sett

In order to minimise the potential for human and dog related disturbance of the retained or new sett area and its surrounding vegetation, access to this portion of the Site will be restricted and discouraged through landscaping (e.g., fencing, dense planting) and signage (e.g., 'Dogs to be kept on leads to protect wildlife'). Timing of works in the vicinity of the artificial sett will ensure any noisy or intrusive works required in this area take place prior to the artificial sett becoming active.

4.6.3.2.2 Mitigation 10: Bats

Lighting

Given the current agricultural context of the Site, which has no artificial lighting within the area of the Site, the increase in lighting could have an impact on local bat populations through the loss of dark foraging and commuting corridors. However, the Lighting Design Plan (Metec Consulting Engineers, 2023) accompanying this application includes bat-friendly lighting measures in line with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT, 2023):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.

- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers
- Light shields will be used to reduce light spill, particularly along the Ferganstown and Ballymacon Stream, and direct it only to where it is needed.

4.6.4 **BIODIVERSITY ENHANCEMENT MEASURES**

A Biodiversity Management Plan will be prepared to incorporate biodiversity enhancement measures including the below, into the Operational Phase. This will be submitted and approved by Meath County Council prior to occupation of the Site.

4.6.4.1 Enhancement 1: Bat Boxes

Five summer bat boxes (e.g., Woodcrete 1FF design) will be erected on suitably sized trees within the district park of the Proposed Development Site, the placement of which will be determined by a bat ecologist.

Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. Bat boxes will be erected prior to construction works. The bat ecologist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- Diameter of tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

4.6.4.2 Enhancement 2: Swift Boxes/Bricks

It is recommended that swift boxes or bricks are incorporated into the Proposed Development where possible, particularly on the apartment blocks. The incorporation of swift boxes or bricks would help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021). The following recommendations are extracted from "Saving Swifts" by Birdwatch Ireland. swift bricks/boxes:

- Will be constructed of long-lasting material and securely fixed in position.
- Will be erected at least five metres above ground level.

- Will be erected in sheltered cool areas out of the sun, or under an overhang and /or under the eaves. Bricks can be placed at any aspect, however, as they tend not to overheat the way that externally fitted boxes can.
- Will have a clear airspace in front for access.
- Will be grouped (side by side in rows) as swifts are colony nesters.
- HD. ONOGNOZZ Will avoid sites which can be accessed by predators- cats, squirrels, mappies, rats.
- Will avoid sites near plate glass windows because they are a known collision hazard for birds.
- Will not be placed directly above ledges or other obstructions. Swifts drop before taking flight and can collide with obstacles below the nest entrance.
- Will not be one above the other.
- Will not be near spotlights or later fit spotlights near them.

It is advised to install a swift calling system under the supervision of the project ecologist to attract swifts and encourage them to take up residence at a new site.

4.6.4.3 Enhancement 3: Amphibian and Reptile Hibernacula

It is recommended to enhance the proposed attenuation ponds for amphibian and reptile use by providing suitable refuge and hibernacula adjacent to these ponds. It is recommended that 2-3 areas of hibernacula are provided at each pond at areas furthest removed from traffic and likely human activity, and where the location would provide potential links to the nearby hedgerows and trees.

Hibernacula for amphibians and reptiles is relatively easy to create from rubble, wood, and soil, all of which can likely be sourced from the Site during works. Rubble and wood in various sizes should be piled either in a shallow depression or on the slope of the attenuation pond in a disorganised way to create nooks and crevices. Larger tree trunks or rocks should be placed so that they will protrude through the final mound to provide open entrances to the mound. This pile should then be covered in soil to allow the inner crevices to maintain a stable temperature through the winter and allow for hibernation. The top can be planted with for example grass and native wildflowers. See Figure 4.9 for examples of finished hibernacula.

Figure 4.9: Examples of suitable amphibian and reptile hibernacula and refugia.



4.6.4.4 Enhancement 4: Pollinator Habitat

Pollinator/insect habitat, as seen in figure 4.10 will be created on site by:

- Creating an earth bank;
- Scraping back some bare earth;
- Leaving some areas to grow wild; and/or
- By drilling holes 10cm deep in unvarnished wood for solitary bees.

Figure 4.10: Examples of solitary bee habitat.



Extracted from How-to-guide: Creating wild pollinator nesting habitat (NBDC, 2016).

Large bee or insect hotels will not be installed. Guidance from the All -Ireland Pollinator Plan states "Don't install a large bee or insect hotel. Large bee hotels are attractive to humans, but not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an averagesized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren't easy targets." A link to a "How-to-guide Creating wild pollinator nesting habitat" is provided for the development management company to put these habitats in place: How-to-guide-Nesting-2018-WEB.pdf (pollinators.ie). An appointed ecologist will oversee the creation of these habitats.

4.6.5 MONITORING

Tabe 4.16 below provides a summary of the required monitoring and pre-works inspections during the Construction Phase, as well as any surveys that should be completed during the Operational Phase. The monitoring, inspections and surveys will ensure that the identified mitigation measures are implemented and maintained efficiently and have the desired effect of protecting the local ecology from adverse impacts.

The monitoring/surveys outlined below will be included in a BMP for the Proposed Development, along with the detailed mitigation measures for the Construction and Operational Phases (section 4.6) and Biodiversity Enhancement Measures (section 4.6.4).

In addition to the items listed below, this document should detail the landscape management operations for the Proposed Development, including cutting/trimming regimes and maintenance of bat boxes and pollinator habitat. This document will also be updated to reflect any follow-up survey results as they are carried out. The BMP will be prepared and agreed in consultation with a suitably gualified ecologist and Meath County Council.

| Table 4.16: Monitoring and pre- | works inspections for the identified mit | igation measures during Construction |
|---------------------------------|--|--------------------------------------|
| Phase of the Proposed Develop | pment. | |

| Measure | Monitoring | |
|--|---|------|
| CONSTRUCTION PHASE | ίς. | |
| Mitigation 1: Tree Protection | Ongoing monitoring by Arborist or qualified ecologist. |) |
| Mitigation 2: Construction Phase Lighting | No monitoring required. | 2025 |
| Mitigation 3: Biosecurity | Ongoing monitoring by contractor. | |
| Mitigation 4: Bats | Spring and Summer activity surveys to be carried out by a qualified bat ecologist. | |
| Mitigation 5: Badger | All works associated with vegetation clearance, sett exclusion and closure, and the creation and monitoring of the artificial sett will be carried out under supervision of a qualified ecologist with expertise in badgers. | |
| Mitigation 6: Vegetation Clearance | Any site vegetation clearance within the hedgerows, treelines, or grassland habitats subject to supervision by a qualified ecologist and a phased approach. | |
| Mitigation 7: Waste Management | Ongoing monitoring by contractor. | |
| Enhancement 1: Bat Boxes | The placement and construction of these structures should be carried out under the supervision of a qualified ecologist to ensure they are fit for purpose. | |
| Enhancement 2: Swift Boxes | The placement and construction of these structures should be carried out under the supervision of a qualified ecologist to ensure they are fit for purpose. | |
| Enhancement 3: Amphibian and Reptile Hibernacula | The placement and construction of these structures should be carried out under supervision of a qualified ecologist to ensure they are fit for purpose. | |
| Enhancement 4: Pollinator Habitat | Ongoing monitoring by contractor under supervision of a qualified ecologist. | |
| OPERATIONAL PHASE | | |
| Mitigation 8: Invasive Species Management | An Invasive Species Survey will be carried out by a qualified ecologist during the next botanical season after soft landscaping has been completed. | |

To be carried out by a suitably qualified ecologist (highlighted in green) or by the development contractor (no highlight).

4.7 INTERACTIONS

The biodiversity elements of this report have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage, and landscape elements of the proposed development. There are numerous inter-related environmental topics described in detail throughout this document which are of relevance to the biodiversity chapter. The biodiversity chapter of the report involves interactions with the Land, Soils and Ground Water, Hydrology (Surface Water and Waste Water), Air and Climate, Noise and Vibration, Traffic and Transportation, Material Assets-Waste and Material Assets. It is considered that there is the potential for slight, temporary negative impacts on biodiversity due to dust (air), noise, emissions to water and construction traffic associated with the Construction Phase. However, post mitigation these impacts are not deemed to be significant.

4.8 REINSTATEMENT

There are no requirements for reinstatement.

4.9 **RESIDUAL IMPACTS**

PECENNED. ON OGROOM Residual impacts are impacts that remain once mitigation has been implemented or impacts that gannot be mitigated. Table 4.17 below provides a summary of the impact assessment for the identified KERs and details the nature of the impacts identified, the mitigation measures proposed, and the classification of any residual impacts.

Both standard Construction Phase control measures, and specific mitigation measures, have been outlined to ensure that the Proposed Development does not impact on any species, habitats or designated sites of conservation importance. It is essential that these measures are complied with, in order to ensure that the Proposed Development complies with National conservation legislation.

Provided all recommended measures are implemented in full and remain effective throughout the lifetime of the Proposed Development, no significant negative residual impacts on the local ecology, or on any designated nature conservation sites, will occur as a result of the Proposed Development.

| Table 4.17: Su | immary of pot | ential impacts on | KER(s). mitia | ation propose | ed and residu | ual impacts. | N.C. | | |
|-------------------------|--|---|------------------------------|------------------------|---------------------------------|------------------------------|---|-----------------------------|---|
| Key | Evaluation | Potential | Impact With | out Mitigation | 1 | | Proposed | Proposed | Residual |
| Ecological Resource | | Impact | Quality | Magnitude / Extent | Duration | Significance | Mitigation / Mitigating Factors | Enhancements | Impact |
| HABITATS | | | | | | | | | |
| Treeline (WL2) | Local Importance (Higher Value) | Construction Phase: Loss of habitat Operational Phase: None identified. | Negative | Local | Permanent | Moderate | Mitigation 1: Tree Protection | None | Negative, Local, Permanent, Not Significant |
| Hedgerow (WL1) | Local Importance (Higher Value) | Construction Phase: Loss of habitat Operational Phase: | Negative | Local | Permanent | Moderate | Mitigation 1: Tree Protection | None | Negative, Local, Permanent, Not Significant |
| | | None identified. | None | None | None | None | | | |
| Drainage Ditch (FW4) | Local Importance (Higher Value) | Construction Phase: Loss of habitat. Deterioration of water quality from construction- related pollutants. Operational Phase: None identified. | Negative Negative None | Local Local None | Permanent Short-term None | Moderate Moderate None | Best practice development standards outlined in various sections of the OCEMP. SUDS measures. | None | Imperceptible |
| FAUNA | | | | | | | | | |
| Bat Assemblage | Local Importance | Construction Phase: | Negative | Local | Permanent | Significant | Mitigation 4: Bats | Enhancement 1: Bat boxes | Negative, Local, |

| | | | | | | | Pro- | | |
|---|--|---|----------------------------------|-------------------------|--------------------------------------|---------------------------------|--|---|---|
| Key | Evaluation | Potential | Impact With | out Mitigatior | 1 | | Proposed C | Rroposed | Residual |
| Ecological Resource | | Impact | Quality | Magnitude / Extent | Duration | Significance | Mitigation / Mitigating Factors | Enhancements | Impact |
| | (Higher Value) | Loss of habitat due to felling of the central treeline and hedgerows. Increase in lighting during construction works. Operational Phase: Increase lighting. | Negative | Local | Short-term Permanent | Slight Significant | Lighting Plan | ohloeite | Permanent, Slight |
| Potential Breeding Bird Assemblage | Local Importance (Higher Value) | Construction Phase: Habitat loss. Disturbance from noise, dust and/or lighting. Operational Phase: Habitats as a result of the proposed planting on Site. | Negative Negative Positive | Local Local Local | Permanent Short-term Permanent | Significant Slight Slight | Mitigation 6: Vegetation Clearance Best practice development standards outlined in various sections of the OCEMP. | Enhancement 2: Swift Boxes/Bricks | Negative, Local, Permanent, Slight |
| Badger | Local Importance (Higher Value) | Construction Phase: Risk of injury or death during vegetation clearance | Negative | Local | Permanent | Significant | Mitigation 5: Badger Mitigation 6: | None. | Negative, Local, Permanent, Slight |

| | P _K | | | | | | |
|---|--|--|---|---|---|---|--|
| Potential | Impact Without Mitigation | | | | Proposed QRroposed Residual | | |
| Impact | Quality | Magnitude / Extent | Duration | Significance | Mitigation / Mitigating Factors | Enhancements | Impact |
| Habitat loss. Disturbance from noise, dust and/or lighting. Operational | Negative Negative | Local Local | Permanent Short-term | Significant Slight | Vegetation Clearance Best practice development standards outlined in various | JUG RU | N.A. |
| Phase: Disturbance due to human activity. | Negative | Local | Permanent | Moderate | sections of the OCEMP. Landscape Design | | |
| Construction Phase: Habitat loss. Risk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish. Disturbance from noise, dust and/or lighting. Operational Phase: Disturbance | Negative Negative Negative Negative | Local Local Local | Permanent Short-term Short-term Permanent | Moderate Moderate Slight Moderate | Mitigation 6: Vegetation Clearance Mitigation 7: Waste Management Best practice development standards outlined in various sections of the OCEMP. Landscape Design | None. | Negative, Local, Permanent, Slight |
| | Potential Impact Habitat loss. Disturbance from noise, dust and/or lighting. Operational Phase: Disturbance due to human activity. Construction Phase: Habitat loss. Risk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish. Disturbance from noise, dust and/or lighting. Operational Phase: Disturbance due to human activity. | Potential ImpactImpact With QualityHabitat loss.NegativeDisturbance from noise, dust and/or lighting.NegativeOperational Phase: Disturbance due to human activity.NegativeConstruction Phase: Habitat loss.NegativeRisk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish.NegativeDisturbance from noise, dust and/or lighting.NegativeDisturbance from noise, dust and/or lighting.NegativeOperational Phase: Disturbance from noise, dust and/or lighting.Negative | Potential ImpactImpact Without Mitigation QualityMagnitude /ExtentHabitat loss.NegativeLocalDisturbance from noise, dust and/or lighting.NegativeLocalOperational Phase: Disturbance due to human activity.NegativeLocalConstruction Phase: Habitat loss.NegativeLocalRisk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish.NegativeLocalDisturbance due to human activity.NegativeLocalRisk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish.NegativeLocalDisturbance from noise, dust and/or lighting.NegativeLocalOperational Phase: Disturbance from noise, dust and/or lighting.NegativeLocalOperational Phase: Disturbance due to human activity.NegativeLocal | Potential ImpactImpact Without Mitigation QualityMagnitude / ExtentDurationHabitat loss.NegativeLocalPermanentDisturbance from noise, dust and/or lighting.NegativeLocalShort-termOperational Phase:NegativeLocalPermanentConstruction Phase: Habitat loss.NegativeLocalPermanentRisk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish.NegativeLocalPermanentDisturbance from noise, dust and/or lighting.NegativeLocalShort-termDisturbance from noise, dust and/or lighting.NegativeLocalShort-termDisturbance from noise, dust and/or lighting.NegativeLocalShort-termDisturbance from noise, dust and/or lighting.NegativeLocalPermanentDisturbance due to human activity.NegativeLocalPermanent | Potential ImpactImpact Without MitigationQualityMagnitude / ExtentDurationSignificanceHabitat loss.NegativeLocalPermanentSignificantDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightOperational Phase: Disturbance due to human activity.NegativeLocalPermanentModerateConstruction Phase: Habitat loss.NegativeLocalPermanentModerateRisk of injury or clearance and / or entrapment in construction- related rubbish.NegativeLocalShort-termModerateDisturbance from noise, dust and/or lighting.NegativeLocalPermanentModerateRisk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish.NegativeLocalShort-termModerateDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightOperational Phase: Disturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightOperational Phase: Disturbance from noise, dust and/or lighting.NegativeLocalPermanentModerateOperational Phase: | Potential ImpactImpact Without Mitigation QualityProposed Mitigation / Mitigation / ProposedHabitat loss.NegativeLocalPermanentSignificantVegetation ClearanceDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightBest practice development standards outlined in various sections of the OCEMP.Operational Phase: Disturbance due to human activity.NegativeLocalPermanentModerateMitigation / Mitigation / ClearanceConstruction Phase: Habitat loss.NegativeLocalPermanentModerateMitigation 6: Vegetation ClearanceRisk of injury or delarance clearance and / or entrapment in construction- related rubbish.NegativeLocalPermanentModerateMitigation 7: Waste ManagementDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightMitigation 7: Waste ManagementDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightMitigation 7: Waste ManagementDisturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightMitigation 3: Disturbance development standards outlined in various sections of the OCEMP.Disturbance from noise, dust and/or lighting.NegativeLocalShort-termSlightMitigation 6: Disturbance development standards outlined in various sections of the OCEMP. | Potential Impact Impact Without Mitigation Quality Magnitude / Extent Duration Significance Proposed Mitigation / Mitigation / Mitigation / Factors Proposed Mitigation / Mitigation / Factors Habitat loss. Negative Local Permanent Significant Vegetation Clearance Vegetation Clearance Disturbance from noise, dust and/or lighting. Negative Local Short-term Slight Best practice development standards outlined in various sections of the OCEMP. Moderate Operational Phase: Negative Local Permanent Moderate Mitigation 6: Vegetation Clearance None. Construction Phase: Negative Local Permanent Moderate Mitigation 6: Vegetation Clearance None. Risk of injury or deatan during vegetation clearance and / or entrapment in construction- related rubbish. Negative Local Short-term Moderate Mitigation 7: Waste Management Waste Management Disturbance from noise, dust and/or lighting. Negative Local Short-term Slight Mitigation 5: Vegetation Clearance Disturbance from noise, dust and/or lighting. Negative Local Short-term |

| | | | | | | | Pro- | | |
|------------------------|--|---|---------------------------|-----------------------|------------|--------------|--|---|---|
| Key | Evaluation | Potential | Impact Without Mitigation | | | | Proposed Orpoposed Residual | | |
| Ecological Resource | | Impact | Quality | Magnitude / Extent | Duration | Significance | Mitigation / Mitigating Factors | Enhancements | Impact |
| Amphibians | Local Importance (Higher Value) | Construction Phase: Loss of breeding habitats. | Negative | Local | Permanent | Moderate | Mitigation 6: Vegetation Clearance Mitigation 7: Waste | 5: Enhancement 3: Amphibian and Reptile Hibernacula | Negative, Local, Permanent, Not Significant |
| | | death during vegetation clearance or from other construction activities. | Negative | | | Moderate | Management | | |
| | | Operational Phase: Additional habitat availability within new attenuation areas. | Positive | Local | Permanent | Moderate | | | |
| Common Lizard | Local Importance (Higher Value) | Construction Phase: Risk of injury or death during vegetation clearance and / or entrapment in construction- related rubbish. | Negative | Local | Short-term | Moderate | Mitigation 6: Vegetation Clearance Mitigation 7: Waste Management | Enhancement 3: Amphibian and Reptile Hibernacula | Negative, Local, Permanent, Not Significant |
| | | Phase: | Positive | Local | Permanent | Slight | | | |

| | | | P. | | | | | | |
|------------------------|-----------------------------|--|---------------------------|-----------------------|----------|--------------|---|--------------|---------------|
| Key | Evaluation | Potential | Impact Without Mitigation | | | | Proposed C | Rroposed | Residual |
| Ecological Resource | | Impact | Quality | Magnitude / Extent | Duration | Significance | Mitigation / Mitigating Factors | Enhancements | Impact |
| | | No potential impacts identified | | | | | | 01/06/2 | |
| Fish Assemblage | International Importance | Construction Phase: Risk of deterioration of water quality from construction- related pollutants. Operational Phase: None identified. | Imperceptible | Local | None | None | Best practice development standards outlined in various sections of the OCEMP. SUDS measures. | None | Imperceptible |

4.9.1 SUMMARY

While residual impacts may be negative on a local scale, these habitats and species recorded on Site are common and widespread throughout the surrounding landscape, and as such are not considered significant. It is considered that, provided the mitigation measures proposed within this report together with all best practice development standards as outlined in the OCEMP are carried out in full, and consultation with the NPWS where appropriate, there will be no significant negative impact to any KER habitat, species group or biodiversity as a result of the Proposed Development.

4.10 DIFFICULTIES ENCOUNTERED IN COMPILING

No difficulties were encountered during the compiling of this Chapter.

4.11 REFERENCES

Aughney, T., Kelleher, C. & Mullen, D. (2008). Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny.

Bat Conservation Trust and Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK. ILP, Rugby

Bang, P. and Dahlstrom, P. (2001). Animal Tracks and Signs, Oxford University Press, Oxford.

Bibby, C. J., Burgess, N. D. & Hill, D. A. (1992). Bird Census Techniques. Academic Press, New York. Bird Survey & Assessment Steering Group. (2022). Bird Survey Guidelines for assessing ecological impacts, v.1.0.0. https://birdsurveyguidelines.org

Blamey, M., Fitter, R. and Fitter, A. (2003). Wild Flowers of Britain and Ireland. London: A & C Black. British Standards Institution (2013) BS 42020:2013 Biodiversity: Code of practice for planning and project, BSI, London.

CIEEM (2015). Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

Clements, D.K. & Toft, R.J. (1993). Hedgerow Evaluation and Grading Systems (HEGS) A Methodology for the Ecological Survey, Evaluation and Grading of Hedgerows. Countryside Planning and Management. Colhoun, K., Cummins, S. (2013). Birds of Conservation Concern in Ireland. Irish Birds Vol. 9 No. 4.

Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

Curtis, T.G.F. and McGough, H.N. (1988). The Red Data Book 1: Vascular Plants. Dublin: The Stationery Office.

Devlin, Z. (2014). The Wildflowers of Ireland – A Field Guide. The Collins Press. Cork, Ireland.

EPA. (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports. Published by the Environmental Protection Agency, Ireland.

EPA, (2024). Environmental Protection Agency Online Mapping [ONLINE] Available at: http://www.epa.ie/ [Accessed May 2024].

Fitzpatrick. Ú., Weekes, L. & Wright M. (2016) Identification Guide to Ireland's Grasses. 2nd Edition. Publish by National Biodiversity Data Centre, Carriganore, Waterford.

Forest Service (2000a). Forest Harvesting and the Environment Guidelines. Department of Agriculture, Fisheries and Food.

Forest Service (2000b). Forest and Water Quality Guidelines. Department of Agriculture, Fisheries and Food.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Kilkenny: The Heritage Council.

Foulkes, N., Fuller, J., Little, D., McCourt, S. and Murphy, P. (2013). Hedgerow Appraisal System - Best Practise Guidance on Hedgerow Survey, Data Collation and Appraisal. Woodlands of Ireland, Dublin. Unpublished Report

Gilbert, G., Gibbons, D.W., and Evans, J. (1998): Bird Monitoring Methods: a manual of techniques for key UK species. Sandy: RSPB.

Gillings, S., Wilson, A.M., Conway, G.J., Vickery, J.A., Fuller, R.J., Beavan, P., Newson, S.E., Noble, D.G. & Toms, M.P. (2007) Winter Farmland Bird Survey. BTO Research Report No. 494.

GSI, (2024). Geological Survey of Ireland website [ONLINE] Available at: http://www.gsi.ie/ [Accessed May 2024].

Hedrick Ryan Consulting Engineer. (2024a). Engineering Services Report for the Proposed Development at Boyne Village (Phase 1b), Athlumney, Navan, Co. Meath.

Hedrick Ryan Consulting Engineer. (2024b). Outline Construction Environmental Management Plan for the Proposed Development at Boyne Village (Phase 1b), Athlumney, Navan, Co. Meath.

Herpetofauna Groups of Britain and Ireland. (1998). Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards. HGBI Advisory Notes for Amphibians and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth. Unpublished.

Igoe, F., Quigley, D.T.G., Marnell, F., Meskell, E., O' Connor, W. & Byrne, C. (2004). The Sea Lamprey (Petromyzon marinus L.), River Lamprey (Lampetra flubviatilis L.) and Brook Lamprey (Lampetra planeri) (BLOCH) in Ireland: General Biology, Ecology, Distribution and Status with Recommendations for Conservation. Biology and Environment: Proceedings of the Royal Irish Academy, 104B(3), 43-56.

Institution of Lighting Professionals (ILP). (2018). Guidance Note 08/18: Bats and artificial lighting in the UK. Bats and the Built Environment series. [ONLINE] Available at: https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/ [Accessed August 2020].

Irish Water. (2022). Annual Environmental Report Navan D0059-01.

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. and Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

Kingston, N. (2005). Proposed Red Data List for Vascular Plants. A Consultation Document from the National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. and Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

Kelly, F.L., and King, J.J. (2001) A review of the ecology and distribution of three lamprey species, Lampetra fluviatilis (L.), Lampetra planeri (Bloch) and Petromyzon marinus (L.): A context for conservation and biodiversity considerations in Ireland. Biology and Environment: Proceedings of the Royal Irish Academy 101B (3), 165-185.

Lawton, C., Flaherty, M., Goldstein, E.A, Sheehy, E. and Carey, M. (2015) Irish Squirrel Survey 2012. Irish Wildlife Manuals, No. 89. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Lundy M.G., Aughney T., Montgomery W.I., Roche N. (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland.

Marnell, F., Kelleher, C. & Mullen, E. (2022). Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland

McAney, K. (2008). A Conservation Plan for Irish Vesper Bats. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

Murnane, E., Heap, A., and Swain, A., (2006). Control of water pollution from linear construction projects. Technical guidance. CIRIA C648. Published by CIRIA, UK.

Natura Environmental Consultants (2015). Ecological Assessment – Beech Park Development, Old Bray Road, Cabinteely, Co. Dublin. Planning ref. number: D15A/0385.

NBDC, (2024). National Biodiversity Data Centre online mapping [ONLINE] Available at: http://maps.biodiversityireland.ie/Map.aspx. [Accessed May 2024].

NPWS, (2013a). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS, (2013b). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS, (2024). National Parks and Wildlife Service website [ONLINE] Available at: http://www.npws.ie/en/ [Accessed May 2024].

NPWS (2021) Conservation Objectives: Screen Hills SAC 000708. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NRA. (2005). Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA. (2006). Guidelines for the Treatment of Bats during the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA. (2008). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA. (2009a). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA (2009a). Environmental Assessment and Construction Guidelines. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes. Environmental Series on Construction Impacts. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

OPR (2021). Office of the Planning Regulator. Appropriate Assessment Screening for Development Management, OPR Practice Note PN01

Russ, J., (2012). British bat calls: a guide to species identification. Pelagic publishing.

Smith, G.F., O'Donoghue, P, O'Hora K., and Delaney, E. (2010). Best Practice Guidance for Habitat Survey and Mapping. Published by the Heritage Council.

Stone, E.L., Jones, G., Harris, S. (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Glob. Change Biol. 18, 2458–2465

5.0 LAND AND SOILS

5.1 INTRODUCTION



This chapter assesses the proposed development's land, soils and underlying geology during the construction and operation of the proposed development. It also identifies the characteristics, potential effects, mitigation measures and monitoring measures arising from the proposed development.

This chapter was prepared by Patrick McStay (Hendrick Ryan) & Richard Langford (Parkmore Environmental Services)

Patrick McStay BEng MSc CEng MIEI MIStructE is a Chartered Consulting Civil & Structural Engineer with 30 years' experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments.

Pat has worked on many similar projects including developments in the immediate area of this application. These include the development of 98 residential units adjacent to the LDR6 at Athlumney.

Richard Langford has a degree in geology from Trinity College Dublin and MSc Applied Hydrogeology from Newcastle-upon-Tyne. Richard is a hydrogeologist with 23 years' experience working as a geologist / hydrogeologist in environmental and groundwater consultancy.

5.2 METHODOLOGY

5.2.1 GUIDELINES

The assessment of the potential impact of the proposed development on land and soils was undertaken with reference to the methodology and specific criteria set out in the following documents:

- Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environment Impact Statements (Institute of Geologists of Ireland (IGI) 2013);
- Guidelines On the Information to be Contained in Environmental Impact Assessment Reports (EPA, May 2022)
- EIA Directive 2014/EU/52,
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003),
- EPA Draft EIAR Guidelines 2017,
- Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003),
- Development Management Guidelines (DoEHLG, 2007) and Guidelines for Planning Authorities and
- An Bord Pleanála on Carrying out Environmental Impact Assessments (DoECLG, March 2013).

Effects are characterised using Table 3.3 of the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, May 2022).

5.2.2 CONSULTATION

The following statutory body information sources were consulted:

- Meath County Council;
- Geological Survey of Ireland;
- Ordnance Survey of Ireland;
- Environmental Protection Agency;

- Teagasc; .

Office of Public Works.
Desktop Study
The following sources of information were reviewed to evaluate the soils, geological & hydrogeological aspects of the site:

- Current & historical Ordnance Survey Maps (1829 1842, 1837 1842 & 1888, 1913), •
- Aerial photography (1995 & 2000), •
- The Geology of Ireland, Ed. C. H. Holland, (Dunedin Academic Press, 2001), •
- Geological maps of the site produced by the GSI, •
- Quaternary Maps, •
- Bedrock Mapping, •
- Groundwater Vulnerability Mapping, •
- Aquifer Yield Maps. •
- Teagasc & Environmental Protection Agency Soil Information system, •
- Historic Mines Sites, Inventory & Risk Classification, (EPA & GSI). •
- Report on Site Investigation for Site at The Ramparts, Navan, Co. Meath, Ground Investigations Ireland • Ltd, May 2007,
- Ground Investigation Report, Athlumney, Co. Meath, Ground Investigations Ireland, October 2020. •
- Application of Methodology •

The following investigative surveys / reports were consulted:

- Site inspection / walkover survey. •
- Topographical survey.
- Visit project site to observe existing conditions. •
- Several site investigations undertaken by Ground Investigations Ireland to ascertain the existing • around conditions on the lands included with this application (refer to Appendix D1. Volume III of this EIAR). These included the following scope of:

Site Investigation (September / October 2020)

- 14No. Trial Pits to assess ground conditions, soil profiles and ground water levels
- 13No. Soakaway Tests to determine a soil infiltration value to BRE Digest 365
- Report with recommendations •

Site investigation (February 2023)

- 12No. Trial Pits to assess ground conditions, soil profiles and ground water levels ٠
- 12No. Soakaway Tests to determine a soil infiltration value to BRE Digest 365
- 10No. Window Sample boreholes to recover soil samples •
- 10No. Dynamic Probes to determine soil strength / density characteristics •
- 5No. Cable percussion boreholes to establish ground conditions and soil parameters •
- Geotechnical & Environmental Laboratory testing •
- Report with recommendations •

Site investigation (November 2023)

- 11No. Trial Pits to assess ground conditions, soil profiles and ground water levels •
- 9No. Soakaway Tests to determine a soil infiltration value to BRE Digest 365 •
- Geotechnical & Environmental Laboratory testing; and •
- Report with recommendations •

5.2.3 DESKTOP STUDY

A desktop study for the site was completed and the relevant bodies and information sources referenced in section 5.2.2 used as information sources.

5.2.4 APPLICATION OF METHODOLOGY

The methodology was applied as per the guidelines referenced in section 5.2.1. The potential impact of the proposed scheme on soils and geology environment has been assessed by classifying the importance of the relevant attributes and quantifying the likely magnitude of any potential impact.

This impact assessment methodology takes on board the broad direction of the Guidelines for the Preparation of Soils, Geology & Hydrogeology Chapters of Environmental Impact Statements (IGI 2013).

5.2.5 STUDY METHODOLOGY

The methodology was applied as per the guidelines referenced in section 5.2.1.

5.2.6 PROJECT SITE

The project site, of approximately 13.26 hectares, is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares landbank, which is the subject of a masterplan development proposal.

The project lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site currently exists as greenfield land and is surrounded by residential properties to the west.



Figure 5.1: Subject Lands

Source: Google Maps - Note red line indicative - refer to WH Architects Site Location Map.
The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.

5.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

Details of the existing land / soils receiving environment / baseline scenario are detailed in the following sections which were compiled based on the information sources and consultations above.

5.3.1 TOPOGRAPHY, LAND USE & HISTORIC LAND USE

The topography of the site slopes gently from east to west towards the River Boyne, which is located c. 450m to the west northwest of the site. The site is located between 50m and 40m above mean sea level contours.

Figure 5.2: Site Topography



(Infrastructure Design Report)

The existing site is predominantly "greenfield".

To give context of the proposed subject lands and any potential changes to land, soils, geology and hydrology that have the potential to influence the importance of a feature and the magnitude of any impacts. The lands appear to be used for agricultural use. The historic land use is based on aerial imagery and historic maps:

• OSI 6-inch mapping First Edition B&W, Last Edition B&W

- OSI 25 inch Historic Mapping
- OSI 1995 Aerial Photography
- OSI 2000 Aerial Photography
- OSI 2005 Aerial Photography

5.3.2 TOPSOIL



Based on the Teagasc data base the topsoil has been defined as grey brown podzolics to brown earths. The soils are mapped as being deep well drained mineral soils (mainly basic), derived mainly from calcareous parent materials.

Site specific information taken from the ground investigation report (Ground Investigations Ireland, October 2020 – See appendix D Volume III of the EIAR) indicates that brown, sandy clayey topsoil was present in all 14 trial pits (TPs) excavated across the site to a maximum depth of 0.4m below ground level.

5.3.3 BEDROCK GEOLOGY

A review of the GSI database for the subject lands gives the bedrock classification a Dark Limestone & Shale of the LUCAN formation. This bedrock formation is commonly known as the "Calp" Limestone Formation, and consists of dark grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey, and limestones interbedded with calcareous shales.



Figure 5.3: Bedrock Unit

5.3.4 QUATERNARY & SOIL

According to the GSI web mapping the quaternary sediments consist of till derived from Limestones.

Site specific information taken from the ground investigation report indicates that cohesive deposits were encountered beneath the topsoil and were described typically as brown sandy gravelly CLAY with many cobbles and occasional boulders overlying a brownish grey sandy gravelly CLAY with many cobbles and

⁽Courtesy of GSI)

occasional boulders. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. Cohesive deposits were encountered at depths of between 0.6m below ground level (TP14) and 2.0m below ground level (TP1, 2 and 13).



(Courtesy of GSI)





Granular deposits were encountered below the cohesive deposits and were typically described as brown slightly sandy clayey sub rounded to sub angular fine to coarse GRAVEL with many cobbles and rare boulders, or, greyish brown clayey gravelly fine to coarse SAND with many cobbles and occasional boulders. The secondary silt/clay constituents varied across the site and with depth. Granular deposits were encountered beneath a large portion of the central area of the site at depths between 0.6m below ground level (TP14) and 2.8m below ground level (TP10).

5.3.4.1 Radon

Radon is a naturally occurring radioactive gas formed by the radioactive decay of uranium and thorium which may be present in varying quantities in rocks, soils and groundwater. Classified by IARC (International Agency for Research on Cancer) as *Group 1 - carcinogenic to humans* - Radon is second only to smoking as the leading cause of lung cancer. It is estimated that some 250 lung cancer cases each year in Ireland are linked to radon exposure and accounts for more than half of the total radiation dose received by the Irish population (EPA, 2016). The acceptable level, or Reference Level, for homes and schools in Ireland is 200 becquerel per cubic metre (Bq/m³). For workplaces the Reference Level is 400 Bq/m³

Consultation with the EPA's online Radon Map shows a prediction of the number of homes in a given grid square that exceed the national Reference Level (200 bequerel per cubic metre (Bq/m³)). Grid squares in which the predicted percentage of homes is 10% or greater are called High Radon Areas.



Figure 5.6: Radon Risk Map

Source: EPA Maps

The EPA's Radon Map shows that the site is not located in a High Radon area. In the vicinity of the site according to the EPA, about 1 in 10 homes in this area is likely to have high radon revels.

5.3.5 HYDROGEOLOGICAL ASPECTS

The site is located within the catchment of the river Boyne. Several small ditches drain the site and feed into the Millrace / Farganstown Stream to the south which discharges into the river Boyne. The site investigation shows that topsoil is generally underlain by a layer of clayey SAND or sandy CLAY overlying CLAY with occasional seams of SANDS & GRAVELS.

Though groundwater was not encountered in trial pits excavated at higher elevations of the site, it was encountered at relatively shallow depths at some trial pits excavated at lower areas of the site adjacent to field drains and the Millrace.

Based on site topography and surface water drainage flows, groundwater flow is likely to be from northeast – south west towards the Millrace and River Boyne.



Figure 5.7: Groundwater

Due to the presence of low permeability soils adjacent to the surface, groundwater movement through the glacial deposits will be relatively slow unless high permeability sands and gravels are present. Ground water recharge following development can be assisted and using detention basins designed to maximize infiltration.

5.3.6 GROUNDWATER VULNERABILITY

The GSI has developed a groundwater vulnerability classification for Ireland. The groundwater vulnerability at a particular point can be determined based on the natural geological and hydrogeological characteristics at that point. The vulnerability therefore depends on the nature of subsoils (permeability), the type of recharge (point or diffuse) and the thickness of the unsaturated zone (depth to groundwater).

The vulnerability of the bedrock aquifer underlying the site is rated as "high". A "high" vulnerability rating indicates the presence of between 3 and 10m of moderate permeability material overlying the bedrock aquifer. 14 no. trial pits excavated on the site confirm the presence of at least 2.8m of overburden beneath the site. Eighteen boreholes were drilled using the shell and augur method during a 2007 site investigation at the neighbouring site to the west (Site Investigation by Ground Investigations Ireland at the Ramparts, Navan, Co. Meath, 2007). The 18 no. shell and augur boreholes were drilled to depths of between 4.9m to 9.8m below ground level. Bedrock was not reportedly encountered in any of the boreholes. Two of the boreholes were continued to depths of 12m and 18m below ground level using a rotary coring rig. Bedrock was not reportedly encountered in either of these boreholes. Borehole drilling confirms that the groundwater vulnerability rating beneath the neighbouring site is "high to moderate".



Figure 5.8: Groundwater Vulnerability

(Courtesy of GSI)

Figure 5.9: Aquifer Data



(Courtesy of GSI)

د0

Additional site investigation works have been carried out in 2020-2023. These investigations all consisted of shallow exploration (e.g. trial pits, soakaway tests). Bedrock was not encountered during these investigations.

5.3.7 BEDROCK GEOLOGY

A review of the GSI database for the subject lands gives the bedrock classification a Dark Linestone & Shale of the LUCAN formation. This bedrock formation is commonly known as the "Calp" Linestone Formation, and consists of dark grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey, and limestones interbedded with calcareous shales.

5.3.8 HYDROGEOLOGY

Bedrock beneath the site has been classified as a Locally Important Bedrock Aquifer, which is generally moderately productive. This indicates possible well yields of between 100m³ and 400m³ per day.

The limestones and shales encountered within the Calp Limestone Formation have no intergranular permeability; groundwater flow occurs in fractures and faults and along karstified conduits where present.

The Calp Limestones in places are reportedly highly folded and faulted. There is a lot of mapped faults in the Navan to Slane area. According to the GSI, evidence suggests that the degree of karstification throughout the Calp Limestone is highly variable; as is the degree of structural deformation, the occurrence of open fractures in a connected network which will allow groundwater flow, the degree of confinement by impermeable tills, and the additional storage provided by the many gravel deposits overlying the aquifer. Investigations carried out for Tara Mines Ltd (1.5km east of Navan) involving exploratory drilling and permeability testing revealed that the limestone was karstified in some places at between 25 and 73 metres below ground but that the cavities were filled with a variety of unconsolidated material (GSI, 2003).

There are no active boreholes or wells on site. A review of the GSI database indicates there was a shallow 7.3m deep well with a poor yield (7.6 m³/day) located at Athlumney. This well was drilled in 1899. It is likely that this well was completed in the overburden and is probably not still in use. The GSI website also notes a 64.6m deep well with a poor yield (6.5m³/day) located at Farganstown. This well was drilled in 1940 and is also probably not currently in use.

The site is not located within any mapped group water scheme or public water supply source protection area.

5.3.9 GEOLOGICAL HERITAGE

The site does not encompass any listed geological heritage sites. The closest geological heritage site is the Boyne Valley (IGH 7), which is located ~0.5km northwest of the site.

5.3.10 DESIGNATED SITES

In the Republic of Ireland designated sites include proposed National Heritage Areas (pNHAs), National Heritage Areas (NHAs), Special Areas of Conservation (SAC) and Special Protection Areas (SPAs). The proposed site at Athlumney is not located within or adjacent to any designated site.

There are two designated sites within 0.5km of the proposed development site; the River Boyne and River Blackwater SPA (Site Code 004232), which is a designated site due to the presence of the Kingfisher; and the River Boyne and River Blackwater SAC (Site Code 002299), where the qualifying interests include Alkaline Fens, Alluvial forests with Alnus glutinosa and Fraxinus excelsior; River Lamprey, Salmon, and Otter.

5.3.11 GEOLOGICAL RECEPTOR IMPORTANCE

The primary risk is the removal of soil from the site during construction of the housing development.

Secondary risks are from hydrocarbon spillage during construction of the housing development, and leakage to ground from sewage wastewater discharge at the site. These are common potential impacts to all construction sites (such as road works and industrial sites).

Land beneath the site is considered as having moderate to high importance given it supports good quality tillage ground. Subsoil beneath the site is considered as having low to moderate importance given its relative abundance locally. Bedrock geology is considered as having low importance beneath the site given it will not be accessed or impacted by the proposed development.

The importance of the land, soil and geological environment is summarised below.

|--|

| Attribute | Importance | Reason |
|-------------------------------------|---------------------|--|
| Land | High | Good quality tillage land |
| Soil | High to Moderate | Generally well drained fertile topsoil. The fertile soil provides the framework for good agricultural tillage land to exist over the majority of the site. The proposed site only encompasses a small area of the existing agricultural land in the local area. |
| Subsoil (Quaternary Deposits) | Low | Quaternary deposits beneath site are not classified as an aquifer by GSI. |
| Bedrock Geology | Low | Depth to bedrock is greater than 18m below ground level and will not be accessed or impacted by proposed site development works. |

5.3.12 CONTAMINATED LAND

The site is to be developed on greenfield agricultural land. There was no contamination identified in the site investigation report.

5.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development will consist of the construction of a mixed-use development comprising 322 no. dwellings, (212 no. houses, 26 no. duplex apartments and 84 no. apartments) community centre and sports hall, and a district public park, all on a site of c. 13.26 hectares. Refer to Chapter 2.0 (Description of Development and Alternatives) for a detailed site and development description.

The proposal comprises the second phase (phase 1B) of Phase 1 of the development of the wider Masterplan lands.

Further information regarding the proposed infrastructure elements of the proposed development is detailed in the separate "Engineering Services Report, (ESR) prepared by Hendrick Ryan Consulting Engineers.

It is anticipated that the main development characteristics effecting soils and geology comprise the following:

- General construction activities across most of the site.
- Excavations to facilitate construction of foundations, road construction, landscaping features and installation of services including drainage, utilities, stormwater storage and SUDS features.
- Changes to ground levels across the site to facilitate final development levels.
- Disposal of excavated soil off-site.
- Importation of construction materials to the site including incorporating same below the ground.
- Land take of c. 13.26 hectares from agricultural to a residential scheme, including houses, open space, roads and ancillary infrastructure.
- Removal of topsoil and subsoil to allow road construction, foundation excavation, services installation.
- It is estimated that approximately 62,500m³ of cut and 25,000m³ of fill (generally comprising normal stone material used in the construction of roads, footpaths and buildings) will be required across the development. Cut material will be reused on site where possible for landscaping in order to minimise the volume of material that needs to be removed from site.

The proposed scheme will have a requirement for imported materials, primarily comprising high standard fill and stone for pipeline construction, hardstanding areas, concrete for foundations, reinforced concrete structures. Fill material will generally comprise of crushed rock in accordance with TII Specification for Roadworks and SR21 Annex E. Granular bedding and surrounds to pipes shall consist of free draining hard clean and chemically inert gravel or crushed stone.

The majority of new material brought to the site will be used immediately or will be stored within the site boundary. Other materials such as asphalt or concrete will be brought directly to the construction site when required and immediately placed.

5.5 POTENTIAL EFFECTS OF THE PROPOSED DEVELOPMENT

5.5.1 CONSTRUCTION PHASE

This section identifies potential and significant effects to the soil and geology of the subject site caused by the construction of the proposed development.

5.5.2 STRIPPING OF TOPSOIL

Removal of the existing topsoil layer will be required across the site. It is expected that half of all stripped topsoil will be reused on site (incorporated into landscaping of back gardens and public open spaces).

Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff which will have a temporary negative not significant effect due to the temporary exposure of sub soil layers during.

Table 5.2: Preliminary Estimated Topsoil Volumes (Approximate)

| | Volume (m ³) |
|---|--------------------------|
| Topsoil Strip (0.1 to 0.4m thick layer) | 12,900 |
| Topsoil disposal | 0 |
| Topsoil Reuse | 12,900 |

5.5.3 EXCAVATION OF SUBSOIL LAYERS

Excavation of existing subsoil layers will be required in order to allow road construction, foundation excavation, drainage and utility installation and provision of surface water attenuation facilities which will have a temporary negative not significant effect due to the temporary exposure of sub soil layers during construction which may result in erosion and generation of sediment laden runoff.

Soil compaction can occur due to movement of construction and maintenance traffic on the site. This is considered to be a *negative slight-moderate long-term impact* on the soil and *in-situ* earth materials.

The ongoing presence of the proposed buildings and associated internal roads, footpaths and hardstanding will result in sealing of the soil. This sealing effect can impact on natural exchanges occurring between soils and the atmosphere which influence the natural function and associated biodiversity of soils. This will have a *negative slight permanent impact* on the soil.

Where feasible, excavated material will be reused as part of the site development works (e.g., use as fill material beneath landscaping.

Table 5.3: Estimated Cut/Fill Volumes (Approximate)

| | Volume (m ³) |
|--|--------------------------|
| Cut | |
| Buildings (including foundations) | 15,718 |
| Services installation (excavation) | |
| Wastewater | 4,176 |
| Surface water (including attenuation) | 10,182 |
| Watermain | 5,232 |
| Gas | 1,741 |
| Electrical | 12,122 |
| | |
| Roads, parking, footpaths etc | 13,298 |
| Total Cut | 62,469 |
| Imported Fill | |
| Buildings | |
| Services installation (fill to trenches) | |
| Wastewater | 2,131 |
| Surface water (including attenuation) | 5,588 |
| Watermain | 2,707 |
| Gas | 834 |
| Electrical | 6,134 |
| Total Fill | 24,913 |

5.5.4 CONSTRUCTION TRAFFIC

Approximately 12,900m³ (generally 0.3-0.4m depth of topsoil across the site) of topsoil will be excavated from the existing ground level. Topsoil for re-use will be stored in stockpiles for its protection and retained for future use in landscaping works. Approximately 60,000m³ of sub-soil (clay, sand, gravel) will also be excavated to facilitate construction of buildings, roads, parking, footpaths etc. and the installation of underground services.

It is intended that most of the excavated material will be stored on site for re-use in landscaping with excess material removed from site by lorries under license to a registered landfill in consultation with the Local Authority. These activities will generate associated construction traffic on the road network. From previous project experience, we estimate up to 40No. two-way HGV movements per day on the local road network. In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from construction staff and deliveries of construction materials and equipment.

Earthworks plant (e.g. dump trucks) and vehicles delivering construction materials to site (e.g. concrete deliveries, etc.) have potential to cause rutting and deterioration of the topsoil layer and any exposed subsoil layers, resulting in erosion and generation of sediment laden runoff. This issue can be particularly noticeable at site access points, resulting in deposition of mud and soil on the surrounding road network. Dust generation can also occur during extended dry weather periods as a result of construction traffic. The Outline Construction Environmental Management Plan details precautions to be taken to minimize detrimental effects on the environment during the works.

Following topsoil stripping there is a risk of rutting and deterioration of the exposed subsoil layers by earthworks plant and construction traffic during the construction period. This may cause erosion; generation of sediment laden run-off and mud being deposited on adjacent roads from construction vehicles. However, it is not envisaged that there would be any adverse effect on the existing natural strength or quality of the remaining subsoil on completion. As such the potential effect is likely to be short term, moderate effect on subsoil surfaces. The Outline Construction Environmental Management Plan details precautions to be taken to minimize siltation of streams as a result of this.

It will be necessary to import materials to site, in particular large volumes of imported stone (approximately 25,000m³) for construction of the buildings, roads, services etc. Large quantities of concrete, bricks, steel, asphalt, windows, fittings, pipes, materials etc. will also need to be delivered to site by lorry. These activities will generate a large amount of construction vehicle trips (mostly lorries) on the road network and local area during the construction phase of the works.

The construction of the development will require construction workers to travel to and from the site daily which will generate additional traffic on the existing local road network for the construction phase of the project. Refer to Chapter 10 Traffic for further details and information on the traffic impacts. Refer to section 5.5.5 for impact of fuel, oils and lubricants used by construction vehicles.

The potential impact of construction traffic will be a not significant negative effect over the duration of the construction programme. Refer to EIAR Chapter 10 for a table of effects.

5.5.5 ACCIDENTAL SPILLS AND LEAKS

During the construction phase there is a risk of accidental pollution related to the following construction activities;

- storage of oils and fuels on site,
- oils and fuels leaking from construction machinery,
- spillage during refuelling and maintenance of construction machinery,
- use of cement and concrete during construction works.

Potential accidental spills and leaks could cause contamination of the existing topsoil, subsoils or bedrock or groundwater underlying the site.

There is a potential risk of localised contamination of the groundwater due to construction activities i.e. from accidental spillages, leaks etc. resulting in a potential Permanent Negative effect on the groundwater (in the absence of mitigation). The Outline Construction Environmental Management Plan details precautions to be taken to reduce the risk of spillages occurring and ensuring that spilled materials are contained to minimize the risk to the environment.

5.5.6 GEOLOGICAL ENVIRONMENT

It is not envisaged that the proposed development will have any discernible negative effect on the geological environment. Excavations associated with development of the site have been designed as shallow as possible and are located mainly above bedrock level. Bedrock is only expected to be encountered at localised points to the north of the site. These potential effects can be characterised as not significant. It is not envisaged that this will have any discernible impact on the geological environment. Excavations associated with development of the site have been designed as shallow as possible and no bedrock was encountered in the site investigation. Where bedrock is encountered it will be crushed, screened and tested for use within the designed works.

5.5.7 HUMAN HEALTH

A potential risk to human health due to the development could be the short-term construction activities which may result in direct contact, ingestion or inhalation by construction workers/personnel on site with the soils (e.g., construction workers exposed to dust generated by the construction activities within the site which may expose soils in dry weather to wind). Further risks to human health include accidental spills / leaks of hydrocarbons / oils relating to construction activities. See section 5.5.5 above for more details. These potential effects can be characterised as short-term, imperceptible, and negative, in the absence of mitigation. Please refer to Chapter 3 Human Health.

No human health risks associated with long term exposure to contaminants (via. direct contact ingestion or inhalation) resulting from the proposed development are anticipated.

5.5.8 OPERATIONAL PHASE

On completion of the construction phase, it is not envisaged that there would be further direct, or indirect effects on the existing soils or geology on the site. Soft landscaping, planting, road surface and hard landscaping areas within the development will protect the soils from exposure and erosion. Properly designed and constructed hard landscaping, site services and stormwater collection will prevent concentrated run-off from eroding existing soils or banks or causing contamination.

The development when constructed will create additional impermeable surface areas and land take of c. 13.26 hectares. The type of development (residential) and the proposed layout has a low risk of impacting run-off water quality. Run-off from the development's impermeable areas is designed to be collected via a new stormwater network which incorporates on-line attenuation storage systems and SuDS features such as permeable paving, bio-retention areas, swales, and tree pits to improve water quality in accordance with the principles of SuDS design. The day-to-day operational activities of the completed development are therefore unlikely to have any direct or indirect impact on the groundwater environment or water quality.

Since operational run-off is collected into concentrated locations an associated minor impact will be reduction of the stormwater infiltration across the full site area i.e., the "*greenfield*" infiltration potential will be reduced.

Also, the risk of accidental spills or leaks of fuels and oils from vehicles on the site may be collected via run-off and directed into the stormwater network / SUDS features which could lead to risk of impacting existing soils where infiltration is facilitated. Sustainable Urban Drainage systems, gullies and interceptors will be maintained to ensure they remain in good working order.

The ongoing presence of the proposed buildings and associated internal roads, footpaths and hardstanding will result in sealing of the soil. This sealing effect can impact on natural exchanges occurring between soils and the atmosphere which influence the natural function and associated biodiversity of soils. This will have a *negative slight permanent impact* on the soil.

This sealing also has an impact on drainage and groundwater recharge to the underlying aquifer and this is dealt with in Chapter 6 Water.

The potential effects of accidental spills or leaks will have a negative slight effect.

(EIAR Chapter 6 provides further details regarding the strategy in relation to the development's stormwater management for the subject site.)

5.5.9 "DO-NOTHING" SCENARIO

Should no development be proposed for the site and the site remains as open undeveloped land this would remove any potential for contamination issues over the operational or post development phase. Notwithstanding this, the land is zoned for the sort of development applied for and as part of the national strategy to provide accommodation, the proposed development is required. As such the "Do-Nothing" Scenario is not applicable.

5.6 MITIGATION MEASURES

5.6.1 INCORPORATED DESIGN MITIGATION

The proposed development and planning drawings submitted have taken into account potential contamination issues and upon completion the development has a system in place to ensure rainwater runoff from the site passes is adequately treated prior to out falling into the mill race.

Mitigation included in the design of the proposed development include:

- Proposed development levels are designed to minimise cut/fill type earthworks and volume of material to be disposed off-site where possible.
- Landscaping works for the proposed development when incorporated into the scheme are designed to protect the soils again from weathering and erosion.
- Design of site services / drainage works are in accordance with the relevant design guidance such as the GDSDS, The SUDS Manual (CIRIA C753) and the Irish Water Code of Practice (IW-CDS-5030-03 Revision 2).
- Excavated material to be removed off-site is undertaken to the relevant EPA licensing requirements.
- Landscaping works for the proposed development when incorporated into the scheme are designed to protect the soils again from weathering and erosion.
- Appropriately designed site services / drainage / sewers will protect the soils and geology from risk
 of contamination arising from the development such as light liquids separator or SuDS treatment
 train approach.

5.6.2 CONSTRUCTION PHASE MITIGATION

An Outline Construction Environmental Management Plan (OCEMP), prepared by Hendrick Ryan Consulting Engineers is included with the planning application (contained in Appendix D Volume III of the EIAR). This plan will be developed further by the contractor into a Construction Management Plan for the construction phase, which will include the mitigation measures contained in the EIAR. In advance of work starting on site, the appointed Contractor will prepare a Construction and Environmental Management Plan (CEMP). The Plan sets out the overarching vision of how the construction of the project will be managed in a safe and organised manner by the Contractor. The CEMP will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIAR and any subsequent conditions relevant to the project.

The OCEMP includes a range of site-specific measures which will include the following mitigation measures in relation to soils:

- Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.
- Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter watercourses.
- Control of Soil Excavation and Export from Site;
- Topsoil stockpiles will be located on site so as not to necessitate double handling.
- Topsoil to be re-used throughout the development in landscaping and public open spaces / linear park.
- Disturbed subsoil layers to be stabilised as soon as practicable backfilling of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping, to be carried out promptly to minimise the duration that subsoil layers are exposed to the effects of weather and construction vehicles.
- Stockpiles of excavated subsoil material to be protected for the duration of the works and located separate to the topsoil stockpiles.
- Construction site mitigation such as wheel wash and dust suppression measures to be implemented.
- Measures to capture and treat sediment laden surface water runoff especially from excavations and stripped land to be implemented (e.g. sediment tanks, surface water inlet protection and earth bunding adjacent to open drainage ditches).
- Where feasible, excavated subsoil material to be reused as part of the site development works (e.g. for landscaping works and for backfill to trenches under non-trafficked areas).
- Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes on the site and entering the site.
- All oils, fuels, paints and other chemicals to be stored in a secure bunded hardstanding area.
- Refuelling and servicing of construction machinery to take place in a designated hardstanding area, remote from surface water inlets (when it is not possible to carry out such activities off-site).
- Good housekeeping (site clean-ups, use of disposal bins, etc.) on the site project.
- Any material removed from site shall be classified before removal to ensure it is disposed of to an appropriately licensed landfill or recovery facility in accordance with The Waste Management (Hazardous Waste) Regulations 1998. Unsuitable material that cannot be reused on site to be disposed off-site under license.
- Where bedrock / boulders are encountered in excavations, option to crush and reuse to be considered depending on quantity of material excavated. Screened material may be reused as a fill material e.g. in road construction and backfill to service trenches.
- Where feasible, excavated material will be reused as part of the site development works (e.g. use as fill material beneath roads) however, unsuitable excavated subsoil is expected and will have to be removed to an approved landfill.

All fill and aggregate imported for use on the proposed development site will be sourced from reputable suppliers. All suppliers will be vetted for:

 Aggregate compliance certificates/declarations of conformity for the classes of material specified for the project;

- Environmental Management status;
- Regulatory and Legal Compliance status of the Company.



Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the excavation and there will be no direct link or pathway from this area to any surface water body. It is anticipated that only local/low level of stockpiling will occur as the bulk of the material will be excavated either straight into trucks for transport off site or will be reused in other areas of the site as fill.

- Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.
- The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:
- Designation of bunded refuelling areas on the site (if required);
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
- Any flexible pipe, pump, tap or valve will be fitted with a lock and will be secured when not in use;
- All bowsers to carry a spill kit and operatives must have spill response training; and
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:
- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they should be done so secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

5.6.3 OPERATIONAL PHASE

During the operational phase of the proposed development there is limited to no potential for site activities to impact on the geological environment of the area. The proposal will result in a permanent land take of c. 13.26 hectares.

Following best practice, the potential for the ground water to become polluted via oil spills will be reduced as far as is practical by the use of an oil separator or other appropriate treatment to take run off from carparking areas and passing through same prior to disposal.

Mitigation measures envisaged during the operational phase comprise:

- Ensuring regular maintenance of site services, SuDS features and attenuation systems such that they operate as designed.
- Emptying oil separators as per manufacturer's operation and maintenance recommendations to mitigate against risk of spillage / leaks into the soils.

5.7 PREDICTED IMPACT FOLLOWING MITIGATION (RESIDUAL IMPACT)

The proposed development will alter the current land use from agricultural to residential development, community, retail, and associated public open space and landscape areas. The impact on land, soil, geology and hydrogeology from accidental spillages of fuel and lubricants used during the construction

phase of the development is predicted to be minimal when stored and used in a responsible manner. After implementation of the mitigation measures recommended above for the construction phase, the proposed development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction phase will be short term only in duration. Implementation of the measures outlined in Section 5.6 will ensure that the potential impacts of the development on soils and the geological environment are minimised during the construction phase and that any residual impacts will be short term.

Residual Impacts such as loss of agricultural land / earthworks haulage & the risk of contamnation of groundwater are deemed to be of minor risk, as the proposal for residential accommodation would not be seen as a potential high-risk development post construction.

5.7.1 TOPSOIL

There is a quantity of topsoil material removed off-site to facilitate the development. Effects will be permanent and not significant as the land changes from a greenfield to a residential development with excess material disposed of at a licensed facility.

Following implementation of mitigation measures included in section 5.6 and the OCEMP (contained in Appendix D2 Volume III of the EIAR, the risk of deterioration or erosion during construction will be temporary and slight.

Land use change from an agricultural area to a residential development during operational phase with associated public open space and landscaped areas will be permanent change to the existing topsoil condition. Effects will be permanent and negligible.

Land use change from agricultural to landscaped open space operational phase will be a permanent change. Effects negligible to the topsoil condition.

5.7.2 SUB-SOIL

The impact on land, soil, geology, and hydrogeology from accidental spillages of fuel and lubricants used during the construction phase of the development is predicted to be minimal when stored and used in a responsible manner. After implementation of the mitigation measures outlined in Section 5.6 and the OCEMP (Appendix D Volume III of this EIAR) for the construction phase, the proposed development will not give rise to any significant long-term adverse effects. Slight negative effects during the construction phase will be short term only in duration.

Implementation of the measures outlined in Section 5.6 and the OCEMP will ensure that the potential effects of the development on soils and the geological environment are minimised during the construction phase and that any residual effects will be short term and imperceptible.

Residual effects from earthworks haulage and the risk of contamination of groundwater are deemed to be of minor risk. The residual impacts for a residential development, and open space are deemed to be imperceptible post construction (during the operational phase).

Landscaping for the developments will reduce the initial impact from the construction phase and will protect the soils again from weathering and erosion. The effects on the underlying bedrock geology arising from the construction phase will be imperceptible. The greatest effect will relate to the soils from the construction activity as soil levels will be altered throughout. However final landscaping should reduce and address these effects. It is anticipated that the effects on soils arising from the construction phase will be short term and not significant.

The effects on the underlying bedrock geology arising from the construction phase will be imperceptible.

Effects on the soil resulting from the proposed operational phase of the development is anticipated to be imperceptible; once the development is completed, risks to the land and solis will be from pollutants deriving from the use of the residential developments and/or from contaminated solities water run-off.

Refer to Chapter 6 Water further information and details relating to water, hydrogeology, and hydrology.

5.8 *"WORST-CASE"* SCENARIO

5.8.1 CONSTRUCTION PHASE

106202

Under a *'worst case'* scenario none of the mitigation measures are implemented. This could result in the accidental release of fuel, oil, paints, or other hazardous material could occur on site during the construction phase, through the failure of secondary containment or a materials handling accident on the site. If this were to occur over open ground, then these materials could infiltrate through the soil contaminating the soil zone. If the materials were not recovered promptly, then the contaminants may contaminate the down gradient groundwater where overburden is more shallow above bedrock. Refer to Chapter 6 Water further information and details relating to water, hydrogeology, and hydrology. However, the "worst case" scenario is unlikely to occur due to the mitigation measures outlined in section 5.6 above.

5.8.2 OPERATIONAL PHASE

Under a 'worst case' scenario none of the mitigation measures are implemented. As noted from an operation view point the worst-case scenario would be an accidental spill of oils from cars or effluent from or a leak in the foul drainage system or damage to the oil separator serving the carparking for the proposed scheme. This could result in the accidental release of fuel and oil to the receiving environment. Refer to Chapter 6 Water further information and details relating to water, hydrogeology, and hydrology.

5.9 MONITORING

Construction phase monitoring relates to the good maintenance of mitigation measures outlined above in section 5.6 including the OCEMP contained in Appendix D Volume III of this EIAR. Soil removed during the construction phase is to be monitored to maximise potential for re-use on site. Monitoring of any hazardous material stored on-site forms part of the Construction & Demolition Waste and By-Product Management Plan, included in the LRD application and Chapter 11 of this EIAR Material Assets Waste Management. A dust management/monitoring programme is included in Appendix C 7.2 Volume III of the EIAR. The Outline Construction Environmental Management Plan also details precautions to be taken to minimize the effect of dust on air quality.

The proposed foul drainage & potable water network will be vested to Irish Water, and as the statutory agency, will have responsibility for the maintenance of the foul drainage & potable water network once completed. The stormwater system will be taken in charge by Meath County Council who will carry out maintenance on the system if required.

5.9.1 MONITORING MEASURES – CONSTRUCTION PHASE

Proposed monitoring during the construction phase in relation to the soil and geological environment are as follows:

• Contractors will adhere to the mitigation in this EIAR and OCEMP in Appendix D Volume III of this EIAR.

- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road sub-formation level in advance of placing capping material, stability of excavations etc.).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated materia) to be reused as fill; protection of soils from contamination for removal from site)
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.)
- Soil removed during the construction phase will be monitored to maximise potential for re-use on site. Any contaminated soil encountered and not identified on site investigations will be analysed and disposed off-site at a suitable licensed facility.
- The quantities of topsoil, subsoil and rock removed off site will be recorded.

5.9.2 MONITORING MEASURES – OPERATIONAL PHASE

Monitoring of the "*taken in charge*", public open space areas by Meath County Council will be on-going. They will ensure that the detention basins and other SuDS features such as swales are adequately maintained. If they are found to be not adequately maintained, then they will be responsible for increasing the maintenance schedule.

5.10 REINSTATEMENT

There is no requirement to assess if these lands can be fully reinstated to green field in the future scenario.

5.10.1 MONITORING MEASURES – OPERATIONAL PHASE

No ongoing monitoring will be required during the operational phase.

5.11 DIFFICULTIES ENCOUNTERED

No difficulties were encountered in completing this section. It is noted that all volumes calculated are estimated volumes based on similar schemes and review of proposals. Actual volumes / amounts may change slightly based on final detailed design and condition of soils when exposed / excavated.

5.12 CUMULATIVE IMPACTS

The primary potential cumulative impact considered is local increase in hard standing and subsequent decrease in local groundwater recharge as the landscape changes from predominantly greenfield to large impermeable areas.

As part of the proposed development features such as open bottom attenuation, swales, tree pits, green roofs and permeable paving as part of the design which all promote groundwater recharge. Given these features and the geological and hydrogeological environments of the proposed development, i.e. the "local important" bedrock aquifer, the potential cumulative effects to the land, soils, geology and hydrogeology of the local and surrounding areas are deemed to be insignificant.

Each project currently permitted or under construction is subject to EIA and/or planning conditions which include appropriate mitigation measures to minimise effects on the land, geological and hydrogeological environment. Cumulative impacts, if any, will be limited to the construction stage and will, therefore, be temporary to short-term in duration. As long as mitigation measures for the developments are carried out as permitted, there will be no significant cumulative impacts on the land, geological and hydrogeological environment.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park and comprise construction of: 3 no. commercial high-bay warehouse units.

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development.

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann).

Some separate Irish Water upgrade works may be needed to facilitate development in general in Navan, including the subject lands, but do not form part of this application. The sewerage/water supply connections to serve the site have already been constructed in the new public road (LDR6) by Meath County Council / Irish Water.

Overall, the cumulative impact of the construction of the proposed development and the projects above are predicted to be neutral in terms of quality and of an imperceptible significance (temporary in duration).

Should any future developments be under construction or planned in the vicinity of the site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented.

There cumulative effects arising from the construction and operational phase of the development are short term and not significant.

5.13 DIFFICULTIES ENCOUNTERED

No difficulties were encountered while developing this report.

5.14 INTERACTIONS

There are interactions between land and soils, water and material assets and built asset (traffic).

There are interactions between land and soils and water, with changes in depth and type of overburden impacting the protection provided to aquifers. The likely impact will be permanent, slight and adverse.

There are interactions between land and soils and water, with some surface water conveyed and stored in SuDS features such as swales and discharging to the ground where possible. The likely impact will be permanent, slight and favourable.

There are interactions between lands and soils and material assets, with the construction of drainage and utilities impacting the quantity of soil, subsoil and rock as these materials will be removed to facilitate construction. The likely impact will be permanent, slight, and adverse.

There are interactions between lands and soils and material assets, with the delivery of normal stone fill under buildings and roads and footpaths resulting in additional construction vehicles on roads adjacent to the site. The likely impact will be temporary, slight, and adverse.

Refer to chapter 15 for the anticipated interactions and interdependencies relating to land and soils.

5.15

- •
- REFERENCES EPA. (2021). EPA Maps, Accessed on 11th May 2022 <u>http://gis.teagasc.ie/soils/map.php,</u> Department of Communications, Climate Action and Environment, Geological Survey reland, Alai OGI LOTA • Accessed on 11th May 2022. Geological Survey Ireland Spatial Resources (arcgis.com)

6.0 WATER AND HYDROLOGY

6.1 INTRODUCTION



This section of the Environmental Impact Assessment Report (EIAR) document has been prepared by Hendrick Ryan Consulting Engineers and assesses and evaluates the impact of the proposed development on the Site's Water, Hydrology and Hydrology during the demolition, construction, and operational phases. All natural water bodies including surface freshwater (streams, bogs, ponds, rivers, and lakes), hydrogeological / groundwater (shallow and deep) impacted by the proposed development are assessed. Interaction between the water bodies and the surface water drainage, foul water drainage, and water supply proposals are assessed.

A Site Specific Flood Risk Assessment (SSFRA) has been completed by JBA Consulting Engineers and is included as a standalone report with this application and has contributed to the contents of the EIAR, and the assessment below.

This chapter was prepared by Patrick McStay (Hendrick Ryan) & Richard Langford (Parkmore Environmental Services).

Patrick McStay BEng MSc CEng MIEI MIStructE is a Chartered Consulting Civil & Structural Engineer with 30 years' experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments and

Richard Langford has a degree in geology from Trinity College Dublin and MSc Applied Hydrogeology from Newcastle-upon-Tyne. Richard is a hydrogeologist with 23 years' experience working as a geologist / hydrogeologist in environmental and groundwater consultancy.

6.2 METHODOLOGY

6.2.1 GUIDELINES

Key guidance documents considered as part of EIAR preparation are listed below.

| Body | Guidance | |
|----------------------------------|--|--|
| Transport Infrastructure Ireland | Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA , 2009) | |
| | Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008) | |
| | Guidelines for The Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2008) | |
| | Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (NRA 2007) | |
| | Road Drainage and the Water Environment (DN-DNG-03065) | |
| | Design of Earthworks Drainage, Network Drainage, Attenuation & Pollution Control (DN-DNG-03066) | |
| | Drainage Design for National Road Schemes - Sustainable Drainage Options (RE-CPI-07001) | |
| | Drainage Systems for National Roads [DN-DNG03022] | |

Table 6.1: Guidance Documents

| Body | Guidance | | |
|---|---|--|--|
| Office of Public Works (OPW) | The Planning System and Flood Risk Management (OPVC 2009) | | |
| | OPW Flood Maps (<u>http://www.floodinfo.ie/)</u> | | |
| Environmental Protection | Guidelines On the Information to Be Contained In Environmental Impace Assessment Reports (EPA, May 2022) | | |
| Agency (EPA) | EPA Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (EPA, Sept. 2003) | | |
| | Geo Portal (<u>https://gis.epa.ie/EPAMaps/</u>) | | |
| Department of Housing Planning and Local Government | River Basin Management Plan for Ireland 2018 – 2021 | | |
| Inland Fisheries Ireland (IFI) | Guidelines on protection of fisheries during construction works in and adjacent to waters (Inland Fisheries Ireland 2016) | | |
| | The SUDS Manual (CIRIA C753) | | |
| | Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (CIRIA C532) | | |
| Construction Industry | Control of Water Pollution from Linear Construction Sites (CIRIA C648) | | |
| Research and Information Association (CIRIA) | Development and Flood Risk – Guidance for the Construction Industry (CIRIA 624) | | |
| | The Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (C532) (2001) | | |
| | Environmental Good Practice on Site Guide (C741) (2015) | | |
| Dublin City Council (DCC) | The Greater Dublin Strategic Drainage Study [GDSDS] (Dublin City Council et al., 2005) | | |
| Meath County Council | County Development Plan. | | |
| IFI | Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters | | |
| Institute of Geologists Ireland (IGI) | Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements (2013) | | |
| Environment Agency (UK) EA | PPG1: General Guide to the Prevention of Pollution (UK Guidance Note) | | |

6.2.2 CONSULTATION

In order to identify the current conditions and to establish any potential impacts for the proposed development it is necessary to undertake a desk top review of the existing water features and site topography conditions for the subject lands. The existing conditions have been interpreted from a desk top study.

To establish same the following list of statutory bodies were consulted.

- Meath County Council;
- Geological Survey of Ireland;
- Ordnance Survey of Ireland;
- Environmental Protection Agency;
- Office of Public Works.

6.2.3 DESKTOP STUDY/SITE VISITS

This chapter encompasses knowledge obtained from site visits, drainage and water services record information received from Irish Water and the Local Authority. Additionally, information from the EPA and GSI websites has been utilised. Hendrick Ryan met with Meath County Council Planners and Drainage personnel for pre-planning meetings and this has informed their approach to the proposed design.

The following sources of information were reviewed to evaluate the Water & Hydrology aspects of the site.

- Current & historical Ordnance Survey Maps (1829 1842,1837 1842 & 1888, 1913);
- Aerial photography (1995 & 2000);
- Office of public Works, Historical Flood Mapping;
- Office of Public Works, Flood Risk Management Plans;
- Meath County Council, Development Plan, 2017 2023.
- Report on Site Investigation for Site at The Ramparts, Navan, Co. Meath, Ground Investigations Ireland Ltd, May 2007,
- Ground Investigation Report, Athlumney, Co. Meath, Ground Investigations Ireland, October 2020, February 2023 & November 2023.
- Trim Groundwater Body, Summary of Initial Characterisation, GSI, 2003

6.2.4 ASSESSMENT METHODOLOGY

The assessment of the potential impact of the proposed development on the water bodies was carried out in accordance with the methodology and the specific criteria set out in the following documents:

- EPA Guidelines on Information to be Contained in an Environmental Impact Statement (May 2022),
- EIA Directive 2014/EU/52, Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003),
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003), Development Management Guidelines (DoEHLG, 2007) and
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessments (DoECLG, March 2013).

Effects are characterised using Table 3.3 of the EPA Guidelines on Information to be Contained in an Environmental Impact Statement (May 2022).

6.2.5 APPLICATION OF METHODOLOGY

Application of methodology was carried out as per the guidelines referenced above.



Source: Figure 3.4 of Guidelines on the information to be contained in Environmental Impact Assessment Reports

6.2.6 STUDY/PROJECT AREA

The subject site, of approximately 13.26 hectares is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares site, which is the subject of a masterplan development proposal.

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.



Figure 6.2: Subject Lands

Source: Google Maps - Note red line indicative - refer to WH Architects Site Location Map.

6.3 RECEIVING ENVIRONMENT (BASELINE SCENARIO)

In order to identify the current conditions and to establish any potential impacts for the proposed development it is necessary to undertake a desk top review of the existing water features and site topography conditions for the subject lands. The existing conditions have been interpreted from a desk top study.

In accordance with the recommendations of the Greater Dublin Strategic Drainage Study, the predevelopment *'green field'* runoff rate was established as being 3.5l/sec/Ha, therefore giving a predevelopment runoff rate as 50.11l/sec.

6.3.1 TOPOGRAPHY & LAND USE

The topography of the site slopes gently from east to west towards the River Boyne, which is located c. 450m to the west northwest of the site. The site is located between 50m and 40m above mean sea level contours.

The existing site is predominantly "greenfield".

To give context of the proposed subject lands and any potential changes to land, soils, geology and hydrology that have the potential to influence the importance of a feature and the magnitude of any

impacts. The lands appear to be used for agricultural use. The historic land use is based on aerial imagery CEIVED. ON OGROPH and historic maps:

- OSI 6-inch mapping First Edition B&W, Last Edition B&W;
- OSI 25 inch Historic Mapping; •
- OSI 1995 Aerial Photography;
- OSI 2000 Aerial Photography;
- OSI 2005 Aerial Photography.

Figure 6.3: Site Topography



(Infrastructure Design Report)

6.3.2 **CLIMATIC CONDITIONS**

Met Eireann records show that the average annual rainfall for the period 1981-2010 in the area is of the order 881.4 mm/year. The Navan rain gauge is located c. 3km southwest of the site.

Average potential evapotranspiration data from Dublin Airport, located c. 37 km southeast of the site, for the period 1981 to 2010 is of the order of 554.9 mm/year. PE data from Dublin Airport is used as it is not available for Navan. Assuming actual evapotranspiration is 95% of potential evapotranspiration give an AE of 527.15 mm/year. Using these figures gives an average annual effective rainfall of c. 354.25 mm/year. (A literature review of average annual evapotranspiration of 52% of annual precipitation for the region of the site gives effective rainfall of 396mm/year, which is broadly similar. (Mills, G, 2000)).

Effective rainfall is divided between recharge to groundwater and runoff to surface water. Given the hydrogeological setting of the quarry (moderate permeability subsoil (glacial till) overlain by well drained soils, the potential recharge to the overburden is estimated to be as high as 60% (GSI Recharge Maps).

This indicates that up to 212.55 mm/year is available to recharge the underlying bedrock aquifer, with less than 141.7 mm/year available as runoff to surface water. It is this runoff which helps sustains the Ferganstown and Ballymacon stream.

6.3.3 EXISTING SURFACE WATER FEATURES & HYDROLOGY

The regional hydrology is dominated by the River Boyne, which flows in a north easterly direction c. 430m northwest and hydraulically downgradient of the subject site. The River Boyne is designated as a Special Area of Conservation (SAC) and Special Protection Area (SPA).

The subject lands currently falls from east to west, with an average topographical level varying from 52 mAOD down to 44mAOD.

The nearest surface water body is a small stream (referred to as the Ferganstown and Ballymacon stream with EPA Code 07F17) which flows in a westerly direction along the third class road that forms the southernmost boundary of the subject site (known also as the Old Road, Athlumney). This stream continues along the third class road for c. 225m before flowing in a north to northwesterly direction, where it forms a mill race, before discharging to the River Boyne c. 430m northwest of the subject site.

While the subject lands have no formal watercourses traversing them, there are local drainage ditches which have served the subject lands. These land drains ultimately discharge to the mill race c. 200m west southwest of the subject site. It is along this drainage ditch that attenuated storm water will discharge to the mill race.



Figure 6.4: EPA Watercourses

(Courtesy of GSI)

6.3.4 REGIONAL HYDROGEOLOGY

Figure 6.5: Extract from GSI Online Mapping Service (Groundwater Resources)

| Data Viewer Transition Zone Geolaíocht Open Topographic | Data Viewer Groundwater Flood Data | 4 | <u>ک</u> |
|---|--|--|----------------------------|
| Groundwater Data Viewer Display Issue Help | o Data Download Groundwater Programme Geologic | cal Survey Ireland DECC | ``⊘. 🔹 🗄 👪 |
| ELACKCASTLE | N51 nore Ardmulichan | DNULCHAN | YSTOWN and NULFF LITTLE |
| TOWN ABBEYLAND N51 | FERGANSTOWN and BALLYMACON Back (km2) 1,010.34 | Iportent Aquifer - which is Generally Ily Productive | |
| MOATHILE South Navan ATHLUMNEY | ALEXANDER REID | HARRISTOWN | |
| A GHBOY | BAILIS | | REALTOGE |
| GAm BALREASK OLD | JOHNS TOWN BRANNANE TOWN | FOLLISTOWN | TAFFORDSTOWN |

(Courtesy of GSI)

6.3.5 LOCAL HYDROLOGY – WATER FRAMEWORK DIRECTIVE

Under the Water Framework Directive (Directive 2000/60/EC) all surface water catchments have been characterised and assigned an overall status based principally on chemical and ecological status. The status of river water bodies can range from Bad-Poor-Moderate-Good-High. The objective of the Water Framework Directive is to restore poor quality water bodies to at least 'Good' status and prevent deterioration of 'Good' status water bodies, by 2021.

Ireland has been divided into 46 large catchments, 583 sub-catchments and 4829 smaller water bodies. The subject site lies within the Boyne 140 waterbody which is part of the Boyne_SC_110 sub-catchment of the River Boyne catchment (hydrometric area 07). They all form part of the Eastern River Basin District.

A review of the Catchments.ie website indicates that the Boyne_140 waterbody (i.e. the Ferganstown and Ballymacon stream) has no assigned status (it has good chemical surface water status but no assigned ecological status; hence no status has been assigned). The Farganstown and Ballymacon stream are not at risk of failing to meet the requirements of the water body.

The Farganstown and Ballymacon stream discharges into the River Boyne c. 430 m northwest and downstream of the proposed site. The River Boyne has no assigned status downstream of the site (it has good chemical surface water status but no assigned ecological status; hence no status has been assigned).

6.3.6 SURFACE WATER ABSTRACTIONS

No surface water abstractions were noted on the Farganstown and Ballymacon stream, or in the River Boyne immediately downgradient of the site.



Figure 6.6: Extract from GSI Online Mapping Service (Groundwater Vulnerability)

(Courtesy of GSI)

6.3.7 FLOODING AND FLOOD RISK

The Eastern Catchment Flood Risk Assessment & Management Study (Eastern CFRAM study published by OPW) and the Strategic Flood Risk Assessment in the Meath County Council Development Plan present the risk of flooding under a number of different scenarios including a high probability flood event (1-in-10 year event), a medium probability event (1-in-100 year even) and a low probability event (1-in-1000 year event). A review of the maps indicates that the subject lands are generally not at risk of flooding under either of the three scenarios.

These reports indicate that the vast majority of the site has no history of flooding and is located in Flood Zone 'C'. However, there are some small areas of land on the banks of the Millrace / Farganstown Stream where periodic flooding has occurred in the past. Records also show that the Millrace / Farganstown Stream has over-spilled onto the Old Athlumney Road after heavy rain (minutes of meeting, Meath County Council, 14/3/05). The reported flooding is upstream of the subject site and will not be affected by development works on site.

During pre-planning discussions, Meath County Council stated that the proposed development must adhere to the recommendations of governmental policy to ensure not only that property and people would not be affected by potential flooding events but also that should the site experience flooding, emergency vehicular access must be maintained to the site.

JBA Consulting have carried out a Site Specific Flood Risk Assessment (SSFRA) which has been included with this planning application. The aims and objectives of the flood risk assessment were to:

- · Identify potential sources of flood risk
- · Confirm the level of flood risk and identify key hydraulic features
- Assess the impact that the proposed development has on flood risk
- Develop appropriate flood risk mitigation and management measures which allow for the longterm development of the site

The flood risk assessment, carried out in accordance with the OPW /DECLG guidance document "The Planning System and Floor Risk Management" includes a review of flood risk maps (e.g. Eastern CFRAM, Strategic Flood Risk Assessment by Meath CC) and hydraulic modelling of the Millrace / Farganstown Stream adjacent to the subject lands.



The Site Specific Flood Risk Assessment concluded that:

- There is no evidence of historic flooding affecting the site itself, but there was recurring flooding was recorded close to the site boundary with the Millrace.
- Hydraulic modelling of the Millrace confirms that the site is primarily within Flood Zone C
- There is backflow along two of the drainage ditches / field drains within the site boundary in the 1% and 0.1% AEP events.
- Risk to property on the site is managed by setting floor levels at a minimum of 300mm above the predicted water level for the 1% AEP (+ allowance for climate change) event.
- Post-development modelling, shows that there is no increased risk of flooding to the site or surrounding lands associated with the development.
- There is no evidence (predicted or historic) of pluvial flooding within the site boundary

All buildings within the proposed development are to be located within Flood Zone 'C' with low probability of flooding with an adequate freeboard above predicted flood levels. The floors of buildings have been set above adjoining road levels with gradients sloping away from buildings to ensure that surface water is conveyed away from buildings.

It is proposed that areas adjacent to the Millrace which have flooded previously will remain undeveloped. Based on the historical and predicated flooding information the proposed development is considered appropriate. Refer to the Site Specific Flood Risk Assessment (SSFRA) submitted with this application for LED. 07 a more detailed analysis of potential flooding.

6.3.8 SOILS, SUBSOILS AND BEDROCK GEOLOGY

Based on the Teagasc data base the top soil has been defined as grey brown podzolics to brown earths. The soils are mapped as being deep well drained mineral soils (mainly basic), derived mainly from calcareous parent materials.

Subsoils are mapped as Tills derived from Limestones. According to the GSI, the vulnerability rating for the site is "high" which indicates up to 10m of overburden above the bedrock. Borehole drilling on the neighbouring site to the west in 2007 indicates a depth to bedrock of more than 18m.

A review of the GSI database for the subject lands gives the bedrock classification a Dark Limestone & Shale of the LUCAN formation. This bedrock formation is commonly known as the "Calp" Limestone Formation, and consists of dark grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey, and limestones interbedded with calcareous shales.

6.3.9 **HYDROGEOLOGY**

Bedrock beneath the site has been classified as a Locally Important Bedrock Aquifer, which is generally moderately productive. This indicates possible well yields of between 100m³ and 400m³ per day.

There are no active boreholes or wells on site. A review of the GSI data base indicates there was a shallow 7.3m deep well with a poor yield (7.6 m³/day) located at Athlumney. It is likely that this well was completed in the overburden and is probably not still in use. The site is not located within any mapped group water scheme or public water supply source protection area.

Groundwater was encountered in two of the 14 trial pits excavated during the 2020 site investigation (Ground Investigations Ireland Ltd, 2020) at 1.5m below ground level in TP 12 and at 16m below ground level in TP13. Groundwater was not encountered in any of the other trial pits. It must be noted that groundwater levels can vary seasonally and the groundwater level was not monitored for longer than 1 day. Groundwater level monitoring completed in 2007 on the neighbouring site encountered groundwater levels at between 1.7m and 2.5m below ground level. These levels are within the same range as encountered in the current site investigation. Given bedrock was not encountered during either site investigation, including in a borehole drilled to 18m below ground level, the groundwater levels monitored likely represent a perched groundwater level.

Under the Water Framework Directive, different geological formations have been grouped into similar 'rock unit groups' of similar hydrogeological characteristics. Large areas of these rock unit groups have been defined as 'groundwater bodies', the management unit for groundwater for the purposes of the Water Framework Directive. The overall status of each groundwater body has been assessed as either 'Good' or 'Poor' as part of the Water Framework Directive Implementation work in Ireland.

The existing and proposed site is located within the Trim Groundwater Body (GWB). The Trim Groundwater Body has been assessed as having 'Good' status and is considered to be at risk of failing to achieve the objectives of the Water Framework Directive (i.e. maintain good status by 2021). The main mapped pressures on the groundwater body are agricultural and domestic wastewater pressures.

According to the GSI, the limestones and shales encountered within the Calp Limestone Formation have no intergranular permeability; groundwater flow occurs in fractures and faults and along karstified conduits where present.

The Calp Limestones in places are reportedly highly folded and faulted. There is a lot of mapped faults in the Navan to Slane area. According to the GSI, evidence suggests that the degree of karstification throughout the Calp Limestone is highly variable; as is the degree of structural deformation, the occurrence of open fractures in a connected network which will allow groundwater flow, the degree of confinement by impermeable tills, and the additional storage provided by the many gravel deposits overlying the aquifer.

Investigations carried out for Tara Mines Ltd (1.5km east of Navan) involving exploratory drilling and permeability testing revealed that the limestone was karstified in some places at between 25 and 73 metres below ground but that the cavities were filled with a variety of permeable unconsolidated material (GSI, 2003). The fault system discharges groundwater at a rate of about 4,200 m3/day to the mine sump but this is at a depth of 250m below ground level. Joint planes also transmit groundwater within the mine but to a lesser extent than the faults. The is likely some drawdown in water level towards the mines as dewatering pumping causes a cone of depression surrounding the site (GSI, 2004).

Two recharge mechanisms occur in this groundwater body: point recharge and diffuse recharge. Diffuse recharge occurs over the majority of the area, including the subject site, being higher in areas where subsoil is thinner and/or more permeable. Due to the karstic nature of the aquifer, it is possible to have point recharge, typically at swallow holes where a large amount of concentrated recharge occurs in a small area.

The main discharge mechanism for this aquifer is as baseflow to the river Boyne and its tributaries. Discharge from the aquifer will also occur via springs. The variety noted in the structural deformation of the rocks will influence the groundwater flow and hence the nature of the discharge from the aquifer. Where there is a high degree of fracturing, conduit flow is more likely. In these areas, groundwater will discharge from the aquifer via springs, the flow from such springs will be highly variable or "flashy" as there is a low storativity in the aquifer. Where the karstic system is less developed, the occurrence of large springs is less likely as the groundwater body discharges as baseflow to the overlying rivers.

The regional groundwater flow direction is anticipated to be downslope to the northwest, towards the river Boyne.

6.3.10 DESIGNATED SITES

In the Republic of Ireland designated sites include proposed National Heritage Areas (pNHAs), National Heritage Areas (NHAs), Special Areas of Conservation (SAC) and Special Protection Areas (SPAs). The proposed site at Athlumney is not located within or adjacent to any designated site.

There are two designated sites within 0.4km of the proposed development site; the River Boyne and River Blackwater SPA (Site Code 004232), which is designated site due to the presence of the Kingfisher; and the River Boyne and River Blackwater SAC (Site Code 002299), where the qualifying interests include Alkaline Fens, Alluvial forests with Alnus glutinosa and Fraxinus excelsior; River Lamprey, Salmon, and Otter.

6.3.11 RECEPTOR SENSITIVITY AND IMPORTANCE

The site itself is not located within any designated areas. However, there are two designated water dependent sites within 0.4 km of the site.

Given the presence of low to moderate permeability subsoils beneath the site to a proven depth of 18m below ground level immediately adjacent to the site, and the presence of an underlying locally important bedrock aquifer, the site has been categorised as a Type A Hydrogeological environment (i.e. passive geological/hydrogeological environment) (IGI, 2013).

As no construction will take place below the groundwater table, there is no requirement to lower the groundwater table by pumping, and no discharge of dewatering effluent to surface water is proposed from

site. Discharge of storm water run-off to the surface drainage network will be attenuated to green field runoff rates and pre-treated to allow settlement of suspended solids and retention of hydrocarbons. Therefore, the risk of impacting the surface water drainage network is low.

The primary risk to water from any construction site would be from hydrocarbon/chemical spillage and/or leakages within the site, and from discharge of sediment laden runoff to the surface drainage network.

Groundwater at the site can be classed as sensitive because the underlying bedrock is classified as a Locally Important Aquifer (Lm); and the vulnerability rating for the site is high. There is groundwater within the overburden sediments. This is not classified as an aquifer by the GSI and is considered of low importance. There are no known potable abstractions from the aquifer down gradient of the site.

Contamination of the underlying bedrock aquifer could occur as a result of leakage of hydrocarbons from the plant and machinery on the site and refuelling of plant and machinery. Given the presence of up to 18m of overburden in the immediate vicinity of the site, and the proven depth of up to 2.8 m of overburden beneath the site, there is a low risk that bedrock groundwater will be impacted as a result of construction activities on the site.

In terms of non-designated surface water bodies that are hydraulically connected to the site (i.e. the Farganstown and Ballymacon stream), it is the assessment approach that all surface waters, regardless of whether they have 'poor' or 'good' status, should be treated the same in terms of the level of protection and mitigation measures employed, i.e. there should be no negative change in WFD status at all. For the purpose of the impact assessment all surface waters in hydraulic connectivity with the site are considered to have a very high importance and are very sensitive. The Farganstown and Ballymacon stream is part of the Boyne River catchment, which has no assigned status under the Water Framework Directive. Approximately 430 m downstream of the site, the Farganstown and Ballymacon stream discharges to the River Boyne and River Blackwater SAC. This area is classified as a SAC based on the presence of 5 no. habitat and/or species which are listed on Annex I/I/IVI of the EU Habitats directive and is considered to have a very high importance and is very sensitive.

The proposed site is currently in use as agricultural grassland. Proposed construction works could significantly alter the hydrological regime. Land use change without mitigation would increase the rainfall runoff rates from the site and decrease the proportion of rainfall percolating to groundwater. However, rainfall runoff will be reduced to green field runoff rates, and a proportion of the stormwater generated on site will percolate to ground via soak pits. A summary of receptor sensitivity and importance is presented in below.

Mitigation measures associated with the proposed development should ensure that the underlying groundwater will continue to be of a high quality and will therefore not impact on the quality of downgradient surface water bodies, where it provides groundwater baseflow.

| ltem | Description | Sensitivity | Importance | Risk |
|-----------------|--|----------------|----------------|----------|
| Bedrock Aquifer | Locally important aquifer. No potable abstraction wells within 1km downgradient of the site. | Sensitive | Low | Low |
| Overburden | Not classified as an aquifer by GSI. No downgradient potable abstraction wells | Sensitive | Low | High |
| Surface Water | The Ferganstown and Ballymacon stream (the millrace) connects the site hydraulically to downgradient | Very Sensitive | Very Important | Moderate |

Table 6.2: Summary Table of Receptor Sensitivity and Importance

| ltem | Description | Sensitivity | Importance | Risk |
|------|---|-------------|------------|------|
| | River Boyne and River Blackwater SAC | | CEIVED. | |

6.3.12 WATER QUALITY

The Site is located in the Boyne Catchment (Catchment I.D 07) and in the Boyne_SC_110 Sub-catchment (Sub-catchment I.D.07_1) (EPA, 2023).

The Ferganstown and Ballymacon Stream (EU Code: IE_EA_07B041900) is located along the south and west boundaries of the Site and flows northwest to the River Boyne (EU Code: IE_EA_07B041900) 285m west of the Site. This river discharges to the Irish Sea via the Boyne Estuary (EU Code: IE_EA_010_0100) 28km northeast of the Site (EPA, 2023).

Both the Ferganstown and Ballymacon Stream and River Boyne are currently under review as to whether they will meet their Water Framework Directive (WFD) objectives and were designated a "Moderate" ecological status during the most recent 2016-2021 survey period (EPA, 2023). The EPA water quality monitoring data for the stations on the River Boyne located closest to the Site is summarised in Table 4.2. The reported Q-value results indicate that water quality in the River Boyne in the vicinity of the Site is poor to moderate.

| EPA Monitoring Station name | Station Code | Location from Site | Distance from Site | Assigned Q value |
|--------------------------------|--------------|-----------------------|-----------------------|---------------------|
| 2km d/s Navan (LHS) | RS07B041900 | North downstream | 550m | 3-4 "Moderate" |
| Slane Rd Br Navan | RS07B011800 | West upstream | 1.34km | 3 "Poor" |

Table 6.3: EPA monitoring stations and assigned Q values

The Waterbody Status for river, groundwater, and transitional water bodies relevant to the Site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 4.3.

Table 6.4: WFD Risk and Water Body Status

| Waterbody Name | Water body; EU code | Location from Site | Distance from Site | WFD water body status (2016-2021) | WFD 3 rd cycle Risk Status | Hydraulic Connection to the Site |
|---|------------------------|--|-----------------------|---|---|---|
| Surface Water Bo | dies | | | | | |
| Ferganstown and Ballymacon Stream | IE_EA_07B04 1900 | Abutting the south and west boundaries of the Site | N/A | Moderate | Review | Surface water drainage from Site |
| River Boyne | IE_EA_07B04 1900 | Northeast | 285m | Moderate | Review | Downstream of the Site via the Ferganstown and Ballymacon Stream |
| Transitional Water Bodies | | | | | | |
| Boyne Estuary | IE_EA_010_01 00 | Northeast | 28km | Moderate | At Risk | Downstream of the River Boyne |
| Groundwater Bodies | | | | | | |
| Trim | IE_EA_G_002 | N/A | N/A | Good | At Risk | Underlying groundwater-body |

6.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The development will consist of for the construction of 322 no. dwellings, (212 no. nouses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

Refer to Chapter 2.0 (Description of Development) for a detailed site and development description.

Further information regarding the proposed infrastructure elements of the proposed development are detailed in the separate Engineering report prepared by HRA.

The proposed development will require that the aforementioned local land drains be removed as the site is developed. The sites proposed storm water drainage system has been designed to drain into the existing mill race stream. As per the requirements of the Greater Dublin Strategic Drainage Study all new developments are to limit the run-off from post development sites to pre-development rates. In addition, storm water flows being restricted provision must be made through the use of sustainable urban drainage systems to provide sufficient capacity to retain on site the predicated storm water flows generated by an extreme storm event, (a 1-in- 100 year storm event increased by 20% for the predicted effects of climate change).

It is anticipated that the main development characteristics impacting water, hydrogeology and hydrology comprise the following:

- General construction activities across most of the site.
- Installation of sub surface utilities.
- Installation of stormwater storage.
- Installation of SUDS features.
- Installation of foul water storage.
- Changes to ground levels across the site to facilitate final development levels.

6.4.1 TOPOGRAPHY & LAND USE

The proposed development is designed to follow the existing ground profile where possible. The proposed dwellings finished floor levels are designed with existing levels in mind and relationships with boundaries existing boundaries. Finished floor levels to properties are set over and above minimum freeboard requirements.

6.4.2 REGIONAL HYDROGEOLOGY

The integration of SUDs features with traditional drainage methods, is a strategy of both the County Development Plan. SUDs features encourage groundwater recharge where possible and replicate natural drainage systems. SUDs features proposed for the subject site include swales, tree pits, permeable paving, above ground attenuation areas.

6.4.3 SITE HYDROLOGY AND GROUNDWATER

The proposed development is designed to limit surface water runoff from the site to the greenfield runoff rate and to store flows exceeding this in overground Ponds and swales. For storms exceeding a 100-year event, the development has been designed to provide overland flood routes along streets and roads to direct flood water away from residential units and to open space areas.

At soakaway test locations and trial pit locations from a site investigation carried out in 2020, excavations were carried out to a maximum depth of 2.8m below existing ground level. Groundwater was an countered at approximately 1.5m to 1.6m below ground level in 2 of the 14 trial pits.

During construction, the deepest excavations are expected to be required for installation of surface water and foul drainage lines. Notwithstanding the site investigation results infiltration of groundwater into excavations may be possible due to seasonal changes and ground variations across the site.

The proposed surface water drainage network, attenuation storage and site levels are designed to accommodate a 100- year storm event (including an allowance for climate change comprising a 20% increase in rainfall figures, as required in the GDSDS (Greater Dublin Strategic Drainage Study)). Proposed finished floor levels of all dwellings are set over and above 500mm above the estimated 1 in 100-year return period storage level, as required in the GDSDS.

6.4.4 FLOODING AND FLOOD RISK

The SSFRA carried out by JBA Consulting assesses the proposed development in the context of the 'Planning System and Flood Risk Management Guidelines'. This report is included as a standalone report.

The site is considered to have a low probability of flooding based on our review of OPW's Flood Hazard Mapping, and the Eastern CFRAM. 1. Refer to Section 6.3.5 above, which outlines that the majority of the Site is within Flood Zone C.

As surface water drainage design has been carried out in accordance with the Greater Dublin Strategic Drainage Study, and SuDS methodologies are being implemented as part of a treatment train approach. The SuDS surface water treatment train approach, whereby storm water will be directed into local filter drains, permeable paving & tree pits, prior to additional storm water storage being provided swales and ponds. Installation of a series of Hydrobrake devises and slotted weirs will limit surface water discharge from the site to greenfield runoff rates.

6.5 POTENTIAL LIKELY SIGNIFICANT EFFECTS OF THE PROPOSED DEVELOPMENT

The following provides an assessment of the potential effects on the water environment of the proposed development without mitigation measures being incorporated into the detailed design and construction phase. The mitigation measures and predicted effect of the proposed development are set out below in Section 6.6 and 6.7.

6.5.1 CONSTRUCTION PHASE

During the construction phase there will be a number of personnel based on site who will require canteen and toilet facilities, which will be tankered off to a licensed facility until a connection to the public sewer has been established. At no time during construction will foul sewerage be allowed to discharge to the surface water network.

Construction of the proposed development will require the removal of a large part of the topsoil and extensive earthworks to facilitate the construction of the dwellings, infrastructure service provision, road construction, surface water storage systems etc. Given the extent of disturbance, there is potential for weathering and erosion of the surface soils from precipitation and run-off.
Surface water runoff from the construction phase may also contain increased silt levels or result in pollution from the construction processes. The discharge of these contaminants, such as concrete and cement, which are alkaline and corrosive, to the river Boyne has the potential to cause pollution. Accidental oil or fuel spillages or leaks from construction activities also have the potential to find their way into the adjacent water courses. Both increased silt and contaminant levels have the risk of reducing water quality in the adjoining water courses.

Excavation of soil and sub-soil layers will reduce the ability of the lands to recharge groundwater. The majority of surface water runoff will therefore be collected and positively discharged from the development to settlement ponds before discharging to the mill race. It is likely that this activity will have a slight, adverse, permanent, residual, impact on groundwater.

Construction of the proposed development will require the removal of a large part of the topsoil and extensive earthworks to facilitate the construction of the residential buildings, infrastructure service provision, road construction, surface water storage systems etc. Given the extent of disturbance, there is potential for weathering and erosion of the surface soils from precipitation and run-off.

Surface water runoff from the construction phase may also contain increased silt levels or result in pollution from the construction processes. The discharge of these contaminants, such as concrete and cement, which are alkaline and corrosive, has the potential to cause pollution in drainage ditches within the site and nearby watercourses. Accidental oil or fuel spillages or leaks from construction activities also have the potential to find their way into the adjacent drainage ditches and nearby water courses. Both increased silt and contaminant levels have the risk of reducing water quality in the adjoining water courses.

Excavation of soil and sub-soil layers may reduce the ability of the lands to recharge groundwater. The surface water runoff will be collected and positively discharged from the development to an existing drainage network on Athgoe road. It is likely that this activity would have a negative, not significant effect on groundwater.

Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities. This has the potential to result in increased silt and pollutant levels into existing nearby watercourses. In the absence of mitigation, it is likely that this activity would have a negative, temporary, moderate effect on the watercourses.

Heavy rain fall or a high level of ground water could produce ponding in open trenches. Discharge of this rain water pumped from excavations to existing drainage ditches could compromise the capacity of upstream networks and as such cause flooding. It is likely this effect would have a negative, temporary, moderate effect. The consequence of this will increase the flow within the existing drainage network and hence potentially cause flooding.

Discharge of wash water from concrete trucks and discharge of vehicle wheel wash water has the potential to contaminate the groundwater. This effect may be characterised as a temporary, short term, moderate effect. It is likely that this activity would have a temporary, adverse, slight, adverse, impact on groundwater and local watercourses within the area.

Potential impacts that may arise during the construction phase are noted below:

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities.
- Discharge of rainwater pumped from excavations.
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance contaminating the surrounding surface water and hydrogeological environments.
- Concrete runoff, particularly discharge of wash water from concrete trucks.
- Discharge of vehicle wheel wash water.

• Infiltration of groundwater into excavations.

Accidental pollution of water from plant, machinery or temporary storage areas is possible, due to the nature of construction. This likely but brief impact would be imperceptible in nature as any potential pollution would be indirect as it would percolate through the soil, prior to reaching the local groundwater. Excavation works are required, to strip the site's topsoil and for the installation of proposed drainage intrastructure.

Heavy rain fall or a high level of ground water could produce ponding in open trenches. Discharge of this water pumped from excavations to existing streams could reduce the capacity of the existing surface water conduits / ditches. This impact may be characterised as a likely, slight, temporary, adverse impact.

The temporary effects of these works are anticipated to be imperceptible neutral effects. Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall storm water quality. The submitted construction management plan submitted with the planning application indicates the proposed measures required to avoid same.

6.5.2 OPERATIONAL PHASE

Once the development is completed the operational impacts on the water & hydrology aspects of the site would be minimal. The biggest risk item is cross contamination of surface water from the operational phase of the development from accidental oil spillages, refer to the Mitigation section below for proposed remedial issues. A positive impact from the development will be the reduction in storm water runoff experienced during extreme storm events, as the flow from the development will be restricted. The downstream water course will be at a reduced risk from flooding during extreme storm events.

Potential operational phase effects are noted below:

- Increased impermeable surface area will reduce local groundwater recharge and potentially increase surface water runoff and flooding downstream. It is likely that this activity would have a slight, permanent, adverse, effect on groundwater and the local watercourses.
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas). The likely effect may be characterised as imperceptible, temporary and adverse.
- Contamination risks arising from development use / leaking pipes / contaminated surface water runoff. The likely adverse effect arising from this activity may be characterised as adverse, imperceptible and temporary.
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).
- Foul waste and surface water discharging to ground through leakage in the drainage systems.
- Contamination risks arising from development use / leaking pipes / contaminated surface water runoff.

6.5.3 RISKS TO HUMAN HEALTH

A potential risk to human health from water, hydrology and hydrogeology can be linked to the potential for contamination of the potable water supply. The ground water and supply network would present possible pathways. The risk is considered below.

6.5.3.1 Groundwater Supply

The receiving groundwater is a locally important aquifer. The risk to the contamination of this source from surface water run-off from the development during construction and operation is considered to be low given the low infiltration rates obtained as part of the preliminary site investigation undertaken, and the depth to

bedrock, which is greater than 18m on the neighbouring site to the west and is assumed to be at between 5 and 10 m according to the GSI, which indicates a "high" vulnerability rating for the site.

6.5.3.2 Network Supply

As noted above surface water outflow from the site ultimately discharges to the River Boyne. If surface water is not adequately treated and managed in accordance with the GDSDS it has the potential to impact human health.

Surface water drainage for the development has been designed in accordance with the GDSDS therefore the risk to human health has been mitigated.

6.5.4 "DO-NOTHING" SCENARIO

In order to provide a qualitative and equitable assessment of the proposed development, this section considers the proposed development in the context of the likely effects upon the receiving environment should the proposed development not take place.

Notwithstanding this, the land is zoned residential development as applied for and as part of the County Development Plan to provide accommodation the proposed development is required.

Fluvial flooding events would continue as they have historically in this area with the existing floodplains. Groundwater status would also remain unchanged if the existing agricultural land use continued.

Groundwater status would also remain unchanged if the existing land use continued.

6.6 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

6.6.1 INCORPORATED DESIGN MITIGATION

The proposed development and planning drawings submitted have taken into account potential contamination issues and, upon completion the development, has a system in place to ensure rainwater runoff from the site is adequately treated prior to outfalling into the proposed storm water drainage system.

Mitigation measures follow the principles of avoidance, reduction and remedy. The most effective measure of avoidance is dealt with during the site selection and design stage, by ensuring that the development does not traverse or come in close proximity to sensitive hydrological attributes.

Where avoidance of the feature has not been possible, consideration has been given to locally modify the proposed development so as to reduce / minimise the extent of the impact. If any modifications are proposed to reduce hydrological impacts, it is necessary to also consider any associated impacts to the hydrological and ecological regimes.

- Excavated material to be contained to ensure excavated material (from earthworks) does not enter a drainage ditch or watercourse.
- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage entering the watercourse.
- Design of site services / drainage works are in accordance with the relevant design guidance.
- Appropriately designed site services / drainage / sewers will protect the water, hydrogeology and hydrology from risk of contamination arising from the development such as light liquids separator or SuDS treatment train. Features such as permeable paving, swales, tree pits and above ground and open-bottom attenuation are proposed to intercept pollutants and promote groundwater recharge where possible. A bypass separator is proposed prior to any surface water discharging to drainage ditches.

- Design and layout of the scheme is aimed at maximising SuDS features and protect watercourses in accordance with guidance from Inland Fisheries Ireland on the Planning for Watercourses in the Urban Environment.
- Surface water drainage for the development has been designed in accordance with the GDSDS and the SUDS Manual to avoid risk to human health.

6.6.2 CONSTRUCTION PHASE MITIGATION

To minimise the impact of the construction phase on the water environment mitigation measures included in section 6.6.2 and the OCEMP (contained in Appendix D Volume II of this EIAR) will be implemented.

6.6.2.1 General site works

- A Site Specific Construction and Environment Management Plan will be developed and implemented during the construction phase. Site inductions to include reference to the procedures and best practice as outlined in the OCEMP, prepared by HRA Consulting Engineers, submitted with the LRD application and will include mitigation measures contained in the EIAR.
- Measures will be implemented to capture and treat sediment laden surface water runoff from excavated trenches and stripped land (e.g. sediment tanks, surface water inlet protection and earth bunding adjacent to open drainage ditches).
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- The extent of sub-soil and topsoil stripping will be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place on-site into an appropriate washout facility.
- Discharge from any vehicle wheel wash areas will be directed to on-site settlement tanks/ponds.
- Oil and fuel stored on site for construction will be stored in designated areas. These areas will be bunded and should be located away from surface water drainage and features.
- Refuelling and servicing of construction machinery to take place in a designated hardstanding area, remote from surface water inlets (when it is not possible to carry out such activities off-site).
- Any hazardous materials to be stored within secondary containment designed to retain at least 110% of the storage contents to prevent the accidental release (fuels, paints, cleaning agents, etc.) with bunds for oil/diesel storage tanks.
- Spill kits will be kept in designated areas for re-fuelling of construction machinery.
- Dewatering measures will only be employed where necessary.
- Works will be in accordance with the requirements of the Office of Public Works (OPW) and Inland Fisheries Ireland (IFI).
- Pollution prevention measures in accordance with guidance from Inland Fisheries Ireland (2016) or as otherwise agreed with the IFI. This will include the installation of sediment traps and culverting of drainage ditches 'in the dry', where required.
- No direct discharges made to waters where there is potential for cement or residues in discharge;
- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall surface water quality. Potential issues can be mitigated against by ensuring that the developments environmental management plan is adhered to, to prevent accidental onsite oil spillages and the regular maintenance of onsite plant to eliminate potential risks. As outlined in the Construction Management Plan submitted with the planning application.
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.
- A Site Specific Construction and Environment Management Plan will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Construction and Environment Management Plan.

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- The extent of sub-soil and topsoil stripping to be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.
- Precast concrete units fabricated off site will be specified for culvert and bridging structures with cast in-site requirements minimised.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.
- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.
- Hazardous construction materials shall be stored appropriately to prevent contamination of watercourses or groundwater.
- Spill kits should be kept in designated areas for re-fuelling of construction machinery.
- Dewatering measures should only be employed where necessary.

6.6.3 OPERATIONAL PHASE

Upon completion of the Construction Phase of the proposed scheme, issues pertaining to the development would in general be issues such as accidental pollution incidents into the storm water system.

Sustainable Drainage Systems will be incorporated, where practicable, in order to improve the quality of the surface water discharging from site and reduce the runoff volume and rate, thus providing a positive impact on the receiving surface water network and downstream waterbody. The surface water drainage design, for this development, was designed in accordance with the Local Authority requirements. All SuDS measures will be provided in accordance with the Greater Dublin Strategic Drainage Study Regional Drainage Policy Volume 2 - New Development (GDSDS- RDP Volume 2). Specific design requirements for SuDS systems are established by the Construction Industry Research and Information Association's publication CIRIA C753 – The SuDS Manual.

Following best practice, the potential for the storm water to become polluted via oil spills will be reduced as far as is practical by the use of oil separators or other appropriate treatment methods to take run off from carparking areas and passing through same prior to disposal.

Irish Water would maintain the foul & potable water systems while Meath County Council will maintain the storm water network.

As such this type of development would not increase the risk to surface water or downstream flooding. As the site is provided with a new storm sewer to replace the existing water course and all storm water generated on site will now be attenuated to ensure that the runoff from the site is kept to green field rates, downstream lands would not be flooded when an extreme storm is experienced. The overall storm water quality will also be enhanced as SuDs features are included in the proposed development and all surface waters are to pass through an oil separator or other appropriate treatment method, prior to outfalling into the mill race.

Operational phase mitigation measures are noted below:

- The design of proposed site levels (roads, FFL etc.) has been carried out to replicate existing surface contours, break lines etc. and therefore replicating existing overland flow paths, and not concentrating additional surface water flow in a particular location.
- Surface water runoff from the site will be attenuated to the greenfield runoff rate as recommended in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by a Hydrobrake flow control device, with a combination of above ground ponds, low flow channels and swales provided to store runoff from a 1 in 100-year return period event. SUDs features are implemented in the surface water drainage network to reduce the rate of runoff form hard standing area sand to improve the quality of surface water runoff. For detailed information refer to HRA report included with the LRD application.
- Surface water runoff from the development will be collected by an appropriately designed system with contaminants removed prior to discharge i.e. petrol interceptor.
- A regular maintenance and inspection programme of the flow control devices, attenuation storage facilities, gullies, petrol interceptor and foul pumping station will be required during the Operational Phase to ensure the proper working of the development's networks and discharges.
- Waste generated by the everyday operation of the development should be securely stored within designated collection areas with positive drainage collection systems to collect potential runoff.
- Operational waste will be removed from site using licensed waste management contractors.

6.7 PREDICTED EFFECTS FOLLOWING MITIGATION (RESIDUAL IMPACT)

Residual Impacts such as loss of agricultural land / earthworks haulage & the risk of contamination of surface water are deemed to be of minor risk, as the proposal for apartment type residential accommodation and housing would not be seen as a potential high-risk development, post construction.

The predicted residual effects of the construction and operation activities following implementation of the mitigation measures above is provided below.

- As surface water drainage design has been carried out in accordance with the GDSDS, and SUDS methodologies are being implemented as part of a water quality treatment train approach (run-off from the development's impermeable areas is designed to be collected via a new stormwater network which incorporates on-line attenuation storage systems and SuDS features such as permeable paving, bio-retention areas, swales and tree pits to improve water quality in accordance with the principles of SuDS design. Which are all designed to improve water quality), with imperceptible effects on the water and hydrogeological environment arising from the operational phase.
- Implementation of the measures outlined in Section 6.6 will ensure that the potential effects of the development on soils and the geological environment are minimised during the construction phase and that any residual effects will be short term and imperceptible.
- Residual effects from earthworks haulage and the risk of contamination of groundwater are deemed to be of minor risk following implementation of the measures outlined in Section 6.6. The residual effects for a residential development, and open space are deemed to be imperceptible post construction (during the operational phase).

6.7.1 IMPACT ON CLIMATE

The surface water drainage network, attenuation storage and site levels are designed to accommodate a 100-year storm event (provision for 20% climate change included). Floor levels of houses are set above the 100-year flood levels by a minimum of 0.5m. For storms in excess of 100 years, the development has been designed to provide overland flood routes along the various development roads towards the surface water drainage outfalls and existing roads. This overland flood route also reduces the development's vulnerability to climate change.

6.7.2 IMPACT ON HUMAN HEALTH

Risks to human health include the accidental spills/ leaks of hydrocarbons/ oils entering the groundwater/surface water or potable water system. This impact following mitigation measures outlined in section 6.6 will result in an imperceptible impact to human health.

6.8 WORST CASE SCENARIO

Worst case scenarios envisioned are extreme occurrences of the potential effects identified above in conjunction with failure of mitigation measures including:

- Significant contamination event.
- Flooding due to extreme event or unsuitable drainage measures.

Given the scale of the site, low risk flood zoning and relatively standard nature of the works involved the likelihood of a "*worst case*" event is extremely low.

6.8.1 CONSTRUCTION PHASE

Implementation of the measures outlined in Section 6.6.2 will ensure that the potential effects of the proposed development on water and the hydrogeological environment do not occur during the construction phase and that any residual effects will be short term.

6.8.2 OPERATIONAL PHASE

As noted from an operation view point the worst case scenario would be an accidental spill of oils or foul effluent from a leak in the foul drainage system or an oil spill from the oil-separators.

As surface water drainage design has been carried out in accordance with the GDSDS, and SuDS methodologies are being implemented as part of a treatment train approach, there are no predicted residual effects on the water and hydrogeological environment arising from the operational phase.

6.9 MONITORING

Construction phase monitoring relates to the good maintenance of mitigation measures outlined above in section 6.6 including the Outline Construction and Environmental Management Plan (OCEMP) (see Appendix D Volume III of the EIAR). It is recommended that any monitoring of any hazardous material stored on-site be carried out in accordance with the CEMP.

6.9.1 CONSTRUCTION PHASE

- Contractors will adhere to the CEMP and Mitigation Measures contained in this EIAR.
- Construction monitoring of the works (e.g. inspection of services and SUDS installation and backfill, stability of excavations etc.).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill; protection of soils from contamination for removal from site)
- Monitoring sediment control measures (sediment retention tanks, surface water inlet protection etc.)
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.) If these measures are found to be inadequate or inadequately implemented, then the

developer will ensure that measures are put in place to remedy this. Monitoring of discharge from sediment retention ponds (e.g. pH, sediment content). If these measures are found to be inadequate or inadequately implemented, then the developer will ensure that measures are put in place to remedy this.

• A dust management programme will (see Appendix C Volume III of the EIAR) be implemented during the construction phase of the development. If these measures are found to be inadequate or inadequately implemented, then the developer will ensure that measures are put in place to remedy this.

6.9.2 OPERATIONAL PHASE

Proposed monitoring during the operational phase in relation to the water and hydrogeological environment are as follows:

- The taking in charge of the water infrastructure will ensure the system is regularly inspected and maintained.
- The performance of all SuDS features will be monitored by the relevant authorities during the life of the development.
- Monitoring of the installed hydrobrake, interceptor and gullies and all other SUDs features will be carried out to prevent contamination and increased runoff from the site.

6.10 CUMULATIVE IMPACTS

Cumulative phase looks at the increased overall implications the proposed development may have on the environs due to the degree of development locally. The type of development experienced in the area over the last decade is very similar in type, primarily residential accommodation.

The Development if Phase 1 development plan that includes mostly residential developments to the east, north and west of the Development. These future developments, which do not form part of this application, could connect into the services being proposed for the application site. Thereby the proposed residential development would aid in providing the required infrastructure to enhance the surrounding developable lands.

Some separate Irish Water upgrade works may be needed to facilitate development in general in Navan, including the subject lands, but do not form part of this application. The location of these works is shown on drawing no. 2135/102, prepared by Hendrick Ryan Consulting Engineers.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park and comprise construction of: 3 no. commercial high-bay warehouse units.

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

Overall, the cumulative impact of the construction of the proposed development and the projects above are predicted to be neutral in terms of quality and of an imperceptible significance (temporary in duration).

The recent construction of the sewerage/water supply connections along the public road (LDR6) by Irish Water are to facilitate the proposed development.

Any other future development in the vicinity of the site would have to be similarly designed in relation to permitted surface water discharge, surface water attenuation ponds and SuDS, therefore, no potential cumulative effects are anticipated in relation to surface water and flooding.

Overall, the impact on the hydrological and hydrogeological environment as a result of the wider developments in the area are considered to be long-term and imperceptible. Each project currently permitted or under construction is subject to EIA and/or planning conditions which include appropriate mitigation measures to minimise effects. Provided mitigation measures are in place at each of the developments, the overall effect is expected to be neutral.

6.11 INTERACTIONS

There is an interaction between land/soils/biodiversity on the site and groundwater, where removal of soil/subsoils can increase groundwater vulnerability and result in sediment run-off and the potential for impacts to local watercourses. The mitigation measures set out in the OCEMP will ensure that the impacts are reduced and minimised.

There is an interaction between the water environment and waste management as there may be the requirement for removal of contaminated soil off site to a suitable licensed facility to prevent contamination of water. This is dealt with in Chapter 11 Waste Management.

There is the interaction between waste and water where management of foul water is related to prevention of contamination of water.

6.12 DIFFICULTIES ENCOUNTERED

No difficulties were encountered in completing this section.

6.13 REFERENCES

Environmental Protection Agency (EPA), 2000, EPA Geo Portal, Available at http://gis.epa.ie/,

Office of Public Works (OPW), 2000, Flood and Erosion Mapping, Available at http://www.opw.ie/en/flood-risk-management/floodanderosionmapping/,

Flooding.ie, 2009, The planning System and Flood Risk Management, Available at About - OPW Flood Risk Management (floodinfo.ie),

South Dublin City Council, 2006, Greater Dublin Regional Code of Practice for Drainage Works, Available at <u>http://www.sdcc.ie/sites/default/files/guidelines/greater-dublin-regional-code-of-practice-for-drainage-works.pdf</u>,

7.0 AIR QUALITY AND CLIMATE

7.1 INTRODUCTION



This chapter of the EIAR has been prepared by Byrne Environmental Consulting Ltd to identify and assess the potential air quality and climatic impacts that the proposed LRD development at Boyne Village, Athlumney, Navan, Co. Meath may have on the receiving environment during the construction and operational phases of the project. The assessment includes a comprehensive description of the existing air quality and climate at the subject site; a description and assessment of how the construction phase and the operational phase of the development may impact air quality and climate and the mitigation measures that will be implemented to control and minimise the impact that the development may have on air quality and climate.

Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd and prepared all aspects of this EIAR Chapter. Ian Byrne has 26 years of experience in the monitoring and assessment of air quality and climatic impacts that residential, commercial, and industrial developments may have on the receiving environment.

7.2 STUDY METHODOLOGY

The assessment methodology of the potential impact of the proposed development on air quality and climate has been conducted in accordance with the following guidance:

7.2.1 AIR QUALITY

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Advice Note on Preparing Environmental Impact Statements Draft (EPA, 2015);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management 2024).

7.2.2 CLIMATE

Climate Change Risk Assessment (CCRA) identifies the impact of a changing climate on a development and on the receiving environment. The assessment considers a projects vulnerability to climate change.

Greenhouse Gas Emissions Assessment (GHGA) identifies the GHG emissions associated with a development over the extent of its lifetime.

The assessment of the impact of the development on climatic factors is considered in relation to greenhouse gas emissions and climate change.

Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) (Government of Ireland, 2021);

- Climate Action Plan 2024 (Government of Ireland, 2023);
- Meath Climate Action Plan 2024-2029 (Feb 2024).
- RECEIL Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment 10 01 06 POPE (European Commission, 2013);
- 2030 Climate and Energy Policy Framework (European Commission, 2014); •
- 2030 EU Climate Target Plan (European Commission, 2021b); •
- Assessing Greenhouse Gas Emissions and Evaluating their Significance (Institute of • Environmental Management & Assessment (IEMA), 2022);
- IEMA Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their • Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section • 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (UK Highways Agency, 2019); and
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

7.2.3 AIR QUALITY ASSESSMENT METHODOLOGY

A review of the most applicable standards and guidelines has been undertaken in order to define the air quality significance criteria for the Construction and Operational Phases of the proposed development. Predictive calculations and impact assessments relating to the likely Construction Phase air quality impacts have been undertaken at the nearest sensitive locations to the construction activities. Predictive calculations have been performed to assess the potential air quality impacts associated with traffic alterations associated with the operational phase at the most sensitive locations; and a schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality impacts associated with the proposed development.

Air quality standards and guidelines are available from a number of sources. The guidelines and standards referenced in this report include those from Ireland and the European Union.

In order to reduce the risk to health due to poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or 'air quality standards' are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit values, as defined in Table 7.1.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are the national Air Quality Standards Regulations 2022 (S.I No. 739 of 2022) which incorporate the ambient air quality limits set out in Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (CAFÉ Directive).

EU legislation on air quality requires that Member States divide their territory into 20 nes for the assessment NED: ONOGRODA and management of air quality. The zones in place in Ireland are as follows:

- Zone A is the Dublin conurbation;
- Zone B is the Cork conurbation; •
- Zone C comprises the 23 large towns in Ireland with a population >15,000; and
- Zone D is the remaining area of Ireland.

The air quality in each zone is assessed and classified with respect to upper and lower assessment thresholds, based on measurements over the previous five years. Upper and lower assessment thresholds are prescribed in the legislation for each pollutant. The number of monitoring locations required is dependent on population size and whether ambient air quality concentrations (i) exceed the upper assessment threshold, (ii) are between the upper and lower assessment thresholds, or (iii) are below the lower assessment threshold.

Nuisance dust is assessed with regard to the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) which specifies a limit of 350 mg per m² per day averaged over a 30 +/- 2 day period.

Table 7.1: Air Quality Standards

| Pollutant | Regulation | Limit | Value | |
|---|-------------------------------|---|---|--|
| Sulphur Dioxide 2008/50/EC | | Hourly limit for protection of human health - not to be exceeded more than 24 times/year | 350 µg/m³ | |
| | | Daily limit for protection of human health | 125 µg/m³ | |
| Nitrogen Dioxide | 2008/50/EC | Hourly limit for protection of human health - not to be exceeded more than 18 times/year | 200 µg/m³ | |
| | | Annual limit for protection of human health | Value 350 μg/m³ 125 μg/m³ 200 μg/m³ 40 μg/m³ 50 μg/m³ PM10 40 μg/m³ 25 μg/m³ 20 μg/m³ | |
| Particulate Matter | 2008/50/EC | 24-hour limit for protection of human health - not to be exceeded more than 35 times/year | 50 μg/m³ PM ₁₀ | |
| (as PM ₁₀) | | Annual limit for protection of human health | 350 µg/m ³ 125 µg/m ³ 200 µg/m ³ 40 µg/m ³ 50 µg/m ³ PM ₁₀ 40 µg/m ³ 25 µg/m ³ 25 µg/m ³ 20 µg/m ³ | |
| Particulate Matter (as PM _{2.5}) – Stage 1 | 2008/50/EC | Annual limit for protection of human health | 25 µg/m³ | |
| Particulate Matter (as PM _{2.5}) – Stage 2 | 2008/50/EC | Annual limit for protection of human health | 20 µg/m³ | |
| Dust Deposition | TA Luft (German VDI, 2002) | Annual average limit for nuisance dust | 350 mg/m2/day | |

7.2.3.1 Baseline Air Quality Assessment Methodology

The baseline air quality at the site has been determined with reference to published air quality data contained in the EPA's Air Quality in Ireland 2022 (EPA 2003) which includes specific data sets for Navan.

7.2.3.2 Construction Phase Dust Assessment Methodology

The Construction Phase dust assessment was conducted in accordance with The Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (2024) classifies demolition and construction sites according to the risk of impacts and recommends appropriate mitigation measures that are appropriate to the risk.

The IAQM Guidance on the Assessment of Dust from Demolition and Construction' (2024) defines the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National, or local designation) and the potential dust sensitivity of the ecologically important species present. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 250m for the site entrance. The closest designated site is the river Boyne located c. 300m from the northern site boundary. The river Boyne will not be impacted by construction phase dust emissions due to the extended distance between the site and the river Boyne.

7.2.3.3 Operational Phase Air Quality Assessment Methodology

The assessment of operational phase air quality was conducted with regard to Transport Infrastructure Ireland (TII) guidance document entitled *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a)* which refers to the following road scenarios which may affect local air quality.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

7.2.4 CLIMATE ASSESSMENT METHODOLOGY

7.2.4.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The use of the TII carbon tool is considered appropriate as the material types and construction activities employed by the proposed development are accounted for in the tool. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO2e (tonnes of carbon dioxide equivalent).

7.2.4.2 Operational Phase

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments LA 114 Climate (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

The above DMRB scoping criteria will be used to determine whether a detailed modelling assessment of traffic emissions is required as part of the EIAR assessment. The proposed development will not cause a change in traffic of more than any of the above scoping criteria. Therefore, no detailed assessment was required as there is no potential for significant impacts.

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. A sustainability Report / Energy Statement has been prepared by *Metec Consulting Engineers* for the proposed development. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate as a result of the implementation into the design of the development of energy saving and sustainable feature

7.3 BASELINE ENVIRONMENT

7.3.1 BASELINE AIR QUALITY

The existing ambient air quality in the vicinity of the site has been characterised from published air quality information contained in the EPA's Air Quality in Ireland 2022 (EPA 2023). The proposed development is located in Navan which is characterised as a Zone C area. Table 7.2 presents the results of the EPA's 2022 monitoring programme in the Zone C area. NO2, PM10 and PM2.5 data is from the Navan monitoring station located at the Inner Relief Road and which is approximately 2.5km west of the subject site.

| Pollutant | Period | Value µg/m3 | Limit µg/m3 |
|-------------------|-------------|----------------|----------------|
| NO ₂ | Annual Mean | 21.0 | 40 |
| | Houry Max | 135.6 | 200 |
| SO ₂ | Annual Mean | 2.9 – 4.7 | 20 |
| | Houry Max | 24.7- 100.3 | 350 |
| | Daily Max | 7.2 – 27.4 | 125 |
| P M 10 | Annual Mean | 14.2 | 40 |
| | Daily Max | 56.8 | 50 |
| PM _{2.5} | Annual Mean | 8.3 | 25 |

Table 7.2: EPA Zone C 2022 Air Quality Data

Ref. EPA 2023

The air quality in Navan may be characterised as good, with concentrations SO_2 , NO_2 , PM_{10} and $PM_{2.5}$ below their associated limit values. The *EPA's Air Quality in Ireland 2022 (EPA 2003)* report suggests that the burning of fossil fuels and road traffic are the principal sources of air pollution in Ireland.

7.3.2 METEOROLOGICAL DATA

The nearest representative synoptic meteorological station to the subject site is at Dublin Airport which is located approximately 35km southeast of the Athlumney site in Navan and as such, long-term measurements of wind speed/direction and air temperature for this location are representative of prevailing conditions experienced at the subject site. Recent meteorological data sets for Dublin Airport were obtained from Met Éireann for the purposes of this assessment study as detailed in Table 7.3.

Wind is of key importance for both the generation and dispersal of air pollutants. Meteorological data for the closest synoptic meteorological station to the site which is at Dublin Airport 35km south east of the site indicates that the prevailing wind direction in the Navan area, is from the West and Southwest and blows Northeast across the proposed development. The mean annual wind speed in the Dublin area between 1991 - 2022 is 5.4 m/s.

| Table 7.3: Meteorological Data for Dublin Airport 2019-2023 | | | 6 |
|---|-------------|---------------|-----------------------|
| Year | Period | Rainfall (mm) | Mean Temperature_(⁰C) |
| 2019 | Annual Mean | 886 | 9.5 |
| 2020 | Annual Mean | 790 | 10.6 |
| 2021 | Annual Mean | 667 | 9.8 |
| 2022 | Annual Mean | 688 | 10.2 |
| 2023 | Annual Mean | 1001 | 10.6 |
| | Mean | 806 | 10.1 |

Table 7.3: Meteorological Data for Dublin Airport 2019-2023

Ref. Met Eireann

7.3.3 Climate

The Environmental Protection Agency (EPA) (2023) Ireland's Final Greenhouse Gas Emissions (2022) is presented below in Table 7.4 and details the total nation emissions of Greenhouse Gasses.

| Sector | 2021 Emissions (Mt CO ₂ e) | 2022 Emissions (Mt CO ₂ e) | % Total 2022 (including LULUCF) | % Change from 2021 to 2022 |
|--|--|--|---------------------------------------|----------------------------|
| Agriculture | 23.626 | 23.337 | 34% | -2.1 |
| Transport | 10.978 | 11.634 | 17% | 6.0 |
| Energy Industries | 10.262 | 10.076 | 15% | -1.8 |
| Residential | 6.992 | 6.105 | 9% | -12.7 |
| Manufacturing Combustion | 4.614 | 4.288 | 6% | -7.1 |
| Industrial Processes | 2.475 | 2.289 | 3% | -7.5 |
| F-Gases | 0.745 | 0.741 | 1% | -0.5 |
| Commercial Services | 0.765 | 0.767 | 1% | 0.2 |
| Public Services | 0.672 | 0.659 | 1% | -1.9 |
| Waste Note 1 | 0.726 | 0.867 | 1% | 4.9 |
| Land Use, Land-use Change and Forestry (LULUFC) | 7.338 | 7.305 | 11% | -0.5 |
| National total excluding LULUFC | 61.955 | 60.764 | 89% | -1.9 |
| National total including LULUFC | 62.293 | 68.069 | 100% | -1.8 |

Table 7.4: Total National Greenhouse Gas Emissions 2022

Ref EPA 2023

LULUCF Land Use, Land Use Change and Forestry

7.3.3 SENSITIVITY OF THE ENVIRONMENT

The sensitivity of the local environment is assessed in accordance with UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024), which is used to determine the extent of impact on property and human health that dust generated during the construction phase of a development may have based on the distance between

source and receiver and the sensitivity of the receiver, in this case existing residential houses to the west of the site. Some of these houses are within 20m of the site boundaries and as such the receptor sensitivity is assessed to be High.

| Receptor | Number of | Distance from Source (m) | | | |
|-------------|-----------|--------------------------|--------|--------|-------|
| Sensitivity | Receptors | <20 | <50 | <100 | 6-250 |
| | >100 | High | High | Medium | Low |
| High | 10-100 | High | Medium | Low | Low |
| | 1-10 | Medium | Low | Low | Low |
| Medium | >1 | Medium | Low | Low | Low |
| Low | >1 | Low | Low | Low | Low |

Table 7.5: Sensitivity to Dust Soiling on People and Property

Ref Guidance on the Assessment of Dust from Demolition and Construction, IAQM, 2024

7.4 DO NOTHING SCENARIO

If the proposed development does not proceed, construction works will not occur and the previously identified impacts of air quality emissions and climatic impacts will not occur. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future. Therefore, the construction and operational phase air quality and climatic impacts outlined in this assessment are likely to occur at some stage in the future even in the absence of the proposed development.

7.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The project relates to the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

7.6 POTENTIAL SIGNIFICANT EFFECTS

7.6.1 AIR QUALITY CONSTRUCTION PHASE

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

The development of the site will be conducted in the following phased stages:

- Enabling works Site set up and Site clearance
- Construction works including site infrastructure, houses, apartment buildings and landscaping

Construction impacts with both of these phased stages are considered below.

Works activities associated with the 'Site set up' will be undertaken prior to construction works commencing in each sub-phase. The setting up of the site shall involve the construction of site security partial and site compounds, site offices, materials and waste storage areas and staff welfare facilities. These temporary activities will have a minimal potential to generate fugitive dust emissions or combustion gas emissions.

Site clearance and ground excavation works will be undertaken in separate phases and these activities have the potential to generate fugitive windblown dust emissions rising from the operation of mechanical plant such as dozers, excavators and tipper trucks and the movement of these vehicles on exposed surfaces at the site. With regard to the phased development approach, only one phase at a time shall be developed with the remaining phased areas remaining generally undisturbed until such a time as they are developed. Infrastructural works will be required to facilitate site services but it is not predicted that there would be bulk excavations of stripped soils until such a time as the development of subsequent phases are commenced.

With regard to the volume of waste material (top and sub soils) generated during site clearance there will be a requirement for HGV trucks to remove the material from the site. Stripped top-soils shall be stockpiled and covered on site for re-use during final landscaping works. Trucks shall be loaded with material on-site by mechanical excavators and loading shovels which will generate fugitive dust emissions as a result of the transfer of the excavated materials comprised principally of soils and stones from stockpile to truck.

The movements of construction vehicles on the site shall also generate windblown dust emissions. Where dusty waste material is loaded onto exposed open trucks, fine dusts may be released as the truck travels along public roads.

It is estimated that there will be a maximum of 40 no. 2-way HGV movement per day associated with site clearance works for each phase of development. This relatively small volume of truck movements will have a negligible impact on local ambient air quality. In general, site clearance works would occur for an approximate 2 - 3 month period.

7.6.1.2 Building and Site Infrastructure Construction Works

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site which have the potential to generate fugitive windblown dust emissions.

Construction equipment including generators and compressors will also give rise to some exhaust emissions. However, due to the size and nature of construction activities, exhaust emissions during construction will have a negligible impact on local air guality and therefore on human health.

Construction traffic to and from the site shall result in a short term increase in the volume of diesel fuelled HGV's along the local road network which will generate additional hydrocarbon and particulate emissions from the vehicle exhausts.

The Institute of Air Quality Management - Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024) classifies demolition and construction sites according to the risk of impacts and to identify mitigation measures appropriate to the risk. The main air quality impacts that may arise are:

Dust Deposition resulting in the soiling of surfaces;

26/201×

- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM10 concentrations as a result of dust generating activities on site;
- Increase in airborne particles and NO2 from diesel fuelled site vehicles and plant;

The risk assessment considers the following site activities and their associated potential impacts:

- Earthworks;
- Construction works;
- Trackout (vehicle movements).

The risk assessment considers the following dust related impacts:

- Annoyance due to dust soiling;
- The risk to health from exposure to PM10;
- Harm to Ecological receptors.

The magnitude of the potential dust emission requires the scale of the works to be classified as Small, Medium or Large which are defined as follows:

A Earthworks

| Large | Site Area >10,000m ² potentially dusty soil prone to suspension (e.g. clays) >10 earth moving vehicles operating simultaneously |
|--------|--|
| Medium | Site Area 2500m2 – 10,000m ² moderately dusty soil (e.g. silts) 5- 10 earth moving vehicles operating simultaneously |
| Small | Site Area <2500m ² Large grain size (e.g. sands) <5 earth moving vehicles operating simultaneously |

Earthworks Large Site Area 121,735m₂

Table 7.6: Risk of Dust Impacts Earthworks

| Sonoitivity of Aroo | Dust Emission Magnitude | | |
|---------------------|-------------------------|-------------|----------|
| Sensitivity of Area | Large | Medium | Small |
| High | High Risk | Medium Risk | Low Risk |
| Medium | Medium Risk | Medium Risk | Low Risk |
| Low | Low Risk | Low Risk | Low Risk |

B Construction Works

| Large | Total Building Volume >100,000m ³ |
|--------|--|
| Medium | Building Volume 25,000m ³ - 100,000m ³ |
| Small | Total Building Volume <25,000m ³ |



Construction Works Building Volume Large Volume >100,000m³

Table 7.7: Risk of Dust Impacts - Construction

| Sensitivity of Area | Dust Emission Magnitude | | |
|---------------------|-------------------------|-------------|----------|
| | Large | Medium | Small |
| High | High Risk | Medium Risk | Low Risk |
| Medium | Medium Risk | Medium Risk | Low Risk |
| Low | Low Risk | Low Risk | Low Risk |

C Trackout

| Large | >50 HGV outward movements per day |
|--------|---|
| | of potentially dusty clays on unsealed road >100m |
| Medium | 10 - 50 HGV outward movements per day |
| | of potentially dusty clays on unsealed road 50 - 100m |
| Small | <10 HGV outward movements per day |
| | of potentially dusty clays on unsealed road >50m |

Trackout Movements High Volume >50 HGV/day

Table 7.8: Risk of Dust Impacts - Trackout

| Soncitivity of Aroo | Dust Emission Magnitude | | |
|---------------------|-------------------------|-------------|----------|
| Sensitivity of Area | Large | Medium | Small |
| High | High Risk | Medium Risk | Low Risk |
| Medium | Medium Risk | Medium Risk | Low Risk |
| Low | Low Risk | Low Risk | Low Risk |

The dust risk assessment for soiling, health and ecology completed for each of the aspects of dust emissions has been determined from the characteristics of the development as detailed above. Table 7.8 presents the dust risk for each aspect.

Table 7.9: Dust Risk Assessment to Define Site-Specific Mitigation Measures

| Sensitivity of Area | Dust Emission Magnitude | | | | |
|---------------------|-------------------------|------------|--------------|-----------|--|
| High | Demolition | Earthworks | Construction | Trackout | |
| Soiling | NA | High Risk | High Risk | High Risk | |
| Human Health | NA | High Risk | High Risk | High Risk | |
| Ecology | NA | High Risk | High Risk | High Risk | |

Note Demolition works are not required for the development

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m2*day) averaged over a one-month period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government (DOEHLG, 2004) apply the Bergerhoff limit value of 350 mg/(m2*day) to the site boundary of quarries. This limit value can also be implemented with regard to potential dust impacts from construction of the proposed development.

In relation to construction related traffic, air quality significance criteria are assessed on the basis of compliance with the appropriate standards air limit values. The Air Quality Standards Regulations 2011

replace the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999.

There is a high risk of dust soiling and human health impacts associated with the proposed works. Therefore, best practice dust mitigation measures appropriate for sites with a high risk of dust impacts will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to have a **negative, moderate and short-term offect** on air quality.

7.6.1.3 Construction Traffic and Plant

Construction related traffic movements and static plant have the potential to impact air quality as a result of combustion engine emissions.

In the absence of mitigation, emissions to air from construction traffic and plant is predicted to have a *negative, imperceptible, and short-term* effect on air quality.

7.6.2 AIR QUALITY OPERATIONAL PHASE

Traffic movements associated with the development have been evaluated and assessed as part of the Traffic & Transport Assessment by *Trafficwise Ltd.* The development will not result in an increase in traffic by 1,000 AADT or 200 HDV AADT thus local road links will not be adversely impacted by the operation of the development.

In the absence of mitigation, emissions to air from operational traffic is predicted to have a *negative*, *imperceptible, and long-term* effect on air quality.

7.6.3 CLIMATE

7.6.3.1 Climate Construction Phase

Embodied Carbon is the amount of carbon emitted during the construction of a building. The extraction of raw materials, the manufacturing of materials, transportation and installation can all produce carbon emissions. Using the ECOM Embedded Carbon Calculation Tool the estimated construction phase embodied carbon will be 68,733 kg CO2e.

The impact on Climate associated with the construction phase in the absence of mitigation will have a **negative**, **not significant**, **long-term effect**.

7.6.3.2 Operational Carbon

Operational Carbon is the amount of carbon emitted once a building is in use. The development has been designed to minimise the generation of greenhouse gas emissions and the impact on Climate as detailed in the Sustainability Report / Energy Statement has been prepared by Metec Consulting Engineers.

The impact on Climate associated with the operational phase in the absence of mitigation will have a negative, not significant, long-term effect.

7.7 CUMULATIVE EFFECTS

7.7.1 CONSTRUCTION PHASE AIR QUALITY

The cumulative potential significant air quality effects associated with the construction phase has been considered with regard to the IAQM Guidance (2024) which states that if a proposed development occurs

at the same time as any other development within 500m of the subject development site there is potential for cumulative dust impacts to occur.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann).

Should the construction phase of these other developments occur at the same time as the subject development the potential cumulative there is the potential for an increased dust soiling risk in the local area resulting in a negative, slight, and short-term effect.

7.7.2 OPERATIONAL PHASE AIR QUALITY

Traffic associated with the operational phase included traffic data for other proposed developments within the area will result in an increase in vehicle exhaust emissions resulting in a negative, imperceptible, and long-term effect.

7.7.3 CONSTRUCTION PHASE CLIMATE

The construction of the subject development together with the other identified developments, should they proceed will result in a **negative, not significant short-term effect.**

7.7.4 OPERATIONAL PHASE CLIMATE

The operation of the subject development together with the other identified developments, should they proceed will result in a **negative**, **not significant short-term effect**.

7.8 MITIGATION

This section provides the measures that shall be implemented during the construction and operational phase and into the design of the development to minimise the impacts on the receiving environment, local population and human health, livestock and agricultural lands, local flora and fauna, local businesses and on climate.

7.8.1 CONSTRUCTION PHASE

In order to ensure that adverse air quality impacts are minimised during the construction phase and that the potential for soiling of property and amenity and local public roads is minimised, the following mitigation measures shall be implemented during the course of all construction activities:

AQ CONST 1: Air Quality Mitigation Measures

- Adherence to the contractor's CEMP which will include the mitigation measures contained in this EIAR and OCEMP in Appendix D and Dust Management Plan in Appendix C, volume III of this EIAR.
- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
- A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.
- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.

AQ CONST 2: Climate Mitigation Measures

- Implementation of the site-specific Resource and Construction Waste Management Plan which defines how the reuse and recycling of materials shall be maximised.
- Prevention of site plant and machinery engines idling.
- Ensure all plant and machinery are well maintained.
- Minimising damage to site construction materials by correct storage and management.
- Sourcing construction materials locally such as from local quarries and concrete plants where possible to reduce transport related CO2 emissions.

7.8.2 OPERATIONAL PHASE

The operational phase includes mitigation measures relating to the design of the development to minimise the impact of the operational phase of the development on air quality and climate are as follows:

AQ OP1: Air Quality Mitigation Measures

- Natural Gas heating, No traditional solid fuel fireplaces
- Inclusion of electric car charging points to encourage electric vehicle ownership
- .01/06/202× Proximity of Bus Eireann and private bus operator's commuter services on the R158 Navan-Dublin Road to the east of the development to provide public transport to residents.

AQ OP2 : Climate Impact Mitigation Measures

- Energy Efficiency All proposals for development shall seek to meet the highest standards of sustainable design and construction with regard to the optimum use of sustainable building design criteria such as passive solar principles and also green building materials.
- All residential units shall be designed and constructed in accordance with The Irish Building • Regulations Technical Guidance Document L - Conservation of Fuel & Energy - Dwellings amended in 2017 includes requirements for all residential dwellings to be "Nearly Zero Energy" Buildings" (NZEB's) by 31st December 2020.
- In order to reduce energy consumption, the following key design features have been considered in the design process and will be incorporated into the construction of the residential units:
- Passive solar design including the orientation, location and sizing of windows •
- The use of green building materials: low embodied energy & recycled materials
- Energy efficient window units and frames with certified thermal and acoustic insulation properties
- Building envelope air tightness
- Installation of Mechanical Ventilation & Heat Recovery systems in all apartment units which operate by extracting warm air from kitchens and bathrooms, cleaning it and distributing it to other rooms in the unit.
- Air to Water Heat Pumps in a residential houses •
- Thermal insulation of walls and roof voids of all units
- All buildings will have a minimum Building Energy Rating of A3
- Electric Vehicle charging points will be installed within the development.

7.9 RESIDUAL IMPACT ASSESSSMNET

7.9.1 CONSTRUCTION PHASE AIR QUALITY

In order to minimise dust and construction vehicle emissions during the construction phase, a series of best practice mitigation measures have been developed which will be implemented from the outset of construction activities to ensure that air quality standards are not exceeded.

When the mitigation measures detailed in Section 7.8.1 are implemented, the impact of the proposed development on local air quality will have a negative, not significant and short-term effect.

7.9.2 **OPERATIONAL PHASE AIR QUALITY**

Emissions from vehicle movements associated with the development will not exceed air quality standards., The predicted operational phase impact to air quality with mitigation as a result of increased traffic will result in a negative, not significant and long-term effect.

Emissions of air pollutants during the operational phase are predicted to be significantly below the ambient air quality standards limit values which are based on the protection of human health. The predicted impacts on human health with mitigation will result in a **neutral**, **not significant and long-(erm effect**.

7.9.3 CUMULATIVE EFFECTS AIR QUALITY

According to the IAQM guidance (2014) should the construction phase of the proposed development coincide with the construction phase of any other developments within 500m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. However, provided the mitigation measures outlined in Section 7.6.1, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted resulting in a **negative**, **not significant and short-term effect**.

The cumulative impact on air quality during the operational phase of the proposed development and other developments when operational will result in a **negative**, **imperceptible and long-term effect**.

7.9.4 CONSTRUCTION PHASE CLIMATE

The proposed development will be constructed using best practice climate mitigation measures to reduce the impacts on Climate. The predicted impact with mitigation relating to Greenhouse Gas emissions will result in a **negative, imperceptible, short-term-term effect.**

7.9.5 OPERATIONAL PHASE CLIMATE

The proposed development will be designed to include best practice climate mitigation measures to reduce the impacts on Climate. The predicted impact with mitigation relating to Greenhouse Gas emissions will result in a **negative, imperceptible, long-term effect.**

7.10 RISK TO HUMAN HEALTH

Best practice mitigation measures will be implemented for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction air emissions on human health will result in a neutral, imperceptible, and short-term effect.

Operational phase traffic emissions and building emissions as a result of the proposed development are compliant with all National and EU ambient air quality limit values which are designed for the protection of human health. The impact of operational phase air emissions on human health will result in a neutral, imperceptible, and long-term effect.

7.10 INTERACTIONS

7.10.1 POPULATION AND HUMAN HEALTH

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Ch.03. Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is short-term, imperceptible, and negative with respect to population and human health during construction and long-term, imperceptible, and neutral during operation phase.

7.10.2 TRAFFIC AND TRANSPORT

Interactions between air quality and traffic (Ch.10 Material Assets- Traffic & Transport) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be long-term, imperceptible and neutral.

7.10.3 CLIMATE

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

7.10.4 LAND, SOILS AND GEOLOGY

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

7.10.5 BIODIVERSITY

As set out in Chapter 5 (Ch. 05 Land & Soils), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on biodiversity.

The impact of the interactions between land, climate, soils and geology, biodiversity and air quality are considered to be short-term, imperceptible and neutral.

7.11 MONITORING

7.11.1 CONSTRUCTION PHASE

Dust deposition levels will be monitored to assess the impact that site construction site activities may have on the local ambient air quality and to demonstrate that the environmental control measures in place at the site are effective in minimising the impact of construction site activities on the local receiving environment including existing residential developments and lands bordering the site. The following procedure shall be implemented at the site on commencement of site activities:

The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at site boundary locations for a period of 30 +-2 days. Monitoring shall be conducted on a monthly basis for the duration of the construction phase.

After each (30 +-2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m2-day in accordance with the relevant standards.

Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained on-site by the Construction Site Manager. Monitoring reports shall be made available to the Meath County Council as requested.

7.11.2 OPERATIONAL PHASE

SECENED. ON Air quality monitoring is not required for the operational phase of the development.

7.12 REINSTATEMENT

Reinstatement issued are not relevant to this Chapter of the EIAR, with regard to the construction and operational phases.

7.13 DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION

There were no difficulties encountered in compiling this Chapter of the EIAR.

7.14 REFERENCES

Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.

Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements -Draft

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

Met Éireann (2023) Met Éireann website: https://www.met.ie/

Transport Infrastructure Ireland (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft.

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2

Government of Ireland (2022) Climate Action Plan 2023.

Department of Environment, Climate and Communications (DECC) (2023a) Climate Action Plan (CAP) 2024

Department of Environment, Climate and Communications (DECC) (2023b) Long-Term Strategy on Greenhouse Gas Emissions Reductions.

European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into **Environmental Impact Assessment**

European Commission (2021a) Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027

European Commission (2021b) 2030 EU Climate Target Plan

European Union (2018) Regulation 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013

Meath County Council Climate Change Action Plan 2024-2029 (Feb 2024)

Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads

Transport Infrastructure Ireland (TII) (2022c) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate.

8.0 NOISE AND VIBRATION

8.1 INTRODUCTION



This chapter of the EIAR has been prepared by Byrne Environmental Consulting Ltd to identify and assess the potential noise and vibrational impacts associated with a proposed Strategic Housing Development at Boyne Village, Athlumney, Navan, Co. Meath during both the Construction and Operational Phases of the development.

This chapter includes a comprehensive description of the receiving ambient noise climate in the vicinity of the subject site; a description of how the construction and operational phases may impact the existing ambient noise climate, the mitigation measures that shall be implemented to control and minimise the impact that the development may have on existing ambient noise levels.

The mitigation measures designed for the development shall demonstrate how the development shall be constructed and operated in an environmentally sustainable manner in order to ensure its minimal impact on the receiving noise climate and at any existing or future receptors in the vicinity of the development site.

Ian Byrne MSc. Environmental Protection, Dip Environmental & Planning Law, Member of the Institute of Acoustics, is the Principal Environmental Consultant of Byrne Environmental Consulting Ltd and prepared all aspects of this EIAR Chapter. Ian Byrne has over 26 years experience in the monitoring and assessment of noise and vibration impacts associated with construction and operation phases of residential, commercial and industrial developments may have on the receiving environment.

Based on academic qualifications and professional experience, Ian Byrne is defined as a "Competent Person" as defined in the EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

8.2 STUDY METHODOLOGY

The general assessment methodology of the potential noise and vibrational impacts that the proposed development will have on the receiving environment has been prepared in accordance with:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);

The study has been undertaken using the following methodology:

- An environmental noise survey has been undertaken at the subject site in order to characterise the existing baseline noise environment;
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed during the construction phase of the project at the nearest sensitive locations to the development site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the development site;
- A schedule of mitigation measures has been proposed to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development; and

• An inward noise impact assessment from existing and future noise sources on the proposed development.

8.2.1 NOISE ASSESSMENT METHODOLOGY

8.2.1.1 Baseline Environment



The baseline noise environment in the vicinity of the proposed development site has been defined by field surveys conducted during April 2024 at site boundaries adjacent to existing residential development. Sound level measurements were conducted in favourable weather conditions when there was no precipitation and when mean windspeeds were <5m/sec.

The existing ambient noise climate in the vicinity of the site has been characterised with information obtained from site specific baseline noise surveys conducted in the vicinity of the closest noise sensitive receptors to the subject site. Baseline noise surveys were conducted in accordance with *ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise* and with regard to the EPA's 2016 *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).*

8.2.1.2 Impact Assessment Methodology

The impact of the proposed development has been determined through prediction of future noise levels associated with the scheme using established calculation techniques.

Construction noise and vibration impacts have been assessed in accordance with Transport Infrastructure Irelands (TII) guidance document *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March 2014)*. Indicative construction noise calculations have been undertaken using the methodology set out in *BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise 2009+A1 2014*.

Impacts associated with road traffic movements on the development when operational have been assessed with regard to the *TII Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March 2014)*. UK Department of Transport (Welsh Office) - Calculation of Road *Traffic Noise [CRTN]* and the Highways Agency Design Manual for Roads and Brides Part 7 HD 213/11 – *Revision 1 Noise and Vibration.*

The operational phase of the development has been assessed with regard the *Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound.* Acoustic design of apartments refers to the 2018 Ministerial Guidelines "Sustainable Urban Housing – Design Standards for New Apartments. Paragraph 1.18 of the document refers specifically to the Building Regulations Technical Guidance Documents and states that the construction of the apartment building shall comply with all relevant requirements.

8.2.2 CONSTRUCTION NOISE IMPACT ASSESSMENT METHODOLOGY

The construction noise limits, which are presented in Table 8.1 represent a reasonable compromise between the practical limitations in a construction project, and the need to ensure an acceptable noise level for the nearby residents and other sensitive receptors including amenity space. Table 8.1 specifies the recommended Project Noise Limit Criteria in accordance with *BS 5228 – 1:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 1 Noise*. Noise limit criteria are based on the noise measured at the external façade of a receptor.

8.2.2.1 BS 5228 ABC Method

This method defines how existing ambient noise levels at a noise sensitive receptor (NSR) is catagorised (A, B or C) with regard to the existing ambient noise climate in the absence of construction noise. An associated noise limit value is then applied to the NSR. If the noise limit value is exceeded, there is a significant effect at the external façade of the NSR.

BS 5228-1:2009+A1:2014 sets out guidance on permissible noise levels relative to the existing noise environment. Table 12.1 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors.

| Construction Phase Noise Limit Criteria | | | | | | |
|---|------------------------|---------------------|---------------------|---------------------|--|--|
| Period | Time Period | Category A dB(A) | Category B dB(A) | Category C dB(A) | | |
| Monday to Friday Daytime | 07:00hrs – 19:00hrs | 65 | 70 | 75 | | |
| Saturday Daytime | 07:00hrs – 13:00hrs | 65 | 70 | 75 | | |
| Evenings & Weekends Daytime | 19:00hrs – 23:00hrs | 55 | 60 | 65 | | |
| Nightime | 23:00hrs – 07:00hrs | 45 | 50 | 55 | | |

Table 8.1: BS5228-2014 Construction Phase Noise Limit Criteria

Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur. It should be noted that this assessment method is only valid for residential properties and if applied to commercial premises without consideration of other factors may result in an excessively onerous thresholds being set.

8.2.2.2 Proposed Construction Noise Limit Value

The proposed construction noise limit value at local NSR's in proximity of the site has been determined to be 65dB(A) based on the results of the baseline noise survey data and with regard to Table 8.1.

8.2.2.3 Construction Traffic Noise Assessment Methodology

The Design Manual for Rods and Bridges (DMRB)(UKHA 2020) provides guidance on the likely effect of construction traffic noise as detailed in Table 8.2.

| Construction Phase Likely Effect | | | | |
|---|-----------|--|--|--|
| Magnitude of Impact Increase in Traffic Noise dB(A) | | | | |
| Negligible | <1.0 | | | |
| Minor | 1.0 - 3.0 | | | |
| Moderate | 30. – 5.0 | | | |
| Major | >5.0 | | | |

Table 8.2: Likely effect with change in noise level associated with construction traffic

8.2.3 CONSTRUCTION VIBRATION IMPACT ASSESSMENT METHODOLOGY

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV) measured in in mm/sec..

Construction impacts have been assessed in accordance with BS 7385-2:1993 – Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to Damage Levels from Groundborne Vibration and BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration 2009+A1 2014.

8.2.4 CONSTRUCTION IMPACT ASSESSMENT METHODOLOGY

Table 8.3 details the limits above which cosmetic damage could occur for transient vibration. Minor damage is possible at vibration magnitudes which are greater than twice those shown in Table 8.3, and major damage to a building structure would only generally occur at values greater than four times the tabulated values. These values only relate to transient vibration. If there is a continuous vibration, the guide values shown in Table 8.3 shall be reduced by up to 50%.

This guidance is reproduced from BS 5228-2:2009+A1 2014 – Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 2 – Vibration and BS 7385-2:1993 – Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to Damage Levels from Groundborne Vibration.

| | PPV (mm/s) in frequency range of predominant pulse | | | |
|--|--|------------------------------|--|--|
| rype of building | 4-15Hz | 15Hz and above | | |
| Unreinforced or light framed structures. | 15mm/s at 4Hz increasing | 20mm/s at 15Hz increasing to | | |
| Residential or light commercial buildings. | to 20mm/s at 15Hz. | 50mm/s at 40Hz and above. | | |

Table 8.4, reproduced from BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration 2009+A1 2014 outlines the vibration levels (in terms of PPV) from construction activities and their likely effect on humans.

| Vibration Level (PPV) | Effect |
|-----------------------------|---|
| 0.14mm/s | Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration. |
| 0.30mm/s | Vibration might be just perceptible in residential environments. |
| 1.0mm/s | It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents. |
| 10mm/s | Vibration is likely to be intolerable for any more than a very brief exposure to this level. |

Table 8.3: Guidance on the effect of construction vibration levels on humans

8.2.5 OPERATIONAL PHASE NOISE IMPACT ASSESSMENT METHODOLOGY

BS 4142 Methods for rating and assessing industrial and commercial sound (2014) is an appropriate standard to assess the impact of a new noise source. In this assessment the commercial aspect of the development has the potential to generate mechanical noise from mechanical plant including Air Handling Units and Compressors. BS4142 details the methodology for assessing the impact of a specific noise source with respect to the increase in the existing ambient noise climate at a NSR. The following definitions are detailed in BS4142:

- "Specific sound level, LAeq, Tr" is equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T. This level has been determined with reference to manufacturers information for specific plant items.
- *"Rating level" LAr, Tr is the specific noise level plus adjustments for the character features of the sound (if any), and;*
- "Background noise level" is the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T. This level is expressed using the LA90 parameter. These levels were measured as part of the baseline survey.

The assessment procedure in BS4142: 2014 is as follows:

- 1. determine the specific noise level;
- 2. determine the rating level as appropriate;
- 3. determine the background noise level, and;
- 4. subtract the background noise level from the specific noise level in order to calculate the assessment level.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific source will have an adverse impact or a significant adverse impact. A difference of +10 dB or more is likely to be an indication of a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, dependent on the context. Where the rated plant noise level is equivalent to the background noise level, noise impacts are typically considered to be neutral.

8.2.7 Operational Phase Traffic Noise Impact Assessment Methodology

The impact assessment criteria associated with operational road traffic noise as defined in *Design Manual for Rods and Bridges (DMRB)(UKHA 2020)* is detailed Table 8.5 below. This guidance allows the assessment of the likely long-term operational traffic effects to be established.

| Change in sound level (dBA) | Subjective reaction | Impact | EPA Glossary of Effects | | | |
|--------------------------------|-----------------------------|------------|-------------------------|--|--|--|
| 0 | None | No Change | Neutral | | | |
| 0.10 - 2.9 | Imperceptible | Negligible | Imperceptible | | | |
| 3-4.9 | Perceptible | Minor | Slight | | | |
| 5-9.9 | Doubling of loudness | Moderate | Moderate | | | |
| >10 | Over a doubling of loudness | Major | Significant | | | |

Table 8.4: Likely impact associated with change in traffic noise level

8.2.8 Operational Phase Vibration

The operational phase of the development will not include any aspects that will generate a vibrational impact.

8.2.9 Inward Noise Impact Assessment

The Professional Guidance on Planning & Noise (ProPG), May 2017 was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) has been generally considered as a best practice guidance and has been widely adopted by Local Authorities in Ireland to risk assess the noise impact on a residential development and other noise sensitive receptors which in this case is the Creche.

The ProPG document is used in this Chapter to evaluate the extent of the noise risk that existing rail line to the north has on the subject development site.

The ProPG document describes a risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and,

Stage 2 – Involves a full detailed appraisal of the proposed development covering four "key elements" that include:

- Element 1 Good Acoustic Design Process;
- Element 2 Noise Level Guidelines;
- Element 3 External Amenity Area Noise Assessment
- Element 4 Other Relevant Issues

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. Figure 8.1 describes the initial noise risk assessment.





include industrial/commercial noise where this is present but is "not dominant".

c. LARQ, 161v is for daytime 0700 – 2300, LARQBIV is for night-time 2300 – 0700.

d. An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F}$ > 60 dB means the site should not be regarded as negligible risk.

Table 8.5: ProPG Recommended Internal Noise Levels

| Activity | Location | Period (07:00 to 23:00hrs) | Period (23:00 to 07:00hrs) | |
|----------------------------|------------------|---------------------------------|---|--|
| Resting | Living Room | 35 dB L _{Aeq, 16hr} | NA | |
| Dining | Dining Room/Area | 40 dB LAeq, 16hr | NA | |
| Sleeping (Daytime Resting) | Bedroom | 35 dB L _{Aeq, 16hr} | 30 dB L _{Aeq, 8hr} 45 dB L _{AFmax} | |
| External Amenity | Garden | 50-55 dB L _{Aeq, 16hr} | NA | |

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings as detailed in Table 6.

| Table 8.6: BS8233:2014 Recommended Internal Noise Levels | | | | | |
|--|------------------|---------------------------------|---|--|--|
| Activity Location (07:00 to 23 | | Period (07:00 to 23:00hrs) | Period (23:00 to 97:00hrs) | | |
| Resting | Living Room | 35 dB L _{Aeq, 16hr} | NA | | |
| Dining | Dining Room/Area | 40 dB L _{Aeq, 16hr} | NA 😪 | | |
| Sleeping (Daytime Resting) | Bedroom | 35 dB L _{Aeq, 16hr} | 30 dB L _{Aeq, 8hr} 45 dB L _{AFmax} | | |
| External Amenity | Garden | 50-55 dB L _{Aeg. 16hr} | NA | | |

External Garden Amenity Areas

BS8233:2014 states that "the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 - 55 dB LAeq,16hr" and that "these guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited."

8.3 **EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)**

8.3.1 **DESCRIPTION OF THE BASELINE ENVIRONMENT - ENVIRONMENTAL NOISE CONTEXT**

The south-western and southern aspects of the site borders existing residential developments. The Tara Mines – Drogheda train line is located. 300m north of the site. The R153 Regional road is located c. 350m from the southern site boundary. The M3 Dublin to Kells Motorway is located c.6km west of the site. Lands adjoining the north-eastern and eastern site boundary are currently in agricultural use.

The observed noise sources in the local area have been identified during the baseline noise monitoring periods and are occasional train movements (currently up to 4 movements per day) north of the site and internal vehicle movements in the adjoining residential estates.

BASELINE ENVIRONMENTAL NOISE SURVEY 8.3.2

Baseline noise data in the vicinity of the closest residential receptors to the proposed development site boundaries has been obtained from noise monitoring surveys conducted by Byrne Environmental Consulting Ltd during April 2024. The baseline monitoring locations were selected in accordance with ISO 1996,2, 2017: Acoustics - Description, Measurement and Assessment of environmental noise and the 2016 EPA publication, "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) and included locations in proximity to existing residential dwellings adjacent to the development areas and within the site itself to assess the inward impact of local road traffic noise within the site.

MEASUREMENT LOCATIONS 8.3.3

Baseline noise measurements were conducted at five locations as shown in Figure 8.2 below and as described in Table 8.5 below. Noise monitoring surveys were conducted under free-field conditions at a height of approximately 1.5m above ground and approximately 3.5m away from reflecting surfaces for a period of 48 hours (2- days) at each location in order to obtain detailed noise data and assess the existing noise climate at the locations accurately.

X

| Table 8.7: Baseline noise measurement locations | | | | | |
|---|--|--|--|--|--|
| Location N1 | Neighbourhood Centre Apartments at northern site boundary | | | | |
| Location N2 | Southern site boundary adjacent existing residential development | | | | |





The noise parameters used to describe the existing ambient noise climate are described as follows:

| L _{Aeq} : | The equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. |
|--|---|
| L _{A10} : | The sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise. |
| L _{A90} : | The sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise. |
| L _{Amax} : | The instantaneous maximum sound level measured during the sample period. |
| 1/3 Octave bar analysis | The frequency analysis of a sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. Used to determine tonal components of a sound source. |
| L _{Amax} : | The instantaneous maximum sound level measured during the sample period. |
| L _{den} L _{day} L _{night} | Day-evening-night indicator 24hrs Day indicator 07:00hrs – 19:00hrs Night indicator 23:00hrs – 07:00hrs |
| | |

Levening Evening indicator 19:00hrs – 23:00hrs

Noise levels are measured using a logarithmic noise scale (decibel) and are denoted dBA. The "A" indicates that a frequency weighting has been applied to allow for the variation in the sensitivity of the .0106/202× human ear.

8.3.4 **BASELINE NOISE MEASUREMENT RESULTS**

Table 8.8: Location N1 Northern site boundary

| Period 7-16 04 24 | Measured sound pressure levels dBA (re 20µPa) | | | | |
|----------------------------------|---|------------------|------------------|-------|--------------------------|
| Fellou 7-10.04.24 | L _{Aeq} , | L _{A10} | L _{A90} | LAMax | |
| Daytime period 07:00 – 19:00hrs | 51 | 58 | 45 | 79 | L _{Aeq,16hr} 56 |
| Nightime period 23:00 – 07:00hrs | 45 | 48 | 41 | 65 | L _{Aeq,8hr} 46 |

During the daytime periods the noise climate at N1 is primarily influenced by distant road traffic. Freight Train movements to and from Tara Mines occur approximately six times per day.

Vibration was not perceptible during the survey period at Location N1 even during passing train events.

Noise levels are low during the nightime periods with no dominant noise sources.

Regarding the ProPG Stage 1 Initial Risk Assessment the daytime LAeq. 16hr of 56dB(A) is in the low risk category.

Regarding the ProPG Stage 1 Initial Risk Assessment the nightime LAeg. 8hr of 46dB(A) is in the low risk category.

Table 8.9: Location N2 Southern site boundary

| Period 7-16 04 24 | Measured sound pressure levels dBA (re 20µPa) | | | | |
|----------------------------------|---|------------------|------------------|-------|--------------------------|
| Fenda /-10.04.24 | L _{Aeq,} | L _{A10} | L _{A90} | LAMax | |
| Daytime period 07:00 – 19:00hrs | 56 | 61 | 52 | 74 | L _{Aeq,16hr} 58 |
| Nightime period 23:00 – 07:00hrs | 47 | 50 | 43 | 69 | L _{Aeq,8hr} 47 |

During the daytime periods the noise climate at N2 is primarily influenced by road traffic and general neighbourhood noise such as children playing and bin collections.

Vibration was not perceptible during the survey period at Location N2.

Noise levels are low during the nightime periods with no dominant noise sources.

Regarding the ProPG Stage 1 Initial Risk Assessment the daytime LAG, 16hr of 58dB(A) is in the low risk category.

Regarding the ProPG Stage 1 Initial Risk Assessment the nightime L_{Aeq, Bhr} of 47dB(A) is in the low risk category.

8.3.5 SIGNIFICANCE

Based on the recorded baseline noise surveys conducted in the vicinity of the proposed development site it may be concluded that the existing ambient noise levels are low at the closest existing and proposed residential receptors.
Local road traffic noise has a negligible impact at location N1 and a slight impact at N2. Measured noise data demonstrates that existing road traffic and minimal daily rail traffic (6 train in pyements per day) at the development will not have an adverse impact on the daytime or nightime noise climate at the closest proposed residential units at the development.

It is noted that there are plans to upgrade the Navan railway line. Under the National Development Plan, work on the €750 million project is not expected to start until 2031 with completion estimated to be 2036. From a review of the current options, the railway line to the north is not part of the passenger upgrade and the rail line to the north is used for freight. Due to the nature of the Tara mines operations (sometimes intermittent) it is considered that there would not be a material increase in the future impacts to residents.

Local road traffic noise has an influence on the ambient noise climate at site boundaries and at local existing residential receptors noise source throughout the day, but traffic noise recede during the evening and nightime periods.

8.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

When considering a development of this nature, the potential impacts of noise and vibration must be considered for each distinct stage: the medium term (3-5 years) impact of the construction phase and the ongoing long term impact of the operational phase. It is important that there is no unacceptable increase in ambient noise levels during the construction phases and during the operational phase.

Short term noise exposure during the construction phase must be managed and controlled to acceptable levels. There are a number of existing residential noise sensitive receptors located in proximity to the development site boundaries. It is fundamental that the proposed development or any aspect of the proposed development must not adversely impact the existing noise levels experienced at these receptors over the long term.

The operational phase of the proposed development will include typical residential neighbourhood noise such as internal residential vehicle movements, children playing, pedestrians, bin collections and occasional delivery van movements. These normal residential activities are not considered "noise" as they are part of everyday living.

The development will also include Active Open Spaces, including playing fields, playground areas and a public park which will not be a source of unacceptable noise for existing local residents of future residents of the development.

The retail/commercial units a creche and a community centre and sports hall do have the potential to generate low levels of noise however all units will be designed and constructed to ensure internal noise does not propagate into the external environment.

8.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

Various elements of both the construction and operational phases of the proposed development have the potential to impact on the receiving on the local receiving noise environment, on adjacent residential properties and on human health. The likely potential impacts for both construction and operation of the proposed scheme prior to mitigation are described in this chapter of the EIAR. The mitigation measures are described in Section 8.7 and the predicted impacts with the development in place and the mitigation measures incorporated in Section 8.9.

8.5.1 CONSTRUCTION IMPACTS

The development of the site will be conducted in the following phased stages:

- Enabling works Site set up and Site clearance
- Construction works including infrastructure and building construction and landscaping

8.5.1.1 Enabling works - Site Set Up and Clearance

Works activities associated with the 'Site set up' will be undertaken prior to construction works commencing. The setting up of the site shall involve the construction of site security hoarding and site compounds, site offices, materials and waste storage areas and staff welfare facilities. These short-term activities will have a minimal potential to generate excessive noise levels.

The proposed development involves the ground clearance of the existing site to facilitate the proposed development including buildings, internal roads and hard standing areas, services and landscaped areas.

Site clearance, levelling and an element of ground excavation shall also occur at this stage. A variety of items of plant will be in use during site clearance and ground excavation. These will include excavators, dump trucks, compressors, and generators. The operation of these items of plant has the potential to generate short term elevated noise levels beyond the site boundary.

During the site clearance works, Construction and Demolition (C&D) waste shall be segregated as per the requirements of the project Resource and Construction Waste Management Plan for the site and shall be exported off-site by appropriately permitted waste contractors. The movement of these trucks to and from the site shall result in an increase in the volume HGV's within the immediate area and along the proposed haul routes which will generate additional noise levels.

A quantity of excavated top and subsoils will be stockpiled on site and used for landscaping purposes.

8.5.1.2 Construction Works

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site, and construction traffic, which will all generate noise. The highest noise levels will be generated during the general construction activities. The construction noise levels will be of relatively short term duration and will only occur during daytime hours which will serve to minimise the noise impacts at local existing receptors.

It is predicted that the construction phases shall result in a short-term increase in noise levels in the area as well as introducing tonal and impulsive noise as a result of construction activities such as pneumatic breaking, cutting, excavating, vehicle movements and general manual construction activities.

Due to the phased nature of the development which will occur over an approximate 3-5 year period, there will be slight to moderate impacts on the existing residential estates and houses located opposite the site boundaries.

The noise and vibrational impacts of construction works will only be prevalent when construction works are occurring in proximity to these residential receptor areas and as such the impacts will not extend over the entire duration of the total construction phase.

The proposed construction phase noise mitigation measures as detailed in Section 8.7 shall ensure that all construction activities are controlled and managed and audited by an independent acoustic consultant to confirm that the mitigation measures are implemented throughout the construction phase.

8.5.1.3 Construction noise predictions

The predicted construction noise levels that will be experienced at the nearest residential receptors as a result of construction activities have been calculated using the activity L_{Aeq} method outlined in *BS 5228*

1:2009+A1 2014 – Code of Practice for noise and vibration control on construction and open sites – Part 1 Noise.

Tables 8.8 and 8.9 detail assumed plant items during the key phases of construction with the associated source reference from *BS 5228: 2009+A1 2014*. The closest residential properties to the proposed development site are located at distances ranging from approximately 10m-50m. Construction noise calculations have therefore been conducted both at distances of 10m to 50m from the works for the Site Clearance and Main Construction phases, representing the nearest existing residential receptors to the works located to the south and southwest of the site.

| Plant Item | BS 5228 Reference | Calculated sound pressure levels L _{Aeq} dB at distances from receptors | | |
|-----------------------|-------------------|---|----|--|
| | | 10 | 50 | |
| Generator (enclosed) | C.4 Ref 84 | 68 | 54 | |
| Compressor (enclosed) | D.6 Ref 19 | 71 | 57 | |
| Tracked Excavator | C.2 Ref 3 | 76 | 62 | |
| Wheeled Excavator | C.2 Ref 26 | 77 | 63 | |
| HGV | C.4 Ref 19 | 75 | 61 | |
| Dozer | C.2 Ref 11 | 79 | 65 | |
| Combined | | 72 | 56 | |

Table 8.10: Indicative construction noise predictions associated with Site Enabling works

Table 8.11: Indicative construction noise predictions associated with building construction works

| Plant Item | BS 5228 Reference | Calculated sound pressure levels L _{Aeq} dB at distances from receptors | | |
|------------------------------------|----------------------|---|----|--|
| | Nelelelice | 10 | 50 | |
| Generator (enclosed) | C.4 Ref 84 | 68 | 54 | |
| Compressor(enclosed) | D.6 Ref 19 | 71 | 57 | |
| Tracked Excavator | C.2 Ref 3 | 76 | 62 | |
| Wheeled Excavator | C.2 Ref 26 | 77 | 63 | |
| HGV | C.4 Ref 19 | 75 | 61 | |
| Concrete / Steel Cutting Equipment | Various | 82 | 68 | |
| Dump truck | C.2 Ref 30 | 77 | 63 | |
| Combined L _{Aeq,period} | | 72 | 54 | |

The results of the assessment has indicated that, in general, at distances of greater than 10m from the works site provided all mitigation measures including site hoarding are implemented, the construction day time noise limit of 75dB L_{Aeq, 11hr} can be complied with during both enabling and construction works. It is also important to note that the impact due to construction activities will be transient in nature and the noise levels detailed in Tables 8.8 and 8.9 represent worst case scenarios when all items of plant are operating simultaneously without noise mitigation measures in place.

A **negative, slight to moderate and short-term effect** is predicted at the closest residential receptors during the construction phase.

Construction Traffic Noise

Based on the assumption of up to 40 HGV movements per day on the haul routes to and from the site along public roads, the resulting average predicted traffic noise level at the closest receptors is calculated as follows:

FC. ELLED. OTOGROPA The predicted noise levels at any receptor located within 5m of the haul route road has been calculated using a standard international acoustical formula as described below.

SEL + $10\log_{10}(N) - 10\log_{10}(T) + 20\log_{10}(r^{1}/r_{2}) dB$ $L_{Aeq}, T =$

where $L_{Aeq, T}$ is the equivalent continuous sound level over time period (T) (3600 sec)

- is the A weighted Sound Exposure Level of the noise event (77dB); SEL
- Ν is the number of events over the time period T (40);
- r1 is the distance at which SEL is assessed (5m)
- r2 is the closest distance to the receptor from the road (10m)

The calculations assumed a maximum scenario of 4 truck movements per hour based on a 10 hour working day a maximum Sound Exposure Level of 77dBA for the trucks and the minimum distance between the local road passing by each of the nearest noise sensitive receptors to the public road (10m). No attenuation, above geometric spreading, has been considered within these calculations may be considered the worst case scenario.

The maximum predicted LAeq. period values as a result of the HGV traffic movements at the nearest noise sensitive receptors located along the haul route roads is predicted to be 51 dBA, LAea, period.

It is not expected that the predicted short-term increase in HGV movements associated with the construction phase of the development will have an adverse impact on the existing noise climate of the wider area or on local receptors.

The noise impact associated with construction traffic on public roads will result in a negative, slight, and short-term effect at the closest residential receptors during the construction phase.

Vibration

The most significant potential sources of ground borne vibrations that may be generated during the construction phase of the development will be generated by the following practices:

- Ground preparation excavation activities that require the use of pneumatic rock breakers •
- Movement of site vehicles bulldozers, tracked excavators and dump trucks on ground surfaces
- Hard core surfaces and haul road compaction with vibro-rolling vehicles
- Road construction surface vibro-rolling

Vibration impacts have been considered from any particular plant items that have the potential to generate perceptible levels of vibration.

The nearest off-site residential receptors will be c. 10m from construction works. Depending on the methods of construction, there is the possibility of construction related vibration impacts on human beings as a result of ground preparation and concrete foundation activities. However, such sources of vibration shall be temporary and intermittent.

It is highly unlikely that any construction generated vibrations at buildings 10m from the proposed development would result in cosmetic damage. Experience of similar construction projects has shown that beyond this distance there is no risk of cosmetic damage occurring within buildings.

The vibration impact associated with construction works will result in a negative, slight, and short-term effect at the closest residential receptors during the construction phase.

8.5.2 **OPERATIONAL PHASE**

The noise aspects to be considered for the completed development can be divided into two categories:

- Noise impacts on neighbouring residential receptors from the operation in the levelopment from traffic and retail activities Noise impacts on neighbouring residential receptors from the operational development

8.5.2.1 Traffic Noise Impact

The main potential for altering the noise environment once the development is operational fand thus impacting neighbouring residential receptors, is from road traffic noise associated with the development.

Traffic movements associated with the development have been evaluated and assessed as part of the Traffic & Transport Assessment prepared by Trafficwise Limited. The split in am and pm peak traffic movements will not result in an adverse impact on local air quality at any local junction and it is predicted that the impact of car engine exhaust emissions will have a negligible impact on local ambient air quality. The maximum increase at any junction as a result of the fully operational development will be 14.7% on the R153 Kentstown Road (West) AM Peak and 14.3% on the R153 Kentstown (West) PM Peak.

The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7) states that it takes a 25% increase or a 20% decrease in traffic flows in order to get a 1dBA change in traffic noise levels. On this basis, the traffic flow increases associated with the development for all year scenarios will result in a negligible increase of +1dBA on existing ambient noise levels at existing residential receptors at the R153 Kentstown Junction. There will be no increase in noise levels at other analysed local junctions.

The noise impact associated with traffic on public roads will result in a negative, slight, and long-term effect at the closest residential receptors during the operational phase.

8.5.2.2 Pump Station Noise

The development will include a temporary foul water pump station located in the eastern area of the site c. 50m from the closest residential receptors. All plant associated with its operation shall be located underground and its operation is not predicted to be audible at the closest residential receptors. A typical well maintained underground pump station of this nature would generate sound pressure levels between 60 – 65dB(A). With regard to the sound attenuation provided by its subterranean location and the distance between the pump station and the closest residential units, it is predicted that the noise level experienced at the residential units would be <15 dB(A).

The noise impact associated with the pump station will result in a **neutral**, **imperceptible and long-term** effect at the closest residential receptors during the operational phase.

8.5.2.3 Internal Residential Traffic Noise

The subject development includes the provision of surface and under-croft car parking spaces for the residential units. Vehicles within the residential areas will generally travel at speeds <20kmph as a result of speed limit signage and speed reducing ramps throughout the development which result in relatively low noise levels being generated by internal vehicle movements.

The noise impact associated with internal traffic movements will result in a negative, slight, and longterm effect at the closest residential receptors during the operational phase.

8.5.2.4 Neighbourhood Noise

Within the proposed development, sounds generated by everyday domestic activities including waste collection activities, pedestrians, children, and use of open spaces, are part of everyday living, and are not considered "noise" in the sense of a potential nuisance. These activity noises would not have any potential for impact beyond the boundaries of the site.

The noise impact associated with neighbourhood noise will result in a **negative**, slight, and long-term effect at the closest residential receptors during the operational phase.

8.5.2.5 Mechanical Plant Noise (Retail Units and Community Centre)

The selection of building services plant will ensure that noise levels comply with the criteria previously described in Section 8.2.6. It is acknowledged that the selection of the specific plant items is subject to change during the detailed design stage, and this is normal industry practice. However, noise from any new plant items will be designed and/or controlled so as not to give rise to any adverse effects at the nearest noise sensitive locations.

Once operational, if building services plant items are required to serve the development, the cumulative operational noise level at the nearest noise external sensitive location will be designed/attenuated to meet the relevant *BS 4142* noise criteria for day and night-time periods. This will ensure that mechanical plant noise does not exceed background noise levels, and hence, as per BS4142 is an indication of the specific sound source having a low impact.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level then this indicates that complaints are likely to occur and that there will be a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

The noise impact associated with building services plant will result in a **negative**, **imperceptible**, **and long-term effect** at the closest residential receptors during the operational phase.

8.2.5.6 Potential Inward Noise impacts on the proposed development

The inward noise impact from the rail line located c. 300m north of the site has been considered as a noise source that could have the potential to have an existing or future negative noise impact on the development. The effect of this has been assessed as follows.

This section details an assessment of the potential daily train noise impact on the subject development to determine if noise mitigation measures should be included in the design of particular units within the development that front onto the Tara Mines operational rail line.

The noise level associated with a short duration event such as a passing train movement can be expressed in terms of its Sound Exposure Level (SEL) which can be used to calculate the contribution of a series of events, in this case the number of passing of trains per day, to determine the overall noise level over the day. The acoustic formula below is used to calculate the daily noise level that will be experienced at the Noise Sensitive Receptors.

LAeq, T = SEL + 10log10(N) - 10log10(T) - 20log10(r2/r1)

Where:

LAeq,T is the equivalent continuous sound level over time period T (18 hours 06:00hrs – 00:00hrs = 64800 seconds)

SEL is the A Weighted Sound Exposure Level of the passing train at the closest receptor (65 dB(A)) N is the number of events during the time period T (4 trips per day) NED OTOS r1 is the distance from the rail track to the closest façade of the property (20m) r2 is the distance from the point of measurement to the freight train (5m)

The calculated LAeq, 18hr train noise level is 56dB(A).

The inward noise impact of the limited number of existing daily train movements (4 no.) on the closest residential units does not exceed the existing baseline noise levels at this location.

Should train movements increase in the future to double the existing movements to 8 movements per day the resultant LAeq, 18hr train noise level would be 59dB(A).

The inward noise impact associated with train movements results in a negative, slight and long-term effect.

N1 Northern Site Boundary

The ProPG Stage 1 Initial Risk Assessment for the daytime is LAeq, 16hr 56dB(A) which is in the low risk category at the northern site boundary.

The ProPG Stage 1 Initial Risk Assessment for the nighttime period is L_{Aeq. 8hr} of 46dB(A) which is in the low risk category at the northern site boundary.

N2 Southern Site Boundary

The ProPG Stage 1 Initial Risk Assessment for the daytime period is LAea, 16hr of 58dB(A) which is in the low risk category.

The ProPG Stage 1 Initial Risk Assessment for the nighttime period is LAeq. 8hr of 47dB(A) which is in the low risk category.

The results of the ProPG noise risk assessment associated with the inward noise impact associated with road traffic and rail noise on the development will result in a negative, slight, and long-term effect.

8.5.3 VIBRATION

The only source of vibration predicted, once the development has been constructed and is operational, is vibration associated with internal road traffic movements.

As a vehicle travels along a road, vibration can be generated in the road and subsequently propagate towards nearby buildings. Such vibration is generated by the interaction of a vehicle's wheels and the road surface and by direct transmission through the air of energy waves. Some of these waves arise as a function of the size, shape and speed of the vehicle, and others from pressure fluctuations due to engine, exhaust and other noises generated by the vehicle.

Ground vibrations produced by residential road traffic are unlikely to cause perceptible, cosmetic, or structural vibration in properties located near to well-maintained and smooth road surfaces. Vibration impacts associated with road traffic in particular commercial van and trucks can therefore be largely avoided by good maintenance of the road surface.

It has been assessed that vibration levels related to road traffic movements, including those additional movements due to the proposed development would be significantly lower than those levels required to lead to disturbance of occupiers or to cause cosmetic or structural damage to buildings.

8.5.4 **'DO NOTHING' SCENARIO**

If the site remains undeveloped it shall continue to have no noise or vibrational impact on the receiving environment. Based on the projected increase in traffic up to the design year of 2041 the increase in traffic noise levels in the area without the subject development would be < 3dB. This increase above the existing situation would be minor and would not result in an imperceptible change in the existing noise climate at any local receptor.

8.6 CUMULATIVE NOISE IMPACTS

In accordance with Schedule 6, Part 2(c) of the Planning and Development Regulations 2001-2018, this section has considered the cumulative impact of the proposed development in conjunction with existing adjacent development and future development in the vicinity of the subject site. This section relates to the cumulative impact on the subject site itself and on surrounding sites.

The European Commission's report of May 1999 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions' defines cumulative impact as follows:

"Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project".

The Irish Water Code of Practice for water infrastructure – Connections and Developer Services – Design and Construction requirements. Dec 2017 specifies that noise, vibration and odours shall be minimised during Irish Water works. The contractor engaged to conduct the works on behalf of Irish Water will conduct the monitoring to assess the impacts of works on air quality, noise and vibration.

The worst case scenario associated with the Irish Water works construction noise is not predicted to exceed the *BS 5228 – 1:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 1 Noise* weekday limit of 75dB(A), LAeq, 10hr or the Saturday limit of 75dB(A), LAeq, 10hr 6hr. Therefore, it is anticipated that there would be a moderate impact, for limited periods of time, on the closest local residences within the vicinity of the development during construction. Noise mitigation measures such as the installation of acoustic screens between the works and the receptors would be required to reduce the noise impact associated with construction activities to within recommended levels.

Relevant developments have been identified with regard to their size and scale, their use mix and composition, and their proximity to the proposed development, within the settlement of Navan, in particular to identify any substantial / strategic residential development or larger scale commercial development. Applications of a minor nature were discounted from the planning history search, for example applications for under 5 no. dwellings, or applications relating to minor extensions, works to existing dwellings, and change of use applications. The planning history search focussed on relevant permitted developments in the last 5 years, with a search also undertaken for permitted longer term permissions (i.e. with a 10 year permission).

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann).

PECEIL Should any other developments be under construction or planned in the vicinity of the site, potential cumulative impacts are not anticipated once similar mitigation measures are implemente \mathscr{C} 26/202×

8.7 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

8.7.1 CONSTRUCTION PHASE

8.7.1.1 General Construction Site Management

The following noise management measures shall be implemented at the site from the outset of site activities to control and manage noise levels during the construction phase of the proposed development:

NV CONST 1 Noise Mitigation Measures

An independent acoustic consultant shall be engaged by the contractor prior to the commencement of site activities to ensure that all noise mitigation measures as specified in this Section of the EIAR are implemented and to prepare a site specific Construction Phase Noise Management Plan. The Plan shall include all relevant noise and vibration control measures as specified in this Chapter of the EIAR. The Plan shall be submitted to Meath County Council for approval as required.

The nominated contractor shall appoint a designated person to manage all environmental complaints including noise and vibration.

A noise complaint procedure shall be implemented in which the details of any noise related complaint are logged, investigated, and where required; measures are taken to ameliorate the source of the noise complaint.

Appropriate signage shall be erected on all access roads in the vicinity of the site to inform HGV drivers that engines shall not be left idling for prolonged periods and that the use of horns shall be banned at all times.

HGV's queuing on any local or public road shall not be permitted and it shall be the responsibility of site management to ensure this policy is enforced.

Typical construction hours are:

07:00hrs – 19:00hrs Monday to Friday 08:00hrs - 14:00hrs Saturday Closed on Sundays and Bank/Public Holidays

All onsite generator units (if required) used to supply electricity to the site shall be silenced models or enclosed and located away from any receptor.

The site compound shall be located at a point on site furthest away from any residential development.

Mains power shall be used to supply electricity to all site offices and site lighting at the earliest instance.

The use of generators during the night-time shall be avoided.

8.7.1.2 Construction Phase Noise Control & Mitigation

The following shall be implemented to mitigate construction noise impacts in order to ensure that the construction phase of the development does not have an unacceptable impact on sensitive receptors:

NV CONST 2 Construction Works Noise Mitigation Measures

- A strictly enforced noise management programme shall be implemented at the site from the outset of construction activities.
- The Construction Project Manager shall appoint an acoustic consultant to conduct continuous noise surveys which shall be conducted at the baseline noise monitoring locations throughout the construction phase of the development to assess compliance with the construction noise limit criteria detailed in Table 8.1 above and to assess the effectiveness and implementation of the specific Construction Phase noise mitigation measures detailed in this document.
- The principal of controlling noise at source shall be implemented at the site. Best practice mitigation techniques as specified in BS 5228:2009+A1 2014 Noise and Vibration Control on Construction and Open Sites shall be implemented during the construction phase and are detailed in this Section.
- Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable.
- Where reasonable, practicable, noisy plant or activities shall be replaced by less noisy alternatives if noise breaches and/or complaints occur.
- Proper use of plant with respect to minimising noise emissions and regular maintenance will be required.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and will be maintained in good efficient order
- Where noisy plant is required to operate in works areas next to residential houses low noise plant options will be used wherever practicable.
- Dumpers and any plant used for moving materials around the site will have high performance exhaust silencers.
- Selected use of rubber-tyred equipment over steel track equipment where practicable.
- The use of inherently quiet plant is required where appropriate all compressors and generators will be "sound reduced" or "super silent" models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
- All compressors, generators and pumps shall be silenced models fitted with properly lined and sealed acoustic covers or enclosures, which will be kept closed whenever the machines are in use.
- All pneumatic percussive tools such as pneumatic hammers shall be fitted with dampers, mufflers or silencers of the type recommended by the manufacturer.
- Fixed items of plant shall be electrically powered in preference to being diesel or petrol driven.
- Vehicles and mechanical plant utilised on site for any activity associated with the works shall be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.

- Any plant, equipment or items fitted with noise control equipment found to be defective in shall not be operated until repaired / replaced.
- Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum during periods when not in use.
- Static noise emitting equipment operating continuously shall be housed within suitable acoustic enclosure, where appropriate.
- All excavator mounted pneumatic breakers used for demolition and ground breaking activities shall be fitted with effective dampeners and /or enclosed within a noise adsorbing blanket structure to minimise noise emissions.
- Site activities shall be staggered when working in proximity to any receptor, that is concrete cutting and rock breaking should where possible. This proposed method of working will provide effective noise management of site activities to ensure that any receptor is not exposed to unacceptably high levels of noise over extended periods.
- Excessive reviving of all vehicles shall be avoided.
- Unnecessary dropping of heavy items onto ground surfaces shall be banned.
- The use of an excavator bucket to break up slabs of concrete or tarmacadam shall not be permitted.
- The dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.
- The use of acoustic screens to attenuate noise at source shall be implemented as deemed necessary.
- Plant Reversing Alarms: Where reasonably practicable and deemed safe by risk assessment, taking
 into account onsite hazards and working environment, the tonal reversing alarms of mobile plant shall
 be replaced with broadband alarms.
- A nominated person from the Project Management team will be appointed to liase with local residents and businesses regarding noise nuisance events.
- In the event of the requirement for out of hours work to occur which will involve the generation of noise levels that are predicted to exceed out of hours noise limit criteria, Meath County Council shall be immediately notified prior to the works commencing.
- A nominated person from the Project Management team will be appointed to liaise with and inform local residents and Meath County Council regarding out of hours works.
- An independent acoustic consultant shall review the implementation of the recommended mitigation measures on a monthly basis.

The images below describe the use of noise screens for construction activities.

It is recommended that high performing acoustic barriers are utilised such as Echo Barrier products or Ventac products.

Double height acoustic blanket enclosure Acoustic blankets screening piling and excavations



8.7.1.3 Construction Phase Vibration Control & Mitigation

The following specific vibration mitigation and control measures shall be considered during the construction phase:

NV CONST 3 Vibration Mitigation Measures

- Breaking out concrete elements using low vibration tools
- Choosing alternative, lower-impact equipment or methods wherever possible
- Scheduling the use of vibration-causing equipment, such as jackhammers, at the least sensitive time of day
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible
- Sequencing operations so that vibration causing activities do not occur simultaneously
- Isolating the equipment causing the vibration on resilient mounts
- Keeping equipment well maintained.

- Confining vibration-generating operations to the least vibration-sensitive part of the day which could be when the background disturbance is highest
- A nominated person from the Project Management team will be appointed to liaise with local residents and businesses regarding vibrational nuisance events.
- An independent acoustic consultant shall review the implementation of the recommended mitigation measures on a monthly basis.

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, structural vibration monitoring shall be conducted during the course of the project works if required.

It is proposed that vibration monitoring will be conducted at properties adjacent to or within 50m of the site as required using calibrated vibration monitors and geophones capable of transmitting live text and email alerts to ensure that if vibration levels approach or exceed specified warning and limit values, site personnel will be alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the vibrational impacts of protected structures.

As detailed in Section 8.2.2 the transient vibration guide values for cosmetic damage as specified in British Standard BS 7385:, Evaluation and measurement for vibration in buildings, Part 2 1993 Guide to damage levels arising from ground borne vibration is 15 mm/sec Peak Component Particle Velocity at 4 Hz increasing to 20 mm/sec at 15 Hz. This limit value rises to 50 mm/sec at frequencies of 40 Hz and greater. The applied conservative limit of 12.5 mm/sec PPV (peak particle velocity) applied for this assessment is significantly lower than these levels.

Having regard to the above we suggest the inclusion of the following mitigation measure for ease of reference:

N V CONST 4

In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Management Plan (including traffic management) shall be put in place prior to the commencement of development. This will have regard to the mitigation measures set out in Section 8.7 of this document.

8.7.2 OPERATIONAL PHASE NOISE MITIGATION

N&V OPERA 1: External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path.

8.7.2.1 Acoustic Design requirements for residential buildings *Windows*

In order to ensure a sufficient level of sound insulation is provided for all dwellings within the development, the following lists the minimum sound insulation performance of windows and window frame sets in terms of the in-situ weighted sound reduction index (R_W):

30dB R_W for Living rooms & Bedrooms

30dB R_W for Kitchen – Dining Rooms.

The acoustic performance specifications detailed are the minimum requirements which shall apply to the overall glazing system when installed on site. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form

part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc. All exterior wall and door frames should be sealed tight to the exterior wall construction.

Ventilation Systems

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations. The apartment units shall include mechanical heat recovery ventilation systems which will negate the requirement for passive wall vents in bedrooms and living spaces which would otherwise allow the transfer of external noise into the building through the air gaps in the passive vents. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice. This design feature of the residential units will ensure that the building structure is acoustically insulated from the external environment.

Wall Constructions

The wall construction typically provides the highest level of sound insulation performance to a residential building. The residential dwellings will be built using either masonry or a timber framed construction. The minimum sound insulation performance of the chosen wall construction will be 55dB Rw.

Roof Construction

The insulated roof constructions proposed across the site will provide an adequate level of sound insulation to the properties within the development site. A minimum sound insulation value of 40dB Rw should be used for roof spaces.

At the earliest stage during the construction phase, residential test units shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with *Department of the Environment, Building Regulations 2014, Technical Guidance Document* E - Sound. Table 8.14 above provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units and to assess compliance with external noise intrusion criteria as defined in *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings.*

The operational phase of the development is predicted not to have an adverse noise impact on the receiving environment or on existing residential developments adjacent to the site during the operational phase of the scheme. Therefore, no mitigation measures additional to those set out above are proposed.

8.7.3 'WORST-CASE' SCENARIO

The worst-case scenario would be that the attributes and mitigation measure were not carried out and subsequently not appropriately enforced by the local authority.

The main potential for adverse impacts on local quality will occur during the construction phase. The worstcase scenario, therefore, corresponds to the situation where the mitigation measures for construction activities fail or are not implemented. Should noise mitigation measures not be implemented during the construction phase, significant noise nuisance is likely in areas close to the construction site. There would be significant adverse effect on human health in the absence of such mitigation measures.

8.8 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

8.8.1 CONSTRUCTION PHASE

8.8.1.1 Risks to Human Health

Construction phase noise and vibration emissions will be temporary and transient and will be mitigated with best practice measures so as to reduce the risk on the health of the existing local population.

The noise impact with mitigation in place on local human health will result in a negative, slight and short-term effect.

8.8.1.2 Risk to local Fauna

The risk to local fauna including badgers in lands adjacent the site boundaries is low as badgers are nocturnal animals and works will not occur during the nighttime period.

The noise impact with mitigation in place on local fauna will result in a negative, slight and short-term effect.

8.8.2 OPERATIONAL PHASE

8.8.2.1 Inward Noise Impact

The noise impact generated by additional traffic movements associated with the development is predicted to be of an imperceptible impact on existing ambient noise levels at receptors along the local road network.

It has been predicted that during daytime and night-time periods, acceptable internal noise levels can be achieved in all residential units as defined in *BS 8233* with windows closed, using the measures detailed above in Section 8.7.2 above.

With regard to the recommended mitigation by design measures as specified above, it may be concluded that residential properties located within the proposed development can be appropriately designed and constructed to achieve acceptable internal noise levels and to ensure the required acoustic performance of adjoining residential units.

The inward noise impact with mitigation in place on residents of the operational development will result in a **negative, slight and long-term effect.**

8.8.2.2 Outward Noise Impact

Noise will be generated by the operation of the retail units and will primarily relate to goods deliveries and the operation of vents and fans. With regard to the fact that the retail units will be located to the northeast of the site at the furthest point away from existing residential receptors it is predicted that their operation will not result in a negative noise impact on existing residential development to the southwest or south of the site.

All vents and fans associated with the retail units will be required to be acoustically attenuated to ensure that their operation does not have a negative noise impact on residents within the development.

The outward noise impact with mitigation in place on residents of the operational development will result in a **negative, slight and long-term effect.**

8.9 MONITORING

8.9.1 CONSTRUCTION PHASE

8.9.1.1 Proposed Noise Monitoring Programme During Site Construction

This section describes the noise and vibration monitoring methodologies that shall be implemented at the site to ensure that construction site activities do not cause excessive nuisance or cause cosmetic or structural damage to properties or structures in the vicinity of the site.

On commencement of the site construction activities, continuous noise motion systems shall be installed at site boundary locations to measures and assess the impact that site activities may have on ambient noise levels at local receptors.

The environmental noise measurements will be completed in accordance with the requirements of ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise and with regard to the *EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).* The measurement parameters to be recorded include wind speed, temperature, LAeq, LA90, LA10 and LAmax, 1/3 Octave Frequency analysis and impact noise analysis.

8.9.1.2 Noise Monitoring Locations

The noise monitoring location recommended for the noise monitoring surveys will be at existing residential noise sensitive receptors (N2) adjacent to the southern site boundary (Ref Figure 8.1) and in proximity to the badger sets.

8.9.1.3 Proposed Vibration Monitoring Programme During Site Construction

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, it is proposed that structural vibration monitoring may be implemented during the course of the construction phase if and as required. It is proposed that vibration monitoring will be conducted at adjacent properties identified as N1 opposite the southern site boundary (Ref Figure 8.1) as required using calibrated vibration monitors and geophones with live text and email alert functionality to ensure that if vibration levels approach or exceed specified warning and limit values, site personnel will be alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the vibrational impacts of protected structures.

8.9.1.4 Vibration Monitoring Locations

The vibration monitoring location recommended for the vibration monitoring surveys will be at existing residential noise sensitive receptors (N2) adjacent to the southern site boundary (Ref Figure 8.1).

8.9.2 OPERATIONAL PHASE

Following the completion and full occupation of the development including the operation of the retail and non-residential aspects, a 1-month continuous noise monitoring programme shall be conducted at baseline noise monitoring location N2 to assess the impact of operational noise on the closest existing residential development. The noise assessment will be conducted in accordance with BS 4142 Methods for rating and assessing industrial and commercial sound (2014). Should it be determined that operational noise has an adverse impact, the specific noise sources will be identified and appropriate noise mitigation measures will be implemented to reduce the operational noise level.

8.10 REINSTATEMENT

Reinstatement issues are not relevant to this Chapter of the EIAR, with reference to the construction and operational phase.

8.11 INTERACTIONS

The principal interactions between Noise & Vibration impacts and Human Beings have been addressed in this report which describes in detail the mitigation measures that shall be implemented to ensure that human health and residential amenity are not adversely impacted by any aspect of the construction or operational phases of the development.

8.12 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no difficulties encountered in compiling this Chapter of the EIAR.

8.13 REFERENCES

Design Manual for Roads & Bridges – Volume 11 Section 3.

Professional Guidance on Planning & Noise (ProPG), (IoA, 2017).

British Standard BS 5228 (2009 +A1 2014): Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.

British Standard BS 7385 (1993): Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.

British Standard BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.

British Standard BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound Calculation of Road Traffic Noise, Department of Transport Welsh Office, HMSO, 1988.

ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

ISO 9613 (1996): Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation.

EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)

Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022); and

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);



9.0 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

9.1 INTRODUCTION

This chapter of the EIAR has been prepared by Cunnane Stratton Reynolds Ltd (CSR), landscape architects and planners on behalf of Albert Developments Ltd.

The Landscape and Visual Impact Assessment (LVIA) was informed by a desktop study and a survey of the site and its receiving environment in January 2024. This report identifies and discusses the landscape and the receiving environment in relation to residential development in Athlumney, Navan, Co. Meath.

The application site is c.13.26 hectares. The site is located on the eastern edge of Navan Town. The site lies immediately to the east and south of the Drogheda railway line and the River Boyne and north of Athlumney Wood and Kentstown Road. The site is bounded to the south by a small country lane, Old Road, and to the south west by the residential neighbourhood of Tubberclaire Meadows. A few scattered residential buildings and farm houses are located to the south and south east of the site along Old Road. Arable farmland bounds the remainder of the site within the wider masterplan area.

This Assessment has been prepared by

- Declan O'Leary holds B.Agr Sc. Land. Hort., Dip LA., CLI, MILI., Declan has over 30 years' experience in the design and analysis of landscape and the impacts of change, and the preparation of assessments for inclusion in assessment reports.
- Prithvi Gowda holds B.Arch., MScUD&P. Prithvi Gowda has over 5 years working in a multi-disciplinary role within landscape and planning teams.

9.2 METHODOLOGY

9.2.1 DEFINITION OF LANDSCAPE

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental, and economic benefits to individuals and society.

As a cultural resource, the landscape functions as the setting for our day-to-day lives, also providing opportunities for recreation and aesthetic enjoyment and inspiration. It contributes to the sense of place experienced by individuals and communities and provides a link to the past as a record of historic socio-economic and environmental conditions.

As an environmental resource, the landscape provides habitat for fauna and flora. It receives, stores, conveys, and cleans water, and vegetation in the landscape stores carbon and produces oxygen. As an economic resource, the landscape provides the raw materials and space for the production of food, materials (e.g. timber, aggregates) and energy (e.g. carbon-based fuels, wind, solar), living space and for recreation and tourism activities.

9.2.2 FORCES OF LANDSCAPE CHANGE

Landscape is not unchanging. Many different pressures have progressively altered familiar landscapes over time and will continue to do so in the future, creating new landscapes. For example, within the

receiving environment, the environs of the proposed development have altered over the last thousand years, from wilderness to agriculture and settlement or townscape.

Many of the drivers for change arise from the requirement for development to meet the needs of a growing population and economy. The concept of sustainable development recognises that change must and will occur to meet the needs of the present, but that it should not compromise the ability of future generations to meet their needs. This involves finding an appropriate balance between economic social and environmental forces and values.

The reversibility of change is an important consideration. If change must occur to meet a current need, can it be reversed to return the resource (in this case, the landscape) to its previous state to allow for development or management for future needs.

Climate change is one of the major factors likely to bring about future change in the landscape, and it is accepted to be the most serious long-term threat to the natural environment, as well as economic activity (particularly primary production) and society. The need for climate change mitigation and adaptation, which includes the management of water and more extreme weather and rainfall patterns, is part of this.

9.2.3 GUIDANCE

Landscape and Visual Appraisal and Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity. As this report is not part of an Environmental Impact Assessment Report (EIAR), and is instead a standalone Landscape and Visual Appraisal, the report does not include a statement of the significance of effects. However, the process by which the landscape and visual effects are identified is similar to that of a Landscape and Visual Assessment carried out as part of an EIAR.

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA);
- Guidelines on the Information to be Contained in Environmental Impact Statements, May 2022, published by the Environmental Protection Agency (EPA);
- Meath County Development Plan 2021-2027.

9.2.3.1 Key Principles of GLVIA

Use of the Term '*Effect*' vs '*Impact*'

The GLVIA advises that the terms *'impact' and effect'* should be clearly distinguished and consistently used in the preparation of an LVIA.

'Impact' is defined as the action being taken. In the case of the proposed development, the impact would include the construction of the buildings and associated boundaries and external areas.

'Effect' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, or changes to the composition, character, and quality of views in the receiving environment. This report focusses on these effects.

Assessment of both 'Landscape' and 'Visual' Effects

Another key distinction to make in a LVIA is that between landscape effects and the visual effects of development.

'Landscape' results from the interplay between the physical, natural, and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a tandscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

9.2.4 METHODOLOGY FOR LANDSCAPE ASSESSMENT

In Section 9.7 of this report the landscape effects of the development are assessed. The nature and scale of changes to the landscape elements and characteristics are identified, and the consequential effect on landscape character and value are discussed. Trends of change in the landscape are taken into account. The assessment of significance of the effects takes account of the sensitivity of the landscape resource and the magnitude of change to the landscape which resulted from the development.

9.2.4.1 Sensitivity of the Landscape Resource

The sensitivity of the landscape is a function of its land use, landscape patterns and scale, visual enclosure and the distribution of visual receptors, and the value placed on the landscape. The nature and scale of the development in question is also taken into account. For the purpose of assessment, five categories are used to classify the landscape sensitivity of the receiving environment.

| Sensitivity | Description |
|-------------|--|
| Very High | Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change. |
| High | Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principal management objective for the area is conservation of the existing character. |
| Medium | Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong or has evidence of alteration to / degradation / erosion of elements and characteristics. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change. |
| Low | Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principal management objective is to facilitate change through development, repair, restoration or enhancement. |

Table 9.1: Categories of Landscape Sensitivity

| Sensitivity | Description |
|-------------|---|
| Negligible | Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration. |

9.2.4.2 Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Five categories are used to classify magnitude of landscape change.

| Table 9.2: Categories | of Landscape Change |
|-----------------------|---------------------|
|-----------------------|---------------------|

| Magnitude of change | Description |
|------------------------|---|
| Very High | Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape. |
| High | Change that is moderate to large in extent, resulting in major alteration to key elements features or characteristics of the landscape and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape. |
| Medium | Change that is moderate in extent, resulting in partial loss or alteration to key elements features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape. |
| Low | Change that is moderate or limited in scale, resulting in minor alteration to key elements features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape. |
| Negligible | Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape key elements features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character. |

9.2.4.3 Significance of Effects

In order to classify the significance of effects (both landscape and visual), the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint, using the following guide. There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

| Table 9.3: Guide to | Classification of Significance of Landscape Effects | |
|---------------------|---|--|
| | | |

| | | Sensitivity of the Landscape Resource | | | | |
|----------------|-----------|---------------------------------------|----------------------------------|-------------------------------------|---------------------|---------------------------|
| | | Very High | High | Medium | Low | Negligible |
| e of e | Very High | Profound | Profound- Very Significant | Very Significant- Significant | Moderate | Slight |
| jnitud hang | High | Profound-Very Significant | Very Significant | Significant | Moderate- Slight | Slight-Not Significant |
| Mag | Medium | Very Significant- Significant | Significant | Moderate | Slight | Not Significant |

| | Sensitivity of the Landscape Resource 🎪 | | | | |
|------------|--|---------------------------|--------------------|--------------------|---------------|
| | Very High | High | Medium | Low | Regligible |
| Low | Moderate | Moderate- Slight | Slight | Not significant | Imperceptible |
| Negligible | Slight | Slight-Not Significant | Not significant | Imperceptible | Imperceptible |

The matrix above is used as a guide only. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable.

Landscape effects are also classified as positive (beneficial), neutral or negative (adverse) (See definitions in Section 9.2.6). Development has the potential to improve the environment as well as damage it. In certain situations, there might be policy encouraging a type of change in the landscape, and if a development achieves the objective of the policy the resulting effect might be positive, even if the landscape character is profoundly changed.

9.2.5 METHODOLOGY FOR VISUAL ASSESSMENT

In Section 9.7 of this report the visual effects of the development are assessed. Visual assessment considers the changes to the composition of views, the character of the views, and the visual amenity experienced by visual receptors. The assessment is made for a number of viewpoints selected to represent the range of visual receptors in the receiving environment.

The significance of the visual effects experienced at these locations is assessed by measuring the viewpoint sensitivity against the magnitude of change to the view resulting from the development.

| Table 9.4: C | ategories of | Viewpoint | Sensitivity |
|--------------|--------------|-----------|-------------|
| | | | |

| Sensitivity | Description |
|-------------|---|
| Very High | Viewers at iconic viewpoints - towards or from a landscape feature or area - that are recognised in policy or otherwise designated as being of high value or national value. This may also include residential viewers who are focussed to a large extent on the view. |
| High | Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes. |
| Medium | Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view. |
| Low | Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, and not regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be generally considered of low susceptibility. |
| Negligible | Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping where the view has no relevance or is of poor quality and not valued. |

9.2.6 MAGNITUDE OF CHANGE TO THE VIEW

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral, or glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects.

Five categories are used to classify magnitude of change to a view as set out in the Table below.

| Magnitude of Change | Description |
|------------------------|--|
| Very High | Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes the dominant the composition and defines the character of the view and the visual amenity. |
| High | Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity. |
| Medium | Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity. |
| Low | Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity. |
| Negligible | Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity. |

Table 9.5: Categories of Visual Change

9.2.7 SIGNIFICANCE OF VISUAL EFFECTS

As for landscape effects, in order to classify the significance of visual effects, the magnitude of change to the view is measured against the sensitivity of the viewpoint, using the guide in Table 9-3 above.

9.2.7.1 Quality

The predicted impacts are also classified as beneficial (positive), neutral or adverse (negative). This is not an absolute exercise; in particular, visual receptors' attitudes to development, and thus their response to the impact of a development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn. These qualitative impacts/effects are defined as:

- Beneficial (positive) improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern, and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.
- Neutral Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality.
- Adverse (negative) Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.

9.2.7.2 Timescale

Impacts/effects are also categorised according to their longevity or timescale:

Table 9.6: Categories of Visual Change

| Definition of duration of effects | | |
|-----------------------------------|------------------|--|
| | Duration | Description |
| CONSTRUCTION STAGE* | Temporary | Effects lasting one year or less |
| | Early Short Term | Effects lasting one to two years |
| | Mid Short Term | Effects lasting three to four years |
| OPERATIONAL STAGE | Later Short Term | Effects lasting five to seven years |
| | Medium Term | Effects lasting seven to fifteen years |
| | Long Term | Effects lasting fifteen to sixty years |
| | Permanent | Effects lasting over sixty years |

*Estimated Construction stage length for this project.

The construction phase is forecast to last four years; however works will be taking place in different parts of the site at different times, some parts may be complete and in Operational Stage whilst Construction is ongoing elsewhere. Some views may experience a short construction period and move to operational stage whilst construction is commencing or continuing in other views. The interpretation of this is dealt with in the site-specific descriptive text for the assessment where appropriate.

9.2.7.3 Photography and Presentation of Viewpoints

Each viewpoint is illustrated by a photograph showing the existing view and the photomontage showing the proposed development.

Photomontages have been produced by 3D Design Bureau and are presented in a separate booklet as part of the planning application, with a map of their locations. Verified photographs and photomontages have been taken with a wide angle focal length (FL) and prime lens to allow representation of the development within its context. In all visualisations, the extent of the 50mm FL view has been indicated for reference, which is broadly equivalent to the c.40 degree Horizontal Field of View (HFoV) and is representative of what the human eye perceives and reflects the requirements of the Landscape Institute 'Technical Guidance Note on Visual Representation' (2019).

To correctly view the photomontage at the correct scale, the extents of the 50mm lens or 40 degree angle of view should be extended to A3 in size and viewed at arm's length. This can be done by printing a hard copy or, more easily, digitally on screen, allowing reference back to the wider angle to understand the context.

Each viewpoint is described below in Section 9.8 in its existing condition and the effects of the proposed development. The descriptions, including of the changes / effects of the development, focus primarily on the extent of the 50mm image, and the winter (worst case scenario) view, but refer to the context, as appropriate, to inform analysis.

Verified views were captured in January 2024.

9.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

9.3.1 MEATH COUNTY DEVELOPMENT PLAN 2021-2027

The Meath County Development Plan 2021-2027 (hereafter referred to as Development Plan / MCDP) contains a range of policies relevant to establishing the landscape and visual values and sensitivities for the site and site environs. These are set out below.

9.3.1.1 Chapter 2 Core Strategy

The County's Core Strategy is covered under Chapter 2 of the MCDP, includes the following relevant aims which outline the need to facilitate sustainable, compact development, and to protect and support environmental resources, as stated;

"To continue to support the creation of socio-economically progressive vibrant, dynamic, and healthy communities throughout the County and ensure that future growth is based on the principles of sustainable development that delivers a high-quality living and working environment that meets the needs of all residents, in accordance with National and Regional Guidance."

The town of Navan is identified as a 'Key Town' in the County Settlement Hierarchy, with the description; "Large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to act as growth drivers to complement the Regional Growth Centres."

9.3.1.2 Chapter 8 Cultural and Natural Heritage Strategy

County Meath is home to a range of unique heritage sites of national and international importance, which contribute to its identity and character. The Development Plan notes the intrinsic link between the County's character and cultural assets and economic success. The Cultural and Natural Heritage Strategy is covered under Chapter 8 of the MCDP.

9.3.1.3 Biodiversity and Green Infrastructure

The Development Plan describes the County's natural heritage to include scenic river valleys, rolling farmland, a network of mature hedgerows and diverse coastal habitats. The River Boyne is a valuable natural and cultural asset.

The River Boyne & River Blackwater Valley SPA and SAC is located 600m (approx.) north of the subject site.

As such, the following policies are relevant;

HER POL 27 - To protect, conserve and enhance the County's biodiversity where appropriate.

HER POL 28 - To integrate in the development management process the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures, as appropriate.

HER POL 55 - To recognise the economic, social, environmental and physical value of Green Infrastructure.

HER POL 56 - To require that all Land Use Plans protect, manage and provide where possible green infrastructure in an integrated and coherent manner.



Figure 9.1: River Boyne and River Blackwater Valley SAC & SPA

(indicative site boundary in red line) (source: EPA Maps)

9.3.1.4 Woodlands, Hedgerows and Trees

The value of green infrastructure, woodlands, trees and hedgerows are supported by the MCDP. It is noted that Meath is one of the least wooded counties in Ireland. Small and fragmented woodlands are located particularly along the river Boyne as found to the north of the site along the riverbank. As such, the following policies are relevant:

HER POL 38 - To promote and encourage planting of native hedgerow species in new developments and as part of the Council's own landscaping works.

HER POL 39 - To recognise the archaeological importance of townland boundaries including hedgerows and promote their protection and retention.

HER POL 40 - To protect and encourage the effective management of native and semi-natural woodlands, groups of trees and individual trees and to encourage the retention of mature trees and the use of tree surgery rather than felling, where possible, when undertaking, approving or authorising development.

9.3.1.5 Cultural and Natural Assets

The Development Plan outlines the wealth of cultural and natural assets found in County Meath. Policy exists to protect cultural and natural assets. The site does not fall within an Architectural Conservation Area or in the immediate vicinity of one. The are no National Monuments or Protected Structures located on the site on the zoned site or in its immediate surroundings.

9.3.1.6 Landscape Character

The Development Plan outlines the importance of landscape on a European and National Level. At a County Level, Meath has embedded landscape within policy and has undertaken a Landscape Character Assessment that has identified landscape character areas, its sensitivity, and the capacity for change.



Figure 9.2: Landscape Character Areas

Relevant Policies and Objective:

HER POL 52 - To protect and enhance the quality, character, and distinctiveness of the landscapes of the County in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment (2007) in Appendix 5, to ensure that new development meets high standards of siting and design.

HER OBJ 50 - To require landscape and visual impact assessments prepared by suitably qualified professionals be submitted with planning applications for development which may have significant impact on landscape character areas of medium or high sensitivity.

The Meath Landscape Character Assessment (MCLA) classifies the area in which the development site lies, to the east of Navan, as LCA 6 - 'Central Lowlands' and covers a substantial area of central Meath. This area is described as:

"Large lowland landscape area composed of rolling drumlins interspersed with numerous large estates and associated parkland Thick wooded hedgerows, with some conifer plantations, and shelterbelts of ash and larch, separate medium to large fields. Deep roadside drainage ditches and banked hedgerows are a common feature of the landscape in the enclosed rural road corridors......"

Characteristics of the area include;

- Complex drumlin landform created by glacial movement.
- Ground conditions suit those trees that thrive in free draining soil such as beech, oak, ash and lime with wetter species such as alder, birch, and willow present adjacent to the Royal Canal.
- Mix of small medium rough pasture fields.
- Beech stands and rows of beech and pine.
- Sand & gravel quarries southwest of Hill of Down and near Kilmessan.
- Mix of small medium rough pasture fields.
- 3 proposed National Heritage Areas (pNHA's) Duleek Commons, Thomastown Bog and Balrath Woods.
- Strong network of well-wooden hedgerows in most parts.

- Range of mature broadleaf copses and rows of pines. Some wetland habitat and wet pasture adjacent to Royal Canal
- WED. ONDERORA Boyne River Corridor and Stoneyford River are important due to the variety of habitats associated with the rivers.
- Long established mixed scale farmlands.
- Settlements have a high proportion of vernacular buildings.
- A strong network of hedgerows in most part.
- Estate landscapes.

•

- Buried archaeology but few upstanding historical features.
- The Landscape Value of this LCA has been assessed as High. .
 - The Landscape Sensitivity of this LCA has been assessed as Medium.
- The Landscape Importance of this LCA has been assessed as Regional.

The potential capacity of the LCA is described as:

"Medium potential capacity to accommodate multi-house residential developments because they are already a feature on the outskirts of towns and the strong landscape structure of small fields with welldefined boundaries and woodland are capable of accommodating carefully planned developments."

The characteristics of the Landscape Character Area 5 - the 'Boyne Valley' are vital and necessary to this assessment due to the proximity of the site to the valley. Characteristics of the LCA 5 include:

- The most significant and highly valued landscapes in the county because it contains the Bru • na Boinne World Heritage Site
- Settlements such as Trim, Slane and the southern fringe of Navan.
- Southern edge of Navan: Mix of residential and industrial units. •
- Settlements have a high proportion of vernacular buildings.
- A steep river valley with areas of rolling lowland adjacent to the River Boyne
- A well wooded river corridor.
- A strong network of hedgerows in most parts
- Mix of medium large pasture/arable fields
- Long established mixed scale farmland.
- Ground conditions that suit those trees that thrive in free draining soil such as beech, oak and lime with birch, larch and willow associated with the River Boyne
- Estate landscapes Mix of Sycamore, Yew, Alder and Beech associated with these.
- The Landscape Value of this LCA has been assessed as Exceptional.
- The Landscape Sensitivity of this LCA has been assessed as High.
- The Landscape Importance of this LCA has been assessed as International. •

The potential capacity of the LCA in relation to the proposal is as follows:

"Due to the exceptional landscape value and high sensitivity of the Boyne Valley, this LCA has low potential capacity to accommodate multi-house residential developments. It provides the setting for historic features of international importance (Bru na Boinne, WHS)" (p.45).

It should be noted that the above statement relates to the whole of the Boyne Valley Landscape Character Area. Local Development Plans reflect these landscape sensitivities in the zoning of lands as noted below in the summary of relevant Policy in the Development Plan.

It should be noted that the subject site does not fall under the LCA 5 – Boyne Valley. The Navan – Drogheda Rail line acts as a physical barrier, making the site disconnected and disjointed from the valley. However, due to the proximity and importance of Boyne Valley as a natural reserve is respected and reflected in this report.

9.3.1.7 Views and Prospects

Map 8.6 of the MCDP shows a number of protected views in the vicinity of Navan. To the north east of Navan Viewpoints 33 and 38 are approximately 3km and 1 km from the site respectively.

VP 33 at Proudstown Crossroads on the R162 is orientated east across a "settled landscape" but acknowledges the dense urbanisation on the right hand side (south) of the view as the Navan urban area expands. Due to distance and topography the site at Athlumney is not perceivable nor a feature of the view.

VP38 at Carne Hill on county road to north of Casey's Cross Roads on R153 is orientated south west away from the site.

Therefore no protected views are affected by the proposed development.

9.3.2 NAVAN SETTLEMENT

The settlement statement or strategy for Navan and other towns are covered under 'Volume 2 – Written Statements and Maps for Settlements of the Development Plan. The vision for Navan is;

"For Navan to continue to function and develop as a multi-modal Key town in Meath; an important employment centre for administrative, retail, health, and education services, where development in the town centre is balanced by investment in the business and industrial parks, which will enhance its attractiveness as a place to live, work, and invest and thereby support the creation of a sustainable community."

The subject site falls within the Master Plan 12 boundary. The status of the Master Plan is "Agreed in 2020" and subsequently subject to an update in 2024;

The development of these lands will provide for phased and integrate development including the delivery of the distributor road and local services and community facilities in tandem with residential development.

9.3.2.1 Land Use Zoning

The following land use objectives relate to the proposed residential development site and indicate future land uses;

- A2 New Residential "To provide for new residential communities with ancillary community facilities, neighbourhood facilities as considered appropriate."
- C1 Mixed Use "To provide for and facilitate mixed residential and employment generating uses."
- F1 Open Space "To provide for and improve open spaces for active and passive recreational amenities."

Relevant Policies and Objectives;

Settlement and Housing

NAV POL 1 - To consolidate and strengthen Navan's position a Key Town and the principle economic and service centre in Meath by continuing to support economic and population growth based on the principles of a sustainable community and a high quality and attractive urban environment.

NAV OBJ 2 - To support and encourage residential development on under-utilised land and/or vacant lands including 'infill' and 'brownfield' sites, subject to a high standard of design and layout being achieved.

Green Infrastructure

NAV OBJ 34 - To promote the preservation of individual trees or groups of trees or woodlands identified on the Heritage Map for Navan (Map no.22b) and to manage these trees in line with Arboricultural best practice.

Figure 9.3: Land Use Zoning (extract from MCDP)



9.3.3 NON-STATUTORY PLANS – MP12 FRAMEWORK PLAN

The subjects site falls within a wider masterplan area within the MP12 – for the lands at Athlumney, Alexander Reid, Bailis and Ferganstown and Ballymacon.

The Objectives for the plan area are as follows;

- To cater for the increased growth of the population of the town and the provision of quality residential accommodation;
- To provide opportunities for expansion of the employment base of Navan;
- To provide an urban design framework of real quality;
- To provide for a good social mix including the provision of residential units which cater for the requirements of different user types;

- To provide good amenity space at appropriate strategic locations which would be of a high design quality;
- To develop an appropriate network for pedestrians, cyclists, public transport and motorists and in particular to develop the main distributor road the LDR 6 which is a specific objective of the Navan Development Plan;
- To ensure adequate provision for appropriate retail, community, educational and any other amenities required to service the new population including the provision of a neighbourhood centre.

The Development Plan identifies the lands as 'Masterplan 12' (MP12). This Masterplan, as agreed with Meath County Council will provide an appropriate framework and means of guiding new development and services in a coherent and sustainable manner. The Masterplan provides an advisory and 'non-statutory' planning document, in compliance with the Meath County Development Plan. The subject application is the first phase of development on the lands, in accordance with the plan.

Figure 9.4: MP12 Masterplan



As noted, earlies, the key to the development of the MP12 lands is the construction of the Farganstown Access Road under the Local Infrastructure Housing Activation Fund (LIHAF) which will open up the 135 hectares of land for development, 11.6 hectares of which is in the ownership of Meath County Council. This road is currently under construction.

The objectives of the MP12 Framework are:

- To cater for the increased growth of the population of the town and the provision of quality residential accommodation;
- To provide a coherent and co-ordinated approach for the development of a large tract of Greenfield lands of various uses and landownerships;
- To provide opportunities for expansion of the employment base of Navan;

- To provide an urban design framework of real quality;
- To provide for a good social mix including the provision of residential units which cater for the requirements of different user types;
- To provide good amenity space at appropriate strategic locations which would be of a high design quality;
- To develop an appropriate network for pedestrians, cyclists, public transport and motorists and in particular to develop the main distributor road the LDR 6 which is a specific objective of the Navan Development Plan;
- To ensure adequate provision for appropriate retail, community, educational and any other amenities required to service the new population including the provision of a neighbourhood centre.

9.3.4 RELEVANT PLANNING HISTORY

Relevant developments have been identified with regard to their size and scale, their use mix and composition, and their proximity to the proposed development, within the settlement of Navan, in particular to identify any substantial / strategic residential development or larger scale commercial development. Applications of a minor nature were discounted from the planning history search, for example applications for under 5 no. dwellings, or applications relating to minor extensions, works to existing dwellings, and change of use applications. The planning history search focussed on relevant permitted developments in the last 5 years, with a search also undertaken for permitted longer term permissions (i.e. with a 10 year permission). Relevant projects are listed below and can be seen on Figure 9.5.



Figure 9.5: Planning History and Relevant Projects in the Area (site boundary in red)

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units. ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development NED: 0106202 Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units. Uisce Eireann Planning Reg. Ref. 2460066 – Pumping Station.

9.3.5 LANDSCAPE BASELINE: DESCRIPTION OF THE SITE AND ENVIRONS

The existing site and its environs are described below in terms of:

- Location and Overview .
- Landform, Topography and Drainage •
- Site boundaries, Field patterns and Vegetation •
- Landform and Landcover •
- Land use and Green Infrastructure •
- Access •
- Built, Natural and Cultural Heritage •
- Landscape Character
- Visual Amenity •
- Landscape value and Susceptibility •
- Visibilitv

9.3.5.1 Location and Overview

The site is located approximately 1km from the Navan Town Centre. The site lies east/south-east to the town centre and to the south and east of the Boyne Valley. The site lies immediately to the east and south of the Navan to Drogheda railway line and the River Boyne. The site lies to the north of Athlumney Wood and Kentstown Road. The site is bounded by Old Road to the south, residential development to the west and arable agricultural farmlands to the north and east.

The subject site is situated within a wider masterplan area. The site boundaries were derived through a master planning process and are defined by residential parcels rather than by site specific landscape features such as hedgerows and tree line.

9.3.5.2 Landform, Topography and Drainage

The highest point of the site is located on the eastern boundary, close to the existing barn shed on-site, at a level of 51.95m AOD. The land might be best described as gently rolling and gradually sloping towards the western boundary and the north-western boundary. The only significant feature is the raised railway embankment.

Run-off appears to be directed towards the River Valley and is along drainage ditches within and around the fields.



9.3.5.3 Field patterns, Site Boundaries, Landcover and Vegetation

- Agricultural fields 3 in total
- Arable lands

The agricultural fields are small to medium in size and are divided by hedgerow lined ditches. The hedgerows range in condition and contain several scattered hedgerow trees, some of which look distinctive although range in physiological condition.

The south-western edge of the subject site partly abuts private property boundaries.

The only existing hedgerows on boundary edges are located along the southern edge and the edge to Tubberclaire Meadows. The south western edge also follows a field boundary in the vicinity of the proposed district park. These hedgerows contain a range of trees and native shrubs but very few of individual significance.

9.3.5.4 Land use and Green Infrastructure

The lands, as described above are all currently in private use for agricultural purposes.

The Boyne River Valley is a connected and protected wildlife corridor containing several different habitats. The site is situated at a distance from the riverbank and the closest distance measured from the north-western boundary is about 450m.

The existing barn shed on-site is surrounded by vegetation and trees for the purposes of visual cover. Apart from these trees, there are no other trees to be found on the site.

9.3.5.5 Access

The site has historically been largely in private agricultural use, therefore there is currently no general public access to it. The private barn shed on the lands can be accessed from the Old Road. The lands are irregular in shape, therefore, there are no other public access points. The LIHAF funded Part 8 road (currently under construction and completion) bounds the subject lands to the east and will provide access to the public road.

9.3.5.6 Built, Natural and Cultural Heritage

The Development Plan does not identify any protected structures on-site or in the immediate surroundings of the site. The site does not fall within an Architectural Conservation Area or in the vicinity of one.

The Boyne valley has long attracted human settlement, evidence for which dates to pre-historic eras. However, there is no evidence or records of settlement on the subject site and no part of the site falls is identified to be part of an area designated as 'zone of archaeological importance'.

The Athlumney Castle and Church Graveyard is about 1.3km to the west of the site. The Castle and the remains are not visible from the site.

9.3.5.7 Landscape and Visual Amenity

The site is located at the fringe of the Navan development area. The landscape varies across the east and the west. The west side of the site can be described as 'developed' and the east side of the site can be described as rural in character. Whilst the site is on the edge of Navan town, the wider landscape to the north and east is characterised by agricultural fields and farmsteads, bounded by mature and expanding hedgerows and tree belts.

The site falls within a Landscape Character Area designated as the 'Central Lowlands'. As mentioned above the subject site is disconnected from the LCA 5 - Boyne Valley and is situated at a distance from the valley. Therefore, the landscape character and description of the Boyne Valley LCA vary of that to the site.

The MCDP identifies Protected Views in the town and the county (See Section 9.3.1.7 above), however there are no protected views affected by the development.

9.3.5.8 Visibility

The subject site lies at an elevation, however, offers limited views to the town and the valley.

The landscape around the site is predominantly flat with mature trees and hedgerows defining the field boundaries. The effect of this is that views are generally foreshortened and limited. The thick and tall hedgerows along the Old Road and along the residential developments shortens the visibility of the site from the immediate surroundings.

9.3.5.9 Landscape Character

The landscape character of the subject lands is of a greenfield site containing strong urban influences – particularly to the west. It is defined by its;

- Landform which slopes gently across the plateau of the site towards the west and north-west.
- Existing arable use of the fields

- Healthy hedgerow connected across the site. .
- Lack of history or heritage connected to the site. •
- Shared boundaries with residential and sub-urban estates. •
- Proximity and views towards the Navan town. •
- Limited access to the site due to the private ownership. .
- Limited views from across the majority of the site area. •

As such, the landscape sensitivity of the subject lands is 'Medium'.

RECEIVED. OTOGIADA 9.3.6 SUMMARY OF LANDSCAPE CHARACTERISTICS AND VALUES

The values and characteristics of the site are listed below and can be categorised in two ways – values which should be conserved, and those that provide opportunity for enhancement. These values are summarised below:

9.3.6.1 Conservation Values

The values to be conserved indicate those aspects of the receiving environment which are valued and sensitive and could be negatively impacted on by the proposed development. These include:

- Trees/treelines and hedgerows across the site and boundaries. •
- The relationship and integration of the site with existing residential communities •
- Views from elevated lands towards the wider site and Navan town. •
- Structural landscape elements wooded railway embankment, mature hedgerows and field • boundaries.
- Presence of water Mill race and pond area, ditches / drains to hedgerows. •
- Proximity to Boyne Valley and Canal.

9.3.6.2 Enhancement Values

The enhancement values reflect change that is occurring in the landscape and its inherent robustness -The values to be enhanced represents the site's capacity to accommodate change. These include:

- Objectives to support compact, well-connected, high quality urban development with a strong sense of • place.
- Zoning of lands for mixed land use development for residential, mixed-use and open space. •
- The site's location on the edge of an urban area and partially developed urban landscape / area in • transition.
- Evolving adjacent suburban development to north west, west and south, and along with key • infrastructure developments such as the LIHAF Road (LDR6).
- Mixed landscape and sense of place. .
- The site and environs is not representative of the wider LCA and its sensitivity. •

9.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development provides for 322 no. dwellings, in a sustainable mix of houses, apartments, and duplex apartments as well as retail units, community space, a creche and open space of c. 3.2 hectares, including a 1.65 hectare public park. Key built elements include:

- 212 no. houses
- 26 no. duplex units
- 84 no. apartments across 3 no. apartment buildings (Block 2 [5-storeys] comprises), Block 3 [5-storeys above neighbourhood centre 6-storeys in total] and Block 4 [4 storeys above community centre 5-storeys in total]).
- Provision of a c. 512 sq. m creche at ground floor of Block 2 as well as a 1,778 sq.m. Community Centre and Sports Hall;
- Provision of an anchor retail unit (net floor space 1,000 sq. m [GFA 1,390 sq. m.]), takeaway, c. 82 sq. m, café, c. 210 sq. m, pharmacy c. 88 sq. m and General Practice Surgery c. 232 sq. m) as well as ESB substation and bins, all accommodated within the ground floor level of the neighbourhood centre to the north-west of the site;
- 693 no. car parking spaces, 289 no. bicycle parking spaces throughout the development;
- Provision of a temporary foul water pumping station (and associated storage) located within the district public park to service the scheme;
- Surface water attenuation measures as well as all ancillary site development works
- Series of landscaped/Public Open Space areas of c.3.72 hectares including playground areas and a Public Park of c.1.65 ha of open space as well as additional communal open space for the apartments and duplex apartments;
- ESB sub-station, hard and soft landscaped areas, public lighting, bin stores, all ancillary landscape works including planting and boundary treatments and the provision of cycle paths, and all ancillary site development works.

The proposed development is on lands zoned as A2 – New Residential - "*To provide for new residential communities with ancillary community facilities, neighbourhood facilities and employment uses as considered appropriate for the status of the centre in the Settlement Hierarchy*".

A part of the subject lands is zoned F1 – Open Space – "To provide for and improve open spaces for active and passive recreational amenities".

The proposed new landscape characteristics are defined by:

Neighbourhoods defined by a landscape led urban design response;

A new district park (Athlumney Park) alongside the neighbourhood centre as the primary focal point of the proposed development;

A smaller neighbourhood park that provides a centre point to the residential neighbourhood.

Wherever possible, the retaining of existing hedgerows and trees on boundaries to maintain a connected green infrastructure strategy for the site and neighbouring sites;

A new network of green corridors across the proposed lands for movement of both people and fauna, connecting to existing green corridors;

Urban blocks that are well connected and appropriate in size to encourage walking and permeability within the proposed neighbourhood;

Provision of pedestrian and cycle connectivity, through human-scale streets, green links, parks and avenues;

A distinctive hierarchy and legibility of street proportions and treatments allowing for passive management of traffic with priority given to cyclists and pedestrians;

Open space provision of c. 3.2ha.

Provision of new woodland and planting belt acting as buffer between the new Distributor Road, safeguarding impacts on views and the residential amenities of the residents.

9.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

This section identifies potential impacts of the construction and operational phases of the development on The otograph the landscape and visual resource study area.

9.5.1 CONSTRUCTION PHASE

9.5.1.1 Potential Landscape Impacts

The potential construction impacts on the landscape include the:

- Retention and safeguarding of existing trees and boundary vegetation where applicable. •
- Removal of the omission of selected mature trees, small groups of young trees and all internal • hedgerows
- Extensive change of the landscape from agricultural lands to a construction site and the resultant • change in landscape character
- Movement of soil and storage of materials •
- Potential Impacts on Views •
- The potential construction impacts on views include the: •
- Gradual erection of buildings and all engineering, building and landscape works required with • associated site infrastructure, fencing and plant.
- Visibility of site plant and machinery, which will be both still and moving. Cranes will be visible over the ٠ roofs of existing buildings.
- Removal of ground layer vegetation as it is stripped and stock piled. Bare earth will be visible. ٠
- Omission of selected mature trees, small groups of young trees and all internal hedgerows in views. •
- Retention and protection of the majority of the trees on site which will continue to screen and soften • some views towards and within the site.

9.5.2 **OPERATIONAL PHASE**

9.5.2.1 Potential Landscape Impacts

The potential construction impacts on the landscape include the:

- Change in character from agricultural lands to a residential development and series of parks. •
- Preservation of ecological habitats •
- Potential Impact on Views •
- The potential operational impacts on views include the: ٠
- Introduction of new residential buildings into the view •
- Introduction of new movement infrastructure roads, cycle paths and pedestrian paths into the view •
- Potential change in the skyline •
- Potential screening of more expansive views •
- Introduction of a more designed landscape •
- Gradual establishment of new vegetation and planting in the streets, open spaces, gardens and along • sections of the site boundary.

9.5.3 POTENTIAL CUMULATIVE IMPACTS

The proposed development is part of the wider expansion of Navan town in keeping with MP12. Cumulatively this is the transformation of this rural landscape in accordance with local policy for development. Permitted but not vet built development is set out in Section 9.3.4, coupled with the lands also zoned for development, this will see major cumulative change at the site and environs.

New development should maintain Green Infrastructure networks, landscape structure – trees and woods - and a consistent materiality, particularly to ensure the site's landscape potential is achieved and to ensure the protection of views from designated locations/routes. These recommendations have been LED. OF accommodated within the masterplan submitted.

9.5.4 **"DO NOTHING" IMPACT**

The 'do-nothing' impact refers to the non-implementation of the proposed development. The primary effect of this would be that the impacts and effects identified would not directly occur. In this regard the following issues are relevant.

The current agricultural land use of the subject site is not a land use which is likely to persist in the longer term due to the current zoning.

If the site is left in its current state, as agricultural land use, the management of the fields and hedgerows will be likely to continue in its current manner and hence a neutral impact will persist on the existing landscape.

9.6 **AVOIDANCE, REMEDIAL & MITIGATION MEASURES**

The following recommendations are put forward to mitigate against the negative impacts mentioned above and to reinforce the positive impacts of the proposed development. Mitigation measures are proposed and considered only on the lands of the subject site.

9.6.1 CONSTRUCTION PHASE

During construction there will be a change to the landscape and there will be negative visual impacts for residents and visitors to the areas adjacent to the site associated with construction activity.

The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.

Site hoarding will be appropriately scaled, finished, and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

Existing trees and woodlands to be retained and are shown in the CSR Design Statement and Arboricultural Reports.

Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to BS5837: Trees in relation Design, Demolition and Construction - Recommendations (BSI, 2012). Tree protection details will be included with the application to MCC.

Adverse impacts both during construction and at operation phases could be mitigated through undertaking the following site works early on in the construction process in order to soften and screen views as early on as possible.

Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.

9.6.2 OPERATIONAL PHASE

The scheme design incorporates significant consideration and mitigation in respect of potential impacts.

The architectural layout aims to address visual impacts by proposing variety in scale and massing of buildings.

The extensive planting of additional trees and shrubs throughout the site where possible will reduce the visual mass of the buildings, soften, and partially screens the development over time from various viewpoints, as identified in the assessment, thereby minimising the visual impacts.

Landscape works are proposed to reduce and offset of any impacts generated due to the proposed development, where possible. The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries, and internal roads, both native and ornamental varieties, will enhance the overall appearance of the new development and compensate for the removal of hedgerows and trees where needed for the construction works and increase the overall landscape capacity of the site to accommodate development.

Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist.

Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.

Design of public open space that forms part of a network of spaces that includes areas for passive and active recreation, social / community interaction and play facilities catering for all ages.

Application of best practice horticultural methods to ensure that mitigation measures establish and grow appropriately.

9.6.3 'WORST-CASE' SCENARIO

The 'worst-case' scenario would be if the proposed development failed to safeguard any of the existing valued landscape features or was laid out in a way that failed to respond to surrounding landscape and townscape character, scale, sensitivities and views. Similarly, if the proposed development is approved but failed to integrate proposed green infrastructure and if the positive attributes of the design and mitigation measures were not carried through in full or enforced by the Local Authority.

9.7 PREDICTED LANDSCAPE IMPACTS

9.7.1 LANDSCAPE SENSITIVITY

The receiving environment consists of the following;

- LCA 6 Central Lowlands,
- The subject lands, and
- LCA 5 Boyne Valley.

The proposed development directly affects the physical character of:

- LCA 6 Central Lowlands, and
- The subject lands.

The proposed development is situated closely to the;

LCA 5 – Boyne Valley.



The proposed development does not directly impact the character of the LCA 5 – Boyne Valley however due to its proximity of the subject site to the LCA, it is important to assess the indirect impacts.

9.7.1.1 Sensitivity of the Receiving Environment

The subject sites falls within 'Central Lowlands Landscape Character Area' which is categorised to have 'High' Landscape Value, 'Moderate' Sensitivity and of 'regional Importance as per the Landscape Character Assessment.

The subject sites is situated close to the 'Boyne Valley Landscape Character Area' which is categorised to have 'Very High' Landscape Value, 'High' Sensitivity and of 'International' Importance as per the Landscape Character Assessment.

The value and sensitivity of the LCA 5 & LCA 6 in the development plan covers the entirely of these LCA boundaries. The character of these two LCAs around the urban fringes of Navan has degraded and diminished over the years due to urbanisation and related land uses. Therefore, the receiving environment is not representative of the wider LCAs as described above, and its value and sensitivity is reflective of an area in transition to an urban area, where the subject site is situated.

Therefore, the wider sensitivity in the LCAs are cognisant of the potential consolidation and expansion of development in the main urban areas and support of such development is a strategy to protect the wider landscape area. In this regard, the sensitivity of the receiving landscape is reflective of the character of the wider settlement area of Navan rather than the more expansive rural landscape character of the areas, subject to not impact adversely on that wider landscapes.

The subject site and the receiving environment were described in Section 9.3.4. The subject lands contain some valued elements, features or characteristics, and local hedgerows and trees on site. The subject site and their receiving environment are mixed, i.e., in existing urban / semi-urban areas and in the fringes of the town. This is typical of the immediate surrounding landscape.

The site's zoning is supportive of development on this site. The lands falls within MP12 Master Plan Boundary. The Master Plan 12 lands has a mix of land uses; that is residential development, community uses, business/enterprise and open space. The Distributor Road is partly built and other lands in the MP12 boundary are either under planning process or granted planning permission. Therefore, the area is under rapid transition and is reflective of the zoning of the lands.

Therefore, the landscape sensitivity of the receiving environment (reflecting its zoning within the wider LCA) is classified as '**Medium**' – Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.

A review of the extent to which the development will affect the views experienced from adjacent landscapes are examined in section 9.8.

9.7.2 CONSTRUCTION STAGE

Construction will be programmed and phased over 46 – 48 months (4 years) resulting in ongoing infrastructure, building and related works for that period of time. These are generally visually adverse in nature. This will entail:

- Site clearance of much of the existing scrub vegetation, topsoil, and subsoil to accommodate the new construction.
- The temporary stockpiling of topsoil for reuse and of excavated sub-soil;
- The temporary movement of machinery in and out of the site construction access to the site will be off Coolock Lane to minimise disturbance to established residential areas.
- All engineering, building and landscape works required with associated site infrastructure, fencing and plant.

Close up views around the perimeter of the site will be obscured by 3m solid timber hoarding around the perimeter with a further 3m high dust netting above this. Nonetheless during construction, the site and views would be dominated by works and activity.

For the purposes of assessment, the Construction Phase Impacts are categorised as Temporary or Early Short Term.

The landscape sensitivity of the receiving environment is '**Medium**'. The magnitude of change during construction phase would be "**High**". This would change the character of the landscape and generate a landscape effect that would be 'significant'.

Qualitatively, it is expected that all construction works would have an **Adverse** landscape impact. Although valued features would be protected, the works would change the lands until they are re-made into the proposed neighbourhood.

9.7.3 OPERATIONAL STAGE

The site's '*Enhancement Values*' reflect a significant body of policy that is supportive of major landscape change at this location to form a new residential community. The site is surrounding by established residential neighbourhoods and currently the area is experiencing landscape change and urbanisation of its setting – it is becoming an anomaly in this context. Nonetheless it offers attractive characteristics to contribute to this new environment (reflected in its Conservation Values).

The impact of the development is the change of the site from open agricultural landscape to a new residential area. Locally some trees and hedgerows will be affected, however the new development has been laid out to incorporate many of these existing landscape 'green infrastructure' features within its landscape structure of open spaces and networks.

The proposed development has been prepared in accordance with best practice national guidelines local guidance in the Meath County Development Plan and National Guidance – Urban Design Guide 2009 by the Department of Environment, Heritage and Local Government and the Design Manual for Urban Roads and Streets by the Department of Transport, Tourism and Sport. The site layout has been sensitive to the landscape elements of value on the site, incorporating them into the development, adding value to them and enhancing their role.

The "Effect" of this in terms of alteration of the landscape character is assessed for the site as;

The 'Magnitude of Change' is **Medium**, i.e., Change that is moderate in extent, resulting in partial loss or alteration to key elements features or characteristics of the landscape, and/or introduction of elements that

may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.

(This reflects the Development Plan zoning, current nature of the site and its surroundings).

The effect is of Moderate Significance.

Qualitatively the landscape effect is **Neutral**, i.e., Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality.

This recognises that, whilst the change in character from open field site in the urban fringes of Navan to sub-urban/urban is complementary to the existing land uses, reflects land use policy for the site and has been applied to the site reflecting best practice in terms of urban design, open space development and Green Infrastructure policy. Overtime the new landscape structure will evolve to integrate the existing and new residential areas as part of a wider extension of Navan's urban area within its wider landscape setting.

9.8 PREDICTED VISUAL IMPACTS

9.8.1 ZONE OF VISUAL INFLUENCE AND POTENTIAL VISUAL RECEPTORS

Based on the assessment of the landscape characteristics, values, and sensitivities, 12 representative viewpoints were selected to assess visual impact and effects. These are scheduled and mapped below. Existing photographs and proposed photomontages are provided by 3D Design Bureau.

The landscape architect's site survey was conducted in January 2024. Verified views were captured in January 2024.

The assessed viewpoints are shown on Figure 9-7 & 9-8 overleaf and are listed in Table 9-7 below. A sensitivity rating has been ascribed to each visual receptor based on the definitions provided in Table 4. A rationale for the sensitivity rating is provided under the description of each existing view below.

| VP | Viewpoint | Rationale for selection | Viewpoint sensitivity | Approx. distance from site boundary | Site Visibility |
|----|---|--|--------------------------|---|--------------------|
| 1 | Looking east/south- east from the Level Crossing, Boyne Road | Representative of views experienced by road users | Low | 300m | Visible |
| 2 | Looking east from Ballis Manor | Representative of views experienced by road users and pedestrians and by residential receptors | Medium | 310m | Not Visible |
| 3 | Looking north-east from Tubberclaire Meadows, abutting the south-western boundary | Representative of close-range views experienced by residential receptors, open space users and pedestrians | Medium | 140m | Limited |
| 4 | Looking east from Tubberclaire Meadows, abutting the south-western boundary | Representative of close-range views experienced by residential receptors | Medium | 100m | Limited |
| 5 | Looking north-east from Old Road, southern boundary | Representative of views experienced by road users and pedestrians and by residential receptors. | Medium | - | Partially |

Table 9.7: Selected Viewpoints for Visual Assessment

| VP | Viewpoint | Rationale for selection | Viewpoint sensitivity | Approx. distance from site boundary | Site Visibility |
|----|---|--|--------------------------|---|--------------------|
| 6 | Looking north-west from Old Road, in front two detached houses | Representative of views experienced by road users and pedestrians and by residential receptors | Medium | 50m | Partially |
| 7 | Junction of R153 and Metges Rd | Representative of views experienced by road users and pedestrians and by residential receptors | Low | 410m | Partially |
| 8 | One-off Housing, looking west from the farm lane | Representative of views experienced by road users and pedestrians and by residential receptors | Medium | 800m | Partially |
| 9 | Eastern corner of the application site boundary | Representative of views experienced by road users and pedestrians | Low | - | Visible |
| 10 | Northern corner of the application site boundary | Representative of views experienced by residential receptors | Low | - | Visible |
| 11 | View from Glenveigh Residential Neighbourhood | Representative of views experienced by residential receptors | Medium | 300m | Partially |
| 12 | St Mary's Cemetery, north west of railway line | Representative of views experienced by road users and pedestrians | Low | 260m | Limited |

Figure 9.7: Location of medium-long range viewpoints





Figure 9.8: Location of close-range viewpoints

9.8.2 CONSTRUCTION IMPACTS AND EFFECTS ON VISUAL RECEPTORS

Construction is expected to be phased over four years. Further detail regarding the construction phase is set out in in the OCEMP. However individual areas will experience construction phases as a temporary or early short term Impact within this 0-48 month programme.

During construction phase, effects will generally consist of substantial site clearance, including trees and vegetation, and building processes required to construct the proposed development. These effects are predominantly adverse in nature, varying in magnitude and significance depending on visibility.

Construction effects are Temporary to Early Short Term in nature and once complete the development enters its Operational Stage.

9.8.3 OPERATIONAL IMPACTS AND EFFECTS ON VISUAL RECEPTORS

9.8.3.1 Viewpoint 1 - Looking east/south-east from the Level Crossing, Boyne Road

| Description | The existing view is from Boyne Road, located across the railway line. The viewpoint in located 300m from the site boundary and is located in front of a private farmgate. The viewpoint is representative of views experienced by road users and pedestrians and by those commuting by trains. |
|-------------|---|
| | In the foreground, the boundary hedgerows and gate to the farm is visible. In the middle ground the working rural landscape and some farm sheds are visible. In the background some mature hedgerows and groups of trees, within the rural landscape is visible. |
| | Overall, the view is of an agricultural landscape. The most prominent features are the vegetation; dense hedgerows and trees scattered in a generally flat landscape. |

| | However most of the land in the view is zoned for development and major change in character. | | |
|----------------------------|---|-----------|--|
| Sensitivity | Low | E. | |
| Visual Impacts and Effects | | | |
| Operational Phase | The upper floors of apartment buildings and roofscape of houses would be visible in the background view and would introduce a very urban element into current mostly rural scene. The proposed development will clearly erode the rural character of the view, however, it is located on the fringes of Navan in the context of other urbanising features, and extensive zoned lands. | | |
| | Magnitude of Change Medium | | |
| | Significance of Effects Slight | | |
| | QualityAdverse in the short term, improving to Ne Medium and Long term | | |
| | Duration | Permanent | |
| Cumulative Effects | Phase 1A development is located to the rear east of the agricultural buildings visible in the view. However all the lands in the foreground would ultimately be developed and views to the proposed development would be screened by new buildings. Whilst this would result in a large change to the view, there would be a negligible or no cumulative effect. | | |

9.8.3.2 Viewpoint 2 - Looking east from Ballis Manor

| Description | Scription This view is from Ballis Manor/from a residential neighbourhood. The view is loc along Ballis Manor on a public footpath. The view is about 310m from the site bour and is representative of the views experienced by road users and pedestrians. viewpoint is also representative of views experienced everyday by some resider Ballis Manor. The viewers from this viewpoint are looking in the foreground at the local sub- | | |
|----------------------------|---|------------|--|
| | road and beyond that at matured vegetation along the boundary of the residential neighbourhood. In the middle ground is the boundary wall and some vegetation in front and remnant hedgerow trees behind the wall. The vegetation restricts long-distance views from Ballis Manor and the site itself is one field removed beyond another intervening hedgerow. The intervening lands are zoned for development. | | |
| | with little scenic interest beyond the boundary. | | |
| Sensitivity | Medium | | |
| Visual Impacts and Effects | | | |
| Operational Phase | The proposed development is not visible in the view and hence no impact on the visual amenity or the quality of views enjoyed by the residents and users of Ballis Manor. | | |
| | Magnitude of Change | Negligible | |

| | Significance of Effects | Not Significant | | |
|-----------------------|--|--|--|--|
| | Quality | Neutral | | |
| | Duration | Permanent | | |
| Cumulative Effects | Although the lands beyond subject development woul | ond the boundary in the view are zoned for development, as the ould not be visible there would be no cumulative effects | | |
| | | Ty I and I a | | |

9.8.3.3 Viewpoint 3 - Looking north-east from Tubberclaire Meadows, abutting the south-western boundary.

| Description | The viewpoint is from Tubberclaire Meadows, from a public footpath. The viewpoint is looking north-east towards the subject site and is a close-range view. The view is representative of views enjoyed by pedestrians and residents of Tubberclaire Meadows. These are representative of views that residents experience everyday. In the foreground is the local road, with the green open space beyond occupying the centre of the view. The view is closed by the existing hedgerow vegetation along the housing boundary which restricts long distance views from the viewpoint other than through gaps in the vegetation. To the right of centre of the view can be seen some of the boundary walls and houses of Tubberclaire Meadows. The view is from a residential suburb looking at a local green around which houses are orientated. The boundary hedgerow and trees along the boundary close long-distance views and create an ettrative or generate an ettrative or generate an ettrative or generate an ettrative or generate an ettrative or generated and the set of the set | | |
|-----------------------|---|---|--|
| | · | | |
| Sensitivity | High | | |
| Visual Impact | Visual Impacts and Effects | | |
| Operational Phase | The proposed developme hedgerow and beyond the | nt is partly visible from this viewpoint through gaps in the garden walls however there is little change to visual amenity. | |
| | Magnitude of Change | Low | |
| | Significance of Effects Slight-Moderate | | |
| | Quality Neutral | | |
| | Duration | Permanent | |
| Cumulative Effects | Lands in between the boundary in the view and the subject site are zoned for development however the cumulative effect would only be slight. | | |

9.8.3.4 Viewpoint 4 - Looking east from Tubberclaire Meadows, abutting the south-western boundary

| Description | The viewpoint is also from Tubberclaire Meadows, from a public footpath. The viewpoint |
|-------------|---|
| | is looking east/north-east at the subject site and is a close-range view. The view is |
| | representative of views enjoyed by pedestrians and residents of Tubberclaire Meadows. |
| | This viewpoint is about 100m south-east of Viewpoint 3, and the characteristics of this |
| | viewpoint would be similar of Viewpoint 3. |
| | |

| | In the foreground is the local road and dwelling houses in the fore and middle ground. The houses restrict long range views from this viewpoint. To the left side of the view, is the boundary hedgerow enclosing in the view and local green. The view is from a residential suburb looking at a local green around which houses are orientated. The boundary hedgerow and trees along the boundary, and existing houses | | | |
|-----------------------|---|-----------|--|--|
| Sensitivity | High | POLA I | | |
| Visual Impacts | Visual Impacts and Effects | | | |
| Operational Phase | The proposed development is partly visible from this viewpoint through gaps in the hedgerow and houses however there is little change to visual amenity. | | | |
| | Magnitude of Change | Medium | | |
| | Significance of Effects Slight-Moderate | | | |
| | Quality Neutral | | | |
| | Duration | Permanent | | |
| Cumulative Effects | Lands adjacent the hedgerow to the west are zoned for development however the cumulative effect would only be slight. | | | |

9.8.3.5 Viewpoint 5 - Looking north-east from Old Road, southern boundary

| Description | This view is from Old representative of views exp itself is enclosed by dense This viewpoint looks direct From the viewpoint, the hedgerows ad scattered tr The valued elements or fe | Road looking eastwards towards the site. The view is berienced by road users, predominantly in vehicles. The road hedgerow trees and restricts views beyond the road corridor. Ity towards the southern edge of the site boundary. viewer experiences a rural country lane enclosed with ees either side. atures would be the rural character of the road. | |
|------------------------------------|---|--|--|
| Sensitivity | Medium | | |
| Visual Impacts | s and Effects | | |
| <i>Operational</i> <i>Phase</i> | The proposal provides one pedestrian access path and one vehicular access route from Old Road to the proposed development through the existing roadside hedgerow. The changes are visible in the view but are very minor in nature. The addition of the pathways have a neutral impact on the view, as they partly detract from the rural character but add elements of interest and relief from enclosure to the view. These openings are not uncharacteristic of the lane. | | |
| | Magnitude of Change Low | | |
| | Significance of Effects | Slight | |
| | Quality | Neutral | |

| | | Ŷ |
|-----------------------|--|---|
| | Duration | Permanent |
| Cumulative Effects | There would be no other cumulative effect. | development to be visible in this view. There would be no |

9.8.3.6 Viewpoint 6 - Looking north-west from Old Road, in front of two detached houses

| Description | This view is from Old Road in front of dwelling houses adjacent to the site boundary. This view can be classified as a close-range view. This viewpoint is representative of views experienced by road users and nearby residents along Old Road. The foreground and middle ground view is of the site access, gate and boundary wall of the residential dwelling. To the left side of the view, the Old Road and mature vegetation/trees along the road is visible. The view is of a cluster of established rural houses on a local rural road. | | |
|-----------------------|--|---|--|
| Sensitivity | Medium | | |
| Visual Impact | s and Effects | | |
| Operational Phase | Several houses in the view would be visible beyond the garden of the residence and driveway centrally in the view. The gable and roofs of these are visible but have a similar style and colour to the existing houses. Whilst an intensification of use, they are reflective of existing uses and only partially visible. The existing character remains | | |
| | Magnitude of Change | Medium | |
| | Significance of Effects Moderate | | |
| | Quality | Neutral | |
| | Duration | Permanent | |
| Cumulative Effects | There would be no other cumulative effect. | development to be visible in this view. There would be no | |

9.8.3.7 Viewpoint 7 – Looking north from the Junction of R153 and Metges Rd

| Description | This view is from the junction of R153 and Metges/Hodgett Road. The viewpoint is located along the eastern side of Metges Road and is looking north towards the site. The viewpoint is located approximately 360m from the southern site boundary. This view is representative of views experienced by road users and pedestrians approaching this junction. |
|-------------|---|
| | The view is predominantly looking at the junction and the construction of the new road infrastructure (RT8) that services the wider masterplan area. In the middle ground some development in the form of residential dwellings are visible to the left and some mature trees are visible to the left side of the view. In the background some mature and dense hedgerows along field boundaries are visible. |

| | Overall, the view of a large new junction in an evolving new urban area on the town edge. The view is of an area in transition dominated by infrastructure and new construction. | | | | |
|-----------------------|---|--|--|--|--|
| Sensitivity | Low | | | | |
| Visual Impact | s and Effects | | | | |
| Operational Phase | Views to the proposed development would be limited by existing vegetation and buildings in the view. Therefore, the proposed development is barely visible in the view and change would be difficult to perceive. | | | | |
| | Magnitude of Change | Negligible | | | |
| | Significance of Effects | Imperceptible | | | |
| | Quality | Neutral | | | |
| | Duration | Permanent | | | |
| Cumulative Effects | Lands between the viewpo views of the site itself, rep effect. | bint and the site are zoned for development and would screen lacing its visibility in the view. There would be no cumulative | | | |

9.8.3.8 Viewpoint 8 - One-off Housing, looking west from the farm lane

| Description | This view is from a rural lane leading to some farmlands and rural housing. The view is looking west towards the town of Navan and this view can be classified as long-distance view. The viewpoint is located at a higher elevation and some expansive views are experienced from the gaps in vegetation. This viewpoint is representative of views experienced by road users and pedestrians and from local housing. Whilst the view is partly restricted by the hedgerow along the lane, it is cut low and in the background, the town and its environs are visible. It is an attractive view or panorama over the rural landscape towards Navan. | | | | | |
|----------------------|---|-----------|--|--|--|--|
| Sensitivity | Medium | | | | | |
| Visual Impact | s and Effects | | | | | |
| Operational Phase | The proposed development is prominent through gaps in the vegetation in the middle of the view. It is perceived as the consolidation and expansion of the urban area closer to the viewer, whilst the general character of the panorama remains. In due course the intervening lands would be developed in line with MP12, closing and foreshortening the current panorama. | | | | | |
| | Magnitude of Change | Low | | | | |
| | Significance of Effects Slight | | | | | |
| | Quality | Neutral | | | | |
| | Duration | Permanent | | | | |

| Cumulative | Lands between the viewpoint and the site are zoned for development and would screen |
|------------|--|
| Effects | views of the site itself, closing and foreshortening the currempanorama. As a result |
| | there would be no cumulative effect. |

9.8.3.9 Viewpoint 9 - Eastern corner of the application site boundary

| | there would be no cumulat | tive effect. | | | | |
|-----------------------|---|---|--|--|--|--|
| | | TRO. | | | | |
| 9.8.3.9 Viewpo | oint 9 - Eastern corner of t | he application site boundary | | | | |
| Description | This view from the new road infrastructure (RT8) being laid as part of the delivery of MP12. This view can be classified as close-range view. This viewpoint is representative of views experienced by road users and potential future residents / worker. The view is dominated by a new roundabout and approach roads in the fore ground and middle ground. Beyond that can be seen the undeveloped fields of the MP12 | | | | | |
| | masterplan area and the p be seen around the existin in the current view which is | roposed site. In the middle of the view, a cluster of trees can g farm building on site. There are few highly valued elements s of an area in an advanced state of transition. | | | | |
| Sensitivity | ity Low | | | | | |
| Visual Impacts | s and Effects | | | | | |
| Operational Phase | Phase 1B in this developr view. Phase 1A is shown strong 4 storey corner buil | ment would extend to the left and right of the centre of the in the montage and assumed to be in place also, forming a ding. Together they are transformative. | | | | |
| | Magnitude of Change | Medium | | | | |
| | Significance of Effects | Slight | | | | |
| | Quality | Neutral | | | | |
| | Duration | Permanent | | | | |
| Cumulative Effects | As indicated above and vis element in the view. Cumul place to be legible and de and Beneficial. | sible in the photomontage Phase 1A would be the prominent latively they would be transformative and allow the new urban finitive. The cumulative effect would be of High Significance | | | | |

9.8.3.10 Viewpoint 10 - Northern corner of the application site boundary

| Description | This view from the new road infrastructure (RT8) being laid as part of MP12. This view can be classified as close-range view. This viewpoint is representative of views experienced by future road users and future residents, however the location and the view are a creation of the masterplan development strategy for the area. |
|---------------|---|
| | The view looks at the road infrastructure in the fore ground. In the middle ground, the agricultural landscape of the existing site is visible albeit increasingly neglected. In the middle of the view, mature trees surround the existing farm building on site. The view is of a formerly rural landscape in an advanced transition. |
| Sensitivity | Low |
| Visual Impact | s and Effects |
| Operational | Phase 1B (In contrast to view 9) is the dominant built element visible in this view with a |
| Phase | corner apartment block rising to 5 storeys flanked by 3 storey duplex units. |

| | The new buildings coupled with boundary fences and planting / street trees is transformative in a positive way of the view. | | | | | | |
|------------|---|---------------|--|--|--|--|--|
| | Magnitude of Change | Very High | | | | | |
| | Significance of Effects | Moderate | | | | | |
| | Quality | Beneficial | | | | | |
| | Duration | Permanent | | | | | |
| Cumulative | Phase 1A would not be visible in this view, lying behind the Phase 1B development. | | | | | | |
| Effects | There would be no cumula | ative effect. | | | | | |

9.8.3.11 Viewpoint 11 - View from Glenveigh Residential Neighbourhood

| Description | This view is from The Avenue, Glenveigh residential neighbourhood. The neighbourhood is located to the south of Boyne Road and to the north of the railway line. The views to and from the neighbourhood are mostly screened by dense mature vegetation along the railway line. Where there are gaps in the vegetation, there are views towards the south looking at the agricultural landscape. The outlook is an attractive one for the local housing and residents. | | | | | |
|-----------------------|---|-----------|--|--|--|--|
| Sensitivity | High | | | | | |
| Visual Impact | s and Effects | | | | | |
| Operational Phase | The proposed development is barely visible in the view and has no effect on the quality of the view. | | | | | |
| | Magnitude of Change Negligible | | | | | |
| | Significance of Effects Slight/Not Significant | | | | | |
| | Quality Neutral | | | | | |
| | Duration | Permanent | | | | |
| Cumulative Effects | There would be no cumulative effect. | | | | | |

9.8.3.12 Viewpoint 12 - St Mary's Cemetery, north west of railway line

| Description | This view is from Boyne Road, in front of the St Mary's Cemetery. This is a long distance view looking south towards the proposed development. The view is representative of |
|-------------|---|
| | The foreground and middle ground view shows the cemetery. In the background dense vegetation and mature trees along the railway line are evident. The trees screen most views towards the south of the railway line. The mature vegetation provides an attractive backdrop to the cemetery. |
| | Overall, the view is of a cemetery and viewers would be focused these cultural features. The vegetation provides an attractive background to the cemetery. |

| | | <i>P</i> ₂ | | |
|-----------------------|---------------------------------------|---|--|--|
| Sensitivity | Low | CEIL | | |
| Visual Impact | ts and Effects | | | |
| Operational Phase | The proposed development of the view. | oposed development is barely visible in the view and has no effect on the quality view. | | |
| | Magnitude of Change | Negligible | | |
| | Significance of Effects | Slight/Not Significant | | |
| | Quality | Neutral | | |
| | Duration | Permanent | | |
| Cumulative Effects | There would be no cumula | ative effect. | | |

9.8.4 SUMMARY OF VISUAL EFFECTS

The following table summarises the results of the assessment of the effects of the proposed development on the visual resource.

| Tabl | ine s.o. Summary of Visual Lifects | | | | | | |
|---------|---|-------------|------------|------------------------------|------------------|-----------|------------|
| V P | | 0 | | Significance and Term | | | Cumulative |
| N o. | Location | Sensitivity | Change | Short | Medium | Long | |
| 1 | Looking east/south- east from the Level Crossing, Boyne Road | Low | Medium | Slight and Advers e | Slight & Neutral | | No Effect |
| 2 | Looking east from Ballis Manor, abutting western boundary | Medium | Negligible | Not Significant and Neutral | | No Effect | |
| 3 | Looking north-east from Tubberclaire Meadows, abutting the south-western boundary | High | Low | Slight and Neutral | | Slight | |
| 4 | Looking east from Tubberclaire Meadows, abutting the south-western boundary | High | Medium | Slight-Moderate and Neutral | | Slight | |
| 5 | Looking north-east from Old Road, southern boundary | Medium | Low | Slight and Neutral | | No Effect | |
| 6 | Looking north-west from Old Road, in front two detached houses | Medium | Medium | Moderate and Neutral | | No Effect | |

Table 9.8: Summary of Visual Effects

| V P | | | Degree of | Significance and Term | | | Cumulative | |
|---------|--|-------------|------------|-------------------------|---------------------------|----------------------|------------|--|
| N o. | Location | Sensitivity | Change | Short | Medium | Long | | |
| 7 | Junction of R153 and Metges Rd | Low | Negligible | Impercep | Imperceptible and Neutral | | No Effect | |
| 8 | One-off Housing, looking west from the farm lane | Medium | Low | Slight and Neutral | | No Effect | | |
| 9 | Eastern corner of the application site boundary | Low | Medium | Slight and Neutral | | High & Beneficial | × | |
| 10 | Northern corner of the application site boundary | Low | Very High | Moderate and Beneficial | | No Effect | | |
| 11 | View from Glenveigh Residential Neighbourhood | High | Negligible | Slight and Neutral | | No Effect | | |
| 12 | St Mary's Cemetery, north west of railway line | Negligible | Low | Slight/No Neutral | t Significa | nt and | No Effect | |

The proposed development is expected to have a temporary adverse effect on the visual resource during construction. Upon operation and into the future, the development is expected to have a neutral and in places beneficial long term / permanent effect on the visual resource.

9.9 MONITORING

9.9.1 CONSTRUCTION PHASE

Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting, and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.

9.9.2 OPERATIONAL PHASE

This will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete.

9.10 REINSTATEMENT

The proposed landscape development works in the form of tree and shrub planting will be used to reinstate the site, post-construction. These works will be carried out by an appointed landscape contractor and will be supervised by a suitably qualified landscape architect or manager.

10.0 MATERIAL ASSETS - TRAFFIC AND TRANSPORTATION

10.1 INTRODUCTION

This chapter assesses the likely effects of the proposed development in terms of vehicular pedestrian and cycle access during the construction and operational phases of the proposed development. This Chapter of the EIAR has been prepared by Trafficwise Limited, Traffic and Transportation Planning Consultants. This chapter is prepared by Julian Keenan whose primary degree (BE hons) is held in Civil Engineering from University College Galway. A Director of Trafficwise Ltd., a member of the Institution of Engineers of Ireland and the Chartered Institution of Highways and Transportation, Julian Keenan has over 30yrs engineering experience with 25yrs specialising in Roads Design and Transportation Planning.

The chapter describes: the methodology; the receiving environment at the application site and surroundings; the characteristics of the proposal in terms of physical infrastructure; the potential impact that proposals of this kind would be likely to produce; the predicted impact of the proposal examining the effects of the proposed development on the local road network; and the remedial or reductive measures required to prevent, reduce, or offset any significant adverse effects.

10.2 BACKGROUND

As part of the LRD process numerous meetings, both statutory (Section 247) and non-statutory, where held with Meath County Council.

A pre-planning meeting was held on the 13th of December 2022 and the LRD S32 meeting was held on the 8th of November 2023, which was attended by Meath County Council (MCC) Roads and Transportation Department. Various documentation including preliminary scheme details and drawings were submitted by the applicant. The observations, recommendations and other MCC feedback assisted in establishing a scope for the key transportation items to be addressed within the application and this chapter of the EIAR which includes the MCC requirements for pedestrian permeability, service arrangements, emergency vehicle access, public transport accessibility and internal road design. A list of the key feedback is as follows:

- Internal roads design standard Design Manual for Urban Roads and Streets (DMURS)
- Pedestrian/Cycle connectivity to public transport facilities
- Pedestrian permeability and linkages through the site
- The methodology adopted in preparing the TTA will accord with Transport Infrastructure Ireland (TII) publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines 2014' and will have regard to the Chartered Institution of Highways & Transportation (IHT) 'Guidelines for Traffic Impact Assessment'.
- Traffic surveys and junction assessments include;
 - Site 1: R153 Kentstown Road/Metges Road/LDR6 Junction
 - Site 2: Old Athlumney Road
 - Site 3: Boyne Road
- Future year roads network capacity assessment scenarios to include;
 - Opening Year.
 - Opening Year +5 years.
 - Opening Year +15 years.

A list of the key MCC Transportation Department feedback based upon preliminary scheme details and drawings were submitted by the applicant is as follows.

- Development to accommodate LDR6 future underpass of the Navan-Drogheda commercial railway line.
- Assess existing link capacity of Old Athlumney Road.

- Assessment of capacity and impact on R153 Kentstown Road signal controlled junction with particular emphasis on the phased delivery of LDR6
- DMURS Statement required to identify street hierarchy etc.
- Desire lines and permeability links to be clearly shown particularly linking to south west corner to schools.
- MCC preference was to provide direct access onto Old Athlumney Road for each individual property but accepted that other factors such as flood risk and ecology may factor in the layout of direct access to this area including segregated pedestrian and cycle access.
- Provision to be made so the site accommodates future pedestrian/cycle path to be provided along southern boundary along the Old Athlumney Road
- Footpaths to be brought to the boundary to facilitate future connections where appropriate.
- Car parking provision of 1 space per unit for apartments is considered too low as the site is considered peripheral in respect of Apartment Guidelines. MCC recommend that CDP standards would be sought with respect to provision of EV charging points, disabled parking and taxi drop off.
- Cycle parking to be provided for the apartments in secure buildings.
- Suitable parking and set-down facilities to serve proposed creche.
- Traffic and Transport Assessment (TTA) of the development to scope advised by Meath County Council
- Require a report demonstrating compliance with the principles and specifications set out in DMURS.
- Prepare a Parking Strategy and Mobility Management Plan
- Scheme to be subject of a Quality Audit that includes a) Road Safety Audit, Access Audit, Walking Audit and Cycle Audit.

The scope of the Traffic and Transport Assessment has been discussed and agreed with Meath County Council at the pre-planning meetings and is the same scope adopted in the preparation of this chapter. Matters relating to DMURS are addressed in a separate document. Parking is addressed in a separate Traffic and Transport Assessment Report. A separate Mobility Management Plan has been prepared. An independent Quality Audit has been undertaken and includes for a Road Safety Audit, Access Audit, Walking Audit and Cycle Audit. The recommendations of which have been considered and incorporated in the proposed scheme layout. Details relating to further consultation are provided in the Traffic and Transport Assessment (TTA) report which accompanies the planning submission.

10.3 METHODOLOGY

The approach to this assessment accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. The following methodology has been adopted for this assessment:

- Environmental Protection Agency (EPA) Guidelines on the information to be contained in the EIAR;
- Transport Infrastructure Ireland (TII) publication PE-PDV-02045 'Traffic and Transportation Assessment Guidelines'.(2014)
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- 'Guidelines for Traffic Impact Assessments' The Chartered Institution of Highways and Transportation;
- Meath County Development Plan 2021-2027;

In preparing this chapter Trafficwise Ltd. engaged in a scoping and consultation process with the Transportation Department of Meath County Council and engaged with representatives of that Department to discuss the development proposals. The general methodology adopted for this chapter is summarised as follows:

- Baseline traffic data derived from 12-hour classified vehicular traffic count surveys undertaken in November 2019
- Trip generation A development trip generation assessment has been carried out using the database method. The assessment references the TRICS database of surveys for similar land-uses, to determine the potential vehicular and person trips to and from the proposed development.
- Trip distribution Based upon existing traffic characteristics and the surrounding road network, an
 appropriate distribution has been assigned to site development vehicular and pedestrian rips across
 the road network.
- Existing junction assessment An assessment of the existing and future operation of junctions on the receiving road network as a basis of modelling the impacts of the impact arising from the proposed development.
- Future junction operation assessments Future year traffic forecasts were derived from TII Project Appraisal Guidelines growth factors. Together with the forecast development trip generation figures the performance of the junctions on the receiving road network are modelled for the proposed year of opening, 5 years after opening and 15 years after opening. Where appropriate an assessment of existing junction performance is undertaken as a base reference. Assessments are undertaken both with and without the proposed development to assess the incremental impact arising directly form the proposed development.
- Car parking and bicycle parking provision within the proposed development have been assessed with reference to the parking standards set out in the Local Authority development plan and national guidelines for new apartments.
- A Mobility Management has been prepared setting out the availability of sustainable transport options in the vicinity of the development site. Mobility measures have been outlined whereby the proposed development may reduce the rate of private car use by residents and visitors.

10.4 RECEIVING ENVIRONMENT

This section considers the baseline conditions, providing background information for the site in order to determine the significance of any traffic implications. This section also considers the existing accessibility of the site by sustainable modes of transport.

10.4.1.1 Site Location

The application site is located within Meath County Council Masterplan 12 lands located to the east of Navan town. It is largely rural in character consisting of fields in agricultural use, bounded by field hedgerows. To the north-west is the Navan to Drogheda commercial rail line which is crossed by one level crossing and beyond it, low density residential development as well as a graveyard. To the north-east and east the character is essentially rural, and the land is in agricultural use. The south of the area is characterised by low density residential development along two existing roads. The following Figure 10.1 highlights the receiving roads and local landmarks and shows the general location of the Masterplan 12 lands shaded violet. Phase 1 is outlined cyan whilst Phase 1B lands are shaded Cyan. Phase 1A for which Meath County Council by decision dated 21-Jan-2022 issued a notification of its decision to grant permission under Planning Reg. Ref. 21/1046 is outlined red and is shaded red. That decision has been appealed under An Bord Pleanála Case Ref. ABP-312746-22. There are areas of Phase 1A lands common to Phase 1B. In the interest of clarity those areas of land exclusive to Phase 1A are highlighted yellow. Local Distributor Road LDR6 is shown with the dashed magenta lines with signal junctions at either end or roundabouts at the internal nodal points within Masterplan 12.



Figure 10.1: Site Location and Local Road Network (Source: Google Earth)

10.4.1.2 Local Road Network – General

Navan enjoys excellent national road network connectivity and is located at the core of an arterial network of national and regional roads. To the northeast the N51 provides access to the N2 via Slane and the M1 further east on the outskirts of Drogheda. To the southwest the N51 provides access to the M3 Motorway, Athboy and Delvin. Significant road links in Navan include the N51 Athboy/Delvin Road, the R153 Kentstown Road, the R161 Trim Road, R147 Kells/Dunshaughlin/Dublin Road and the R162 Monaghan Road.

N51 National Secondary Road: The route known as the Slane Road from west to east starts at Delvin, County Westmeath at a junction with the N52. It passes through Athboy known locally as Kells Road, crosses the M3 motorway with which it meets at M3 Junction 9 (Delvin/Navan North), it forms the Navan Inner Relief Road and onto Slane where it forms an at grade crossroads with the N2 road, all in County Meath, before crossing the M1 motorway at M1 Junction 10 and terminating to the north of Drogheda in County Louth at a roundabout on the R132 (former N1).

R153 Regional Road: Regional Road R153, known as the Kentstown Road starts in Navan at the R147 Kells Road where it crosses the River Boyne. R153 heads east passing through Kentstown approximately 10km to the southeast of Navan. The R153 terminates at the N2 Balrath Crossroad approximately 3km east of Kentstown. The route has a variable quality single carriageway. The road is typically wide twolane road with verges varying in width throughout. There are sections of the R132 where multiple accesses to individual dwellings prevail. The marked lanes in the carriageway measure between 6.5m and 7m in width along the development site frontage giving wide driving lanes of approximately 3.5m in both directions. Save for a short section between the railway and the entrance to Loreto Secondary School there are footways on both sides of the Kentstown Road between LRD6 and R147. The footway provision varies in quality and width throughout.



Figure 10.2: R153 Kentstown Road (Facing East at Moor Park GC)

<u>R147 Regional Road:</u> The R147 runs from Phibsborough in Dublin to its junction with the M50. It then follows the route of the former N3 between Clonee and Kells. It serves as an alternative route for non-motorway traffic. To the east of Navan the R147 runs northwest to meet with the N3 which continues to Cavan where it crosses the border and becomes the A3.

<u>Old Athlumney Road:</u> Old Athlumney Road commences at the R153 Kentstown Road to the west. Travelling east from the Kentstown Road the character of the road varies, generally reducing in width and quality further east. Between Kentstown Road and Bailis Manor the road is approximately 6m in width and has a footway on one side, switching from one site to the other at several locations. Approximately 25m west of the access junction to Tubberclaire Meadows the road narrows and the footway is discontinued.

To the east of Tubberclaire Meadows the road width further narrows to approximately 4m adjoined by a verge and stream on the northern side. Old Athlumney Road is subject to a speed limit of 50km/h. To the east of Tubberclaire Meadows there is a double-sided road sign indicating a speed limit of 50km/h applies in both directions. Figure 10.3 shows the character of the road to the west of Tubberclaire Meadows and Figure 10.4 shows the road to the west on the approach to the site frontage which lies east of a small residential development called 'Old Athlumney Manor'.



Figure 10.3: Old Athlumney Rd West of Tubberclaire Meadows (Facing East)

Figure 10.4: Old Athlumney Rd East of Tubberclaire Meadows (Facing East)



Local Distributor Road LDR6: Figure 10.1 shows the alignment of LDR6 which has undergone the Part 8 Local Government Planning and Development Regulations process. LDR6 is funded by the Local Infrastructure Housing Activation Fund.

Construction on LDR6 has recently been completed from a new signal-controlled junction at the R153 Kentstown Road located at the northern end of Metges Road. LDR6 currently stops short of the Navan railway but is designed to connect to the Boyne Road to the northwest. The current construction has not included the underpass of the existing Navan-Drogheda rail line which will be completed as part of a further construction phase.

LDR6 has been designed in accordance with Transport Infrastructure Ireland's Design Geometry publications formerly the National Roads Authority's Design Manual for Roads and Bridges. The Design

Speed for new distributor roads is typically 60km/h. The horizontal and vertical alignment parameters of LDR6 accord with the requirements set out in the current design standards.

In brief, the distributor road alignment consists of a 7.3m wide carriageway consisting of 3.65m through lanes adjoined by segregated cycleways and footways on both sides. There is a roundabout junction with Old Athlumney Road and a further two roundabout junctions north of Old Athlumney Road are provided to serve various lands on both side of the distributor road. The ultimate northern junction with the Boyne Road is designed as a signal-controlled junction.

In discussions at the pre-planning stage the Planning Authority has directed that the assessment of road network capacity should consider that the proposed development and adjoining lands to the south will be served only by the LDR6 connection to R153 Kentstown Road. This has been done in the interest of examining a worst-case traffic distribution scenario where, for some unforeseeable reason, the crossing of the Navan-Drogheda commercial rail line construction might be delayed.

The Navan Transport Plan 2014-2019 identifies LDR6 under the recommended provision of the plan and states the following under LTP Action 10 in Section 7.0 'Transport Plan Recommendations – Infrastructural Improvements':

"The capacity of the R153 Kentstown Road, the Boyne Road and the junction of Sion Road with the R147 is identified as a key constraint in allowing the planned growth of east / south east Navan to proceed. The delivery of LDR6 is considered necessary to alleviate such constraints. The Planning Authority shall consider the need to phase the delivery of this link and in particular the under bridge of the Navan – Drogheda rail line with the proper planning and sustainable development of the area. INF OBJ 11 also proposes the investigation of the need for an additional river crossing of the Boyne linking the Boyne and Slane Roads and this is supported by the conclusions of the Navan Traffic Model."

10.4.1.3 Pedestrian and Cycling Facilities

Located along the northern frontage of the development site, Local Distributor Road LDR6 will be subject to a 60km/h speed limit. The cross-section of LDR6 is consistent throughout. When construction is completed there will be formal segregated footways and cycleways provided on both sides of LDR6 from the development to the R153 Kentstown Road. There are continuous footways on Kentstown Road between LDR6 and the town centre. Footway and cycleway facilities extend southward from Kentstown Road along Metges Road toward Johnstown Wood linking up with similar facilities on Bóthar Sion which leads back to the R147. The following Figure 10.5 is an excerpt from the Navan Transport Plan 2014-2019 showing the proposed cycle network. This network is also duplicated in the Cycle Network Plan for the Greater Dublin Area as set out in 'Proposed Cycle Network – Navan, Sheet N12'.



Figure 10.5: Navan Transport Plan 2014-2019 Proposed Cycle Network

All of the blue routes shown in the Navan Transport Plan are identifies as 'Secondary' routes with no routes categorised as 'Primary'. LDR6 and Metges Road are identified as Cycle Route NA2 which is shown to extend from the Boyne Road in the north, along LDR6 and Metges Road ultimately connecting to the R147 Dublin Road. Significant connections include R153 Kentstown Road (NA3) and Bóthar Sion (NA4) which is shown to provide a southern orbital route for cyclists. Old Athlumney Road is identified in the plan as a 'Feeder' cycle route.

10.4.1.4 Public Transport

The existing railway line between Navan and Drogheda marks the northern boundary of Masterplan 12 Lands. This railway line facilitates infrequent freight trains from Tara Mines to Dublin Port. We understand that there are approximately four train trips along this line per day. A direct railway service connecting Navan with Dublin was discontinued in 1963. The main inter-city bus service between Navan and Dublin is operated by Bus Eireann which operates several bus routes that connect Navan to Dublin, Drogheda, Trim, Kells, and other towns and villages in the surrounding area with all bus services running seven days a week. In addition private coach operators also provide a service where Collins Coaches operates a bus service that connects Navan to Dundalk and Drogheda which runs seven days a week. Matthews Coaches operates a bus service that connects Navan to Dublin Airport, Dublin City Centre, and other towns in the surrounding area also running seven days a week. Local Link Meath operates a rural transport service that connects Navan to other towns and villages in the Meath area with the service running Monday to Saturday. Bus Eireann operates the most regular service; buses run generally between the hours of 06:00hrs to 23:00hrs from Monday to Saturday. Bus Eireann offers a limited night time service to Dublin and other nearby urban centres such as Drogheda, Trim and Ashbourne. The following table shows the current Bus Eireann commuter services.

| Route No. | Origin/ Destination | No. Buses | Frequency | | | | | | |
|--------------|---|--|---|--|--|--|--|--|--|
| 109 | Dublin – Dunshaughlin – Navan - Kells | 29 busses weekdays 25 Saturdays 22 Sundays | Every 30 mins in peak and 60 mins off-peak | | | | | | |
| 109A | Dublin Airport/City Centre - Ashbourne - Ratoath - Dunshaughlin - Navan - Kells | 24 buses daily | Every hour | | | | | | |
| 107 | Navan to Kingscourt | 4 buses weekdays & Sat 1 bus on a Sunday | Every 3 - 4 hours. | | | | | | |
| 190 | Navan to Drogheda/Laytown | 19 buses weekdays 19 buses on Sat & Sun | Every hour. | | | | | | |

Table 10.1: Bus Eireann Services to Navan

Bus Éireann Route 109 operates between Navan and Dublin City Centre, with several stops in between. The route runs seven days a week, including holidays, and is a popular transportation option for commuters, students, and tourists. From Navan the route travels south towards Dublin, passing through the towns of Dunshaughlin, Dunboyne, and Blanchardstown before arriving at Dublin City Centre. The journey time from Navan to Dublin City Centre is typically around an hour but can vary depending on traffic and other factors. Bus Éireann operates a range of services on Route 109, including regular services, express services, and services that operate via Dublin Airport.

Bus Eireann also operates Route NX Dublin-Navan Express The first stop of the NX bus route is Abbey Road and the last stop is O'Connell St Upper. NX (Dublin) is operational every day. Route NX has 10 stops and the total trip duration for this route is approximately 51 minutes. The service commences in Dublin at 04:20 from Beresford Place stopping at 5 no. locations in Navan including at Navan IDA, Johnstown Super Valu, Meath County Council, Ma Dwyer's Guesthouse and Abbey Road, stopping at these locations approximately 3 no. times per hour from 05:20 to midnight. The following Figure 10.6 is an excerpt from Bus Éireann current route map and in the context of Navan shows the Bus Éireann Expressway Coach Services (Blue) together with the Bus Éireann Local Bus Services (Red) set out in Table 10.1.



Figure 10.6: Bus Eireann Services to Navan

Bus Éireann has enhanced services in Navan and Drogheda. The new Navan Town Bus service now operates two routes called N1 and N2 with buses running every half hour from early morning until 23:30 hrs on weekdays and Saturdays with services once per hour on Sundays. The new service replaces the previous 110A, 110B and 110C routes. The following Figure 10.7 is a schematic of the Navan Town Service bus network.



10.4.1.5 Road Safety Authority Collision History

The collision statistics on the Road Safety Authority (RSA) website includes records of road traffic collisions for the period 2005 to 2016 inclusive and provides basic information on all reported collisions. This is the extent of the data in the online database and reports for 2017, 2018 and 2019 are not yet available.

The RSA records include only those collisions officially recorded and where a member of An Garda Síochána was present to formally record details of the incident. The following Figure 2.5 shows a plot of the recorded collisions over the 11-year period for which data is available.

Figure 10.8 shows a total of 19 collisions on the network serving the general location of the proposed development site and these are numbered. Other collisions, generally on the R147 corridor are simply noted for location and severity but are not numbered or referenced directly. There are three categories of collision which include 'minor' (highlighted grey), 'serious' (highlighted amber) and 'fatal' (highlighted red).

Three collisions on Figure 2.5 are highlighted yellow on Kentstown Road and are classified as 'serious' with the vast majority shown with a grey dot and classified as 'minor'. Table 10.2 provides the basic data relevant to each of the numbered collisions shown in Figure 10.8.





The data provided in Figure 10.8 and Table 10.2 shows an average of less than two collisions per year which is exceeded in 2010 when there were four and in 2014 when there were three. There were two serious accidents in 2010 of which one involved a single vehicle on Old Athlumney Road and the other on Kentstown Road to the west of Old Athlumney Road. A serious collision in 2016 involved a motorcycle turning form Kentstown Road to Athlumney Village. The RSA collision records suggest that on the receiving road network serving the proposed residential development there is no significant clustering of accidents and no significant trends in the type of traffic collisions. The data suggests that the local road network has a relatively good safety record.

~

| Ref | Year | Vehicle | Circumstances | Day | Time | Severity | Casualties | |
|-----|------|---------|---------------------------------|------|-------------|----------|------------|-----|
| 1 | 2011 | Car | Single Vehicle Only | Sun | 16:00-19:00 | Minor | 1 Minor | |
| 2 | 2016 | Car | Other | Wed | 07:00-10:00 | Minor | 1 Minor O | |
| 3 | 2008 | M/Cycle | Angle, Right Turn Motorcycle | Wed | 10:00-16:00 | Minor | 1 Minor | 222 |
| 4 | 2010 | Car | Rear-End, Straight | Mon | 10:00-16:00 | Minor | 1 Minor | 525 |
| 5 | 2007 | Car | Other | Fri | 19:00-23:00 | Minor | 1 Minor | |
| 6 | 2005 | Car | Angel, Both Straight | Tue | 19:00-23:00 | Minor | 1 Minor | |
| 7 | 2010 | Car | Other | Tue | 19:00-23:00 | Minor | 4 Minor | |
| 8 | 2009 | Car | Rear-End, Straight | Tue | 19:00-23:00 | Minor | 1 Minor | |
| 9 | 2016 | Ped | Undefined | Fri | 10:00-16:00 | Minor | 1 Minor | |
| 10 | 2015 | Bicycle | Other | Sat | 16:00-19:00 | Minor | 1 Minor | |
| 11 | 2016 | M/Cycle | Angle, Both Straight | Tue | 16:00-19:00 | Serious | 1 Serious | |
| 12 | 2010 | Car | Single Vehicle Only | Sat | 07:00-10:00 | Serious | 1 Serious | |
| 13 | 2005 | Car | Angle, Right Turn | Thur | 07:00-10:00 | Minor | 1 Minor | |
| 14 | 2014 | Bicycle | Other | Mon | 16:00-19:00 | Minor | 1 Minor | |
| 15 | 2010 | Car | Other | Fri | 16:00-19:00 | Serious | 1 Serious | |
| 16 | 2005 | M/Cycle | Angle, Right Turn | Thur | 10:00-16:00 | Minor | 1 Minor | |
| 17 | 2008 | Car | Other | Wed | 03:00-07:00 | Minor | 1 Minor | |
| 18 | 2014 | Car | Rear End, Straight | Thur | 10:00-16:00 | Minor | 2 Minor | |
| 19 | 2014 | Car | Single Vehicle Only | Wed | 16:00-19:00 | Minor | 1 Minor | |

Table 10.2: RSA Collision Records 2005-2016

10.4.1.6 Relevant Planning Authority Policies and Objectives

General

In summarising relevant past and current transport policies for County Meath, reference has been made to The National Development Plan 2018-2027, Navan Development Plan 2009-2015 (Consolidated Version), Meath County Development Plan 2013-2019 and Meath County Development Plan 2021-2027. The National Development Plan, in terms of infrastructure considerations has aimed to build upon and enhance Ireland's economic and social development by means of a concentrated and focused development strategy for the national primary road network. In relation to the impact on Meath, the strategy can be broadly related to the provision of enhanced road and public transport infrastructure. In summarising current transportation policies and future objectives for the general area, reference has been made to the Meath County Development Plan 2021-2027 which sets out the authority's policies and objectives for the development of County Meath together with the Navan. Meath County Development Plan 2021-2027 sets out the vision, policies, strategies and objectives for planning and sustainable development of County Meath and Navan. Traffic and Transport related information including policies and

objectives considered relevant to Navan and the location of the Masterplan 12 lands are summarised ECENTED. below.

Achievements

Meath County Development Plan 2013-2019, Section 6.4 sets out the progress that has been made since 2007 in advancing the delivery of key infrastructure projects and initiatives serving the county and in particular Navan. Connectivity within the county and beyond are improved through the achievement of:

- Completion of the M3 Motorway, Clonee to Meath-Cavan border
- Opening of the Clonsilla to Dunboyne Navan Rail Line (Phase 1)
- The development of Quality Bus Corridors

The key infrastructure project that has had a significant impact upon the local roads network in the vicinity of Navan and the Masterplan 12 lands is the construction of the M3 Clonee to Kells Motorway. The motorway involved the construction of approximately 50km of motorway/dual carriageway and 11km of single carriageway. A further 24km of link roads and the widening and re-alignment of other roads. The M3 was opened in June 2010. Starting in Clonee the motorway bypasses regional towns such as Dunshaughlin, Navan and Kells, terminating southwest of Kells at the N52 Kells Northern Bypass. The M3 has afforded considerable traffic relief to Navan town which had until its opening experienced severe operational difficulties during peak times. The motorway has brought many benefits to Navan town. It has reduced travel times and improved access to the town, making it easier for people to commute to work. visit family and friends, and access services and amenities. It has also improved safety by diverting heavy traffic away from local roads, reducing congestion and improving air quality. The motorway has also had a positive impact on the local economy, making it easier for businesses to transport goods and services to and from Navan. It has also attracted new investment to the area, with new businesses and industries setting up in and around Navan, creating jobs and stimulating economic growth. Overall, the M3 Clonee to Kells Motorway has been a significant development for Navan town, bringing many benefits to residents, businesses, and visitors to the area.

Public Transport

A campaign to have the Clonsilla to Navan railway line reopened, seeks a commuter service to Dublin, initially via the existing Drogheda line, and then directly through reopening the direct line to Dublin via. Dunboyne. The Transport 21 plan envisaged the reopening of Clonsilla services happening in two stages, initially to a park and ride off the M3 at Pace by 2009 and later extending to Navan by 2015. The first stage of the project as far as Pace, Co. Meath was completed in 2010, and a daily commuter service to Dublin Docklands Station commenced in September 2010. The second stage of the rail link to Navan has been postponed indefinitely.

Meath County Development Plan 2013-2019 had set out in the context of the then decision to defer the delivery of Phase II of the Navan Rail Line that the bus network would continue to be the predominant public transport alternative serving the County. It is therefore considered vital that bus services and facilities are enhanced to make travel by bus more attractive to existing and potential users.

In the Meath County Development Plan 2021-2027 the provision of a rail line from Pace (M3 Parkway) to Navan remains a key objective of the Council. Relevant current policy is as follows:

- Policy MOV POL 5 'To support the extension of the rail network in the County and to actively and strongly pursue a rail line from Dunboyne/M3 Parkway to Navan subject to proper planning and environmental considerations.'
- Policy MOV POL 6 'To actively pursue, in conjunction with Irish Rail and the NTA, the re- appraisal • of the extension of the Dunboyne/M3 Parkway line to Navan during the Mid-Term review of the GDA Transport Strategy in accordance with the precepts of the RSES.'

- Policy MOV POL 7 'To support the reappraisal and thereafter, promote facilitate and advance the Dunboyne M3 Parkway line to Navan railway line project and associated all services in cooperation with other relevant agencies.'
- Policy MOV OBJ 5 '(a) To protect and safeguard the detailed designed alignment of Phase II of the Navan rail route and surrounding lands (including identified station locations); as illustrated on Map Series No. 5.1 in Volume 3, free from development and any encroachment by inappropriate uses which could compromise its future development as a rail facility, prior to the reappraisal of the project as part of Mid Term Review of the GOA transport strategy in accordance with the precepts of the RSES; (b) As part of the future planning of the Dunboyne/M3 Parkway line to Navan, the possibility of a spur serving Ashbourne and Ratoath should be explored subject to compliance with national policy and the Railway order'.

Navan is served by both public and private bus services. The bus services provide essential transportation for the local community, connecting Navan to other towns and cities in the region. Bus Éireann is the national bus service provider and operates a number of routes from Navan to Dublin, Drogheda, Trim, and other nearby towns. It also provides local bus services within Navan, connecting different parts of the town. Local Link is a rural transport service that provides a range of scheduled services and door-to-door transport options for people living in remote and isolated areas. It operates several routes from Navan to nearby towns and villages. Navan is also served by private bus/coach services, Collins Coaches operates a range of services from Navan to Dublin, including airport transfers and private hire services. Matthews Coaches is another private bus company that operates services from Navan to Dublin and Dublin Airport, as well as services to other nearby towns and villages. Glen Whelan Coach Hire is a private bus company that operates services from Navan to Dublin and Dublin Airport, as well as private hire services for schools, sports clubs, and other groups. In addition to these public and private bus services, there are also several shuttle services that operate in Navan, including a shuttle service to and from Blanchardstown. Sillan Tours Ltd. offers a daily commuter service from Cootehill, Co. Cavan to Dublin City Centre stopping at Shercock, Kingscourt, Nobber, Wilkinstown, Navan, Garlow Cross, Ross Cross and Dunshaughlin en route to the City Centre. Sillan also provides a service to UCD. Royal Breffni Tours provide four daily services to Dundalk Institute of Technology. Streamline Coaches provide services to Maynooth University.

Bus Éireann has enhanced services in Navan and Drogheda. The Navan Town Bus service now operates two routes called N1 and N2 with buses running every half hour from early morning until 23:30 hrs on weekdays and Saturdays with services once per hour on Sundays. The new service replaces the previous 110A, 110B and 110C routes. Route N1 includes R153 Kentstown Road and Metges Road. In due course it is expected that the N1 service will be extended to include Local Distributor Road LDR6 which has several bus stops designed to service the Masterplan 12 lands.

Transport Strategy for the Greater Dublin Area 2022-2042

The Transport Strategy for the Greater Dublin Area, 2022-2042 sets out a strategy for how transport will be developed across the region, covering Dublin, Meath, Wicklow and Kildare, over the period of the strategy. It replaces Transport Strategy for the Greater Dublin Area 2016-2035.

The Strategy recognises Navan as the largest urban centre in County Meath and that it has experienced rapid population growth over the last two decades. It highlights that a significant proportion of the population of County Meath particularly those living along the N3/M3 corridor, travel to and from Dublin City each day for employment and education purposes. As per the previous Strategy travel choices for travel between Navan and Dublin are principally limited to bus and car. On this basis the Strategy now proposes to extend the rail system from the M3 Parkway terminus station (Dunboyne) to Navan town.

 Measure RAIL4 – Navan Rail Line 'The existing rail network in the GDA will be extended by the provision of a new rail line from the M3 Parkway terminus station (just west of Dunboyne) to Navan town, serving Dunshaughlin and Kilmessan along its route. The precise alignment of this line will be determined as the project proceeds through the scheme design, appraisal and planning processes.' Transport Strategy Figure 19.1 'Strategy Phasing' categorises the Navan Raik Line as a Medium Term which is in the timeframe 2031-2036. The Strategy outlines that the development of the bus network 'may' give rise to the need to develop bus stations in certain locations, in particular identifying Navan.

The Strategy states that it is an aim of the NTA to ensure that the reliability and efficiency of regional bus services is maximised indicating that bus priority will be sought on national routes where traffic congestion causes delays to bus services. Seven regional bus corridors are identified as forming part of the Core Bus Network and these include M3.N3 serving Navan.

Eastern and Midlands Regional Spatial and Economic Strategy, 2019-2031

Regional Policy Objective RPO 6 Integrated Transport and Land Use Planning seeks to: 'Promote best use of Transport Infrastructure, existing and planned, and promote sustainable and active modes of travel to ensure the proper integration of transportation and land use planning.'

The Regional Spatial Economic Strategy acknowledges that transport as a sector is one of the significant contributors to our national Green House Gas emissions and as a nation, we need to act on climate change. There is a recognised need to transition to a low carbon society by reducing transport usage including transitioning to clean renewables which is a key aspect of Ireland's response to climate change. Transition to a low carbon transport system is firstly about reducing the need for travel and then shifting to economically efficient modes such as active travel modes and public transport. The NTA's Transport Strategy for the Greater Dublin Area provides a framework for the planning and delivery of transport infrastructure and services over the period 2016 - 2035.

Meath County Development Plan 2021-2027 identifies the following Regional Policy Objectives as relevant:

- Policy RPO 8.1 'The integration of transport and land use planning in the Region shall be consistent with the guiding principles expressed in the transport strategy of the RSES.'
- Policy RPO 8.2 'The capacity and safety of the Region's strategic land transport networks will be managed and enhanced, including through the management of travel demand in order to ensure their optimal use.'
- Policy RPO 8.3 'That future development is planned and designed in a manner which maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, both existing and planned and to protect and maintain regional accessibility.'
- Policy RPO 8.4 'Land use plans within the GDA shall demonstrate a consistency with the NTA's Transport Strategy for the Greater Dublin Area and plans with or outside of the GDA shall be consistent with the guiding principles expressed in the RSES.'
- Policy RPO 8.5 'To support the preparation of a regional strategy for freight transport in collaboration with the relevant transport agencies and the other Assemblies.'
- Policy RPO 8.6 'In order to give local expression to the regional level Transport Strategy within the Region in conjunction with the NTA, Local Transport Plans (LTP) will be prepared for selected settlements in the Region.' The settlements for which Local Transport Plans will be made will include, but will not be limited to, Athlone, Dundalk, Drogheda, Arklow, Ashbourne, Balbriggan, Longford, Mullingar, Portlaoise, , Naas, Navan, Newbridge, Tullamore, and Wicklow-Rathnew and certain large settlements or development areas within the Dublin Metropolitan Area.'
- Policy RPO 8.7 "To promote the use of mobility management and travel plans to bring about behaviour change and more sustainable transport use."
- Policy RPO 8.8 'The RSES supports delivery of the rail projects set out in Table 8.2, subject to the
 outcome of appropriate environmental assessment and the planning process.' Where these projects
 include:

- Re-appraisal of the extension of the Dunboyne/M3 Parkway line to Navan during the Mid Term Review of the GDA Transport Strategy;2
- Dart expansion Programme new infrastructure and electrification of existing lines, including provision of electrified services to Drogheda, Maynooth and M3 Parkway on the Maynooth/Sligo Line.
- Policy RPO 8.9 'The RSES supports delivery of the bus projects set out in Table 8.3 subject to the outcome of appropriate environmental assessment and the planning process.' Where Table 8.3 includes a broad range of measures addressing all aspects of bus transport including routes, fare structures, passage information etc.
- Policy RPO 8.10 'The RSES supports appraisal and or delivery of the road projects set out in Table 8.4 subject to the outcome of appropriate environmental assessment and the planning process.' These projects include:
 - N2 Slane Bypass;
 - N2 Rath roundabout to Kilmoon;
 - N2 Ardee Bypass;
 - N2 Ardee to Castleblayney;
 - N3 Clonee to M50
 - M4 Maynooth to Leixlip.
 - Long term protection for the Eastern Bypass and the Leinster Outer Orbital Route.
- Policy RPO 8.11 'Support the improvement, and protection, of the EU TEN-T network and the strategic function of the Dublin to Belfast road network.'
- Policy RPO 8.12 'Support the delivery of a higher speed rail connection between Belfast and Dublin and Cork.'
- Policy RPO 8.13 'Support the Local Link Rural Transport Programme throughout rural areas of the Region.'
- Policy RPO 8.14 'The RSES supports delivery of the strategic park and ride projects set out in Table 8.5 subject to the outcome of appropriate environmental assessment and the outcome of the planning process.' The development plan acknowledges that these projects include Dunboyne.

In terms of cycling the RSES focuses on implementation of the NTA Greater Dublin Area Cycle Network Plan, delivery of the National Cycle Plan, provide safe cycling routes in towns and villages across the Region, enhance pedestrian facilities in all urban areas in the Region; and investment priorities for cycleways feasibility and route selection studies for cycleways shall identify and subsequently avoid high sensitivity feeding or nesting points for birds and other sensitive fauna.

Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-2027 sets out the vision, policies, strategies and objectives for planning and sustainable development of County Meath. The roads and transportation policies and objectives considered relevant to preparation of the TTA for the Phase 1B lands are summarised below.

General Policy and Objectives:

- Policy MOV POL 1 'To support and facilitate the integration of land use with transportation infrastructure, through the development of sustainable compact settlements which are well served by public transport, in line with the guiding principles outlined in RPO 8.1 of the EMRA RSES 2019-2031.'
- Policy MOV POL 2 'To carry out strategic studies to identify and set out the delivery mechanisms for the necessary transport infrastructure to implement the Economic Development Strategy for County Meath.'

- Policy MOV POL 3 'To promote sustainable land use planning measures which facilitate transportation efficiency, economic returns on transport investment, minimisation of environmental impacts and a general shift towards the greater use of public transportation (proughout the County.')
- Policy MOV POL 4 'To promote higher residential development densities in settlement centres along public transport corridors, subject to compliance with normal planning criteria.'
- Objective MOV OBJ 1 'To prepare and commence implementation of Local Transport Plans (LTP), in conjunction with the NTA and relevant stakeholders, for Drogheda (in conjunction with Louth County Council as part of the Joint Urban Plan), Ashbourne, Navan, Ratoath, and other settlements where Local Area Plans are undertaken, having regard to the Area Based Transport Assessment Guidance Notes (2019).'
- Objective MOV OBJ 2 'To seek regular engagement between Transport Infrastructure Ireland (TII) and the relevant Municipal District regarding road safety issues communities located on Meath's national roads.'
- Policy MOV POL 5 'To support the extension of the rail network in the County and to actively and strongly pursue a rail line from Dunboyne/M3 Parkway to Navan subject to proper planning and environmental considerations.'
- Policy MOV POL 6 'To actively pursue, in conjunction with Irish Rail and the NTA, the re- appraisal
 of the extension of the Dunboyne/M3 Parkway line to Navan during the Mid-Term review of the
 GDA Transport Strategy in accordance with the precepts of the RSES.'
- Policy MOV POL 7 'To support the reappraisal and thereafter, promote, facilitate and advance the Dunboyne M3 Parkway line to Navan railway line project and associated rail services in cooperation with other relevant agencies.'
- Policy MOV OBJ 5 '(a) To protect and safeguard the detailed designed alignment of Phase II of the Navan rail route and surrounding lands (including identified station locations), as illustrated on Map Series No. 5.1 in Volume 3, free from development and any encroachment by inappropriate uses which could compromise its future development as a rail facility, prior to the reappraisal of the project as part of Mid Term Review of the GOA transport strategy in accordance with the precepts of the RSES; (b) As part of the future planning of the Dunboyne/M3 Parkway line to Navan, the possibility of a spur serving Ashbourne and Ratoath should be explored subject to compliance with national policy and the Railway order'.
- Policy MOV POL 8 'To cooperate with the NTA and other relevant agencies to have ongoing reviews of the network of bus routes in Meath, and to support and encourage public transport operators to provide improved bus services in, and through the County.'
- Policy MOV POL 9 'To ensure that the design and planning of transport infrastructure and services accords with the principles of sustainable safety, in order that the widest spectrum of needs, including pedestrians, cyclists, the ageing population and those with mobility impairments are taken into account.'
- Policy MOV POL 10 'To ensure that new developments in Regional Growth Centres, Key Towns, Self-Sustaining Growth Towns and Self-Sustaining Towns are laid out so as to facilitate the provision of local bus services and the provision of Park and Ride facilitates as appropriate.'
- Policy MOV POL 11 ' To facilitate in conjunction with relevant statutory agencies alternative transport modes to the private car, including enhanced delivery of public transport services along regional corridors (as defined in the NTA's Transport Strategy for the Greater Dublin Area 2016-2035); frequent local bus services linking residential areas to District Centres and Town Centres, and which also serve shopping areas, employment areas and other activity centres, and connecting to key transport interchange points.'
- Policy MOV POL 12 'To support the implementation of recommendations presented in the NTA's Transport Strategy for the Greater Dublin Area 2016-2035 and any subsequent reviews thereof.' 'To ensure that design for cycle infrastructure for all relevant developments shall be carried out in accordance with the Greater Dublin Area Cycle Network Plan, other relevant design standards or any successors to these documents.'
- Objective MOV OBJ 11 'To provide bus priority measures on existing and planned road infrastructure, where appropriate, in collaboration with the NTA, Bus Éireann and TII (where relevant).'

- Objective MOV OBJ 12 'To identify deficits in bus infrastructure and develop a priority list as a basis to secure funding for improvement works, including the provision of bus shelters, bus stops and travel information at stops."
- Objective MOV OBJ 13 'To require Mobility Management Plans and Traffic and Transport Assessments for proposed trip intensive developments, as appropriate. Please refer to Chapter 11 Development Management Standards and Land Use Zoning Objectives.'
- Objective MOV OBJ 14 'To deliver, in conjunction with the NTA and the Department of Transport, a Public Transportation Hub in Navan to accommodate national, commuter, regional and tocal bus services.'
- Objective MOV OBJ 25 'To facilitate the provision of electricity charging infrastructure for electric vehicles both on street and in new developments in accordance with car parking standards and best practice.'
- Policy MOV POL 17 'To identify and seek to implement a strategic, coherent and high-quality cycle and walking network across the County that is integrated with public transport and interconnected with cultural, recreational, retail, educational and employment destinations and attractions.'
- Policy MOC POL 20 'To encourage, where appropriate, the incorporation of safe and efficient cycleways, accessible footpaths and pedestrian routes into the design schemes for town centres/neighbourhood centres, residential, educational, employment, recreational developments and other uses.'
- Objective MOV OBJ 27 'To implement, in conjunction with the NTA, the recommendations of the NTA strategy with regard to walking and cycling infrastructure.'
- Objective MOV OBJ 30 'To request the submission of a quality audit pedestrian and cycling permeability plans as part of new housing developments.'
- Policy MOV POL 26 'To provide for and carry out improvements to sections of national, regional and county roads that are deficient in terms of alignment, structural condition or capacity, where resources permit, and to seek to maintain that standard thereafter. To ensure that, where possible, any maintenance and improvement strategies have regard to future climates.'
- Objective MOV OBJ 46 'To require provision of parking standards in accordance with the standards set out in Chapter 11 Development Management for all developments.'

Meath County Development Plan 2021-2027 – Statement for Navan

Key opportunities relevant to the development site are as follows:

- The success by the Council in obtaining LIHAF funding for the construction of a Distributor Road at Farganstown provides an opportunity to deliver residential development and release strategically important employment and enterprise lands in this part of the town.
- Delivering compact growth through the redevelopment of infill and brownfield sites in addition to the development of greenfield sites in proximity to the town centre will assist in creating a more sustainable settlement where there are opportunities for people to use more sustainable modes of transport.
- Whilst sustainable transport and Smarter Travel will be at the core of the development strategy for Navan, there are a number of strategic roads that are critical in the long-term growth of the town. The construction of these distributor roads would improve connectivity and accessibility within the town and would allow for significant volumes of through traffic to be removed from the town centre thereby providing opportunities to improve pedestrian and cyclist infrastructure in the town centre.
- It is a key objective of the Council to support the extension of the passenger rail link from Dunboyne to Navan to Dublin in order to generate greater connectivity and strengthen the economic potential of the town.
- The development of the remaining residential lands in the town is closely linked to the delivery of distributor roads. As part of the growth strategy for the town some of these lands have been phased based on a residential evaluation and prioritisation of lands. This includes the following lands at Farganstown – LIHAF funding has been approved for a section of the Distributor Road (LDR 6) that would link the Boyne Road with the Kentstown Road. The construction of this section of road
would facilitate the delivery of c.1,600 residential units. Taking account of the lead in time associated with the delivery of this Distributor Road it is unlikely that all of these units would be delivered during the life of this Plan. It is therefore proposed to phase the release of these lands.

- There is also an employment zone in Farganstown where there are lands zoned for enterprise and employment uses adjacent to residential lands. These lands have the potential to provide a range of employment uses and would support the creation of a sustainable 'live work' community in this part of the town. The development of these lands is dependent on the construction of a distributor road, part of which was funded under the LIHAF Fund.
- There are 13 Master Plan areas identified in Navan. The purpose of a Master Plan is to ensure an integrated approach is taken to the phasing, management, and development of lands within the Master Plan Area. A planning application will not be considered in the absence of the Master Plan being agreed in writing with the Executive of the Planning Authority. The Council reserves the right to revisit completed Master Plans in the event of a change in circumstances which would merit such a reappraisal. Same is a matter for the Executive as all Master Plans are non-statutory plans. Masterplan 12 has been agreed in 2020 and the development plan states the following: 'Master Plan 12 relates to lands zoned for residential, mixed use, employment, community, and open space/recreational uses in the Athlumney/Farganstown area. A Master Plan shall be prepared for these lands that will ensure the delivery of a high quality, appropriately phased development including a suitable mix of house type, community, and employment uses.'

Key objectives relevant to the development site are as follows:

- Policy NAV OBJ 10 'To support the delivery of a 'live work' community at Farganstown and Nevinstown as recommended in the Meath Economic Development Strategy 2014-22.'
- Policy NAV OBJ 18 'To prepare a Local Transport Plan for Navan in consultation with the National Transport Authority and in accordance with the Transport Strategy for the Greater Dublin Area.'
- Policy NAV OBJ 20 'To support the delivery of the following key road projects:- Distributor Road LDR6 Kentstown Road to Boyne Road.'
- Policy NAV OBJ 21 'To support improvements to the local road network and in particular between Metges Road and Casey's Cross.'
- Policy NAV OBJ 22 'To support improvements to the bus network, including accessibility, facilities, and services and junction upgrades, in partnership with the National Transport Authority.'
- Policy NAV OBJ 23 'To support the progression of Phase II of the Navan railway line project and rail services in cooperation with other relevant agencies.'
- Policy NAV OBJ 24 'To examine the feasibility of the requirement and case for a bridge crossing and distributor road link connecting the Slane Road to the Boyne Road.'
- Policy NAV OBJ 28 'To support and facilitate the implementation of cycle lanes and associated cycle infrastructure upgrades as identified within the Greater Dublin Area Cycle Network Plan, within the town centre in partnership with the National Transport Authority and other relevant stakeholders.

Meath County Development Plan 2021-2027 – Car Parking Standards

Reference has been made to Meath County Development Plan 2021-2027, Chapter 11, Section 9 'Parking Standards' in which Table 11.2 'Car Parking' outlines car parking standards. Notwithstanding that complex developments may be assessed separately regarding the circumstances of each case the standard parking requirements that apply for the following development types are noted.

- Dwellings, 2 per conventional dwelling
- Flats/Apartments, 2 per unit in all cases plus 1 visitor space per 4 units
- Food Retail, 1 per 20m2 GFA (<1,000m2) else 1 per 14m2 GFA (provision for taxi)
- Non-food Retail, 1 per 20m2 GFA
- Creches, 1 per employee & dedicated set-down area 1 per 4 children
- Sports Clubs, 2 per court, 5 per 100m2 GFA

Meath County Development Plan 2021-2027 Policy DM OBJ 90 states that dimensions of parking bays shall comply with Table 11.3 'Car Parking Bays' where Parking Dimensions Perpendicular to Kerb are 5.0m x 2.5m; Parking Dimensions Adjacent to wall or other obstruction are 5.0m \times 2.75m, Parking Dimensions Parallel to Kerbs are 6.0m x 2.5m. Accessible Parking Bays to comply with Building Regulations 5.0m x 2.5m + 1.2m on the sides and rear of each space. Loading Bay dimensions 6.0m x 3.0m whilst circulation aisles in car parks are to be a minimum 6.0m in width.

Relevant policies and objectives relating to car parking provision include:

- Objective DM OBJ 91 'Car parking provision shall normally be provided within the curtilage of the development site. Where, in the opinion of the Council, it would be impracticable for individual developers to provide for on-site parking, a contribution may be required.'
- Objective DM OBJ 92 'Loading bays shall be located and designed to prevent any obstructions to traffic circulation and to accommodate vehicular manoeuvring on site.'
- Objective DM OBJ 93 'New residential development should take account of the following regarding car parking:
 - Vehicular parking for detached and semi-detached housing should be within the curtilage of the house;
 - Vehicular parking for apartments, where appropriate, should generally be at basement level.
 Where this is not possible, parking for apartments and terraced housing should be in small scale informal groups overlooked by residential units;
 - The visual impact of large areas of parking should be reduced by the use of screen planting, low walls and the use of different textured or coloured paving for car parking bays;
 - o Consideration needs to be given to parking for visitors and people with disabilities;
 - Provision of EV Charging points.
- Objective DM OBJ 94 'All car parks shall include the provision of necessary wiring and ducting to be capable of accommodating future Electric Vehicle charging points, at a rate of 20% of total space numbers.'
- Objective DM OBJ 95 'In any car park in excess of 20 spaces where public access is available, four fully functional charging points for Electric Vehicles shall be provided in accordance with IEC 61851 Standard for Electric Vehicle Conductive Charging Systems.'
- Objective DM OBJ 101 'Planning applications for significant commercial, industrial and other developments shall demonstrate the provision of adequate drop-off and set-down areas for taxi services.'
- Objective DM OBJ 102 'To require the provision of facilities for taxis in all new supermarket and neighbourhood development proposals.'

Meath County Development Plan 2021-2027 – Cycle Parking Standards

Reference has been made to Meath County Development Plan 2021-2027, Chapter 11, Section 9 'Parking Standards' in which Table 11.4 'Cycle Parking Standards' outlines cycle parking standards. The standard parking requirements that apply for the following development types are noted.

- Apartments, 1 private secure space per deb space plus 1 visitor space for every 2 units.
- Shops, 1 per every 10 car spaces or 1 per checkout whichever is greater.
- Offices, 10% of employee numbers subject to minimum of 10 bicycle places or one bicycle space for every car space whichever is greater.
- Other, 1 bicycle space per car space or 10% of employee numbers in general.

Local Distributor Ring Road (LDR6)

Local Distributor Ring Road LDR6 is funded by the Local Infrastructure Housing Activation Fund (LIHAF).

Navan Development Plan 2009-2015 had stated the following in relation to 'New Road'Schemes':

"For the overarching goals of the Planning Authorities to be secured and for the road hierarchy to be implemented, new road schemes will be required in order to support the sustainable development of the town. The construction of new and improved roads will also facilitate the reallocation of road space on the existing radial road network to pedestrians, cyclists and/or public transport users."

Sections of the proposed road network are expected to be delivered in tandem with development in the short-medium term. Part of that Outer Orbital Route includes Local Distributor Road 6 or LDR6 which is a link road between Kentstown Road (R153) and the Boyne Road Navan including crossing the Navan/Kingscourt railway line. The alignment of LDR6 is shown relative to the Phase 1B lands in Figure 10.1. Part VIII planning consent is in place for LDR6, and construction work has been substantially completed.

The Local Distributor Outer Orbital Route will link all existing radial routes and the proposed M3 Motorway thus significantly reducing the necessity for commuting traffic to enter the town centre proper. LDR6 as part of the local distributor orbital route provides access to Masterplan 12 lands at two locations: via a programmed signal-controlled junction at the intersection of the R153 and Metges Road to the south, and a signalised junction with the Boyne Road to the north. LDR6 is the main distributor route through and serving the Masterplan 12 lands. LDR6 in conjunction with Metges Road will essentially function as an eastern inner relief road for Navan connecting the Boyne Road, R153 Kentstown Road, Sion Road (connecting to LDR1 and LDR 2 in the west) and the R147 Dublin Road.

LDR6 is a single carriageway with a 3.5m wide lanes in each direction. LDR6 is provided with segregated cycleways and footways on both sides. LDR6 is provided with 3 no. roundabouts along its length and signal-controlled junctions at either end, being Boyne Road to the north and R153 Kentstown Road to the south. One of the roundabouts provides a junction between LDR6 and the Old Athlumney Road whilst the other two roundabouts provide links to new minor roads which form part of the Phase 1 lands and thus Masterplan 12.

Development Management Guidelines and Standards

The thresholds for Traffic and Transport Assessment set out in the county development plan for guidance purposes are as follows:

- Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road;
- Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists;
- Residential development in excess of 100 dwellings;
- Retail and leisure development in excess of 1,000m2;
- Industrial development in excess of 5,000m2, and;
- Distribution and warehousing in excess of 10,000m2.

The proposed Phase 1B development includes a mixed-use development consisting of a total of 420 no. residential units (less 98 no. units which comprise Phase 1A) together with a neighbourhood centre and a creche and can therefore exceeds the threshold for residential development as set out in the development plan guidance, it follows therefore that Masterplan 12 similarly exceeds the threshold values.

10.4.1.7 Baseline Existing Traffic

Traffinomics (formerly Abacus) Transportation Surveys Ltd. carried out classified turning count surveys on the public road network in the vicinity of the site using CCTV on Tuesday 26th November 2019 and Tuesday 18th April 2023 between 07:00 and 19:00hrs together with Automatic Traffic Counter (ATC) data collection on the Boyne Road and Old Athlumney Road. The ATC data spans Tuesday 26th February 2019 to Monday 2nd December 2019 inclusive and Tuesday 18th April 2023 to Monday 24th April 2023 inclusive. A copy of both sets of traffic survey data is provided in Appendix A of the Traffic and Transport Assessment (TTA) report that accompanies the application. The 2019 data was collected prior to the opening of LDR6 and the roundabout connection to the Old Athlumney Road. The TTA provides various graphs and comparisons between the 2019 and 2023 survey data sets to assess the change in traffic patterns and to provide a basis of comparing actual traffic growth against published growth rates. IN both surveys Tuesday data was collected in the turning counts to reflect typical weekday traffic patterns which include the commuter peak periods. The weekday commuter peak periods typically tend to have the heaviest hourly network flows. Traffic data for 2019 and 2023 was collected for the following locations:

- Site J1: R153 Kentstown Road/Metges Road Signal Junction
- Site A1: Boyne Road at northern terminal of LDR6
- Site A2: Old Athlumney Road (Eastern End)
- Site A3: Old Athlumney Road (Western End)

The traffic flow data from the April 2023 surveys is the Baseline for this Chapter and forms the basis of the assessments of road network capacity and the likely impact of the proposed development on the operation of the receiving road network defined by the above scope agreed with Meath County Council Transportation Department at pre-planning meetings.

Automatic Traffic Counts – Old Athlumney Road (Fig. 10.9 - A2)

To assess the current traffic conditions on the receiving road and to assess speed characteristics in accordance with the standard measurement methodology automatic traffic counter (ATC) surveys were carried out by Traffinomics. The ATC equipment was installed along the road frontage of the proposed development site on Old Athlumney Road as shown in Figure 10.9. The ATC recorded traffic flows and speeds continuously for one week starting at midnight on Monday 17th April 2023 and ending at midnight on Monday 24th April 2023.

The ATC equipment has been used over the course of one week in the interest of acquiring a representative sample. The sample size is a two-way count of 3,819 vehicles on Old Athlumney Road. Speed calculations are based upon individual vehicles by direction with a minimum separation distance between vehicles of 4 seconds (headway) to capture lead vehicle speeds since only the driver of the lead vehicle chooses their speed. The speed survey sample is 3,663 two-way vehicles (2,944 eastbound and 719 westbound). The records of vehicle speeds using automatic traffic counter has been gathered in accordance with the standard practice. Figure 10.10 shows the recorded daily traffic flows whilst Figure 10.11 shows the average weekday hourly traffic flows on Old Athlumney Road passing the southern road frontage of the proposed development site.



Figure 10.9: Traffic Survey Sites

Figures 10.10 shows, by direction, the total daily traffic flow on Old Athlumney Road. The average total daily two-way traffic flow is 546 vehicles (439 eastbound and 106 westbound). The weekday daily traffic profile can be seen from Figure 10.11 and shows a pronounced peak in the morning eastbound traffic flows with only modest peaks corresponding with the typical evening commuter period. Figures 10.10 and 10.11 show an shows an imbalance in eastbound and westbound flows suggesting that traffic returns to the area via an alternative route to LDR6. The average weekday hourly flow in the period 07:00-19:00hrs is 30 vehicles eastbound and 7 vehicles westbound at count Site A2.



Figure 10.10: Old Athlumney Road (East) Daily Traffic Flow by Direction



Figure 10.11: Old Athlumney Road (East) Average Weekday Hourly Traffic Flow

Vehicle Speeds and Design Speed (Based on ATC 3 Data)

TTA Appendix A provides a full breakdown of vehicle speed statistics recorded over the course of the surveys. The TTA also reports upon previous traffic data collected in 2019 before the construction of the LRD6.

Table 10.4 below provides a summary of those speed statistics relating to eastbound and westbound traffic on Old Athlumney Road over the course of the 7-day survey of 2023.

Vehicle speeds were recorded by direction. Taking the greater of the two sets of data the average speed on Old Athlumney Road is approximately 47km/h whilst the dry weather 85th percentile speed is in the order of 56km/h. The Design Speed of the receiving road is less than 60km/h.

| Speed | Old Athlumney Road | | | | | | | |
|--------|--------------------|------|-----------|------|--|--|--|--|
| Speed | Eastb | ound | Westbound | | | | | |
| (km/h) | No. | % | No. | % | | | | |
| 00-10 | 2 | 0.1 | 0 | 0.0 | | | | |
| 10-20 | 55 | 1.9 | 34 | 4.7 | | | | |
| 20-30 | 160 | 5.4 | 101 | 14.0 | | | | |
| 30-40 | 501 | 17.0 | 181 | 25.2 | | | | |
| 40-50 | 1037 | 35.2 | 211 | 29.3 | | | | |
| 50-60 | 855 | 29.0 | 137 | 19.1 | | | | |

Table 10.3: Recorded Vehicle Speeds

| Spood | | Old Athlur | mney Road | | | | |
|-----------|-------|------------|-----------|-------|--|--|--|
| Speed | Eastb | ound | West | bound | | | |
| 60-70 | 288 | 9.8 | 41 | 5.7 | | | |
| 70-80 | 44 | 1.5 | 13 | 1.8 | | | |
| 80-90 | 2 | 0.1 | 1 | 0.1 | | | |
| Average | 47 k | xm/h | 43 km/h | | | | |
| 85th %ile | 58 k | xm/h | 55 k | xm/h | | | |

Automatic Traffic Counts – Old Athlumney Road (Fig. 10.9 - A3)

The ATC equipment was installed close to the junction with R153 Kentstown Road to count the traffic entering and leaving the junction with Old Athlumney Road. Figure 10.12 shows the recorded daily traffic flows whilst Figure 10.13 shows the average weekday hourly traffic flows on Old Athlumney Road near the junction with R153 Kentstown Road. Figure 10.12 shows, by direction, the total daily traffic flow on Old Athlumney Road. The average weekday traffic flow is 2,017 vehicles (1,173 eastbound and 844 westbound). The weekday daily traffic profile can be seen from Figure 10.13 and shows identifiable peaks corresponding with the typical commuter periods with a westbound bias toward Kentstown Road in the morning and a reversal in the evening. Save for the peak commuter periods Figure 10.12 and 10.13 show a relatively balanced flow by direction throughout the day.



Figure 10.12: Old Athlumney Road (West) Daily Traffic Flow by Direction



Figure 10.13: Old Athlumney Road (West) Average Weekday Hourly Traffic Flow

Automatic Traffic Counts – Boyne Road (Fig. 10.9 – A1)

The ATC equipment was installed on the Boyne Road to the east of the entrance to St. Mary's Cemetery and close to the future junction with LDR6. The sample size is a two-way count of 20,980 vehicles on Old Athlumney Road.



Figure 10.14: Boyne Road Daily Traffic Flow by Direction



Figure 10.15: Boyne Road Average Weekday Hourly Traffic Flow

Figures 10.14 shows, by direction, the total daily traffic flow on Boyne Road. The average total daily twoway traffic flow is 2,544 vehicles (1,252 northbound and 1,292 southbound). The average weekday traffic flow is 2,997 vehicles (1,485 northbound and 1,512 southbound). The weekday daily traffic profile can be seen from Figure 10.15 and shows identifiable peaks corresponding with the typical commuter periods with a westbound bias toward Kentstown Road in the morning and a reversal in the evening. Both the volume and pattern of flow on the Boyne Road compare closely with those recorded at the western end of the Old Athlumney Road. Save for the peak commuter periods Figure 10.14 and 10.15 show a relatively balanced flow by direction throughout the day.

The weekday morning peak hour of 08:00-09:00hrs records an average of 96 northbound and 146 southbound movements at count site A1. The evening peak hour period 17:00-18:00hrs shows an average weekday traffic flow of 137 vehicles northbound and 95 southbound.

Turning Count Survey – R153 Kentstown Road (Fig. 10.9 – J1)

Daily traffic flows recorded on the receiving road network of Kentstown Road during the course of the Tuesday 18th April 2023 survey are shown in the following Figure 10.16 which presents the traffic flow data in network flow diagram format. The total flow is shown 'blue', HGV flow '(red)' and busses '[green]'. Table 10.5 below provides a summary of the recorded traffic flows on the receiving road network during the course of Tuesday 18th April 2023. Table 10.5 shows the recorded traffic flow and percentage HGV content enumerated between 07:00 and 19:00hrs. Based upon TII PE-PAG-02039 Project Appraisal Guidelines Unit 16.1 'Expansion Factors for Short Period Traffic Counts' the weekday AADT is estimated to be approximately 26.4% greater than the flows recorded during the 12 hour surveys.





| Table | 10.4 | Receiving | Road | Traffic | Flows | 18-A | or-2023 |
|-------|-------|-----------|------|---------|-------|------|---------|
| Iabic | 10.4. | Neceiving | Nuau | Trainc | 110W3 | | JI-ZUZJ |

| Pood Link | Daily Traffic Flows 07:00-19:00hrs | | | | | | |
|--------------------------------------|------------------------------------|-------|-----|---------|-------------|--|--|
| KOAU LIIIK | Total | Heavy | Bus | % Heavy | AADT (est.) | | |
| R153 Kentstown Road (West) | 7,431 | 375 | 146 | 7.0% | 8,940 | | |
| R153 Kentstown Road (East) | 6,857 | 407 | 97 | 7.4% | 8,250 | | |
| Metges Road | 6,616 | 263 | 134 | 6.0% | 7,960 | | |
| LDR6 | 596 | 55 | 5 | 10.1% | 717 | | |

It is best practice in preparing TTA to assess the impact of the proposed developments during periods when the impact of development traffic flows on the receiving road network are likely to be greatest. The peak hours and associated traffic flows recorded in the November surveys are outlined in Table 10.6 and 10.7 to be as follows:

- Weekday AM Network Peak Hour 08:00-09:00hrs.
- Weekday PM Network Peak Hour 17:00-18:00hrs

Table 10.6 and Table 10.7 provide a summary of the recorded two-way peak hour traffic flows on the receiving road network in the morning and evening peak hours. Network flow diagrams of the recorded peak hour traffic flows are provided in diagrams of Figure 10.17 and 10.18.

| Table 10.5. Morning Peak nour flows on Receiving Road Network (Two-wa | Table 10.5: | Morning Pea | k Hour Flows | on Receiving | Road Network | (Two-way |
|---|-------------|-------------|--------------|--------------|--------------|----------|
|---|-------------|-------------|--------------|--------------|--------------|----------|

| Deed Link | Morning Peak Hour Traffic Flows 08:00-09:00hrs | | | | | | |
|--------------------------------------|--|-------|-----|---------|--|--|--|
| | Total | Heavy | Bus | % Heavy | | | |
| R153 Kentstown Road (West) | 687 | 36 | 12 | 7.0% | | | |
| R153 Kentstown Road (East) | 692 | 36 | 9 | 6.5% | | | |
| Metges Road | 624 | 20 | 12 | 5.1% | | | |

| Road Link | Evening Peak Hour Traffic Flows 17:00-18:00ms | | | | | | |
|--------------------------------------|---|-------|-----|---------|--|--|--|
| Road Link | Total | Heavy | Bus | % Meavy | | | |
| R153 Kentstown Road (West) | 725 | 19 | 6 | 3.4% | | | |
| R153 Kentstown Road (East) | 745 | 31 | 5 | 4.8% | | | |
| Metges Road | 777 | 8 | 5 | 1.7% | | | |

Table 10.6: Evening Peak Hour Flows on Receiving Road Network (Two-way)

Network flow diagrams of the recorded peak hour traffic flows are provided below in the network flow diagrams of Figure 10.17 and Figure 10.18.

Figure 10.17: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2023



Figure 10.18: R153 Kentstown Road/Metges Rd Evening Peak Hour Flows 2023



CHARACTERISTICS OF THE PROPOSED DEVELOPMENT 10.5

10.5.1

Phase 1 including both Phase 1A lands and the proposed Phase 1B lands consists of the following:

the construction of a total of 420 residential units consisting of 253 houses, 60 duplex units and 107 apartment units as follows:

- 217 no. 3-bed houses and 36 no. 4-bed houses 0
- 30 no. 2-bed duplex units and 30 no. 3-bed duplex units 0
- 47 no. 1-bed apartments and 60 no. 2-bed apartments
- provision of a crèche with a floor area 512m² •
- Neighbourhood Centre with floor area 2,002m² consisting of the following: •
- Anchor Retail Unit 1,000m² + 255m² (Storage) + 112m2 Staff Area/Office 0
- Take Away 82m² 0
- Pharmacy 88m²
- Café 210m²
- \circ GP Surgery 232m²
- Community Centre 1,778m²

In total there are 253 houses, 60 duplex units and 47 apartments together with a further 60 apartments in the neighbourhood centre. Phase 1B and Phase 1A are part of the overall Masterplan 12 lands. The remaining phases of Masterplan 12 and LDR6 will be developed on an incremental basis into the future and will in any case be subject to the planning process. Masterplan 12, Figure 4.1 shows the Phase 1 lands.

The Phase 1A development Planning Reg. Ref. 21/1046 (ABP-312746-22) currently under appeal comprises 98 no. dwellings as follows:

- 40 no. 3-bed houses and 1 no. 4 bed house
- 17 no. 2 bed duplex apartments and 17 no. 3 bed duplex apartments
- 12 no. 1 bed apartments and 11 no. 2 bed apartments

temporary pumping station, as well as site services all on a site of c. 3 hectares, to be accessed from recently constructed 'LDR6' Road

The proposed Phase 1B development includes the following:

the construction of a total of 322 residential units consisting of 212 houses, 26 duplex units and 84 apartment units as follows:

- 177 no. 3-bed houses and 35 no. 4-bed houses 0
- 13 no. 2-bed duplex units and 13 no. 3-bed duplex units 0
- 35 no. 1-bed apartments and 49 no. 2-bed apartments 0
- provision of a crèche with a floor area 491m² •
- Neighbourhood Centre with floor area 1,888m² consisting of the following: •
- Anchor Retail Unit 1,000m2 + 255m² (Storage) + 112m² Staff Area/Office 0
- Take Away 82m^{2.}
- \circ Pharmacy 88m²
- Café 210m²
- GP Surgery 250m²
- Community Centre 1,798m²

Although it is not an integral part of this application LDR6 has been constructed as part of the overall Masterplan 12. LDR6 had undergone the Part VIII Local Government (Plancing and Development) Regulations process as an objective of the County Council Development Plan and has been constructed from a new signal-controlled junction at the R153 Kentstown Road (Metges Road/Kentstown Road Junction) northwest to the Navan – Drogheda railway line. LDR6 will ultimately continue northward under the rail line to connect to the Boyne Road at a signalised junction in accordance with Meath County Development Plan 2021-2027 Policy NAV OBJ 20 which includes the delivery of the entire Distributor Road LDR6 Kentstown Road to Boyne Road. As part of those future works, provision is made in the Masterplan 12 lands to accommodate an underpass of the existing Navan-Drogheda rail line, nevertheless this does not preclude other configurations for a crossing of the railway.

It is understood that LDR6 will be completed to the Boyne Road within the timescales of completion for the proposed Phase 1B lands. Notwithstanding this however the traffic model for Phase 1B has assumed a traffic sensitivity scenario where the railway underpass will not be constructed. This results in a robust analysis of the capacity of the R153 Kentstown Road signal junction. The Local Authority Transportation Section has sought that this be done in the interest of examining an upper value or robust traffic distribution scenario which accounts for circumstances where there might be delays to the provision of the railway crossing where the construction is likely to comprise significant civil engineering works involving larnród Éireann.

10.5.2 POTENTIAL FUTURE DEVELOPMENT ON MASTERPLAN 12

As set out in Masterplan 12, the proposed Masterplan 12 lands will be developed on a phased basis and within individual planning applications. The role and function of the masterplan is to guide future development of all lands within the masterplan area. It is however considered to be an iterative and live document that will be subject to change with the agreement of the Planning Authority in order to reflect changes in the national and local economy, market trends, land ownership and future infrastructure provision.

As development activity increases and planning applications are submitted within the masterplan area, future iterations of the document will evolve to reflect the circumstances at that time.

The guiding principle for infrastructure delivery is to ensure the delivery of sustainable living and working communities with an emphasis on the provision of the necessary infrastructure in tandem with the delivery of residential units.

The development of the Masterplan 12 lands is dependent on the delivery of LDR6 Farganstown Access Road under the Local Infrastructure Housing Activation Fund (LIHAF). The road construction was substantially completed in 2021 and the first phase of development under Phase 1 (incl. Phase 1A and proposed Phase 1B) will see over 420 new homes being provided along with Meath County Council Part 8 housing, with a good mix of social, affordable and private homes in the overall numbers. In time it is estimated in the Meath County Development Plan 2021-2027 that there is potential to deliver a total of up to 1,600 new homes on the Masterplan 12 lands in subsequent phases.

For the purposes of cumulative traffic assessments in the report, in addition to the Phase 1 lands it is expected that approximately 1,100 no. further residential units could be constructed on the remainder of Masterplan 12 lands including 86 no. units proposed by Meath County Council.

For the purposes of this report it has been assumed that Masterplan 12 development will include a mixture of 550No. houses and 550No. apartments. The lands to the east of LDR6 are zoned for E1/E3 - Strategic Employment Zones (High Technology Uses)/Warehousing & Distribution where E1 objective is 'To facilitate opportunities for high technology and major campus style office-based employment within high quality and accessible locations', and E3 objective is 'To facilitate logistics, warehousing, distribution and supply chain management inclusive of related industry facilities which require food access to the major road network.'.'

10.5.2.1 Internal Road Network

Road Hierarchy

The general arrangement of roads is shown on Trafficwise Drawing No. TWL/30104/P1B/01A 'General Roads Layout (1:1000)', further detail of carriageways, footways, crossings, swept path analyses, parking etc. are provided on:

- Trafficwise Drawing No. TWL/30104/P1B/02A 'General Roads Layout (1:500)'
- Trafficwise Drawing No. TWL/30104/P1B/03A 'General Roads Layout (1:500)'
- Trafficwise Drawing No. TWL/30104/P1B/04A 'General Roads Layout (1:500)'

LDR6 is the Local Distributor Road that will serve as the primary collector/distributor road through the Masterplan 12 lands. This distributor road has a 7.3m wide single carriageway; together with segregated cycle lanes and footways on both sides. LDR6 starts at a signal junction on the R153 Kentstown Road and heading northwest is provided with 3 no. roundabouts; the first of which forms a junction with the existing Old Athlumney Road with the other two roundabouts providing access to zoned lands on both sides of the LDR6, via general access roads. As set out in Masterplan 12, these general access roads will be 'Link Road' standard and will all have similar cross sections consisting of a maximum 6.0m wide single carriageway; generally flanked with 2.0m wide footways on both sides.

The minor access roads linking LDR6 into residential areas have been designed to support a lower speed limit of 30kph in accordance with the principles of DMURS. These roads will include for a maximum 5.5m wide single carriageway; with 2.0m wide verge; and 2.0m footway on at least one side of the road. Save for the high trafficked sections close to LDR6 Dedicated cycle lanes will not be provided on internal residential streets as traffic volumes will be low which should contribute toward a safe environment in which to share road space with other road users.

The Design Manual for Urban Roads and Streets (DMURS) 2019 sets out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas. The road hierarchy within Phase 1 including the integration of Phase 1A has been developed in compliance with DMURS principles. Where cul-de-sacs are used pedestrian and cycle links have been accommodated where possible in the interest of permeability.

Masterplan 12 sets out that vehicular routes within the Masterplan 12 area will be classified into the following:

- Main Roads: The LDR6 road passes centrally through Masterplan 12 and is envisaged as the backbone of the development carrying a relatively high volume of traffic locally. LDR6 divides the overall area generally into a commercial zone to the east and a residential zone to the west. The landscape treatment of this route will seek to create a boulevard feature.
- Secondary Roads: Secondary roads are main roads within the area servicing all neighbourhood areas and linking to the LDR6 road. Traffic will generally be more local and domestic in character. Footpaths and cycleways, where provided, are separated from the road by grass verge or drainage systems and the street character will be like the boulevard but smaller in scale.
- Local Neighbourhood Roads: Local neighbourhood roads and streets service each residential zone. The character of the streets will be domestic, safe and leafy. The footpaths are separated from the road either by grass verge or hard drainage channel.
- Home Zones: Home Zones are to be found within the residential area, where pedestrian and vehicular traffic interact equally. Home Zones also allow for play on the street.

The proposed Phase 1B development and Phase 1A is composed principally of Local Neighbourhood Roads with limited use of Home Zones in short sections generally of cul-de-sac.

Controlling Speeds



The proposed residential lands will provide for an appropriate speed environment, LDR6 has been designed to a Design Speed of 60kph as had been directed by the Local Authority in the LAP4 plan under which the Part VIII application had been prepared. All internal roads have been designed to a maximum Design Speed of 50kph whilst local neighbourhood roads will be subject to a 30kph speed limit designed to be self-enforcing through the principles of DMURS. LDR6 is interrupted by roundabouts along its length, and these will contribute to creating a relatively uniform vehicular speed environment between the intersections. The layout and alignment of the general access roads within the Masterplan 12 has been developed so that most roads do not facilitate sustained high speed. Straight sections of access road are generally broken up by junctions, bends and raised thresholds and parkways where appropriate.

Pedestrian and Cycling Provision

The road network for the proposed development will provide safe and appropriate conditions for pedestrians and cyclists. This should encourage insofar as practicable a modal shift in favour of cycling and walking instead of private motor vehicles (especially for those living and employed locally – within the Masterplan 12 lands).

We have identified areas requiring special attention by virtue of the expected concentration or generation of vulnerable road users. These locations incorporate both formal and informal pedestrian crossing facilities. The areas requiring special attention include the proposed creche, public park, interaction between the Neighbourhood Centre and the park, connectivity between the neighbourhood centre and proposed residential area to the south and connection to the bus stops on LDR6. At sensitive locations, it is intended that raised thresholds/crossings will be provided. Pedestrian crossing facilities are designed and located to accommodate the foreseeable pedestrian desire lines. Controlled pedestrian/cyclist crossings will be provided at the two major junctions on the LDR6 i.e. the R153 Kentstown Road and the Boyne Road traffic signal-controlled junctions. It is understood that a future controlled pedestrian/cyclist crossing will be provided on the LDR6 near the neighbourhood centre. There are additional uncontrolled pedestrian crossing points along the LDR6 at roundabout splitter islands which will accommodate two-stage crossing points for pedestrians.

Vulnerable Road User Provision

Subject to Local Authority requirements, access for people with disabilities will include the following design elements:

- Pedestrian guardrails at controlled crossings on the LDR6;
- High friction grip surfacing on the approaches to the two controlled crossings on the LDR6 i.e. at the Boyne Road and Kentstown Road signal junctions and at the Pelican/Toucan Crossing near the Neighbourhood Centre;
- Audible bleepers at the two controlled crossings
- Dished kerbs and tactile paving at all crossings
- Adequate lighting to be provided at all crossings.

Public Transport Provision

Three bus stops will be provided along each side of the LDR6. These bus stops maximise the future catchment area by ensuring that residents and neighbourhood centre patrons within Masterplan 12 will be within a five minute walk of the bus stop.

The realisation of a future rail stop along the existing rail line would promote a further modal split from private vehicles toward rail transport. There is potential for a small future train station to be located to the

south of the cemetery lands which would fall within a 10 minute catchment of all Masterplan 12 residents/patrons. This is not likely to be provided in the short or medium termeven in the context of the overall development timescales for the Masterplan 12 lands. NED.

Servicing and Emergency Vehicle Accessibility

The development provides appropriate access for emergency vehicles via streets with sufficiently wide carriageways to accommodate heavy vehicles and fire tenders. Within the residential areas the cul-desac roads are provided with suitably designed court bulbs or T-heads to enable trucks and service vehicles to turn around.

10.5.2.2 Development Traffic Generation

TRICS Database

As agreed with the Local Authority Roads Section the TRICS (Trip Rate Information Computer System) database has been used to establish representative traffic generation rates for each of the proposed land uses within the Phase 1 lands, within the proposed Phase 1B lands, within the Phase 1A development and within the overall Masterplan 12 lands. Average traffic generation rates have been calculated for the established network peak hours of 08:00-09:00hrs in the morning and 170:0-18:00hrs in the evening. Due to the level of robustness already factored into the calculations with respect to the capacity of the greater network serving Navan, the use of average traffic generation rates is considered appropriate, and this has been agreed with the Local Authority in pre-planning meetings. From discussions with the Local Authority it is considered that the 85th percentile traffic generation figures are likely to be unrepresentative of the peak generation of the proposed development. Given the masterplan objective of sustainable communities it was agreed that the cumulative 85th percentile scenario for all proposed land uses was highly unlikely to occur under normal day-to-day circumstances. The Local Authority is understood to be satisfied with the approach adopted in this study and agrees that the traffic assumptions used in the study should yield sufficiently robust network analysis output satisfactory for use in the evaluation and forecasting of roads infrastructure performance.

The traffic generation rates derived from TRICS are based on survey data from existing developments, which are located in areas with similar demographics to that of Masterplan 12, where practical, survey data from sites in neighbourhood centres and suburban areas has been used. Traffic generation rates and calculations have been undertaken to take into account that volume of traffic and cumulative impact which might potentially arise from the realisation of all potential zoned lands with future developments within Masterplan 12.

Traffic Generation to Proposed Development

The TRICS criteria selected to model the likely trip rates of the residential development is 'Residential -Mixed Private/Non-Private Housing' and 'Flats Privately Owned'. For the former, results for the TRICS database were returned from a selection of 50 no. sites located in suburban areas with the selection of survey days spread evenly over the days of the week. In the latter case the traffic generation rates are derived form a selection of 27 no. sites located in suburban areas. The purpose of this assessment is to guantify the traffic generation of the Phase 1 lands including the proposed Phase 1B and the Phase 1A development and to identify the likely potential level of traffic arising. The following Table 10.8 is derived from the forecast TRICS rates and provides an estimate of the total traffic generation arising from the Phase 1 lands comprising the proposed Phase 1B development and Phase 1A development Planning Reg. Ref. 21/1046 (ABP-312746-22). The Phase 1A figures are those bracketed.

| | | HOU | SES | | | APART | MENTS | | |
|-------------|------------------------------|---------------------|------------|----------|-------------------------------|---------------------|----------|--|-----|
| | Phase | e 1 = Phase | e 1B + Pha | ise 1A | Phase 1 = Phase 1B + Phase 1A | | | | |
| Timo | 253 Houses + 60 Duplex Units | | | | | 107 Apa | rtments | The second secon | |
| Period | | Phas | e 1A | | | Phas | e 1A | ·O. | |
| | (44 | Houses + 3 | 4 Duplex L | Jnits) | | (23 Apa | rtments) | | |
| | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart | 201 |
| 07:00-08:00 | 0.058 | 0.226 | 18 (4) | 71 (17) | 0.042 | 0.138 | 4 (1) | 15 (3) | × |
| 08:00-09:00 | 0.123 | 0.360 | 38 (9) | 113 (27) | 0.039 | 0.168 | 4 (1) | 18 (4) | |
| 09:00-10:00 | 0.145 | 0.190 | 45 (11) | 59 (14) | 0.051 | 0.080 | 5 (1) | 9 (2) | |
| 10:00-11:00 | 0.131 | 0.155 | 41 (10) | 49 (12) | 0.040 | 0.056 | 4 (1) | 6 (1) | |
| 11:00-12:00 | 0.134 | 0.145 | 42 (10) | 45 (11) | 0.045 | 0.047 | 5 (1) | 5 (1) | |
| 12:00-13:00 | 0.173 | 0.171 | 54 (13) | 54 (13) | 0.052 | 0.052 | 6 (1) | 6 (1) | |
| 13:00-14:00 | 0.174 | 0.173 | 54 (13) | 54 (13) | 0.061 | 0.062 | 7 (1) | 7 (1) | |
| 14:00-15:00 | 0.168 | 0.184 | 53 (13) | 58 (14) | 0.066 | 0.063 | 7 (2) | 7 (1) | |
| 15:00-16:00 | 0.228 | 0.166 | 71 (17) | 52 (12) | 0.081 | 0.056 | 9 (2) | 6 (1) | |
| 16:00-17:00 | 0.272 | 0.177 | 85 (20) | 55 (13) | 0.099 | 0.060 | 11 (2) | 6 (1) | |
| 17:00-18:00 | 0.350 | 0.196 | 110 (26) | 61 (15) | 0.153 | 0.051 | 16 (4) | 5 (1) | |
| 18:00-19:00 | 0.264 | 0.181 | 83(20) | 57 (14) | 0.124 | 0.053 | 13 (3) | 6 (1) | |

Table 10.7: TRICS Based Peak Hour Traffic Generation – Residential

The Phase 1A development comprises only residential units accordingly the bracketed figures set out in Table 10.8 above are the sum total of traffic potentially generated by that development. The traffic generation arising from the residential parts of the Phase 1A development equates to approximately one quarter of the residential traffic generation arising from the overall Phase 1 which incorporates both the Phase 1B and Phase 1A residential units.

To assess the traffic generation of the proposed retail development in the neighbourhood centre it is assumed that the anchor store will be a supermarket type development. It is assumed for the purposes of the assessment that a discount foodstore would be representative of the likely type of occupier. The TRICS database of traffic surveys has been interrogated for Land Use 'Retail' and Category 'Discount Foodstores'.

Based upon 14 surveys the following trip rates are returned based upon an average Gross Floor Area of 2,273m². Table 10.9 provides a summary of the TRICS based generation rates which are based upon a total of 14 surveys and also provides an estimate of the forecast traffic generation of the proposed development which is based upon a proposed total Floor Area of 1,375m².

Table 10.8: Forecast Peak Hour Traffic Generation – Anchor Retail (Phase 1B)

| TRICS Database Foodstore Phase 1B | | | | | Brew Al | /s Hill ∟DI | Factored TRICS x 1.26 | |
|--------------------------------------|---|---|-------------------------------|-------------------------------|---|--|--------------------------|--------|
| Period | Arrive Rate/ (100m ²) | Depart Rate/ (100m ²) | Arrive 1,367m ² | Depart 1,367m ² | Arrive Rate/ (1,125m ²) | Depart Rate (1,125m ²) | Arrive | Depart |
| 07:00-08:00 | 0.267 | 0.091 | 4 | 1 | - | 1 | 5 | 2 |

| Time | TRICS DatabaseBrews HillFactoredFoodstore Phase 1BALDITRICS x 1.26 | | | | | | ored x 1.26 | | |
|-------------|--|---|-------------------------------|-------------------------------|---|--|----------------|--------|----|
| Period | Arrive Rate/ (100m ²) | Depart Rate/ (100m ²) | Arrive 1,367m ² | Depart 1,367m ² | Arrive Rate/ (1,125m ²) | Depart Rate (1,125m ²) | Arrive | Depart | |
| 08:00-09:00 | 1.257 | 0.779 | 17 | 11 | - | 11 | 22 | 13 | |
| 09:00-10:00 | 2.679 | 2.002 | 37 | 28 | 21 | 29 | 46 | 35 | 52 |
| 10:00-11:00 | 3.901 | 3.336 | 54 | 46 | 39 | 48 | 68 | 58 | S |
| 11:00-12:00 | 4.242 | 3.989 | 58 | 55 | 63 | 57 | 73 | 69 | |
| 12:00-13:00 | 4.028 | 4.130 | 55 | 57 | 55 | 59 | 70 | 72 | |
| 13:00-14:00 | 3.765 | 3.911 | 52 | 54 | 49 | 56 | 65 | 68 | |
| 14:00-15:00 | 4.042 | 3.794 | 56 | 52 | 51 | 55 | 70 | 66 | |
| 15:00-16:00 | 3.872 | 4.008 | 53 | 55 | 59 | 58 | 67 | 69 | |
| 16:00-17:00 | 3.390 | 3.774 | 47 | 52 | 69 | 54 | 59 | 65 | |
| 17:00-18:00 | 3.049 | 3.623 | 42 | 50 | 57 | 52 | 53 | 63 | |
| 18:00-19:00 | 2.440 | 2.805 | 34 | 39 | 68 | 40 | 42 | 49 | |
| 19:00-20:00 | 1.263 | 1.667 | 17 | 23 | 48 | 24 | 22 | 29 | |
| 20:00-21:00 | 0.674 | 0.923 | 9 | 13 | 43 | 13 | 12 | 16 | |
| 21:00-22:00 | 0.099 | 0.310 | 1 | 4 | - | 4 | 2 | 5 | |

We have reviewed the planning submission for a discount foodstore granted permission at Johnathan Swift Street in Trim under Planning Registry Reference TA15/0598 and upheld on appeal to An Board Pleanála under case reference PL17.245996. That submission reports upon traffic surveys at the Brews Hill Aldi store on the R161 west of Navan town centre. The Brews Hill Aldi data shows greater rates of traffic generation than those derived directly from the TRICS database. For the purposes of the traffic assessment therefore the TRICS data has been factored to be consistent with the local data. The factored traffic generation rates (inflated by 26% from the TRICS data) are considered likely to be representative in the context of the local demographic. Further evaluation of the TRICS database shows that the peak Saturday traffic generation to a discount foodstore is typically lower than the traffic generation during the weekday evening peak hour.

Road network traffic flows on a Saturday during the development peak hour are also typically less than during the traditional weekday evening commuter peak hour. It follows that the appropriate assessment peak hour for the Phase 1B proposed mix of land uses is the weekday evening peak hour identified from the traffic surveys as 17:00-18:00hrs.

It is long established from trip research, and it is accepted within the industry that as many as 95% of trips to new foodstore development in the commuter peak hours are trips that are already on the network albeit not necessarily in the location or at that particular time. During the weekday peak hour period there is typically a high percentage of pass-by and diverted trips associated with the journey home from work which typically accounts for 30% of traffic.

To assess the traffic generation of the proposed Phase 1B ancillary retail units the TRICS database of traffic surveys has been interrogated for Land Use 'Retail' and Category 'Shopping Centre – Local Shops' which is considered to cover the general uses proposed within Phase 1B which include a café, takeaway, pharmacy and doctors' surgery. The following trip rates for free standing retail units are returned based

upon an average Gross Floor Area of 3,012m². Table 10.10 provides a summary of the TRICS based generation rates together with an estimate of the traffic generation of the proposed Phase 1B development which is based upon a total Gross Floor Area of 630m² (includes Doctor Surgery).

Trade at the small retail development is likely to be aligned with trade at the associated anchor retail unit modelled as a discount foodstore. It is therefore considered that the appropriate assessment peak hour for this land use should co-ordinate with the anchor development accordingly the assessment period is the weekday evening peak hour identified from the traffic surveys as 17:00-18:00hrs.

| Time | TRICS Database - Retail Phase 1B | | | | | | | |
|-------------|----------------------------------|----------------------------------|-----------------------------|-----------------------------|--|--|--|--|
| Period | Arrive Rate/100m ² | Depart Rate/100m ² | Arrive 630m ² | Depart 630m ² | | | | |
| 07:00-08:00 | 3.20 | 2.54 | 20 | 16 | | | | |
| 08:00-09:00 | 2.77 | 2.01 | 17 | 13 | | | | |
| 09:00-10:00 | 5.10 | 3.67 | 32 | 23 | | | | |
| 10:00-11:00 | 5.83 | 5.65 | 37 | 36 | | | | |
| 11:00-12:00 | 6.39 | 5.98 | 40 | 38 | | | | |
| 12:00-13:00 | 7.04 | 6.91 | 44 | 44 | | | | |
| 13:00-14:00 | 6.44 | 6.49 | 41 | 41 | | | | |
| 14:00-15:00 | 6.64 | 6.56 | 42 | 41 | | | | |
| 15:00-16:00 | 6.28 | 6.41 | 40 | 40 | | | | |
| 16:00-17:00 | 6.86 | 6.67 | 43 | 42 | | | | |
| 17:00-18:00 | 5.16 | 6.48 | 33 | 41 | | | | |
| 18:00-19:00 | 4.85 | 5.45 | 31 | 34 | | | | |
| 19:00-20:00 | 3.90 | 4.23 | 25 | 27 | | | | |

Table 10.9: Forecast Peak Hour Traffic Generation – Ancillary Retail (Phase 1B)

For the purpose of estimating traffic generation to the proposed Phase 1B creche facility the TRICS database of traffic surveys has been interrogated for Land Use 'Education' and Category 'Nursery'. The flowing Table 10.11 provides a summary of the TRICS based generation rates together with an estimate of the traffic generation of the proposed Phase 1B creche development based upon a total Gross Floor Area of 511m².

The peak hour periods at the creche development are the traditional commuter peak hour periods in the morning and evening which are 08:00-09:00hrs and 17:00-18:00hrs respectively. The proposed creche development will be a contributor to the overall traffic generation in both peak hours and accordingly it is appropriate to assess both the morning and evening peak hour periods.

The proposed Phase 1B creche is a local facility and is considered likely to generate non-car trips accordingly the assessment forecasts are considered robust.

| Time | TRICS Database – Creche Phase 1B | | | | | | |
|-------------|----------------------------------|----------------------|----------------------|----------------------|--|--|--|
| Period | Arrive Rate/Pupil | Depart Rate/Pupil | Arrive 105 Pupils | Depart 105 Pupils | | | |
| 07:00-08:00 | 0.12 | 0.068 | 13 | 7 | | | |

Table 10.10: Forecast Peak Hour Traffic Generation – Creche (Phase 1B)

| Time | TRICS Database – Creche Phase 1B | | | | | | | | |
|-------------|----------------------------------|----------------------|----------------------|----------------------|-----|--|--|--|--|
| Period | Arrive Rate/Pupil | Depart Rate/Pupil | Arrive 105 Pupils | Ospart 105 Pupils | | | | | |
| 08:00-09:00 | 0.268 | 0.208 | 28 | 22 | | | | | |
| 09:00-10:00 | 0.122 | 0.123 | 13 | 13 | 0 | | | | |
| 10:00-11:00 | 0.042 | 0.031 | 4 | 3 | 203 | | | | |
| 11:00-12:00 | 0.057 | 0.039 | 6 | 4 | 5 | | | | |
| 12:00-13:00 | 0.093 | 0.112 | 10 | 12 | | | | | |
| 13:00-14:00 | 0.07 | 0.098 | 7 | 10 | | | | | |
| 14:00-15:00 | 0.055 | 0.053 | 6 | 6 | | | | | |
| 15:00-16:00 | 0.072 | 0.088 | 8 | 9 | | | | | |
| 16:00-17:00 | 0.1 | 0.113 | 11 | 12 | | | | | |
| 17:00-18:00 | 0.171 | 0.205 | 18 | 22 | | | | | |
| 18:00-19:00 | 0.017 | 0.044 | 2 | 5 | | | | | |

Traffic Generation to Masterplan 12 (Cumulative Assessment)

Residential Development

It is assumed for the purposes of assessing cumulative impact that the Masterplan 12 lands might accommodate the further development of 1,100 residential units. For the purposes of traffic assessment it is assumed that half would be houses and half apartments.

Based upon the same data provided in Table 10.8, the following Table 10.12 provides an estimate of the additional traffic generation arising from the future development of the Masterplan 12 lands.

| Table 10.11.1 of coast i cak from that the ocheration - masterplan 12 residential | | | | | | | | | | |
|---|---------------------|---|--|---------|--|---------------------|--------|--------|--|--|
| Time Period | Addition | Master Houses (550 H al to Phase | plan 12 5 664m² louses) e 1B and Pl | hase 1A | Masterplan 12Apartments 1,614m²(550 Apartments)Additional to Phase 1B and Phase 1A | | | | | |
| | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart | | |
| 07:00-08:00 | 0.058 | 0.226 | 32 | 124 | 0.042 | 0.138 | 23 | 76 | | |
| 08:00-09:00 | 0.123 | 0.360 | 68 | 198 | 0.039 | 0.168 | 21 | 92 | | |
| 09:00-10:00 | 0.145 | 0.190 | 80 | 105 | 0.051 | 0.080 | 28 | 44 | | |
| 10:00-11:00 | 0.131 | 0.155 | 72 | 85 | 0.040 | 0.056 | 22 | 31 | | |
| 11:00-12:00 | 0.134 | 0.145 | 74 | 80 | 0.045 | 0.047 | 25 | 26 | | |
| 12:00-13:00 | 0.173 | 0.171 | 95 | 94 | 0.052 | 0.052 | 29 | 29 | | |
| 13:00-14:00 | 0.174 | 0.173 | 96 | 95 | 0.061 | 0.062 | 34 | 34 | | |
| 14:00-15:00 | 0.168 | 0.184 | 92 | 101 | 0.066 | 0.063 | 36 | 35 | | |
| 15:00-16:00 | 0.228 | 0.166 | 125 | 91 | 0.081 | 0.056 | 45 | 31 | | |

| Time Period | Addition | Master Houses (550 H al to Phase | plan 12 5 664m² louses) e 1B and Pl | hase 1A | Masterplan 12 Apartments 1,674m ² (550 Apartments) Additional to Phase 1B and Phase 1A | | | |
|----------------|---------------------|---|--|---------|--|---------------------|--------|--------|
| | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart | Arrive Rate/Unit | Depart Rate/Unit | Arrive | Depart |
| 16:00-17:00 | 0.272 | 0.177 | 150 | 97 | 0.099 | 0.060 | 54 | 33 0 |
| 17:00-18:00 | 0.350 | 0.196 | 193 | 108 | 0.153 | 0.051 | 84 | 28 |
| 18:00-19:00 | 0.264 | 0.181 | 145 | 100 | 0.124 | 0.053 | 68 | 29 |

Employment Uses – Zoned Lands

In order to assess the traffic generation of the lands to the east of LDR6 are zoned for E1/E3- Strategic Employment Zones (High Technology Uses) it is assumed that the land use might be suitably represented as Industrial Estate or Business Park so the TRICS database of traffic surveys has been interrogated for Land Use 'Employment' and Category 'Industrial Estate' and 'Business Park'.

Based upon 43 surveys for Industrial Estates and 19 surveys of Business Parks the following trip rates are returned. Table 10.13 summaries traffic generation based upon an estimated total $60,000m^2$ divided between the two uses which are assumed to occupy the more southern portion of the lands zoned E1/E3 within the overall Masterplan 12 lands.

| Time | Inc | Masterplan 12 Industrial Estate 50,000m ² | | | | Masterplan 12 Business Park 10,000m ² | | | |
|-------------|---|---|--------|--------|--|---|--------|--------|--|
| Period | Arrive Rate/ (100m ²) | Depart Rate (100m ²) | Arrive | Depart | Arrive Rate (100m ²) | Depart Rate (100m ²) | Arrive | Depart | |
| 07:00-08:00 | 0.312 | 0.11 | 156 | 55 | 0.493 | 0.084 | 49 | 8 | |
| 08:00-09:00 | 0.393 | 0.193 | 197 | 97 | 1.15 | 0.147 | 115 | 15 | |
| 09:00-10:00 | 0.289 | 0.221 | 145 | 111 | 0.568 | 0.182 | 57 | 18 | |
| 10:00-11:00 | 0.251 | 0.235 | 126 | 118 | 0.215 | 0.157 | 22 | 16 | |
| 11:00-12:00 | 0.253 | 0.258 | 127 | 129 | 0.186 | 0.19 | 19 | 19 | |
| 12:00-13:00 | 0.256 | 0.268 | 128 | 134 | 0.239 | 0.357 | 24 | 36 | |
| 13:00-14:00 | 0.269 | 0.258 | 135 | 129 | 0.318 | 0.267 | 32 | 27 | |
| 14:00-15:00 | 0.244 | 0.254 | 122 | 127 | 0.203 | 0.208 | 20 | 21 | |
| 15:00-16:00 | 0.211 | 0.276 | 106 | 138 | 0.144 | 0.265 | 14 | 27 | |
| 16:00-17:00 | 0.198 | 0.331 | 99 | 166 | 0.143 | 0.434 | 14 | 43 | |
| 17:00-18:00 | 0.108 | 0.351 | 54 | 176 | 0.118 | 0.904 | 12 | 90 | |
| 18:00-19:00 | 0.065 | 0.133 | 33 | 67 | 0.068 | 0.52 | 7 | 52 | |
| 19:00-20:00 | 0.176 | 0.216 | 88 | 108 | 0.092 | 0.161 | 9 | 16 | |

Table 10.12: Forecast Peak Hour Traffic Generation – Masterplan 12 Employment

Employment Uses – Current Application

There is a current proposal under Planning Reg. Ref. 221703 that seeks permission for a development consisting of the construction of 7,198m² of warehousing and is Phase 1 of an overall development within

an overall area in the northern most portion of the Masterplan 12 lands all zoned entirely E2 - 'General Enterprise and Employment'.

The greater Enterprise Park development which occupies the northern portion of the Masterplan 12 lands zoned E1/E3 is estimated to consist of a total of 48,490.90m² of warehousing. The traffic generation rates derived from TRICS are based on survey data from existing developments that are located in areas with similar demographics to that of the proposed development. The TRICS criteria selected to model the trip rates of this part of the Masterplan 12 lands are evaluated based upon the survey category 'F - Warehouse Commercial'. The traffic generation rates for the elements associated with Warehouse have been derived form a selection of 19 no. sites consisting of 21 no. surveys of which 17 no. are located in suburban and edge of town areas whilst 2 no. are edge of town sites, 2 no. are categorised as free standing.

Table 10.14 provides an estimate of the traffic generation arising from the warehousing and distribution portion of the development including for traffic generation arising from ancillary office areas.

| | | Warehouse Commercial (48,490.90m ²) | | | | | | | | | | |
|-------------|---|---|--|--|-----------------|-------------------|-----------------|-----------------|--|--|--|--|
| Time | Light V Rate/ [/] | ehicles 100m² | Goods \ Rate/ ⁻ | Vehicles 100m² | Light V Gene | ehicles ration | Goods \ Gene | Vehicles ration | | | | |
| Period | Arrive Rate/ (100m ²) | Depart Rate (100m ²) | Arrive Rate (100m ²) | Depart Rate (100m ²) | Arrive | Depart | Arrive | Depart | | | | |
| 05:00-06:00 | 0.016 | 0.000 | 0.012 | 0.036 | 8 | 0 | 6 | 17 | | | | |
| 06:00-07:00 | 0.036 | 0.004 | 0.032 | 0.056 | 17 | 2 | 16 | 27 | | | | |
| 07:00-08:00 | 0.161 | 0.053 | 0.031 | 0.035 | 78 | 26 | 15 | 17 | | | | |
| 08:00-09:00 | 0.154 | 0.034 | 0.035 | 0.035 | 75 | 16 | 17 | 17 | | | | |
| 09:00-10:00 | 0.079 | 0.043 | 0.037 | 0.033 | 38 | 21 | 18 | 16 | | | | |
| 10:00-11:00 | 0.048 | 0.049 | 0.041 | 0.034 | 23 | 24 | 20 | 16 | | | | |
| 11:00-12:00 | 0.044 | 0.049 | 0.032 | 0.03 | 21 | 24 | 16 | 15 | | | | |
| 12:00-13:00 | 0.051 | 0.072 | 0.031 | 0.021 | 25 | 35 | 15 | 10 | | | | |
| 13:00-14:00 | 0.104 | 0.075 | 0.038 | 0.036 | 50 | 36 | 18 | 17 | | | | |
| 14:00-15:00 | 0.073 | 0.092 | 0.038 | 0.031 | 35 | 45 | 18 | 15 | | | | |
| 15:00-16:00 | 0.048 | 0.087 | 0.033 | 0.03 | 23 | 42 | 16 | 15 | | | | |
| 16:00-17:00 | 0.038 | 0.137 | 0.03 | 0.024 | 18 | 66 | 15 | 12 | | | | |
| 17:00-18:00 | 0.028 | 0.129 | 0.022 | 0.023 | 14 | 63 | 11 | 11 | | | | |
| 18:00-19:00 | 0.040 | 0.083 | 0.014 | 0.018 | 19 | 40 | 7 | 9 | | | | |
| 19:00-20:00 | 0.040 | 0.008 | 0.016 | 0.044 | 19 | 4 | 8 | 21 | | | | |
| 20:00-21:00 | 0.012 | 0.008 | 0.012 | 0.036 | 6 | 4 | 6 | 17 | | | | |
| 21:00-22:00 | 0.005 | 0.014 | 0.026 | 0.004 | 2 | 7 | 13 | 2 | | | | |
| Daily | 0.977 | 0.937 | 0.48 | 0.526 | 474 | 454 | 233 | 255 | | | | |

Table 10.13: Forecast Peak Hour Traffic Generation – Warehousing Potential

Employment Uses Peak Hour Traffic Generation

The following Table 10.15 and Table 10.16 summarise the forecast daily and peak pour traffic generation arising at the greater Enterprise Park lands (48,490.90m²) and includes all E3 zoned lands in the northern part of Masterplan 12 including the development proposed under Planning Reg. Ref. 221703.

| Table 10.14: Enterprise Park Forecast Daily Traffic Generation | | | | | | | | | | |
|--|---|--------|---------------|--------|---------------|--------|---------------|--------|---|--|
| | Enterprise Park Traffic Generation - Light Vehicles (HGV) | | | | | | | | | |
| Time Period | Primary Trips | | Primary Trips | | Primary Trips | | Primary Trips | | × | |
| Period | Arrive | Arrive | Arrive | Arrive | Arrive | Arrive | Arrive | Arrive | | |
| | No. | No. | No. | No. | No. | No. | No. | No. | | |
| Weekday | 474 | 474 | 474 | 474 | 474 | 474 | 474 | 474 |] | |
| 07:00-19:00 | (233) | (233) | (233) | (233) | (233) | (233) | (233) | (233) | | |

Table 10.15: Enterprise Park Forecast Peak Hour Traffic Generation

| | | Enterprise Park Traffic Generation - Light Vehicles (HGV) | | | | | | | | | |
|------------------------|---------------|---|---------------|---------------|---------------|---------------|---------------|---------------|--|--|--|
| Time Period | Primary Trips | | Primary Trips | | Primary Trips | | Primary Trips | | | | |
| T CHOU | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | | | |
| Weekday 08:00-09:00 | 75 (17) | 16 (17) | NA | NA | NA | NA | 75 (17) | 16 (17) | | | |
| Weekday 17:00-18:00 | 14 (11) | 63 (11) | NA | NA | NA | NA | 14 (11) | 63 (11) | | | |

The following Table 10.17 and Table 10.18 summarise the forecast daily and peak hour traffic generation arising at the Masterplan 12 Enterprise lands located to the south and exclude the lands identified as Enterprise Park. Table 10.17 and Table 10.18 are all based upon the cumulative standalone traffic generation and therefore account for no community use, cross-visitation, pass- by or combined trips. For the purposes of the following calculations it is assumed that approximately 12.5% of the traffic generated by the standalone Masterplan 12 Employment lands to the south will be comprised of HGV.

Table 10.16: Masterplan 12 Forecast Daily Traffic Generation

| | Masterplan 12 Enterprise Traffic Generation - Light Vehicles (HGV) | | | | | | | | | | |
|------------------------|--|----------------|---------------|---------------|---------------|---------------|----------------|----------------|--|--|--|
| Time Period | Primary Trips | | Primary Trips | | Primary Trips | | Primary Trips | | | | |
| Fenoa | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | | | |
| Weekday 07:00-19:00 | 1,668 (238) | 1,697 (242) | NA | NA | NA | NA | 1,668 (238) | 1,697 (242) | | | |

Table 10.17: Masterplan 12 Forecast Peak Hour Traffic Generation

| | Ма | Masterplan 12 Enterprise Traffic Generation - Light Vehicles (HGV) | | | | | | | | | |
|------------------------|---------------|--|---------------|---------------|---------------|---------------|---------------|---------------|--|--|--|
| Time Period | Primary Trips | | Primary Trips | | Primary Trips | | Primary Trips | | | | |
| i choù | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | Arrive No. | | | |
| Weekday 08:00-09:00 | 273 (39) | 97 (14) | NA | NA | NA | NA | 273 (39) | 97 (14) | | | |
| Weekday 17:00-18:00 | 58 (8) | 233 (33) | NA | NA | NA | NA | 58 (8) | 233 (33) | | | |

Refinement of TRICS Data to Allow for Mixed-Use Nature of Development

As is typical in the study of multi-opportunity mixed use development this study makes allowances for the high likelihood of cross-visitation; multiple-purpose trips; and trips generated solely within the Phase 1 development lands as part of the traffic generation calculations. Adjustment of the figures to reflect the above should provide more realistic estimates of the total traffic flow that is likely to be manifest at the gateway points to Masterplan 12 lands i.e. the proposed signal controlled junction of the LDRe/Kentstown Road/Metges Road and the proposed signal controlled junction of the LDRe/Metges.

Most of the sites in TRICS are stand-alone sites with each site generally comprising a singular land use. The Phase 1 development lands and Masterplan 12 lands on the other hand, comprises of a variety of complimentary land uses which, when fully operational, are likely to generate multi-purpose trips and some level of cross-visitation. An example would be if a resident living in the residential portion of the Phase 1 development (comprising Phase 1A and Phase 1B) stopped off at the Neighbourhood Centre on their way to or from work, or if that trip were undertaken on foot. In the case of a sustainable community the TRICS data taken conjunctively can give rise to a significant over-estimate of the total trip generation. In practice the neighbourhood centre in Phase 1B will give rise to multiple-purpose trips and to trips by non-car mode from within the development. Many of the trips arising at the proposed Phase 1B neighbourhood centre would be generated from within the Masterplan 12 lands and would in theory not actually access the public road network outside of Masterplan 12 since the origin and destination are within Masterplan 12.

If simply accumulating the TRICS generation for each standalone land-use then potential double counting is likely in the case of the proposed development since the nature of the Phase 1 development lands and Masterplan 12 in general is that of an integrated mixed-use development covering residential, retail, educational and employment land uses.

Based on the advice of the TII Publication PE-PDV-02045 '*Traffic and Transport Assessment Guidelines*' (2014), the impact arising from Proposed Phase 1B Development will be evaluated for the forecast year of opening; whilst the impact of Masterplan 12 Full Development will be evaluated for fifteen years after opening. In the following the rationale behind the adjusted TRICS figures is provided in each instance.

Adjustments to Proposed Development Traffic Generation

It is likely that some traffic generated by the Neighbourhood Centre retail uses would already be on the road network (travelling to and from work for instance) and would be accounted for in the traffic generated by the residential element. This is referred to as 'passing trade' or 'pass-by trips' and is likely to be at its highest during peak hours. To reflect this phenomenon, the forecast stand-alone traffic generation rates for retail element as derived from TRICS are typically reduced in such analyses. In the interest of a robust assessment however no reduction is assumed. The resulting forecast traffic generation and distribution for various development traffic generation scenarios is provided in the following figures:

- Figure 10.19 Traffic Forecast Phase 1A (Reg. Ref. 21/1046; ABP-312746-22)
- Figure 10.20 Traffic Forecast Phase 1B (Proposed)
- Figure 10.21 Traffic Forecast Phase 1A + Phase 1B No Boyne Road Link
- Figure 10.22 Traffic Forecast Phase 1A + Phase 1B With Boyne Road Link
- Figure 10.23 Traffic Forecast Other MP12 Residential No Boyne Road Link
- Figure 10.24 Traffic Forecast Other MP12 Residential With Boyne Road Link

The various figures show the forecast traffic flows arising from the proposed development together with traffic arising from Phase 1A and the other lands zoned for residential development in Masterplan 12. The figures are presented in network flow diagram format where morning peak flows are shown in 'blue' and evening peak hour flows are shown in '(Red)' and are bracketed.



Boyne Road

Figure 10.20: Traffic Forecast Phase 1B (Proposed)







Figure 10.21: Traffic Forecast Phase 1A + Phase 1B - No Boyne Road Link



Figure 10.22: Traffic Forecast Phase 1A + Phase 1B – With Boyne Road Link



Figure 10.23: Traffic Forecast Other MP12 Residential – No Boyne Road Jeink



Figure 10.24: Traffic Forecast Other MP12 Residential – With Boyne Road Link

Adjustments to Masterplan 12 - Full Development Traffic Generation

The local shops or neighbourhood centre in phase 1B should reasonably attract a greater proportion of passing trade when Masterplan 12 is fully realised. It could be assumed for the purposes of this study that the TRICS derive traffic generation for the shops (as standalone development) could be reduced by as much as 80%.

A primary school is expected to be built before the completion of Masterplan 12 and is expected to serve principally the Masterplan 12 community. The integrated cycle lane and footway network will be a clear incentive to students and parents alike to avail of more sustainable forms of transport in travelling to and from the school. The majority of car borne trips to the school are considered likely to be generated from outside of the Masterplan 12 lands. It is assumed that 10% of the stand-alone TRICS derived traffic generation would be traffic generated from outside Masterplan 12 as most students will likely reside in Masterplan 12. It is similarly assumed that 10% of the stand-alone traffic generation at the Phase 1B crèche will be from the roads network beyond Masterplan 12. Given the extent of residential development and employment related development within Masterplan 12, it is expected that there will be a significant degree of cross-visitation between the two land uses. It has been assumed for the purposes of this report that 50% of the car-based trips to/from the employment generating developments to the east of LDR6 will arise from within Masterplan 12. No further reductions have been applied to the TRICS derived traffic generation for any other land uses in Masterplan 12. Figure 10.25 and Figure 10.26 show the forecast traffic generation arising from the Masterplan 12 employment lands zoned E1/E3 to the east of LDR6. Figure 10.26 shows the traffic distribution with LDR6 completed whilst Figure 10.25 shows the distribution were the link to Boyne Road delayed. Figure 10.25 represents the sensitivity scenario that Meath County Council suggested should be included. :

- Traffic distributes onto R153 and Boyne Road in current proportions.
- Future traffic distributes 20% to Boyne Road and 80% to R153 Kentstown Road
- 50% of TRICS forecast Enterprise and Employment Traffic comes from the receiving road Network outside of Masterplan 12
- 25% of TRICS forecast Enterprise and Employment Traffic is internal.
- 25% of TRICS forecast Enterprise and Employment Traffic is discounted as employees using noncar modes of transport.
- No discount in Residential Traffic.
- No pass-by trips assumed to the Neighbourhood Centre
- Creche generated traffic assumed to be generated internally only, the small proportion arising from outside study area is assumed to be included in an element of double counting.



Figure 10.25: Traffic Forecast– Masterplan 12 Enterprise – No Boyne Link Road



Figure 10.26: Traffic Forecast- Masterplan 12 Enterprise - With Boyne Link Road

Standard Assessment Thresholds

In Ireland, a Traffic and Transport Assessment or Traffic Impact Assessment must accompany all planning applications for developments which could potentially generate significant traffic volumes. A Traffic and Transport Assessment should be carried out if the proposed development exceeds the following thresholds:

- Development traffic exceeds 10% of turning movements at junctions with and on National Roads
- Development traffic exceeds 5% of turning movements at junctions with National Roads if location has
 potential to become congestive or sensitive.
- Residential Development in excess of 200 dwellings
- Parking Provided 100 on-site parking spaces.

(Reference-NRA Traffic and Transport Assessment Guidelines 2014: Table 2.2; page 9)

Phase 1B Traffic

Section 10.4.7 details the current traffic flows on the receiving road network. Various figures and tables are provided for weekdays together with the respective peak hours. Based upon Figure 10.19 the Phase 1B lands are forecast to generate 80 no. inbound vehicle movements and 133 no. outbound in the morning peak hour. The traffic generation attributable to the Phase 1A development is 10 arrivals and 31 departures in the morning peak hour. In the evening peak hour the forecast traffic generation of Phase 1B is 162 inbound movements and 145 outbound (as measured at R153 Kentstown Road junction) The evening peak hour traffic generation of the Phase 1 A development is 23 arrivals and 15 departures. Based upon Table 10.6 and Table 10.7 the following Table 10.19 and Table 10.20 provide summaries of the forecast peak hour traffic generation against the recorded two-way peak hour traffic flows on the receiving road network.

| Bood Link | Morning Peak Hour Traffic Flows 08:00-09:00hrs | | | | | |
|--------------------------------------|--|----------------|------------|--|--|--|
| | Total 2-way Flow | Additional No. | % Increase | | | |
| R153 Kentstown Road (West) | 687 | 101 | 14.7% | | | |
| R153 Kentstown Road (East) | 692 | 59 | 8.5% | | | |
| Metges Road | 624 | 53 | 8.5% | | | |

Table 10.18: Forecast Morning Peak Hour Flows on Receiving Road Network

Table 10.19: Forecast Evening Peak Hour Flows on Receiving Road Network

| Pood Link | Evening Peak Hour Traffic Flows 17:00-18:00hrs | | | | | | |
|--------------------------------------|--|----------------|------------|--|--|--|--|
| KUdu LIIIK | Total 2-way Flow | Additional No. | % Increase | | | | |
| R153 Kentstown Road (West) | 725 | 104 | 14.3% | | | | |
| R153 Kentstown Road (East) | 745 | 87 | 11.7% | | | | |
| Metges Road | 777 | 106 | 13.6% | | | | |

Notwithstanding that Phase 1B will not be completed and occupied for some time in the future, the forecast traffic generation set against recent 2023 network traffic flow data shows that Phase 1B has the potential to exceed the 10% threshold set out in the guidelines. Phase 1B also exceeds the 200 no. dwelling threshold. Notwithstanding that the receiving road network has been designed expressly to accommodate the traffic arising from Masterplan 12 the tabulated traffic data shows that by the standard metrics the

development warrants detailed capacity assessment of the LDR6 infrastructure as agreed with the RCEINED. ONO Planning Authority at pre-planning stage.

10.6 POTENTIAL IMPACT OF THE PROPOSAL

10.6.1.1 Construction Phase

All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with the local road's authority prior to the commencement of construction activities on site. The contractor will decide the construction programme to be implemented and will be required to finalise a Construction Management Plan with the Planning Authority. The Planning Authority is familiar with the traffic generation characteristics associated with general construction with the recent construction of LDR6. The existing road network serving Masterplan 12 and the internal road network have been designed to accommodate this type of traffic and the levels of construction activity forecast. Impacts arising from construction traffic will be managed and mitigated through the agreement of suitable haul routes. There is no significant construction traffic impact arising in residential areas.

To reduce insofar as practicable, the impact of construction generated traffic and to reduce the volume of site generated traffic during construction the following measures are proposed:

- Provision of sufficient onsite parking to accommodate construction personnel, visitor parking and deliveries thus preventing potential overflow onto the local network.
- Encourage the Contractor to transport construction personnel.
- Inform construction staff of mobility management measures and principles highlighting the availability of non-car modes of transport and the accessibility of the site by bus, train and bicycle.
- Provision of on-site truck cleaning facilities (i.e. wheelwash or truck-wash) on site or other such • measures to prevent the deposition of debris and detritus that might be carried to the public road.
- A system to be put in place to clean roads in the case of accidental deposition of material.
- Preparation of a detailed Construction Management Plan to the agreed with the Planning Authority.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed, respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment.

The likely impact of the construction works will be short-term in nature. The number of staff on site will fluctuate over the implementation of the subject scheme. Nevertheless, based upon the experience of similar projects, it would be expected that approx. 100 - 200 staff will be on site at any one time, subsequently generating relatively low levels of two-way vehicle trips during the peak AM and PM periods over the period of the construction works (construction workers will be encouraged to use shared transport where practicable). On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 16:00.

Deliveries to the site would be expected to arrive at a steady rate during the course of the day, the majority of which would be lorries with inert fill material that will be brought onto the site over the entire duration of the construction stages of the development. The proposed haul routes for the fill material will exit and enter the site at the LDR6 and travel along the eastern distributor relief road to the R147 Dublin Road or to M3 Motorway.

The potential impact during the construction phase with all the above considered would have a short term negative effect on the surrounding road network, however, with the CTMP and deliveries managed accordingly, this will have imperceptible effect in Navan Town Centre and key traffic corridors within the town.

10.6.1.2 Operational Phase

Overview



The capacity of a road network is typically dictated by the operation of the links and junctions within that network. Capacity assessments of the key junctions in the vicinity of the site are modelled for base and future year scenarios in order to provide a comparative basis upon which to evaluate the incremental impact of the proposed Phase 1B development and to appraise the overall performance of the road network under future assumed network traffic flow criteria. In order to prepare a traffic network model various base assumptions are made with respect to the future growth of traffic on the receiving road network.

Scope of Assessment

Regarding the choice of appropriate assessment years the TII Publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines' advise as follows; *"Timescale: Traffic volumes for opening year, opening +5 and opening year +15. These timescales are fairly standard and should be expected".* It is assumed for the purposes of the assessment that Phase 1B will be constructed by the end of 2026 accordingly the year 2026 has been selected as the opening year. In line with the guidance provided in the National Roads Authority Traffic and Transport Assessment Guidelines, modelling analyses of the capacity of the receiving road network have been carried out for the following:

- Opening Year (Assumed 2026)
- Opening Year +5yrs (2031)
- Opening Year +15yrs (2041).

The following junctions have been included in the scope of the modelling assessments agreed with Meath County Council Transportation Section.

- Site 1: R153 Kentstown Road/Metges Road/LDR6 Junction
- Site 2: Old Athlumney Road
- Site 3: Boyne Road

Traffic Growth Rates

For the purposes of the traffic assessment traffic generation arising directly from the proposed development has been assumed not to grow over time. Background traffic flows on the public road network have been assumed to grow in accordance with the latest growth factors published by the Transport Infrastructure Ireland (TII) in May 2019 in the document 'Project Appraisal Guidelines: Unit 5.3 Travel Demand Projections'.

Central growth factors have been used in the derivation of the future traffic flows from the surveyed 2023 flows. The TII forecast central growth factors assume traffic growth of 1.73% per annum between 2016 and 2030 and 0.7% per annum thereafter for HGV traffic the corresponding growth factors are 3.65% and 1.86%.

Existing traffic flows are as surveyed and will be used as a base for comparison of the analyses for future year junction performance. The growth indices used to derive Opening Year (2026) and; Opening Year +5ys (2031) and Opening Year +15yrs (2041) flows from the surveyed (2023) flows are as follows. National Primary Road Medium Growth Rates (Applied to All Roads)

| • | 2019-2023 (Opening Year) | 1.053 (Cars) | 1.114 (HGV) |
|---|---------------------------------|--------------|-------------|
| • | 2019-2028 (Opening Year +5yrs) | 1.147 (Cars) | 1.332 (HGV) |
| • | 2019-2038 (Opening Year +15yrs) | 1.229 (Cars) | 1.605 (HGV) |
It should be noted that the growth factors have been applied directly to peak hour traffic data. It can nonetheless be appreciated that growth factors are not always directly applicable to peak hour periods (the peak hour generally spreads out as opposed to intensifying). Ignoring this factor and adding growth directly to the peak hour generally results in robust calculations favoured by traffic experts in the assessment of road networks. Traffic growth on local road networks is generally attributable to development in the area. It could therefore be assumed that a portion of the forecast network growth would already be accounted for by way of the traffic generated by Phase 1 the proposed Phase 1B development and other general development in and around Athlumney. However, in the interests of preparing a robust analysis of network capacity this consideration has been discounted.

Scenarios Analysed

The main corridor upon which the new traffic generated by the proposed Phase 1B development will have an impact is the LDR6, R153 Kentstown Road and Boyne Road. The scope of future year assessments focuses on the operation of the future R153 Kentstown Road signal controlled junction, future Old Athlumney Road/LDR6 Roundabout and the two development access roundabouts on the LDR6 to the north hereafter referred to as the LDR6 Northern and Southern Roundabouts.

The purpose of LDR6 is primarily to facilitate development and the assessments aim to show that the infrastructure provided by LDR6 is suitable to accommodate the forecast traffic arising from the proposed Phase 1B development and from the development of the Masterplan 12 lands served by LDR6.

The LDR6 infrastructure is currently serves no development so no assessments have been carried out for the without development scenario. A series of traffic scenarios have been assessed that consider traffic flows with the proposed Phase 1B development in place and further assessments consider a 2041 scenario in which the Masterplan 12 lands are fully developed and occupied.

The various future traffic flow scenarios have been assessed for the Opening Year 2026, Opening Year +5yrs and the Design Year of 2041. The TRL suite of programs assesses network performance in the identified peak hours.

The 'do something' scenarios include for the forecast assessment value Phase 1B development traffic flows being added to the following forecast network flows derived from the 2023 traffic surveys factored as set out above.

The relative traffic generation and distribution flows arising from the proposed Phase 1B development, and the Masterplan 12 lands are shown in the series of Figures 10.19 through 10.26 above. It is assumed for the purposes of the traffic assessments that approximately half of all lands in Masterplan 12 will be developed and occupied by 2031 (Opening Year +5yrs). In the interest of simplicity, the 2031 analyses accounts for half of the development generation figures presented in Figure 10.23 through Figure 10.26.

The surveyed and forecast future traffic flows on Old Athlumney Road and Boyne Road are as follows in Table 10.21 and Table 10.22 which provide a summary of the forecast peak hour traffic generation against the recorded two-way peak hour traffic flows on the receiving road network.

| Road Link | Voor | Morning F 08:00-0 | Peak Hour 9:00hrs | Evening Peak Hour 17:00-18:00hrs | | | | |
|-----------------------------------|----------------|---------------------------|---------------------------|-------------------------------------|---------------------------|--|--|--|
| | rear | Northbound Total (HGV) | Southbound Total (HGV) | Northbound Total (HGV) | Southbound Total (HGV) | | | |
| Boyne Surve Road 2023 Surve | 2019 Survey | 62(1) | 97(2) | 135(3) | 87(2) | | | |
| | 2023 Survey | 94(2) | 142(4) | 136(1) | 94(1) | | | |

Table 10.20: Boyne Road Forecast Peak Hour Traffic Flows (Weekdays)

| Road Link | Veer | Morning F 08:00-0 | Peak Hour 9:00hrs | Evening Peak Hour 17:00-18:00hrs | | |
|-----------|------|---------------------------|---------------------------|-------------------------------------|---------------------------|--|
| | Tear | Northbound Total (HGV) | Southbound Total (HGV) | Northbound Total (HGV) | Southbound Total (HGV) | |
| | 2026 | 99(2) | 149(4) | 143(1) | 99(1) | |
| | 2031 | 108(3) | 163(5) | 156(1) | 108(1) | |
| | 2041 | 115(3) | 174(6) | 167(2) | 115(2) | |

Table 10.21: Old Athlumney Road Forecast Peak Hour Traffic Flows (Weekdays)

| Road Link | Voor | Morning F 08:00-0 | Peak Hour 9:00hrs | Evening Peak Hour 17:00-18:00hrs | | |
|-------------------|----------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--|
| | Tear | Eastbound Total (HGV) | Westbound Total (HGV) | Eastbound Total (HGV) | Westbound Total (HGV) | |
| Old | 2019 Survey | 42(1) | 36(2) | 41(1) | 68(4) | |
| | 2023 Survey | 94(0) | 2(0) | 37(0) | 11(0) | |
| Athlumney Road | 2026 | 99(0) | 2(0) | 39(0) | 12(0) | |
| Road | 2031 | 108(0) | 2(0) | 42(0) | 13(0) | |
| | 2041 | 115(0) | 2(0) | 45(0) | 14(0) | |

The forecast network traffic flows for each assessment scenario at the R153 Kentstown Road Roundabout are provided in the following network flow diagrams.

Figure 10.27: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2023







Figure 10.29: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2031







Figure 10.31: R153 Kentstown Road/Metges Rd Morning Peak Hour Flows 2041





Figure 10.32: R153 Kentstown Road/Metges Rd Evening31 Peak Hour Flows 2041

Modelling Software

As recommended by TII and the CIHT, the Transport Research Laboratory (TRL) computer modelling program the program Junctions 10 formerly ARCADY, PICADY, OSCADY has been used to assess the future performance of the links, roundabouts and signalised junctions on the receiving road junctions. The TRL programs are primarily intended as a means of assessing roundabout and signal junction performance. The output provides performance indicators for roads designers and planners with regards to capacity, queuing and delay.

An 85% level of saturation corresponding to a Ratio of Flow to Capacity (RFC) of 0.850 is generally accepted at roundabout junctions near urban areas, and 0.75 in rural areas, although these figures should not be considered in isolation and should be viewed together with queuing and delay information. The indices for traffic signal operation are more complex, nonetheless an RFC of 0.900 is considered the rule of thumb figure for a signal junction functioning well with queues clearing and little wastage of green time. In the following we provide a summary of the salient output results for each assessment. The output results of the analyses should primarily be viewed as a performance indicator facilitating a comparative assessment between the various traffic flow scenarios. The infrastructure upon which the proposed development relies currently serves no development so an assessment of the infrastructure in 2019 using the surveyed existing traffic flow criteria cannot be provided to afford a means by which to calibrate (through observation of the existing scenario) the models of future assessment value traffic scenarios. The various assessment traffic flow scenarios for the proposed development are undertaken as set out below.

- Scenario 1 (S1): 2026 Year of Opening 'Do-Nothing' peak hour assessments that includes the network traffic flows set out in Figure 10.27 and Figure 10.28. Nominal flows are attributed to LDR6 to account for construction traffic demand and possible operation of some element of other residential development lands within Masterplan 12. Traffic generation of Phase 1A assumed as per Figure 10.19 where the Boyne Road junction is assumed not to be constructed.
- Scenario 2 (S2): 2026 Year of Opening 'Do-Something' peak hour assessments that include the network traffic flows set out in Figure 10.27 and Figure 10.28. together with Scenario 1 development traffic flows arising from Phase 1A and traffic arising from the proposed development

of Phase 1B. Nominal flows are attributed to LDR6 to account for construction traffic demand and possible operation of some element of other residential development lands within Masterplan 12. Traffic generation of proposed Phase 1B is assumed as per Figure 10.20 where the Boyne Road junction is assumed not to be constructed.

- Scenario 3 (S3): 2031 Year of Opening +5yrs 'Do-Something' peak hour assessments which includes for the TII forecast growth in network traffic flows as set out in Figure 10.29 and Figure 10.30. It is assumed that cumulative traffic arising from half of the development of al-Masterplan 12 lands will arise as per Figure 10.23 (MP12 Residential excepting Phase 1A and Phase 1B) and Figure 10.25 (MP12 Employment). Traffic flows arising from Phase 1 A and the proposed Phase 1B are included for as per Figure 10.21. In this 2031 assessment it is assumed that the Boyne Road junction will not have been constructed.
- Scenario 4 (S4): 2041 Year of Opening +15yrs 'Do-Something' peak hour assessments which includes for the TII forecast growth in network traffic flows as set out in Figure 10.31 and Figure 10.32. It is assumed that cumulative traffic arising from the development of all Masterplan 12 lands will arise as per Figure 10.24 (MP12 Residential excepting Phase 1A and Phase 1B) and Figure 10.26 (MP12 Employment). Traffic flows arising from Phase 1 A and the proposed Phase 1B are included for as per Figure 10.22. In this 2041 assessment it is assumed that the Boyne Road junction will have been constructed.
- Scenario 5 (S5): 2041 'Sensitivity Analysis' for Year of Opening +15yrs 'Do-Something' peak hour assessments which includes for the TII forecast growth in network traffic flows as set out in Figure 10.31 and Figure 10.32. It is assumed that cumulative traffic arising from the development of all Masterplan 12 lands will arise as per Figure 10.23 (MP12 Residential excepting Phase 1A and Phase 1B) and Figure 10.25 (MP12 Employment). Traffic flows arising from Phase 1 A and the proposed Phase 1B are included for as per Figure 10.25. In this 2041 'Sensitivity Assessment' it is assumed that the Boyne Road junction will not have been constructed.

R153 Kentstown Road Signal Junction

The signal controller is understood to operate on variable sets of timing regimes which change and optimise depending on the time of day and the traffic demands registered with the controller from the detector loops on the various approach lanes to the junction. As is the case with modern signal controller equipment such as the commonly installed Siemens ST800 system the cycle time and splits can be optimised continuously depending upon the demand registered.

In the interest of providing comparable analyses and for the purposes of all traffic signal capacity assessments for all scenarios and future years the proposed traffic signals are set to operate on the same set of default fixed cycle time of 60 seconds both morning and evening and are not vehicle actuated.

The following Figure 10.33 and Figure 10.34 show the phasing, staging sequence and signal timings and cycle that has been used in the analyses of junction performance.



Figure 10.33: Assessment Signal Staging at LDR6/Kentstown Road

It is acknowledged that the signal junction will incorporate pedestrian crossings. The pedestrian phase has not been included in the peak hour assessment given that it is unlikely to be called up for every cycle.

Figure 10.34: Assessment Signal Staging Sequence LDR6/Kentstown Road



Assessment of Receiving Road Network

The underlying assessment criteria are as follows:

- With/Without Proposed Development Fully Operational in Opening Year
- All Movements Traffic Signal Junction at Kentstown Road
- Cycle Time Optimised for each data set.
- Stage Length Optimised for each data set.
- Nearside Lanes treated as bays with capacity for 5 no. vehicles.

- National Road Central Value Growth Applied to Network
- New Distributor Road connection to Boyne Road not completed until 2041

The capacity of the signals system has been evaluated using Junctions 10. The model calculates capacities, queues, and delays for isolated (uncoordinated), traffic signal-controlled junctions. It can evaluate a set of known signal timings, and optionally it can optimise stage lengths and/or cycle time to minimise delay. The modelling assessments assume Vehicle Actuation with a maximum available cycle time of 150 seconds.

The results of the modelling analyses output for the Kentstown Road junction subject to the forecast morning and evening weekday peak hour traffic flow scenarios for the year of opening and future year scenarios are summarised in the following tables. It is assumed that the signal junction are controlled by an intelligent controlled and that cycle times and stage times are optimised. Comparable output data for the year of opening year 2026 relates to both the 'Do-Nothing' scenario where only network traffic growth is considered and the 'Do-Something' scenario where the forecast traffic generation arising from the proposed development has been added to the factored 'Do-Nothing' 2026 network traffic flows.

The results of the analyses for the year of opening 2026 are summarised Table 10.23 and show that the junction operates within capacity with a maximum RFC of 0.490. The overall junction Level of Service (LOS) is A with or without the proposed development. By comparing the 'Do-Nothing' and 'Do-Something' scenario results the incremental effects of the proposed development Phase 1B traffic on the operation of the junction can be determined. The effects of the proposed development traffic in both the morning and evening peak hours are forecast not to be significant and the impacts upon capacity are considered negligible.

| Assessment | Δrm | Queue (Veh) Delay | REC | Stream | Junc | tion | Network Residual | |
|--------------------|-----|----------------------|-------|--------|------|-------|---------------------|---------------|
| Year/Scenario | | Average | (s) | N O | LOS | Delay | LOS | Capacity |
| Opening Year | A | 1.7 | 7.90 | 0.26 | Α | | | |
| 2026 ¹⁰ | В | 1.9 | 11.28 | 0.35 | В | 7 45 | ٨ | 147% Arm B |
| AM Peak | С | 2.5 | 5.66 | 0.33 | Α | 7.45 | ^ | |
| Do-Nothing | D | 0.7 | 5.87 | 0.16 | Α | | | |
| Opening Year | А | 1.8 | 8.02 | 0.26 | Α | | | 143% Arm C |
| 2026 ¹¹ | В | 2.0 | 10.20 | 0.34 | В | 7 40 | Α | |
| AM Peak | С | 2.7 | 5.96 | 0.39 | Α | 7.40 | | |
| Do-Something | D | 1.5 | 6.72 | 0.30 | Α | | | |
| Opening Year | А | 2.9 | 8.37 | 0.39 | Α | | | |
| 2026 ¹² | В | 3.1 | 13.52 | 0.49 | В | 9.25 | ٨ | 101% |
| PM Peak | С | 2.4 | 4.98 | 0.32 | Α | 0.55 | ^ | Arm B |
| Do-Nothing | D | 1.3 | 6.94 | 0.24 | Α | | | |
| Opening Year | А | 3.1 | 9.58 | 0.43 | Α | 8.35 | Α | 101% |

Table 10.22: Modelling Output - Kentstown Signal Junction (Opening 2026)

¹⁰ Assessment Traffic Flows: Figure 10.27 + Figure 10.19

¹¹ Assessment Traffic Flows: Figure 10.27 + Figure 10.19 + Figure 10.20

¹² Assessment Traffic Flows: Figure 10.28 + Figure 10.19

| Assessment Year/Scenario | Arm | Queue (Veh) Average | Delay (s) | RFC | Stream LOS | Junc Delay | tion | Network Residual Capacity |
|--|-----|---------------------------|--------------|------|---------------|---------------|------|---------------------------------|
| 2026 ¹³ Scenario S2 PM Peak Do-Something | В | 2.9 | 11.52 | 0.44 | В | | | Arm B |
| | С | 2.5 | 5.72 | 0.34 | Α | | | 010 |
| | D | 1.2 | 6.16 | 0.22 | Α | | | |

Arm A: Kentstown Rd (W) Arm B: LDR 6 Arm C: Kentstown Rd (E) Arm D: Metges Rd

Given the results of the year of opening analysis show that the impact of the proposed development will not be significant, the analyses for later years include only for the 'Do-Something' Scenario together with the development of all zoned lands in Masterplan 12 (including Phase 1A and Phase 1B). It is considered unlikely that the LDR6 connection to the Boyne Road will be realised during the construction of the early phases of the Masterplan accordingly the analyses for each of the 2026 and 2031 scenarios assume only a connection to the R153 Kentstown Road to the south. As agreed with Meath County Council Transportation Section all analysis assume that all development traffic including Masterplan 12 traffic will be required to use the Kentstown Road junction only with no access to the Boyne Road. The analyses for 2041 assume that the LDR6 connection to Boyne Road will have been realised.

| Assessment | Arm | Queue (Veh) | Delay | REC | Stream | Junction | | Network Residual |
|--|-----|-----------------------|-------|------|--------|----------|-----|---------------------|
| Year/Scenario | | Average | (s) | N N | LOS | Delay | LOS | Capacity |
| Opening Year | А | 2.5 | 9.69 | 0.36 | Α | | | |
| +5 Years 2031 14 | В | 2.5 | 11.31 | 0.45 | В | 0.67 | ٨ | 67% |
| Scenario S3 AM Peak | С | 3.8 | 8.17 | 0.55 | Α | 0.07 | A | Arm C |
| ¹ ⁄ ₂ Masterplan | D | 2.6 | 6.72 | 0.40 | Α | | | |
| Opening Year | А | 3.9 | 10.64 | 0.49 | В | | | 55% Arm B |
| +5 Years 2031 ¹⁵ | В | 3.7 | 13.23 | 0.57 | В | 0.22 | ٨ | |
| Scenario S3 PM Peak | С | 3.2 | 6.55 | 0.46 | Α | 9.33 | A | |
| 1/2 Masterplan | D | 2.2 | 7.12 | 0.36 | Α | | | |
| Opening Year | А | 2.5 | 8.78 | 0.35 | Α | | | |
| +15 Years 2041 ¹⁶ | В | 2.7 | 11.66 | 0.48 | В | 9.64 | ٨ | 58% |
| Scenario S4 AM Peak | С | 3.9 | 7.56 | 0.57 | Α | 0.04 | A | Arm C |
| All Masterplan | D | 3.0 | 7.87 | 0.45 | Α | | | |
| Opening Year | А | 3.7 | 8.33 | 0.44 | Α | | | |
| +15 Years 2041 ¹⁷ | В | 4.0 | 14.01 | 0.61 | В | 8.79 | Α | 45% Arm B |
| PM Peak | С | 3.0 | 5.09 | 0.43 | Α | | | |

Table 10.23: Modelling Output - Kentstown Signal Junction (Future Years)

¹³ Assessment Traffic Flows: Figure 10.28 + Figure 10.19 + Figure 10.20

¹⁴ Assessment Traffic Flows: Figure 10.29 + (0.5) Figure 10.23 + (0.5) Figure 10.25 + Figure 10.21

¹⁵ Assessment Traffic Flows: Figure 10.30 + (0.5) Figure 10.23 + (0.5) Figure 10.25 + Figure 10.21

¹⁶ Assessment Traffic Flows: Figure 10.31 + Figure 10.24 + Figure 10.26 + Figure 10.22

¹⁷ Assessment Traffic Flows: Figure 10.32 + Figure 10.24 + Figure 10.26 + Figure 10.22

| Assessment | Arm | Queue (Veh) | Delay (s) | RFC | Stream LOS | Junction | | Network Residual |
|---|-----|-----------------------|--------------|------|---------------|----------|-----|---------------------|
| Year/Scenario | | Average | | | | Delay | LOS | Capacity |
| All Masterplan | D | 2.4 | 9.04 | 0.41 | Α | | | |
| Arm A: Kentstown Rd (W) Arm B: LDR 6 Arm C: Kentstown Rd (E) Arm D: Metges Rd | | | | | | | | |

The traffic flows used in the analyses assume TII growth rates will apply in Navan and will apply directly to the peak hours. The traffic arising from the development of the Masterplan 12 lands can reasonably be considered to account for some element, and likely a significant element of, the TII forecast traffic growth. The analyses take no account of this source of double counting of traffic growth over the coming 18 years. For these reasons the assessments of the performance of the Kentstown Road junction can be considered suitably robust. This level of robustness was agreed with Meath County Council Transportation Section in scoping the study.

The results of the modelling analyses of the R153 Kentstown Road signal junction subject to the forecast various weekday peak hour traffic flow scenarios are summarised in Table 10.23 and Table 10.24. The traffic flows corresponding to the various scenarios are referenced in Column 1 by footnote to the various network traffic flow diagrams.

Given that an RFC value of less than 0.900 generally indicates that urban traffic junctions are operating within capacity, the results of the analysis show that the R153 Kentstown Road junction can operate within capacity for all assessment traffic flow scenarios. LDR6 and the junction with R153 Kentstown Road have been designed with the express purpose of providing a local distributor road servicing the Masterplan 12 lands. The above assessment results confirm that the new junction will function as designed and will satisfactorily accommodate the traffic generation arising from the proposed development and the development of the lands currently zoned in Masterplan 12.

The above analyses for 2041 set out in Table 10.23 are based upon an assumption that the LDR6 rod will have been completed and that the connection to Boyne Road will have been constructed and will be open to general traffic. At pre-planning stage Meath County Council requested that a sensitivity test be undertaken for the operation of the Kentstown Road junction on the underlying assumption that the LDR6 connection to Boyne Road is not open within the traffic analysis design horizon of 2041. The results of the sensitivity test are set out in Table 10.24. Given that an RFC value of less than 0.900 generally indicates that urban traffic junctions are operating within capacity, the results of the analysis show that the R153 Kentstown Road junction can operate within capacity subject to the sensitivity assessment traffic flow scenario.

| Assessment | Arm | Queue (Veh) | Delay | REC | Stream | Junction | | Network Residual | |
|--|-----|-----------------------|-------|------|--------|----------|-----|---------------------|--|
| Year/Scenario | | Average | (s) | | LOS | Delay | LOS | Capacity | |
| Opening Year +15 Years 2041 ¹⁸ | А | 3.0 | 10.51 | 0.45 | В | | | 34% Arm C | |
| | В | 3.2 | 12.84 | 0.56 | В | 10.2 | В | | |
| Scenario S5 AM Peak | С | 4.9 | 10.44 | 0.69 | В | 10.2 | | | |
| All Masterplan | D | 4.1 | 8.32 | 0.56 | Α | | | | |
| Opening Year +15 Years | А | 4.4 | 10.34 | 0.56 | В | 0.72 | • | 45% Arm B | |
| | В | 4.2 | 12.88 | 0.62 | В | 9.72 | A | | |

Table 10.24: Modelling Output - Kentstown Signal Junction (2041 Sensitivity Test)

¹⁸ Assessment Traffic Flows: Figure 10.31 + Figure 10.21 + Figure 10.23 + Figure 10.25

| Assessment Year/Scenario | Arm | Queue (Veh) Average | Delay (s) | RFC | Stream LOS | Junc Delay | tion | Network Residual Capacity | |
|---|-----|---------------------------|--------------|------|---------------|---------------|------|---------------------------------|--|
| 2041 ¹⁹ Scenario S5 | С | 4.0 | 7.75 | 0.58 | Α | | | RD. | |
| PM Peak All Masterplan | D | 3.3 | 8.43 | 0.51 | Α | | | 100 | |
| Arm A: Kentstown Rd (W) Arm B: LDR 6 Arm C: Kentstown Rd (E) Arm D: Metges Rd | | | | | | | | | |

Old Athlumney Road Roundabout

The Old Athlumney Road Roundabout is the next junction along LDR6 north of the R153 Kentstown Road. The results of the ARCADY modelling analyses of the junction subject to the forecast various typical weekday peak hour traffic flow scenarios are summarised in Table 10.25. The traffic flows corresponding to the various scenarios are referenced in Column 2 to Figures 10.19 and 10.26 in the case of forecast development traffic flows arising from the proposed development and from Masterplan 12 and Figures 10.27 through 10.32 for the various future network traffic flows scenarios.

| Table 10.2 | 25: Capacity | / Assessments | Old Athlumney | / Road Roundab | out |
|------------|--------------|---------------|---------------|----------------|-----|
| | | | | | |

| Year | Traffic Flow | Arm | Ratio of Flow to Capacity | | (Queuing Delay) Min/Veh | |
|-------------------|--|------------------------|------------------------------|------------|----------------------------|------------|
| | Scenario | | AM Peak | PM Peak | AM Peak | PM Peak |
| | Figure 10.19 | Old Athlumney Road (W) | 0.002 | 0.001 | 0.0(0.04) | 0.0(0.04) |
| Opening Year | Figure 10.20 | LDR6 (N) | 0.112 | 0.108 | 0.1(0.04) | 0.1(0.04) |
| 2026 S2 | + Figure 10.27 (am) | Old Athlumney Road (E) | 0.000 | 0.000 | 0.0(0.00) | 0.0(0.00) |
| | Figure 10.28 (pm) | LDR6 (S) | 0.052 | 0.138 | 0.1(0.04) | 0.2(0.04) |
| Opening | Cumulative Figure 10.21 | Old Athlumney Road (W) | 0.024 | 0.014 | 0.0(0.04) | 0.0(0.04) |
| Year+ | (Half) Fig 10.23 | LDR6 (N) | 0.140 | 0.136 | 0.2(0.04) | 0.2(0.04) |
| 2031 | (Hall) Fig 10.25 + | Old Athlumney Road (E) | 0.016 | 0.043 | 0.0(0.04) | 0.0(0.04) |
| S3 | Figure 10.29 (am) Figure 10.30 (pm) | LDR6 (S) | 0.133 | 0.149 | 0.2(0.04) | 0.2(0.04) |
| Opening | Cumulative Figure 10 21 | Old Athlumney Road (W) | 0.050 | 0.029 | 0.1(0.04) | 0.0(0.04) |
| Year+ Figure 10.2 | Figure 10.23 | LDR6 (N) | 0.288 | 0.273 | 0.4(0.05) | 0.4(0.05) |
| 2041 | + | Old Athlumney Road (E) | 0.035 | 0.094 | 0.0(0.04) | 0.1(0.05) |
| S4 | Figure 10.31 (am) Figure 10.32 (pm) | LDR6 (S) | 0.266 | 0.300 | 0.4(0.05) | 0.4(0.05) |

The Old Athlumney Road Roundabout is similarly sized to the R153 Kentstown Road roundabout but is subject to significantly less traffic flow on the entry arms accordingly the junction has significant reserve capacity. The maximum RFC value is 0.288 under the 2038 traffic flow scenario and indicates that Masterplan 12 internal roundabout junction with Old Athlumney Road can operate within capacity for all assessment traffic flow scenarios. Given the significant reserve capacity there is scope for existing users of the Old Athlumney Road currently using the junction with R153 Kentstown Road to redistribute and use LDR6 to access R153 Kentstown Road. The proportion of the total volume of arising on (returning to) Old

¹⁹ Assessment Traffic Flows: Figure 10.32 + Figure 10.21 + Figure 10.23 + Figure 10.25

Athlumney Road is not considered significant with respect to the overall operation of the LDR6 infrastructure.

LDR6 Masterplan Access Roundabout (Southern)

The Southern Masterplan 12 Access Roundabout is the next junction on LDR6 to the north of Old Athlumney Road. In the context of the development of Masterplan 12 it provides access to ands zoned for residential development on the western side of LDR6 and residential to the east of LDR6. The results of the Junctions 10 modelling analyses of the Southern Masterplan Access Roundabout subject to the forecast various typical weekday peak hour traffic flow scenarios are summarised in Table 10.26. The traffic flows corresponding to the various scenarios are referenced in Column 2 to the various network traffic flow figures.

The results of the analysis show that the maximum RFC value is 0.282 in the 2041 scenario which includes for the development of all Masterplan 12 lands. The internal roundabout junction is shown to operate within capacity for all assessment traffic flow scenarios without significant queuing or delay on the entry arms and is thus suitably sized and designed to accommodate the development of the Masterplan 12 as is the primary function of the LDR6 infrastructure.

| Year | Traffic Flow | Arm | Ratio of Flow to Capacity | | Average Queue Veh (Queuing Delay) Min/Veh | | |
|-------------------|---|---------------------|------------------------------|------------|---|------------|--|
| | Scenario | | AM Peak | PM Peak | AM Peak | PM Peak | |
| | Figure 10.19 | Residential Dev (W) | 0.046 | 0.025 | 0.0(0.04) | 0.0(0.04) | |
| Opening Year | Figure 10.20 | LDR6 (N) | 0.063 | 0.086 | 0.1(0.04) | 0.1(0.04) | |
| 2026 S2 | Figure 10.27 (am) | Business Park. (E) | 0.000 | 0.000 | 0.0(0.00) | 0.0(0.00) | |
| | Figure 10.28 (pm) | LDR6 (S) | 0.052 | 0.136 | 0.1(0.04) | 0.2(0.04) | |
| | Figure 10.21 Figure 10.23 | Residential Dev (W) | 0.100 | 0.032 | 0.1(0.04) | 0.0(0.04) | |
| Opening Year+ | (Half) | LDR6 (N) | 0.099 | 0.094 | 0.1(0.04) | 0.1(0.04) | |
| 5yrs 2031 | (Half) | Business Park. (E) | 0.023 | 0.043 | 0.0(0.04) | 0.0(0.04) | |
| S3 | + Figure 10.29 (am) Figure 10.30 (pm) | LDR6 (S) | 0.095 | 0.138 | 0.1(0.04) | 0.2(0.04) | |
| Openina | Figure 10.21 | Residential Dev (W) | 0.214 | 0.067 | 0.3(0.05) | 0.1(0.04) | |
| Year+ | Figure 10.23 Figure 10.24 | LDR6 (N) | 0.214 | 0.190 | 0.3(0.05) | 0.2(0.05) | |
| 2041 | + Figure 10.31 (am) | Business Park. (E) | 0.050 | 0.136 | 0.1(0.04) | 0.2(0.05) | |
| 54 | Figure 10.32 (pm) | LDR6 (S) | 0.192 | 0.282 | 0.2(0.04) | 0.4(0.05) | |

Table 10.26: Capacity Assessments LDR6 Southern Development Roundabout

LDR6 Development Access Roundabout (Northern)

The Northern Masterplan Access Roundabout is located to the south of the railway and provides access to the west for residential and mixed-use development, Phase 1A and the proposed Phase 1B whilst it also provides access to the east to the development proposed under Planning Reg. Ref. 22/1703 ' Boyne Village Enterprise Park'. The results of the Junctions 10 modelling analyses of the roundabout subject to the forecast various typical weekday peak hour traffic flow scenarios are summarised in Table 10.27. The traffic flows corresponding to the various scenarios are referenced in Column 2 to the various network traffic figures.

The results of the analysis show that the maximum RFC value is 0.201 in the 2041 scenario which includes for the development of all Masterplan 12 lands. The internal roundabout junction is shown to operate within capacity for all assessment traffic flow scenarios without significant queuing or delay on the entry arms and is thus suitably sized and designed to accommodate the development of the Masterplan 12 lands.

| lands | | | | | | 1 | |
|--------------------------------------|---|----------------------|------------------|------------------|-------------------------------|------------|----|
| Table 10. | 27: Capacity Asse | ssments LDR6 Norther | n Develo | opment F | Roundabo | ut | 22 |
| Year | Traffic Flow | Arm | Ratio of Capa | Flow to acity | Average Q (Queuing Min/ | P. | |
| | Scenario | | AM Peak | PM Peak | AM Peak | PM Peak | |
| | Figure 10 19 | Residential Dev (W) | 0.061 | 0.085 | 0.1(0.04) | 0.1(0.04) | |
| Opening Year 2026 S2 | Figure 10.19 Figure 10.20 + Figure 10.27 (am) Figure 10.28 (pm) | LDR6 (N) | 0.000 | 0.000 | 0.0(0.00) | 0.0(0.04) | |
| | | Business Park. (E) | 0.000 | 0.000 | 0.0(0.00) | 0.0(0.04) | |
| | | LDR6 (S) | 0.037 | 0.093 | 0.0(0.04) | 0.1(0.04) | |
| Opening | Figure 10.21 Figure 10.23 (Half) Figure 10.25 (Half) | Residential Dev (W) | 0.100 | 0.072 | 0.1(0.04) | 0.1(0.04) | |
| Year+ | | LDR6 (N) | 0.034 | 0.032 | 0.0(0.04) | 0.0(0.04) | |
| 2031 | + Figure 10 29 (am) | Business Park. (E) | 0.013 | 0.032 | 0.0(0.04) | 0.0(0.04) | |
| S3 | Figure 10.30 (pm) | LDR6 (S) | 0.065 | 0.099 | 0.1(0.04) | 0.1(0.04) | |
| Opening | Figure 10.21 | Residential Dev (W) | 0.201 | 0.146 | 0.3(0.05) | 0.2(0.04) | |
| Year+ | Figure 10.23 Figure 10.25 | LDR6 (N) | 0.072 | 0.068 | 0.1(0.04) | 0.1(0.04) | |
| 2041 | Figure 10.31 (am) Figure 10.32 (pm) | Business Park. (E) | 0.025 | 0.067 | 0.0(0.04) | 0.1(0.04) | |
| S4 | | LDR6 (S) | 0.131 | 0.201 | 0.1(0.04) | 0.3(0.05) | |

Boyne Road Signal Junction

The traffic signal stages, and phasing used in the modelling assessment of the LDR6/Boyne Road junction are shown in Figure 10.34 and Figure 10.35.

| Figure 10.35: LDR6/Bc | yne Road Junction - | Signal Phases and Stages |
|-----------------------|---------------------|---------------------------------|
|-----------------------|---------------------|---------------------------------|

| | Arn Boyne F | n A Road (E) | Arn LDI | 1 B R6 | Arm C Boyne Road (₩) | | | | |
|---------|----------------|----------------------------|------------|------------------|-------------------------|---------------|--|--|--|
| | ← | 1 | ← | \rightarrow | 1 | \rightarrow | | | |
| | Left | Ahead | Left | Right | Ahead | Right | | | |
| Phase | A | $\textcircled{\textbf{A}}$ | C | C | в | В | | | |
| Stage 1 | Green | Green | Red | Red | Red | Red | | | |
| Stage 2 | Red | Red | Green | Green | Red | Red | | | |
| Stage 3 | Red | Red | Red | Red | Green | Green | | | |
| A B C | | | | | | | | | |



The capacity of the signals system has been evaluated using Junctions 10. The model calculates capacities, queues and delays for isolated (uncoordinated), traffic signal-controlled junctions. It can evaluate a set of known signal timings, and optionally it can optimise stage lengths and/or cycle time to minimise delay. The modelling assessments assume Vehicle Actuation with a maximum available cycle time of 90 seconds and the results are summarised in Table 10.28. It is considered unlikely that the LDR6 connection the Boyne Road will be realised during the construction of the early phases of Masterplan 12 accordingly the analyses for 2026 and 2031 scenarios assume only a connection to the R153 Kentstown Road to the south. Analysis of the traffic signal junction has been undertaken only for the ultimate 2041 scenario which includes for the traffic arising from the development of all Masterplan 12 lands. Given that an RFC value of less than 0.900 generally indicates that urban traffic junctions are under capacity, the results of the analysis show that the Boyne Road junction can operate within capacity.

| Assessment | Arm | Queue (Veh) | Delay | RFC | Stream | Junction | | Network Residual | |
|--|-----|-----------------------|-------|-------|--------|----------|--------------|---------------------|--|
| Year/Scenario | | Average | (s) | N O | LOS | Delay | LOS | Capacity | |
| Opening +15yr 2041 ²⁰ | А | 0.6 | 1.30 | 0.107 | Α | | | | |
| Scenario S4 | В | 0.3 | 0.40 | 0.183 | Α | 5.40 | Α | 74% Arm B | |
| All Masterplan | С | 0.6 | 1.70 | 0.122 | Α | | | | |
| Opening +15yr 2041 ²¹ | А | 1.3 | 0.19 | 0.235 | Α | | | | |
| Scenario S4 | В | 0.5 | 0.20 | 0.240 | Α | 5.59 A | 69% Arm B | | |
| All Masterplan | С | 1.7 | 0.07 | 0.270 | Α | | | | |
| | | | | | | | | | |

| Table 10.28: Capacit | v Assessments Bo | vne Road Signal | Controlled Ju | unction 2041 |
|----------------------|------------------|------------------|----------------------|--------------|
| Table Televi Supatit | | yno noad orginar | 001111 01104 01 | |

Arm A: Boyne Rd (W) Arm B: LDR 6 Arm C: Boyne Rd (E)

²⁰ Assessment Traffic Flows: Figure 10.30 + Figure 10.23 + Figure 10.25 + Figure 10.21

²¹ Assessment Traffic Flows: Figure 10.31 + Figure 10.24 + Figure 10.26 + Figure 10.22

10.6.1.3 "Do-nothing" Scenario



The proposed development is part of the Masterplan 12 lands and LDR6 is the distributor road serving these lands. The delivery of LDR6 is funded by the Local Infrastructure Housing Activation Fund (LIHAF) and is expressly built to service the Masterplan 12 lands. In the absence of the proposed development, the operational performance of the LDR6 and interconnecting existing junctions on the surrounding road network will operate similarly and will be relatively between a scenario where Masterplan 12 is implemented either with or without the proposed development. The objective of the Masterplan Development is the delivery of a sustainable live work community model. The proposed development delivers significant elements of that community including park areas, neighbourhood centre, creche and community hall, all of which will contribute to a reduction traffic needing to use the greater road network to access such amenity and services. As part of a whole, the proposed development has the potential to make a significant contribution to the live work model and to reduce the overall impact of the Masterplan 12 lands on the receiving roads environment of Kentstown Road and Boyne Road.

The "do-nothing" scenario would mean that the significant public investment in the LIAHF road would not be optimised.

10.7 CAR PARKING

10.7.1 PARKING PROVISION PHASE 1 MASTERPLAN LANDS

Meath County Development Plan 2021-2027 Table 11.2 sets out parking standards by land use. These standards are applied at the discretion of Meath County Council having regard to the availability and adequacy of on street parking, existing or future off=street parking to serve the development and the status of the development within the town and the status of the town within the settlement structure of Meath. Non-residential parking standards are "maxima". Parking facilities for mobility impaired drivers are required at the rate of 2 per 100 spaces where spaces shall be proximate to the building entry points. Section 4.22 of the Department of Housing, planning and Local Government (DHPLG) "Sustainable Urban Housing: Design Standards for New Apartments" provides guidance relevant to parking provision for new apartments. The car parking requirement relating to the Phase 1 Masterplan (combined Phase 1A and Phase 1B) with regard to the above schedules and guidance on car parking requirements are outlined in Table 10.29.

| | | Standards | | No. | Requirement | | | |
|--------|-------------|-------------------------------|------------------------|-------------------------|-------------|-----------|-------------------------------------|--|
| U | nit Type | Meath CDP | DHPLG | GFA | Me CI | ath)P | DHPLG | |
| ents | 1-bed | 2/unit | | 47 | 94 | | 107 Resident 27-36 Visitor | |
| artme | 2-bed | 2/unit | 1/unit + | 60 | 120 | 214 | | |
| Apa | 3-bed | 2/unit | 1 visitor space per | Nil | 0 | | | |
| olex | 2-bed | 2/unit | 3-4 units | 30 | 60 | 100 | 60 Resident | |
| Ind | 3-bed | 2/unit | | 30 | 60 | 120 | Visitor | |
| Ises | 3-bed | 2/unit | NIA | 217 | 434 | 506 | | |
| Нос | 4-bed | 2/unit | NA | 36 | 72 | 500 | NA | |
| Creche | | 1/employee + 1/ 5 children | NA | 10 Staff + 105 Child | 31 | 31 | NA | |
| And | chor Retail | 1/20 sq.m | NA | 1,367m ² | 68 | 68 | NA | |

Table 10.29: Relevant Car Parking Standard and Guidance – Phase 1 Masterplan

| | Standards | | No. | Requirement | | | |
|------------------|--------------|-------|---------------------|-------------|-----------|-------|---|
| Unit Type | Meath CDP | DHPLG | Units GFA | Me CI | ath DP | CHPLG | |
| Takeaway | 1/5 sq.m | NA | 82m ² | 5 | 5 | NA) | |
| Pharmacy | 1/20 sq.m | NA | 88m ² | 4 | 4 | NA | |
| Café | 1/5 sq.m | NA | 233m ² | 25 | 25 | NA | 2 |
| GP Surgery | 2 per room | NA | 293m ² | 8 | 8 | NA | |
| Community Centre | 1/5 sq.m | NA | 1,798m ² | 360 | 360 | NA | |

Table 10.30 sets out the parking standard requirement and parking provision associated with the Phase 1B neighbourhood centre development to the north of the Phase 1B mixed-use development which includes for the construction of a retail and residential uses and makes provision for future community uses.

| Unit Type | | Standards | | No. | | Require | Densities | | |
|------------|-----------------|--------------|------------------------|---------------------|--------------|---------|-------------------|----------------|--|
| | | Meath CDP | DHPLG | Units GFA | Meath CDP | | DHPLG | Provided | |
| ents | 1-bed | 2/unit | 1/unit + | 23 46 | | | 60 | 60 | |
| artme | 2-bed | 2/unit | 1 visitor space per | 37 | 74 | 120 | Resident 15-20 | Resident 15 | |
| Apa | 3-bed | 2/unit | 3-4 units | Nil | 0 | | Visitor | Visitor | |
| | Anchor Retail | 1/20 sq.m | NA | 1,367m ² | 68 | NA | | | |
| | Takeaway | *1/5 sq.m | NA | 82m ² | 5 | | NA | | |
| | Pharmacy | 1/20 sq.m | NA | 88m ² | 4 | 110 | NA | 116 | |
| Café | | 1/5 sq.m | NA | 233m ² | 25 | | NA | 116 | |
| GP Surgery | | 2 per room | NA | 293m ² | 8 | | NA | | |
| Co | ommunity Centre | 1/5 sq.m | NA | 1,798m ² | 360 | 360 | NA | | |

 Table 10.30: Parking Provision at Neighbourhood Centre

Parking for the residential units in Block 3 and Block 4 in the neighbourhood centre will be provided at surface level. The Phase 1B layout is shown on Trafficwise Drawing No. TWL/30104/P1B/06A and includes for the provision of 75 car parking spaces at surface level. This area of parking is part undercroft to the apartment building (Block 4) to the north-west of the Neighbourhood Centre. These car parking spaces will be for use of residents only. A servicing area for the anchor retail unit is located on the same side of the building.

Parking for the retail element of the neighbourhood centre is provided at surface level. The car parking layout is shown on Trafficwise Drawing No. TWL/30104/P1B/06A. In total Phase 1B provides 116 no. parking spaces for non-residential uses. The main parking area is located to the front of the anchor retail unit, further parking is provided along the western side of the building outside the smaller retail units and will be dedicated to serving the Phase 1B GP Surgery on the western side of the anchor unit. Given the type of store in the Neighbourhood Centre it is not anticipated that there would be significant cross-visitation between the various retail uses save for between the store and the café. The development of the Phase 1A and Phase 1B and Masterplan 12 lands is centred on creating a sustainable community in which to work and reside. The community hall is a local amenity serving the needs of the local community. It is highly unlikely that the community hall would give rise to significant traffic generation, and this was

confirmed by Meath County Council Transportation Section at the per-planning stages. The peak times of use at the community hall and the retail units are not likely to coincide so the parking demand arising at the community hall is considered to be satisfied by the provision of 116no. car parking spaces in the Neighbourhood Centre car park. Table 10.25 below sets out the parking standard requirement and parking provision associated with the residential development of Phase 1 masterplan (combined Phase 1A and Phase 1B) excluding the neighbourhood centre. The Phase 1 masterplan includes for the construction of residential units and a creche and incorporates the current proposed Phase 1B.

| | Unit Type | | Standards | | R | Requirer | | | |
|-----------|-----------|----------------------------------|-----------|----------------|--------------|------------|---------------------------------|----------------|--|
| Unit Type | | Meath CDP | DHPLG | Units | Meath CDP | | DHPLG | Provided | |
| ents | 1-bed | 2/unit | | 24 | 48 | | 47 | 47 | |
| artme | 2-bed | 2/unit 1/unit + 23 46 | 94 | Resi. 12-16 | Resident | | | | |
| Apa | 3-bed | 2/unit | 1 visitor | Nil | 0 | | Visitor | Visitor | |
| lex | 2-bed | 2/unit | 3-4 units | 30 | 60 | | 60 Resi. 15-20 Visitor | 60 Resident | |
| Dup | 3-bed | 2/unit | | 30 | 60 | 120 | | 20 Visitor | |
| | Creche | 1/employee + 1/ 5 children | NA | 105 Child | 10 Staff | 21 Drop | NA | 9 + 5 | |
| S | 2-bed | 2/unit | | Nil | 0 | | NA | | |
| ouse | 3-bed | 2/unit | NA | 217 | 434 | 506 | | 504 | |
| Т | 4-bed | 2/unit | | 36 | 72 | | | | |

Table 10.31: Parking Provision at Residential – Combined Phase 1A plus Phase 1B

Parking provision for houses includes two parking spaces in each case as per the standard set out in the county development plan. This is with the exception of the parking associated with the 6 no. units 85-90 for which a total of 10 no. spaces is provided in a courtyard arrangement.

Parking for the creche is provided on the basis that it will be attended by or will accommodate up to 105 children. The creche requires 1 space per employee. The number of employees varies depending upon the ages of the children catered for and whether the child is in all-day or sessional care. From discussions with operators of a similar type of facility it is expected that there would be approximately 9 no. full-time and 3 no. part-time childcare practitioners together with a manager and a cook. Cleaning staff would not be present during opening hours. If all staff were to travel by car there would be a demand for 11-12 staff parking spaces. On this basis 8 no. staff spaces are considered satisfactory. Trafficwise Drawing No. TWL/30104/P1B/06A shows 9 no. car parking spaces serving creche staff and these are located with the circulation island of parking and are numbered 6 -14. The development plan standard also requires the provision of a dedicated set-down area with the standard requirement set at 1 space for every 5 children. This equates to a set-down area of 21 no. spaces. An underlying objective of Phase 1 Masterplan and Masterplan 12 is to create a model live and work community where the demand to travel and car dependency are low. On the basis that the Phase 1 Masterplan creche serves the local community and given the concentration of units proximate to the creche site (including neighbourhood centre) it is considered highly likely that a significant proportion of creche users will arrive on foot. In this context the proposed Phase 1B development includes for the provision of a dedicated set-down area for 5 no. vehicles adjacent to the creche. The provision of a total of 5 no. set-down spaces and 9 car parking spaces (which can be used for set-down where not used by staff) is considered satisfactory to serve the proposed creche. Should it be the case that the demand for creche set-down is greater than anticipated, spaces numbered 1 – 7 to the south of the community centre have been earmarked as suitable to reserve for creche staff during creche operating hours. The county development plan standard for the Phase 1 Masterplan

apartments and duplex units is 214 no. car parking spaces. The Department of Housing, planning and Local Government (DHPLG) "Sustainable Urban Housing: Design Standards for New Apartments" suggests a provision of 134 no. spaces (107 no. for residents and 27 -36 no. for visitors). The guiding principle for infrastructure delivery is to ensure the delivery of sustainable living and working communities with an emphasis on the provision of the necessary infrastructure in tandem with the delivery of residential units. On the basis that Phase 1 Masterplan and Masterplan 12 envisage a community that will include for both living and working with a reduced need to travel so a total of 144 no. parking spaces are allocated to serve the apartments and duplex units. This provision is modestly above that set out in the Sustainable Urban Housing: Design Standards for New Apartments as summarised in Table 10.31.

10.7.2 DISABLED CAR PARKING

Meath County Development Plan 20121-2027 states that parking facilities for mobility impaired drivers and their vehicles are required to be provided at the general rate of 5 per 100 spaces and such spaces shall be proximate to the entry points of the proposed buildings they serve. Trafficwise Drawing No. TWL/30104/PL/06A shows spaces provided near the entrance points to the apartments, the retail units and community centre.

10.7.2.1 Cycle Parking Standards

Meath County Development Plan 2021-2027, Section 11.9.3 states that the council will require cycle parking to be provided with new developments. Relevant development plan objectives are set out below:

- Objective DM OBJ 96: 'To require the provision of cycle parking facilities in accordance with the Design Standards for New Apartments (March 2018) and Table 11.4 Cycle Parking Standards.'
- Objective DM OBJ 97: 'Cycle parking facilities shall be conveniently located, secure, easy to use, adequately lit and well sign posted. All long-term (more than three hours) cycle racks shall be protected from the weather.'
- Objective DM OBJ 98: 'To establish and implement Cycle Parking Standards for new developments in the County.'
- Objective DM OBJ 99: 'In residential developments without private gardens or wholly dependent on balconies for private open space, covered secure bicycle stands should be provided in private communal areas.'
- Objective DM OBJ 100: 'All cycle facilities in multi-storey car parks shall be at ground floor level and segregated from vehicle traffic. Cyclists shall also have designated entry and exit routes at car parks.'

In general bicycle parking facilities are generally expected to be within 25 metres of a destination for shortterm parking (shops) and 50 metres for long term parking (school, college, and office). Cycle parking facilities shall therefore be conveniently located, secure, easy to use, adequately lit and well posted. Weather protected facilities are typically considered where appropriate. In addition, short-term bicycle parking should be placed within a populated, well-supervised area, and monitored by CCTV where possible.

Section 4.15 - 4.17 of the Department of Housing, Planning and Local Government (DHPLG) 'Sustainable Urban Housing: Design Standards for New Apartments' relates to cycle parking provision at apartment developments. The document outlines that an important context for the guidelines is a forecast likely significant population increase in cities and urban areas over the next two decades and highlights that the guidelines aim to secure wider Government policy to achieve more sustainable urban development that will enable more households to live closer to their places of work without the need for long commuter journeys and disruption of personal and family time. Enabling citizens to more easily get around our cities and urban areas is a fundamental planning concern and maximising accessibility of apartment residents to public transport and other sustainable transport modes is a central theme of the guidelines. The

guidelines recommend generally a minimum standard of 1 no. cycle storage space per bedroom (apartments) together with visitor parking at a rate of one space for every two residential units.

Phase 1 masterplan residential apartments (combined Phase 1A and Phase 1B) are provided in 4 no. blocks generally along the LDR6 boundary of the masterplan development site with Block 1 to the south of the Phase 1A development close to the southern LDR6 roundabout, Phase 1B Block 2 incorporates a creche and is located at the northwest corner of the residential development, Phase 1B Block 3 is above the retail element of the neighbourhood centre and Phase 1B Block 4 is located to the northwest of the Block 3. The following Table 10.32 summarises the number of units and number of beds in each of the Phase 1 masterplan apartment blocks together with the DHPLG bicycle parking standards for new apartments.

| Location | | Units | | Requ | uired | Provided | | |
|------------------|---------|---------|---------|---------------------|---------------------|---------------------|---------------------|--|
| | | I - bed | 2 - bed | Internal Storage | External Visitor | Internal Storage | External Visitor | |
| S | Block 1 | 12 | 11 | 34 | 12 | 34 | 12 | |
| nent | Block 2 | 12 | 12 | 36 12 | | 36 | 12 | |
| partr | Block 3 | 14 | 22 | 58 18 | | 58 | 20 | |
| ∢ | Block 4 | 9 | 15 | 39 12 | | 39 | 12 | |
| Creche | | NA | NA | 1/3 No. Car Parking | | 0 | 10 | |
| Retail/Community | | NA | NA | Spa | ices | 0 | 54 | |

| Table 10 |).32: Bic | vcle Parkin | a Provision |
|----------|-----------|-------------|---------------------|
| 1001010 | 1021 DIG | , | 9 1 1 0 1 0 0 0 0 1 |

The Phase 1 masterplan neighbourhood centre in Phase 1B includes for a total of 54 no. bicycle parking spaces and these are shown along the plaza area stretching between the community centre and along the southern facades of the retail units as shown on Trafficwise Drawing No. TWL/30104/PL/06A. Phase 1B provides cycle parking for 10 no. bicycles outside the creche at Block 2.

The Phase 1 Masterplan neighbourhood centre in Phase 1B includes for a total of 54 no. bicycle parking spaces and these are shown along the plaza area stretching between the community centre and along the southern facades of the retail units as shown on Trafficwise Drawing No. TWL/30104/PL/06A. Phase 1B provides cycle parking for 25 no. bicycles outside the creche at Block 2. The Phase 1 Masterplan apartment blocks (combined Phase 1A and Phase 1B) include for a total of 223 no. cycle parking/storage spaces including 167 no. resident indoor cycle storage spaces and 56 no. visitor spaces. All short stay visitor spaces are located adjacent to the main entrances to the apartment blocks as shown on Trafficwise Drawing No. TWL/30104/P1B/06A. In total 167 no. secure long stay cycle storage spaces are sown within the buildings of Block 1, Block 2, Block 3 and Block 4 and these are accessed from directly from within the buildings. The residents cycle parking facilities within the buildings are lockable compounds for long term bike parking with smart card or proximity key control. Cycle stands/racks are shown to be provided within the compounds for added security.

Under the provisions of Phase 1 Masterplan signage will be provided to help people find/identify visitor cycle parking at each of the residential destinations. The location of cycle parking for Phase 1 Masterplan is considered to accord with the Meath County Council Developments Plan Standards whilst the number of spaces accords with Section 4.15 - 4.17 of the Department of Housing, planning and Local Government (DHPLG) 'Sustainable Urban Housing: Design Standards for New Apartments' in accordance with Meath County Development Plan 2021-2027 Objective DM OBJ 96. The DHPLG standards generally require minimum standard of 1 no. cycle storage space per bedroom (apartments) together with visitor parking at a rate of one space for every two residential units. This standard accordingly requires 167 no. secure cycle storage spaces together with 54 no. visitor spaces to serve both Phase 1A and Phase 1B. The Phase 1 Masterplan cycle parking provision includes 167 no. secure bicycle storage spaces within the

buildings and 56 no. short term visitor spaces and thus accords with the DHPLG standard and the requirements of the county development plan.

10.7.2.2 Parking Provision Proposed Phase 1B.

The current proposed development is for Phase 1B of the Phase 1 Masterplan. The proposed Phase 1B development includes the following:

- the construction of a total of 322 residential units consisting of 213 houses, 26 duplex units and 84 apartment units as follows:
- o 177 no. 3-bed houses and 35 no. 4-bed houses
- o 13 no. 2-bed duplex units and 13 no. 3-bed duplex units
- o 35 no. 1-bed apartments and 49 no. 2-bed apartments
- provision of a crèche with a floor area 512m²
- Neighbourhood Centre with floor area 2,002m² consisting of the following:
- Anchor Retail Unit 1,000m2 + 255m² (Storage) + 112m² Staff Area/Office
- Take Away 82m^{2.}
- Pharmacy 88m²
- Café 210m²
- GP Surgery 232m²
- Community Centre 1,778m²

Table 10.33 sets out the parking standard requirement and parking provision associated with the Phase 1B neighbourhood centre development to the north of the Phase 1B mixed-use development which includes for the construction of a retail and residential uses and makes provision for future community uses.

| Unit Type | | Standards | | No. | | Require | ement | Descile | | |
|------------|--------------|--------------|------------------------|---------------------|----------|-----------|--------------|-------------------|----------------|--|
| | | Meath CDP | DHPLG | Units GFA | Me CI | ath DP | DHPLG | Provided | | |
| ents | 1-bed | 2/unit | 1/unit + | 23 46 | | 60 | 60 | | | |
| Irtme | 2-bed | 2/unit | 1 visitor space per | 37 | 74 | 120 | 120 Resident | Resident 15-20 | Resident 15 | |
| Apa | 3-bed | 2/unit | 3-4 units | Nil | 0 | | Visitor | Visitor | | |
| Anch | nor Retail | 1/20 sq.m | NA | 1,367m ² | 68 | | NA | | | |
| Tal | keaway | *1/5 sq.m | NA | 82m ² | 5 | | NA | | | |
| Ph | armacy | 1/20 sq.m | NA | 88m ² | 4 | 110 | NA | | | |
| Café | | 1/5 sq.m | NA | 233m ² | 25 | | NA | 110 | | |
| GP Surgery | | 2 per room | NA | 293m ² | 8 | | NA | | | |
| Commu | unity Centre | 1/5 sq.m | NA | 1,798m ² | 360 | 360 | NA | | | |

Table 10.33: Parking Provision at Phase 1B Neighbourhood Centre

Table 10.34 below sets out the parking standard requirement and parking provision associated with the residential development of Phase 1B excluding the neighbourhood centre.

| Unit Type | | Standards | | No. | Requirement | | | 'ECC | |
|-----------|-------|-------------------------------|--|--------------|--------------|------------|--|--------------------------------|----|
| | | Meath CDP | DHPLG | Units | Meath CDP | | DHPLG | Provided | |
| ents | 1-bed | 2/unit | | 12 | 24 | 48 | 24 Resi. 6-8 Visitor 26 Resi. 6-9 Visitor | 24 Resident 8 | |
| Apartme | 2-bed | 2/unit | 1/unit + | 12 | 24 | | | | 20 |
| | 3-bed | 2/unit | 1 visitor space per 3-4 units | Nil | 0 | | | Visitor | 5 |
| Duplex | 2-bed | 2/unit | | 13 | 26 | 52 | | 26 Resident 8 Visitor | |
| | 3-bed | 2/unit | | 13 | 26 | | | | |
| Creche | | 1/employee + 1/ 5 children | NA | 105 Child | 10 Staff | 21 Drop | NA | 14 (9 + 5) | |
| ouses | 2-bed | 2/unit | NA | Nil | 0 | | | | |
| | 3-bed | 2/unit | | A 177 | 354 | 424 | NA | 422 | |
| T | 4-bed | 2/unit | | 35 | 70 | | | | |

| Table 10.34: Parkin | g Provision at Phase 1 | B Residential Excl. Nei | ghbourhood Centre |
|---------------------|------------------------|--------------------------------|-------------------|
|---------------------|------------------------|--------------------------------|-------------------|

Parking provision for houses includes two in-curtilage parking spaces in the case of all houses fronting onto streets. Duplex units are provided with dedicated on-street parking perpendicular to the street as exampled below. The duplex units to the north of the central park area share a parking scheme generally serving the duplex units, creche and Block 2. Trafficwise Drawing No. TWL/30104/P1B/06A provides a schedule of parking and shows the allocation of parking as it relates to the Phase 1B proposed development.

The county development plan standard for the Phase 1B apartments and duplex units is 120 no car parking spaces at the Neighbourhood Centre serving Block 2 and Block 4 together with 100 no. car parking spaces to serve Block 3 and the nearby proposed duplex units. The Department of Housing, planning and Local Government (DHPLG) 'Sustainable Urban Housing: Design Standards for New Apartments' suggests a total provision of between 137 no. and 147 no. spaces (110 no. for residents and 27 no. to 37 no. for visitors). The guiding principle for infrastructure delivery is to ensure the delivery of sustainable living and working communities with an emphasis on the provision of the necessary infrastructure in tandem with the delivery of residential units. On the basis that Phase 1 Masterplan and Masterplan 12 envisage a community that will include for both living and working with a reduced need to travel a total of 114 no. car parking spaces are provided with 66 no. parking spaces allocated to serve the standalone apartments and duplex units and 75 no. car parking spaces to serve those residential units located in Blocks 3 and 4 at and close to the neighbourhood centre. The proposed parking provision accords with the Sustainable Urban Housing: Design Standards for New Apartments as set out in Table 10.33 and Table 10.34.

10.7.2.3 Disabled Car Parking

Meath County Development Plan 2013-2019 states that parking facilities for mobility impaired drivers and their vehicles are required to be provided at the general rate of 5 per 100 spaces and such spaces shall be proximate to the entry points of the proposed buildings they serve. Trafficwise Drawing No. TWL/30104/P1B/06A shows spaces provided near the entrance points to the retail units and the apartment buildings that comprise Phase 1B.

10.7.2.4 Cycle Parking Standards

The proposed Phase 1B development includes apartments at Block 2, Block 3 and Block 4. The following Table 10.35 summarises the number of units and number of beds in the proposed Phase 1B apartment block together with the DHPLG bicycle parking standards for new apartments.

 \mathcal{P}_{\star}

| Table 10.35: Bicycle Parking Provision – Phase 1B | | | | | | | | |
|---|---------|---------|---------|---------------------|---------------------|---------------------|--------------------|-----|
| Location | | Units | | Required | | Provided | | |
| | | I - bed | 2 - bed | Internal Storage | External Visitor | Internal Storage | External Visito | |
| ents | Block 2 | 12 | 12 | 36 | 12 | 36 | 12 0 | 2 |
| Apartme | Block 3 | 14 | 22 | 58 | 18 | 58 | 20 | 20- |
| | Block 4 | 9 | 15 | 39 | 12 | 40 | 12 | |
| Creche | | NA | NA | 1/3 No. Car Parking | | 0 | 10 | |
| Retail/Community | | NA | NA | Spaces | | 0 | 54 | |
| Total | | NA | NA | NA | | 134 | 108 | |

The proposed Phase 1B apartment blocks include for a total of 178 no. cycle parking/storage spaces including 133 no. resident cycle storage spaces and 44 no. visitor spaces. The short stay visitor spaces are located adjacent to the main entrances to the apartment blocks as shown on Trafficwise Drawing No. TWL/30104/P1B/06A. The residents cycle parking facility within the buildings are lockable compounds for long term bike parking with smart card or proximity key control. Cycle stands/racks are shown to be provided within the compound for added security.

10.8 **REMEDIAL OR REDUCTIVE MEASURES**

10.8.1 CONSTRUCTION PHASE

As part of the Safety Health & Welfare assessment of the construction stage of the project. Albert Developments Limited, Balmoral, Navan, Co. Meath, and the appointed contractor will develop a sitespecific construction traffic management plan which will seek to (insofar as practicable) segregate resident and construction traffic routes, both pedestrian and vehicular. Details of the signing layout regimen will be provided in the detailed Construction Traffic Management Plan which is to be agreed with the Planning Authority prior to work commencing on the site. A condition of planning is respectfully invited with regard to the preparation of the detailed Construction Traffic Management Plan. The Construction Management Plan will include the mitigation contained in this EIAR including the Outline CEMP contained in Appendix D Volume III of this EIAR.

The Construction Management Plan incorporates a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed developments on-site construction activities. Construction Management Plans are typically prepared for developments generating significant construction activity. The management plan should contain measures to mitigate the effects of construction addressing issues such as traffic management, hours of working, delivery times and methods of prevention of noise and dust, reinstatement of damaged roadways, footways and grass verges, and the accommodation of construction and staff parking within the development during the construction period.

The construction works associated with the proposed development will involve normal construction activities such as excavation, filling, lifting, pumping, pipe laying, concrete works, mechanical installation etc.

A detailed Construction Management Plan will be drawn up prior to the commencement of construction activities (typically prepared together with programme of works upon appointment of contractor), in order to minimize the impacts to the environment during construction.

The Construction Management Plan will detail the allowable working day, construction traffic, parking arrangements and will incorporate environmental protection measures. Provisions to reduce the environmental impact and to minimise disruption to the surrounding environment arising from construction activities will include the following:

- Parking for all construction staff will be provided on site.
- Requiring contractors to ensure that no pollution or obstruction of ground water and watercourses is caused by their operations.
- Requiring contractors to comply at a minimum with the provisions of BS 5228 (Noise Control on Construction and Demolition Sites) or other noise control measures prescribed by the Planning Authority.
- Where necessary, require contractors to erect suitable noise barriers to minimize disturbance and avoid nuisance when operating machines at night (between 1900 hours and 0800 hours).
- Limiting vibration caused by construction plant to the maximum permitted values in BS6472 (Guide to evaluation of human exposure to vibration in buildings (1Hz to 80Hz) or other control measures prescribed by the Planning Authority.
- Requiring contractors to take reasonable precautions to ensure that all wastewater discharged shall not be harmful to or cause obstruction or deposit in drains and to prevent oil, grease or other objectionable matter being discharged into drains.
- Requiring contractors, during the execution of works, to keep all plant and materials and all equipment connected with the construction of the works in good order and clean and tidy.
- Requiring contractors to remove any waste materials from the site to a licensed waste facility.
- Requiring contractors to ensure that the public roads in the vicinity of the site are maintained free from all mud, dirt and rubbish, which may arise from or by reason of the execution of the works. To facilitate this, the Contractor could be required to provide a wheel washing facility to an approved standard within the construction site.
- Prohibiting the disposal of excess concrete on any part of the construction site.
- Requiring the contractor to provide a designated bin for washing down the chutes of concrete lorries on site.
- Requiring the contractors to keep the construction compounds free and clear of excess dirt, rubbish piles and scrap wood etc. at all times. Requiring the contractors to keep the designated parking area and other common areas clear and free of rubbish and debris.
- Requiring contractors to be responsible for the disposal of all wood, food, food packaging and paper generated during the construction phase and requiring them to furnish containers and vehicles to collect and haul these items and dispose of them to a licensed waste facility. Dumping of these items within the construction site will be prohibited.
- Requiring scrap materials, rubbish, etc. to be hauled out of the work areas (daily) and disposed of by the Contractor on a daily basis to a licensed waste disposal facility.
- Requiring the contractor to obtain any necessary permits from the Local Authority or Environmental Protection Agency for the disposal of waste.
- At the completion of the work, require contractors to leave the construction area in a neat, clean and orderly condition.
- Requiring individual contractors to provide sanitary facilities that would be adequate for their construction personnel. Sanitary facilities should include proper wash down WCs with sewer connections, or if this is impractical, chemical closets.
- Requiring that all temporary buildings associated with construction of the development comply with the Safety, Health and Welfare Regulations. On completion of the works, contractors should remove them entirely with all slab, drains and water mains and restore the surface of the land to its original condition or other reasonable conditions.

In addition, any excavated material generated during the construction of the plant will be reused on site, where appropriate. Parking facilities for construction vehicles and private transportation will be located within the development site. Temporary site fencing will be erected and maintained to secure the site during the construction phase.

10.8.2 OPERATIONAL PHASE



The objective of the Masterplan Development is the delivery of a sustainable live work community model. The proposed development delivers significant elements of that community including park areas, neighbourhood centre, creche and community hall, all of which will contribute to a reduction traffic needing to use the greater road network to access such amenity and services. As part of a whole, the proposed development has the potential to make a significant contribution to the live work model and to reduce the overall impact of the Masterplan 12 lands on the receiving roads environment of Kentstown Road and Boyne Road.

The proposed development incorporates a significant number of interconnected walking and cycling routes for commuting, circulating within the development and leisure. Internal routes connect to local amenities and the neighbourhood centre and to surrounding developments and the greater travel network of Navan town. These facilities will provide attractive and safe routes for residents which will encourage residents and visitors to travel by more sustainable modes.

A Mobility Management Plan (MMP) has been prepared and will be implemented for all residents and particularly the residents of the apartment units. Notwithstanding that the commercial elements of the development are part of the overall Masterplan 12 live work sustainable community model and are expressly provided to reduce the need to travel by car the principles of the MMP will extend to staff associated with the operation of the commercial elements albeit that the majority of staff is expected to be living in the local community. In co-ordination with the objectives of the sustainable community model the MMP ultimately seeks to encourage sustainable travel practices for all journeys to and from the proposed development.

10.9 PREDICTED IMPACT OF THE PROPOSAL

When considering a development of this nature, the potential traffic impact on the surrounding area is considered for each of two stages; the construction phase and operational phase. These two distinct stages are considered separately within this section.

10.9.1 CONSTRUCTION PHASE

Market forces have a large part to play in the rate of delivery of residential schemes in particular and the industry can in some respect be market led. At this stage it is expected that the proposed residential dwellings will be constructed at a rate of 100 houses per year. Apartment and duplex units will be constructed at a relatively similar rate. It is envisaged that the full scheme will be completed within 5 years of commencement.

All construction activities will be controlled by the Construction Traffic Management Plan (CTMP) that will be agreed with the local authority prior to commencement of construction on site. A Construction and Environmental Management Plan has been prepared by Byrne Environmental and accompanies this application. As set out in brief in 10.7.1 above, a detailed CMP will be agreed with the Planning Authority prior to commencement and will include operating constraints and controls and will include hours of construction and construction activities, traffic management and haul route management, traffic associated with waste management, noise and vibration arising from construction vehicles and activities together with other construction related matters.

Depending upon the stage of construction, what elements are being constructed and the time of year the number of site staff will fluctuate over the construction period of the scheme. Based upon projects of a similar size and composition a development of this type and scale is expected to require approximately 80 – 120 staff on site at any one time. Given the traditional construction start and finish time, construction staff is generally not travelling during the traditional morning and evening commuter peak hours. It is considered unlikely that the proposed development would generate more than 20 to 40 two -way vehicle

trips during either the morning or evening peak hours and the impact on the operation of the greater travel network serving Navan will not likely be significant. Save for periods of more intensive activity like concrete pours the vast majority of material deliveries to the site will occur at a relatively steady rate during the course of the day. The number of deliveries per day depends on the stage of construction and time of year and cannot be accurately estimated until such time as a contractor puts together a detailed construction works programme. Based upon built schemes it is conservatively estimated that the site may generate 2-4 deliveries per hour. It is likely that there would be a concentration of deliveries in the morning and early afternoon with a drop off in the late afternoon. It is not expected that the total number of deliveries would exceed 50 vehicles per day.

The impact of construction traffic on the capacity and operation of the surrounding receiving road network and that network serving Navan town is not considered likely to be significant. Impact from construction related traffic is generally low. The contractors CEMP will include clearly defined haul route and routes that shall not be used in connection with construction traffic. In general the prescribed haul routes will include the R153 Kentstown Road for vehicles from the north of Navan (thus avoiding Navan centre), traffic from the south and west will use eastern distributor link from R147 Dublin Road along Metges Road and LDR6 or alternatively Bothar Sion might be used to connect R147 and Metges Road as part of the haul route. Haul routes will be agreed a part of the contractors CEMP.

10.9.2 OPERATIONAL PHASE

The composition of the receiving road network and the travel network provision available to the proposed development are set out in Section 10.4 'Receiving Environment' and Section 10.4.7 provides the baseline traffic flow data on the receiving road identified by Meath County Council as within the appropriate scope of the traffic assessments. Section 10.5.3 sets out the principles and methodology of forecasting the traffic generation of the proposed development and the cumulative traffic generation arising from the development of the Masterplan 12 lands. These assessments do not make specific discounts to traffic forecasts based upon the aspiration of the Masterplan for a sustainable live work community. For the purposes of traffic capacity assessments the proposed development and the development of Masterplan 12 are assumed to be traditional, and the traffic forecasts use the database method and are based upon survey of existing sites. With the aid of industry standard capacity assessment software Section 10.6 examines the impact of the proposed development and cumulative impact of Masterplan 12 on the operation of the LDR6 and connected infrastructure at Boyne Road, Old Athlumney Road and Kentstown Road. Future network assessments also account for network traffic growth on the receiving local and regional road network at the central rates published by Transport Infrastructure Ireland. These growth forecasts of network traffic generally corresponding to economic growth and account for general development traffic and thus contribute to a robust cumulative impact assessment.

The proposed development connects directly to LDR6 which is built expressly for the purposes of accommodating the traffic arising from the proposed development and the development of Masterplan 12. The capacity assessments of Section 10.6 show that the connecting roundabouts on LDR6 will operate well within capacity when subject to traffic arising from the proposed development. The roundabouts are shown to operate satisfactorily when the Masterplan 12 lands are fully developed.

There are two principal connections to LDR6; the Boyne Road to the north and the Kentstown Road to the south, both of which are proposed to be signal controlled junctions. The capacity of both junctions was analysed as standalone junctions using standard modelling software. The model was developed for the 'Do Something' scenario for both junctions to determine the level of capacity available in various future scenarios. A 'Do Nothing' scenario was not tested for these junctions as construction of LDR6 is incomplete and in any case even when LDR6 is constructed in 2021 there will be no generator of traffic on this distributor road until Masterplan 12 developments are permitted and constructed. The results of the traffic modelling analysis undertaken for the key internal junctions and the signal junction on the Boyne Road and Kentstown Road show that all junctions will operate well within capacity for the morning and evening peak hours for all scenario years assessed with no significant queueing or delay.

10.10 MONITORING

10.10 MONITORING 10.10 MONITO Management Plan will be monitored over the course of the Construction Period.

10.10.2 OPERATIONAL PHASE

The implementation and performance of mobility management planning initiatives including any ongoing revisions or new initiatives will be monitored and evaluated throughout the Operational Phase. As part of the MMP process, post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

10.11 REINSTATEMENT

Not applicable in respect of traffic and transport.

10.12 POTENTIAL CUMULATIVE IMPACTS

Potential cumulative impacts have been assessed in relation to existing and permitted transportation schemes.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) - 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

The traffic modelling undertaken includes growth in background traffic flows which accounts for other developments in the area. The proposed development is part of the overall Masterplan 12 lands, and the assessments include for the cumulative impact arising from the future development of all Masterplan 12 lands. Any future developments outside of the assessment scope in the vicinity of the subject site and not specifically included in this assessment will be required to similarly be subject of transport assessments to assess the potential cumulative impacts to the transport network.

10.13 INTERACTIONS

The projected increase in vehicle traffic during the operational stage may lead to a slight increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures described in the Noise and Air Quality Section of this Environmental Impact Assessment Report will prevent and minimize the potential impacts of this interaction.

The Air Quality and Climate Chapter of this EIAR states that the impact of the proposed development on air quality and climate is considered Long-term and imperceptible for the Operational Stage of the proposed development.

The design team has been in regular contact with each other throughout the design process to minimise environmental impacts and to ensure a sustainable and integrated approach to the design of the proposed development.

There is the interaction between Land and Soils Chapter where the import and export of construction materials is considered. The associated construction traffic has been considered in the construction stage impacts and Construction Management Plan included with the application.

There is a potential for short-term or temporary negative impacts to human health during the Construction Phase due principally to noise, dust, air quality and visual impacts and these are examined in the various Chapters of this EIAR. The impacts arising from traffic generation during the Construction Phase would also be short-term and temporary and are not likely to be significant and will be appropriately mitigated.

10.14 RISKS TO HUMAN HEALTH

During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant, or adverse effects to the existing public road network. The vast majority of the works are away from the public road in a controlled environment. Measures will be put in place to reduce the risk of road traffic accidents during the construction phase. Furthermore, it is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used and no unusual substance or underground tunnelling works required or predicted.

10.14.1 CONSTRUCTION STAGE

A number of temporary risks to human health may occur during construction phase related to noise, dust, air quality and visual impacts which are addressed in other sections of this EIAR. Traffic impacts are considered to be negligible due to the implementation of mitigation measures identified.

10.14.2 OPERATIONAL STAGE

The proposed development will give rise to a slight increase in traffic on the local road network.

10.15 'DO-NOTHING' IMPACT

In the absence of the proposed development, the capacity and performance of the existing junctions along LDR6 and connecting to the greater road network on the receiving road network will be impacted by the traffic generation arising from the development of Masterplan 12 and by the forecast network traffic growth generally corresponding to economic growth.

10.16 DIFFICULTIES ENCOUNTERED IN COMPILING THE CHAPTER

No difficulties were encountered in completing this section.

10.17 REFERENCES

- Transport Infrastructure Ireland PE-PDV-02045 'Traffic and Transport Assessment Guidelines' (2014).
- Chartered Institution of Highways and Transportation 'Guidelines for Traffic Impact Assessment' (1994)

- Department of the Environment and Local Government (DoELG), Department of Transport (DoT) and the Dublin Transportation Office (DTO) 'Traffic Management Guidelines' (2003).
- Meath County Development Plan 2021-2027
- Navan Transport Plan 2014-2019.
- Transport Infrastructure Ireland, Project Appraisal Guidelines (PAG), Unit 5.3. Travel Demand Projections'.
- National Disability Authority, 'Building for Everyone' (2002).
- Transport Infrastructure Ireland 'Design Manual for Roads and Bridges'.
- Department of Transport, Tourism and Sport, 'Design Manual for Urban Roads and Streets' (2019).
- Towards a National Planning Framework: A Roadmap for the Delivery of the National Planning Framework (DECLG, 2015);

PECEIL

11.0 MATERIAL ASSETS – WASTE

11.1 INTRODUCTION

This chapter of the EIAR was prepared to assess the potential significant effects that construction and operational wastes associated with the proposed development may have on the receiving environment, and regional and national waste management infrastructure.

It should be read in conjunction with the site-specific Resource Waste Management Plan and the Operational Waste Management Plan . Both of these documents are submitted as part of the Planning Application.

This chapter of the EIAR has been prepared by Ian Byrne MSC, Principal Environmental Consultant of Byrne Environmental Consulting Ltd.

Ian Byrne holds a Masters Degree in Environmental Protection and a Diploma in Environmental and Planning Law. Ian Byrne has prepared numerous Resource and Construction Waste Management Plans, Operational Management Plans and Waste Impact Assessment Chapters of EIAR'S for SHD's, LRD's, Mixed-Use Developments and Industrial and Commercial developments and has been involved in the recent preparation of EIAR Waste Management Chapters for the following projects:

- Clonburris SDZ;
- Hollystown LRD;
- Balbriggan LRD.

11.2 STUDY METHODOLOGY

This Chapter of the EIAR has been prepared with regard to the *National Waste Management Plan for a Circular Economy 2024-2030 (NWMPCE)*. This is Ireland's national waste strategy published in March 2024 that will replaces the existing regional waste management plans across provincial and local regional authorities and places the emphasis on more waste prevention and increased recycling, reusing and repair practices.

The NWPCE intends to move Ireland toward a circular economy in which focus is shifted away from waste disposal, favouring circularity and sustainability by identifying and maximising the value of material through improved design, durability, repair and recycling. By extending the time resources are kept within the local economy, both environmental and economic benefits are foreseen.

The waste reduction and recycling targets set out in the WMPCE are as follows:

Municipal Waste

Target 1AAchieve a 6% reduction in residual municipal waste by 2030

Target 2AAchieve 90% compliance in the dry recycling bin by 2030

Target 2B Achieve a 10% increase per annum in material compliance in the residual bin by 2030

Construction & Demolition Waste

Target 1B Reduce Construction and Demolition Waste by 12% by 2030

The Waste Framework Directive as referenced in the WMPCE has set a recycling target of 70% of non-hazardous Construction & Demolition Waste.



The Waste Hierarchy

The foundation of EU waste management is the five-step "waste hierarchy", established in the Waste Framework Directive. It establishes an order of preference for managing and disposing of waste. This Chapter of the EIAR demonstrates how the design, construction and operation of the development will comply with the waste hierarchy whereby waste prevention is the most preferred strategy. Where waste generation is unavoidable, re-use is the most preferred fate, followed by recycling and then energy recovery, with disposal (e.g. to landfill) being the least preferred fate.



11.2.1 CONSTRUCTION PHASE WASTE ASSESSMENT METHODOLOGY

The calculated construction waste tonnage has been derived from the Building Research Establishment Environmental Assessment Method (BREEAM) which specifies that 11.1 tonnes of construction waste is generated for every 100m2 of development area.

11.2.2 OPERATIONAL PHASE WASTE ASSESSMENT METHODOLOGY

The volume of waste that will be generated during the full occupancy of the development have been calculated with regard to *British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice.*

11.2.3 Relevant Legislation & Guidance

11.2.2.1 Construction Phase

The construction waste management impact assessment has been prepared in accordance with the following relevant legislative instruments, policies and guidance:

- Waste Management Acts 1996-20232011
- European Union (Waste Directive) Regulations 2020 (SI No. 323/2020)
- The European Union Waste Framework Directive EU WFD (2018/8512008/98/EC)
- National Waste Management Plan for a Circular Economy 2024-2030
- Waste Management (Collection Permit) (Amendment) (No.2) Regulations 2023 (SI No. 104 of 2023)
- EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- EPA (2020). A guide to by-products and submitting a notification under Article of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)(Draft)
- EPA (2019). Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011
- EPA (2021). Best Practice Guidelines for the preparation of resource and management plans for construction and demolition projects

• Meath County Development Plan 2021-2027

The Meath County Development Plan 2023-2029 includes specific Policies and Objectives relating to the management of Construction and Demolition Waste as follows:

INF POL 70 To encourage the recycling of construction and demolition waste and the reuse of aggregate and other materials in future construction projects.

INF OBG 67 To require developers to prepare construction and demolition waste management plans for new construction projects over certain thresholds which shall meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and national and regional waste management policy.

11.2.2.2 Operational Phase

The operational waste management impact assessment has been prepared with regard to the following relevant legislative instruments, policies and best practice guidelines:

- Waste Management Acts 1996-201123
- Waste Management (Collection Permit) (Amendment)(No.2) Regulations 2023 (SI No. 104 of 2023)
- European Union (Waste Directive) Regulations 2020 (SI No. 323/2020)
- The European Union Waste Framework Directive EU WFD (2018/8512008/98/EC)
- National Waste Management Plan for a Circular Economy 2024-2030
- Department of Housing, Local Government and Heritage (2022). Sustainable Urban Housing: Design Standards for New Apartments. Guidelines for Planning Authorities
- Meath County Council (2021). Meath County Development Plan 2021-2027

Relevant waste management objectives of the Meath County Development Plan 2021-2027are:

Chapter 11.5.27 Waste Management (Meath County Development Plan)

Regard should be had to the number of individual bins required to serve each residential unit at design stage and in particular the requirement for segregating waste for recycling and food waste, (Refer to Chapter 6 Infrastructure for further details)

DM POL 16 All new residential schemes shall include appropriately sited and designed secure refuse storage areas, details of which shall be clearly shown in pre-application discussion and planning application documentation.

DM OBJ 52 in residential schemes, appropriately sized bin storage areas must be provided to the front of terraced dwellings in locations which are easily accessible by the householder. These areas shall be well screened and the design shall integrate with the dwelling.

DM OBJ 53 Apartment schemes shall make provision for waste segregation and recycling. Bin storage shall generally be on the ground floor level of development, be adequately ventilated, screened from public view and adjacent to the block it serves. Where appropriate, the bin storage area shall be a separate structure to the apartment building.

DM OBJ 54 Shared bin storage areas shall be located conveniently for residents and collection service providers with appropriate security measures.

BS 5906:2005 Waste Management in Buildings-Code of Practice

This Chapter of the EIAR has been prepared in accordance with regard to *British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice* which provides guidance on methods of waste calculation, storage, collection, segregation for recycling and recovery for residential building.

The Department of Housing, Planning and Local Government – Sustainable Urban Housing: Design Standards for New Apartments

The development will include 3-bin waste segregation systems at source together with the communal waste storage areas have been designed in compliance with Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities (as updated 2023) as follows:

Provision shall be made for the storage and collection of waste materials in apartment schemes. Refuse facilities shall be accessible to each apartment stair/lift core and designed with regard to the projected level of waste generation and types and quantities of receptacles required. Within apartments, there should be adequate provision for the temporary storage of segregated materials prior to deposition in communal waste storage and in-sink macerators are discouraged as they place a burden on drainage systems.

The following general design considerations should be taken into account in the provision of refuse storage facilities:

- Sufficient communal storage area to satisfy the three-bin system for the collection of mixed dry recyclables, organic waste, and residual waste;
- In larger apartment schemes, consideration should also be given to the provision of separate collection facilities for other recyclables such as glass and plastics;
- Waste storage areas must be adequately ventilated so as to minimise odours and potential nuisance from vermin/flies and taking account the avoidance of nuisance for habitable rooms nearby;
- Provision in the layout for sufficient access for waste collectors, proximity of, or ease of access to, waste storage areas from individual apartments, including access by disabled people;
- Waste storage areas should not present any safety risks to users and should be well-lit;
- Waste storage areas should not be on the public street and should not be visible to or accessible by the general public. Appropriate visual screening should be provided, particularly in the vicinity of apartment buildings;
- Waste storage areas in basement car parks should be avoided where possible, but where provided, must ensure adequate manoeuvring space for collection vehicles;
- The capacity for washing down waste storage areas, with wastewater discharging to the sewer.

11.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

11.3.1 DESCRIPTION OF THE BASELINE ENVIRONMENT

The baseline environment is characterised by the nature of the existing site and the local and regional waste management infrastructure that serves the Navan, Co. Meath area in which the site is located. The Zone of Influence (ZOI) associated with waste generated by the construction and operational phases of the development relate to the impact that the site will have on Regional licenced and permitted facilities that will accept waste for recycling, re-use, and disposal. With regard to the locations of these facilities which are located within the greater Meath and Dublin Area and with regard to the Indaver Waste Incinerator in Duleek County Meath, the ZOI extends to approximately 50km.

11.3.2 CONSTRUCTION PHASE

Ground Investigations Ireland have conducted site investigations at the site and the ground is comprised of top soil, made ground, granular deposits and cohesive deposits as detailed in their Ground Investigation Report Ref 12517-01-23, June 2023.

Prior to the commencement of construction works a Waste Classification Report will be prepared in accordance with the *EPA (2018) Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* by utilising the results of laboratory analysis and the Haz Waste Online Classification Tool. Soils will then be classified as an appropriate Waste Category.

Construction wastes including soils arising from bulk excavation works can be accepted at a range of licenced facilities within approximately 30km of the subject site including *Integrated materials Solutions, The Naul, Co. Dublin.*

11.3.3 OPERATIONAL PHASE

Local waste management infrastructure in the greater Meath area has been reviewed and there are a range of local domestic recycling facilities within 10km of the subject site including:

- A Civic Amenity Recycling Centres are located at the Mullagboy Industrial Estate Navan which is c. 4km from the subject development site.
- A bottle bank is located at Public Car-Park, Abbeyland South, Navan c. 3km from the subject development site.
- A clothing bank is located at Rathdrinagh, Navan c. 4km from the subject development site.

Domestic waste collection services in the Navan area are currently provided by the following companies.

- Greyhound Recycling
- Panda Waste
- Thorntons Recycling

11.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The project relates to the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller D. OTIOGIAOR open space areas and landscaped areas.

A full description is set out in chapter 2 of the EIAR.

11.5 THE "DO NOTHING SCENARIO"

Should the subject development not proceed, it is likely that another residential development may be applied for in the future as the subject site is zoned for residential development.

Should the site remain undeveloped there is a likely risk that it could be subject to illegal fly-tipping and the effect would be locally negative with a significance ranging from imperceptible to profound, depending on the magnitude of fly-tipping, with a duration of temporary to short-term depending on the responsiveness of the relevant authorities to any such situation.

POTENTIAL SIGNIFICANT EFFECTS 11.6

11.6.1 **CONSTRUCTION IMPACTS**

The development of the subject site will require ground preparation works prior to the commencement of construction activities which will generate a range of waste types.

Construction wastes if not managed and segregated on-site will have the potential to be difficult to separate into different waste streams to allow for further processing, recovery, re-use or to be recycled.

The calculated construction waste tonnage has been derived from the Building Research Establishment Environmental Assessment Method (BREEAM) which specifies that 11.1 tonnes of construction waste is generated for every 100m² of development area. Based on the combined building area contained in the Schedule of Accommodation for the development of c.37,237m², it has been calculated that up to c. 4133 tonnes of construction waste may be produced.

The tonnage of soils and stones to be generated has been determined from the cut and fill analysis for the site.

Table 11.1 details the EPA's most recently published (2023) % breakdown of Construction waste.

Table 11.1: Construction Waste Composition EPA 2020 Waste Statistics

| Waste Type | % composition of total waste | | | | |
|-----------------------|------------------------------|--|--|--|--|
| Metal | 15 | | | | |
| Wood Plastic Glass | 4 | | | | |
| Bituminous Materials | 10 | | | | |
| Concrete Brick Gypsum | 41 | | | | |
| Mixed C&D | 30 | | | | |

Table 11.2: Predicted construction waste tonnages

| LoW Code | Description | Volume Generated (tonnes) | Prevention (tonnes) Non Waste | Reused (tonnes) Non- Waste | Recycled (tonnes) Waste | Recovered (tonnes) Waste | Disposed (tonnes) Waste |
|-------------|-------------|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------|--------------------------------|-------------------------------|
| 17 01 01 | Concrete | 4005 | 0 | 045 | C05 | 0 | 05 |
| 17 01 02 | Brick | 1695 | 0 | 915 | 685 | 0 | 80 |

| LoW Code | Description | Volume Generated (tonnes) | Prevention (tonnes) Non Waste | Reused (tonnes) Non- Waste | Recycler (tonnes) Waste | Recovered (tonnes) Waste | Disposed (tonnes) Waste |
|--------------|--------------------------------|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------|--------------------------------|-------------------------------|
| 17 01 03 | Tiles and Ceramics | | | | | · 0. | |
| 17 02 01 | Wood | | | | | 10 | 2 |
| 17 02 02 | Glass | 165 | 0 | 0 | 130 | 33 | Roj 2 |
| 17 02 03 | Plastic | | | | | | , X |
| 17 03 02 | Bituminous Material | 413 | 0 | 178 | 235 | 0 | 0 |
| 17 04 07 | Mixed Metals | 620 | 0 | 0 | 620 | 0 | 0 |
| 17 05 04 | Soil and Stone | 120,640 | 0 | 20,640 | 0 | 0 | 100,000 |
| 17 09 04 | Mixed C&D Waste | 1240 | 0 | 385 | 495 | 223 | 174 |
| 20 01 08 | Biodegradable Canteen Waste | 10 | 0 | 0 | 0 | 0 | 10 |
| 20 03 01B | Mixed Municipal Waste | 10 | 0 | 0 | 0 | 0 | 10 |
| 20 01 01 | Paper & Cardboard | 1 | 0 | 0 | 1 | 0 | 0 |

The likely significant effects associated with construction waste will be negative, not significant and short-term.

11.6.2 OPERATIONAL PHASE

The volume of waste that will be generated during the full occupancy of the development have been calculated with regard to *British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice.*

British Standard BS 5906:2005 states that 70 litres of waste are generated per bedroom per week with an allowance of an additional 30 litres per unit per week.

The subject development includes 843 no. bedrooms in 322 no. residential units.

The total domestic waste generated per week is detailed in Table 11.3.

The likely significant effects associated with operational waste will be negative, not significant and long-term.

| Table 11.3: Total week | y Domestic waste | generation |
|------------------------|------------------|------------|
|------------------------|------------------|------------|

| Scenario | # | Factor | Weekly Waste litres |
|----------|------|------------------------------|------------------------|
| Bedrooms | 843 | 70 Litres per week / bedroom | 59,010 |
| Units | 322 | 30 litres per week / unit | 9,660 |
| | Tota | al Weekly Domestic Waste | 68,670 |
The volume of commercial waste that will be generated has been calculated with regard to British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice as detailed in Table 11.4.

| Table 11.4. Total weekly commercial waste generation | | | | | | | |
|--|-----------|------------------------|--|--|--|--|--|
| Unit | Area (m²) | Weekly Waste litres | | | | | |
| Anchor Retail | 1000 | 10,000 | | | | | |
| GP Surgery | 232 | 600 | | | | | |
| Cafe | 210 | 4500 | | | | | |
| Take Away | 82 | 3300 | | | | | |
| Pharmacy | 88 | 2200 | | | | | |
| Creche | 512 | 3600 | | | | | |
| Community Centre | 1848 | 500 | | | | | |
| Totals | - | 24,700 | | | | | |

Table 11.4: Total weekly Commercial waste generation

The likely significant effects associated with operational waste will be negative, not significant, and long-term.

11.6.3 CUMULATIVE EFFECTS

The local area in which the subject development is located has a number of existing and permitted developments which together with the proposed development will have a cumulative short-term construction impact and a long-term operational impact.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park, and comprise construction of: 3 no. commercial high-bay warehouse units

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

The other projects listed above have been considered in terms of additional potential demand on regional waste management infrastructure should these other developments proceed.

Should other local sites be constructed during the construction phase of the subject site, there will be an increased demand on Regional Waste Management Infrastructure including Waste Recovery and Waste Recycling Facilities to process construction wastes.

If all local permitted developments are constructed and become operation in the future, there will be an increased demand on Regional Waste Management Infrastructure including Waste Recovery, Waste Recycling Facilities and Waste Disposal to process operational wastes.

Table 11.5 details the cumulative Likely Significant Effects associated with construction and operational wastes. These effects have been determined with regard to how construction and operational wastes must be managed on developments in accordance with the Waste Legislation and Guidance detailed above in Section 11.2.3 of this Chapter of the EIAR.

Table 11.5: Summary of cumulative Likely Significant Effects of construction and operational waste effects

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Туре |
|------------------------------|----------|--------------------|----------|-------------|------------------------|------------|
| Construction Waste | Negative | Not Significant | Regional | Likely | Short- Term | Worst-Case |
| Operational Waste | Negative | Not Significant | Regional | Likely | Long-Term Permanent | Worst-Case |

11.6.4 SUMMARY

The following Tables summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied.

In the scenario where a Resource and Construction Waste Management Plan has not been prepared or implemented in accordance with the Waste Legislation and Guidance detailed in Section 11.2.3 of this Chapter of the EIAR for the development, the Likely Significant Effects are detailed below in Table 11.6.

Table 11.6: Summary of Construction Phase Likely Significant Effects in the absence of mitigation

| Likely Significant Effect | Quality | Significan ce | Extent | Probability | Duration | Туре |
|---------------------------|----------|------------------|----------|-------------|------------|------------|
| Construction Waste | Negative | Significant | Regional | Likely | Short-Term | Worst Case |
| Receiving Environment | Negative | Significant | Regional | Likely | Short-Term | Worst Case |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

In the scenario where an Operational Waste Management Plan has not been prepared or implemented in accordance with the Waste Legislation and Guidance detailed in Section 11.2.3 of this Chapter of the EIAR for the development, the Likely Significant Effects are detailed below in Table 11.7

Table 11.7: Summary of Operational Phase Likely Significant Effects in the absence of mitigation

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Туре |
|------------------------------|----------|--------------|----------|-------------|-----------|------------|
| Operational Waste | Negative | Slight | Regional | Likely | Long-Term | Worst Case |
| Receiving Environment | Negative | Significant | Regional | Likely | Long-Term | Worst Case |

RECEIL

11.7 MITIGATION

11.7.1 INCORPORATED DESIGN MITIGATION

The site-specific Resource and Construction Waste Management Plan (RWMP) includes specific details on how construction phase wastes and resources shall be controlled, managed and monitored throughout the construction phase as detailed in Section 11.6.2 and also contained in Appendix E, Volume III of the EIAR.

The site-specific Operational Waste Management Plan (OWMP) includes specific details on how operational phase wastes shall be controlled, managed, and monitored throughout the lifetime of the development as detailed in Section 11.6.3 and also contained in Appendix E, Volume III of the EIAR.

11.7.2 CONSTRUCTION PHASE MITIGATION

11.7.2.1 Construction Waste Management

- From the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.
- Spill kits shall be located within the site compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills to minimise the potential for ground contamination.
- All vehicle and plant oils and liquid construction materials shall be stored in secure impermeable storage units.
- All diesel-powered generators shall be inspected on at least a weekly basis by a delegate of the project manager to ensure it is not leaking diesel or oils.
- All empty containers containing residual quantities of oils, greases and hydrocarbon-based liquids shall be stored in a dedicated, clearly labelled impermeable container.
- In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.
- It will be the responsibility of the Resource and Waste Manager (RWM) to ensure that a written record of all quantities and natures of wastes exported off-site are maintained on-site in a Waste File at the Project office.
- It is the responsibility of the RWM that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:
- Waste Management (Collection Permit) Regulations 2007 2023 (as amended) (SI No.820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2016 (SI No.247 of 2016)
- Waste Management (Collection Permit) Amendment No. 2 Regulations 2023 (SI No.104 of 2023)

- Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) (Amendment) Regulations S.I.250 of 2019.2007 to 2023 (as amended).
- Waste Management Acts 1996 (Revised 1st July 2023).- 2011.
- Prior to the commencement of the Project, the Resource and Waste Manager (RWM) shall identify
 a permitted Waste Contractor(s) who shall be engaged to collect and dispose of all inert and
 hazardous wastes arising from the project works.
- The RWM shall maintain copies of all Waste Collection Permits and copies of the Waste Facility
 Permit or Waste Licence to which waste materials are exported to. The RWM shall ensure that all
 Permits/Licences are within date.
- All waste soils prior to being exported off-site, shall be classified as inert, non-hazardous or hazardous in accordance with the EPA (2018) Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous document to ensure that the waste material is transferred by an appropriately permitted waste collection permit holder and brought to an appropriately permitted or licensed waste facility.

11.7.2.2 Resource Management

- Materials shall be ordered on an "as needed" basis to prevent over supply and preventing damage to bulk orders stored on-site.
- Materials shall be stored and handled in a manner that minimises the generation of damaged materials
- Materials shall be ordered in appropriate sequence to minimise materials stored on site
- All staff and Sub contractors shall be advised through inductions and tool box talks on how to dispose of their waste correctly on-site.
- Broken concrete blocks and excess aggregate materials shall be segregated and stored off-site for use as hard standing material on future projects. This will result in the following positive impacts:
- Reduction in the requirement for virgin aggregate materials from quarries
- Reduction in energy required to extract, process and transport virgin aggregates
- o Reduced HGV movements associated with the delivery of imported aggregates to the site
- Reduction in the amount of landfill space required to accept C&D waste
- Excess wood will be segregated in separate skips and sent for recycling.
- Plastic arising from general waste or packaging will be segregated and stored in separate skips.
- Metals waste shall be stored in dedicated skips
- Top soil that is stripped shall be retained for landscaping purposes.

11.6.3 Operational Phase Mitigation

The OWMP (contained in Appendix E, Volume III of the EIAR) is defined by the following stages of waste management with regard to the Circular Economy and the Waste Hierarchy.

| Stage 1 | Occupier Source Segregation |
|---------|-------------------------------------|
| Stage 2 | Occupier Deposit and Storage |
| Stage 3 | Bulk Storage and On-Site Management |
| Stage 4 | Off-Site Removal |
| Stage 5 | End Destination of wastes |

The Key Aspects that are designed into the development are:

- PECENED. ONOGROZA 3-Bin systems in each unit to encourage waste segregation at source
- Communal Bin Stores to provide for Organic, Recyclable, Mixed Waste, Glass and WEEE waste storage
- Residents to be provided with a Bulky Waste collection service
- Waste Management & Record Keeping •
- A Bring Bank will be located at the Community Centre for use by residents and the local community

The Facilities Management Company shall maintain a weekly register detailing the quantities and breakdown of general mixed domestic waste, recyclable waste and organic waste wastes removed from the apartment aspect of the development. Supporting documentation shall be provided by the Waste Collection Contractor on a monthly basis.

The Facilities Management Company shall prepare an annual information report for all apartment residents detailing the quantities and waste types generated by the development for the previous year. The report shall include reminder information on the correct segregation at source procedures and the correct placement of wastes in the waste storage area. Other aspects of ongoing waste management continuous improvement shall also be stated.

The proposed Neighbourhood Centre will include a bring bank facility indicated on the WHA layout located to the south of the sports hall in the C1 zone.

11.8 **RESIDUAL IMPACT ASSESSMENT**

This section assesses potential significant environmental effects impacts which remain after mitigation measures are implemented.

11.8.1 CONSTRUCTION PHASE

The potential likely effects of construction waste will be negative, not significant and short--term. This conclusion is based on the implementation of the Resource and Construction Waste Management Plan through the construction phase of the development.

Construction phase wastes will be managed through design, management and waste reduction and recycling initiatives at the proposed development, it is predicted that the impact of the construction phase of the development is not likely to have a significant effect will not have a significant adverse impact on the receiving environment, or on local and regional waste management services or infrastructure and the development shall be managed shall to comply with Local Authority objectives for construction waste management.

11.8.2 OPERATIONAL PHASE

The potential likely effects of operational waste will be negative, not significant, and long-term. This conclusion is based on the implementation of the Operational Waste Management Plan through the lifetime of the development.

The development shall be designed to provide adequate domestic waste infrastructure and storage areas for all apartments. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development and thus reduce the potential for the generation of mixed unrecyclable waste streams. The operational phase of the development is not likely to have a significant effect on regional waste infrastructure and the operation of the development shall be managed to comply with Local Authority objectives for domestic waste management.

11.7.3 Summary of Post-Mitigation Effects

The following Tables summarise the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

| ······································ | | | | | | |
|---|----------|--------------------|----------|-------------|----------------|----------|
| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Туре |
| Regional Construction Waste Infrastructure | Negative | Not Significant | Regional | Likely | Short- Term | Residual |
| Receiving Environment | Neutral | Not Significant | Regional | Unlikely | Short- Term | Residual |

Table 11.8: Summary of Construction Phase Effects Post Mitigation

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 11.9: Summary of Operational Phase Effects Post Mitigation

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Туре |
|---|----------|--------------------|----------|-------------|---------------|----------|
| Regional Domestic Waste Infrastructure | Negative | Not Significant | Regional | Likely | Long Term | Residual |
| Receiving Environment | Neutral | Not Significant | Regional | Unlikely | Long- Term | Residual |

Table 11.10: Summary of cumulative residual construction and operational waste effects

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Туре |
|------------------------------|----------|--------------------|----------|-------------|------------------------|----------|
| Construction Waste | Negative | Not Significant | Regional | Likely | Short- Term | Residual |
| Operational Waste | Negative | Not Significant | Regional | Likely | Long-Term Permanent | Residual |

11.9 WORST CASE SCENARIO

A worst-case scenario would arise if the construction phase and operational phase wastes streams were not managed in accordance with the Resource and Construction Waste Management Plan or the Operational Waste Management Plan. Unmanaged waste streams will reduce the ability to re-use and recycle waste fractions and result in the generation of unsegregated waste streams which will have an increased impact on the environment as a result of the energy required to dispose of them in landfill or by incineration. In this worst-case scenario the effect would be short-term to long-term, significant and negative.

11.10 INTERACTIONS

The identified interactions between the management of waste arisings during both the construction and operational stages are as follows;

- Population & Human Health (Chapter 7): management of waste in the construction and operational phase to mitigate nuisance, vermin, litter, etc.
- Land, Soils, Geology & Hydrogeology (Chapter 9): excavation to facilitate the development.
- Traffic & Transportation (Chapter 16): specifically, movement of waste associated with the construction stage.

These have been comprehensively addressed herein and / or in the corresponding other specialist chapters, where appropriate.

11.11 MONITORING

11.11.1 CONSTRUCTION PHASE WASTE MONITORING

The Resource and Waste Manager will maintain a written record of all quantities and types of construction wastes generated, reused / recycled, and exported off-site during the construction phase.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.
- Description of how waste at facility shall be treated i.e. disposal / recovery / export

11.11.1.1 Construction Phase Waste Auditing

In order to ensure that construction wastes generated during the course of the development are being effectively managed and recorded, a waste management audit shall be conducted on a routine basis to determine compliance with the RWMP.

The effectiveness of a Resource and Waste Management Plan and its implementation will be subject to quarterly audits by the RWM throughout the duration of the construction phase.

Audits will focus on materials inputs to the project and the waste outputs identifying:

11.11.1.2 Resources

• How resource management was integrated into the design of project buildings and areas

- Re-use, recycling of existing on-site materials prior to development including soils, buildings, • structures.
- Re-using surplus materials from previous development projects e.g. office cabins, fencing, aggregates, concrete products. .01061202
- Additional opportunities for future resource management.

11.11.1.3 Waste

The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

- Performance targets will be developed, e.g. an 85% overall recycling target, successes and failures will be recorded and Action Plans will be developed to address any issue which arise.
- Inspections of the waste storage areas will be undertaken and recorded on a weekly basis, issues relating to housekeeping, inappropriate storage and segregation of wastes.
- The RWM will record the findings of the audits, including types and quantities of waste arising, final • treatments and costs, in a quarterly audit report.
- The Final Waste Audit will examine the manner of how resources were managed and how and where the waste was produced and how waste generation can be reduced in future projects.

11.11.2 OPERATIONAL PHASE WASTE MONITORING

The Facility Management Company shall prepare an annual report for the Local Authority and residents of the development on the quantities of waste generated within the development to demonstrate how waste reduction and recycling targets are being achieved with regard to the targets defined in the National Waste Management Plan for a Circular Economy 2024-2030.

11.12 SUMMARY OF MITIGATION AND MONITORING

The following Table summarises the Construction Phase mitigation and monitoring measures.

| Likely Significant Effe | ct | Mitigation | Monitoring |
|-----------------------------------|---------|---|---|
| Additional constructio generation | n Waste | Implementation of Site- Specific Resource and Waste Management Plan | Recording of all waste generated and exported off-site Waste auditing |

Table 11.11: Summary of Construction Phase Mitigation and Monitoring

The following Table summarises the Operational Phase mitigation and monitoring measures.

Table 11.12: Summary of Operational Phase Mitigation and Monitoring

| Likely Significant Effect | Mitigation | Monitoring |
|-------------------------------------|--|-----------------------------------|
| Additional domestic wast generation | e Implementation of Site- Specific Operational Waste Management Plan | Recording of all waste generated. |

11.13 SUMMARY

The proposed development shall be designed, constructed, and operated in accordance with regard to Irelands national waste strategy contained in the National Waste Management Plan for a Circular Economy 2024-2030.

The construction phase of the development shall be managed in accordance with a Resource and Waste Management Plan which will defines how the segregation of construction wastes will allow for the maximum potential for recycling, re-use or recovery and to minimise the volume of waste sent for disposal.

The operational phase of the development shall be managed in accordance with an Operational Waste Management Plan The development shall be designed and managed to provide residents with the required waste management infrastructure to minimise the generation of un-segregated domestic waste and maximise the potential for segregating and recycling domestic waste fractions.

11.14 REFERENCES

- Waste Management Act 1996-2023;
- The Waste Framework Directive (2018/851);
- The National Waste Management Plan for a Circular Economy 2024-2030;
- Waste Management (Collection Permit) (Amendment) (No.2) Regulations 2023 (SI No. 104 of 2023);
- EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- EPA (2020). A guide to by-products and submitting a notification under Article of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)(Draft);
- EPA (2019). Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011;
- EPA (2021). Best Practice Guidelines for the preparation of resource and management plans for construction and demolition projects;
- Meath County Development Plan 2021-2027;
- Building Research Establishment Environmental Assessment Method (BREEAM);
- Department of Housing, Local Government and Heritage (2023). Sustainable Urban Housing: Design Standards for New Apartments. Guidelines for Planning Authorities;
- British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice.

MATERIAL ASSETS - UTILITIES 12.0

12.1 INTRODUCTION



This report was prepared by Patrick McStay BEng MSc CEng MIEI MIStructE. Pat is a Chartered Consulting Civil & Structural Engineer with 30 years experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments.

Pat has worked on many similar projects including developments in the immediate area of this application. These include the development of 98 residential units adjacent to the LDR6 at Athlumney, Navan.

The utilities sections (ESB, Telecoms & Gas) were prepared by Daniel Lynch of Metec, who has a degree in Building Services Engineering from DIT Bolton Street (BEng (hons). BEng (Tech), CIBSE, MIEI.) and has over 15 years' experience in the design & successful delivery of a wide range of projects in the highend bespoke residential, commercial, hospitality, logistics, educational and life science sectors throughout Ireland and internationally including England, Channel Islands, Poland and Dubai.

12.2 METHODOLOGY

The following section outlines the legislation and guidelines considered, and the adopted methodology for preparing this chapter.

12.2.1 **GUIDELINES**

The methodology followed for this section is in accordance with the EPA "Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022" and "Advice Notes on Current Practice (in the preparation on Environmental Impact Statements Draft September 2015". Information on built assets in the vicinity of the development lands was assembled from the following sources:

- A desktop review of Irish Water Utility Plans, ESB Networks Utility Plans, Gas Networks Ireland • Service Plans, Eir E-Maps and Virgin Media Maps;
- Consultation with Irish Water and Meath County Council; •
- Submission of a Pre-Connection Enquiry Application to Irish Water;
- Review of ESB Network Utility Plans;
- Review of Gas Networks Ireland exiting network maps;
- Review of EIR Telecommunications exiting network maps;
- Review of Virgin Media Telecommunications exiting network maps;
- Site Inspection / Walkover; •

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines which are standard and best practice:

- Greater Dublin Strategic Drainage Study (GDSDS);
- IS EN752, "Drain and Sewer Systems Outside Buildings";

Foul water, surface water and potable water calculations are included in the Engineering Services Report prepared by HRA Consulting Engineers.

12.2.2 PROJECT SITE/STUDY AREA

The subject site, of approximately 13.26 hectares is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares site, which is the subject of a masterplan (MP12).

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.

Figure 12.1: Subject Lands



Source: Google Maps - Note red line indicative - refer to WH Architects Site Location Map.

12.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

The subject lands are located within the administrative jurisdiction of Meath County Council. The site is bounded to the west and south by existing dwellings; to the east and to the north and by the new LIHAF road and agricultural lands.

12.3.1 EXISTING STORM WATER INFRASTRUCTURE

Public storm water infrastructure in Navan is under the administrative control of Meath County Council. A review of the publicly available records confirms that there are no public surface water sewers in the area. The area, which consists of undeveloped agricultural land (greenfield), is drained by small field drains which flow to the Millrace / Farganstown Stream.

All field drains and water courses within the area currently flow to the river Boyne. These field drains will generally be maintained and used to convey attenuated stormwater from the development to the river Boyne which will remain the eventual recipient of excess surface water.

RECEIVED. OTOERO2&

The existing field drains are shown below.





Illustration of existing surface water drainage

12.3.2 **EXISTING FOUL WATER INFRASTRUCTURE**

All public foul sewage infrastructure is under the administrative control of Irish Water. A review of their records confirms that there are no active foul sewers in the immediate vicinity of the subject lands.

Irish Water records indicate an existing 600mm wastewater sewer located to the southeast of the subject lands on the Kentstown Road. This sewer drains to the northwest into an existing Irish Water wastewater pumping station before ultimate treatment at the regional Wastewater treatment plant in Navan. Irish Water has confirmed that there is adequate capacity in existing infrastructure to cater for the proposed development.

A 1.2km long section of the LDR6 has recently been constructed adjacent to the subject lands by Meath County Council. The road stretches from the Kentstown Road towards the Boyne Road stopping east of the railway line.

The section of completed road has been serviced with wastewater infrastructure to service the proposed development and adjoining developments including a 110mm rising main which shall be used to convey wastewater uphill from a temporary WasteWater Pump Station (WWPS) on the subject lands to a 225mm wastewater gravity sewer which feeds into the 600mm sewer on the Kentstown Road.

Irish Water records also show an existing 250mm foul sewer on the Boyne Road north west of the subject site which drains north toward the WasteWater Treatment Works (WWTW) at Farganstown.

The existing foul sewers are shown on drawing 2135/1b-100 Rev. P4.



Figure 12.3: Existing foul sewers

12.3.3 **EXISTING POTABLE WATER INFRASTRUCTURE**

Potable water services are also under the administrative control of Irish Water. Records from Irish Water show existing 180mm watermains (O/D) in the Kentstown Road and the Boyne Road. The new LDR6 has been serviced with potable water infrastructure including a 180mm watermain and a 500mm watermain. It is intended that these services will continue to the Boyne Road and connect with existing services when the LDR 6 is completed.

The proposed development shall be serviced by the existing 180mm watermain.

The existing watermains are shown on drawing 2135/1b-100 Rev. P4

12.3.4 ESB POWER

The existing ESB network maps indicate an existing 10 kV Medium Voltage overhead electricity line traversing the proposed site. This overhead line may need to be diverted for the development. The ESB planners will review the capacity of the existing electrical infrastructure and advise the extent of upgrade works to comply with their infrastructural requirements.

New infrastructure connections have been considered in the design of the proposed development and there are no known issues with local infrastructure to supply the new development at this time. New integrated ESB sub-stations shall be provided for the Neighbourhood and Community Centres and 3 No. additional ESB sub-station (630Kva) units are proposed within the footprint of the development. The ESB will be the final arbiters of the electrical configuration within the site.

Main cable ducting shall comply with the requirements of the ESB Networks Housing Schemes Guidebook for ESB Networks Standards for Electrical Services. ESB Networks will specify the route, size and purpose of all ducts on the site layout plan. For all ducting which lies within the housing scheme/development, the trench cross-section and ducting requirements set out in the guidebook shall apply.



Source: Metec

12.3.5 EXISTING GAS INFRASTRUCTURE

The Gas network's infrastructure map does not indicate any existing gas pipework connection serving the proposed development at Boyne Village (Phase 1B), Navan. The two closest mains to the proposed development is on the Old Road outside of Old Athlumney Manor and TubberClaire Meadows Estate. There is no requirement for gas on the proposed development site as the new buildings will be provided with alternative methods for generation of heating and hot water, as per the Sustainability Report/Energy Statement, included with the application.

12.3.6 TELECOMMUNICATIONS – EIR

EIR infrastructure to the surrounding area is sufficient to service the development subject to final agreement with EIR. An existing Eir network map is shown below.

Figure 12.5: Eir network



Source: Metec

12.3.7 TELECOMMUNICATIONS – OTHER

Virgin Media had confirmed they had no underground services adjacent to the proposed development location as of June 2022, with confirmation on current network status pending. Colt Technologies have confirmed they currently have no apparatus in this area as have Enet how have also confirmed they currently have no plant in this area.

12.3.8 TELECOMS – MAJOR TELECOMMUNICATION MASTS

As part of the design process the impact on the development on major telecommunications links has been considered. There are no foreseen issues with the proposed development as there are no visible telecommunication masts in the immediate surrounding area. A map of telecom masts in the greater surrounding area can be seen below, with proposed site boundary indicated in pink.



Source: Metec

12.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The project relates to the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,020 sq. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

Further information regarding the proposed infrastructure elements of the proposed development is detailed in the separate "Engineering Services Report", (ESR) prepared by Hendrick Ryan Consulting Engineers including details of surface water / SuDS design, wastewater drainage and potable water supply.

12.4.1 SURFACE WATER DRAINAGE

The development will include the construction of a surface water network throughout the lands, which will collect surface water runoff from all hard standing areas.

The management of surface water for the proposed development has been designed to comply with the policies and guidelines outlined in the Greater Dublin Strategic Drainage Study (CDSDS) and with the requirements of Meath County Council.

A new surface water drainage system will collect runoff from roads and roofs together with any additional runoff from landscape areas which does not percolate to ground.

Given the size and topography of the proposed development, the site has been divided into several zones for surface water collection and attenuation purposes. It is proposed to provide a piped surface water network with detention basins and ponds to provide attenuation storage within each of these areas prior to discharging to the Millrace / Farganstown Stream and eventually to the river Boyne.

The proposed surface water system has been designed to cater for the 1-in-100yr (0.01 AEP) storm event with an additional allowance (rainfall figures from Met Eireann have been increased by 20%) for future climate change. Discharge from the development has been limited to the pre-development greenfield runoff rate (Q_{bar}). All detention basins have been designed to facilitate infiltration into the ground where suitable conditions permit. Refer to the Engineering Services Report for more information.



Figure 12.7: Surface Water Design

Division of site into zones for surface water design and attenuation (Extract from Hendrick Ryan Drawing No. 2135/1b – 411)

Table 12.1 outlines the proposed attenuation zones associated with the development. The surface water management strategy for the proposed development is outlined in Chapter 6.

| Attenuation Facility | Location | Contributing Area (m ³) | Vol. required (m ³) | Vol. provided (m ³) | | | | |
|----------------------------|----------|-------------------------------------|---------------------------------|---------------------------------|--|--|--|--|
| Detention basin | Zone 1a | 11,450 | 290 | 290 | | | | |
| Attenuation pond | Zone 1b | 5,294 | 484 💙. | 580 | | | | |
| Detention basin | Zone 2a | 9,371 | · C | 2 | | | | |
| Attenuation pond | Zone 2b | 3,144 | | | | | | |
| | | 12,515 | 450 | 540 | | | | |
| Detention basin | Zone 3a | 4,135 | 72 | 2218 | | | | |
| Detention basin | Zone 3b | 1,876 | 25 | ×152 | | | | |
| Detention basin | Zone 4a | 2,795 | 77 | 110 | | | | |
| Detention basin | Zone 4b | 3,117 | 89 | 168 | | | | |
| Stormtech attenuation tank | Zone 5a | 10,642 | 15.85 | 23.50 | | | | |
| Permeable paving | | | 1.9 | 15.75 | | | | |
| Stormtech attenuation tank | | | 6.1 | 15.1 | | | | |
| Permeable paving | | | 1.0 | 20.25 | | | | |
| | | | 24.85 | 74.60 | | | | |
| Permeable paving | Zone 5b | 800 | 9 | 45 | | | | |
| Attenuation pond | Zone 6 | 929 | 51 | 150 | | | | |
| Stormtech attenuation tank | Zone 7 | 2060 | 103 | 120 | | | | |

Table 12.1: Attenuation Facility Volumes

All surface water drainage shall be constructed in accordance with Greater Dublin Regional Code of Practice for Drainage Works and Meath County Council Requirements.

Several SuDS measures are proposed to minimise the impact on water quality and quantity of the runoff and maximise the amenity and biodiversity opportunities within the site.

It is proposed to provide the following SuDS measures:

- Individual water 'Butts' to rainwater retention & local reuse at houses;
- Rainwater harvesting at the neighbourhood centre;
- Permeable paving at all private carparking;
- Detention basins;
- Attenuation ponds;
- Bio-retention areas;
- Tree pits.

Attenuation elements have been sized to provide storage for runoff from the roofs, footpaths, and roads with an allowance for runoff from green areas which does not percolate into the ground. The volumes of the attenuation tanks include a 20% increase in rainfall depth to allow for climate change.

Permeable paving is to be provided in private parking spaces and driveways within the site. It is proposed to provide storage beneath the permeable paving areas to attenuate any surface water runoff from these areas. These storage areas will have a 300mm depth of coarse graded aggregate with a voids ratio of 30% to facilitate attenuation.

The site investigation encountered variable soil permeability across the site with clays, sands and gravels present at different locations and depths. The proposed SuDS elements noted above have been designed to facilitate infiltration / percolation and groundwater recharge. This infiltration has not been included in the attenuation storage calculations. This will result in additional storage being available in extreme events.

12.4.2 FOUL DRAINAGE

All foul effluent generated from the proposed development shall be collected in pipes of 225mm in diameter and flow under gravity to the temporary pumping station. A 100mm rising main from the temporary pump station connects to the existing 100mm rising main in the new LDR6 road. This rising main is connected to the 225mm gravity sewer in the LDR6 and flows by gravity to the existing 600mm in the Kentstown Road. The drainage network for the development will be in accordance with Part 1 of the Building Regulations and to the requirements and specifications of Irish Water.

Discussions were held with Irish Water who reviewed their response and carried out additional checks on the current network. Following Irish Waters internal review, a Confirmation of Feasibility was received on the 6th of October 2023.

A Statement of Design Acceptance has also been received from Irish Water for the proposed development and is included with the planning application.

All foul drainage shall be constructed in accordance with Irish Water Code of Practice / Standard Details for Wastewater.

Individual houses will connect to main sewer network via individual 100mm diameter house connections, as per Irish Water Code of Practice for Wastewater Infrastructure.

The proposed foul sewer network is shown on Hendrick Ryan drawings 2135/1b - 500, 2135/1b - 501, 2135/1b - 502 & 2135/1b - 503.

12.4.3 WATER SUPPLY

The watermain layout and connections, valves, hydrants, meters etc. are designed in accordance with Irish Water's Code of Practice / Standard Details and the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety".

A review of Irish Water records indicates a 180mm O/D PE100 in the new LDR6. It is proposed to connect into the existing potable water supply located in the LDR6. A booster 150ID main is to be laid and connected to the 200mm main in the Boyne Road and connected to the 180mmOD main in the LIHAF road.

Individual houses will have their own connections to the distribution main via service connections and boundary boxes. Individual service boundary boxes will be of the type to suit Irish Water and to facilitate domestic meter installation. Hydrants are provided for fire-fighting at locations to ensure that each dwelling is within the required Building Regulations distance of a hydrant.

The daily demand has been calculated as 248 m³/day as per the Engineering Report. The proposed watermains layout is shown on Hendrick Ryan drawings 2135/1b - 600, 2135/1b - 601, 2135/1b - 602 & 2135/1b - 603.

12.4.4 ESB POWER

The existing overhead services on the site will be undergrounded and diverted as required to accommodate the new development. This will be discussed and agreed with the ESB. A new Medium Voltage below ground network will be provided in the proposed development which will connect to the existing ESB Networks infrastructure in the area. New sub stations will be provided throughout the site to meet the electrical demands associated with the new dwellings, community center, sports center and retail areas.

12.4.5 GAS

It is not proposed to provide gas for this development. Heating and hot water will be provided via electrically powered heat pumps. TENED. ONC

12.4.6 TELECOMMUNICATIONS

There is an extensive Eir Network in the roads surrounding the site.

New connections will be made to the existing Eir networks at the boundary of the site and services will be distributed throughout the site as required. The exact extent and location of these connections will be agreed with Eir during the design stage of the project. All other utility providers will be contacted again during the design phase of the project to confirm if their services are available in the vicinity for connectivity.

POTENTIAL EFFECT OF THE PROPOSED DEVELOPMENT 12.5

12.5.1 CONSTRUCTION PHASE

12.5.1.1 Surface Water

The installation of the surface water sewers for the development will be conducted in parallel with the other services. This will involve construction of pipes and manholes using trench excavation. The potential adverse effect of the proposed development during the construction phase of the development would therefore be short term and minimal as the trenches will be backfilled with appropriate fill material following installation and completion of connection to existing drainage ditch.

Damage to existing underground and over ground infrastructure resulting in possible contamination of the existing systems (including watercourses) with construction related materials. This likely adverse effect would be temporary, regionally short term and moderate.

12.5.1.2 Foul Water

The installation of the foul sewers and rising mains for the development will be conducted in parallel with the other services. This will involve construction of pipes and manholes using trench excavation. The potential adverse effect of the proposed development on the local foul sewerage network during the construction phase of the development would therefore be short term and minimal following connection to the existing network being made.

The site compound will require a temporary foul connection. This likely adverse effect will be temporary and negligible. Improper discharge of foul drainage from contractor's compound could contaminate groundwater and nearby watercourses through seepage. The likely adverse effect on the nearby watercourses would be temporary, regionally short term and moderate.

12.5.1.3 Watermain

Provision of a new water main distribution network would involve construction activities within the subject lands involving trench excavations conducted in parallel with the other services.

There is a risk of contamination of the public water supply during the construction and in particular the connection of the watermain network for the scheme to the public supply. The potential adverse effect on the local public water supply network would be short term and imperceptible.

The site compound will require a water connection. This likely adverse effect will be temporary and negligible.

12.5.2 POWER, GAS & TELECOMMUNICATIONS

The installation of the utilities for the development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

The relocation or diversions of the existing overhead ESB lines may lead to loss of connectivity to and/or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise the impact on neighbouring properties.

There is also a potential loss of connection to the Telecommunications infrastructure while carrying out works to provide service connections. Any loss of supply will be managed by Eir / Virgin Media to minimise the impact on neighbouring properties.

The construction of the proposed development has the potential to cause **a slight**, **adverse**, **temporary**, **residual impact** on receiving the electricity, gas and telecommunication networks.

12.5.3 'DO-NOTHING' SCENARIO

There are no predicted impacts on these material assets should the proposed development not proceed.

12.5.4 OPERATIONAL IMPACTS

Potential operational phase effects on the water infrastructure are noted below:

12.5.4.1 Surface Water

Increased impermeable areas could potentially reduce local ground water recharge and increase surface water runoff (if not attenuated to greenfield runoff rate –refer to Chapter 6 – Water and Hydrogeology) from the site.

Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas) would result in an adverse, slight effect.

12.5.4.2 Foul Water

The impact of the proposed development on the public foul sewerage system will be to increase the quantity of wastewater discharging to the Farganstown WasteWater Treatment Works (WWTW) for treatment and disposal. The estimated loading from the occupancy of the proposed development site would be approximately 157,106 litres per day.

There also exists a minor risk associated with the possibility of leakage from damaged foul sewers and drains within the development site. Any foul water leakage could result in minor contamination of groundwater in the area.

The potential impact from the operational phase of the development is therefore likely to be long term and minimal.

12.5.4.3 Water Supply

The impact of the operational phase of the proposed development on the public water supply will increase the demand on the existing supply by approximately 1.65 l/s. As such additional water quantities would need to be treated and supplied through the existing network to the site. This will require extra cost as well

as increasing abstraction volumes from the existing source. The potential adverse impact of the proposed development on the public water supply network is likely to be long term and minimal.

12.5.5 POWER, GAS & TELECOMMUNICATIONS

The impact of the proposed development on the local ESB network will see an increase demand from the grid throughout the operational phase and will increase incrementally at the completion of each phase.

The development will result in an increased demand for telecommunications throughout the operational phase as expected. As more utility providers continue to enhance and expand their networks in Navan we do not foresee an issue with lack of capacity in the area.

There is no impact envisaged on the local gas network as no new connections are sought for the development.

12.6 MITIGATION MEASURES

12.6.1 CONSTRUCTION MITIGATION

Mitigation measures proposed in relation to the drainage and water infrastructure include the following:

12.6.1.1 Stormwater Infrastructure

The site will be attenuated to greenfield run-off rates as per GDSDS guidance to mimic the current scenario and then discharge to the Millrace / Farganstown Stream.

The use of permeable paving, detention basins and attenuation ponds which have been designed to minimize runoff and maximize groundwater re-charge through infiltration into sandy / gravelly soils (encountered in the geotechnical investigation) will minimize potential effects on groundwater re-charge.

A detailed "Construction and Environmental Management Plan" (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the "Construction and Environmental Management Plan". The mitigation measures contained in the EIAR will be included in the contractors' CEMP.

Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate settlement pond/tank prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.

12.6.1.2 Foul Infrastructure

In order to reduce the risk of defective or leaking sewers, all new sewers will be laid in accordance with Irish Water standards, pressure tested, and CCTV surveyed to ascertain any possible defects.

The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established.

12.6.1.3 Water Supply

The construction compound's potable water supply shall be protected from contamination by any construction activities or materials by constructing it to Irish Water standards with appropriate cover.

Please also refer to Chapter 6.0 – Water for mitigation measures.

12.6.1.4 Power, Gas & Telecommunications

01061025 The relocation or diversions of the existing overhead ESB lines may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

Any loss of supply will be managed by Eir / Virgin Media to minimise impact on neighbouring properties.

12.6.2 OPERATIONAL MITIGATION

Where possible backup network supply to any services will be provided should the need for relocation or diversion or existing services be required otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

Please refer to Chapter 6.0 Water for further operational mitigations.

12.7 **CUMULATIVE IMPACTS**

Each project currently permitted or under construction is subject to EIA and/or planning conditions which include appropriate mitigation measures to minimise effects on the land, geological and hydrogeological environment. Cumulative impacts, if any, will be limited to the construction stage and will, therefore, be temporary to short-term in duration. As long as mitigation measures for the developments are carried out as permitted, there will be no significant cumulative impacts on the land, geological and hydrogeological environment.

Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) - 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park and comprise construction of: 3 no. commercial high-bay warehouse units.

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

Some separate Irish Water upgrade works may be needed to facilitate development in general in Navan, including the subject lands, but do not form part of this application. The sewerage/water supply connections to serve the site have already been constructed in the new public road (LDR6) by Meath County Council / Irish Water.

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

12.7.1 STORMWATER INFRASTRUCTURE

The cumulative impacts of the proposed development are that the local hydraulic pressure on the storm system will be reduced. The requirement to attenuate the subject site to pre- development run-off rates will ensure that during extreme storm events the surface water from the development is limited. The use of sustainable urban drainage features will aid in improving overall storm water quality prior to ultimate discharge.

12.7.2 FOUL INFRASTRUCTURE

The potential impacts on the local and regional foul drainage system are that the proposed development would reduce capacity in the adjoining sewer and the capacity in the Regional WasteWater Treatment Plant in Navan. Notwithstanding same, the lands are zoned for residential development and local upgrades to the regional infrastructure combined with the adequate capacity in the WwTP in Navan. Irish Water has confirmed that the WWTP at Farganstown has adequate capacity to cater for the proposed development and has issued a Confirmation of Feasibility confirming this.

12.7.3 WATER SUPPLY

No potential cumulative impacts are anticipated in relation to potable water as Irish Water have advised that provision of a wastewater connection is feasible.

12.7.4 ESB INFRASTRUCTURE

The relocation or diversions of the existing overhead ESB lines may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise potential impacts on neighbouring properties.

12.7.5 BROADBAND INFRASTRUCTURE

There is could be a potential loss of connection to the Telecommunications infrastructure while carrying out works to provide service connections. Any loss of supply will be managed by Eir / Virgin Media to minimise potential impacts on neighbouring properties.

12.7.6 'DO NOTHING' IMPACT

In order to provide a qualitative and equitable assessment of the proposed development, this section considers the proposed development in the context of the likely impacts upon the receiving environment should the proposed development not take place.

If the proposed development does not proceed there would be no impact on the subject site. The current material assets would continue to operate in their current state.

12.8 PREDICTED (RESIDUAL) IMPACTS OF THE PROPOSED DEVELOPMENT

12.8.1 CONSTRUCTION PHASE

Implementation of the measures outlined in Section 12.6 will ensure that the potential effects of the proposed development on the site's material assets do not occur during the construction phase and that any residual effects will be short term.

12.8.2 OPERATIONAL PHASE

The volume of potable water for treatment and use will increase due to the development of the lands. Please refer to ESR report prepared by HRA Consulting Engineers for details.

The demand on power supply and telecommunications supply will all increase due to the development of the lands. The total increase in the capacity of the local electrical infrastructure as a result of the proposed development will be approximately 2.8MW. The infrastructure of both networks in the in the immediate vicinity of the site is adequate to meet these anticipated demands and there will be no adverse effect on the ability of the respective network to meet the existing demands in the areas surrounding the site. The development of the lands will be constructed inphases, with the final phase being due for completion circa 2029.

12.9 MONITORING

Please refer to Chapter 6.0 – Water and Chapter 4.0 Biodiversity for the proposed monitoring in relation to the surface water during the construction phase. There is no specific monitoring is proposed in relation to the remaining material assets infrastructure during the construction phase.

Proposed monitoring during the operational phase in relation to the water infrastructure are as follows:

- All drainage works will be approved by Meath County Council, Sanitary Services Division, and will be carried out in accordance with the GDRCOP (Greater Dublin Regional Code of Practice for Drainage Works).
- The surface water and foul drainage systems will be monitored by way of observation of any flooding events if such occur and the establishment of a proper maintenance programme for all sewers / Suds features etc.
- Regular cleaning of pipe networks within the development taken in charge will ensure no blockage will obstruct any flow from surface and foul networks.
- On-going water usage within the proposed development will be monitored by bulk water meters. Water usage will be monitored by the relevant authority to avoid waste and leaks etc.
- All drainage works will be approved by Meath County Council and will be carried out in accordance with the GDRCOP (Greater Dublin Regional Code of Practice for Drainage Works).
- All foul and surface water sewers will be CCTV surveyed prior to being 'taken in charge' by Meath County Council.

12.10 REINSTATEMENT

Reinstatement of any excavations relating to the provision of surface and foul drainage, electrical, gas and telecommunications connections is to be carried out in accordance with the relevant asset provider's requirements and the requirements of Meath County Council.

12.11 INTERACTIONS

The potential significant impacts on Material Assets – Utilities arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur.

There are interactions between utilities and lands and soils, with the construction of drainage and utilities impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be permanent slight, permanent and negative.

12.12 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no difficulties encountered in relation to compiling information.



13.0 CULTURAL HERITAGE

13.1 INTRODUCTION



Magda Lyne (MA, MIAI) is an Archaeologist with over 15 years of experience. Her primary focusincludes preparing Archaeological and Cultural Heritage Chapters for EIARs, Archaeological Impact Assessments (AIA), and Cultural Heritage Impact Assessments (CHIA). She has completed EIARs for numerous projects across Ireland, including housing, pharmaceutical plants, wastewater facilities, and public realm projects.

Donald Murphy (BA(Hons), MA, MIAI) is the founder and Managing Director of Archaeological Consultancy Services Unit Ltd and he has over 30 years of experience as an archaeological consultant. Donald has completed EIARs for a variety of projects across Ireland and has managed the archaeological work in advance of several large infrastructural schemes, such as the M3 and M4 motorways.

This chapter was prepared in relation to a Large Scale Housing Development on lands at Ferganstown and Ballymacon & Athlumney, Navan, Co. Meath (ITM 688806, 768139). It includes the results of a desktop archaeological assessment and a geophysical survey undertaken in June 2020 by Donald Murphy under licence 20R0115; test trenching undertaken in January 2024 by Ida La Fratta under licence 23E1013 with features of archaeological significance exposed and excavated since (this was in response to An Bord Pleanála Order ABP-312746-22 and Planning Ref. No. 21/1046 of Meath County Council); and most recently test trenching in May 2024 by Linda Clarke under licence 23E0553 carried out at the request of the client at the pre-planning stage where some small isolated features of archaeological significance were exposed. This document was updated in May 2024 to include up-to-date guidelines, test trenching results and relevant documents.

This chapter assesses the impacts of the proposed development on the known and potential cultural heritage resources. UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (*immovable*: archaeological sites and monuments, architectural heritage structures; movable: artefacts; and underwater: shipwrecks, submerged features) and intangible assets (e.g. folklore, oral tradition and language). Based on this assessment, the chapter then identifies appropriate mitigation strategies.

The recorded and potential cultural heritage resource within the study area, encompassing both the proposed development site and the lands extending for 500m from its boundary, was assessed in order to compile a comprehensive cultural heritage baseline and context.

13.2 LEGAL AND PLANNING FRAMEWORK

The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995) (formally the European Convention on the Protection of the Archaeological Heritage, 1992) ratified by Ireland in 1997; the European Convention on the Protection of Architectural Heritage (Granada Convention, 1985), ratified by Ireland in 1997; and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, ratified by Ireland in 2015.

The national legal statutes and guidelines relevant to this assessment include:

- National Monuments Act (1930) (and amendments in 1954, 1987, 1994 and 2004 and 2014); •
- Heritage Act (1995); •
- National Cultural Institutions Act (1997);



Figure 13.1: Location of site

(with nearby; Sites and Monuments Record; previous archaeological investigations; protected structures and; National Inventory of Architectural Heritage sites).

- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999);
- Planning and Development Act (2000);
- Architectural Heritage Protection: Guidelines for Planning Authorities (Department of Arts, Heritage, and the Gaeltacht, 2011); and
- Framework and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands, 1999)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency, 2022)

13.2.1 ARCHAEOLOGICAL HERITAGE

The following section presents a summary of the legal and policy frameworks designed to protect the Irish archaeological resource and further information is available in the *Framework and Principles for the Protection of the Archaeological Heritage*²² published by the Department of Arts, Heritage, Gaeltacht and the Islands (1999). The administration of national policy in relation to archaeological heritage management is the responsibility of the National Monuments Service (NMS) which is currently based in the Department of Arts, Heritage and the Gaeltacht. The National Monuments Act of 1930, and its Amendments, are the

²²<u>https://www.archaeology.ie/sites/default/files/media/publications/framework-and-principles-for-protection-of-archaeological-heritage.pdf</u>

primary means of ensuring the satisfactory protection of the archaeological resource. They include a number of provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites as National Monuments, the Register of Historic Monuments, the Record of Monuments and Places, the Sites and Monuments Record, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

The archaeological heritage is protected under the National Monuments Act 1930-2014 and its amendments:

- National Monuments (Amendment) Act 2004²³
- National Monuments (Amendment) Act 1994²⁴
- National Monuments (Amendment) Act 1987²⁵
- National Monuments (Amendment) Act 1954²⁶
- National Monuments Act 1930²⁷

13.2.2 ARCHITECTURAL HERITAGE

This section presents a summary of the legal and policy frameworks designed to protect Irish Architectural Heritage; further information is available in the 'Meath County Council: A Guide to Architectural Heritage Protection'²⁸ and in 'Architectural Heritage Protection – Summary of the Guidelines for Planning Authorities'²⁹.

The legal framework in Ireland rests upon UNESCO's 'Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)' ³⁰ ratified in Ireland in 1991 and the 'Grenada Convention (1987)' ³¹, ratified in Ireland in 1997, the latter forms the basis for the protection of architectural heritage in Ireland. The architectural heritage is protected through legislative provisions that were introduced in the Local Government: Planning and Development Act 1999 and has since been replaced by Part IV of the Planning and Development Act 2000³². Responsibility for this legislation lies with the Department of Housing, Local Government and Heritage.

County Development Plans contain a list of protected structures. The planning authority's responsibility is to preserve the character of places and townscapes by assigning Architectural Conservation Areas (ACA), objectives for protection of structures and preservation of the character of areas and is included in the development plan for each county. When a structure is protected it involves the structure, its interior and the land within its curtilage and all fixtures or features both interior and exterior. Should any work take place in relation to protected structures or the exterior of a structure located within an ACA the Department of Housing, Local Government and Heritage must be informed at least 2 months prior to any scheduled works.

Conservation of Architectural Heritage is promoted through the National Inventory of Architectural Heritage that was established in 1990 as a result of the Grenada Convention. This state initiative was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and historic

²³<u>http://www.irishstatutebook.ie/eli/2004/act/22/enacted/en/print</u>

²⁴http://www.irishstatutebook.ie/eli/1994/act//17/enacted/en/print

²⁵http://www.irishstatutebook.ie/eli/1987/act/17/enacted/en/print

²⁶<u>http://www.irishstatutebook.ie/eli/1954/act/37/enacted/en/print</u>
²⁷<u>http://www.irishstatutebook.ie/eli/1930/</u>

²⁸<u>https://www.meath.ie/system/files/upload/Protected%20Structures%20-</u> %20A%20Guide%20to%20Architectural%20Heritage.pdf

²⁹<u>http://www.pleanala.ie/publications/2005/arch_heritage_protection.htm</u> ³⁰<u>https://whc.unesco.org/en/conventiontext/</u>

³¹ https://whic.unesco.org/en/conventions/full list/

³¹<u>https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/121</u> ³²<u>http://www.irishstatutebook.ie/eli/2000/act/30/section/51/enacted/en/html</u>

monuments (miscellaneous provisions) Act, 1999³³. Its role is to identify, record and evaluate the post-1700 architectural heritage of Ireland. It acts as an aid in the protection and conservation of the built heritage, and it provides the basis for the recommendation of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of structures in the Record of Protected Structures (RPS).

13.2.3 EIA LEGISLATIVE FRAMEWORK

The EIA Directives (from 1985 to 2014) set out the requirement for an EIA in European law. This assessment has been prepared in accordance with EIA requirements of codified Council Directive 2011/92/EU as amended by EIA Council Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: *Planning and Development Act, 2000 (as amended) (Part X)* and in *Part 10 of the Planning and Development Regulations, 2001 (as amended).*

Ireland has transposed EU Directive 2014/52/EU by way of the *European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018* which came into operation on 1 September 2018. The Regulations provide for the transposition of the 2014 EIA Directive and give further effect to the 2011 EIA Directive by way of extensive amendments to existing planning law.

13.2.4 STATUTORY CONSULTATIONS

The Minister for Housing, Local Government and Heritage is a statutory consultee in relation to potential impacts of any proposed development on the archaeological heritage under the Planning and Development legislation. At the recommendation of the Minister archaeological conditions can be attached to grants of planning permissions, refusal of planning permission can also be recommended in order to ensure the protection of archaeological heritage.

Archaeological licences are issued at the discretion of the Minister under section 26 of the National Monuments Act (as amended).

The Director of the National Museum of Ireland is a statutory consultee in relation to licence applications, as provided under section 26 (2) of the National Monuments Act 1930 (as amended).

Detection and excavation licences are granted to licence eligible archaeologists following submission of the form (Form NMS 1 -2019); detailed method statement and; funding letter at least three weeks prior to the commencement date to the Department of Housing, Local Government and Heritage in Consultation with the National Museum of Ireland is a body responsible for issuing archaeological licences.

13.3 METHODOLOGY

This section commences with an outline of the criteria used to assess the nature of impacts on the known and potential elements of the cultural heritage resource within the study area. The baseline information on this resource was established by a combination of desk-based research, a site inspection, geophysical survey and test trenching which were undertaken to identify features of cultural heritage significance likely to be affected by the proposed development.

This chapter's methodology is guided by a legislative framework that governs how aspects of archaeological, cultural and architectural heritage are protected. It has been prepared in compliance with all relevant EIAR legislation and guidance, including the recently published guidelines by the Environmental Protection Agency (EPA, 2022)³⁴.

 ³³<u>http://acts.oireachtas.ie/en.act.1999.0019.1.html</u>
 ³⁴<u>https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf</u>

13.3.1 ASSESSMENT METHODOLOGY – POTENTIAL IMPACTS

The quality and type of an impact can be classed as one of the following (as pertipe Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022):

- Negative Impact: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;
- Neutral Impact: A change which does not affect the quality of the environment; or
- Positive Impact: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage site.

The below terms are used in relation to the archaeological and cultural heritage and relate to whether a site will be physically impacted upon or not:

- Direct Impact: Where an archaeological/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and
- Indirect Impact: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

13.3.1.1 Significance of Effects

Impact definitions (description of effects) are as per the most recent EPA guidelines (2022):

Imperceptible

An effect capable of measurement but without significant consequences

Not significant

An effect which causes noticeable changes in the character of the environment but without noticeable consequences

Slight

An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate

An effect that alters the character of the environment in a manner that is consistent with existing or emerging baseline trends.

Significant

An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.

Very Significant

An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment

Profound

An effect that obliterates sensitive characteristics.

13.3.2 DOCUMENTARY SOURCES

SIL. ONDERORA For the purposes of this report, archaeology, architectural & cultural heritage is considered to include the following elements:

- Sites listed in the Sites & Monuments Record (SMR) ٠
- Record of Monuments & Places (RMP) •
- National Monuments •
- Archaeological sites listed on the National Monuments Service website
- Sites reported in the Excavations Database
- Any previously unrecorded sites
- A list of protected monuments.
- A list of architectural heritage structures (NIAH)
- A list of protected structures (Meath County Development Plan 2021-2027)

The following sources were consulted in order to identify and map archaeological sites within and adjacent to the proposed development site:

13.3.2.1 Sites and Monuments Record (SMR) and Record of Monuments & Places (RMP) 35

A primary cartographic source and base-line data for the assessment was the consultation of the Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) for County Meath (Table 13.2). All known recorded archaeological monuments are indicated on 6-inch Ordnance Survey (OS) maps and are listed in this record. The SMR/RMP is not a complete record of all monuments as newly discovered sites may not appear in the list or accompanying maps. In conjunction with the consultation of the SMR and RMP, the electronic database of recorded monuments that may be accessed on their website was also consulted.

13.3.2.2 National Monuments³⁶

A List of Monuments covered by Preservation Orders and a List of National Monuments in the ownership/guardianship of the Minister for Housing, Local Government & Heritage. National Monuments in the ownership/guardianship of the Minister for Housing, Local Government & Heritage are listed on the Department's website.

13.3.2.3 Database of Irish Excavation Reports³⁷

The excavations database is an annual account of all excavations carried out under license. The database includes excavations from 1970 to the present. This database was consulted as part of the desktop research for this assessment to establish if any archaeological excavations had been carried out on or near to the proposed development area (Table 13.1).

13.3.2.4 Topographical Files, National Museum of Ireland

The topographical files of the National Museum of Ireland contain information pertaining to archaeological finds (mainly artefactual) and excavations in numerous townlands throughout the country, which were reported to the museum from the 1920s. While many of these findspots are not recorded monuments, they can provide an indication of archaeological activity in a townland and consequently add to the archaeological potential of an area (Table 13.4)).

³⁵https://maps.archaeology.ie/HistoricEnvironment/

³⁶https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-meath.pdf ³⁷<u>https://excavations.ie/mapsnew/</u>

13.3.2.5 Cartographic Sources

A number of cartographic sources were also consulted as part of the desktop assessment, namely the Down Survey maps of the area (1656-8), the first edition 6-inch (1840) and the 25-inch edition (1907) OS maps and available aerial photography (See 13.4.8 and 13.4.9)

13.3.2.6 Tangible cultural heritage area

Cultural heritage is a broad term encompassing aspects of archaeology as well as architecture. Both elements can be expressed in landscape and can relate to designated landscapes, historic places, monuments, settlements, including buildings and structures.

Tangible cultural heritage areas within the site were identified via examination of Ordnance Survey mapping and as a result of the site visit.

13.3.2.7 Protected Structures (RPS) ³⁸

The *Meath County Development Plan 2021-2027* was consulted. These contain a list of Architectural Conservation Areas and a Record of Protected Structures for the County (See 13.4.4). The latter lists cultural heritage sites, buildings of historic, architectural, -cultural, scientific and/or artistic interest. These are protected by the Local Government (Planning and Development) Act 1999 and the Planning and Development Act 2000 (Part IV Architectural Heritage).

13.3.2.8 Architectural Heritage Sites (NIAH) 39

The National Inventory of Architectural Heritage for County Meath was consulted to determine if any architectural heritage sites were present within the proposed development site (See 13.4.4). It contains a record and evaluation of the post-1700 architectural heritage of Ireland, as an aid in the protection and conservation of the built heritage. It provides the basis for recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

13.3.3 ADDITIONAL SOURCES

The following additional sources were also consulted in order to inform the assessment of all aspects of the archaeological resource within and adjacent to the proposed development site and that the assessment is cognisant of all relevant policies and objectives.

- Site inspections;
- Geophysical survey;
- Test Trenching.
- •

13.3.3.1 Site Inspections

In addition to the desktop study, a site inspection was conducted (See 13.4.7). Site inspection involves examination of the site and includes visiting and walking the area to be developed and its immediate vicinity that might be impacted upon. The general terrain type and land usage are noted, alongside any features of archaeological or historical importance. Their current condition is also investigated and noted. Any suspected landscape anomalies are also visually inspected to determine the possibility of them being anthropogenic in origin. It seeks to identify current and previous land use and to locate any features of archaeological or architectural heritage potential or items of cultural heritage interest on the site.

 ³⁸<u>https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan/chapter/a06-record-protected-structures</u>
 ³⁹<u>https://www.buildingsofireland.ie/</u>

13.3.3.2 Geophysical Survey

Geophysical survey is a non-invasive method of an archaeological assessment that aims to establish the presence of any archaeological features within the site, it is used to inform a program of test trenching and the planning process. This is carried out under detection licence granted to a licence eligible archaeologist and is issued by the Department of Housing, Local Government and Heritage.

Geophysical survey involves surveying the site with a gradiometer system. This allows the detection of potential archaeological responses that show up as a visual representation of variations in soil magnetism. Human activity leaves traces in soil that can sometimes be detected in the course of geophysical survey. Some Geophysical instruments (such as a Bartington GRAD 601-2) were designed especially for archaeological purposes and can detect variations in soil magnetism affording diverse application throughout a variety of archaeological, soil morphological and geological conditions. The results of the geophysical survey are expressed in a form of a greyscale map showing an outline of anomalies detected in the course of survey, these are interpreted by trained archaeologists, however further investigation is often required (in a form of testing/monitoring, that can lead to full excavation) in order to fully assess their depths, age and composition. Upon the completion of the geophysical survey, a report detailing the results of the assessment is prepared and submitted to relevant authorities.

The site was subject to geophysical survey. The survey was carried out by Donald Murphy and Robert Breen of Archaeological Consultancy Services Unit Ltd. (ACSU) between 16th – 30th June 2020 under licence 20R0115 issued by the Department of Housing, Local Government and Heritage. Following the completion of the survey a report was submitted to the Department of Housing, Local Government and Heritage. The full survey is contained in Appendix A (Volume III) of this document.

13.3.3.3 Archaeological Test Trenching

Test trenching is an invasive method of archaeological assessment that aims to establish the presence or absence of any archaeological features within the site; it can be informed by geophysical survey. This is carried out under an excavation licence granted to a licence eligible archaeologist and is issued by the Department of Housing, Local Government and Heritage in consultation with the National Museum of Ireland.

A tracked excavator under strict archaeological supervision is used to excavate trenches across the relevant areas; if geophysical survey of the area was undertaken its results are taken into account and trenches are laid out in order to target anomalies identified in order to fully assess their depths, age and composition. The test trenches are excavated to natural subsoil or the top of archaeological deposits.

During the course of the test trenching the archaeologist investigates and records any archaeological features present and recovers any finds that may be identified. In the event that potential archaeological features are uncovered during testing, these are investigated by hand, a small sample of the features is excavated in order to determine their depth and extent. The features are cleaned and recorded (by plan, photographs, levels, feature sheets, etc.). Upon completion of the archaeological testing, a report detailing the results of the testing, including the location and extent of these features is submitted to relevant authorities. If any finds are recovered during the course of the test trenching, they are washed, if appropriate, treated, catalogued, stored, and left ready for post-excavation analysis. Any items recovered that require urgent conservation are treated immediately by a professional conservator. All appropriate environmental samples and dating samples are taken and sent for further analysis. Should human remains be recovered in the course of test trenching services of an osteologist are required.

The study area was subject to archaeological test trenching (See 13.4.11), this form of mitigation was recommended by assessments carried out in relation to the proposed development (Lyne and Murphy 2020, Murphy and Breen, 2020).

13.4 RECEIVING ENVIRONMENT

13.4.1 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND



The site is located c. 1.7km east of the town centre of Navan, on lands to the south of Boyne Rd (L1600) and to the south of the River Boyne. The site is adjacent to and north of Old Rd, just off Kentstown Rd (R153), and is located in the townlands of Ferganstown & Ballymacon and Athlumney, in Navan, in the civil parish of Athlumney and the barony of Skreen in Co. Meath. It is located within two townlands; the northern extent of the site is within Ferganstown & Ballymacon townland, with the townland boundary between it and Athlumney running roughly in the east-west direction within the development site. The site is located to the south of the Oldcastle-Drogheda railway line which was constructed in the 1850s and later became a part of the Great Northern railway (See Figure 13.1).

An examination of the Placenames Database of Ireland (www.logainm.ie) can reveal important information about the natural and cultural heritage of an area. For example, Athlumney (Áth Luimnigh) can be translated as the ford of the expanse of water and was first mentioned in 1302 as 'Athlumpny'. The townland is located adjacent to and south and west of the River Boyne. Clear evidence for human activity in the environs of the site can be seen from the Bronze Age, including within this townland. Wilde (1850) identified a mound or tumulus (ME025-029) and a cist (ME025-028) located within the townland of Ferganstown & Ballymacon. O'Brien (2003) described a Barrow – Unclassified (ME025-029) as a 'Mound Burial' and lists it alongside monuments discovered in Ninch Co. Meath, Pollacorragune, Tuam, Co. Galway and Muckduff, Co. Sligo.

The first known historical references to the townland of Ferganstown & Ballymacon is from The Down Survey map of County Meath (1654-56) (Figure 13.2). It depicts Athlumny Parish as well as Ballimuchan and Fargnstown. Within the wider area, several mills along the River Boyne are depicted as well as several buildings close to the River Boyne near Navan, likely representing Athlumney tower house and house offset and perhaps castle-motte. The buildings depicted on the Down Survey Map are without crosses, suggesting the early 14th century Athlumney Church is not one of these buildings. To the northeast of the site, Ardmulchan Church is depicted. Taylor and Skinner's map (1777) was also inspected; however it does not offer any relevant detail. Ordnance Survey maps give a glimpse into the busy landscape of the environs of the site. With no buildings depicted within the area of the site on either the 1st Edition Ordnance Survey (OS) 6-inch map of 1836 (Figure 13.3) or on the OS 25-inch map of 1909–11. It appears however that the boundaries remained mostly unchanged since the 1st Edition Ordnance Survey Map, likely due to the presence of a wet ditch in part of the site. Outside of the site but in close proximity to the south of it, running northwest-southeast, a road connecting with the Boyne Rd is depicted leading to fields. It likely represents a former way to Killagrin settlement. This road outline is still visible today in the form of a boundary, however, a building, possibly a farm surrounded by a plot which is visible on the 1835 map, is no longer present by the time of the 1909-1911 map. What appears to be an 18th century 'Model Village' project is depicted on the 1835 map. It is labelled Factory, and a School House and a Mill Dam are also shown.



Figure 13.2: Down Survey Map of County Meath, Barony of Skreen (1654-56)

These are located at the end of a narrow lane connecting it to Boyne Rd that now runs under the Drogheda-Navan railway, which was opened in the 1850s. By the time of the 25-inch map of 1907–11, the railway is depicted as well as a number of mill races running along the water channel. The mill building is now demolished and has been replaced with modern sheds. The field system remained largely unchanged in the area, with relatively few adjustments. The Little Furze settlement located to the south-southwest, as well as Killagrin settlement to the south-southeast of the proposed development are depicted on both OS maps. Located c. 0.5km to the northwest of the site, along the south side of the River Boyne, on the north side of Boyne Rd, Flax, Corn, and Flour Mills are depicted at the time of the 1835 map, suggesting that the wider area was relatively wealthy. Lewis (1837) mentions flax-mills and a very extensive flour-mills property of Mr. Delany. One of these was called the New Mill. It was fitted with machinery and ten pairs of stones, six for grinding wheat and four for oats. These were run by a steam engine of 30 power. To the south of Boyne Rd but north of the Oldcastle Branch railway track, St Mary's cemetery is located. It was not depicted on the 1835 map, but on the 1909-1911 map, its boundaries are already established with hedgerows or trees.

To the southeast of the site, parts of an old routeway are visible on the OS mapping, also mentioned by Roycroft (2017). This routeway ran from Kilcarn, curving northwards, via Alexander Reid Cross Roads and on to Kilagrin. The road very likely continued north along the boundary, through Farrell's Lodge and along the River Boyne and towards Babes Bridge to Donaghmore and likely connects with the route now replaced by the N51. Babe's Bridge is a protected structure that represents the oldest surviving authenticated bridge arch in Ireland (O'Sullivan, Downey 2015). The bridge in question survived the great flood of 1330 but was neglected since the mid-15th century and fell into ruin. It is likely that the route went

⁽showing approximate location of the site)
out of use during the 17-18th century, surviving only in parts. Both maps also illustrate the townland boundary between Ferganstown & Ballmacoon and the townland of Athlumicey and this boundary is located within the current site.

A recorded monument, an enclosure (ME025-053) is also noted 0.6 km to the north of the site. The townlands contain several other Recorded Monuments which are outlined in the section below (13.4.3).





(showing location of the site and known settlements in the proximity of it.)

Navan Town

Navan is situated at the confluence of the Boyne and Blackwater on the main routeway between Dublin and Kells. The medieval town hugged the top of a triangular ridge overlooking the river junction. The ground drops steeply along Watergate Street, on the north, and Ludlow Street, on the south, but westwards along Trimgate Street and Brews Hill the drop is much more gradual. The placename is derived from An Uaimh, 'the cave'. The proximity of the Boyne River would have provided an ideal location for Mesolithic activity. The Boyne Valley was an ideal environment for these early communities. According to Stout (2002), water proximity in coastal, lakeside or riverine setting is a locational feature of 75% of Mesolithic sites in Ireland. The small group of prehistoric objects known from the town suggests that it was frequented during the Neolithic and Bronze Age, perhaps because of its suitability as a fording point (Bradley, 1985). The nature of this prehistoric activity remains unknown but there is nothing to suggest that there was a settlement here at any time. Perhaps the most significant archaeological discovery from the town is the rich Viking burial discovered in 1848 (Wilde, 1850). Burials are usually indicators of settlement, and this find suggests that further work may uncover remains of the Viking period, perhaps a rural settlement site. Navan is traditionally identified with Nuachongbail, where an early monastery was reputedly established by St Fechín (Gwynn and Hadcock, 1970).

Although no reference to the monastery occurs in contemporary sources, the likelihood of its existence is supported by the foundation of a house for Augustinian Canons prior to the Norman conquest of the late 12th century AD (Bradley, 1985). This monastery appears to have been subsequently patronised by Jocelin de Angulo, to whom Hugh de Lacy granted Navan and Ardbraccan before 1186 (Orpen, 1911–20, 84). De Angulo built a motte on an esker ridge south of the Blackwater and he or his son William was probably responsible for the foundation of the town. Nothing is known of the early development of the Anglo-Norman town of Navan and the first clear documentary indication of it as a corporate borough is in 1462 (Berry, 1914). Corporate charters were granted in 1494, 1605 and 1679 (Cogan, 1862). A charter of James II made in 1689, like his other Corporation charters, did not come into force after the Battle of the Boyne. In the Later Middle Ages the town was on the frontier of the Pale and in 1539 it was plundered by O'Neill and O'Donnell. Exposure to attack was so great that the parliament of 1542-3 enacted a charge of 3s 4d on every ploughland in Meath and Westmeath in order to build the walls of Navan. The street pattern of the medieval town was essentially Y-shaped and consisted of Trimgate Street, Ludlow Street and Watergate Street. New Bridge and the street leading to it from Market Square are additions of more recent times. In the 16th-century Cannon Row was built up and the Civil Survey makes it clear that by the mid-17th century streets were established outside the gates on the north, west and south giving the street plan the characteristically linear form which it has retained. The area of the medieval town is characterised by a largely intact burgage plot pattern. The plots are almost all of the long burgage variety with the house fronting onto the street and the property extending to the town wall at the rear. The town charters of 1605 and 1679 refer to markets and fairs and there is little doubt that the importance of the town in the medieval period rested on its function as the market place for its hinterland. The medieval market place was located at the junction of the medieval streets in what was later known as Market Square. It was of a triangular form like those at Thurles and Fethard, Co. Tipperary. The remnants of a market cross of c. 1585 are now preserved in the National Museum of Ireland (No. X1639).

The tradition that Hugh de Lacy walled the town may be dismissed on the grounds that de Lacy was dead before the town was established. The earliest references to murage occur in the mid-15th century. In 1462 the Irish Parliament ordained that Navan could continue to collect the murage customs which had been levied during the reign of Henry VI (1422–61). After the sack of the town in 1539 monies were raised to refortify the walls. This would not appear to have been substantial, however, because in 1598 Navan was grouped with Duleek among the market towns as opposed to the walled towns of Meath. As with other Irish towns, the 18th century was the period that witnessed the removal of the gates and the demolition of much of the wall. Dublin Gate was widened in 1786 and Watergate in 1788. The walled town enclosed an oval area measuring 320m by 275m covering an area of about 5.2 hectares (13 acres) with a circumference of about 800m (Bradley, 1985).

13.4.2 TANGIBLE ARCHAEOLOGICAL AND HISTORICAL ASSETS

13.4.2.1 Summary of Previous Archaeological Fieldwork in the environs

The site was subject to test trenching on two occasions (see Section 13.4.11 for details). Furthermore, a site to the east, adjacent to and west of the new road, and directly north of Old Road and Hodgett Road roundabout, measuring 1.5ha was subject to monitoring in 2022 with no features identified (Noonan, Hegarty, 2023). A site to the south, adjacent to and between Old Road and Kentstown Road was subject to test trenching (23E0033) with no archaeological features or objects discovered (after Noonan, Hegarty, 2023). These sites are not yet uploaded onto the Database of Irish Excavation Reports (1970-2024).

A review of the Database of Irish Excavation Reports (1970-2024) has shown that the nearest excavation to the study area located adjacent to the eastern boundary of the field (18E0308) did not reveal any features of archaeological interest, several archaeological investigations have been carried out in the surrounding area over the past 25 years. In general, the evidence suggests an area with significant prehistoric, medieval and post-medieval activity, in the form of both habitation and funerary sites.

Listed below are the investigations located within and in the environs of the study area that further demonstrate the overall archaeological potential of the site and its surrounding townlands. The details are derived from the Summary Accounts of Archaeological Excavations in Ireland (<u>www.excavations.ie</u>).

| Site | Licence No. | RMP/SMR No. | Site Type | Investigation Type | 2207 |
|--|----------------|-----------------------------|---|---|----------------|
| Ferganstown & Ballymacon Townland, Farganstown, Navan, Co. Meath | N/A | N/A | No archaeology found | Monitoring | T _X |
| Metges Road, Navan | 22E0165 | N/A | No archaeology found | Monitoring | |
| Dunville Apartments, Alexander Reid, Navan | 22E0952 | N/A | Pits, Kilns, cereal processing Early Medieval (AD 400-AD 1099) | Test trenching and Monitoring | |
| Old Road Development | 23E0033 | N/A | No archaeology found | Monitoring | |
| R153 Ferganstown and Ballymacon, Alexander Reid, Bailis | 18E0308 | N/A | No archaeology found | Archaeological test trenching | |
| ATHLUMNEY/ LIMEKILNHILL/ BALREASK OLD | 03E0613 | SMR 25:49 | No archaeological significance | Archaeological monitoring | |
| FERGANSTOWN/ BALLYMACKON | 98E602 | N/A | Cut features | Archaeological monitoring | |
| FERGANSTOWN/ BALLYMACKON | 99E0011 | SMR 25:029 | Environs of 'Mound Site' | Archaeological test trenching | |
| FERGANSTOWN/ BALLYMACKON | 1976:28 | N/A | Cist Burial | Rescue excavation | |
| FERGANSTOWN AND BALLYMACKON | 99E0178 | N/A | Souterrain | Limited archaeological excavation | |
| Navan AC Watermains | 06E0165 | ME025– 029, ME025–044 | No archaeological significance | Archaeological monitoring | |
| ATHLUMNEY | 11E240 | N/A | Enclosure and post-medieval farm plot | Archaeological test trenching | |
| Athlumney | 16E0268 | N/A | Enclosure and 2 burials / early to post-medieval | Archaeological monitoring | |
| Alexander Reid and Bailis, Navan | 16E0449 | N/A | Ringfort, burials | Archaeological test trenching | |

A number of archaeological assessments took place in the environs of the proposed development in the townlands of Ferganstown & Ballymacon and Athlumney. An area located adjacent to the eastern extent of the site was tested under licence 18E0308. The testing program was informed by a geophysical survey. A total of 25 trenches were excavated with the topsoil ranging in depth from 0.3-0.5m over the entire area. It was discovered that a crop mark identified during the impact assessment was a backfilled quarry pit. The subsoil across the proposed development comprised an orange-brown stony clay. No archaeological material was encountered in any of the excavated trenches.

Two archaeological monitoring assessments were undertaken North to the north-west of the current site. The first one was located on the ATHLUMNEY/LIMEKILNHILL/BALREASK OLD and was excavated under licence number 03E0613 and took place over a four-day period in June/July 2004. Topsoil was mechanically removed to an average depth of 0.4m. The underlying subsoil was predominantly composed of a yellow/brown silty clay with occasional pockets of sand. Larger deposits of sand occurred at Chainages 1470-1510 and 1560-1580, supporting the presence of sand quarrying in the area. The topsoil on the east wall of the River Boyne valley survived to an average depth of just 0.1m. In this area the underlying subsoil was a leached yellow/blue clay. No artefacts or stratigraphy of an archaeological nature were identified during the course of monitoring of ground disturbance works.

Monitoring was carried out under licence number 98E602 along part of Navan to Donore road and took place in January 1999. This site was located on a low earthen bank where charcoal filled features were identified and ash and animal bone were found contained within their fills. This site does not appear to be related to SMR 25:28 which was a Bronze Age cemetery recorded by Wilde in 1850. A sample of charcoal from one of the features produced a radiocarbon date of AD 585-675. In January 1999, a souterrain passage was exposed, and limited excavation took place in April, under licence 99E0178. The souterrain was largely intact and consisted of a single drystone passage, leading roughly west into a simple beehive chamber. Four trenches were excavated, in order to examine the areas of the site to be affected by the proposed development. The passage walls were constructed from roughly shaped limestone rocks. The walls slanted inwards and were crowned by seven large lintels. The passageway was 3.3m long by 1m high and angled down towards the beehive chamber, which measured 2.65m (north-south) x 2.22m x 1.7m high. The chamber was constructed using both flat and rounded rocks and was sealed by a large capping stone. There was sufficient evidence to suggest that there may have been an entrance passage or drophole feature leading north from the exposed end of the existing passageway. A series of four (mostly linear) parallel cut features were exposed and these were identified as cultivation furrows. Two shallow pits were also exposed. A curved, ditch-like feature and a circular structure were also identified. The shallow circular structure may have been a hut site, however, no associated stake- or post-holes were identified. This feature was outside the arc of the ditch-like trench. Additional archaeological test trenching took place under licence 99E0011, as part of the Navan Sewerage Augmentation Scheme. Located relatively close to the assessment was a mound site, partially destroyed. It contained a long cist and inhumation. Archaeological features had been recorded in the pipeline trench. The National Museum of Ireland excavated a cist burial just to the north of the proposed development in 1976. A long stone cist contained the skeleton of an adult female which was orientated W to E. Originally covered by a low mound approximately 14m in diameter and 1m in maximum height, this had been removed and the cist was disturbed before excavation. No accompanying finds were recovered. The cist measured approximately 1.8m in length and 0.60m in width.

To the south of the site, on the south side of Kentstown Road, R153 assessments informed by a geophysical survey, as well as monitoring and test trenching, took place. The testing assessment was undertaken under licence 11E240, following a desktop assessment and informed by geophysical survey (11R049). Four areas of archaeological potential were identified and included, a possible rectangular enclosure, possible archaeological activity in the form of parallel linear ditches and pits in the northern parts of the area and field boundaries or ditches. As a result, 17 test trenches were excavated identifying a post-medieval farm plot and an enclosure. The enclosure ditch was investigated and found to be 2.5m in width and 0.8m in depth. The outer enclosure ditch was hand dug and found to be 1.5m wide and 0.5m. Subsequently, the area where the enclosure was found was subject to monitoring following a further testing program. Monitoring was carried out under licence 16E0268 and confirmed the presence of the enclosure. During monitoring the remains of two burials were exposed and stripping of the central part of the enclosure was halted. Two hand dug test trenches were excavated under licence 16E0449. Five shallow juvenile and infant burials were identified, resting on the underlying bedrock or in shallow cuts. The burials postdated the early medieval enclosure. Further monitoring did not encounter any further features of archaeological significance. Excavation of the area took place under the same licence and identified a multi-phase occupation of the site from an early medieval settlement to a post-medieval burial ground (containing a total of 38 burials). The early medieval sub-circular settlement enclosure measured 29m by 26m in diameter encircling the low hillock. Number of enclosed spaces to the east, south and west were identified. A number of features with the early medieval phase of activity were identified and consisted of 11 kilns (figure of eight and keyhole shaped), a metalworking area, storage and processing pits.

Metalworking, cereal production, weaving and animal husbandry would indicate a self-sufficient community. Several phases of evolution of this early medieval settlement were identified. Initial examination of artefacts suggests a possible 7th to 8th-century date. The settlement was possibly abandoned as a result of a fire. In the 17th-century a burial ground and possible chapel were established on the remains of the former enclosure. Styluses found on-site might suggest an ecclesiastic community. A chapel building might be represented by the sunken structure that measured 3.6m by 3m and was identified west of the burial ground. In the 18th-century the land returned to agricultural use and further levelling in the mid-19th century in relation to Sion House took place.

More recently, a number of investigations were carried out to the south of the site. A site to the east, adjacent to and west of the new road, and directly north of Old Road and Hodgett Road roundabout, measuring 1.5ha was subject to monitoring in 2022. During the course of monitoring of topsoil stripping and spoil stockpiling and removal activities, no features were identified (Noonan, Hegarty, 2023). Topsoil measuring between 0.3 to 0.6m was removed onto natural subsoil that varied and consisted of a stony beige clay at the southeastern corner to a yellow, beige to a white silty clay within the remaining portion of the site. The monitoring was in relation to a Local Authority Residential Development Approved by an Bord Pleanála, reference ABP-309332-21, under Section 177 AE Planning and Development Act 2000. Test trenching under licence 23E0033 in relation to a private housing scheme and monitoring at Metges Road under licence 22E0165, also did not expose any features of archaeological significance. However, the investigations under licence 22E0952 were carried out at Dunville Apartments to the south of the site, in a plot adjacent to the secondary school site, and identified a cluster of features relating to at least two phases of cereal processing, and included a sub-oval structure defined by thirteen stake holes measuring 2.4m by 2m, curving slots possibly a fence line for a fire pit, and associated drains. The features uncovered appear to be associated with features identified under licence 16E0268.

13.4.3 RECORD OF MONUMENTS AND PLACES

The *Meath County Development Plan 2021-2027* recognises the statutory protection afforded to all recorded monuments under the National Monuments Legislation (1930-2004).

The site contains no recorded monuments. There are four recorded monuments located within c. 1 km of the site. The nearest monument to the site is an enclosure ME025-053 - located c. 0.6 km to the northwest of the site. The study area is also located c. 1.8 km east- of the zone of archaeological potential for Navan town ME025-044.

The wider landscape is also rich in recorded monuments, ranging in date from the prehistoric period to post-medieval times. The following is a list of the recorded monuments located in the environs of the site. Where available, these descriptions are derived from the published Archaeological Inventory of County Meath (Moore 1988) but in some instances have been revised and updated on the National Monuments Service Archaeological Survey Database or are awaiting updating (<u>Historic Environment Viewer (archaeology.ie)</u>

| RMP No./SMR No. | Class/Site Type | Townland | Description | | | |
|--------------------|--------------------------|-------------------------------|---|--|--|--|
| ME025-053 | Enclosure | FERGANSTOWN and BALLYMACON | No information available | | | |
| ME025-028 | Cist | FERGANSTOWN and BALLYMACON | Wilde (1850, 163) records the discovery of small cists with sepulchral urns at a place called 'Choc a Reamuin'. | | | |
| ME025-029 | Barrow - unclassified | FERGANSTOWN and BALLYMACON | Circular mound (diam. c. 14m, H c 1m) with long cist and inhumation at centre. Destroyed during building in 1976 (RMAHS 1977, 65-7) | | | |
| ME025-052 | Souterrain | ALEXANDER REID | No information available. | | | |

Table 13.2: Recorded Monuments in the environs of the study area

13.4.4 ARCHITECTURAL HERITAGE ASSETS – PROTECTED STRUCTURES AND NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE (NIAH)

The *Meath County Development Plan 2021-2027* contains a record of all Protected Structures within the area and in addition, the National Inventory of Architectural Heritage for County Meath was also consulted as it contains a list of architectural heritage structures. There are no Protected Structures nor architectural heritage structures within the proposed development area and none in the Athlumney townland, the two nearest such structures are located in Ferganstown and Balllymacon townland and consist of; Rowley Lock (RPS Id. MH025-112), a late 18th-century lock bridge and house and; Babe's Bridge (RPS Id. MH025-113), a 14th-century bridge on the River Boyne, both are located on or near the River Boyne. While the site of the no longer standing Ferganstown House (NIAH Site ID 5759), is located c. 0.7 km to the northeast of the proposed development and the nearest standing architectural heritage structure is Railway Bridge (NIAH, Reg. No. 14010061) over the Athlumney Road and located c. 1.2 km to the south-west.

The following is a description of nearby heritage structures (Figure 13.1) as listed within the Record of Protected Structures - *Meath County Development Plan 2021-2027* or within the National Inventory of Architectural Heritage (NIAH).

| Name | Townland | NIAH Reg No | RPS ID | Description |
|--|-------------|----------------|---------------|---|
| Athlumney Road Railway Bridge | Athlumney | 14010061 | N/A | Single arch railway bridge over road, c.1849, with rusticated limestone buttressed piers, voussoirs, imposts and parapet. Rusticated limestone with drafted margins to abutments, parapet and retaining walls to embankments, ashlar coping to parapet and ashlar string courses at springing and track levels. Segmental arch with rusticated voussoirs with drafted margins. |
| Rowleys Lock | Ferganstown | N/A | MH025- 112 | A lock c.1790, with ashlar limestone walls to channel. Lock gates replaced by concrete walls. A Ruinous Five-bay, single storey stone lock-keepers house and above one of the lock gates is a single arch stone bridge with a plaque. |
| Babe's Bridge | Ferganstown | N/A | MH025- 113 | Fourteenth century bridge. One arch survives on S bank of Boyne |

Table 13.3: Protected Structures and National Inventory of Architectural Heritage (NIAH) structures in the environs of the site

13.4.5 UNDESIGNATED CULTURAL HERITAGE ASSETS

The north part of the site is located within the townland of Ferganstown and Ballymacon, while the south part is within the townland of Athlumney. The townland boundary traverses the site and is roughly east-west aligned within the site. It appears that the minor, east part of this boundary had hedges removed, however a bank is still visible. Also, further to the southeast the majority of the townland boundary still has mature hedge row growing. A slight curve of the townland boundary was noted in the archaeological assessment carried out in January 2020, and was thought that it could possibly represent a part of an enclosure with its north part removed prior to Ordnance Survey maps; however, geophysical survey (20R0115) and test trenching (23E0553) carried out on site did not identify any archaeological features at this location.

The proposed development will impact on the townland boundary, preservation by record is required. This should entail a written and photographic record of the boundary.

13.4.6 STRAY ARCHAEOLOGICAL FINDS

Topographical Files of the National Museum of Ireland were consulted to assess the area's archaeological potential A number of objects are recorded from townlands in the environs of the site. These relate to and reflect archaeological activity in the wider area (Table 13.4).

Table 13.4: Stray Archaeological Finds listed in the Topographical Files of the National Museum of Ireland

| Museum ID | Townland | Description | | |
|--------------|-------------------------------|---|--|--|
| W558-W564 | Athlumney | Gilt bronze harness mounts (8th-9th century AD). On display in Kildare Street. | | |
| 1000:387 | Athlumney | Bone sample | | |
| 1976:621-22 | Athlumney | Pottery | | |
| 1976:623 | Athlumney | Ceramic object | | |
| 1976:624 | Athlumney | Object (wood) | | |
| 1977:8-10 | Athlumney | Pottery | | |
| 2004:170 | Athlumney | Stone axehead | | |
| 1883:618-619 | Ferganstown and Ballymacon | Stone axehead | | |
| 1937:3493 | Ferganstown and Ballymacon | Flint arrowhead | | |
| 196:543 | Ferganstown and Ballymacon | Human remains | | |

13.4.7 SITE INSPECTION

The site was inspected by Donald Murphy on the 7th of January 2020 and in May 2024. The proposed development area comprises parts of 4 separate fields bounded by mature and semi-mature field boundaries with a modern farmyard building at the centre. All buildings and walls within the farmyard are

of concrete and of no heritage value. The site lies within the undulating countryside and is relatively flat to the east, north and south, though slopes slightly from the east. At the time of inspection in 2020, the westernmost field had been planted with a winter crop, the southern and eastern fields were of grass pasture and the northern field was fallow, though construction of a new road had been commenced at its northern boundary.

During the 2024 visit, the new road and associated roundabouts were constructed with topsoil bunds present within a minor portion of the site. It was noted that a part of the site was subject to test trenching on foot of a grant of planning for part of the site with some of the backfilled trenches still noticeable (see 13.4.11 for details).

No features or finds of an archaeological nature were identified or recovered during the site visit.

13.4.8 CARTOGRAPHIC ANALYSIS

Examination of pre-Ordnance Survey mapping included; **The Down Survey map of County Meath (1654-56)** and **Taylor and Skinner's map (1777)**. On the Down Survey map of County Meath (Figure 13.2) 'Athlumny' Parish' as well as 'Ballimuchan' and 'Fargnstown' are depicted. Within the wider area several mills along the River Boyne are shown as well as several buildings at the bend of the River Boyne, likely representing Athlumney tower house and perhaps Castle-motte. The buildings depicted on the Down Survey Map are without crosses, suggesting that the 14th century Athlumney Church is not one of these buildings. To the northeast of the proposed development, Ardmulchan Church is depicted. Taylor and Skinner's map (1777) was also inspected; however, it does not offer any relevant detail.

Ordnance Survey maps of the area were examined in order to identify any possible archaeological features and to trace the development of the site during the nineteenth and early twentieth centuries. No buildings are depicted within the site on either the 1st Edition Ordnance Survey (OS) 6-inch map of 1836 (Figure 13.3) or the 3rd Edition Ordnance Survey OS 25-inch map of 1907–11. It appears that the field system remained largely unchanged since the time of the 1st Edition Ordnance Survey map, likely due to the presence of a wet ditch, with relatively few adjustments.

To the north of the site, a roadway is also illustrated leading into the fields from the nearby Boyne Road and is likely to represent the former access road to Killagrin settlement. The outline of this road is still visible today in the form of a field boundary, however, a building, possibly a farm, surrounded by a plot visible on the 1835 map, is no longer present by the time of the 1909-1911 map. To the west of the site, on the 1835 map 'The Factory', 'School House' and a 'Mill Dam' are shown. By the time of the 25-inch map of 1907–11, the railway, which opened in the 1850s, is depicted as well as several mill races running along the water channel. The Little Furze settlement, located to the south-southwest, as well as Killagrin settlement to the south-southeast of the site are depicted on both the 1835 and 1907-11 OS maps. Along the south side of the River Boyne, on the north side of Boyne Rd, Flax, Corn and Flour Mills are depicted on the 1835 map, suggesting the wider area was relatively wealthy at the time.

Both maps also illustrate the townland boundary between Ferganstown & Ballmacon and the townland of Athlumney, which crosses the site (see 13.4.5).

13.4.9 AERIAL IMAGERY

Aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995, 2000 and 2005) and Google Earth (2005-2024) were examined.

One particular image (Google Earth – 12.07.2013) contained a possible faint cropmark that might represent an enclosure; in addition, a curve within the townland boundary, visible on the 1st Edition Ordnance Survey (OS) Map of 1836 and on all the aerial photographs was evident. Both were noted as of potential archaeological significance, possibly representing circular enclosures. These were identified during the Archaeological Assessment carried out in January 2020 (Murphy and Lyne, 2020). The site

have since been assessed by geophysical survey (20R0115) and test trenching (23E0553; 23E1013), which suggests the absence of any enclosure within the site.

In some cases, the field boundaries shown on the historical mapping which are no longer extant could be seen as dark lines on the ground surface, these were detected in the course of geophysical survey (Figure 13.4 and Figure 13.5).



Figure 13.4: Interpretation of geophysical survey (20R0115), Fields 1 and 2

13.4.10 GEOPHYSICAL SURVEY

Following the recommendation expressed in the Archaeological Impact Assessment prepared in January 2020 by the authors and at the request of the client, the entire study area was subject to geophysical survey. The survey was carried out by Donald Murphy and Robert Breen of Archaeological Consultancy Services Unit Ltd. (ACSU) between 16th – 30th June 2020 under licence 20R0115 issued by the Department of Housing, Local Government and Heritage in consultation with the National Museum of Ireland. Following the completion of the survey a report was submitted to the Department of Housing, Local Government and Heritage. The full survey is contained in Appendix A (Volume III) of this EIAR

The aim of the survey was to establish the presence/absence of the potential enclosures and to assess the archaeological potential of the site.

A full detailed gradiometer survey was undertaken throughout the application area using a Bartington GRAD 601-2 dual sensor fluxgate gradiometer system. A detailed survey was conducted with a sample

interval of 0.25m and a traverse interval of 1m with variations in the magnetic field between -100nT to +107.834nT.

The two potential archaeological monuments noted in the 2020 assessment were not identified during the survey (Figures 13.4 and 13.5), however, the remains of several historic field divisions in Fields 1, 2, 3, and 4 were noted (Anomalies A, C1, C2 H, I, F, C1, C2) as well as segments of early field systems and smaller features of potential archaeological significance. Weak linear trends (D, G, E1-E3) identified throughout the survey area may also be associated with such field systems and associated agricultural activities. Such faint linear anomalies may represent former field boundaries and drainage features.



Figure 13.5: Interpretation of geophysical survey (20R0115), Fields 3 and 4

Several weak magnetic anomalies (B) were seen throughout the surveyed area; however, these are likely to represent modern agricultural features and natural geology and are unlikely to be of archaeological significance.

A number of magnetic anomalies (K) and isolated ferrous anomalies were also identified throughout the survey area.

No clear indications of archaeological activity were identified. The report (see Appendix A) recommended that archaeological assessment in the form of test trenching be carried out in order to fully assess the development area, particularly the identified field divisions and linear anomalies in order to fully assess their depths, age, and composition.

13.4.11 TEST TRENCHING

The site was subject to test trenching on two occasions in 2024, in January by Idada Fratta under licence 23E1013 carried out in response to An Bord Pleanála Order (ABP-312746-22) and Planning Ref. No. 21/1046 of Meath County Council and, most recently, in May by Linda Clarke under licence 23E0553 carried out at the request of the client at the pre-planning stage (Figure 13.8). Below is a summary and an outline of the findings.

1) Test Trenching (23E1013; La Fratta, 2024)

Test trenching of a northeastern portion of the site, consisting of one irregularly shaped field oriented east-west that measures 3.07ha was carried out in January 2024 under licence 23E1013 by Ida La Fratta.

A total of 17 trenches, measuring 770 linear metres in total were investigated.

Test trenches targeted archaeological anomalies identified during the geophysical survey (20R0115). Archaeological features were identified (see Figure 13.6). These included two burnt mounds and a pit (Trenches 7 and 9) as well as two possible kilns or pits (Trench 8).

- Archaeological Area 1 (AA1; Burnt Mound Spread/fulacht fiadh and pit/kiln) Features of archaeological significance were identified in Trenches 8 and 9; the trenches were extended in order to assess the extent of the features present. A burnt mound spread/fulacht fiadh (C 9.1) measuring c. 4.4m by 2.8m was identified, with an associated pit or kiln (C8.1) measuring 0.75m by 0.7m to the west also being recorded.

- Archaeological Area 2 (AA2; possible pit/kiln)

A feature of archaeological significance was identified in Trench 8. A small area of in situ burning representing a possible kiln or pit (C8.2) measuring 1m by 0.6m was recorded. *Archaeological Area 3 (AA3; large pit)*

A feature of archaeological significance was identified in Trench 7, the trench was extended to assess the extent of the feature present. A large pit (C7.1) measuring c. 1.4m by 0.8m and c. 0.18m in depth where sectioned was recorded.

Preservation in situ (avoidance) was not feasible; hence, preservation by record was recommended. The recommendations included topsoil stripping of areas measuring 20m by 15m (AA1), 10m by 10m (AA2) and 10m by 10m (AA3) and that the features identified and any associated features exposed be fully excavated by hand and preserved by record. This was since carried out under licence 23E1013. Furthermore, monitoring of topsoil stripping was also recommended to mitigate the impact on any further unknown, isolated features if present (see area demarcated in blue Figure 13.8).

Figure 13.6: Kilns/pits (C8.1, C8.2), burnt mound area (C9.1), pit (C7.1) and kiln/pit (C8.1)



2) Test Trenching (23E0553; Clarke, in prep.)

In May 2024 a second phase of test trenching was carried out by Linda Clarke of Archaeological Consultancy Services Unit on the remaining part of the site.

Over 4,500 linear metres of test trench was excavated (Figure 13.8). Trial trenching to a level of 12% of the site was achieved in order to fully assess the archaeological potential of the site, targeting the geophysical anomalies identified (20R0115).

Topsoil measuring between 0.3 and 0.8m was removed onto the natural subsoil level some small isolated features of archaeological significance were exposed. These included:

- An oval pit (3A), north to south aligned, measuring 1.2 by 0.8m, exposed within the western extent of Test Trench 3 and filled with burnt stone and charcoal.
- A sub-circular pit (3B), north to south aligned, measuring 0.9m by 0.85m and 0.1m in depth where sectioned, exposed within the western extent of Test Trench 3 and filled with burnt stone and charcoal,
- A cereal drying kiln (95A), figure of eight-shaped, northwest to southeast aligned, measuring 1.5m by 0.8m, exposed in Trench 95, filled with charcoal and charcoal-rich material (see Figure 13.7)

The features exposed have no surface expression. As preservation in situ (avoidance) is not possible, preservation by record is recommended. The topsoil should be stripped under archaeological supervision from the three areas measuring 10m by 10m around the features exposed (a kiln and two pits) and the features identified should be fully excavated by hand and thus preserved by record. If required, the areas are to be extended should any additional features be found with a minimum 5m buffer zone between the archaeological feature and the edge of the stripped area. This is to be carried out under licence prior to works in these areas commencing. The remaining portion of the site where no features were exposed does not require any further mitigation.

Figure 13.7: Kiln 95A exposed in Test Trench 95 (23E0553).





Figure 13.8: Test trenching result, showing trenches excavated, including identified archaeology

NOLOLX

13.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

A full description of the proposed development is provided in Section 2 of this dociment.

Any development of these lands has the potential to impact the features identified during test trenching.

13.6 PREDICTED EFFECTS OF THE PROPOSED DEVELOPMENT

13.6.1 CONSTRUCTION PHASE

13.6.1.1 Archaeology

The site was subject to geophysical survey and test trenching. No clear indications of archaeological activity were identified as a result of the geophysical survey (see 13.4.10 for details), subsequently anomalies identified, and the overall potential of the site was assessed during test trenching (see 13.4.11 for details). A portion of the site measuring 3.07 was subject to test trenching with features of archaeological significance exposed and excavated since. Test trenching of the remaining portion of the site, measuring 10.4ha, identified some small isolated features of archaeological significance with preservation by record recommended. The features exposed under licence 23E0553, as well as any additional unrecorded archaeological features or deposits if present in the area measuring 3.07ha assessed under licence 23E1013, will be impacted by ground disturbances associated with the proposed development.

The construction of the development and any groundworks associated would involve the total removal of the three features identified under licence 23E0553 and any previously unknown features within the area assessed under licence 23E1013 and as such have a negative/adverse profound effect.

13.6.1.2 Architectural Heritage

The proposal will entail the demolition of some modern barn farm structures, it should be noted that all buildings and walls within the farmyard are of concrete and of no heritage value. There are no designated or undesignated architectural heritage buildings located within the proposed development site and no buildings were depicted on either of the Ordnance Survey Maps (1835, 1909). The nearest Protected Structures, as listed within the *Meath County Development Plan 2021-2027*, are located in Ferganstown and Balllymacon townland and consist of; Rowley Lock (RPS Id. MH025-112), and Babe's Bridge (RPS Id. MH025-113). Both are located on or near the River Boyne; while the site of the no longer standing Ferganstown House (NIAH Site ID 5759) is located c. 0.7 km to the northeast of the proposed development and the nearest standing architectural heritage structure is Railway Bridge (NIAH, Reg. No. 14010061) over the Athlumney Road is located c. 1.2 km to the southwest.

These will not be impacted upon by the proposed development. There will be no impact on Architectural Heritage.

13.6.1.3 Cultural Heritage

The site is located within four fields and two townlands – Athlumney and Ferganstown and Ballymacon. A townland boundary which traverses the site is still present. It is represented by mature trees, a hedge row and a bank. The development will have a negative/adverse profound effect upon a portion of the townland boundary and will result in its partial removal.

13.6.2 OPERATIONAL PHASE

13.6.2.1 Archaeology

Direct Effect

Following the successful implementation of the archaeological mitigation measures presented in Section 13.7.1.1 and prior to the construction phase, it is predicted that no further direct effects on the identified archaeological sites within the proposed development site will arise during the operational phase.

The direct effects during the operational stage are imperceptible. There will be no direct impaction recorded or previously unrecorded archaeological remains.

Indirect Effect

The indirect impacts during the operational stage are imperceptible. There will be no indirect effects on recorded archaeological monuments; all archaeological material will be impacted upon during the construction phase, the closest monument (ME025-053 -Enclosure) is located c. 0.6 km to the north-northwest, on the north side of the railway line and Boyne Rd. As such, there is no direct line of sight between these locations and the proposed development will have no visual impact on this monument.

13.6.2.2 Architectural Heritage

Direct Effect

The direct effects during the operational stage are imperceptible. There will be no direct impact on architectural heritage during the operational stage.

Indirect Effect

The indirect effects during the operational stage are imperceptible. There will be no indirect impact on architectural heritage; the closest protected structures (MH025-112- Rowleys Lock) and (MH025-113 - Babe's Bridge), are located on or near the River Boyne, on the north side of the railway line and Boyne Road.

As such, there is no direct line of sight between these locations and the proposed development will have no visual impact on these structures.

13.6.2.3 Cultural Heritage

Direct Effect

Following the successful implementation of the archaeological mitigation measures presented in Section 13.7.1.3 and prior to the construction phase, it is predicted that no further direct effects on the identified cultural heritage within the proposed development site will arise during the operational phase.

The direct effects during the operational stage are imperceptible. There will be no direct effect on cultural heritage as the construction phase.

Indirect Effect

The indirect effects during the operational stage are imperceptible. There will be no indirect effect on cultural heritage.

13.6.3 "DO-NOTHING" SCENARIO

If the development were not to proceed, there would be no effect upon the archaeological or cultural heritage resource. A 'Do Nothing Scenario' will see the continued preservation of recorded and potential cultural heritage features within the study area.

13.6.4 UNPLANNED EVENTS (ACCIDENTS OR MAJOR DISASTERS)

Direct Effect

The direct effects during unplanned events are imperceptible.

The indirect effects during unplanned events are imperceptible.

13.6.5 CUMULATIVE EFFECT

There will be no cumulative effects on the Cultural Heritage Resource.

13.7 AVOIDANCE, REMEDIAL, AND MITIGATION MEASURES

13.7.1 CONSTRUCTION PHASE

13.7.1.1 Archaeology

The site was archaeologically assessed. An archaeological assessment was carried out in 2020 (Lyne and Murphy, 2020; see Appendix A), geophysical survey (Murphy and Breen, 2020) with subsequent test trenching of the site carried out in January 2024 (La Fratta, 2024) and May 2024 (Clarke, in prep.) identified some small isolated features of archaeological significance.

In order to mitigate the potential effect of the proposed development on the Archaeological Heritage of the site, the following measures are recommended:

- An area measuring 3.07ha, will be subject to archaeological monitoring of groundworks (see area demarcated in blue on Figure 13.8). This area of the site was subject to test trenching under licence 23E1013, with features of archaeological significance identified and excavated since. However, this area was only tested to a level of 5%; hence, further mitigation in the form of monitoring during construction is required in order to mitigate any potential impact on possible further archaeology if present. This will be carried out by a licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage.
- Wherever possible, the preservation in situ of any identified archaeological remains is the preferable option, however where this is not possible preservation by record in advance of construction is recommended. The latter should be carried out by a licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage.
- Preservation by record of features exposed as a result of test trenching carried out under licence 23E0553. This will include topsoil stripping of three areas measuring 10m by 10m around features exposed (a kiln and two pits). The features identified and any further features exposed will be fully excavated by hand and preserved by record (Figure 13.8). The area will be extended (if required) should any additional features be found with a 5m minimum buffer zone between the archaeological feature and the edge of the stripped area established. This shall be carried out by a suitably qualified, licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage prior to construction in these areas commencing. As this area was tested to a level of 12% of the area available, following preservation by record of the features identified, no further mitigation is recommended.
- Full provisions should be made for the resolution (full excavation) of any further archaeological features/deposits that may be discovered through additional archaeological monitoring.

13.7.1.2 Architectural Heritage

No architectural heritage mitigation measures are required during the construction phase.

13.7.1.3 Cultural Heritage

13-26



In order to mitigate the potential impact of the proposed development on the Cultural Heritage of the site, the following measures are recommended:

The townland boundary that traverses the proposed development should be recorded by photograph ٠ :01/06/101× and written description prior to any development proceeding.

13.7.2 OPERATIONAL PHASE

13.7.2.1 Archaeology

Following the successful implementation of the mitigation measures detailed in Section 13.7, it is envisioned that no further archaeological mitigation measures will be required during the operational phase.

13.7.2.2 Architectural Heritage

No architectural heritage mitigation measures are required during the operational phase.

13.7.2.3 Cultural Heritage

Following the successful implementation of the mitigation measures detailed in Section 13.7.1.3, it is envisioned that no further archaeological mitigation measures will be required during the operational phase.

PA

| Table 13.5: Sum | able 13.5: Summary of predicted impacts on cultural neritage assets within study area and mitigation measures | | | | | | | |
|--|---|--------|------------------------|---|---|--|-----------------------------|--|
| Asset Designation | Description | Value | Magnitude of Impact | Construction Phase: Duration, Type, Quality & Significance of Impacts (if any) | Operational Phase: Duration, Type, Quality & Significance of Impacts (if any) | Mitigation Measures | Monitoring of mitigation | |
| Townland Boundary | Field boundary consisting of bank and hedge which also represents the townland boundary | Low | High | Permanent moderate impact | N/A | Photographic and written record of the townland boundary in order to preserve it by record | N/A | |
| Buried archaeological features | Features present | High | High | Permanent moderate/significant impact | N/A | Preservation by record (excavation) of features identified in the area measuring 10.4ha that was subject to investigations under licence 23E0553 | N/A | |
| Potential buried archaeological features | Potential for previously unknown features to be present | Medium | High | Permanent moderate/significant impact | N/A | Monitoring of the area measuring 3.07ha that was subject to investigations under licence 23E1013 | N/A | |

Table 13.5: Summary of predicted impacts on cultural heritage assets within study area and mitigation measures

13.8 RESIDUAL EFFECTS

CONSTRUCTION AND OPERATIONAL PHASE 13.8.1

Archaeology

OFCEINED. OF Construction stage impacts identified on the archaeological resource shall be mitigated by the measures outlined in Section 13.7.1.

Architectural heritage

No residual impacts on architectural heritage resources are expected.

Cultural heritage

No residual impacts on architectural heritage resources are expected.

CUMULATIVE EFFECTS 13.9

No cumulative effects (from surrounding permitted or proposed developments) are predicted upon the archaeological or cultural heritage resource during the construction or operational phase as all archaeological remains will be preserved by record.

13.10 MONITORING

The mitigation measures recommended above would also function as a monitoring system to allow further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures.

REINSTATEMENT 13.11

The proposed development does not include a decommissioning or reinstatement phase. Therefore, reinstatement is not applicable to this assessment.

DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION 13.12

No difficulties were encountered during the compilation of this chapter.

13.13 REFERENCES

Berry, H. F. (ed.) 1914, Statute Rolls of the Parliament of Ireland, 1–12 Edward IV. Dublin. Bradley, J. 1985, Urban Archaeology Survey of Ireland: Part 2, County Meath Unpublished report prepared for the Office of Public Works.

Bradley, J. (1988/9) 'The medieval towns of Co. Meath' in Ríocht na Mídhe, Vol. VIR 31–49. Clarke, L., (in prep.) Archaeological Test Trenching at Ferganstown, Ballymacon and Athlumney, Navan, County Meath (23E0553).

Cogan, A. 1862, The Diocese of Meath, Ancient and Modern, Vol.1. John Fowler. Dublin. Gwynn, A. & Hadcock, R. N. 1970, Medieval Religious Houses: Ireland. Irish Academic Press. Dublin.

La Fratta, I., 2024 Archaeological Assessment at Ferganstown, Ballymacon and Athlumney, Navan, County Meath (23E1013), unpublished report by IAC for Archtree Developments Limited

Moore, M. 1987, Archaeological Inventory of County Meath. Stationery Office. Dublin

Murphy, D. (2018) Archaeological Assessment of Proposed Housing Development at Fitzherbert Wood, Navan, Co. Meath. Unpublished report.

Murphy, D., Breen, R., (2020) Geophysical Survey of a site at Ferganstown & Ballymacon and Athlumney, Navan, Co. Meath (20R0115), unpublished report

Murphy, D., Lyne, M, (2020) Archaeological (Desk Top) of a proposed development at Ferganstown and Ballymacon & Athlumney, Navan, Co. Meath, unpublished report

Noonan, D., Hegarty, D., 2023 Archaeological Monitoring Report. Housing Development at Ferganstown & Ballymacon Townland, Ferganstown, Navan, Co. Meath. Unpublished report. O'Brien, E. 2003. Burial practices in Ireland: first to seventh centuries A.D. In J. Downes and A. Ritchie (eds), Sea change: Orkney and northern Europe in the later Iron Age, AD 300–800, 63–72. Pinkfoot Press, Balgavies

O'Sullivan, M., & Downey, L. (2015). HISTORICAL BRIDGES. Archaeology Ireland, 29(4), 37-40

Orpen, G. H. 1911-20, Ireland Under the Normans 1169–1333. 4 vols. Oxford.

Roycroft, N. (2017) Archaeological Desk Based Assessment, LDR6 / RT8 Distributor Road between Kentstown Road (R153) and Boyne Road, Navan, 'Ferganstown and Ballymacon', 'Alexander Reid' and 'Bailis' Townlands, Co. Meath, Unpublished report.

Stirland, J. (2005) Archaeological Impact Assessment: Ferganstown, Ballymacon. Unpublished report.

Stout, D. L. (2002) Newgrange and the Bend of the Boyne. Cork University Press.

Wilde, W. 1850, The Beauties of the Boyne and its Tributary the Blackwater. Republished 1978.

Cartographic Sources

Down Survey map of County Meath, Barony of Skreen (1654-56), 1st Edition Ordnance Survey (OS) 6-inch map (1835-37) 3rd edition Ordnance Survey (OS) 25-inch map (1909-11), Ordnance Survey Ortho (aerial photography) series, 1995, 2000, 2005, 2012 Google pro aerial imagery 2005-2024

Websites consulted.

Adopted in 2021 Meath County Development Plan (2021-2027) (https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan Geohive (http://map.geohive.ie/mapviewer.html)

Historic Environment Viewer (https://maps.archaeology.ie/HistoricEnvironment/)

Heritage Maps (https://heritagemaps.ie/WebApps/HeritageMaps/index.html)

Index to the Townlands and Towns, Parishes and Baronies of Ireland (https://www.logainm.ie/en/)

National Inventory of Architectural Heritage (http://www.buildingsofireland.ie/)

Recorded Monuments, Co. 1996 Meath. (https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Meath-Manual-(1996)-0036.pdf) Summary Accounts of Archaeological Excavations in Ireland (www.excavations.ie). https://www.archaeology.ie/sites/default/files/media/publications/framework-and-principlesfor-protection-of-archaeological-heritage.pdf https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-meath.pdf ttps://www.epa.ie/publications/monitoring-assessment/assessment/EIAR_Guidelines_2022_Web.pdf http://www.irishstatutebook.ie/eli/2004/act/22/enacted/en/print http://www.irishstatutebook.ie/eli/1994/act//17/enacted/en/print http://www.irishstatutebook.ie/eli/1987/act/17/enacted/en/print http://www.irishstatutebook.ie/eli/1954/act/37/enacted/en/print http://www.irishstatutebook.ie/eli/1930/ https://www.meath.ie/system/files/upload/Protected%20Structures%20-%20A%20Guide%20to%20Architectural%20Heritage.pdf http://www.pleanala.ie/publications/2005/arch heritage protection.htm https://whc.unesco.org/en/conventiontext/ https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/121 http://www.irishstatutebook.ie/eli/2000/act/30/section/51/enacted/en/html http://acts.oireachtas.ie/en.act.1999.0019.1.html

Other Sources

Topographical Files of the National Museum of Ireland, Kildare Street, Dublin 2.

14.0 RISK MANAGEMENT FOR MAJOR ACCIDENTS AND OR DISASTERS

14.1 INTRODUCTION

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has included *'Risk Management'* as a new chapter to be addressed. Article 3 of the new EIA Directive requires that the EIA shall identify, describe, and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, and landscape deriving from (amongst other things) the *"vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned'*.

This Chapter was prepared by Patrick McStay BEng MSc CEng MIEI MIStructE

Pat is a Chartered Consulting Civil & Structural Engineer with 30 years' experience in the design of civic/cultural, commercial, education, healthcare, hotel, leisure, retail, and residential developments.

The chapter identifies and assesses the likelihood and potential significant adverse impacts on the environment arising from the vulnerability of the proposed development to risks of major accidents and / or natural disasters. It considers whether the proposed development is likely to cause accidents and / or disasters and its vulnerability to them.

The purpose of the chapter is to ensure that the safety and precautionary measures necessary to protect the proposed development in the event of a major accident and / or natural disaster are identified and that appropriate mitigation measures are provided that would protect the environment in the event of such occurrences.

This chapter will identify the types of major accidents / natural disasters that the project is vulnerable to; whether major accidents or natural disasters and the responses to these give rise to significant adverse environmental impacts; the nature of these impacts and the measures needed to prevent or mitigate the likely adverse impact of such events on the environment.

14.2 STUDY METHODOLOGY

The starting point for the scope and methodology of this assessment is that the proposed development has been designed and will be constructed in line with best practice described in the Preliminary Construction Management Plan and, as such, major accidents and / or natural disasters will be very unlikely. The identification, control, and management of risk is an integral part of the design and assessment process throughout all stages of a project lifecycle. For example, a Specific Site Flood Risk Assessment was carried out. Measures to control risks associated with Construction Phase activities are incorporated into the Outline Construction and Environmental Management Plan (set out in Appendix D of Volume III of the EIAR).

The following sections set out the requirements as stated in the new EIA Directive, Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (August 2018) and in the EPA Guidelines on the information to be contained in an Environmental Impact Assessment Report (EIAR (May 2022)). The scope and methodology presented is based on the new EIA Directive, the EPA guidelines and professional judgement of the consultants with this responsibility in the construction and operation of the proposed development. A risk analysis-based approach methodology which covers the identification, likelihood, and consequence of major accidents and / or natural disasters has been used for the assessment. This type of risk assessment approach is an accepted methodology.

Recital 15 of the EIA Directive states that:

"In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU."

The proposed development in this instance is residential development on a predominantly greenfield site which includes a construction access road traversing the site and a construction compound. When the proposed development is completed, it will not give rise to ongoing significant risks in its operating environment.

The 2022 EPA Guidelines on the information to be contained in an EIAR refer to major accidents and/or disasters in a number of sections, as follows:

<u>Characteristics of the Project</u> – the guidelines state that the project characteristics should include "a description of the Risk of Accidents – having regard to substances or technologies used."

<u>Impact assessment</u> - the guidelines state that the impact assessment should include "the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)".

Likelihood of Impacts - the guidelines state the following:

"To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and / or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk). This may be supported by general risk assessment methods or by systematic risk assessments required under other regulations e.g., a COMAH assessment."

There are also a number of mechanisms which currently manage accidents outside of the EIA process. These would include the Outline Construction Environmental Management Plan, which would deal with pollution risks during construction (See Chapters 5, 6 and 7 on Land, Soils, Air and Water) and risk of accidents during construction, including traffic accidents. The risk of flooding is dealt with in Chapter 6 Water. The development within the subject site is in Flood Zone C which is low risk and is appropriate for residential development. Separately, the risk of fire is managed through the Fire Safety Certification process, which is an integral part of the design of the proposed development.

14.2.1 SITE SPECIFIC RISK ASSESSMENT METHODOLOGY

This section identifies the potential of unplanned but potential events that could occur during construction and operation of the proposed development.

Risks are set out according to the classification of risk, taken from the Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage & Local Government, 2010), as follows:

RECEIVED. OTOEIROR&

| Ranking | Classification | Likelihood |
|---------|--------------------|---|
| 1 | Extremely Unlikely | May occur only in exceptional circumstances; Once every 500 or more years |
| 2 | Very Unlikely | Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communicates; and / or little opportunity, reason or means to occur; May occur once every 100-500 years. |
| 3 | Unlikely | May occur at some time; and /or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur; may occur once per 10-100 years. |
| 4 | Likely | Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years |
| 5 | Very Likely | Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year. |

Table 14.1: Risk Classification

14.2.2 HAZARD IDENTIFICATION

The site is not in an area prone to natural disasters. Risks were reviewed through the identification of plausible risks in consultation with relevant specialists. Therefore, the risks set out below are considered the most relevant potential risks.

| Category | Risk Factor Type | Likelihood |
|----------------------------|---|------------|
| Weather | Storms, snow | 3 |
| Hydrological | Risk from flooding | 1 |
| Excavation work | Collapse | 3 |
| Road | Traffic accident | 4 |
| Industrial accident | General housebuilding construction | 1 |
| Explosion | General Construction materials no explosive products used. | 1 |
| Fire | Hot works close to timber frame structures. | 3 |
| Building Collapse | Structural failure during construction. | 1 |
| Hazardous substance escape | General housebuilding construction products. | 2 |
| Pollution | Construction | 3 |

Table 14.2: Risk Likelihood

The risks are then tested in terms of consequences (the most probable result of the potential incident). It should be noted that when categorising the Consequence Rating, the rating assigned assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

The impact ratings are taken from the Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage & Local Government, 2010).

A risk matrix can be prepared against which the proposed development can be tested.



Table 14.3: Risk Matrix

14.3 **RECEIVING ENVIRONMENT**

The subject site, of approximately 13.26 hectares is located on lands to the east of Navan town centre. The subject lands amount to a section of a larger 135 hectares site, which is the subject of a masterplan development proposal.

The lands are located to the north of R153, Navan-Kentstown Road, approximately 1.5km east of Navan town centre (Market Square). The site exists currently as greenfield land and is surrounded by residential properties to the west.

The reservation for the Drogheda-Navan railway line is to the north of the Masterplan lands and there are agricultural lands to the east. In addition, road LDR6, a LIHAF funded road is complete to the north of the site by Meath County Council.

The development lands form part of the Meath County Development Plan 2021-2027.

The existing site is undeveloped agricultural (greenfield) land. Existing boundaries within the site are predominantly hedgerows and fencing with some drainage ditches. The overall topography of the site generally falls from northeast to southwest towards the railway line.

The surrounding context consists of a mix of residential and agricultural lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which might result in a risk to human health and safety. From a review of the Meath County Council Development Plan maps there are no SEVESO Site as defined by the Health and Safety Authority, on the subject site of the proposed development.

CHARACTERISTICS OF THE PROPOSED DEVELOPMENT 14.4

The project relates to the construction of 322 no. dwellings, (212 no. houses & 110 no. duplex apartments/apartments) consisting of 177 no. 3-bedroom houses, 35 no. 4-bedroom houses, 26 no. apartments/duplex apartments (13 no. 2-bedroom apartments and 13 no. 3-bedroom duplex apartments), 35 no. 1-bedroom apartments and 49 no. 2-bedroom apartments in 3 no. separate blocks, a Community Centre & Sports Hall, creche, as well as a Neighbourhood Centre of c. 2,002 sg. m (including an anchor retail unit 1,000 sq. m net, GP Surgery, Café, Pharmacy and Takeaway), access, infrastructure, car parking, open space, boundary treatments and all associated site development works.

The proposed development will provide c. 3.72 hectares of open space which includes a District Park (c.1.65 ha), neighbourhood park of c. 0.47 ha, western open space areas (0.93 ha) and a series of smaller open space areas and landscaped areas.

A full description is set out in chapter 2 of the EIAR.

14.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

14.5.1 HEALTH & SAFETY/ RISKS OF MAJOR ACCIDENTS AND/OR DISASTERS

- Risk of falling from scaffolding, ladders or unprotected edges/open voids during the construction phase.
- Risk of falling into open excavations.
- Risk of burial under earthfalls in basement excavations.
- Risk of injury from falling tools / construction materials during construction phase.
- Risk of electrocution / flooding during the foundation works. Any work around existing services.
- Risk of injury during the assembly of precast columns, stairs, façade panels, etc.

14.5.1.1 Construction Phase

It is considered that the main risks associated with the proposed development will arise during the construction phase.

The construction phase of the proposed development may give rise to short-term impacts associated with construction traffic, migration of surface contaminants, dust, noise, and littering. Secondary impacts may include resulting increased traffic arising from hauling building materials to and from the proposed development site which are likely to affect population and human health distant from the proposed development site, including adjacent to aggregate sources and landfill sites.

Construction impacts are likely to be short term and are dealt with separately in the relevant chapters of this EIAR document and will be subject to control through an Outline Construction and Environmental Management Plan (contained in Appendix D Volume III of the EIAR). The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced.

14.5.2 OPERATIONAL PHASE

The main risk identified during operation is the risk of fire. It should be noted that the proposed uses are considered normal hazard fire risks as would be encountered in most residential developments and do not include any hazards which would be regarded as presenting an exceptional environmental fire hazard.

The fire risk mitigation for the project will comprise all fire safety measures necessary to comply with the requirements of Building Regulations. It is noted that these measures will be validated under the Building Control Act 1990-2007 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2018 from Meath County Council.

The measures will include inter alia:

- Provision of fire-rated materials in accordance with relevant building regulations.
- Provision of early warning fire detection systems where required under building regulations.
- Use of materials which do not support fire spread with particular reference, inter alia, to internal wall and ceiling linings and external wall cladding.
- Facilities to assist the fire service including fire tender access proximate to all units, dry rising mains, and external fire hydrants.
- A bespoke Fire Emergency Evacuation Plan [FEEP] will be prepared by a fire consultant at detailed design stage.

14.5.3 'DO NOTHING' SCENARIO

In the do-nothing scenario, the potential risk of the proposed development causing, or being affected by a disaster and / or accident would be low, given that the site is currently an undeveloped greenfield site.

14.6 MITIGATION MEASURES

The Outline Construction Environmental Management Plan (contained in Appendix D Volume III of the EIAR) and the Health and Safety Plan (which will be developed and included in the final CEMP) will limit the risk of accidents during construction. Fire safety will be dealt with under the Fire Safety Code at design and construction stage. The estate management company will have responsibility for fire safety during operations. The OCEMP along with the mitigation measures contained in this EIAR will be implemented as part of the construction of the project.

The proposed development will involve ground works to facilitate the proposed development. Site investigations have been carried out (refer to Appendix D Volume III of this EIAR) and have not identified any hazardous material. Further site investigation and WAC (Waste Acceptance Criteria) testing will be carried out prior to construction to inform the detailed design. In the event that any hazardous material is identified the appropriate measures will be taken in accordance with the requirements of the EPA. The excavation and movement of soil from the site will be undertaken by a registered specialist contractor and removed to a licensed facility. The following are outlined:

- Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution.
- In the event of storms or snow, construction activity can be halted, and the site secured. The construction activity will involve a number of potential risks, as set out below. The risks identified include traffic management, and fire strategy.
- During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant, or adverse effects to the existing public road network. The vast majority of the works are away from the public road in a controlled environment. The objective of which is to minimise the short-term disruption to local residents and reduce the potential for accidents.
- Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.
- With reference to natural disasters (e.g., flooding), the proposed development has undergone a Site-Specific Flood Risk Assessment, prepared by JBA Consulting Engineers. The main area of the site where development is proposed is low risk of fluvial, pluvial or groundwater flooding.
- A Health and Safety Plan will be prepared (required by the Safety, Health and Welfare at Work (Construction) Regulations 2013) to address health and safety issues from the design stages through to the completion of the construction and maintenance phases. The Health and Safety Plan will comply with the requirements of the Regulations and will be reviewed as the development progresses.
- Safety on site will be of paramount importance. Only contractors with the highest safety standards and training will be selected. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated.
- Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.

- Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.
- All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.
- Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

| 1. BASIC RISK INFORMATION | | 2. RISK ASSESSMENT INFORMATION | | 3. RISK RESPONSE INFORMATION | |
|---|---|---|--|--|---|
| Risk Number | Risk Description / Risk Event Statement | Responsible | Impact H / M / L | Probability H / M / L | Actions |
| Provide a unique identifier for risk | A risk event statement states (I) what might happen in the future and (ii) its possible impact on the project. | Name or title of team member responsible for risk | Enter H (High); M (Medium) ; or L (Low) accordin g to impact definition s | Enter H (High), M (Medium) or L (Low) according to probability definitions | List, by date, all actions taken to respond to the risk. This does not include assessing the risk |
| 1 | Work which puts persons at risk of:-burial under earth falls. Risk of burial under earthfalls in trenches. | Project Supervisor Construction Stage (PSCS) | н | Μ | Contractor to address requirement for trench support. Excavations are to be carried out at safe slope. Refer to site investigation for same and temporary works engineer to design. |
| 2 | Scaffolding Risk of falling from scaffolding, ladders or unprotected edges/open voids during the construction phase. | PSCS | Н | М | Working at height required throughout the project. Installation of scaffolding for all working at height activities to be subject to a full temporary works design submission. In order to fully Co-Ordinate any temporary works submission the Project Supervisor for the Design Process must receive the following items before reviewing any submission; A full design submission, Calculations for the design, Design Risk |

| 1. BASIC RISK INFORMATION | | 2. RISK ASSESSMENT INFORMATION | | 3 RISK RESPONSE | |
|---------------------------|---|-----------------------------------|---|-----------------|---|
| | | | | | Assessment, Copy of designer's PI insurances, Designers CV. This submission can then be reviewed by the Permanent Works Engineer to ensure the design will not impact on the permanent structure. |
| 3 | Fire Strategy Risk of fire damage to houses or to partially complete new apartment blocks from construction activities. | PSCS/ PSDP / Fire SC. | Н | Μ | Fire strategy must be put in place in advance of start on site which must take into consideration the requirement for hot works and the provision of Hot Works Permit systems to manage Hot works when needed. A fire marshal will be required - full co- operation from site supervisors and contractors will be required. |
| 4 | Lifting Operations Work involving the assembly or dismantling of heavy pre-fabricated components. Risk of injury during the assembly of precast columns, stairs, façade panels, etc. | PSCS/PSDP | Н | М | Lifting operations using cranes will be a requirement during the project. The PSDP must identify this as a risk factor ensuring the ground conditions are tested and appropriate to point loading from mobile cranes. The PSCS must ensure there is a fully risk assessed lift plan to manage all lifting operations on site. |
| 5 | Existing Utilities Work near overhead electric cables, risk of Electrocution | PSCS/PSDP | Н | М | The PSDP must highlight the existence of live overhead ESB cables on site. The sequence of work to be planned to avoid working in close proximity to the lines. The PSCS to arrange for the relocation of the lines prior to working around them. The PSCS must follow the ESB code of practice and provide a risk assessed RAMS |

| 1. BASIC RISK INFORMATION | | | 2. RISK ASSESSMENT INFORMATION | | 3 RISK RESPONSE |
|---------------------------|---|-----------|-----------------------------------|---|--|
| | | | | | document to manage this hazard. |
| 6. | Construction Traffic Working adjacent to live construction and normal traffic. | PSCS/PSDP | Н | М | Contractor to prepare and implement a Construction Traffic Management Plan to be agreed with the design team to ensure public safety. The contractor is to supervise vehicle movements during construction and enforce the traffic management plan. |

14.7 PREDICTED IMPACTS - RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

14.7.1 RISK ANALYSIS

Following the identification of risks, the next stage is to analyse how likely this is to occur and the consequences, should the risk arise. This will provide a risk score, i.e., the consequences versus the likelihood of the event taking place.

Taking the above table, and applying it below, the red zone represents '*high risk scenarios*', the amber zone represents '*medium risk scenarios*' and the green zone represents 'low risk scenarios.'

| IUNIC | | v uiu | | | | | | | |
|-------------------|-----------------------|--------------|--------------------|---------|---------|-----------------|--------------|--|--|
| | Very | 5 | | | | | | | |
| Likelihood Rating | сікеіу | | | | | | | | |
| | Likely | 4 | | | | | | | |
| | Unlikely | 3 | | | | | | | |
| | Very Unlikely | 2 | | | | | | | |
| | Extremely Unlikely | 1 | | | | | | | |
| | | | Minor | Limited | Serious | Very Serious | Catastrophic | | |
| | | | 1 | 2 | 3 | 4 | 5 | | |
| | | | Consequence Rating | | | | | | |

Table 14.5: Risk Evaluation

- Risk Number 1 = Likelihood rating 2 * Consequence rating 4 = Amber zone (Medium risk scenario)
- Risk Number 2 = Likelihood rating 2 * Consequence rating 4 = Amber zone (Medium risk scenario)
- Risk Number 3 = Likelihood rating 2 * Consequence rating 4 = Amber zone (Medium risk scenario)
- Risk Number 4 = Likelihood rating 2 * Consequence rating 4 = Amber zone (Medium risk scenario)
- Risk Number 5 = Likelihood rating 2 * Consequence rating 5 = Amber zone (Medium risk scenario)
- Risk Number 5 = Likelihood rating 2 * Consequence rating 4 = Amber zone (Medium risk scenario)

14.7.2 MAIN RISKS

The main risks arise during the construction period. The consequences may be limited but severe for the individuals concerned. Geographically widespread environmental consequences are not anticipated.

14.8 INTERACTIONS

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management. Refer to chapter 15 for the anticipated interactions and interdependencies.

14.9 CUMULATIVE IMPACTS

Existing and permitted developments were identified through planning records. Other projects in the wider area comprise:

Meath County Council Reg. Ref. 211046 (ABP Ref. 312746-22) – 98 no. residential units Phase 1A Boyne Village.

Meath County Council Reg. Ref. 22/1703 – Phase 1 of the Boyne Village Enterprise Park and comprise construction of: 3 no. commercial high-bay warehouse units.

Meath County Council Reg. Ref. 21/21 (ABP-311673-21) - 95 no. residential units.

ABP Reg. Ref. JP17.309332 (L.A. Dev. - AA Application) 84-no. unit development

Meath County Council Reg. Ref. ABP-315806-23 - 93 no. residential units.

Planning Reg. Ref. 2460066 – Pumping Station (Uisce Eireann)

Some separate Irish Water upgrade works may be needed to facilitate development in general in Navan, including the subject lands, but do not form part of this application. The sewerage/water supply connections to serve the site have already been constructed in the new public road (LDR6) by Meath County Council / Irish Water.

The primary potential cumulative impact considered is the increase in construction traffic. Overall, the cumulative impact of the construction of the proposed development are predicted to be adverse and of an imperceptible significance (temporary in duration).

14.10 RESIDUAL IMPACTS

Through the implementation of mitigation measures, there are no identified incidents or examples of major accidents and or natural disasters that present a sufficient combination of risk and consequence that would be likely to lead to significant residual impacts or environmental effects.

15.0 INTERACTIONS OF THE FORGOING

15.1 INTRODUCTION



'The purpose of this chapter is to highlight the significant interaction between environmental factors, and the cumulative impact this interaction and the proposed development has on the receiving environment. In preparing the EIAR each of the specialist consultants have and will continue to liaise with each other and will consider the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process.

This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000 and Part 10, and schedules 6 and 7 of the Planning and Development Regulations 2001 as amended.

Article 3(1) of the EIA Directive (2014/52/EU) states that:

The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: a) population and human health; b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; c) land, soil, water, air and climate; d) material assets, cultural heritage and the landscape; e) the interaction between the factors referred to in points (a) to (d).'

As this EIAR document has been prepared by a number of specialist consultants an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 21 years of experience of Environmental Impact Assessment and urban development.

Having regard to the approach taken, the aspects of the environment likely to be significantly affected by the proposed development, during both the construction and operational phases, have been considered in detail in the relevant Chapters of this EIAR document.

The relevant consultants liaised with each other and the project architects, engineers, and landscape architects where necessary to review the proposed scheme and incorporate suitable mitigation measures where necessary. As demonstrated throughout this EIAR, most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the design, construction or operation of the proposed development.

15.2 INTERACTIONS

Section 3.7.2 of the EPA Guidelines 2022 states that the interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. The EPA Guidelines further note that:

"It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. This is usually done using the actual headings used in the EIAR (which may differ from the factors contained in the Directive (ref section 3.3.6). This is typically accompanied by text describing the interactions."

| Table 15.1: Matrix of Summary of interactions between the environmental factors | | | | | | | | | | | |
|---|---------------------------------|--------------|-------------------|-------|----------------------------|---------------------|-------------------------|------------|----------------------|----------------------|--------------|
| Interaction | Population & Human Health | Biodiversity | Land and Soils | Water | Air Quality/Cli mate | Noise/Vibra tion | Landscape and Visual | MA-Traffic | MA- Wasterutititi | Cultural Heritage | Risk Mgmt |
| Population & Human Health | | × | × | × | ✓ | ✓ | ✓ | × | ✓ | 106 AOL | √ |
| Biodiversity | × | | ~ | ~ | × | × | × | × | ~ | × | × |
| Land and Soils | × | ✓ | | ~ | ~ | * | × | × | ~ | ✓ | × |
| Water | ~ | × | \checkmark | | × | × | × | × | \checkmark | × | × |
| Air Quality/Cli mate | ~ | ✓ | × | ~ | | × | × | ~ | × | × | × |
| Noise/Vibr ation | ✓ | ✓ | × | × | × | | × | ✓ | × | × | × |
| Landscap e and Visual | ✓ | \checkmark | × | × | × | ~ | | × | × | × | × |
| MA-Traffic | ✓ | × | ✓ | × | ✓ | \checkmark | × | | × | × | \checkmark |
| MA- Waste/Utili ties | ~ | ~ | ~ | ~ | ~ | ~ | × | ~ | | × | × |
| Cultural Heritage | × | × | × | × | × | × | × | × | × | | × |
| Risk Mgmt | ✓ | × | ~ | ✓ | ~ | ~ | × | ~ | × | × | |

✓ Interaction × No Interaction

The following provides the interactions anticipated from the proposed development:

CHAPTER 3 POPULATION AND HUMAN HEALTH 15.2.1

RECEIVED. The potential significant impacts on population and human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

15.2.1.1 Population and Human Health (Ch 3) - Air Quality/Climate (Ch 7)

The completed development will generate additional emissions to the atmosphere associated with the development, and due to plant equipment within the development.

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. However, dust control measures, as set out in the Dust Management Plan (Appendix C 7.2 Volume III of the EIAR) which includes a range of measures such as wheel washes and covering of fine materials will minimise the impact on air quality.

The effect of construction on air quality will not be significant following the implementation of the proposed mitigation measures. It is proposed to adhere to good working practices and dust mitigation measures to ensure that the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance. There will be no significant impact from dust once the development is completed. Overall, it is envisaged that the proposed development will not have a significant impact on air quality. This is dealt with in Chapter 7.

15.2.1.2 Population and Human Health (Ch 3) - Noise/Vibration (Ch 8)

The greatest potential for noise and vibration impact arising from the proposed development will be in the construction phase. However, following the implementation of the proposed mitigation measures in relation to noise, the impact associated with the construction phase of the proposed development is predicted to be moderate, transient and temporary. No significant impacts on the local noise and vibration climate are predicted during the operational phase of the proposed development. This is dealt with in Chapter 8.

15.2.1.3 Population and Human Health (Ch 3) - Material Assets – Utilities (Ch 12)

The operational stage increased population will create greater demand on built services, placing greater demand on water requirements and the public sewer. Irish Water have confirmed capacity. This is dealt with in Chapter 12.

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management.

15.2.2 CHAPTER 4 BIODIVERSITY (CH 4)

The potential significant impacts on biodiversity arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation, there are expected to be no residual negative effects to biodiversity which can be considered to be significant.

15.2.2.1 Biodiversity (Ch 4) – Land and Soils (Ch 5)

The biodiversity elements of this report have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage and landscape elements of the proposed development. There are numerous inter-related environmental topics described in detail throughout this report document which are of relevance to the biodiversity chapter. The biodiversity chapter of the report involves interactions with the Land, Soils and Ground Water, Hydrology (Surface Water and Waste Water), Air and Climate, Noise and Vibration, Traffic and Transportation, Material Assets-Waste and Material Assets-Services. It is considered that there is the potential for slight, temporary negative impacts on biodiversity due to dust (air), noise, emissions to water and construction traffic associated with the Construction Phase of the proposed Project. These impacts are addressed in the relevant chapters of this EIAR.

15.2.3 LAND AND SOILS (CH 5) – BIODIVERSITY (CH 4)

Excavation and soil works (i.e. through site clearance, re-profiling etc.) during the construction stage have the potential to cause impact on the biodiversity of the site, for example through disturbance of the available habitats, dust and noise. Mitigation has been incorporated to reduce impacts. This is dealt with in Chapter 5.

There are interactions between land and soils and water, with some surface water conveyed and stored in SuDS features such as soakaways and discharging to the ground where possible, replicating the existing greenfield site drainage as closely as possible. The likely impact will be permanent, slight and neutral. This is dealt with in Chapter 6.

The potential significant impacts on land and soils arising from these interactions in the construction and operational phases have been considered within the relevant discipline (biodiversity and soils/water) and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur.

15.2.3.1 Land and Soils (Ch 5) – Air Quality (Ch 7)

Excavation works and exposure of soil during the construction phase can influence the microclimate in an area. The construction phase may result in the spread of dust onto surrounding land uses and public roads. The air quality assessment indicates that there is no significant impact associated with these matters. The implementation of the dust management and dust control measures will ensure that the proposed development will not give rise to the generation of any significant quantities of dust. This is dealt with in Chapter 7.

The potential significant impacts on land and soils arising from these interactions with air quality/climate have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur.

15.2.3.2 Land and Soils (Ch 5) – Material Assets – Utilities (Ch 12)

There are interactions between lands and soils and material assets, with the construction of drainage and utilities impacting the soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be permanent slight, and negative.

There are interactions between lands and soils and material assets, with the delivery of stone fill under buildings and roads and footpaths resulting in additional construction vehicles on roads adjacent to the site. The likely impact will be negative, temporary and slight.

15.2.4 WATER, SURFACE WATER / GROUNDWATER (CHAPTER 6) & HUMAN HEALTH (CHAPTER 3)

Risks to human health include the accidental spills/ leaks of hydrocarbons/ oils entering the groundwater/surface water or potable water system. This impact following mitigation measures outlined in section 6.6 will result in an imperceptible impact to human health. NED: ONOG

15.2.5 AIR QUALITY & CLIMATE (CH 7)

15.2.5.1 Air Quality & Climate (Ch 7) - Population and Human Health (Ch 3)

The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the demolition, construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is short-term, negative and imperceptible with respect to the construction phase and long-term, neutral and imperceptible with respect to the operational phase.

With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be imperceptible.

With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils. No other significant interactions with air quality have been identified.

15.2.6 NOISE/VIBRATION (CHAPTER 7) & MATERIAL ASSETS – TRAFFIC (CH 10)

In compiling this environmental impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and information relating to construction activities provided by the engineers. Noise emission sources from the proposed development during the construction and operational phases will be from construction plant and activity, building services and traffic accessing the development. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Reference can be made to the relevant chapters for additional information.

15.2.7 LANDSCAPE AND VISUAL (CH 9)

The assessment of the landscape impacts associated with the proposed development has a number of interactions with other parameters of the assessment. In summary, these are as follows:

- Population and Human Health
- Biodiversity

The interactions of landscape with these parameters were as follows:

15.2.7.1 Landscape and Visual (Ch 9) & Population and Human Health (Ch 3)

The landscape and visual impact associated with human beings focuses on the effects to dwellings. The proposed development generates visual effects; the effects and associated amelioration of these effects is discussed in the impact section of the chapter.

15.2.7.2 Landscape and Visual (Ch 9) & Biodiversity (Ch 4)

As detailed in Chapter 9, the long-term effects of the proposed development will have a positive effect on the tree cover associated with the development. Extensive native wildflower meadow areas are proposed that further add to the diversity of native flora. Further consultation with the Ecological Consultant will take
place at detailed design, implementation and monitoring stages to ensure adherence to best practice and sound ecological principles.

15.2.8 MATERIAL ASSETS – TRAFFIC AND TRANSPORTATION (CHAPTER 10) & RISK MANAGEMENT (CH 15)

During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause significant or adverse effects to the existing public road network. The vast majority of the works are away from the public road in a controlled environment. Measures (as described in the mitigation measures above in Section 10.7.1) will be put in place to minimise the risk of road traffic accidents during the construction phase. Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used and no unusual or hazardous substances or underground tunnelling works required or predicted.

During the operational phase, it is anticipated that the risk of accidents will be influenced by the additional traffic generated by the proposed development. The potential likelihood of any incidents and the severity of such incidents is minimised due to the appropriate segregation of vulnerable road users through the development as a result of the new dedicated infrastructure proposals the design of which advocates self-regulating low speed streets and dedicated pedestrian / cycle linkages.

15.2.9 MATERIAL ASSETS – WASTE MANAGEMENT (CHAPTER 11)

15.2.9.1 Material Assets – Waste Management (Ch 11) & Water, Hydrogeology & Hydrology (Ch 6)

Should waste be incorrectly handled or stored at the development site during construction works, it has the potential to cause an adverse impact upon water quality in the area through leaching of materials to groundwater or surface water. However, as mentioned above, waste will be segregated and stored in suitably contained waste receptacles at the site compound, considerably reducing the potential risk of pollution to water. It is not considered that there would be any significant risk to water quality as a result of waste management during the operational phase, given that waste will be collected by private, licensed waste contractors and recovered, recycled or disposed of at appropriately licenced waste facilities, which would have environmental controls in place as standard. This is dealt with in Chapter 11.

Should waste be incorrectly handled or stored at the development site, it has the potential to cause an adverse impact upon human beings through nuisance, including visual, odour and pests, and pollution to soils and water.

During the operational phase, suitably contained wheelie bins / waste receptacles will be provided to the residential area and childcare facility by private waste contractors, thus there would be no significant risk of pollution to soils. Waste will be collected on a regular basis. Therefore, waste would not be envisaged to accumulate to high enough volumes to cause nuisance. This is dealt with in Chapter 11.

15.2.10 MATERIAL ASSETS - UTILITIES (CHAPTER 12) & LAND AND SOILS (CH 5)

The potential significant impacts on Material Assets – Utilities arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur.

There are interactions between utilities and lands and soils, with the construction of drainage and utilities impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be permanent slight, permanent, and negative.

15.2.11 RISK MANAGEMENT (CHAPTER 15)

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management.

The potential significant impacts on risk management arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur.

15.2.12 CULTURAL HERITAGE (CHAPTER 13)

Due to the fact that there can often be a cross-over between archaeological, architectural, and cultural heritage sites, this chapter has been fully reviewed and cross-referenced where applicable.

There are interactions between this chapter and the landscape and visual chapter in view of the visual impacts on the settings of archaeological and cultural heritage sites and the potential for landscaping to mitigate such impacts

There are interactions between Cultural Heritage - Architectural heritage and the archaeology chapter in view of the nature of the tower house, which is built heritage, but of archaeological significance.

15.2.13 CULTURAL HERITAGE (CHAPTER 13 AND CHAPTER 14) & LANDSCAPE AND VISUAL (CHAPTER 9)

There are interactions between this chapter and the landscape and visual chapter in view of the visual impacts on the settings of structures of architectural heritage significance and the potential for landscaping to mitigate such impacts.

15.2.14 INTERACTIONS & CUMULATIVE IMPACTS

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other relevant existing and/or approved projects in the area.

The potential cumulative impacts primarily relate to traffic, dust, noise, and other nuisances from the construction of the development, with other planned or existing projects, and each of the EIAR chapters has regard to these in the assessment and mitigation measures proposed.

The potential cumulative significant effects through interactions have been considered and there is no significant potential for cumulative significant effects to arise from multiple non-significant effects. In respect of the project.

16.0 SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

16.1 INTRODUCTION

The central purpose of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document has been prepared by John Spain Associates and sets out a summary of the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring. It is intended that this chapter of the EIAR document will provide a useful and convenient summary to the competent/consent authority of the range of mitigation and monitoring measures proposed. This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the Impact Anticipation and Avoidance strategy. Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration, and timing of the measures to be implemented. A secondary role of EIA related conditions is to ensure that resources e.g. bonds / insurances will be available and properly directed for mitigation, monitoring, or remedial action, in the event that the impacts exceed the predicted levels.

Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions.

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal, and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which if exceeded cause a clearly defined set of actions to be implemented.

16.2 MITIGATION STRATEGIES

16.2.1 INTRODUCTION

There are three established strategies for impact mitigation - avoidance, reduction, and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

16.2.2 MITIGATION BY AVOIDANCE

Avoidance is generally the fastest, most cost effective, and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes. The consideration of alternatives with respect to the development of the subject lands has been described in Chapter 2.

16.2.3 MITIGATION BY REDUCTION

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "end of pipe" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

16.2.4 REDUCING THE EFFECT

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

16.2.5 REDUCING EXPOSURE TO THE IMPACT

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

16.2.6 MITIGATION BY REMEDY

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

16.2.7 MITIGATION AND MONITORING MEASURES

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

16.3 PROJECT DESCRIPTION & ALTERNATIVES EXAMINED

16.3.1 CONSTRUCTION MANAGEMENT STRATEGY

16.3.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The Contractor's CEMP will implement the measures contained in this EIAR and the OCEMP (included with the application in Appendix D Volume III of this EIAR). The OCEMP presents the approach and application of environmental management and mitigation for the construction phase of the proposed Project. It aims to ensure that adverse effects from the construction phase of the proposed Project, on the environment are avoided or minimised. It broadly replicates the construction stage mitigation included in Chapters 3-14 of this EIAR and as summarised in Chapter 16.

Post planning, the appointed contractor will take ownership of the Outline Construction Environmental Management Plan (OCEMP). Prior to any demolition, excavation or construction, the Outline Construction Environmental Management Plan (OCEMP) will be updated by the successful contractor. The CEMP will set out the Contractor's overall management and administration of the construction project. The CEMP will be treated as a live document and communicated to all relevant personnel on site.

The Contractor's CEMP will:

- Be maintained and the procedures implemented by the contractor for the duration of the construction period.
- Manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages.
- Detail measures to be carried out to avoid environmental incidents,
- Detail reporting procedures to be followed if incidents occur including details of responsible person in the construction team.
- Include details of training for all site personnel in the implementation of these procedures as part of the site induction process.
- Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact
 numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental
 Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent
 position within the site compound. These agencies will be notified immediately in the event of a
 pollution incident.

In addition to the EIAR mitigation measures already included in the OCEMP (and mitigation contained in this EIAR and the Enviroguide NIS), the Contractor will be required to include additional details under the following headings:

- Working hours and days;
- Emergency planning in the event of a fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services;
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage, temporary offices and site security arrangements, measures will need to be identified in relation to security of the various sites during construction e.g. controlled access onto site, measures to secure rear gardens, access, etc;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);
- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and construction), Work practices, equipment noise control and screening shall be in compliance with BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise, and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 2: Vibration (together referred to as B.S. 5228);
- Landscape management;

Construction of the development involves the following principal elements:

- Site strip. Earthworks associated with the construction of the houses and roads in the development.
- Construction of new buildings houses, duplex units & creche.
- Construction of roads, footpaths & hard/soft landscaping.
- Buried site services installation. New foul pumping station. Connection to public services.
- Works to the Cookstown Road along the site boundary, and a new footpath along the southside of the road as far as the existing school crossing.

16.3.3 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

In general, the impact of the construction period will be short-term in nature and less significant than the operational stage of the proposed development due to the reduced traffic volumes generated during the construction stage compared to the operational stage. In addition, the peak construction arrivals / departures will be outside of the road network peak hours and therefore will not exacerbate any existing delays encountered during peak times. It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day, and such will not impact significantly during the peak traffic period.

Legislation and guidelines relevant to maintaining the safety of the public adjacent to construction works includes:

- Safety, Health & Welfare at Work (Construction) Regulations 2013
- Traffic Signs Manual Chapter 8 Temporary Traffic Measures and Sign Roadworks (2009), Department for Transport/Highways Agency
- Traffic Management Guidelines (2019), Department of Transport

16.3.3.1 Site Access Routes

Transporting materials to and from site could potentially create nuisance to road users and residents living adjacent to haul roads. To minimise this risk, it is important that the location of site access points for use by construction vehicles is agreed with the Local Authority. It is proposed that local access to the site will generally be provided from the existing roundabout on the LDR 6.

The condition and width of all access roads shall be assessed by the Contactor to ensure that they are suitable for use by heavy construction traffic and delivery of over-sized loads.

16.3.3.2 Construction Traffic

Routing In general, materials will be delivered to site using the public road network. Local access points will be required to enter the construction site from the LDR 6. These access points may require local traffic management.

16.3.3.3 Construction Parking

Parking for construction operatives will be provided within the construction compound. Traffic Management Plan The Contractor shall establish a Traffic Management Plan for the construction works.

The applicant will seek to avoid, wherever possible, bringing construction traffic through areas where there are existing residents. Phases 3 and 4 could have an impact on newly occupied residences constructed in earlier phases.

Old Athlumney Road will not be used as a haul route during construction and will be used only in relation to works along the Old Athlumney Road which include the culverting of the existing open water channel and provision of footway etc.

The TMP shall:

- Address the movement of vehicles, machinery, and pedestrians within the site boundary and on adjacent public roads & footpaths
- Ensure that the safety of construction operatives, public road users and pedestrians is not compromised as a consequence of the works.

This shall be achieved through the effective implementation of traffic mitigation measures. When considering mitigation measures, the Contractor shall pay particular attention to sensitive and vulnerable users (e.g. children, elderly etc) and take account of stakeholders whose activities may be affected by the proposed works (e.g. local schools, residents, businesses etc)

All construction related parking will be provided on site. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff anticipated to be 40 no. staff car trips daily. The proposed on-site car parking area will be designed to have the capacity to accommodate this parking demand in addition to an element of visitor parking spaces.
- Excavation plant and dumper trucks involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.

On-site employees will generally arrive before 08:00, thus avoiding morning peak hour traffic. These employees will generally depart after 18:00 and avoid the PM peak hour.

To minimise disruption to the surrounding environment, the following mitigation measures will be implemented:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- A dedicated 'construction' site access / egress junction will be provided during all construction phases. This will be via the existing accesses constructed on the LRD6.
- Provision of sufficient on-site parking for staff and visitors (as described above) and compounding through the construction of temporary hardstanding areas to ensure no potential overflow of construction generated traffic onto the local network.
- A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.
- A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
- A dedicated construction haul route has been identified and will be agreed with the local authority prior to the commencement of constructions activities on-site.
- Truck wheel washes will be installed at construction and discharge from wheel wash area will be directed to on-site settlement ponds.
- On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.
- Measures will be put in place to minimise the risk of road traffic accidents during the construction phase including;
 - o appropriate temporary traffic management as required,
 - o strict adherence to the proposed construction vehicle haul route, and
 - Wayfinding signage so all visitors can navigate to the designated visitor parking and sign in areas.

16.3.4 LIAISON WITH NEIGHBOURING PROPERTIES

A monitoring regime will be put in place to protect neighbours & neighbouring properties with a full and detailed vibration, noise, dust and groundwater monitoring regime put in place for the duration of the works.



The Contractor will appoint a competent person to be referred to as the Surveying, Instrumentation and Monitoring Subcontractor (MSC) who will implement the monitoring measures during the construction phase described in this EIAR.

The MSC will be responsible for preparing or organising the preparation of condition surveys of surrounding buildings, walls, hardstanding area etc. prior to the carrying out of any works on site. Extent of surveys to be agreed. The condition surveys will be carried out to a level of detail, suitable to the nature and extent of conditions encountered in order to obtain an understanding of the general structural condition of the property/structure and/or external environments.

It is proposed that vibration monitoring will be conducted at properties adjacent or within 50m of the site as required using calibrated vibration monitors and geophones capable of transmitting live text and email alerts to ensure that if vibration levels approach or exceed specified warning and limit values.

16.3.4.1 Traffic Management & Construction Access

In general, the impact of the construction period will be temporary in nature and less significant than the operational stage of the proposed development (HGV vehicle movements not expected to exceed 4 vehicles per hour during the busiest period of construction works).

The works associated with the new development will result in additional traffic on the road network with the vehicles for the importation of earthworks fill material and the delivery of new materials for construction – concrete, concrete blocks, pipes, timber, roof tiles, glazing, road surfacing materials etc. Construction traffic access to the site will be via the LDR6 (with some minor construction traffic related to the construction of the residential cell at the Old Road. It is proposed that unloading bays should be provided for deliveries to the site within the hoarding perimeter. Appropriately demarcated storage zones will be used to separate and segregate materials. All deliveries to site will be scheduled to ensure their timely arrival and avoid the need for storing large quantities of materials on site. The storage area is to be located at least 50m from the site access to allow for the possibility of traffic queueing inside the site without any interference with the public road.

The mitigation will include the following matters:

- The contractor shall be responsible for and make good any damage to existing roads or footpaths caused by his own contractor's or suppliers transport to and from the site.
- The contractor shall at all times keep all public and private roads, footpaths entirely free of excavated materials, debris, rubbish, provide vehicle wheel wash and thoroughly clean all wheels and arches of all vehicles as they leave the site.
- The contractor shall confine his activities to the area of the site occupied by the works and the builders' compound, as far as practicably possible, during any particular phase of the development.
- Properly designed and designated entrance and egress points to the construction site for construction traffic will be used to minimize impact on external traffic.
- Flagmen shall be used to control the exit of construction vehicles from the site onto the public road, if required.
- Existing fire hydrants are to remain accessible as required.

Construction vehicle movements will be minimised through the implementation of the following measures contained in the OCEMP, which forms part of the mitigation in this EIAR (See Appendix D2 Volume III of this EIAR):

- Consolidation of delivery loads to/from the site and scheduling of large deliveries to site to occur outside of peak periods;
- Use of precast/prefabricated materials where possible;
- 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works.
- Adequate storage space on site will be provided;
- Construction staff vehicle movements will also be minimised by promoting the use of public transport.
- Car sharing among the construction staff following Covid-19 safety guidelines may be used to reduce traffic numbers. Public Transport: An information leaflet to all staff as part of their induction on site highlighting the location of the public transport services in the vicinity of the construction site.

16.3.5 REINSTATEMENT / ROAD CLEANING

Prior to the works commencing, detailed photographic surveys (condition schedules) of adjoining walls, roads, footpaths, fences etc. is to be prepared. Copies of the relevant parts are to be made available to adjoining owners and MCC. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause. Roadways are to be kept clean of muck and other debris. A road sweeping truck is to be provided as necessary, to ensure that this is so.

Reinstatement at completion of the works will involve:

- Testing and cleaning of all watermains in the development to the requirements of the IW / MCC prior to connection to the public watermain. This will reduce the risk of contamination to the public water supply when the new network is connected to the system.
- Repair of any damage to any adjacent public roadways, kerbs, grass verges etc. in accordance with MCC requirements.
- Reinstatement of all excavations to the requirements of MCC.
- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.

16.4 POPULATION AND HUMAN HEALTH

16.4.1 CONSTRUCTION PHASE

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided. Readers are directed to Chapter 16 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

In order to protect the amenities enjoyed by nearby residents, premises, and employees a Construction Environment Management Plan will be submitted by the contractor and implemented during the construction phase. The content of the OCEMP will be based on the mitigation set out in this EIAR.

With reference to the construction phase of the proposed development, the objectives of the Resource Waste Management Plan prepared by Byrne Environmental Consulting Ltd., contained in Appendix E Volume III of the EIAR (and also detail in Chapter 11 of the EIAR) is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.

16.4.2 OPERATIONAL PHASE

The operational phase is considered to have likely positive impacts on population in relation to the provision of additional residential units, open space, childcare provision, to cater for the demands of a growing population in accordance with the residential zoning objectives pertaining to the subject site.

During the operational phase of the development the design of the scheme has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

For the operational phase, no further specific mitigation is required having regard to the mitigation included within the other chapters of this EIAR.

16.4.3 MONITORING

In relation to the impact of the development on population and human healthit is considered that the monitoring measures outlined in this EIAR in regard to the other environmental topics such as water, air quality and climate and noise and vibration sufficiently address monitoring requirements. 0106102*

16.5 BIODIVERSITY

16.5.1 AVOIDANCE AND MITIGATION EMBEDDED IN PROJECT DESIGN

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed below.

| Table 16.1: Embedded design features and their potential to act to avoid or mitigate negative impacts | on the |
|---|--------|
| local ecology and environment. | |

| Embedded Design Feature | Avoidance / Mitigation Potential |
|---|---|
| SUDS: Permeable parking; Swales; Bio-retention areas; and Detention basins and ponds. | The SUDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield runoff rates during the Operational Phase. These features will be implemented as part of the surface water drainage design. |
| Landscape Design: District and neighbourhood parks. Strips of native wildflower meadow planting. | Pollinator-friendly trees, hedgerows, and wildflowers will provide foraging opportunities to local birds. |
| Lighting Design Bat-friendly lighting measures will be included as part of the Proposed Development. | Bat-friendly lighting measures will be put in place to reduce light- spill to internal potential bat habitat and external habitat within the surrounding environment. |

16.5.2 CONSTRUCTION PHASE

Table 4.14 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development. The measures listed are outlined in more detail in the OCEMP (Hendrick Ryan Consulting Engineers, 2024b) accompanying this application under separate cover. The OCEMP will be developed and submitted to Meath County Council prior to commencement of development and will include the mitigation measures set out in this EIAR and to comply with any relevant conditions attached to a grant of permission.

Table 16.2: Summary of Best Practice Standards and Mitigation outlined in the OCEMP (Hendrick Ryan Consulting Engineers, 2024b). Where specific details relating to protection of Key Ecological Receptors is required under these measures, reference is made to the appropriate section in this report.

| Theme | Best Practice Standards and Mitigation | Ecology Specific O Mitigation | 5 |
|---|--|----------------------------------|------|
| Soils and Geology | Appropriate measures to store and handle stripped topsoil and subsoil; consideration of weather conditions to minimise silt/sediment entering surface water network and dust control; and appropriate fill material import, storage, and handling away from surface water features. A discharge permit shall be obtained for the disposal of any water arising from pumping. Appropriate storage of fuels, oils and other chemicals, designated refuelling and maintenance area, and preparation of emergency response procedure. | No. | `O2₽ |
| Water - Hydrogeology | Drainage channels and streams shall be clearly identified on site and shown on site plans. A discharge permit shall be obtained for the disposal of any water arising from pumping. Accidental oil or fuel spills shall be immediately cleaned with appropriate adsorbent materials. | No. | |
| Water - Water Supply, Drainage & Utilities | Appropriate use of settlement ponds, foul water to be tankered off site for treatment until connection to foul network made, and all connections (waste water, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people. | No. | |
| Site Compound Facilities and Parking | Location to be agreed with MCC prior to works. Appropriate measures to handle foul water generated, protect potable water supply, health and safety, separate areas for (i) machinery and plant; (ii) concrete batching; and (iii) staff parking. | No. | |
| Construction Waste Management | Managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'. | Yes – See section 4.6.2.2.4 | |
| Landscape and Visual Impact | Appointment of an Arborist to oversee works relating to trees, establishment on Tree Protection Zones in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'; and post-construction tree assessment. | No. | |

| Theme | Best Practice Standards and Mitigation | Ecology Specific Mittgation | |
|---------------------|--|--------------------------------|-------|
| Noise and Vibration | To comply with the requirements of BS 5228- 1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (Code of Practice for Noise and Vibration Control on Construction and Open Sites) as well as Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration. | No. | S POL |
| Air Quality | Dust Management Plan (as set out in Appendix E) to include suppression via watering of areas identified as potential dust source; road sweeping to remove aggregate materials; appropriate cover of transported materials; wheel washing; maintenance of public roads in relation to dust; and appropriate monitoring. | No. | |

In addition, to ensure the OCEMP remains 'fit for purpose' for the duration of the project it should be reviewed and updated by the Project Manager in consultation with the Contractor's Ecologist during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project's environmental commitments. The Contractor shall also designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). This Plan will be prepared upon appointment of the Main Contractor and will contain the mitigation set out in this EIAR and associated appendices.

Additional mitigation measures required for sufficient protection of the KERs identified in this report, and/or details for the specific implementation of the mitigation measures as per the above table are given in the below sections and will be included in a Biodiversity Management Plan (BMP) for the Proposed Development.

16.5.2.1 Protection of Habitats

16.5.2.1.1 Mitigation 1: Tree Protection

Protective tree fencing in compliance with BS 5837:2012 'Trees in relation to design, demolition, and construction – Recommendations' will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees to be retained at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stockpiling or machinery movement will be undertaken within these areas. Tree Protection measures are outlined in drawing no. 20306-T-103, prepared by CSR, included with the application.

16.5.2.1.2 Mitigation 2: Construction Phase Lighting

No overnight lighting will be directed to the natural habitats along the western boundary (i.e., the hedgerow habitat). Where overnight lighting cannot be avoided in these areas due to health and safety concerns, the lighting within the Proposed Development will be designed and installed to minimise the impact on local wildlife and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT 2018):

• There will be no light spill to the boundary habitats.

- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

16.5.2.1.3 Mitigation 3: Biosecurity/Invasive Species

The following best practice site hygiene and biosecurity measures will be in place to avoid the potential introduction of invasive floral species at the Site:

- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.
- All vehicles entering or leaving the Site will have been suitably checked and pressure-washed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate.
- Designated wash-down area to be located away from sensitive receptors such as watercourses, ditches, drains etc.
- Material/water left after vehicles have been pressure-washed must be contained, collected, and disposed of appropriately (These waters <u>must not</u> under any circumstances be discharged to drains or the eastern ditch).

16.5.2.2 Protection of Fauna

16.5.2.2.1 Mitigation 4: Bats

Tree Removal

Prior to the felling, an updated ground-based roost assessment will be carried out by a suitably qualified ecologist. Should any signs of roosting bats or Moderate to High suitability roost features be observed then no works can take place until an aerial assessment or emergence surveys are conducted. Should bats be

present a derogation licence shall be sought from the National Parks and Wildlife Services to facilitate the works.

Specifically, where the felling of Low roost potential trees are absolutely necessary, the following protocol should be followed:

- Tree-felling should be undertaken in the period late **August to late October/early November**. During this period bats are capable of flight and this may avoid risks associated with tree-felling.
- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats/other wildlife to escape. Trees felled should never be sawn up or mulched immediately in case protected wildlife is present.

Should any signs of roosting bats or suitable roost features be observed, or the trees to be removed are deemed to have Moderate or High roosting potential, then no works can take place until an aerial assessment or emergence surveys are conducted and bat absence is confirmed. Should bats be found at any stage of the works, a derogation licence shall be obtained from the National Parks and Wildlife Services to facilitate the works.

Lighting

To minimise potential disturbance to local bats due to lighting during the Construction Phase, construction works will be carried out during normal daylight working hours as follows:

- 7.00am to 7.00pm Monday to Friday
- 8.00am to 2.00pm Saturday.
- No Sunday work will generally be permitted.
- Work outside of normal hours shall only take place where written permission has been received from Meath County Council. The location of any works anticipated to be undertaken outside normal working hours shall be limited and strictly defined.

16.5.2.2.2 Mitigation 5: Badger

Further dedicated badger surveys will be carried out on site prior to the commencement of works to determine all entrances to the active sett on site. Works close to an active badger sett or the removal of vegetation within the vicinity of these setts will only be conducted under the supervision of the badger specialist under licence from the NPWS. During the breeding season (December to June inclusive), no works should be undertaken within 50m of active setts. Badger sett tunnel systems can extend up to 20m from sett entrances. As there is the possibility that tunnels would be destroyed by the movement of heavy plant over the ground above the tunnel system, it is essential that no heavy plant cross within 30m of a sett entrance. This will ensure that setts are not damaged and that badgers are not inadvertently crushed during construction. Lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett

entrance, and light works such as digging by hand or scrub clearance will not take place within 10m of a ECEINED sett entrance unless under licence.

Potential Sett Removal

While the retention of the sett *in-situ* is preferred, alongside the re-design of the Proposed Development to facilitate this retention, primarily regarding the landscape design. However, this is not possible due to spatial constraints, the footprint of the Proposed Development, and the sett will need to be safely removed in consultation with the NPWS (following confirmation that badgers still present and a subsequent derogation licence obtained). A suitably qualified badger specialist will be instructed prior to the Construction Phase to prepare an exclusion plan for the decommissioning of the setts and their destruction once all badgers have been confirmed to have vacated. The objective is to allow the badgers to remain within their territory, even though a portion of their current territory will be lost as a result of the Proposed Development. The provision of an artificial sett within the Site will also be incorporated into the landscape plan.

The existing active setts will not be excluded or destroyed until the artificial replacement sett has been constructed. The existing sett will not be destroyed until the artificial replacement sett is confirmed to be in use by badgers through the use of trail cameras and regular site visits.

Artificial Sett Provision

In the case where the setts on site cannot be retained as part of the Proposed Development, an artificial main sett will be provided as compensation for the loss of the existing main sett. The new sett will be constructed and established before the badgers are excluded from the existing setts and the existing setts are destroyed.

The location of the artificial badger sett will be advised by a qualified ecologist and incorporated into the landscaping masterplan during consultation and derogation licence application with NPWS during the construction phase.

A dense section of scrub vegetation (e.g., bramble, elder, hawthorn, blackthorn) will be planted within the designated artificial sett area yet to be confirmed within the wider landscape contained within the Masterplan of the Proposed Development; the goal being to connect the sett with the boundary hedgerow and treelines and provide cover, shelter and protection for the badgers and minimise human and/or dog related disturbance from the Proposed Development, maximising the setts chances of being adopted. Wildlife friendly lighting will ensure the artificial sett is not illuminated.

Construction of the artificial sett must not place existing setts in danger. All construction equipment must remain a minimum of 30m (up to 50m during breeding season) from all existing (naturally constructed) active sett entrances during the creation of the new sett. The artificial sett will be constructed several months in advance of the closure of the active setts. In this interval, the affected badgers will be encouraged to utilise the artificial sett by means of attractive food baits (peanuts etc.) and materials from the active sett added to the new artificial sett (bedding, discarded spoil). The construction of an effective artificial sett is an exercise best conducted by experienced personnel. The constructed tunnels and chamber system will be located in well-drained soils and be landscaped and planted to ensure adequate cover and lack of disturbance.

Exclusion of Badgers from Active Setts

Exclusion of badgers from active setts will only be carried out during the period of July to November (inclusive) to avoid the badger breeding season. As per the TII guidelines (NRA, 2005), the removal of badgers from affected setts and subsequent destruction of these setts will only be conducted with NPWS permission/approval and by experienced badger specialists. The exclusion process will include monitoring to ensure that badgers have fully evacuated the setts prior to their destruction. The NPWS grant permission/approval to the experts undertaking the badger operations and not to the development or contractor. A badger sett exclusion plan and method statement will be prepared by the badger specialist and provided to the NPWS prior to final application for their approval. No works will take place in the vicinity of the active setts without the supervision of the badger specialist.

Measures to ensure the sett has been vacated and is devoid of all badgers will be designed by the badger specialist, involving a combination of:

- One-way badger proof gates on active entrances.
- Badger proof fencing.
- Soft and hard blocking of inactive entrances, and
- Recurring inspections.

Gates will be left installed, with regular inspections over a minimum period of 21 days before the sett is deemed inactive. Any badger activity at all will require the procedures to be repeated or additional measures taken. No exclusion will commence in advance of the completion of the artificial sett. All setts should be assessed on a case-by-case basis by a suitably qualified experienced badger expert, with measures adapted to suit the situation as per the expert's direction.

Sett Destruction

The existing sett will not be destroyed until it is confirmed the badgers have become established in the artificial sett. Five consecutive days of inactivity must be recorded after this minimum 21-day period to confirm the badgers are not utilising the sett. Sett destruction should then commence immediately, provided that all badgers have been excluded. Should a badger be discovered during this operation, the NPWS will be advised immediately, and all excavation will cease until it is agreed with the NPWS that it may continue. The destruction of a successfully evacuated badger sett may only be conducted under the supervision of qualified and experienced personnel with approval/permission from the NPWS. The possibility of badgers remaining within a sett must always be considered; suitable equipment should be available on hand to deal with badgers within the sett or any badgers injured during sett destruction.

TII guidelines recommend that sett destruction is usually undertaken with a tracked 12-25 tonne excavator, commencing at ca. 25m from the outer sett entrance and working towards the centre of the sett, cutting ca. 0.5m slices in a trench to a depth of 2m. Exposed tunnels may be checked for recent badger activity with full attention paid to safety requirements. A report detailing the evacuation procedures, sett excavation and destruction, location of the new sett, and any other relevant issues will be prepared by the badger specialist and submitted to the NPWS.

16.5.2.2.3 Mitigation 6: Vegetation Clearance

As the Site has been deemed suitable for breeding birds, small mammals (hedgehog, hare, pygmy shrew), amphibians and reptiles, vegetation clearance of the hedgerow and treeline habitat will need to be cognisant of any potentially present fauna. Table 4.15 provides guidance for when vegetation clearance is permissible in relation to wintering, hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000.* The preferred period for vegetation clearance is within the months of September and October to avoid the main wintering bird season, breeding bird and bat maternity and roosting season as well as mammal and reptile hibernation. Where this seasonal restriction cannot be observed, a check for active roosts and/or nests, will be carried out immediately prior to any site clearance by a qualified Ecologist or and repeated as required to ensure compliance with legislative requirements. Where a breeding bird and an active nest is found, the nest will be protected, and no further works will take place in the vicinity of the nest until the

young have fledged. Where continuance of works is critical, the NPWS will be consulted, and a derogation license obtained prior to continuing works.

| Table 16. | 3: Seasona | al restricti | ions on v | vegetatio | n removal | . Red box | es indicate | periods w | ken cleara | nce/works |
|------------|------------|--------------|-----------|-----------|-----------|-----------|-------------|-----------|-------------|-----------|
| are not pe | ermissible | | | | | | | | <u>`</u> О. | |

| Ecological Feature | January | February | March | April | May | June | July | August | September | October | November | December |
|--|--|--|---|---|---|---|-------------------------------------|--------------------|---|---------------------------------------|---|----------|
| Breeding Birds | Veget cleara permi | tation ance ssible | Nesti No cl releva confii an ec | ng biro earano ant stru rmed to cologis | d seas ce of v ucture o be d t. | on egetation s permitte evoid of r | or works ed unless nesting bi | to rds by | Vegetat | ion cleara | ance permiss | ible |
| Hibernating mammals (namely Hedgehog) | Mammal hibernation season No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist. | | | Vege | Vegetation clearance permissible | | | | Mammal hibernation season No clearand vegetation of works to relevant structures permitted u confirmed to devoid of hibernating mammals b ecologist. | ce of br nless o be by an | | |
| Amphibians (namely Common Frog) | Frog Hibern Seaso No ha cleara permi | nation on abitat ance ssible | Com | mon F | rog br | eeding se | eason | Vegetat clearan | ion / Site ce permis | sible | Frog Hibernation Season No habitat clearance permissible | |
| Common Lizard | Lizaro Hiberr Seaso No ha cleara permi | nation on abitat ance ssible | | Activ Habit | e perio tat (sci | od rub, tall s | ward gras | ss) cleara | nce perm | issible | Lizard Hibernation Season No habitat clearance permissible | |

Additionally, all vegetation clearance will be carried out in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog, pygmy shrew, common frog, and common lizard). A phased cutting approach under the supervision of a suitably qualified ecologist will be used to allow wildlife (small mammals, amphibians and reptiles) to move away from any suitable habitat that will be removed. This will take place during weather that is suitable for reptiles to be active (above 10°C with little rain):

- Phase 1 Cutting vegetation to 150-200 mm and removing the arisings;
- Phase 2 After a minimum of one hour, hand-searching the cut areas (conducted by a qualified ecologist) and removing any sheltering habitat (e.g. logs or debris) then cutting vegetation to ground level and removing the arisings; and
- Phase 3 Soil scrape.

Should any suitable refugia or day nesting habitats need to be removed, this will be carried out <u>outside the</u> <u>most vulnerable breeding periods for reptiles and hedgehogs wherever practicable</u> (reptile gravid period May to July, main Hedgehog birthing months June and July) and will be supervised by a qualified ecologist.

16.5.2.2.4 Mitigation 7: Waste Management

As best-practice, all construction-related rubbish on-site e.g., plastic sheeting, netting etc. should be kept in a designated area on-site and kept off ground level so as to protect small fauna (such as small mammals, amphibians, and reptiles) from entrapment and death.

16.5.3 OPERATIONAL PHASE

16.5.3.1 Protection of Habitats

16.5.3.1.1 Mitigation 8: Invasive Species Management

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Despite the measures identified in the OCEMP for the importation of only clean materials, there is the potential for the inadvertent import of invasive species to the Site. If established, there is a risk of further spread both within and out of the Site.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread during the construction of the remaining Boyne Village phases associated with this Proposed Development.

16.5.3.2 Protection of Fauna

16.5.3.2.1 Mitigation 9: Disturbance Limitation to the Badger Sett

In order to minimise the potential for human and dog related disturbance of the retained or new sett area and its surrounding vegetation, access to this portion of the Site will be restricted and discouraged through landscaping (e.g., fencing, dense planting) and signage (e.g., 'Dogs to be kept on leads to protect wildlife'). Timing of works in the vicinity of the artificial sett will ensure any noisy or intrusive works required in this area take place prior to the artificial sett becoming active.

16.5.3.2.2 Mitigation 10: Bats

Lighting

Given the current agricultural context of the Site, which has no artificial lighting within the area of the Site, the increase in lighting could have an impact on local bat populations through the loss of dark foraging and commuting corridors. However, the Lighting Design Plan (Metec Consulting Engineers, 2023) accompanying this application includes bat-friendly lighting measures in line with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT, 2023):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.

- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Light shields will be used to reduce light spill, particularly along the Ferganstown and Ballymacon Stream, and direct it only to where it is needed.

16.5.4 BIODIVERSITY ENHANCEMENT MEASURES

A Biodiversity Management Plan will be prepared to incorporate biodiversity enhancement measures including the below, into the Operational Phase. This will be submitted and approved by Meath County Council prior to occupation of the Site.

16.5.4.1 Enhancement 1: Bat Boxes

Five summer bat boxes (e.g., Woodcrete 1FF design) will be erected on suitably sized trees within the district park of the Proposed Development Site, the placement of which will be determined by a bat ecologist.

Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. Bat boxes will be erected prior to construction works. The bat ecologist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- Diameter of tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

16.5.4.2 Enhancement 2: Swift Boxes/Bricks

It is recommended that swift boxes or bricks are incorporated into the Proposed Development where possible, particularly on the apartment blocks. The incorporation of swift boxes or bricks would help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021). The following recommendations are extracted from "Saving Swifts" by Birdwatch Ireland. swift bricks/boxes:

- Will be constructed of long-lasting material and securely fixed in position.
- Will be erected at least five metres above ground level.

- Will be erected in sheltered cool areas out of the sun, or under an overhang and /or under the eaves. Bricks can be placed at any aspect, however, as they tend not to overheat the way that externally fitted boxes can.
- Will have a clear airspace in front for access.
- Will be grouped (side by side in rows) as swifts are colony nesters.
- ED: 01/06/2022 Will avoid sites which can be accessed by predators- cats, squirrels, mappies, rats.
- Will avoid sites near plate glass windows because they are a known collision hazard for birds.
- Will not be placed directly above ledges or other obstructions. Swifts drop before taking flight and can collide with obstacles below the nest entrance.
- Will not be one above the other.
- Will not be near spotlights or later fit spotlights near them.

It is advised to install a swift calling system under the supervision of the project ecologist to attract swifts and encourage them to take up residence at a new site.

16.5.4.3 Enhancement 3: Amphibian and Reptile Hibernacula

It is recommended to enhance the proposed attenuation ponds for amphibian and reptile use by providing suitable refuge and hibernacula adjacent to these ponds. It is recommended that 2-3 areas of hibernacula are provided at each pond at areas furthest removed from traffic and likely human activity, and where the location would provide potential links to the nearby hedgerows and trees.

Hibernacula for amphibians and reptiles is relatively easy to create from rubble, wood, and soil, all of which can likely be sourced from the Site during works. Rubble and wood in various sizes should be piled either in a shallow depression or on the slope of the attenuation pond in a disorganised way to create nooks and crevices. Larger tree trunks or rocks should be placed so that they will protrude through the final mound to provide open entrances to the mound. This pile should then be covered in soil to allow the inner crevices to maintain a stable temperature through the winter and allow for hibernation. The top can be planted with for example grass and native wildflowers. See Figure 4.9 for examples of finished hibernacula.

Figure 16.1: Examples of suitable amphibian and reptile hibernacula and refugia.



16.5.4.4 Enhancement 4: Pollinator Habitat

Pollinator/insect habitat, as seen in figure 4.10 will be created on site by:

- Creating an earth bank;
- Scraping back some bare earth;
- Leaving some areas to grow wild; and/or
- By drilling holes 10cm deep in unvarnished wood for solitary bees.

Figure 16.2: Examples of solitary bee habitat.



Extracted from How-to-guide: Creating wild pollinator nesting habitat (NBDC, 2016).

Large bee or insect hotels will not be installed. Guidance from the All -Ireland Pollinator Plan states "Don't install a large bee or insect hotel. Large bee hotels are attractive to humans, but not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an averagesized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren't easy targets." A link to a "How-to-guide Creating wild pollinator nesting habitat" is provided for the development management company to put these habitats in place: How-to-guide-Nesting-2018-WEB.pdf (pollinators.ie). An appointed ecologist will oversee the creation of these habitats.

16.5.5 MONITORING

Tabe 4.16 below provides a summary of the required monitoring and pre-works inspections during the Construction Phase, as well as any surveys that should be completed during the Operational Phase. The monitoring, inspections and surveys will ensure that the identified mitigation measures are implemented and maintained efficiently and have the desired effect of protecting the local ecology from adverse impacts.

The monitoring/surveys outlined below will be included in a BMP for the Proposed Development, along with the detailed mitigation measures for the Construction and Operational Phases (section 4.6) and Biodiversity Enhancement Measures (section 4.6.4).

In addition to the items listed below, this document should detail the landscape management operations for the Proposed Development, including cutting/trimming regimes and maintenance of bat boxes and pollinator habitat. This document will also be updated to reflect any follow-up survey results as they are carried out. The BMP will be prepared and agreed in consultation with a suitably gualified ecologist and Meath County Council.

Table 16.4: Monitoring and pre-works inspections for the identified mitigation measures during Construction Phase of the Proposed Development.

| Measure | Monitoring |
|--------------------|------------|
| CONSTRUCTION PHASE | |

| Measure | Monitoring |
|--|---|
| Mitigation 1: Tree Protection | Ongoing monitoring by Arborist or qualified ecologist. |
| Mitigation 2: Construction Phase Lighting | No monitoring required. |
| Mitigation 3: Biosecurity | Ongoing monitoring by contractor. |
| Mitigation 4: Bats | Spring and Summer activity surveys to be carried out by a qualified bat ecologist. |
| Mitigation 5: Badger | All works associated with vegetation clearance, sett exclusion and closure, and the creation and monitoring of the artificial sett will be carried out under supervision of a qualified ecologist with expertise in badgers. |
| Mitigation 6: Vegetation Clearance | Any site vegetation clearance within the hedgerows, treelines, or grassland habitats subject to supervision by a qualified ecologist and a phased approach. |
| Mitigation 7: Waste Management | Ongoing monitoring by contractor. |
| Enhancement 1: Bat Boxes | The placement and construction of these structures should be carried out under the supervision of a qualified ecologist to ensure they are fit for purpose. |
| Enhancement 2: Swift Boxes | The placement and construction of these structures should be carried out under the supervision of a qualified ecologist to ensure they are fit for purpose. |
| Enhancement 3: Amphibian and Reptile Hibernacula | The placement and construction of these structures should be carried out under supervision of a qualified ecologist to ensure they are fit for purpose. |
| Enhancement 4: Pollinator Habitat | Ongoing monitoring by contractor under supervision of a qualified ecologist. |
| OPERATIONAL PHASE | |
| Mitigation 8: Invasive Species Management | An Invasive Species Survey will be carried out by a qualified ecologist during the next botanical season after soft landscaping has been completed. |

To be carried out by a suitably qualified ecologist (highlighted in green) or by the development contractor (no highlight).

16.6 LAND AND SOILS

16.6.1 INCORPORATED DESIGN MITIGATION

The proposed development and planning drawings submitted have taken into account potential contamination issues and upon completion the development has a system in place to ensure rainwater runoff from the site passes is adequately treated prior to out falling into the mill race.

Mitigation included in the design of the proposed development include:

- Proposed development levels are designed to minimise cut/fill type earthworks and volume of material to be disposed off-site where possible.
- Landscaping works for the proposed development when incorporated into the scheme are designed to protect the soils again from weathering and erosion.

- Design of site services / drainage works are in accordance with the relevant design guidance such as the GDSDS, The SUDS Manual (CIRIA C753) and the Irish Water Code of Practice (IW-CDS-5030-03 Revision 2).
- Excavated material to be removed off-site is undertaken to the relevant EPA licensing requirements.
- Landscaping works for the proposed development when incorporated into the scheme are designed to protect the soils again from weathering and erosion.
- Appropriately designed site services / drainage / sewers will protect the soils and geology from risk of contamination arising from the development such as light liquids separator or SuDS treatment train approach.

16.6.2 CONSTRUCTION PHASE MITIGATION

An Outline Construction Environmental Management Plan (OCEMP), prepared by Hendrick Ryan Consulting Engineers is included with the planning application (contained in Appendix D Volume III of the EIAR). This plan will be developed further by the contractor into a Construction Management Plan for the construction phase, which will include the mitigation measures contained in the EIAR. In advance of work starting on site, the appointed Contractor will prepare a Construction and Environmental Management Plan (CEMP). The Plan sets out the overarching vision of how the construction of the project will be managed in a safe and organised manner by the Contractor. The CEMP will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIAR and any subsequent conditions relevant to the project.

The OCEMP includes a range of site-specific measures which will include the following mitigation measures in relation to soils:

- Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.
- Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter watercourses.
- Control of Soil Excavation and Export from Site;
- Topsoil stockpiles will be located on site so as not to necessitate double handling.
- Topsoil to be re-used throughout the development in landscaping and public open spaces / linear park.
- Disturbed subsoil layers to be stabilised as soon as practicable backfilling of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping, to be carried out promptly to minimise the duration that subsoil layers are exposed to the effects of weather and construction vehicles.
- Stockpiles of excavated subsoil material to be protected for the duration of the works and located separate to the topsoil stockpiles.
- Construction site mitigation such as wheel wash and dust suppression measures to be implemented.
- Measures to capture and treat sediment laden surface water runoff especially from excavations and stripped land to be implemented (e.g. sediment tanks, surface water inlet protection and earth bunding adjacent to open drainage ditches).
- Where feasible, excavated subsoil material to be reused as part of the site development works (e.g. for landscaping works and for backfill to trenches under non-trafficked areas).
- Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes on the site and entering the site.
- All oils, fuels, paints and other chemicals to be stored in a secure bunded hardstanding area.

- Refuelling and servicing of construction machinery to take place in a designated hardstanding area, remote from surface water inlets (when it is not possible to carry out such activities off-site).
- Good housekeeping (site clean-ups, use of disposal bins, etc.) on the site project.
- Any material removed from site shall be classified before removal to ensure it is disposed of to an appropriately licensed landfill or recovery facility in accordance with The Waste Management (Hazardous Waste) Regulations 1998. Unsuitable material that cannot be reused on site to be disposed off-site under license.
- Where bedrock / boulders are encountered in excavations, option to crush and reuse to be considered depending on quantity of material excavated. Screened material may be reused as a fill material e.g. in road construction and backfill to service trenches.
- Where feasible, excavated material will be reused as part of the site development works (e.g. use as fill material beneath roads) however, unsuitable excavated subsoil is expected and will have to be removed to an approved landfill.

All fill and aggregate imported for use on the proposed development site will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the project;
- Environmental Management status;
- Regulatory and Legal Compliance status of the Company.

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the excavation and there will be no direct link or pathway from this area to any surface water body. It is anticipated that only local/low level of stockpiling will occur as the bulk of the material will be excavated either straight into trucks for transport off site or will be reused in other areas of the site as fill.

- Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.
- The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:
- Designation of bunded refuelling areas on the site (if required);
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
- Any flexible pipe, pump, tap or valve will be fitted with a lock and will be secured when not in use;
- All bowsers to carry a spill kit and operatives must have spill response training; and
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:
- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they should be done so secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

16.6.3 OPERATIONAL PHASE

During the operational phase of the proposed development there is limited to no potential for site activities to impact on the geological environment of the area. The proposal will result in a permanent land take of c. 13.26 hectares.

Following best practice, the potential for the ground water to become polluted via oil spills where reduced as far as is practical by the use of an oil separator or other appropriate treatment to take run off from carparking areas and passing through same prior to disposal.

Mitigation measures envisaged during the operational phase comprise:

- Ensuring regular maintenance of site services, SuDS features and attenuation systems such that they operate as designed.
- Emptying oil separators as per manufacturer's operation and maintenance recommendations to mitigate against risk of spillage / leaks into the soils.

16.6.4 MONITORING

Construction phase monitoring relates to the good maintenance of mitigation measures outlined above in section 5.6 including the OCEMP contained in Appendix D Volume III of this EIAR. Soil removed during the construction phase is to be monitored to maximise potential for re-use on site. Monitoring of any hazardous material stored on-site forms part of the Construction & Demolition Waste and By-Product Management Plan, included in the LRD application and Chapter 11 of this EIAR Material Assets Waste Management. A dust management/monitoring programme is included in Appendix C 7.2 Volume III of the EIAR. The Outline Construction Environmental Management Plan also details precautions to be taken to minimize the effect of dust on air quality.

The proposed foul drainage & potable water network will be vested to Irish Water, and as the statutory agency, will have responsibility for the maintenance of the foul drainage & potable water network once completed. The stormwater system will be taken in charge by Meath County Council who will carry out maintenance on the system if required.

16.6.4.1 Monitoring measures – construction phase

Proposed monitoring during the construction phase in relation to the soil and geological environment are as follows:

- Contractors will adhere to the mitigation in this EIAR and OCEMP in Appendix D Volume III of this EIAR.
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion
 of cut to road sub-formation level in advance of placing capping material, stability of excavations
 etc.).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill; protection of soils from contamination for removal from site)
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.)
- Soil removed during the construction phase will be monitored to maximise potential for re-use on site. Any contaminated soil encountered and not identified on site investigations will be analysed and disposed off-site at a suitable licensed facility.

• The quantities of topsoil, subsoil and rock removed off site will be recorded.

16.6.4.2 Monitoring measures – Operational phase

Monitoring of the "*taken in charge*", public open space areas by Meath County Council will be on-going. They will ensure that the detention basins and other SuDS features such as swales are adequately maintained. If they are found to be not adequately maintained, then they will be responsible for increasing the maintenance schedule.

16.7 WATER, HYDROLOGY, HYDROGEOLOGY

16.7.1 INCORPORATED DESIGN MITIGATION

The proposed development and planning drawings submitted have taken into account potential contamination issues and, upon completion the development, has a system in place to ensure rainwater runoff from the site is adequately treated prior to outfalling into the proposed storm water drainage system.

Mitigation measures follow the principles of avoidance, reduction and remedy. The most effective measure of avoidance is dealt with during the site selection and design stage, by ensuring that the development does not traverse or come in close proximity to sensitive hydrological attributes.

Where avoidance of the feature has not been possible, consideration has been given to locally modify the proposed development so as to reduce / minimise the extent of the impact. If any modifications are proposed to reduce hydrological impacts, it is necessary to also consider any associated impacts to the hydrological and ecological regimes.

- Excavated material to be contained to ensure excavated material (from earthworks) does not enter a drainage ditch or watercourse.
- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage entering the watercourse.
- Design of site services / drainage works are in accordance with the relevant design guidance.
- Appropriately designed site services / drainage / sewers will protect the water, hydrogeology and hydrology from risk of contamination arising from the development such as light liquids separator or SuDS treatment train. Features such as permeable paving, swales, tree pits and above ground and open-bottom attenuation are proposed to intercept pollutants and promote groundwater recharge where possible. A bypass separator is proposed prior to any surface water discharging to drainage ditches.
- Design and layout of the scheme is aimed at maximising SuDS features and protect watercourses in accordance with guidance from Inland Fisheries Ireland on the Planning for Watercourses in the Urban Environment.
- Surface water drainage for the development has been designed in accordance with the GDSDS and the SUDS Manual to avoid risk to human health.

16.7.2 CONSTRUCTION PHASE MITIGATION

To minimise the impact of the construction phase on the water environment mitigation measures included in section 6.6.2 and the OCEMP (contained in Appendix D Volume II of this EIAR) will be implemented.

16.7.2.1 General site works

• A Site Specific Construction and Environment Management Plan will be developed and implemented during the construction phase. Site inductions to include reference to the procedures and best practice as outlined in the OCEMP, prepared by HRA Consulting Engineers, submitted with the LRD application and will include mitigation measures contained in the EIAR.

- Measures will be implemented to capture and treat sediment laden surface water runoff from excavated trenches and stripped land (e.g. sediment tanks, surface water plet protection and earth bunding adjacent to open drainage ditches).
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- The extent of sub-soil and topsoil stripping will be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place on-site into an appropriate washout facility.
- Discharge from any vehicle wheel wash areas will be directed to on-site settlement tanks/ponds.
- Oil and fuel stored on site for construction will be stored in designated areas. These areas will be bunded and should be located away from surface water drainage and features.
- Refuelling and servicing of construction machinery to take place in a designated hardstanding area, remote from surface water inlets (when it is not possible to carry out such activities off-site).
- Any hazardous materials to be stored within secondary containment designed to retain at least 110% of the storage contents to prevent the accidental release (fuels, paints, cleaning agents, etc.) with bunds for oil/diesel storage tanks.
- Spill kits will be kept in designated areas for re-fuelling of construction machinery.
- Dewatering measures will only be employed where necessary.
- Works will be in accordance with the requirements of the Office of Public Works (OPW) and Inland Fisheries Ireland (IFI).
- Pollution prevention measures in accordance with guidance from Inland Fisheries Ireland (2016) or as otherwise agreed with the IFI. This will include the installation of sediment traps and culverting of drainage ditches 'in the dry', where required.
- No direct discharges made to waters where there is potential for cement or residues in discharge;
- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall surface water quality. Potential issues can be mitigated against by ensuring that the developments environmental management plan is adhered to, to prevent accidental onsite oil spillages and the regular maintenance of onsite plant to eliminate potential risks. As outlined in the Construction Management Plan submitted with the planning application.
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.
- A Site Specific Construction and Environment Management Plan will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Construction and Environment Management Plan.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- The extent of sub-soil and topsoil stripping to be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.
- Precast concrete units fabricated off site will be specified for culvert and bridging structures with cast in-site requirements minimised.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.

- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.
- Hazardous construction materials snan be one -watercourses or groundwater. Spill kits should be kept in designated areas for re-fuelling of construction machinery. Hazardous construction materials shall be stored appropriately to prevent contamination of

16.7.3 OPERATIONAL PHASE

Upon completion of the Construction Phase of the proposed scheme, issues pertaining to the development would in general be issues such as accidental pollution incidents into the storm water system.

Sustainable Drainage Systems will be incorporated, where practicable, in order to improve the quality of the surface water discharging from site and reduce the runoff volume and rate, thus providing a positive impact on the receiving surface water network and downstream waterbody. The surface water drainage design, for this development, was designed in accordance with the Local Authority requirements. All SuDS measures will be provided in accordance with the Greater Dublin Strategic Drainage Study Regional Drainage Policy Volume 2 - New Development (GDSDS- RDP Volume 2). Specific design requirements for SuDS systems are established by the Construction Industry Research and Information Association's publication CIRIA C753 – The SuDS Manual.

Following best practice, the potential for the storm water to become polluted via oil spills will be reduced as far as is practical by the use of oil separators or other appropriate treatment methods to take run off from carparking areas and passing through same prior to disposal.

Irish Water would maintain the foul & potable water systems while Meath County Council will maintain the storm water network.

As such this type of development would not increase the risk to surface water or downstream flooding. As the site is provided with a new storm sewer to replace the existing water course and all storm water generated on site will now be attenuated to ensure that the runoff from the site is kept to green field rates, downstream lands would not be flooded when an extreme storm is experienced. The overall storm water quality will also be enhanced as SuDs features are included in the proposed development and all surface waters are to pass through an oil separator or other appropriate treatment method, prior to outfalling into the mill race.

Operational phase mitigation measures are noted below:

- The design of proposed site levels (roads, FFL etc.) has been carried out to replicate existing surface contours, break lines etc. and therefore replicating existing overland flow paths, and not concentrating additional surface water flow in a particular location.
- Surface water runoff from the site will be attenuated to the greenfield runoff rate as recommended • in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by a Hydrobrake flow control device, with a combination of above ground ponds, low flow channels and swales provided to store runoff from a 1 in 100-year return period event. SUDs features are implemented in the surface water drainage network to reduce the rate of runoff form hard standing area sand to improve the quality of surface water runoff. For detailed information refer to HRA report included with the LRD application.
- Surface water runoff from the development will be collected by an appropriately designed system with contaminants removed prior to discharge i.e. petrol interceptor.
- A regular maintenance and inspection programme of the flow control devices, attenuation storage facilities, gullies, petrol interceptor and foul pumping station will be required during the Operational Phase to ensure the proper working of the development's networks and discharges.

- Waste generated by the everyday operation of the development should be securely stored within designated collection areas with positive drainage collection systems to collect potential runoff.
- Operational waste will be removed from site using licensed waste management contractors.

16.7.4 MONITORING

Construction phase monitoring relates to the good maintenance of mitigation measures outlined above in section 6.6 including the Outline Construction and Environmental Management Plan (OCEMP) (see Appendix D Volume III of the EIAR). It is recommended that any monitoring of any hazardous material stored on-site be carried out in accordance with the CEMP.

16.7.4.1 Construction Phase

- Contractors will adhere to the CEMP and Mitigation Measures contained in this EIAR.
- Construction monitoring of the works (e.g. inspection of services and SUDS installation and backfill, stability of excavations etc.).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill; protection of soils from contamination for removal from site)
- Monitoring sediment control measures (sediment retention tanks, surface water inlet protection etc.)
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.) If these measures are found to be inadequate or inadequately implemented, then the developer will ensure that measures are put in place to remedy this. Monitoring of discharge from sediment retention ponds (e.g. pH, sediment content). If these measures are found to be inadequate or inadequately implemented, then the developer will ensure that measures are put in place to remedy this.
- A dust management programme will (see Appendix C Volume III of the EIAR) be implemented during the construction phase of the development. If these measures are found to be inadequate or inadequately implemented, then the developer will ensure that measures are put in place to remedy this.

16.7.4.2 Operational Phase

Proposed monitoring during the operational phase in relation to the water and hydrogeological environment are as follows:

- The taking in charge of the water infrastructure will ensure the system is regularly inspected and maintained.
- The performance of all SuDS features will be monitored by the relevant authorities during the life of the development.
- Monitoring of the installed hydrobrake, interceptor and gullies and all other SUDs features will be carried out to prevent contamination and increased runoff from the site.

16.8 AIR QUALITY AND CLIMATE

16.8.1 CONSTRUCTION PHASE

In order to ensure that adverse air quality impacts are minimised during the construction phase and that the potential for soiling of property and amenity and local public roads is minimised, the following mitigation measures shall be implemented during the course of all construction activities:

AQ CONST 1: Air Quality Mitigation Measures

- Adherence to the contractor's CEMP which will include the mitigation measures contained in this EIAR and OCEMP in Appendix D and Dust Management Plan in Appendix , volume III of this EIAR.
- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
- A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.
- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.

AQ CONST 2: Climate Mitigation Measures

- Implementation of the site-specific Resource and Construction Waste Management Plan which defines how the reuse and recycling of materials shall be maximised.
- Prevention of site plant and machinery engines idling.
- Ensure all plant and machinery are well maintained.
- Minimising damage to site construction materials by correct storage and management.

• Sourcing construction materials locally such as from local quarries and concrete plants where possible to reduce transport related CO2 emissions.

16.8.2 OPERATIONAL PHASE

The operational phase includes mitigation measures relating to the design of the development to minimise the impact of the operational phase of the development on air quality and climate are as follows:

AQ OP1: Air Quality Mitigation Measures

- Natural Gas heating, No traditional solid fuel fireplaces
- Inclusion of electric car charging points to encourage electric vehicle ownership
- Proximity of Bus Eireann and private bus operator's commuter services on the R158 Navan-Dublin Road to the east of the development to provide public transport to residents.

AQ OP2 : Climate Impact Mitigation Measures

- Energy Efficiency All proposals for development shall seek to meet the highest standards of sustainable design and construction with regard to the optimum use of sustainable building design criteria such as passive solar principles and also green building materials.
- All residential units shall be designed and constructed in accordance with The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings amended in 2017 includes requirements for all residential dwellings to be "Nearly Zero Energy Buildings" (NZEB's) by 31st December 2020.
- In order to reduce energy consumption, the following key design features have been considered in the design process and will be incorporated into the construction of the residential units:
- Passive solar design including the orientation, location and sizing of windows
- The use of green building materials: low embodied energy & recycled materials
- Energy efficient window units and frames with certified thermal and acoustic insulation properties
- Building envelope air tightness
- Installation of Mechanical Ventilation & Heat Recovery systems in all apartment units which operate by extracting warm air from kitchens and bathrooms, cleaning it and distributing it to other rooms in the unit.
- Air to Water Heat Pumps in a residential houses
- Thermal insulation of walls and roof voids of all units
- All buildings will have a minimum Building Energy Rating of A3
- Electric Vehicle charging points will be installed within the development.

16.8.3 MONITORING

16.8.3.1 Construction Phase

Dust deposition levels will be monitored to assess the impact that site construction site activities may have on the local ambient air quality and to demonstrate that the environmental control measures in place at the site are effective in minimising the impact of construction site activities on the local receiving environment including existing residential developments and lands bordering the site. The following procedure shall be implemented at the site on commencement of site activities:

The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at site boundary locations for a period of 30 +-2 days. Monitoring shall be conducted on a monthly basis for the duration of the construction phase.

After each (30 +-2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m2-day in accordance with the relevant standards.

Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained on-site by the Construction Site Manager. Monitoring reports shall be made available to the Meath County Council as requested.

16.8.3.2 Operational Phase

Air quality monitoring is not required for the operational phase of the development.

16.9 NOISE AND VIBRATION

16.9.1 CONSTRUCTION PHASE

16.9.1.1 General Construction Site Management

The following noise management measures shall be implemented at the site from the outset of site activities to control and manage noise levels during the construction phase of the proposed development:

NV CONST 1 Noise Mitigation Measures

An independent acoustic consultant shall be engaged by the contractor prior to the commencement of site activities to ensure that all noise mitigation measures as specified in this Section of the EIAR are implemented and to prepare a site specific *Construction Phase Noise Management Plan.* The Plan shall include all relevant noise and vibration control measures as specified in this Chapter of the EIAR. The Plan shall be submitted to Meath County Council for approval as required.

The nominated contractor shall appoint a designated person to manage all environmental complaints including noise and vibration.

A noise complaint procedure shall be implemented in which the details of any noise related complaint are logged, investigated, and where required; measures are taken to ameliorate the source of the noise complaint.

Appropriate signage shall be erected on all access roads in the vicinity of the site to inform HGV drivers that engines shall not be left idling for prolonged periods and that the use of horns shall be banned at all times.

HGV's queuing on any local or public road shall not be permitted and it shall be the responsibility of site management to ensure this policy is enforced.

Typical construction hours are:

07:00hrs – 19:00hrs Monday to Friday 08:00hrs – 14:00hrs Saturday Closed on Sundays and Bank/Public Holidays

All onsite generator units (if required) used to supply electricity to the site shall be silenced models or enclosed and located away from any receptor.

The site compound shall be located at a point on site furthest away from any residential development.

Mains power shall be used to supply electricity to all site offices and site lighting at the earliest instance.

The use of generators during the night-time shall be avoided.

16.9.1.2 Construction Phase Noise Control & Mitigation

RECEIVED. 07 The following shall be implemented to mitigate construction noise impacts in order to ensure that the construction phase of the development does not have an unacceptable impact on sensitive receptors:

NV CONST 2 Construction Works Noise Mitigation Measures

- A strictly enforced noise management programme shall be implemented at the site from the outset of construction activities.
- The Construction Project Manager shall appoint an acoustic consultant to conduct continuous noise ٠ surveys which shall be conducted at the baseline noise monitoring locations throughout the construction phase of the development to assess compliance with the construction noise limit criteria detailed in Table 8.1 above and to assess the effectiveness and implementation of the specific Construction Phase noise mitigation measures detailed in this document.
- The principal of controlling noise at source shall be implemented at the site. Best practice mitigation techniques as specified in BS 5228:2009+A1 2014 - Noise and Vibration Control on Construction and Open Sites shall be implemented during the construction phase and are detailed in this Section.
- Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable. .
- Where reasonable, practicable, noisy plant or activities shall be replaced by less noisy alternatives if • noise breaches and/or complaints occur.
- Proper use of plant with respect to minimising noise emissions and regular maintenance will be . required.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and will be maintained • in good efficient order
- Where noisy plant is required to operate in works areas next to residential houses low noise plant options will be used wherever practicable.
- Dumpers and any plant used for moving materials around the site will have high performance exhaust • silencers.
- Selected use of rubber-tyred equipment over steel track equipment where practicable. •
- The use of inherently quiet plant is required where appropriate all compressors and generators will • be "sound reduced" or "super silent" models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
- All compressors, generators and pumps shall be silenced models fitted with properly lined and sealed • acoustic covers or enclosures, which will be kept closed whenever the machines are in use.
- All pneumatic percussive tools such as pneumatic hammers shall be fitted with dampers, mufflers or • silencers of the type recommended by the manufacturer.

- Fixed items of plant shall be electrically powered in preference to being diesel or petrol driven.
- Vehicles and mechanical plant utilised on site for any activity associated with the works shall be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.
- Any plant, equipment or items fitted with noise control equipment found to be defective in shall not be operated until repaired / replaced.
- Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum during periods when not in use.
- Static noise emitting equipment operating continuously shall be housed within suitable acoustic enclosure, where appropriate.
- All excavator mounted pneumatic breakers used for demolition and ground breaking activities shall be fitted with effective dampeners and /or enclosed within a noise adsorbing blanket structure to minimise noise emissions.
- Site activities shall be staggered when working in proximity to any receptor, that is concrete cutting
 and rock breaking should where possible. This proposed method of working will provide effective noise
 management of site activities to ensure that any receptor is not exposed to unacceptably high levels
 of noise over extended periods.
- Excessive reviving of all vehicles shall be avoided.
- Unnecessary dropping of heavy items onto ground surfaces shall be banned.
- The use of an excavator bucket to break up slabs of concrete or tarmacadam shall not be permitted.
- The dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.
- The use of acoustic screens to attenuate noise at source shall be implemented as deemed necessary.
- Plant Reversing Alarms: Where reasonably practicable and deemed safe by risk assessment, taking into account onsite hazards and working environment, the tonal reversing alarms of mobile plant shall be replaced with broadband alarms.
- A nominated person from the Project Management team will be appointed to liase with local residents and businesses regarding noise nuisance events.
- In the event of the requirement for out of hours work to occur which will involve the generation of noise levels that are predicted to exceed out of hours noise limit criteria, Meath County Council shall be immediately notified prior to the works commencing.
- A nominated person from the Project Management team will be appointed to liaise with and inform local residents and Meath County Council regarding out of hours works.
- An independent acoustic consultant shall review the implementation of the recommended mitigation measures on a monthly basis.

The images below describe the use of noise screens for construction activities.

It is recommended that high performing acoustic barriers are utilised such as Echo Barrier products or Ventac products.

Double height acoustic blanket enclosure

Acoustic blankets screening piling and excavations





3 sided Acoustic enclosure for surrounding breaking, cutting works



16.9.1.3 Construction Phase Vibration Control & Mitigation

The following specific vibration mitigation and control measures shall be considered during the construction phase:

NV CONST 3 Vibration Mitigation Measures

- Breaking out concrete elements using low vibration tools
- Choosing alternative, lower-impact equipment or methods wherever possible
- Scheduling the use of vibration-causing equipment, such as jackhammers, at the least sensitive time of day
- Routing, operating, or locating high vibration sources as far away from sensitive areas as possible
- Sequencing operations so that vibration causing activities do not occur simultaneously

- Isolating the equipment causing the vibration on resilient mounts
- Keeping equipment well maintained. •
- PECEIVED Confining vibration-generating operations to the least vibration-sensitive part of the day which could . be when the background disturbance is highest
- A nominated person from the Project Management team will be appointed to liaise with local residents • and businesses regarding vibrational nuisance events.
- An independent acoustic consultant shall review the implementation of the recommended mitigation measures on a monthly basis.

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, structural vibration monitoring shall be conducted during the course of the project works if required.

It is proposed that vibration monitoring will be conducted at properties adjacent to or within 50m of the site as required using calibrated vibration monitors and geophones capable of transmitting live text and email alerts to ensure that if vibration levels approach or exceed specified warning and limit values, site personnel will be alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the vibrational impacts of protected structures.

As detailed in Section 8.2.2 the transient vibration guide values for cosmetic damage as specified in British Standard BS 7385:, Evaluation and measurement for vibration in buildings, Part 2 1993 Guide to damage levels arising from ground borne vibration is 15 mm/sec Peak Component Particle Velocity at 4 Hz increasing to 20 mm/sec at 15 Hz. This limit value rises to 50 mm/sec at frequencies of 40 Hz and greater. The applied conservative limit of 12.5 mm/sec PPV (peak particle velocity) applied for this assessment is significantly lower than these levels.

Having regard to the above we suggest the inclusion of the following mitigation measure for ease of reference:

N V CONST 4

In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Management Plan (including traffic management) shall be put in place prior to the commencement of development. This will have regard to the mitigation measures set out in Section 8.7 of this document.

16.9.2 OPERATIONAL PHASE NOISE MITIGATION

N&V OPERA 1: External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path.

16.9.2.1 Acoustic Design requirements for residential buildings Windows

In order to ensure a sufficient level of sound insulation is provided for all dwellings within the development, the following lists the minimum sound insulation performance of windows and window frame sets in terms of the in-situ weighted sound reduction index (R_W) :

30dB R_W for Living rooms & Bedrooms
30dB R_W for Kitchen – Dining Rooms.

The acoustic performance specifications detailed are the minimum requirements which shall apply to the overall glazing system when installed on site. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc. All exterior wall and door frames should be sealed tight to the exterior wall construction.

Ventilation Systems

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations. The apartment units shall include mechanical heat recovery ventilation systems which will negate the requirement for passive wall vents in bedrooms and living spaces which would otherwise allow the transfer of external noise into the building through the air gaps in the passive vents. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice. This design feature of the residential units will ensure that the building structure is acoustically insulated from the external environment.

Wall Constructions

The wall construction typically provides the highest level of sound insulation performance to a residential building. The residential dwellings will be built using either masonry or a timber framed construction. The minimum sound insulation performance of the chosen wall construction will be 55dB Rw.

Roof Construction

The insulated roof constructions proposed across the site will provide an adequate level of sound insulation to the properties within the development site. A minimum sound insulation value of 40dB Rw should be used for roof spaces.

At the earliest stage during the construction phase, residential test units shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with *Department of the Environment, Building Regulations 2014, Technical Guidance Document* E - Sound. Table 8.14 above provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units and to assess compliance with external noise intrusion criteria as defined in *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings.*

The operational phase of the development is predicted not to have an adverse noise impact on the receiving environment or on existing residential developments adjacent to the site during the operational phase of the scheme. Therefore, no mitigation measures additional to those set out above are proposed.

16.9.3 MONITORING

16.9.3.1 Construction Phase

1.1.1.1.1 Proposed Noise Monitoring Programme During Site Construction

This section describes the noise and vibration monitoring methodologies that shall be implemented at the site to ensure that construction site activities do not cause excessive nuisance or cause cosmetic or structural damage to properties or structures in the vicinity of the site.

On commencement of the site construction activities, continuous noise monitoring systems shall be installed at site boundary locations to measures and assess the impact that site activities may have on ambient noise levels at local receptors.

The environmental noise measurements will be completed in accordance with the requirements of ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise and with

regard to the *EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).* The measurement parameters to be recorded include wind speed, temperature, LAeq, LA90, LA10 and LAmax, 1/3 Octave Frequency analysis and mpact noise analysis.

1.1.1.1.2 Noise Monitoring Locations

The noise monitoring location recommended for the noise monitoring surveys will be at existing residential noise sensitive receptors (N2) adjacent to the southern site boundary (Ref Figure 8.1).

1.1.1.1.3 **Proposed Vibration Monitoring Programme During Site Construction**

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, it is proposed that structural vibration monitoring may be implemented during the course of the construction phase if and as required. It is proposed that vibration monitoring will be conducted at adjacent properties identified as N1 opposite the southern site boundary (Ref Figure 8.1) as required using calibrated vibration monitors and geophones with live text and email alert functionality to ensure that if vibration levels approach or exceed specified warning and limit values, site personnel will be alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the vibrational impacts of protected structures.

1.1.1.1.4 Vibration Monitoring Locations

The vibration monitoring location recommended for the vibration monitoring surveys will be at existing residential noise sensitive receptors (N2) adjacent to the southern site boundary (Ref Figure 8.1).

16.9.3.2 Operational Phase

No monitoring required.

16.10 LANDSCAPE AND VISUAL

The following recommendations are put forward to mitigate against the negative impacts mentioned above and to reinforce the positive impacts of the proposed development. Mitigation measures are proposed and considered only on the lands of the subject site.

16.10.1 CONSTRUCTION PHASE

During construction there will be a change to the landscape and there will be negative visual impacts for residents and visitors to the areas adjacent to the site associated with construction activity.

The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.

Site hoarding will be appropriately scaled, finished, and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

Existing trees and woodlands to be retained and are shown in the CSR Design Statement and Arboricultural Reports.

Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to BS5837: Trees in relation Design, Demolition and Construction – Recommendations (BSI, 2012). Tree protection details will be included with the application to the Board.

Adverse impacts both during construction and at operation phases could be mitigated through undertaking the following site works early on in the construction process in order to soften and screen views as early on as possible.

Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.

16.10.2 OPERATIONAL PHASE

The scheme design incorporates significant consideration and mitigation in respect of potential impacts.

The architectural layout aims to address visual impacts by proposing variety in scale and massing of buildings.

The extensive planting of additional trees and shrubs throughout the site where possible will reduce the visual mass of the buildings, soften and partially screens the development over time from various viewpoints, as identified in the assessment, thereby minimising the visual impacts.

Landscape works are proposed to reduce and offset of any impacts generated due to the proposed development, where possible. The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries, and internal roads, both native and ornamental varieties, will enhance the overall appearance of the new development and compensate for the removal of hedgerows and trees where needed for the construction works and increase the overall landscape capacity of the site to accommodate development.

Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist.

Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.

Design of public open space that forms part of a network of spaces that includes areas for passive and active recreation, social / community interaction and play facilities catering for all ages.

Application of best practice horticultural methods to ensure that mitigation measures establish and grow appropriately.

16.10.3 MONITORING

16.10.3.1 Construction Phase

Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting, and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.

16.10.3.2 Operational Phase

This will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-ONDERORA vear period is complete.

MATERIAL ASSETS – TRAFFIC AND TRANSPORTATION 16.11

16.11.1 CONSTRUCTION PHASE

As part of the Safety Health & Welfare assessment of the construction stage of the project. Albert Developments Limited, Balmoral, Navan, Co. Meath, and the appointed contractor will develop a sitespecific construction traffic management plan which will seek to (insofar as practicable) segregate resident and construction traffic routes, both pedestrian and vehicular. Details of the signing layout regimen will be provided in the detailed Construction Traffic Management Plan which is to be agreed with the Planning Authority prior to work commencing on the site. A condition of planning is respectfully invited with regard to the preparation of the detailed Construction Traffic Management Plan. The Construction Management Plan will include the mitigation contained in this EIAR including the Outline CEMP contained in Appendix D Volume III of this EIAR.

The Construction Management Plan incorporates a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed developments on-site construction activities. Construction Management Plans are typically prepared for developments generating significant construction activity. The management plan should contain measures to mitigate the effects of construction addressing issues such as traffic management, hours of working, delivery times and methods of prevention of noise and dust, reinstatement of damaged roadways, footways and grass verges, and the accommodation of construction and staff parking within the development during the construction period.

The construction works associated with the proposed development will involve normal construction activities such as excavation, filling, lifting, pumping, pipe laying, concrete works, mechanical installation etc.

A detailed Construction Management Plan will be drawn up prior to the commencement of construction activities (typically prepared together with programme of works upon appointment of contractor), in order to minimize the impacts to the environment during construction.

The Construction Management Plan will detail the allowable working day, construction traffic, parking arrangements and will incorporate environmental protection measures. Provisions to reduce the environmental impact and to minimise disruption to the surrounding environment arising from construction activities will include the following:

- Parking for all construction staff will be provided on site. •
- Requiring contractors to ensure that no pollution or obstruction of ground water and watercourses is • caused by their operations.
- Requiring contractors to comply at a minimum with the provisions of BS 5228 (Noise Control on • Construction and Demolition Sites) or other noise control measures prescribed by the Planning Authority.
- Where necessary, require contractors to erect suitable noise barriers to minimize disturbance and . avoid nuisance when operating machines at night (between 1900 hours and 0800 hours).
- Limiting vibration caused by construction plant to the maximum permitted values in BS6472 (Guide to evaluation of human exposure to vibration in buildings (1Hz to 80Hz) or other control measures prescribed by the Planning Authority.

- Requiring contractors to take reasonable precautions to ensure that all wastewater discharged shall not be harmful to or cause obstruction or deposit in drains and to prevent oil, grease or other objectionable matter being discharged into drains.
- Requiring contractors, during the execution of works, to keep all plant and materials and all equipment connected with the construction of the works in good order and clean and tidy.
- Requiring contractors to remove any waste materials from the site to a licensed waste facility.
- Requiring contractors to ensure that the public roads in the vicinity of the site are maintained free from all mud, dirt and rubbish, which may arise from or by reason of the execution of the works. To facilitate this, the Contractor could be required to provide a wheel washing facility to an approved standard within the construction site.
- Prohibiting the disposal of excess concrete on any part of the construction site.
- Requiring the contractor to provide a designated bin for washing down the chutes of concrete lorries on site.
- Requiring the contractors to keep the construction compounds free and clear of excess dirt, rubbish piles and scrap wood etc. at all times. Requiring the contractors to keep the designated parking area and other common areas clear and free of rubbish and debris.
- Requiring contractors to be responsible for the disposal of all wood, food, food packaging and paper generated during the construction phase and requiring them to furnish containers and vehicles to collect and haul these items and dispose of them to a licensed waste facility. Dumping of these items within the construction site will be prohibited.
- Requiring scrap materials, rubbish, etc. to be hauled out of the work areas (daily) and disposed of by the Contractor on a daily basis to a licensed waste disposal facility.
- Requiring the contractor to obtain any necessary permits from the Local Authority or Environmental Protection Agency for the disposal of waste.
- At the completion of the work, require contractors to leave the construction area in a neat, clean, and orderly condition.
- Requiring individual contractors to provide sanitary facilities that would be adequate for their construction personnel. Sanitary facilities should include proper wash down WCs with sewer connections, or if this is impractical, chemical closets.
- Requiring that all temporary buildings associated with construction of the development comply with the Safety, Health and Welfare Regulations. On completion of the works, contractors should remove them entirely with all slab, drains and water mains and restore the surface of the land to its original condition or other reasonable conditions.

In addition, any excavated material generated during the construction of the plant will be reused on site, where appropriate. Parking facilities for construction vehicles and private transportation will be located within the development site. Temporary site fencing will be erected and maintained to secure the site during the construction phase.

16.11.2 OPERATIONAL PHASE

The objective of the Masterplan Development is the delivery of a sustainable live work community model. The proposed development delivers significant elements of that community including park areas, neighbourhood centre, creche and community hall, all of which will contribute to a reduction traffic needing to use the greater road network to access such amenity and services. As part of a whole, the proposed development has the potential to make a significant contribution to the live work model and to reduce the overall impact of the Masterplan 12 lands on the receiving roads environment of Kentstown Road and Boyne Road.

The proposed development incorporates a significant number of interconnected walking and cycling routes for commuting, circulating within the development and leisure. Internal routes connect to local amenities and the neighbourhood centre and to surrounding developments and the greater travel network of Navan town. These facilities will provide attractive and safe routes for residents which will encourage residents and visitors to travel by more sustainable modes.

A Mobility Management Plan (MMP) has been prepared and will be implemented for all residents and particularly the residents of the apartment units. Notwithstanding that the commercial elements of the development are part of the overall Masterplan 12 live work sustainable community model and are expressly provided to reduce the need to travel by car the principles of the MMP will extend to staff associated with the operation of the commercial elements albeit that the majority of staff is expected to be living in the local community. In co-ordination with the objectives of the sustainable community model the MMP ultimately seeks to encourage sustainable travel practices for all journeys to and from the proposed development.

16.11.3 MONITORING

16.11.3.1 Construction Phase

The implementation of the agreed Construction Management Plan and incorporated detailed Traffic Management Plan will be monitored over the course of the Construction Period.

16.11.3.2 Operational Phase

The implementation and performance of mobility management planning initiatives including any ongoing revisions or new initiatives will be monitored and evaluated throughout the Operational Phase. As part of the MMP process, post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

16.12 MATERIAL ASSETS – WASTE MANAGEMENT

16.12.1 INCORPORATED DESIGN MITIGATION

The site-specific Resource and Construction Waste Management Plan (RWMP) includes specific details on how construction phase wastes and resources shall be controlled, managed and monitored throughout the construction phase as detailed in Section 11.6.2 and also contained in Appendix E, Volume III of the EIAR.

The site-specific Operational Waste Management Plan (OWMP) includes specific details on how operational phase wastes shall be controlled, managed, and monitored throughout the lifetime of the development as detailed in Section 11.6.3 and also contained in Appendix E, Volume III of the EIAR.

16.12.2 CONSTRUCTION PHASE MITIGATION

16.12.2.1 Construction Waste Management

- From the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.
- Spill kits shall be located within the site compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills to minimise the potential for ground contamination.
- All vehicle and plant oils and liquid construction materials shall be stored in secure impermeable storage units.

- All diesel-powered generators shall be inspected on at least a weekly basis by a delegate of the project manager to ensure it is not leaking diesel or oils.
- All empty containers containing residual quantities of oils, greases and hydrocarbon-based liquids shall be stored in a dedicated, clearly labelled impermeable container.
- In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.
- It will be the responsibility of the Resource and Waste Manager (RWM) to ensure that a written record of all quantities and natures of wastes exported off-site are maintained on-site in a Waste File at the Project office.
- It is the responsibility of the RWM that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:
- Waste Management (Collection Permit) Regulations 2007 2023 (as amended) (SI No.820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2016 (SI No.247 of 2016)
- Waste Management (Collection Permit) Amendment No. 2 Regulations 2023 (SI No.104 of 2023)
- Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) (Amendment) Regulations S.I.250 of 2019.2007 to 2023 (as amended).
- Waste Management Acts 1996 (Revised 1st July 2023).- 2011.
- Prior to the commencement of the Project, the Resource and Waste Manager (RWM) shall identify a permitted Waste Contractor(s) who shall be engaged to collect and dispose of all inert and hazardous wastes arising from the project works.
- The RWM shall maintain copies of all Waste Collection Permits and copies of the Waste Facility Permit or Waste Licence to which waste materials are exported to. The RWM shall ensure that all Permits/Licences are within date.
- All waste soils prior to being exported off-site, shall be classified as inert, non-hazardous or hazardous in accordance with the EPA (2018) Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous document to ensure that the waste material is transferred by an appropriately permitted waste collection permit holder and brought to an appropriately permitted or licensed waste facility.

16.12.2.2 Resource Management

- Materials shall be ordered on an "as needed" basis to prevent over supply and preventing damage to bulk orders stored on-site.
- Materials shall be stored and handled in a manner that minimises the generation of damaged materials
- Materials shall be ordered in appropriate sequence to minimise materials stored on site

- All staff and Sub contractors shall be advised through inductions and tool box talks on how to dispose of their waste correctly on-site.
- Broken concrete blocks and excess aggregate materials shall be segregated and stored off-site for use as hard standing material on future projects. This will result in the following positive impacts:
- Reduction in the requirement for virgin aggregate materials from quarries
- Reduction in energy required to extract, process and transport virgin aggregates
- Reduced HGV movements associated with the delivery of imported aggregates to the site
- Reduction in the amount of landfill space required to accept C&D waste
- Excess wood will be segregated in separate skips and sent for recycling.
- Plastic arising from general waste or packaging will be segregated and stored in separate skips.
- Metals waste shall be stored in dedicated skips
- Top soil that is stripped shall be retained for landscaping purposes.

11.6.3 Operational Phase Mitigation

The OWMP (contained in Appendix E, Volume III of the EIAR) is defined by the following stages of waste management with regard to the Circular Economy and the Waste Hierarchy.

| Stage 1 | Occupier Source Segregation |
|---------|-------------------------------------|
| Stage 2 | Occupier Deposit and Storage |
| Stage 3 | Bulk Storage and On-Site Management |
| Stage 4 | Off-Site Removal |
| Stage 5 | End Destination of wastes |
| 0 | |

The Key Aspects that are designed into the development are:

- 3-Bin systems in each unit to encourage waste segregation at source
- Communal Bin Stores to provide for Organic, Recyclable, Mixed Waste, Glass and WEEE waste storage
- Residents to be provided with a Bulky Waste collection service
- Waste Management & Record Keeping
- A Bring Bank will be located at the Community Centre for use by residents and the local community

The Facilities Management Company shall maintain a weekly register detailing the quantities and breakdown of general mixed domestic waste, recyclable waste and organic waste wastes removed from the apartment aspect of the development. Supporting documentation shall be provided by the Waste Collection Contractor on a monthly basis.

The Facilities Management Company shall prepare an annual information report for all apartment residents detailing the quantities and waste types generated by the development for the previous year. The report shall include reminder information on the correct segregation at source procedures and the correct

placement of wastes in the waste storage area. Other aspects of ongoing waste management continuous improvement shall also be stated.

The proposed Neighbourhood Centre will include a bring bank facility indicated on the WHA layout located :01/06/101× to the south of the sports hall in the C1 zone.

16.12.3 MONITORING

16.12.3.1 **Construction Phase Waste Monitoring**

The Resource and Waste Manager will maintain a written record of all quantities and types of construction wastes generated, reused / recycled, and exported off-site during the construction phase.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.
- Description of how waste at facility shall be treated i.e. disposal / recovery / export

1.1.1.1.5 **Construction Phase Waste Auditing**

In order to ensure that construction wastes generated during the course of the development are being effectively managed and recorded, a waste management audit shall be conducted on a routine basis to determine compliance with the RWMP.

The effectiveness of a Resource and Waste Management Plan and its implementation will be subject to quarterly audits by the RWM throughout the duration of the construction phase.

Audits will focus on materials inputs to the project and the waste outputs identifying:

1.1.1.1.6 Resources

- How resource management was integrated into the design of project buildings and areas
- Re-use, recycling of existing on-site materials prior to development including soils, buildings, structures.
- Re-using surplus materials from previous development projects e.g. office cabins, fencing, aggregates, concrete products.
- Additional opportunities for future resource management.

1.1.1.1.7 Waste

The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

Performance targets will be developed, e.g. an 85% overall recycling target, successes and failures will be recorded and Action Plans will be developed to address any issue which arise.

- Inspections of the waste storage areas will be undertaken and recorded on a weekly basis, issues relating to housekeeping, inappropriate storage and segregation of wastes.
- The RWM will record the findings of the audits, including types and quantities of waste arising, final treatments and costs, in a quarterly audit report.
- The Final Waste Audit will examine the manner of how resources were managed and how and where the waste was produced and how waste generation can be reduced in future projects.

16.12.3.2 Operational Phase Waste Monitoring

The Facility Management Company shall prepare an annual report for the Local Authority and residents of the development on the quantities of waste generated within the development to demonstrate how waste reduction and recycling targets are being achieved with regard to the targets defined in the *National Waste Management Plan for a Circular Economy 2024-2030*.

16.13 MATERIAL ASSETS – UTILITIES

16.13.1 CONSTRUCTION MITIGATION

Mitigation measures proposed in relation to the drainage and water infrastructure include the following:

16.13.1.1 Stormwater Infrastructure

The site will be attenuated to greenfield run-off rates as per GDSDS guidance to mimic the current scenario and then discharge to the Millrace / Farganstown Stream.

The use of permeable paving, detention basins and attenuation ponds which have been designed to minimize runoff and maximize groundwater re-charge through infiltration into sandy / gravelly soils (encountered in the geotechnical investigation) will minimize potential effects on groundwater re-charge.

A detailed "Construction and Environmental Management Plan" (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the "Construction and Environmental Management Plan". The mitigation measures contained in the EIAR will be included in the contractors' CEMP.

Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate settlement pond/tank prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.

16.13.1.2 Foul Infrastructure

In order to reduce the risk of defective or leaking sewers, all new sewers will be laid in accordance with Irish Water standards, pressure tested, and CCTV surveyed to ascertain any possible defects.

The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established.

0106204

16.13.1.3 Potable Water Infrastructure

The construction compound's potable water supply shall be protected from contamination by any construction activities or materials by constructing it to Irish Water standards with appropriate cover.

Please also refer to Chapter 6.0 – Water for mitigation measures.

16.13.1.4 Power, Gas & Telecommunications

The relocation or diversions of the existing overhead ESB lines may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

Any loss of supply will be managed by Eir / Virgin Media to minimise impact on neighbouring properties.

16.13.2 OPERATIONAL MITIGATION

Where possible backup network supply to any services will be provided should the need for relocation or diversion or existing services be required otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

Please refer to Chapter 6.0 Water for further operational mitigation.

16.13.3 MONITORING

Please refer to Chapter 6.0 – Water and Chapter 4.0 Biodiversity for the proposed monitoring in relation to the surface water during the construction phase. There is no specific monitoring is proposed in relation to the remaining material assets infrastructure during the construction phase.

Proposed monitoring during the operational phase in relation to the water infrastructure are as follows:

- All drainage works will be approved by Meath County Council, Sanitary Services Division, and will be carried out in accordance with the GDRCOP (Greater Dublin Regional Code of Practice for Drainage Works).
- The surface water and foul drainage systems will be monitored by way of observation of any flooding events if such occur and the establishment of a proper maintenance programme for all sewers / Suds features etc.
- Regular cleaning of pipe networks within the development taken in charge will ensure no blockage will obstruct any flow from surface and foul networks.
- On-going water usage within the proposed development will be monitored by bulk water meters. Water usage will be monitored by the relevant authority to avoid waste and leaks etc.
- All drainage works will be approved by Meath County Council and will be carried out in accordance with the GDRCOP (Greater Dublin Regional Code of Practice for Drainage Works).
- All foul and surface water sewers will be CCTV surveyed prior to being 'taken in charge' by Meath County Council.

16.14 CULTURAL HERITAGE

16.14.1 CONSTRUCTION PHASE

16.14.1.1 Archaeology

The site was archaeologically assessed. An archaeological assessment was carried out in 2020 (Lyne and Murphy, 2020; see Appendix A), geophysical survey (Murphy and Breen, 2020) with subsequent test trenching of the site carried out in January 2024 (La Fratta, 2024) and May 2024 (Clarke, in prep.) identified some small isolated features of archaeological significance.

In order to mitigate the potential effect of the proposed development on the Archaeological Heritage of the site, the following measures are recommended:

- An area measuring 3.07ha, will be subject to archaeological monitoring of groundworks (see area demarcated in blue on Figure 13.8). This area of the site was subject to test trenching under licence 23E1013, with features of archaeological significance identified and excavated since. However, this area was only tested to a level of 5%; hence, further mitigation in the form of monitoring during construction is required in order to mitigate any potential impact on possible further archaeology if present. This will be carried out by a licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage.
- Wherever possible, the preservation in situ of any identified archaeological remains is the preferable option, however where this is not possible preservation by record in advance of construction is recommended. The latter should be carried out by a licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage.
- Preservation by record of features exposed as a result of test trenching carried out under licence 23E0553. This will include topsoil stripping of three areas measuring 10m by 10m around features exposed (a kiln and two pits). The features identified and any further features exposed will be fully excavated by hand and preserved by record (Figure 13.8). The area will be extended (if required) should any additional features be found with a 5m minimum buffer zone between the archaeological feature and the edge of the stripped area established. This shall be carried out by a suitably qualified, licence eligible archaeologist in consultation with and under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage prior to construction in these areas commencing. As this area was tested to a level of 12% of the area available, following preservation by record of the features identified, no further mitigation is recommended.
- Full provisions should be made for the resolution (full excavation) of any further archaeological features/deposits that may be discovered through additional archaeological monitoring.

16.14.1.2 Architectural Heritage

No architectural heritage mitigation measures are required during the construction phase.

16.14.1.3 Cultural Heritage

In order to mitigate the potential impact of the proposed development on the Cultural Heritage of the site, the following measures are recommended:

• The townland boundary that traverses the proposed development should be recorded by photograph and written description prior to any development proceeding.

16.14.2 OPERATIONAL PHASE

16.14.2.1 Archaeology

Following the successful implementation of the mitigation measures detailed in Section 13.7, it is envisioned that no further archaeological mitigation measures will be required during the operational phase.

16.14.2.2 Architectural Heritage

No architectural heritage mitigation measures are required during the operational phase.

16.14.2.3 Cultural Heritage

Following the successful implementation of the mitigation measures detailed in Section 97.1.3, it is envisioned that no further archaeological mitigation measures will be required during the operational phase.

16.14.3 MONITORING

The mitigation measures recommended above would also function as a monitoring system to allow further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures.

16.15 RISK MANAGEMENT FOR MAJOR ACCIDENTS

The Outline Construction Environmental Management Plan (contained in Appendix D Volume III of the EIAR) and the Health and Safety Plan (which will be developed and included in the final CEMP) will limit the risk of accidents during construction. Fire safety will be dealt with under the Fire Safety Code at design and construction stage. The estate management company will have responsibility for fire safety during operations. The OCEMP along with the mitigation measures contained in this EIAR will be implemented as part of the construction of the project.

The proposed development will involve ground works to facilitate the proposed development. Site investigations have been carried out (refer to Appendix D Volume III of this EIAR) and have not identified any hazardous material. Further site investigation and WAC (Waste Acceptance Criteria) testing will be carried out prior to construction to inform the detailed design. In the event that any hazardous material is identified the appropriate measures will be taken in accordance with the requirements of the EPA. The excavation and movement of soil from the site will be undertaken by a registered specialist contractor and removed to a licensed facility. The following are outlined:

- Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution.
- In the event of storms or snow, construction activity can be halted, and the site secured. The construction activity will involve a number of potential risks, as set out below. The risks identified include traffic management, and fire strategy.
- During the construction stage, the risk of accidents associated with the proposed development are
 not predicted to cause unusual, significant or adverse effects to the existing public road network.
 The vast majority of the works are away from the public road in a controlled environment. The
 objective of which is to minimise the short-term disruption to local residents and reduce the potential
 for accidents.
- Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.
- With reference to natural disasters (e.g., flooding), the proposed development has undergone a Site-Specific Flood Risk Assessment, prepared by JBA Consulting Engineers. The main area of the site where development is proposed is low risk of fluvial, pluvial or groundwater flooding.

- A Health and Safety Plan will be prepared (required by the Safety, Health and Welfare at Work (Construction) Regulations 2013) to address health and safety issues from the design stages through to the completion of the construction and maintenance phases. The Health and Safety Plan will comply with the requirements of the Regulations and will be reviewed as the development progresses.
- Safety on site will be of paramount importance. Only contractors with the highest safety standards and training will be selected. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated.
- Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.
- Safety briefings will be held regularly and prior to any onerous or special task. '*Toolbox talks*' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.
- All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.
- Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

| 1. BASIC RISK INFORMATION | | 2. RISK ASSESSMENT INFORMATION | | 3. RISK RESPONSE INFORMATION | |
|---|--|---|--|--|--|
| Risk Number | Risk Description / Risk Event Statement | Responsible | Impact H / M / L | Probability H / M / L | Actions |
| Provide a unique identifier for risk | A risk event statement states (I) what might happen in the future and (ii) its possible impact on the project. | Name or title of team member responsible for risk | Enter H (High); M (Medium) ; or L (Low) accordin g to impact definition s | Enter H (High), M (Medium) or L (Low) according to probability definitions | List, by date, all actions taken to respond to the risk. This does not include assessing the risk |
| 1 | Work which puts persons at risk of:-burial under earth falls. Risk of burial under earthfalls in trenches. | Project Supervisor Construction Stage (PSCS) | Н | М | Contractor to address requirement for trench support. Excavations are to be carried out at safe slope. Refer to site investigation for same and temporary works engineer to design. |
| 2 | Scaffolding Risk of falling from scaffolding, ladders or | PSCS | н | М | Working at height required throughout the project. Installation of scaffolding for all |

Table 16.5: Strategy for tackling potential risks.

| 1. BASIC RISK INFORMATION | | 2. RISK ASSESSMENT INFORMATION | | 3 RISK RESPONSE | |
|---------------------------|---|-----------------------------------|---|-----------------|--|
| | unprotected edges/open voids during the construction phase. | | | | working at height activities to be subject to a full temporary works design submission. In order to fully Co-Ordinate any temporary works submission the Project Supervisor for the Design Process must receive the following items before reviewing any submission; A full design submission, Calculations for the design, Design Risk Assessment, Copy of designer's PI insurances, Designers CV. This submission can then be reviewed by the Permanent Works Engineer to ensure the design will not impact on the permanent structure. |
| 3 | Fire Strategy Risk of fire damage to houses or to partially complete new apartment blocks from construction activities. | PSCS/ PSDP / Fire SC. | Н | М | Fire strategy must be put in place in advance of start on site which must take into consideration the requirement for hot works and the provision of Hot Works Permit systems to manage Hot works when needed. A fire marshal will be required - full co- operation from site supervisors and contractors will be required. |
| 4 | Lifting Operations Work involving the assembly or dismantling of heavy pre-fabricated components. Risk of injury during the assembly of precast columns, stairs, façade panels, etc. | PSCS/PSDP | Н | М | Lifting operations using cranes will be a requirement during the project. The PSDP must identify this as a risk factor ensuring the ground conditions are tested and appropriate to point loading from mobile cranes. The PSCS must ensure there is a fully risk assessed lift plan to manage all lifting operations on site. |

| 1. BASIC RISK INFORMATION | | 2. RISK ASSESSMENT INFORMATION | | 30 RISK RESPONSE | |
|---------------------------|---|-----------------------------------|---|------------------|--|
| 5 | Existing Utilities Work near overhead electric cables, risk of Electrocution | PSCS/PSDP | Н | М | The PSDP must highlight the existence of live over ead ESB cables on site The sequence of work to be planned to avoid working in close proximity to the lines. The PSCS to arrange for the relocation of the lines prior to working around them. The PSCS must follow the ESB code of practice and provide a risk assessed RAMS document to manage this hazard. |
| 6. | Construction Traffic Working adjacent to live construction and normal traffic. | PSCS/PSDP | Н | М | Contractor to prepare and implement a Construction Traffic Management Plan to be agreed with the design team to ensure public safety. The contractor is to supervise vehicle movements during construction and enforce the traffic management plan. |