10 NOISE AND VIBRATION

10.1 Introduction

This chapter of the EIAR has been prepared by Wave Dynamics Limited an Acoustic Consultancy specialising in noise and vibration. The EIAR chapter was prepared by Cathal Reck | Acoustic Consultant, Cathal has experience of numerous similar planning stage EIAR assessments. Cathal's qualifications include; BSc (Hons) in Music Technology & Production, IOA Certificate of Competence in Environmental Noise Measurement. Cathal is a member of the Institute of Acoustics.

This report was peer reviewed by James Cousins, Managing Director | Principal Consultant with Wave Dynamics who has extensive experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include; BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman. This section addresses the potential noise and vibration impact of the proposed Large-Scale Residential Development in Dunboyne, Co. Meath.

John Connaughton Ltd. intend to apply to Meath County Council for a 10-year planning permission for development of a Large-Scale Residential Development on a sites of approx 21.9 ha in total and 15.74 ha net developable area respectively, at Lands at Station Road and Pace Line, Dunboyne, Co. Meath in the townlands of Dunboyne, Clonee, Castle Farm and Loughsallagh.

The principle application site is generally bounded by Station Road (L2228) to the south, Dunboyne Train Station and the Iarnród Éireann rail line to the West, a cluster of detached houses to the southeast, greenfield lands to north and east. The application includes also 2 no. roundabouts on the R147 (Old Navan Road).

Permission is sought for a 10-year planning permission for a Large-Scale Residential Development, which in summary, will consist of the following: -

A. Construction of 853 no. residential units as follows:
    1. 398 no. Apartment Units in 3 no. 1-6 storey blocks (A-C) consisting of 121 no. 1-bedroom apartments; 258 no. 2-bedroom apartments; and 19 no. 3-bedroom apartments. All apartment units will be provided with private open space areas in the form of balconies/terraces.
    2. 112 no. Duplex Units in 6 no. 2-4 storey blocks (D-H) consisting of 60 no. 2-bedroom units, 52 no. 3-bedroom units. All duplex units will be provided with private open space areas in the form of balconies/terraces.
    3. 343 no. 1-3 storey houses consisting of 4 no. 2-bedroom units, 308 no. 3-bedroom units, 31 no. 4-bedroom units. Each house will have an associated rear private garden.
B. Residential amenity spaces in Block A (approx. 212 sqm), Block B (approx. 284 sqm) and Block C (approx. 81 sqm);
C. The proposed development also includes a proposed café (approx. 196sqm) with associated outdoor seating area, medical unit 1 (197 sqm), retail unit 2 (approx. 217 sqm), retail unit 3 (approx. 170 sqm), community room (approx. 52 sqm), 2 no. creche facilities (approx. 394 sq m and approx. 400 sqm);
D. Provision of 1192 no. car parking spaces across the development site (inclusive of accessible parking spaces (27 no.) and 1,634 no. bicycle parking spaces for

residents and visitors of the scheme provided throughout the development site.

E. 13 no. landscaped public open space amenity areas (approx. 23,925 sqm total);
F. 7 no. communal open spaces associated with the proposed apartments and duplexes will be provided in the form of landscaped areas located in the vicinity of these units (approx. 6,279 sqm total);
G. Section of the Dunboyne Eastern Distributor Road (approx. 865 m long) from the southern site boundary with Station Road (L2228) to the northern boundary of the site. This includes all associated vehicular and pedestrian accesses, carriageways, paths and junctions;
H. New vehicular, pedestrian and cycle connections to Dunboyne Train Station and closure of the existing vehicular access from Station Road (L2228);
I. Upgrade of Station Road (L2228) – proposed Distributor Road junction;
J. Alterations to 2no. roundabouts on the R147 (Old Navan Road):
    a. Roundabout at the junction of Station Road (L2228) and Old Navan Road (R147)
    b. Roundabout at the entrance to Clonee Village on the R147, at the Ard Cluain apartment scheme and Dunboyne Tennis Club
K. All associated site development works, services provision, infrastructural and drainage works, internal access roads, homezones and cycle and pedestrian infrastructure, provision of ESB substations, bin stores, public lighting, landscaping, and boundary treatment works.
L. Temporary areas allowing for construction: 5m buffer zone along the Distributor Road, compound and spoil storage area

Previous applications have been made or permitted on lands within the red line boundary of the subject proposal: Reg. ref. 24/60063, Reg. ref. 23849, ABP NA29S.314232 DART+ West, Reg. ref. 212395 (ABP 304842), Reg. ref. RA180561 refers. The subject application does not materially amend any of these existing, permitted, or proposed development with only minor works proposed to same.

As the development is adjacent the Dublin – M3 Parkway rail line, centred around the proposed Dunboyne Distributor Road and is located in Dublin Airport Noise Zone C an acoustic design statement is required to ensure the future resident's amenity is protected.

10.2 Study Methodology

The assessment of the noise and vibration impacts has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this chapter. In addition to specific noise guidance documents, the following guidelines were considered and consulted for the purposes of this chapter:

- ✓ BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- ✓ Meath County Council Noise Action Plan 2019
- ✓ ProPG Professional Practice Guidance on Planning & Noise.
- ✓ Environmental Protection Agency NG4: Guidance note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities
- ✓ ISO 1996-1:2016 Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures
- ✓ British Standard BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings.
- ✓ Previous experience on similar projects.

The noise and vibration study has been undertaken using the following methodology:

- A baseline environmental noise survey has been undertaken in the vicinity of the subject site in order to characterise the existing baseline noise environment and to assess the character of the existing noise.

- 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 statistical calculations have been performed during the construction phase of the project at the nearest sensitive locations to the development site.

- Predictive modelling using SoundPlan 9.0 and statistical calculations have been performed to assess the potential impacts associated with the operational of the development at the most sensitive locations surrounding the development site; and

- Mitigation measures have been proposed to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development.

10.3 The Existing and Receiving Environment (Baseline Situation)

A baseline noise survey was conducted at the site located in Dunboyne, Co. Meath, to assess the impact of road noise. The purpose of the survey was to quantify the existing noise environment to predict its impact on the future occupants of the development.

An unattended and attended noise survey was conducted to quantify the existing noise environment. The attended measurement survey also included measurements across the site for calibration of the distance attenuation calculations and noise model. The attended noise measurements were undertaken on the 6th of April 2023, the 28th of August 2023 and 28th of November 2023. The noise logger was deployed on the 6th of April 2023 at 15:34hrs and collected on the 11th of April 2023 at 08:08hrs. Vibration measurements were undertaken at the site from 28th to 31st of May 2024.

10.3.1 Site Description and Measurment Locations

The site is located in Dunboyne, Co. Meath. It is surrounded by agricultural farmland with residential developments and the Meath (Navan) – Dublin Rail line to the West and the M3 motorway to the East.

Figure 10.1: Site location and measurement locations A1-A11 and L1.

10.3.2 Survey Methodology and Personnel

The attended surveys and unattended logger deployment were completed by James Cousins (Principal Consultant), Cathal Reck (Technical Engineer), Dr Wil Oshoke (Senior Technical Engineer) and Dan Cousins (Field Engineer).

10.3.2.1 Unattended Noise Measurements

An unattended noise logger was deployed in location L1. The logger was calibrated before and after the measurements and no significant drift was noted. The logger was deployed at a height of approximately 1.2m above the ground and measurements were filtered for periods of unsuitable weather conditions. Additionally, an unattended vibration logger was deployed in location A4 to record the vibration levels caused by train passbys.

10.3.2.2 Attended Noise Measurements

Noise measurements were undertaken in general accordance with ISO 1996-1:2016 using ISO Class 1 sound analysers. Attended measurements were taken for a duration of 15 minutes in the locations A1-A11 as noted in Figure 10.1. Care was taken to avoid any effect on the measurement of extraneous noise, acoustic vibration, or interference. During the attended noise measurements, the sound level meter was positioned at approximately 1.5m above the ground level. The weather conditions were calm (wind less than 5m/s) with no rain, a wind shield was used for the duration of the attended surveys. The noise logger was calibrated before and after the survey and no significant drift was noted.

Figure 10.2: Attended Measurement Setup.

10.3.3 Survey Period

The unattended noise measurements were undertaken on the 6th to the 10th of April 2023, and the 28th of May 2024 to the 31st of May 2024 for the vibration unattended measurements. Attended measurements were taken on 6th April, 28th of August, 28th November 2023 and the 28th of May 2024.

10.3.4 Subjective Noise Environment

During the attended noise survey following noise sources were identified:

- Traffic noise from nearby roads.
- Noise from train passbys.
- Aircraft overhead.

10.3.5 Noise Measurement Equipment

A Class 1 sound level meter/noise logger in general accordance with IEC 61672-1:2013 was used for the attended measurements. **Table 10.1** below summarises the measurement equipment used.

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Calibrator	CAL1	Nor 1251	31056	AC230226	16/10/2024
Sound Level Meter	SLM3	Nor 140	1403082	U44815/SLM230219	27/09/2025
Sound Level Meter	SLM4	Nti XL2-TA	A2A-23316-E1	UK-23-100	01/09/2025

Table 10.1 Noise Measurement Equipment.

10.3.6 Vibration Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Vibrock Vibration Logger	NVMV2	V9000	SN2164	11232164	01/11/2024

Table 10.2 Vibration measurement equipment

10.3.7 Noise Measurement Results

Attended and unattended measurements were taken to measure both the onsite noise levels and the noise from train passbys. This section outlines the results of the attended noise measurements.

10.3.7.1 Attended Measurement Results

Table 10.3 outlines the results of the attended measurement survey.

Measurement				Measured Noise Levels		
Location	Date	Time (hrs)	Duration (mins)	L_{Aeq} dB	L_{AFmax} dB	L_{A90} dB
A1	06/04/2023	11:25	15:00	66	78	55
A2	06/04/2023	11:43	15:00	58	81	51
	28/08/2023	09:55	15:00	54	85	48
	28/08/2023	11:10	15:00	49	60	45
A3	06/04/2023	12:07	15:00	49	61	46
	28/08/2023	10:25	15:00	46	62	42
	28/08/2023	11:30	15:00	53	72	44

Measurement				Measured Noise Levels		
Location	**Date**	**Time (hrs)**	**Duration (mins)**	**L_{Aeq} dB**	**L_{AFmax} dB**	**L_{A90} dB**
A4	06/04/2023	12:37	15:00	59	83	46
	28/08/2023	10:47	15:00	46	58	43
	28/08/2023	11:49	15:00	45	59	41
A5	06/04/2023	14:08	15:00	51	59	47
A6	06/04/2023	13:50	15:00	52	74	47
	28/08/2023	12:29	15:00	52	64	47
	28/08/2023	12:24	15:00	50	64	45
A7	28/11/2023	07:21	15:00	60	83	52
A8	28/11/2023	07:44	15:00	60	75	52
A10	28/11/2023	10:21	15:00	52	64	50
A11	28/11/2023	10:46	15:00	51	58	49

Table 10.3 Attended measurement results

10.3.7.2 Sound Exposure Levels

This section outlines the instances where an aircraft was recorded flying overhead or train passby during the daytime hours only.
To calculate the impact of the aircraft or train noise on the façade of the proposed building it is possible to predict the noise impact using the measured L_{Aeq} from aircraft flyovers and train passbys and calculating the sound exposure level using the following equation:

$$L_{AX} = LAeq + 10*\log_{10}(d1/d2) - 10*\log_{10}(N) + 10*\log_{10}(T)$$

Where:

L_{Aeq} is the measured level of the event
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

10.3.8 Train Passes

Table 10.4 below outlines the sound exposure levels for train passes on the Dublin-M3 Parkway rail line adjacent the proposed development.

Type	Date	Location	Time	Duration (Seconds)	L_{Aeq} dB	L_{AFmax} dB	SEL dB
Train	11/04/2023	L1	08:19	15	79	82	91
Train	28/11/2023	A9	08:18	11	75	79	85
Train	28/11/2023	A9	08:31	12	77	83	88
Train	28/11/2023	A9	08:39	12	78	85	89
Train	28/11/2023	A9	09:03	11	75	80	85

Table 10.4 Train SEL results

10.3.9 Aircraft

Table 10.5 below outlines the measured sound exposure levels for aircraft passes overhead at the development.

Aircraft Movement/Direction	Date	Location	Time	Duration (Seconds)	L_{Aeq} dB	L_{AFmax} dB	SEL dB
Westerly Takeoff	11/04/2023	L1	08:11	26	60	66	74
Westerly Takeoff	11/04/2023	L1	08:14	26	64	69	78
Easterly Landing	28/11/2023	A9	08:58	16	51	52	63

Table 10.5 Aircraft SEL results

10.3.9.1 Unattended Monitoring Results

Table 10.6 outlines the results of noise measurements at the unattended monitoring location L1. A full breakdown of all of the unattended measurement results are provided in Appendix A of this report.

Start Date	$L_{Aeq,16hour}$ (07:00 – 23:00) dB	L_{night} ($L_{Aeq,8hour}$ 23:00 – 07:00) dB	L_{den} (00:00 – 00:00) dB	10th highest night-time L_{AFmax} dB	L_{AF90} (23:00 – 07:00) dB
06/04/2023	63[1]	54	-	64	43
07/04/2023	61	53	62	66	42
08/04/2023	61	52	62	68	39
09/04/2023	59	46	60	55	33
10/04/2023	60	55	59	65	33

Table 10.6 Unattended measurement results

(1) Shortened measurement duration.

(2) Where night-time period is referred to the date is the date the measurement commenced on at 23:00hrs and finished at 07:00hrs on the following calendar day.

10.3.9.2 Discussion of Measurement Results

The ambient noise consisted of traffic noise from Dunboyne and the surrounding areas. The noise from train passbys affected the L_{Afmax} events and also increased the overall SPL for the monitoring period. For the road noise calibration purposes the impact of train passbys was considered on the overall SPL and average noise levels for the day and night.

10.3.10 Weather Conditions for Monitoring Period

Good weather conditions were noted in general during the deployment and collection during the attended survey, with winds of less than 5 m/s and no rain for the attended surveys.

Where weather conditions during the unattended survey impacted on the results they were filtered where required.

10.3.1 Vibration Measurement Results

This section outlines the results of both the unattended and attended vibration measurements.

10.3.11 Unattended Measurement Results

Table 10.7 below outlines the unattended vibration measurement results at location A4.

Date	*16 Hour VDV $ms^{-1.75}$ (07:00 – 23:00)*			*8[1] Hour VDV $ms^{-1.75}$ (23:00 – 07:00)*		
	Axis			*Axis*		
	X	***Y***	***Z***	***X***	***Y***	Z
28/05/2024	0.006	0.009	0.068	0.007	0.009	0.055
29/05/2024	0.006	0.008	0.073	0.007	0.008	0.056
30/05/2024	0.006	0.007	0.079	0.007	0.008	0.063
31/05/2024[(2)]	0.011	0.015	0.089	-	-	-

Table 10.7 Unattended vibration measurement results

(1) Where night-time period is referred to the date is the date the measurement commenced on at 23:00hrs and finished at 07:00hrs on the following calendar day.

(2) Shortened measurement duration.

10.3.12 Attended Measurement Results

Table 10.8 below outlines the results of the vibration measurement results for the logger measurement at location A5 for a train travelling North.

Date	*Time*	*Duration (Seconds)*	*16 Hour VDV $ms^{-1.75}$ (07:00 – 23:00)*			*8[1] Hour VDV $ms^{-1.75}$ (23:00 – 07:00)*		
			Axis			*Axis*		
28/05/2024	*10:23*	60	***X***	***Y***	***Z***	***X***	***Y***	Z
			0	0.009	0.007	-	-	-

Table 10.8 Attended vibration measurement results

10.3.12.1 Discussion of Measurement Results

The vibration levels were dominated by train pass-bys, there were no other vibration sources noted onsite. The logger location was selected as it was representative of the closest houses to the rail line.

10.3.12.2 Future Noise Levels

10.3.12.2.1.1 Road Traffic Noise

The road traffic noise predictions at the site have been undertaken based on the AADT predicted for the new Dunboyne Distributer Road for 2041 road traffic volumes as outlined in the noise impact assessment undertaken for the Distributer Road outlined in WDA report "*WDA230212RP_B_01_Noise Impact Assessment*".

10.3.12.2.1.2 Rail Noise

The existing rail line to the West of the site is used for transit between Dublin Connolly / Docklands and M3 Parkway. There are currently a total of 47 scheduled commuter train passes on the line per day, 25 southbound and 22 northbound mostly concentrated around the morning/evening peak commuting hours and 1 pass each direction per hour outside of the peak times based on information from Iarnród Eireann website. There are a total of 5 passes scheduled for the nighttime period currently.

We understand that Iarnród Eireann are currently engaging in planning for a new expansion project Dart+ West which will increase the frequency of transit services between Dublin and M3 parkway stations. The Dart+ West project also plans to electrify the majority of the fleet which services these stations. Based on our experience of previous similar developments, the use of the dart will lead to lower onset noise levels over commuter and intercity type trains.

Based on the information in Appendix D of the Iarnród Eireann Public Consultation Brochure the number of proposed trains that will transit the rail line adjacent the proposed site is not currently available. An allowance of up to 100% increase in train passes has been allowed for in the assessment which is a worst case prediction.

10.3.12.2.1.3 Aircraft Noise

The development currently resides just inside the Dublin Airport Noise Zone C:

- Zone C – ≥ 54 dB LAeq,16hr and < 63 dB LAeq,16hr and ≥ 48dB Lnight and < 55 dB Lnight.

Noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place the development outside the lowest predicted noise contour of 51 dB LAeq,16hr for the 2025 year scenario as can be seen in Figure 10.3 below. The location of the development is also shown on the contour to put the site location into context.

This shows that the development is outside the lowest predicted contour of 51 – 53dB LAeq,16hour from aircraft noise and therefore can be considered as low risk.

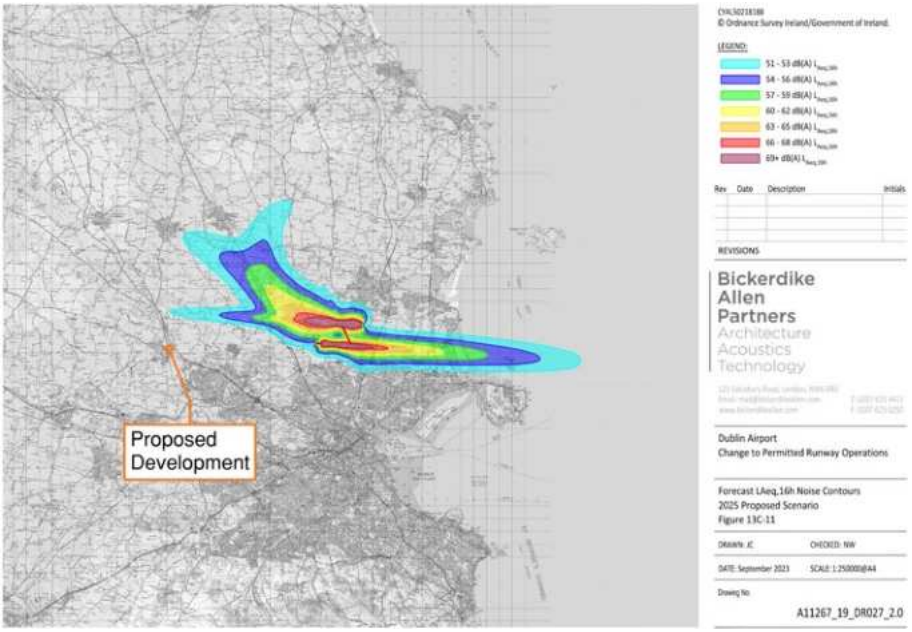


Figure 10.3: DAA predicted proposed $L_{Aeq,16hour}$ (07:00 - 23:00) airport noise contours for 2025.

The proposed development is at greater risk of nighttime aircraft noise due to the current nighttime take off procedure.

Noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place the development within the 40 – 44dB L_{night} noise contour for the 2025 year scenario as can be seen in Figure 10.4 below. The location of the development is also shown on the contour to put the site location into context.

This shows that the development can be considered as low risk also for nighttime aircraft noise.

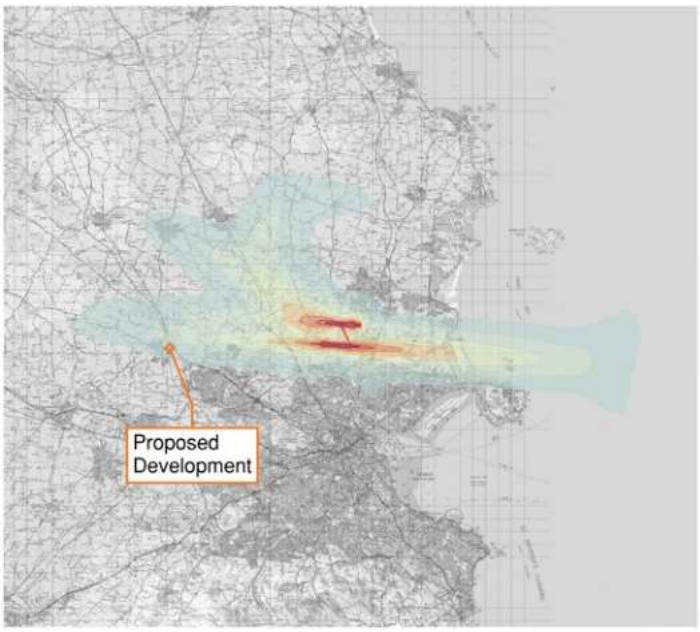


Figure 10.4: DAA predicted proposed L_{night} airport noise contours for 2025.

10.4 Characteristics of the Proposed Development

The site is located in Dunboyne, Co. Meath. It is surrounded by agricultural farmland with residential developments and the Meath (Navan) – Dublin Rail line to the West and the M3 motorway to the East.

In summary, the project comprises of the following:

John Connaughton Ltd. seeks a 10-year planning permission for a large-scale residential development on a 21.9 ha site in Dunboyne, Co. Meath, including 853 residential units (apartments, duplexes, and houses).

Residential Details:

- 398 apartments (1-3 bedrooms) in 3 blocks (2-6 storeys)
- 112 duplex units (2-3 bedrooms) in 6 blocks (2-4 storeys) and 3 blocks (2-6 storeys)
- 343 houses (2-4 bedrooms) in 1-3 storey structures.

Amenities:

- The development will include residential amenity spaces, a café, medical unit, retail unit, community room, two creche facilities, extensive car and bicycle parking, and landscaped public and communal open spaces.
  -

Infrastructure Enhancements:

- Key features include the construction of a section of the Dunboyne Eastern Distributor Road, new connections to Dunboyne Train Station, the closure of an existing access road, and upgrades to Station Road and two roundabouts on the R147.

Additional Works:

- The proposal includes site development works, infrastructure, drainage, internal roads, ESB substations, public lighting, landscaping, boundary treatments,

temporary construction areas, and an acoustic design statement due to proximity to the Dublin – M3 Parkway rail line and Dublin Airport Noise Zone C.

The noise and vibration effects have been considered for both the construction and operational phases of the scheme. During the construction stage of the scheme there will be various sources of noise and vibration from mobile plant and construction activities.

The primary sources during the operational phase will be long term and include additional traffic, plant/equipment and noise from communal spaces.

10.5 Potential Impact of the Proposed Development

10.5.1 Assessment Criteria for Construction Phase – Noise

Meath County Council have not outlined specific construction noise limits within the Meath County Council Noise Action Plan 2019, therefore noise limits outlined in BS5228-1:2009+A1 have been adopted as the criteria for this project. BS5228-1 takes into consideration the impact of the ambient noise at the noise sensitive receptor as follows:

Assessment category and threshold value period	***Threshold value, in decibels (dB) (LAeq)***		
	Category A[1]	***Category B[2]***	***Category C[3]***
Daytime (07:00 – 19:00) and Saturdays (07:00 – 14:00)	65	70	75
Evenings and weekends [4]	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

Table 10.9: BS5228 threshold levels

Note 1: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note 2 Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note 3: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.

Note 4 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sunday

10.5.2 Assessment Criteria for Construction Phase – Vibration

The Meath County Council Noise Action Plan does not contain guidance relating to vibration limits. Best practice guidance is taken from British Standard BS 5228:2009 + A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 2 Vibration.

The standard recommends that for a soundly constructed residential property and similar structures (in good repair), the threshold for minor or cosmetic (i.e. non- structural) damage should be taken as a Peak Particle Velocity (PPV) (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:			
Building Type	**Less than 15Hz**	**15 to 40Hz**	**40Hz and above**
Light framed structures/ residential buildings	12 mm/s	20 mm/s	50 mm/s

Table 10.10: Allowable vibration limits.

10.5.3 Assessment Criteria for Operational Phase – Noise

The main potential source of operational noise from the development is plant, traffic movements and car parking, external/public amenity spaces and creche play areas.

The Meath County Council Noise action plan doesn't specify any operation noise limits typically most councils define these as follows:

- *Daytime 55 dB (A) Leq*
- *Night-time 45 dB (A) Leq (or exceptionally 40 dB(A) Leq)*

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 10.11 offers guidance as to the likely impact associated with any particular change in traffic noise level (Source DMRB, 2011).

Noise Change, dB	**Magnitude of Impact**
0	No Change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

Table 10.11: Magnitude of impacts

10.5.4 Assessment Criteria for Operational Phase – Vibration

Following a review of the operations based on the information provided, there are no relevant sources of vibration associated with the operational phase. Therefore, vibration criteria have not been specified for this phase.

10.6 Construction Phase

10.6.1 Noise Limits

The criteria for the project is based on the criteria outlined in **Table 10.12** and the background noise in the area. The project criteria for construction noise is outlined below in **Table 10.12** distance to the NSLs is based on the closest receiver for each NSL where the NSL reflects a number of houses/sensitive receivers at each NSL. Reference to the baseline survey results and guidance contained in BS 5228 Part 1 for construction noise levels threshold for significance affect from constriction activities is set as follows for the closest noise sensitive locations:

Figure 10.5: Site Location, measurement locations A1-A11 and L1, noise sensitive locations

Noise Sensitive Location	*Distance To the Centre of The Site (m)*	*Ambient Noise dB(A)*	*Noise Limit dB(A)* [1]
NSL1	185	46	65
NSL2	135	52	65
NSL3	380	52	65
NSL4	430	60	65
NSL5	800	60	65

Table 10.12: Construction noise limits

1) 65 dB (A) upper threshold limit

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5dB. If the noise generated by construction activities exceeds the appropriate category value, then a significant effect is deemed to occur.

For large infrastructure projects a limit of 65dB(A) is set as the appropriate the upper limit for construction noise within urban areas near main roads in heavy industrial areas. This is considered an appropriate upper limit for construction noise.

10.6.2 Construction Noise Predictions

Construction noise for the site has been predicted based on the information provided. A summary of the expected equipment, noise levels and operating times are provided in **Table 10.13**. The noise sources are assumed to be located at the centre of the site. The prediction methodology in BS5228 has been used to calculate the noise level over a typical day for each of the main construction stages.

The closest noise sensitive receptors are the residential dwellings with a line of sight to the proposed development located at NSL1 and NSL2 in Figure 10.5.

Construction Phase	***Item of Plant (BS 5228-1:2009+A1:2014 Ref)***	***Noise Level (L_{Aeq} at 10m dB(A))***	***On Time of 10 hr day***
Site Setup	Digger	77	4 hours
	Carpentry tools	78	2 hours
	Skill saw	84	2 hours
Substructre	Excavators	77	2 Hours
	Concrete breaker	92	2 Hours
	Con saws	84	6 Hours
	Rail saw	85	2 Hours
	Drills (into concrete)	89	2 Hours
	Tower Crane	77	6 Hours
	Dumper 7t	81	6 Hours
	Cement Mixer (Discharging	75	6 Hours
	Lorry Idling	80	4 Hours
	Telescopic Handler	71	6 Hours
	Tower Crane Generator	82	10 Hours
	Concrete Pump	78	3 Hours
	Vibrodisplacement and Stone Columns	80	1 Hours
Superstructure	Tower Crane Tower Crane Generator	77 82	6 Hours 10 Hours
	Drills (into concrete)	89	2 Hours
	Power tools	70	4 Hours
	Impact steel	69	2 Hours
	Hammer	69	1 Hour
	Dumper 7t	81	6 Hours
	Cement Mixer (Discharging	75	2 Hours

Construction Phase	Item of Plant (BS 5228-1:2009+A1:2014 Ref)	Noise Level (L_{Aeq} at 10m dB(A))	On Time of 10 hr day
	Lorry Idiling	80	5 Hours
	Telescopic Handler	71	8 Hours
	Concrete Pump	78	1 hour
External finishes	Hand Tools	70	5 Hours
	Con saw	84	2 Hours
	Vibratory Roller	82	4 Hours
	Ashpalt Paver and Tipper	85	3 Hours
	Excavators	77	2 Hours
Internal finishes	n/a	n/a	n/a

Table 10.13: Proposed construction equipment, noise levels and duration.

Table 10.14 summarises the predicted construction noise level at the noise sensitive locations. Examination of the results indicate the construction noise without mitigation is predicted to exceed the noise limits during all stages of the development with the exception of internal finishes.

Location	Noise Limit	Predicted cumulative noise level (construction noise + ambient) With no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External finishes
NSL1	65	67	78	75	73
NSL2	65	68	79	76	66
NSL3	65	64	75	72	73
NSL4	65	67	76	74	73
NSL5	65	66	74	73	66

Table 10.14: Predicted noise levels without mitigation for each stage.

The calculations set out above are based on assumed site construction works and a combination of the plant operating at the same time i.e. worst-case scenario on each site at the same time. In reality this will not be the case however the assessment has been based on wors case scenario.

Location	Noise Limit	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External finishes
NSL1	65	2	13	10	8
NSL2	65	3	14	11	1
NSL3	65	-1	10	7	5
NSL4	65	3	11	9	6
NSL5	65	2	9	8	1

Table 10.15: Attenuation required based on the construction noise predictions.

Noise mitigation measures will be required at all stages of construction. A combination of the mitigation measures outlined in **Error! Reference source not found.** should be used t o reduce the levels of construction noise by the values listed in Section 0.

10.6.3 Traffic from Construction Vehicles

The construction noise impact from additional traffic on the local roads is not expected to produce a perceptible noise impact. The following AADT's for each road have been predicted in Table 10.16 below.

Link Number	*Road Name*	*Do-Something*	*Construction Increase*	*Percentage Increase*	*Noise level Increase*
S	L2228	14076	0	0%	<1dB
T	L2228	15593	170	1.1%	<1dB
U	R147	20174	26	<1%	<1dB
V	R147	14148	52	<1%	<1dB
W	R147	19906	104	<1%	<1dB
X	L2228	7483	66	<1%	<1dB

Table 10.16: Predicted Noise increase from the additional traffic on local roads.

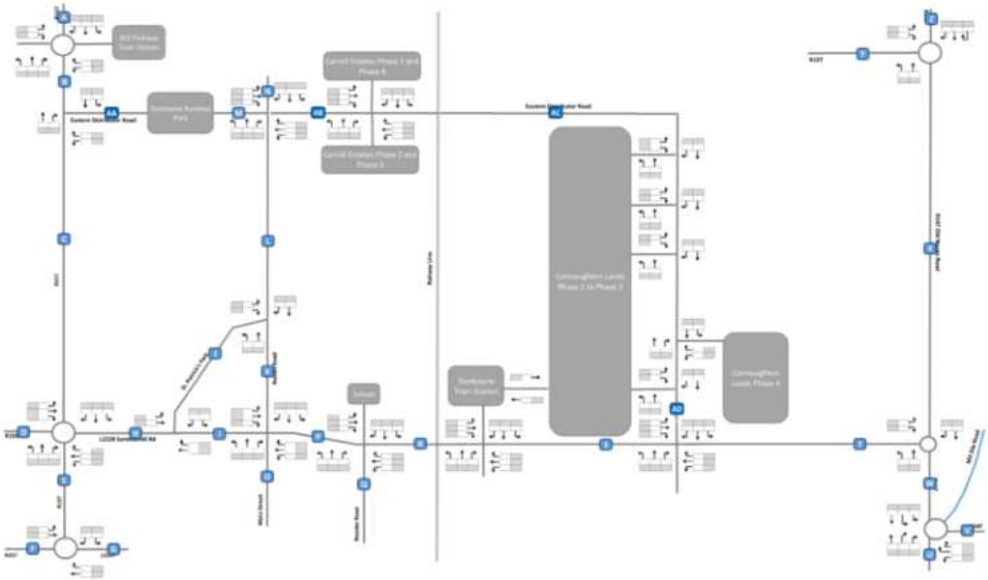


Figure 10.6: Traffic data key layout

10.6.4 Potential Cumulative Impacts

The predictions outlined in the assessment assume a worst-case scenario IE all plant and equipment operating at the same time. It is understood that there is potential noise cumulative impact from the construction of the new distributor road and on the adjacent proposed development.

Once the development is completed, the potential noise impacts to the surrounding environment will include:

- Additional traffic,
- Operational noise from car parking, the operations from each site and the plant and equipment on the buildings.

These impacts are assessed in the following sections.

Once operational, there are no vibration sources associated with the development site based on the information provided.

Construction Noise

There is a potential cumulative impact on the development and in combination effects from the construction noise from the new road and adjacent Carroll Estates site. From a review of the assessments conducted for the adjacent developments the closest noise sensitive receptors differ from the closest noise sensitive receptors for this development. Guidance has been provided for the minimisation of the construction noise from the works on Carroll Estate Lands and on the new road. Given that with mitigation all potential noise impacts from the other works will achieve the project criteria it is not predicted that the cumulative in combination construction noise impact will exceed the project criteria. This assumes all recommended mitigation is incorporated.

Additional Traffic

The additional traffic associated with the construction period for the site is expected to be less than 1000 vehicles per day. This section outlines the predicted noise impact from the cumulative traffic based on a worst-case scenario ie the development in operation at the same time as construction works are taking place.

Traffic noise levels from local roads have been predicted for the Do Minimum 2026 and compared with the Do-Something and Do-Something+Construction scenarios **Table 10.17**. Between the Do-Minimum and Do-Something scenario there is no significant increase, the same can be said for the comparison between the Do-Minimum and the Do-Something+Construction Traffic. It is therefore predicted that the noise level increase between the Do-Minimum and the Do-Something scenarios will not have a perceptible noise impact on the receptors.

Link Number	*Road Name*	*AADT % HGV*	*Do-Minimum*	*Do-Something*	*Do-Something + Construction*	*Predicted Noise level Increase (dB)*
S	L2228	AADT	13226	14076	14076	
		% HGV	1.2%	1.1%	1.1%	<1dB
T	L2228	AADT	14145	15593	15763	

Link Number	Road Name	AADT % HGV	Do-Minimum	Do-Something	Do-Something + Construction	Predicted Noise level Increase (dB)
		% HGV	1.2%	1.3%	2.1%	<1dB
U	R147	AADT	19665	20174	20200	
		% HGV	1.4%	1.4%	1.5%	<1dB
V	R147	AADT	13624	14148	14200	
		% HGV	2.0%	1.9%	2.2%	<1dB
W	R147	AADT	18875	19906	20010	
		% HGV	1.5%	1.6%	1.9%	<1dB
X	L2228	AADT	7156	7483	7549	
		% HGV	2.4%	2.3%	3.0%	<1dB

Table 10.17: Predicted Noise from the additional traffic on Local Roads

10.7 Operational Noise

This section includes an assessment of the operational noise impacts for noise from communal amenity space, creche play areas and the car parking. The plant and equipment for the project has not been determined at this time. The heating and cooling methodology will be developed as part of the design development stage; therefore, plant noise limits have been set out in this section of the report. As part of the building design an acoustic consultant should be engaged to review the plant noise emissions from the development to ensure that the upper noise limits outlined in this report are achieved.

Following the survey a model of the development using SoundPLAN 9.0 modelling software was developed to establish the noise levels from the development in a worst-case scenario. The software implements the algorithms contained in ISO 9613-1 and ISO 9613-2. The noise model considers:

- Distance attenuation,
- Source and receptor locations,
- Barrier effects (buildings, walls etc)
- Topographical elevations,
- Ground effects and absorption,
- Source sound power levels,
- Directivity and orientation of the source,
- Atmospheric attenuation and meteorological effects,

The acoustic model for the development has been developed based on attended and unattended noise survey and the proposed site location and predicted noise sources. As the site has potential to create noise impact at both day and nighttime, a worst-case scenario has been developed for both predicting the noise impact at the nearest noise

sensitive locations. The assessment considers the noise impact of the communal space and creche play areas on the nearby residential receptors.

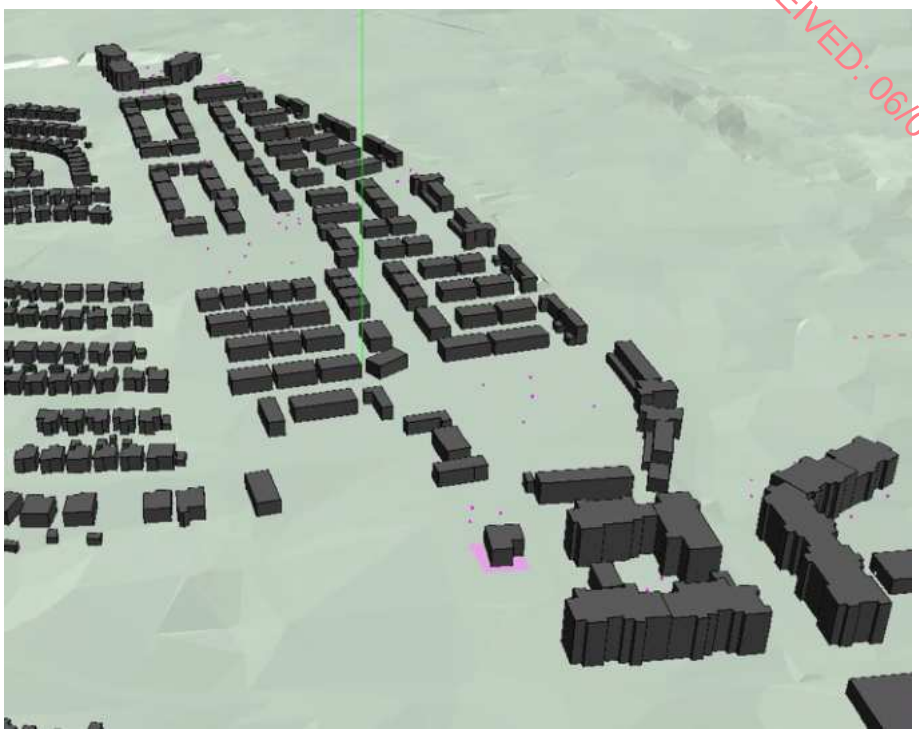


Figure 10.7: Screenshot from the model showing the communal amenity space.

Octave Band Spectra for Male Talker									
Description	**Source Sound Power Level L_w at at Octave Band Centre Frequency, Hz**								**Overall Sound Power Level L_{wA}**
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**dB**
Normal	55	55	64	66	60	56	52	47	66
Raised	64	64	71	73	70	65	60	54	74

Table 10.18: Male Talker

Assumptions

The following general assumptions were made as part of the assessment:

- Assumed both day and night-time operation (worst case).
- Assumed creche play area sound power value of 55dB L_W/m^2 for each play area between the hours of 08:00hrs-17:00hrs.
- Modelling based on the drawings, layouts and information provided.
- Assumed external amenity sound power data based on male talker with raised voice, 1 in 3 talking at one time during the hours of 16:00hrs-01:00hrs. Occupancy per space breakdown in point below.
- Assumed 4 car parking movements per hour during daytime hours, and 2 car parking movements per night-time for each space.
- Assumed the following occupancy for external amenity spaces across the development:
    - Block A – 30 persons,
    - Block B – 15 persons,

- Open space to the North of Block B – 15 persons,
- Open Area 4 – 30 persons,
- Open area 5 & 6 – 15 persons between both,
- Open space Area 8 – 30 persons,
- Open space Area 9 – 15 persons,
- Open space Area 10 – 15 persons,
- Open space Area 12 - 15 persons,
- Open space Area - 15 persons,
- Block C – 30 persons,

For the predictions a receiver was placed at each NSL to calculate the worst-case noise impact. Where NSLs included a number of houses or noise sensitive locations multiple receivers were used to establish the worst case and most impacted NSL.

Location	Night-Time Noise Limit (dBA) Leq	Worst Case Night-Time Predicted(dBA) Leq 8hr	Day-Time Noise Limit (dBA) Leq	Worst Case Day-Time Predicted (dBA) Leq 16hr
NSL1	45	34	55	37
NSL2	45	29	55	31
NSL3	45	41	55	46
NSL4	45	28	55	30

Table 10.19: Predicted operational noise levels at each NSL.

10.8 Cumulative Impacts

The cumulative noise impact from the construction noise and operational noise has been predicted. In the event that the construction of the developments is phased there is the potential for both operational noise and construction noise impact. It is not predicted that this will have a significant impact provided the advice and guidance in this chapter is followed. The operational noise impact considers the cumulative impact from the proposed Carroll Estates site which includes traffic and plant noise sources. The cumulative impact considers noise from the operation of the new road. Given the location of the receivers and the guidance provided in the application for the Carroll Estates development it is not predicted that the developments will have a negative in combination noise impact for the operational phase.

With regard to noise impact and the in combination effects, an Acoustic Design Statement has been produced which outlines the acoustic mitigation measures for operational phase for both the Carroll Estates Site and this site to reduce the noise impact from the distributor road, aircraft noise, train noise and the existing roads. Please refer to Acoustic Design Statements:

WDA230212RP_B _01-Noise Impact Assessment (Dunboyne Distributor Road – Reference 2460063)
WDA231008RP_A_01 Acoustic Design Statement (Carroll Estates)
WDA231120RP_A_01 Acoustic Design Statement (JCL)

The existing operational noise of the development at the boundaries have been considered with the future operational noise levels. Taking into consideration the assessment outlined above, the predicted levels from the operational noise of the

development, the existing noise levels and the distance from the development to the noise sensitive receptors it is not predicted that the development will have a significant impact on the receivers from operational noise.

10.9 Decommissioning

There are no decommissioning works associated with the proposed development.

10.10 "Do Nothing" Impact

Under the Do-Nothing scenario, the prevailing noise environment at the closest noise sensitive locations will remain in line with those measured during the baseline study and hence will be of neutral effect in terms of noise.

10.11 Avoidance, Remedial & Mitigation Measures

10.11.1 Construction Phase

10.11.2 Noise Mitigation Recommendations

Best practice control measures for noise from construction sites are found within BS 5228 (2009 +A1 2014) part 1. Construction noise impacts are expected to vary during the construction phase of the project, this impact will depend on the distance between the construction activities and noise sensitive receptor. The contractor will ensure that all best practice noise and control methods will be used, to ensure any negative noise impacts at off-site noise sensitive locations are minimised.

The best practice measures set out in BS 5228 (2009) Part 1 includes guidance on several aspects of construction site mitigation measures, this includes the

- selection of quiet plant and equipment;
- noise control at source of the noise;
- screening, and;
- public liaison.

10.11.3 General Recommendations

This section of the report sets out noise mitigation options and detailed comment on each one specifically for this site.

10.11.3.1 Selection of Plant and Equipment

The noise impact of all plant and equipment should be assessed prior to selection of the plant for the project. Where an item of plant is identified as noisy with the potential to cause a negative noise impact it should be reviewed to check if there is an alternative quieter version of the same plant to undertake the same construction task.

10.11.3.2 Noise Control at Source

Where replacing a noisy item of plant is not viable or practical, consideration should be given to control that noise at source. This includes modifying the piece of plant or

equipment to generate less noise, using dampening to control vibration induced noise or rattling. Example best practice mitigation measures to be considered are as follows:

- All plant and equipment to be switched off when idling.
- The use of white noise reversing alarms.
- Restriction on the dropping and loading of materials to less sensitive hours.
- The use of local screening for noisy activities or works with hand tools
- Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials.
- Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines.

10.11.3.3 Screening

Screening when used correctly can be an effective method of reducing the construction noise impact on the NSL's. The use of site hoarding and careful selection of areas for noise works, using buildings on the site, site offices and the building being constructed to screen noise from the works.

Local screening of noisy works with the use of temporary acoustic barriers, examples are provided below:

- https://ventac.com/acoustic-products/noisebreak-acoustic-barrier/
- https://echobarrier.com/

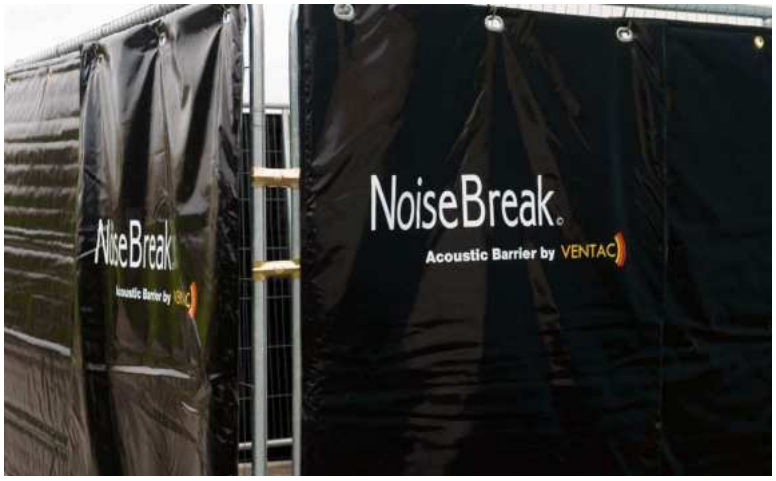


Figure 10.8: Temporary Construction Noise Barrier © Ventac

10.11.3.4 Public Engagement

It is recommended that a public liaison officer should be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents should be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person should also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances.

10.11.3.5 Site Specific Recommendations

Table 10.20 below outlines the recommended site-specific noise mitigation measures based on the attenuation required in Table 10.15.

Construction Stage	Recommended Noise Mitigation Measure
Site Setup	Erect a minimum 2.4m high site hoarding that blocks the line of sight between noise source and receiver. Example construction for the site hording would be as follows: • A 2.4m high and 9mm plywood (4.5 kg/m^2). Barrier must be solid and not contain gaps at the bottom or between adjacent panels Local screening using the examples provided in General Recommendations Section 0 are required around hand tools in addition to hoarding. An absorptive lining should be considered for screening around hand tools will need to have an absorptive lining to avoid reflections increasing noise at other receivers. On this project 3 NSL's have been identified it is recommended that a noise monitor should be placed on the boundary with each of nearest noise sensitive locations closest to the works i.e.
Substructure	Site hoarding to block line of sight. Local screening around noisy plant and equipment. Noise monitoring as above
Superstructure	Local screening around saws/hammers where possible. Use external new building to screen noise from works where possible.
	Noise monitoring as above
External finishes	Local screening around hand tools. Noise monitoring as above

Table 10.20: Mitigation required based on the construction noise predictions.

10.12 Residual Impacts

10.12.1 Construction Noise

There is the potential for some construction noise impact during the construction phase of the developments.

During the construction phase of the project there is the potential for some adverse effects on nearby noise sensitive properties due to noise emissions from site activities as summarised in Table 10.21 below. Set noise limits, hours of construction and the implementation of the mitigation measures outlined in this section will ensure that construction noise and vibration is limited to short term with slight/no significant effect.

Quality	*Significance*	*Duration*
Negative	Slight	Short-term

Table 10.21: Likely Construction Noise Impact

10.12.2 Operational Noise

The noise impacts associated with the operation of the development is summarised in **Table 10.22** below.

Quality	Significance	Duration
Neutral	Imperceptible	Long-term

Table 10.22: Likely Operational Noise Impact

It can be concluded based on the assessment and assumptions outlined in this section that, once operational, noise levels associated with the proposed development will not contribute any significant noise impact to its surrounding environment.

10.13 Monitoring

10.13.1 Construction Phase

10.13.1.1 Construction Noise Monitoring

Construction noise monitoring will be undertaken at periodic sample periods on the boundary with the nearest noise sensitive receptors by the contractor.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

10.13.1.2 Vibration Monitoring

Vibration monitors should be erected during the stone column/ground stabilisation works phase of the development, if applicable. These should be erected on the boundary with the nearest sensitive receptors for each individual site.

The Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.

10.13.1.3 Vibration Limits

The recommended vibration limits to avoid cosmetic damage to buildings, as set out in:

- British Standard BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS5228-2: 2009 + A1: 2014: Code of practice for noise and vibration control on construction and open sites – Vibration.

The standards note that minor structural damage can occur at vibration magnitudes which are greater than twice those presented in **Table 10.23** and major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in **Table 10.23**. Definitions of the damage categories are presented in BS 7385-1:1990.

Vibration PPV at the closest part of sensitive property to the source of vibration		
Frequency		
4 to 15 Hz	15 to 40Hz	40Hz and above
15 mm/s	20 mm/s	50 mm/s

Table 10.23: Transient vibration guide values for cosmetic damage

Note 1: At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded
Note 2: It should be noted that these values are at the base of the building.

10.13.2 Operational Phase

10.13.2.1 Noise

The noise impact assessment has found that there are no significant noise impacts likely at nearby noise sensitive locations during the operational phase and therefore no remedial or reductive measures are required. The predictions are based on the information available at planning stage including the assumed noise levels, when the final mechanical plant is determined it should be verified to ensure compliance with the noise criteria outlined in this chapter.

10.13.2.2 Vibration

Given the distance to the vibration sensitive receptors, the mitigation advice and our experience of measuring similar vibration effects it is not predicted that construction vibration will have a negative impact on the sensitive receptors.

10.14 Interactions

The interaction between Noise and Vibration and other Chapters in this EIAR is primarily limited to Chapter 13 Traffic and Transportation. This noise and vibration assessment chapter has been prepared in consideration of and in conjunction with the relevant outputs of the Traffic and transportation chapter where appropriate.

10.15 Difficulties Encountered When Compiling

No difficulties were encountered when compiling this section.

10.16 References

1) ISO 9613-1:1993Acoustics Attenuation of sound during propagation outdoors.
2) ISO 9613-2:1996 Acoustics Attenuation of sound during propagation outdoors
3) Part 2: General method of calculation
4) Part 1: Calculation of the absorption of sound by the atmosphere
5) EPA Guidelines on the Information to be contained in Environmental Impact Statements, (EPA, 2002);
6) EPA Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), (EPA, 2003);
7) EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports Draft August 2017;
8) EPA Advice Notes for Preparing Environmental Impact Statements, (Draft, September 2015);

9) Environmental Protection Agency NG4: Guidance note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities
10) Design Manual for Roads and Bridges (DMRB), Highways England Company Limited, Transport Scotland, The Welsh Government and The Department for Regional Development (Northern Ireland);
11) Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, Transport Infrastructure Ireland (TII), March 2014;
12) ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise (ISO, 2017);
13) Meath County Council Noise Action Plan 2019
14) BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;
15) BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration; and
16) BS8233:2014 Guidance on sound insulation and noise reduction for buildings.

11 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

11.1 Introduction

This chapter of the EIAR has been prepared by Margaret Egan, MILI, of Áit Urbanism + Landscape Ltd. Margaret Egan (MILI) is a Director of Áit Urbanism + Landscape Ltd, with over twenty years' experience working as a Landscape Architect and LVIA Specialist in the public and private sector, undertaking Landscape and Visual Impact Assessments for a vast range of project types and complexities.

Margaret holds the following qualifications: Irish Landscape Institute, Professional Practice Examination 2005, Diploma in EIA Management, UCD 2003, Bachelor in Landscape Horticulture, UCD 1999, Bachelor of Science (Environmental Resources Management), DIT 1993 and has been involved in the preparation of LVIA's for the following projects:

- Newmarket Square Development SHD, LVIA (Mixed Use, multi-storey) Dublin 8
- Brighton Grove LRD LVIA, Foxrock Co. Dublin
- Greystones Media Campus LVIA, Greystones, Co. Wicklow
- The Speaker Conolly Public House, Mixed Use Development, LVIA, Firhouse
- Northwood 2E, SHD, LVIA, Santry, Co. Dublin
- Coolegad LRD, LVIA, Greystones, Co. Wicklow
- Glebe House LRD, LVIA, Blackrock, Co. Dublin
- Former Europa Garage site, LVIA, Newtown Avenue, Blackrock, Co. Dublin
- Parson Street Maynooth, LVIA, Co. Kildare
- The Farm at Cashel Palace LVIA, Cashel, Co. Tipperary
- Cookstown Road SHD, Enniskerry, LVIA, Co. Wicklow
- SHD Whitechurch Road, LVIA, Edmondstown, Dublin 16

This chapter forms part of the overall Environmental Impact Assessment Report (EIAR). It will assess the landscape and visual impacts of the proposed Large-Scale Residential Development on lands at Station Road and Pace Line, Dunboyne, Co. Meath in the townlands of Dunboyne, Clonee, Castle Farm and Loughsallagh.

11.2 Subject Site Characteristics

11.2.1 Site Description and Context

The development site is located in County Meath, beyond the northeastern edge of Dunboyne Town. It is approximately 700m northeast of Dunboyne Town centre, 2km north-west of Clonee and the County Dublin border, 1.5km south of Pace, and 400m west of the M3 motorway. The site is irregular in shape and includes agricultural lands on both sides of a railway line, accessible from the L2228 road to the south and the 'Navan Road' to the northwest. It is bordered by agricultural lands to the north and east, the Dunboyne railway station and car park to the south-west, and residential housing west of the railway line.

The site is situated within the townland of Dunboyne, surrounded by agricultural land from the north-east to the south, with the urban built-up fabric of Dunboyne to the west. The south-western corner of the site is adjacent to the Dunboyne Train Station car park. North of the train station and car park, the railway line and embankments form the western boundary to the site. The residential housing estates of Elton, Willow Park, Silver Birches, the Elms, and Old Fairgreen are located beyond the railway line to the west and to the south of north-western parcel of the development site.

To the south, the site is bordered by the L2228(Station Road), as well as nearby residential development, and a healthcare clinic beyond which are agricultural fields and accompanying hedgerows, treelines, and drainage ditches. The eastern and northern borders of the site are surrounded by agricultural fields with hedgerows, treelines, and drainage ditches. Beyond the eastern fields, the M3 motorway runs in a north-west/south-west direction. To the north-west, the site is bordered by the Dunboyne Business Park, featuring large warehouse buildings accommodating various enterprises, including educational institutions, sports centre, mechanics, and other business enterprises.

The land is farmed arable agricultural land. The site's boundaries are defined by hedgerows and treelines, palisade fence lines and two agricultural gate access points, one to the south off of Station Road, and one to the north-west off the Navan Road and railway line. The land has been in agricultural use for some time, with historic maps showing the same hedgerow patterns that currently mark field boundaries in the northern portion of the site.

The topography of the site is relatively flat, with elevations ranging between 70.00m and 60.00m according to OSi 10m Contours Mapping.

The subject site is identified in Figure 11.1 below.

Figure 11.1 – Application Site Area - Boundary line in red

11.2.2 Planning Context

Zoning Objectives & Specific Objectives

With regard to zoning objectives, the project area is designated as New Residential within the Meath County Development Plan (Development Plan); this area sits within a larger Settlement Boundary area for Dunboyne/ Clonee/ Pace. New Residential is describe within the Development Plan is as follows:

'Preserve and provide for open space and recreational amenities applies to this zoning.
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.

There is a Specific Object Transport - Indicative Road Route is illustrated along the east boundary of the site. The indicative road enters the site from the south to the east of the train station car park via the L2228 and exits the site to the northwest over the railway line to the north of The Elms residential street. This proposed road curves around the eastern side of Dunboyne Town joining the Rooske Road to the south and the Navan Road to the north.

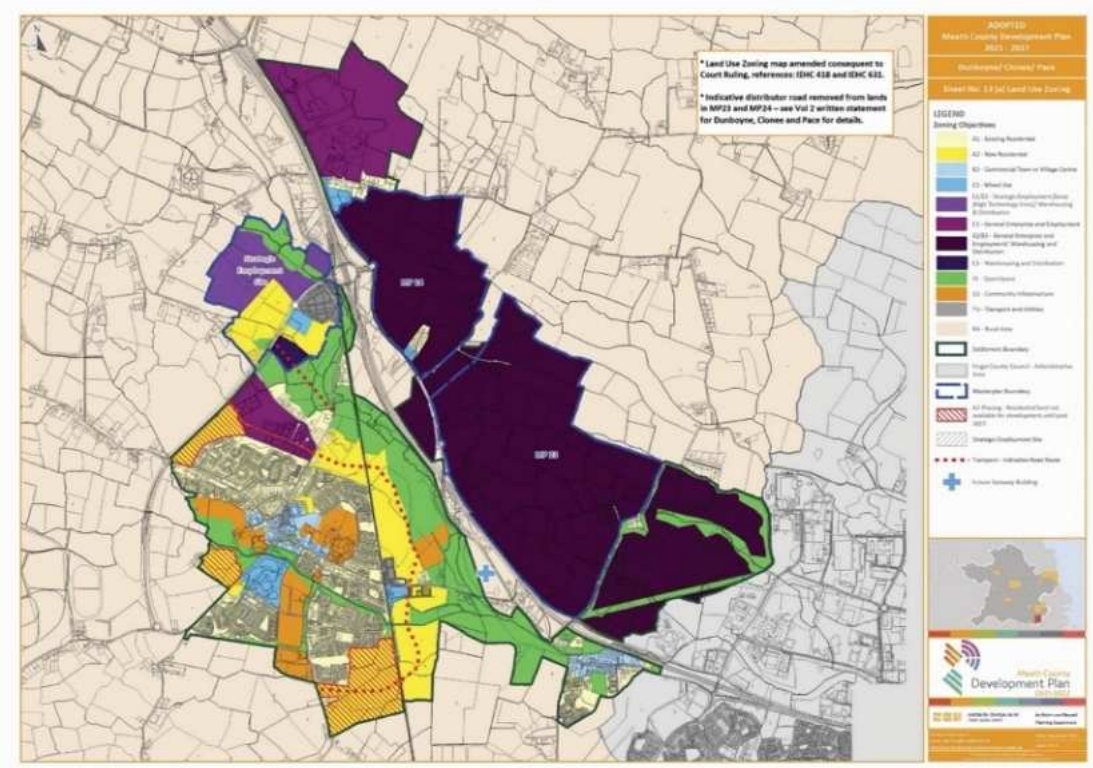


Figure 11.2 – Land Use Zoning, Map 13(a). Meath County Development Plan 2021-2027

Protected Structures & Architectural Conservation Areas

With regard to Architectural Conservations Areas, the Development Plan outlines the following:

Architectural Conservation Areas (ACA)

'An Architectural Conservation Area (ACA) is a place, area, group of structures or townscape, which is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. They may also include areas which contribute to the appreciation of Protected Structures. An ACA may consist for example, of a terrace of houses, a street, town centre or a cluster of structures associated with a specific building such as a mill or country house. Although the individual buildings may not be of special merit, their importance is in their context and interrelationship and the contribution each makes to the character of the area. Unless a structure is also included on the Record of Protected Structures, the protected status afforded from inclusion in an ACA only applies to the exteriors and streetscape. Piecemeal alterations on individual non protected structures can have a significant

cumulative effect on a streetscape. Any works which would have a material effect on the special character of an ACA require planning permission.'

There is one ACA highlighted on the online Meath County Development Plan 2021-2027 online map viewer approximately 750m west of the development site. This ACA is listed as Dunboyne ACA; it is highlighted on the map excerpt below.

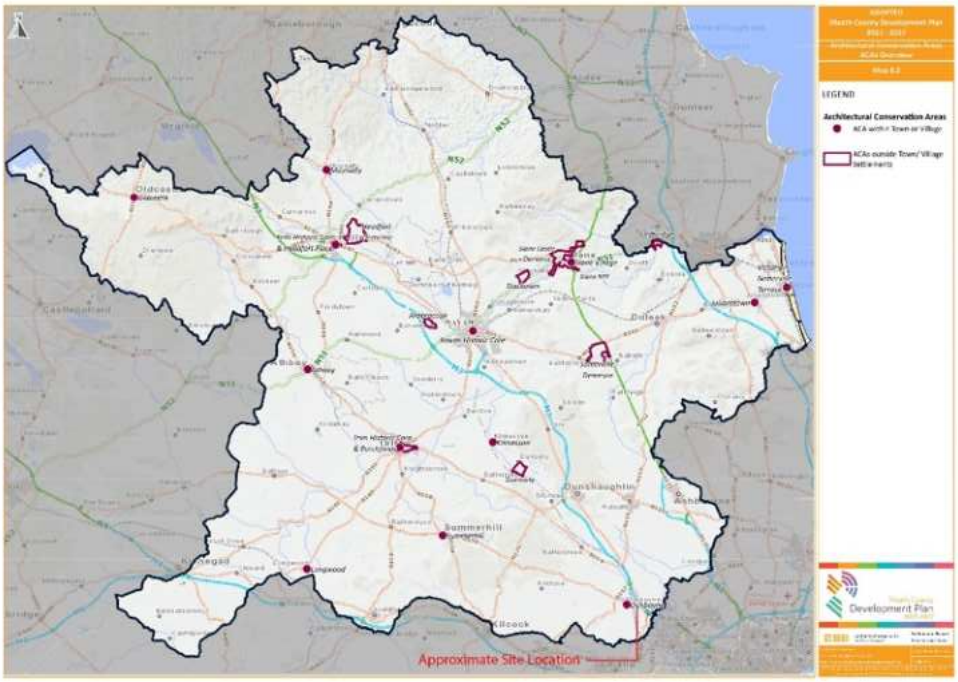


Figure 11.3 – Architectural Conservation Areas, Map 8.2. Meath County Development Plan 2021-2027

With regard to the Dunboyne ACA, the Development Plan outlines the following:

Historical Development and Layout

'Dunboyne was established as one of the secondary Anglo-Normal settlements in Meath and was a market centre for the barony. The morphology of the town is quite complex. Initially a manorial village with a substantial medieval church both located to the north of the castle demesne, in the course of the nineteenth century it developed attributes both of a chapel village and that of an estate village.'

Summary of Special Character

'The special character of Dunboyne is derived from an overlapping of features derived from its long historical development. Its manorial origin is reinforced by the presence of Dunboyne Castle to the south and the medieval church tower, tucked away to the west and away from later developments. This western axis of church and castle is one important aspect of the character of Dunboyne. Another major element is the rectangular green, east of the medieval core, and carved out of the demesne in the early

nineteenth-century. Within this area the tree-lined triangular green space provides a haven of tranquillity from busy routes through the town. The mature trees are important in that they give a sense of scale and unity to the space. '

'Another characteristic of Dunboyne is the predominance of early twentieth-century buildings – Brady's (Dunboyne House), the former National School, terraced two storey houses on the Green and Navan Road reflect early twentieth-century re-ordering of a more vernacular landscape of low thatched houses seen in older photographs. Slightly earlier and more formal architecture was represented by Dunboyne Cottage and the Parochial House, the T-Plan church of c.1800, the initial focus of the green was demolished in 1993, while its replacement had been built nearly forty years earlier.'

Objectives:

To preserve the character of the village and its setting by requiring that the height, scale, and design of any proposed development within the village core and adjoining area should complement the character of the village and not diminish its distinctiveness of place.

To encourage the removal of visually intrusive elements such as overhead cables or inappropriate signage.

To require the preservation and re-instatement of traditional details and materials on existing buildings and the streetscape where improvements or maintenance works are being carried out.
Landscape Character Assessment

The Development Plan contains a Landscape Character Assessment (LCA) which categorises the county into four distinct Landscape Character Types (LCTs). These LCTs are further subdivided into twenty geographically specific Landscape Character Areas (LCAs). The Development Plan provides classification of these landscapes with regard to (1) value, and (2) sensitivity.

The following is an extract from the Development Plan which outlines how this assessment has been made:

This Landscape Character Assessment describes the landscape and seascape of Co. Meath including:

Physical elements - landform, land cover, geology, vegetation cover, hydrology and ecology.

Visual characteristics - type and extent of views, enclosure and patterns formed by physical elements.

Less tangible aspects such as historical and cultural associations, archaeology, tranquillity and aesthetic quality.

The Landscape Character Assessment has been prepared in three stages, each of which is informed by the previous stage. These stages are described below.

Stage 1: Description

This initial stage describes what the landscape is like at the moment and what factors influence its character. Information has been gathered through extensive research and site survey work. It is presented in the form of a written summary of the LCT's and detailed

descriptions of LCA's including descriptions of key characteristics and settlements. The Landscape Character Assessment is also accompanied by a series of maps showing data including the boundaries of LCA's, statutory designations, land uses, soil types, historic features and transportation routes.

Stage 2: Evaluation

The baseline information on landscape character that is described in Stage 1 is now analysed. The value of each LCA refers to the contribution the area makes to the inherent character of County Meath. Value takes account of scenic quality, tranquillity, remoteness, rarity, cultural associations, history, conservation, recreational interests and broader social, economic and environmental aspects.

Box 3

Criteria for Defining Value

Exceptional Value: Areas which are of outstanding value by nature of their dramatic scenic quality, unspoilt beauty, conservation interests, historic, cultural or other associations that influence landscape value. These areas may be of national or international importance.

Very High Value: Areas which have particularly high value by nature of their dramatic scenic quality, unspoilt beauty, conservation interests, historic, cultural or other associations that influence landscape value. These areas may be of national or regional importance.

High Value: Areas which are considered to be of value by virtue of their positive characteristics, sense of place or local associations. These areas may be of regional or local importance.

Moderate Value: Areas which retain a positive character and a sense of place, or are of local interest or importance.

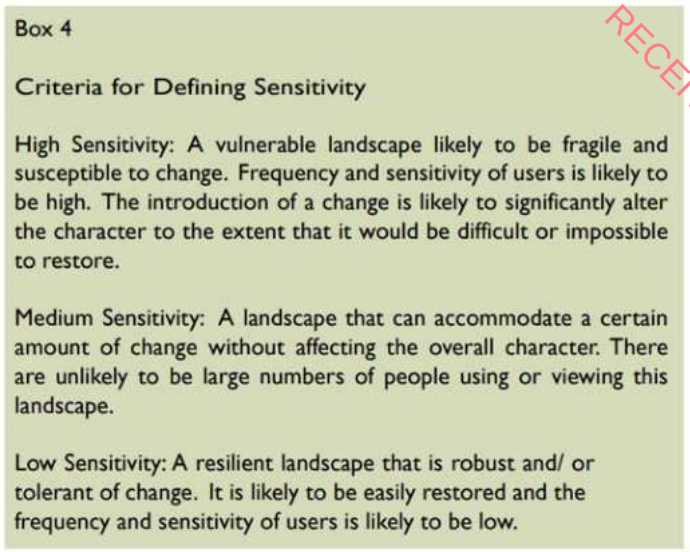
Low Value: Areas in fair to poor condition or which have undergone change to the extent that they do not have a distinctive local character or particular aesthetic quality.

Very Low Value: Areas that are degraded or in poor condition and where the distinctive character and aesthetic quality has been seriously damaged or destroyed.

Figure 11.4 – Criteria for Defining Value, Landscape Character Assessment.

Meath County Development Plan 2021-2027

'The sensitivity of a LCA is defined as its overall resilience to sustain its character in the face of change and its ability to recuperate from loss or damage to its components… …Sensitivity also depends on the condition of the LCA (i.e. what state of repair a LCA is in). A highly sensitive landscape is likely to be vulnerable, fragile and susceptible to change whereas a landscape with low sensitivity is likely to be more robust and/ or tolerant of change.'



Box 4

Criteria for Defining Sensitivity

High Sensitivity: A vulnerable landscape likely to be fragile and susceptible to change. Frequency and sensitivity of users is likely to be high. The introduction of a change is likely to significantly alter the character to the extent that it would be difficult or impossible to restore.

Medium Sensitivity: A landscape that can accommodate a certain amount of change without affecting the overall character. There are unlikely to be large numbers of people using or viewing this landscape.

Low Sensitivity: A resilient landscape that is robust and/ or tolerant of change. It is likely to be easily restored and the frequency and sensitivity of users is likely to be low.

Figure 11.5 – Criteria for Defining Sensitivity, Landscape Character Assessment.

Meath County Development Plan 2021-2027

Stage 3: Policies and Recommendations

Policies and recommendations have been formulated to assist the development of related planning policies, promotion of strategies and development control within the county. They are intended to protect and enhance landscape character, and facilitate and guide sensitively designed development.

Landscape Character Types (LCT's) are generic areas of distinctive character which may occur in several places across the County. They will be similar in terms of overall characteristics although the condition and quality of their individual components may vary. LCT's are used to categorise the more geographically specific Landscape Character Areas (LCA's) which are described in section 7. Meath has been divided into 4 LCT's:

- Hills and Upland Areas
- Lowland Areas
- River Corridors and Estuaries
- Coastal Areas

The development site falls within the Lowland Areas Type. The extract from the Development Plan below provides a description of these areas with regard to their landscape classification:

The Lowland LCT covers the largest proportion of Meath and, due to the high quality of the land, is primarily agricultural. In the south of the County there is an abundance of 18th Century demesnes with extensive areas of mixed woodland and parkland bounded by original stonewalls, creating an attractive landscape setting for the numerous estate houses.

The Lowland LCT have been developed more extensively than other LCT's, particularly in the south east were there is development pressure from the Dublin metropolitan area. This will inevitably lead to significant changes to the landscape character and it is crucial that future development of this LCT is carried out sensitively and with particular reference to the rural nature of the landscape.

The significant growth of towns and villages within the southeast has led to myriad of architectural styles that are not in keeping with the historic built vernacular. It is equally important that future development relates to the existing structure of towns and villages and reflects characteristic building scales and materials.

Much of the lowlands have an enclosed character with well-treed road corridors, dense hedgerows, parkland and areas of woodland. Views of landmarks within the landscape and of the surrounding upland areas are a characteristic of this area and must be retained because the interaction between the lowlands and hills/uplands is an important feature this LCT. Particular features in this LCT, to which views should be retained, include the hills of Loughcrew, Tara and Skryne, as well as mottes, raths and wooded hilltops.

General Recommendations

- Promote good agricultural practices to create a sustainable rural economy e.g.stud farms.
- Provide incentives for smaller rural/family farms to manage their land to avoid loss of hedgerows and field patterns.
- Maintain and enhance the 18th century estate landscapes and associated parkland & woodland to develop them as a tourism resource.
- Diversify the urban fringe by developing mixed-use amenity areas, which will create a landscape buffer creating a transition between urban and rural areas.
- Define the urban fringe with planting of native species and mixed woodland to tie into existing rural landscape.
- Reflect the 18th century field pattern in the scale of new development.
- Restoration of historic boundaries; walls to original standard with coursing and materials to match existing. Hedges; timing and thinning of hedges.
- Preserve views of upland areas that contain the lowlands e.g. Loughcrew, Tara and Skryne

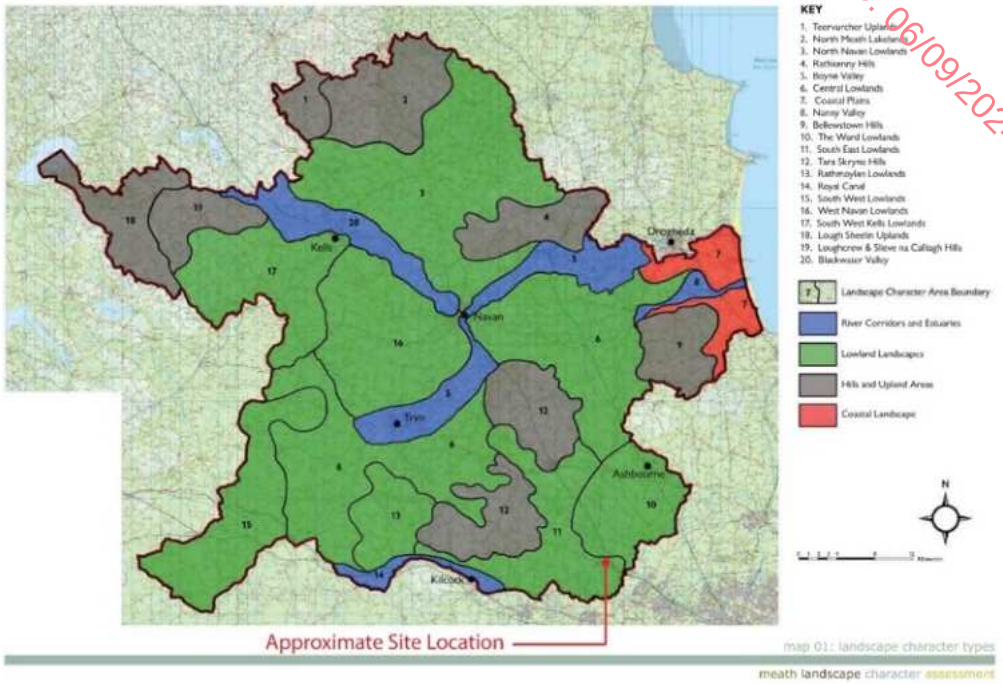
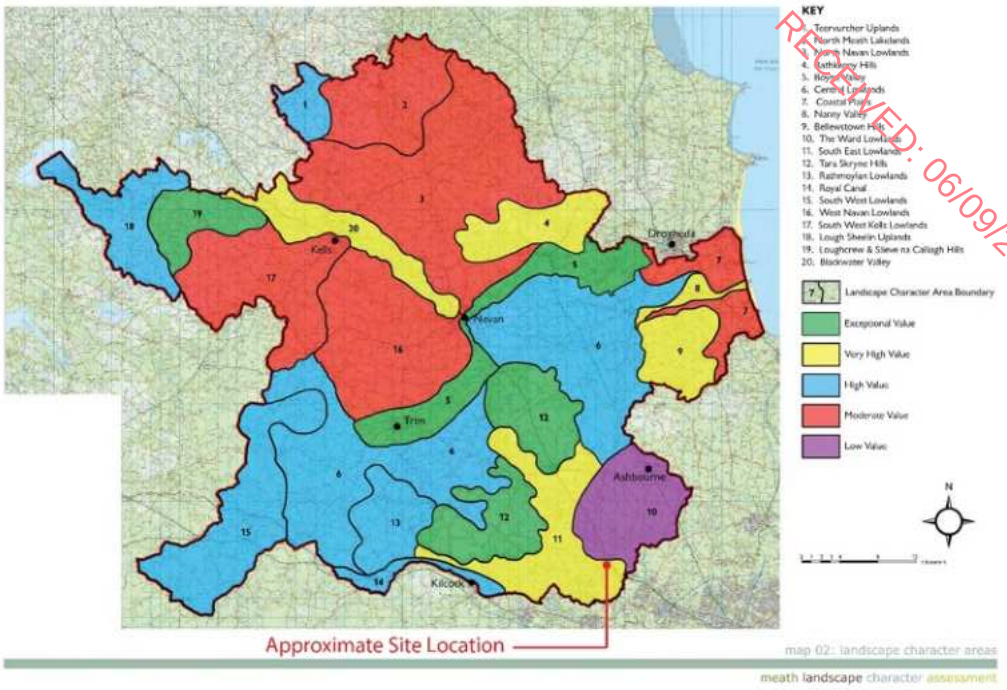


Figure 11.6 – Landscape Character Types, Map 01, Meath Landscape Character Assessment,

Meath County Development Plan 2021-2027

As mentioned above, the LCTs are further subdivided into twenty geographically specific Landscape Character Areas (LCAs). The development site falls within the **South East Lowlands LCA.**

Figure 11.7–



Landscape Character Areas, Map 02, Meath Landscape Character Assessment,

Meath County Development Plan 2021-2027

Therefore the Landscape Value of this Landscape Character Area is categorised as Very High, the Landscape Sensitivity as Medium, and the Landscape Importance as Regional.

Summary of Landscape Character Areas

Landscape Character Type	Landscape Character Area	Value: Exceptional, Very High, High, Moderate, Low, Very Low	Importance: International National Regional Local	Sensitivity: High, Medium, Low
River Corridors and Estuaries	5. Boyne Valley	Exceptional	International	High
	8. Nanny Valley	Very High	Regional	High
	14. Royal Canal	High	Regional	Medium
	20. Blackwater Valley	Very High	Regional	High
Lowland Landscapes	3. North Navan Lowlands	Moderate	Regional	Medium
	6. Central Lowlands	High	Regional	Medium
	10. The Ward Lowlands	Low	Regional	High
	11. South East Lowlands	Very High	Regional	Medium
	13. Rathmoylon Lowlands	High	National	High
	15. South West Lowlands	High	Regional	Medium
	16. West Navan Lowlands	Moderate	Local	Medium
	17. South West Kells Lowlands	Moderate	Local	Medium
Hills and Uplands Areas	1. Teervurcher Uplands	High	Local	Medium
	2. North Meath Lakelands	Moderate	Regional	Low
	4. Rathkenny Hills	Very High	Regional	High
	9. Bellewstown Hills	Very High	Regional	Medium
	12. Tara-Skryne Hills	Exceptional	National / International	High
	18. Lough Sheelin Uplands	High	Regional	High
	19. Loughcrew and Slieve na Calliagh Hills	Exceptional	National / International	High
Coastal Landscape	7. Coastal Plains	Moderate	Regional	High

Table 11.1 – Summary of Landscape Character Areas, Meath Landscape Character Assessment, Meath County Development Plan 2021-2027

Summary of Landscape Capacity

Landscape Character Area	Potential Capacity to accommodate development: Low, Medium, High										
	1. Large-scale farm buildings	2. Visitor facilities	3. Multi-house residential	4. One-off houses	5. Conversion existing buildings	6. Overhead cables, masts, substations	7. Roads and railways	8. Underground services	9. Wind turbines	10. Biomass and forestry	11. Quarrying, mineral extraction and landfill
1. Teervurcher Uplands	Med-low	High	Low	Low	High	Medium	Medium	Medium	Medium	Medium	
2. North Meath Lakelands	Medium	High	Medium	High	High	Low	Medium	Medium	Medium	Medium	
3. North Navan Lowlands	Medium	High	Medium	Low	High	High-med.	High	Medium	Medium	High	
4. Rathkenny Hills	Medium	High	Low-no	Medium	High	Low	Medium	Medium	Low-med.	Low	
5. Boyne Valley	Low	Medium	Low	Low	Medium	Low	Low	Low	Low	Low	
6. Central Lowlands	Medium	High	Medium	Medium	Medium	Medium	Medium	Medium	Low-med.	Medium	
7. Coastal Plains	Low	Low	Medium	Medium	Medium	Low	Low	Low	Med.-low	Medium	
8. Nanny Valley	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	
9. Bellewstown Hills	Medium	Medium	Low	Medium	Medium	Low	Low	Low		Low	
10. The Ward Lowlands	Medium	Medium	Low	Medium	Medium	Low	Medium	Low	Low	Low	
11. South East Lowlands	Medium	Medium	Low	Medium	Medium	Medium	Medium	Medium	Low-med.	Low	
12. Tara Skryne Hills	Low	Medium	Low	Medium	Medium	Low	Low	Low	Low	Low	
13. Rathmoylon Lowlands	High	Medium	Low	Medium	Medium	Low	Low	Low	Low	Low	
14. Royal Canal	Low	Medium	Low	Medium	Medium	Medium	Low	Medium	Medium	Low	
15. South West Lowlands	Medium	High	Low	Low	High	Medium	Med-Low	Med-Low	Medium	Medium	
16. West Navan Lowlands	Medium	High	Medium	Med-high	High	Med-Low	Med-Low	Med-Low	Medium	Medium	
17. South West Kells Lowlands	Medium	High	Low	Medium	High	Low	Low	Medium	Low	Medium	
18. Lough Sheelin Uplands	Medium	High	Low	Med-low	High	Low	Low	Low	Low	Medium	
19. Loughcrew and Slieve na Calliagh Hills	Low	Medium	No	Low-med.	High	No	No	No	No	Medium	
20. Blackwater Valley	Low	High	Low	Low	High	Medium	Medium	Medium	Medium	Low	

Table 11.2 – Summary of Landscape Capacity, Meath Landscape Character Assessment,

Meath County Development Plan 2021-2027

The extract from the Development Plan below provides a description of this area with regard to its landscape classification:

Landscape Description

*'The **South East Lowlands** encompass the area between the Hill of Tara to the southern border and the Dunboyne environs. The landscape is predominantly rolling lowland with large areas dominated by attractive estate landscapes with associated parkland, particularly surrounding Dunsany, Dunboyne and the north of Dunshauglin. This parkland has a mix of smaller estates and stud farms that create a distinctive character. The 2 main transport routes are the R154 from Batterstown to Trim and the R156 Dunboyne to Ballivor……Dunboyne is a large town with an attractive historic centre, particularly the village green surrounded by mature lime trees. The town is an important traffic node linking north Dublin with Navan to the north and Kinnegad to the west. There is extensive modern housing on the periphery and ribbon development adjacent to the main arterial routes. The interface between the edge of town and the surrounding countryside is in poor condition.*

The land is extensively used for pasture in the north, with arable land more prominent further south particularly in the Ratoath environs. The landscape condition gradually deteriorates to the south of Dunshaughlin where development pressure from the Dublin metropolitan area becomes more evident (particularly around Ratoath and Dunboyne.)

The landscape is relatively enclosed due to the topography and wooded hedgerows although longer views are afforded at the top of many drumlins. Many of the views in the lowlands are restricted to those along the road corridors and the immediate hinterland. '

Key Characteristics

Geology & Soils

- Complex drumlin landform created by glacial movement. Limestone is overlain by a variety of rocks and soils – boulder clay, kames and eskers - most of which have been deposited by melting glaciers.
- Calp limestone gives way to shaly limestone and shales with interbedded with limestone or sandstone forming deep well drained soils with localised areas of peaty topsoil and lowland which are apparent surrounding Dunshaughlin. Ground conditions suit those trees that thrive in free draining soil such as beech, oak, ash and lime.

Land Use

- Mix of small pasture fields with some large arable fields in the south.
- Small copses of beech and birch woodland.
- Extensive estate landscapes.

Ecology & Habitat

- No designations.
- Strong network of wooded hedgerows.

History & Culture

- Long established mixed scale farmland.
- Estate landscapes.
- Dunsany Castle, based of one of Hugh de Lacy's tower houses, extended and improved at least four times since the 18th Century
- St Nicholas Church, 15thC ruins and a twin church of that at Kileen which was also built by a member of the Plunkett Family
- 18th Century houses proliferate to south of this character area.
- Railway Architecture1940-1960
- Water Tower, mid C20th design

Tourism

- Dunshaughlin Golf Club
- Hammond House and Gardens
- Dunsany and Killeen Castles
- Historic features in centre of Dunboyne

Settlements and Built Structures

- Main settlement is Dunboyne (see description of key settlements)
- Settlement type is small villages and towns.
- Settlements have most vernacular buildings.
- Built development in countryside consists of individual dwellings, generally modern rather than traditional buildings with concentrations of modern development adjacent to the main towns of Dunshaughlin and Dunboyne.

Description of Key Settlements

Dunboyne:

- Large growth town with attractive historic centre and village green.
- Large modern housing developments on outskirts.
- Degraded landscape setting.

Forces for Change

- The proposed M3 motorway will dramatically change the scale of road infrastructure
- Motorway interchanges are likely to encourage further development around them.
- Significant residential development in Dunboyne is likely to be exacerbated by improved road infrastructure.

Recommendations

1. Provide incentives to landowners to improve condition of farmland, including management of hedgerows and trees in field boundaries.
2. Recognise the importance of stud farming to the upkeep of the landscape in the centre of the Dunboyne farmland and maintain the viability of this industry by sensitive siting of development that may adversely affect it.

3. Consolidate urban fringes of settlements and favour location of development on infill sites rather than ribbon development extending along approaches to settlements. Use appropriate landscape treatment along edges of development to soften urban fringe. Promote and enhance urban fringes to provide increased opportunities for amenity and recreation use. Landscape enhancements to include; rebuilding of dry stonewalls and replanting of hedges where they have been lost or are in poor condition.

4. Develop design guidelines for the restoration and enhancement of landscape condition surrounding road corridors.

5. Provide incentives for landowners to improve management and sustain the viability of agriculture and other rural industries.

6. Develop design guidelines for the conservation and restoration of historic features and areas such as stonewalls, disused buildings and estate villages.

7. The settlements of Dunshaughlin and Dunboyne have the potential to be developed as a focus for rural enterprises such as farmers markets which would allow for rural diversification and provide for stronger links between settlements and their rural surroundings.

8. Conservation of 17th and 18th Century hunting woodlands as an aesthetic, ecological and amenity resource.

9. Maintain the integrity of 18th Century farming landscape by encouraging the management of estate parkland, avenues of mature trees, boundary walls and clipped hedges.

10. Have regard to the presence of national and European designated ecological sites along the Westmeath border.

Potential Capacity

11. Medium potential capacity to accommodate large-scale agricultural buildings although careful planning, considering location, appearance and landscape treatment will be necessary to avoid negative impacts.

12. Medium potential capacity to accommodate tourist facilities that at present are limited, although the construction of a large mixed-use resort in Dunsany will be a significant addition. Future development needs to be carefully designed with particular reference to landscape setting, scale and vernacular style.

13. Low potential capacity to accommodate multi-house developments due to the significant growth of this type of development in recent years. Such development should be limited to the existing urban areas, which have been designated to accommodate such growth, and in these locations they should be very carefully planned in terms of location, scale and design to mitigate against potential adverse impacts, particularly cumulative impacts.

14. Medium potential capacity to accommodate one off houses with careful planning in terms of the local vernacular, design, scale and materials and regard to the potential cumulative effects of locating a number of one off houses in a particular area.

15. Medium potential capacity to accommodate the conversion of existing buildings/estate houses/ barns etc to a different use or as part of a restoration. Careful planning in terms of location, scale and materials with regard to the potential impacts of the changes of use on landscape character.

16. Medium potential capacity to accommodate overhead cables, substations and communication masts due to the enclosed nature of the drumlin landscape which offers good opportunities to screen such development or reduce its prominence.

17. Medium potential capacity to accommodate new transport routes. Main transport corridors are already a feature of the area but the upgrading of existing roads must be carefully planned to avoid the loss of landscape features that screen existing road and rail corridors.

18. Medium potential capacity to accommodate underground services as this LCA is not as archaeologically rich as other areas although the loss of landscape features such as hedgerows would need to be restored to reduce negative impacts.

19. Low potential capacity for wind farms but medium potential capacity for single turbines if appropriately sited to reduce impacts. Views are limited due to topography and wooded hedgerows but there would be a high number of viewers and long-range views from the tops of drumlins, which would need to be taken into account when planning location and layout.

20. Due to extensive growth the landscape character is in a degraded condition. The addition of biomass or commercial forestry would lead to a further loss of landscape features and as such this area has a low potential capacity for such development.

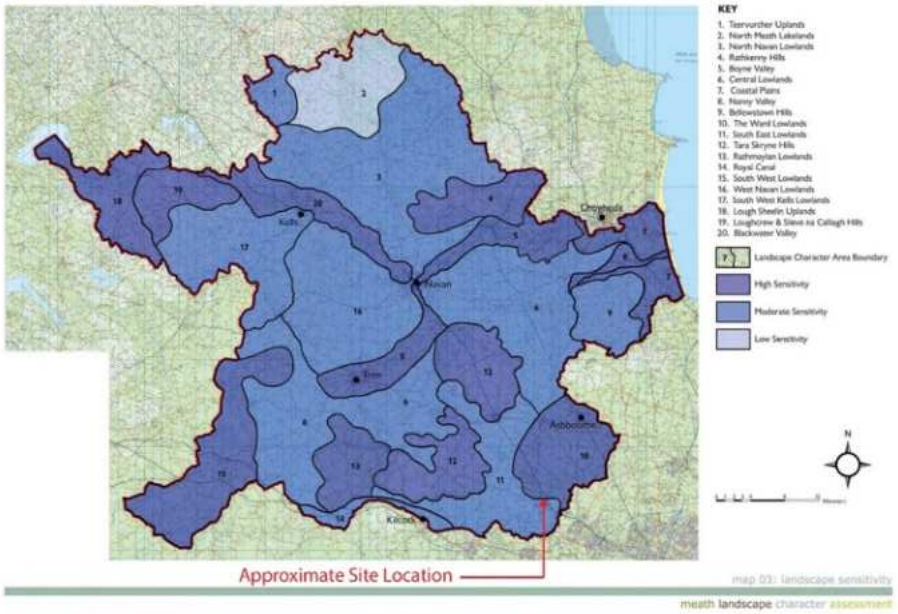


Figure 11.8 – Landscape Sensitivity, Map 03, Meath Landscape Character Assessment,

Meath County Development Plan 2021-2027

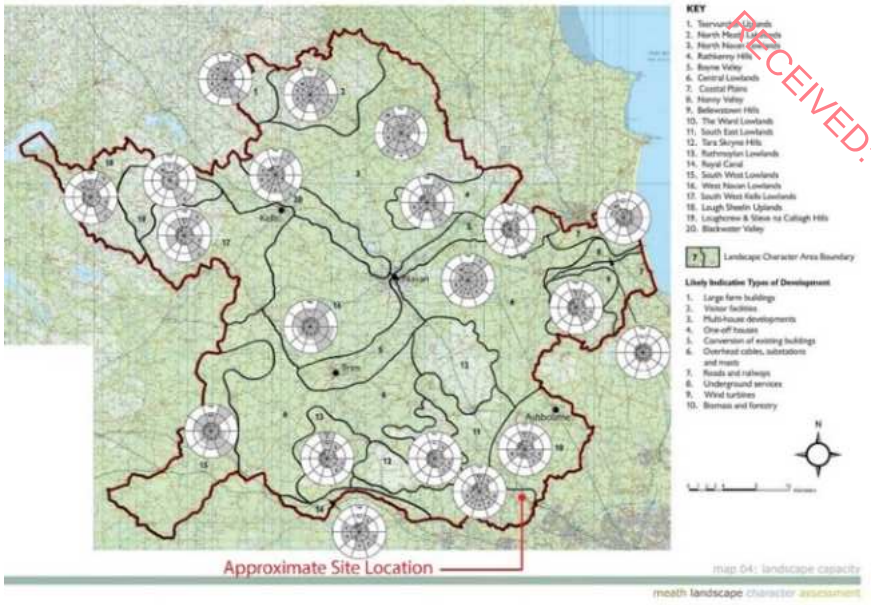


Figure 11.9 – Landscape Capacity, Map 04, Meath Landscape Character Assessment,

Meath County Development Plan 2021-2027

Protected Views & Prospects

There are no protected views or prospects adjacent to the project area, within the Dunboyne/Clonee/Pace settlement, or surrounding area. The nearest registered view is View ID 77, View of Kileen Castle/Skane Valley from south-east direction of the Warrenstown College, which is located approximately 15km to the northwest of the development site.

This is highlighted in the map excerpt below :

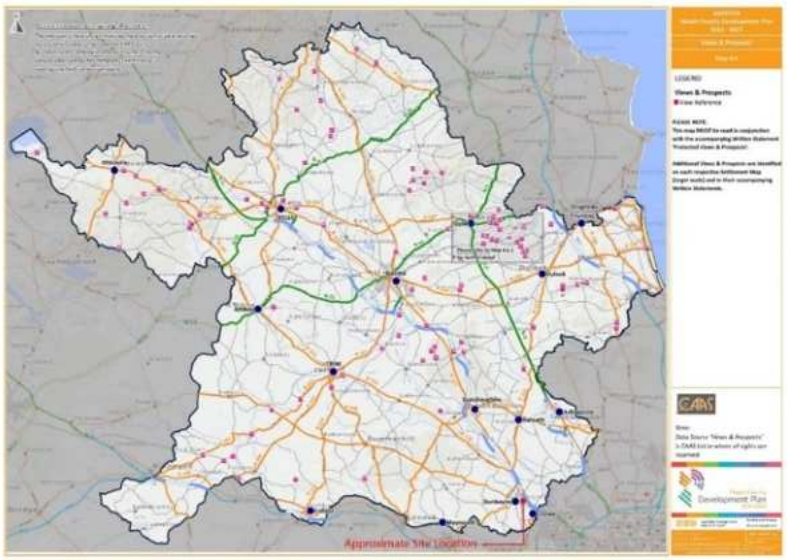


Figure 11.10 – Views & Prospects, Map 8.6, Meath County Development Plan 2021-2027

11.2.3 Contagious Land Use

Map 15 (Land Use) taken from the Meath Landscape Character Assessment illustrates the development site being surrounded by agricultural land to the north-east and south and bordered by what is highlighted as built development (Dunboyne) to the west.

The southwest corner of the site is bordered by the car park for the Dunboyne Train Station, beyond this car park towards the north, the entire west side of the development site is bounded by the railway line serving this station; this railway line serves the Dublin - Maynooth, Longford and M3 Parkway Irish Rail route. The existing Elton, Willow Park, Silver Birches, the Elms, and Old Fairgreen, among others residential estates, lie beyond this railway line to the west.

The development site is bounded by the L2228 (Station Road) road to the south, beyond which lies agricultural fields and accompanying hedgerows, treelines, and drainage ditches. Across the L2228 to the south-east there is a newly constructed residential development comprising three story apartments and two and three-story houses named The Paddocks.

To the south of this residential development there is more construction activity underway. Across the L2228 to the south-west, an assemblage of buildings and open space forms the grounds of Dunboyne Herbs, a healthcare clinic.

There are five single story detached dwellings with accompanying front driveways or gardens and back gardens which front the L2228. At this location, there is also a narrow laneway leading from the L2228 that to two other private residential dwellings and accompanying back gardens. The south-east extents of the development site borders the northwest of this cluster of residential buildings; the interface is composed of walls bordering private garden boundary, laneways, as well as the gable end of one house.

The entire extent of the development site to the east and north is bordered by agricultural fields which contain a network of hedgerows, treelines, and drainage ditches. Beyond approximately 370m of agricultural fields to the east, the M3 motorway runs in a northwest/southwest direction.

To the northwest, the development site is bordered by the Dunboyne Business Park which is made up of several large warehouse buildings accommodating several different enterprises comprising educational institutions, sports centres, mechanics and other businesses.

Figure 11.11 – Land Use Analysis

11.2.4 Topography and Drainage

The topography of the overall landholding can be described as virtually flat. According to OSi 10m Contours Mapping, the site lies between the 70.00m and 60.00m contour range; the site is located closer to the 70.00m contour line. The OSi information indicates that at a smaller scale of study, taking into account the surrounding townlands and beyond, that the site is enveloped by lands that are generally sloping slightly from its highest points in the north-west to its lowest points in the south-east.

The site is located within 'The South East Lowlands LCA (Landscape Character Area) in The Meath County Development Plan 2021-2027 :

'The South East Lowlands encompass the area between the Hill of Tara to the southern border and the Dunboyne environs. The landscape is predominantly rolling lowland with large areas dominated by attractive estate landscapes with associated parkland, particularly surrounding Dunsany, Dunboyne and the north of Dunshauglin.'

The description further illustrates how the topography of the lands surrounding the site comprises lowland, predominantly rolling terrain; this terrain is perceived as flat when viewed and considered from within the site and the development site boundary.

Map 11 (Topography) taken from the Meath Landscape Character Assessment (The Meath County Development Plan 2021-2027) confirms the development site within a topography range of 50-100m contour lines.

Local Settlements

The development site lies within the townland of Dunboyne, County Meath, approximately 800m east of the centre of Dunboyne Village. The development site is located within the eastern edge of the townland of Dunboyne bordered by the townlands of Castlefarm to the south, Loughsallagh to the southeast, Bracetown to the northeast, and Paddingstown, Pace, and Bennetstown to the north.

11.2.5 Vehicular Routes

The railway line serving the Dunboyne Train Station (western commuter route, Docklands to M3 Parkway) bounds much of the western boundary of the site. Beyond the agricultural fields to the east of the development site, the M3 motorway runs in a northwest/southwest direction. The R147 passes over the M3 at this location, and although it is a more meandering route, runs roughly parallel with the M3 in a northwest/southwest direction. Station Road (L2228) which borders the development site to the south runs in an east/west direction from the R147 to the east to Dunboyne Town to the west.

Figure 11.12 – Circulation Analysis

11.2.6 Vegetation

Most of the overall landholding comprises farmed arable land. The remainder of the vegetation on site comprises of a combination of hedgerows and treelines that form the boundaries between the agricultural fields that make up the development site.

The tree and hedgerow survey was undertaken by the Tree File and states :

'The site is divided into a number of large fields by hedgerows, and these also form the boundaries with the adjoining fields and properties. The agricultural field hedgerows are made up of Hawthorn, Elder, Dog Rose and Bramble.

Within some of the hedgerows, Ash, Sycamore and Elm trees have grown up above the hedge lines either as individuals or in short lines and are forming part of the upper canopy formation and some of these are of prominence within this area particularly where they are growing in groups or tree lines such as Tree Nos. 1806-1810 which consists of a line of Ash. The trees are mainly in the early-mature to mature age categories and their condition and quality range from fair to fair/ poor with a lot of the Ash tree population in this area is showing signs of infection by 'Ash Dieback' (Hymenoscyphus fraxineus) and this may lead to the decline or death over time with their removal necessary as part of management. The other tree of note on these lands is 'Tree No. 1804' which is a large prominent Monterey Pine located at the southern end of the site area out in a field where the arable farming/ ploughing has occurred around its base most likely leading to soil and root damage.

Along the L2228 (Dunboyne Road) and the boundaries with the train station, young Hawthorn hedging has been planted on the boundaries as part of its development and for the most part, these are establishing well but in need of some maintenance to help in their establishment.

The layout of the proposed development will require the removal of 10 No. individual trees, two areas of scrub and approximately 1,810 lin. mc.1,810 of hedge sections to facilitate the proposed development application. The hedges ro be removed are made up predominantly of Hawthorn with some Elder and Blackthorn with an undergrowth of Bramble and Dog Rose.

Tree and hedgerow removal is to be mitigated against with new plantings as proposed in the landscape masterplan. Tree sizes will range from whips to semi-mature sized trees,

and a substantial proportion of native species in the planting mix. (Refer to Tree Survey and Arboricultural Impact Assessment and drawings by the Tree File, and Landscape Masterplan and landscape planting specification by KFLA)

Figure 11.13 – Green Space Analysis

11.2.7 Habitats

A number of surveys were undertaken by Enviroguide Consulting between June 2021 and July 2024. These included bat, mammal, breeding bird, winter bird, hedgerow assessment and invasive flora survey. (Refer to EIAR Chapter 8: Biodiversity, for further details.)

Habitats identified on site include linear habitats such as drainage ditches, hedgerows and treelines. Habitat areas identified on the proposed development site include arable crops, tilled land, buildings and artificial surfaces, recolonising bare ground, amenity grassland (improved), scattered trees and parkland and scrub. (See Chapter 6: Figure 8-6 Map of Habitats across the Proposed Development Site.).

The identified habitats include the following :

- Large, farmed fields of 'Arable crops – BC1'.
- Mature hedgerows ('Hedgerows – WL1')
- Two small areas of scrub ('Scrub – WS1') are located in the northern end of the site at the junction of two hedgerows and the trainline, and in the south of the site where an unmanaged plot adjacent to where Mill farm Cottage used to stand has become overgrown.

'Although, not within the Site proper, dense scrub was noted to be present along the field edge that separates the arable lands containing the site from the Tolka river floodplain to the east.

The floodplain containing the Tolka and the Naulswood Stream falls away from the arable lands and was inaccessible due to the presence of drop in height and a dense scrubby margin. Habitats within the floodplain were observed to be tall, wet grassland in nature. During the Site visit on 23rd July 2024, the channel of the Tolka was observed by the surveyor to the north-east of the Site to be flowing and supporting overgrown riverbank vegetation.

The Naulswood Stream channel was also observed from an agricultural road-bridge leading from the arable field north of the Site to a farm track running along the M3 motorway. The stream channel was dry during the Site visit on 23rd July 2024. As can be seen in Figure 8-6, the EPA waterbody shapefiles have the Naulswood in part running through the arable field to the east of the Site. This was not observed to be the case during Site visits with the arable field appearing uninterrupted along the supposed route of the stream. Google Earth satellite imagery shows that this has been the case since ca.2009 at which point a hedgerow can be seen running along the streams route (Figure 8-7).

Within the zone of influence of the Proposed Development lay dwellings ('Buildings and artificial surfaces – BL3') at the time of the surveys in 2022. An offsite dwelling, near to the Site boundary, Mill Farm Cottage, had been sealed with breeze-blocks and concrete and has since been demolished (on 26th September 2023) as part of a separate grant of planning. No rare or protected species of flora were recorded during the surveys carried out at the site.'

Invasive floral species recorded at the site include Butterfly bush (Buddleja davidii), cotoneaster (Cotoneaster spp.) and sycamore (Acer pseudeplatanus).

The Biodiversity assessment concludes that although the network of hedgerows and treelines are somewhat fragmented throughout the site, that these habitats do provide suitable habitats for local bat populations, despite the presence of lighting on adjacent roads, the train station car park and local housing, as commuting and foraging activity was recorded with bat activity following the existing hedgerow and treeline network across the site, and potentially linking up with the Tolka's riparian corridor to the north and east.

The Biodiversity assessment concludes that:

'provided the mitigation measures proposed within this report together with all best practice development standards as outlined in the CEMP are carried out in full, there will be no significant negative impact to any KER habitat, species group or overall biodiversity as a result of the Proposed Development.

The Proposed Development is considered to result in an overall slight positive impact to the floral biodiversity of the site via the landscaping plan, which proposes the retention and enhancement of the existing western hedgerows at the site and a net increase in total native and non-native trees at the Site through supplementary planting.

This will in turn provide additional suitable foraging, commuting and nesting habitat for local populations of fauna including birds, bats and small mammals in an otherwise relatively ecologically poor agricultural landscape, and provide connectivity between the Site and the wider area. The inclusion of bat boxes in the design of the Proposed Development will also provide novel roosting habitat for bats at the Site. As such, the Proposed Development will provide an overall slight net gain in biodiversity.'

11.2.8 Landscape History

The historic first edition 6 Inch Maps from the Ordnance Survey Ireland (OSi) which were surveyed between 1829-41 illustrate that the current development site was made up of a series of agricultural fields while also being surrounded by agricultural fields. A road in the locations of what is now the L2228 is illustrated on this map and bounds the location of the development site to the south.

The historic last edition Cassini 6 Inch Map (1830s -1930s) and 25 Inch Maps (1897-1913) from the Ordnance Survey Ireland (OSi) illustrates the arrival of the Dunboyne Train

Station and the Dublin & Navan Branch of the Midland Great Western Railway Irish railway gauge which bounds the development site to this day to the west.

The land within the development site has remained as agricultural land since these historic maps were surveyed. The same hedgerow patterns that form the current field boundaries within the northern portion of the site can be seen on all of the historic maps which were studied as part of this assessment.

11.2.9 Visual Analysis

The site assessment for the visual analysis of the proposed development site was undertaken in April 2023. The site which is located on the eastern edge of Dunboyne town presents as an agricultural fieldscape setting. With the exception of the western boundary of the site adjoining the railway station lands which is bounded by a green palisade fence, the bulk of the remainder of the boundaries of the fields are comprised of hedgerows and tree lines. The landscape is generally flat with a number views into the site from points along the Navan Road to the north-west and from Station Road to the south.

There are two access routes into the site, from the Navan Road to the north-west and from Station Road to the south via agricultural field gates. A large residential housing estate is located to the west of the site, with limited views east due to the presence of boundary walls. One area of open space to the north of the housing estate (east of The Old Fairgreen) allows open views into the north. The Dunboyne railway station and car park is located to the immediate west/southwest of the site. The palisade fence provides for open views into the central and southern portions of the site. From the south along Station Road, the views are north into the site are relatively open as the boundary hedge is low. Views back into the site from viewpoints further east along Station Road become more intermittent due to the presence of private properties with established boundary trees and hedgerows. There are open panoramic views into the site from the footbridge over the railway line to the south-west of the site.

There are high voltage pylons and overhead wire infrastructure running east-west through the north of the site. There are also smaller scale power poles and overhead wires running through the north-west and south-east of the site, and adjacent to the site on Navan and Station Road. There is also substantial road lighting on Station Road, the adjacent housing estate and within the railway lands and car-park to the west of the site.

There is one visually significant tree within the southern portion of the site, a Monterey Pine.

Given the relatively open nature of the site there are views out to the north to Bracetown Business Park, to the M3 Motorway embankment to the east; views out to the south to the new residential development at Castlefarm on Station Road, and views out the housing estate, Dunboyne Train Station, overbridge and car park to the west. (Please refer to APPENDIX 11 for Site Photography Plates 11.0 to 11.26)

11.2.10 Landscape Quality

The landscape of the subject site can be described as a relatively flat agricultural fieldscape setting, immediately adjoining the edge of the urban fabric of Dunboyne Town. Although the landscape quality can be described as medium to high in places, given the presence of agricultural / pastoral setting with hedgerows and tree lines, there are a number of elements that reduce the overall quality of the landscape parcel.

The western boundary of the site is comprised of a high green palisade fence along the interface with Irish Rail Lands at Dunboyne Train Station. The train line, embankment and fencing bissects the site creating a physical barrier through the northern portion of the site. There are a number of high voltage pylons with associated overhead wire infrastructure running through the northern portion of the site.

Views out of the site are comprised of the built fabric of Dunboyne Town including Bracetown Business Park to the north of the site, Dunboyne Train Station, rail line and car park to the west, new two and three storey residential development to the south and the infrastructure of the M3 motorway to the east.

Combined with local road and road lighting infrastructure, electricity and overhead wire infrastructure, mobile masts, etc, the overall reduction in the quality of the landscape setting is one that is visually degraded.

The visual elements that add value and quality to the site are the presence of hedgerows and treelines along the north, east, south and central portions of the site. There is one mature Monterey Pine that is a visually significant feature with the south of the site, particularly given the relatively flat and open nature of the site. The Monterey Pine with it's distinctive form is visible from the south and west of the site.

In the context of the wider landscape, there are a number of mature trees and woodlands in lands to the south-west that add a high visual quality and enhance the quality of the wider landscape setting.

11.3 Landscape and Visual Impact Assessment

This Landscape and Visual Impact Assessment describes the existing receiving environment, the contiguous landscape and the methodology utilised to assess the impacts. It assesses the visual extent of the proposed development and the proposal's visual effects on key views throughout the study area. It describes the landscape and urban character of the subject site and hinterland, together with the visibility of the site from significant viewpoints in the locality. The report summarises the impact of the proposed development on the visual and landscape amenity of the subject site and its immediate area.

The following visual receptors addressed in this assessment:

- Key views from designated sites of national or international importance where relevant
- Designated protected views and views/scenic routes protected through development objectives in the Meath County Council Development Plan 2022-2028 if applicable
- Local Amenity and Heritage Features
- Local community views to assess the landscape and visual impact of the proposals on those who live and work in proximity to the proposed development as well as those utilising local amenities
- Relevant local settlement nodes
- Major routes adjacent to the site

11.3.1 Overview

Landscape and visual impact assessments are two separate, but closely related topics. The assessment of visual impact focuses on the extent to which new developments can

be seen. Visual analysis forms one part of a Visual Impact Assessment (VIA), the process by which the potential significant effects of a proposed development on the visual resource of an area are methodically assessed. In turn, VIA forms just one part of a Landscape and Visual Impact Assessment (LVIA) and the wider process of Environmental Impact Assessment Report (EIAR). Landscape assessment focuses on the character of the landscape, examining responses which are felt towards the combined effects of the new development.

11.3.2 Desktop Study

Site assessments were undertaken in April and May 2023. Desktop studies were undertaken to evaluate the existing site conditions such as topography, vegetation, settlement patterns, contiguous land use, drainage, landscape and urban character as well as overall visibility of the site from surrounding areas. Information was also collated on protected views, scenic routes, special and protected landscapes etc.

The following documents and web resources were consulted for the desktop study:

- Meath County Development Plan 2021-2027 https://www.meath.ie/
- Ordnance Survey Ireland – Interactive Mapping and Aerial Photography www.osi.ie

This LVIA has been prepared utilising the following guidance documents:

- 'Guidelines on the Information to be Contained in Environmental Impact Statements' Environmental Protection Agency, 2002
- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' Environmental Protection Agency, May 2022.
- 'Advice notes on current practices (in the preparation of an Environmental Impact Statement), Environmental Protection Agency, 2003
- 'Advice notes for Preparing Environmental Impact Statements. Draft'. Environmental Protection Agency, 2015.
- 'Landscape and Landscape Assessment Draft Guidelines', Department of Environment, Heritage and Local Government (DEHLG) 2000
- 'Guidelines for Landscape and Visual Impact Assessment', The Landscape Institute & I.E.M.A., UK, 2013.
- 'Environmental Impact Assessment Handbook', Scottish Natural Heritage (SNH), Version 5, 2018. Appendix 2: Landscape and Visual Impact Assessment.
- DoEHLG, 'The Landscape and Landscape Assessment Draft Guidelines for Planning Authorities".

11.3.3 The Glossary of Impacts used in the assessment of impacts are as per EPA Guidelines:

Quality of Impacts

Positive Impact/Effects
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).

Neutral Impact/Effects

No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.

Negative Impact/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).

Significance of Impacts/Effects

Imperceptible Impact/Effect
An impact/effect capable of measurement but without noticeable consequences.

Not Significant
An impact/effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Impact/Effect
An impact/effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate Impact/Effect
An impact/effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.

Significant Impact/Effect
An impact/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 Impact/Effect
An impact which obliterates sensitive characteristics.

Duration of Impact/Effect
Momentary Impact/Effects
Effects lasting from seconds to minutes.

Brief Impact/Effects
Effects lasting less than a day.

Temporary Impact/Effects
Effects lasting less than a year.

Short-term Impact/Effect
Impact/Effect lasting one to seven years.

Medium-term Impact/Effect
Impact/Effect lasting seven to fifteen years.

Long-term Impact
Impact/Effect lasting fifteen to sixty years.

Permanent Impact/Effect

Impact lasting over sixty years.

Reversible Impact/ Effects
Effects that can be undone, for example through remediation or restoration.

Temporary Impact/Effects
Impact lasting for one year or less.

Types of Impacts
Indirect Impact/Effects (a.k.a. Secondary or Off-site Effects)
Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.

Cumulative Impact/Effects
The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

'Do Nothing Impact'
The environment as it would be in the future should the subject project not be carried out.

`Worst case' Impact/Effect
The effects arising from a project in the case where mitigation measures substantially fail.

Indeterminable Impact/Effect
When the full consequences of a change in the environment cannot be described.

Irreversible Impact/Effect
When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Impact/Effect
The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Synergistic Impact/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).

Other terminology used within this chapter is set out below.

Definition of Visual Impacts
The following terminology, used in this visual assessment, is defined as follows:

Visual Intrusion: where a proposed development will feature in an existing view but without obstructing the view.

Visual Obstruction: where a proposed development will partly or completely obscure an existing view.

Sensitivity and Significance: The significance of impacts on the perceived environment will depend partly on the number of people affected, but also on value judgments about how much the changes will matter. In this respect it is important to identify actual visual and physical connections between the site, its adjacent occupiers/landowners and those

who interact with it from further afield, in the context of the existing and the proposed situations.

While our visual sense is generally acknowledged to represent the dominant contribution to our perception of place and its context, other factors also contribute. Hearing/sound, smell and a variety of social/cultural factors relating to the land-use, function or business conducted on the land (or indeed, memory) can sometimes over-rule or outweigh the visual aspects and lead to individual perceptions which could be described as relatively subjective. The relevance of these non-visual aspects to our perception of our environment and the impact made by proposed changes is considered in other sections of this assessment document. The purpose of this section is to objectively examine and assess the nature and extent of the visual impact created as a result of the development proposal.

11.3.4 Photomontage Methodology

A photomontage is defined as:
'A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs. Photomontages are generated using computer software.' ('Visual Representation of Wind Farms - Good Practice Guidance', Scottish Natural Heritage (SHN) -. 2006)

Choice of Views
The views were chosen to accurately represent the likely visual impact from all directions. Views from the Public Domain were given priority, particularly those from main roads and access routes. The views submitted are considered to be the most important and representative, having regard to the requirement to examine the greatest likely impacts.

Photography of Site
(See photomontage document by Digital Dimensions)
Each of the fourteen chosen views were photographed using a high-resolution digital camera set horizontally using a surveying level to eliminate any possible distortion and to make an accurate match with the computer rendering.

The direction of view was recorded for each shot, together with its position on the ground. The camera positions are then surveyed by GPS to establish their x, y, and z coordinates to an accuracy of +/- 25mm. These positions are then plotted onto Ordnance Survey maps and their distance and angle from the proposed development is recorded to ensure an accurate match with the computer model. The horizontal angle (field) of views for every shot is 67° (unless otherwise stated), therefore if each montage is printed to the same width, there is a consistency of scale and comparative size. It should be noted that this angle (field) of view is considerably less than the human eye viewing angle but greater than a 50 mm lens on a 35 mm camera. It is chosen as the most suitable compromise. The index marks on each photo indicate the size of photo which would be produced by a 50 mm lens on a 35 mm SLR (commonly regarded as a "normal" lens).

Size of Print and Viewing Distance
When the angle of view (field of view) is known, then the correct size of print to view is a function of this angle and distance from the eye. When the photomontages are printed at approximately A3 size (in width), and if they are viewed at approximately 300mm, (normal reading distance) objects seen in the image will appear at approximately the same scale as if viewed in reality from the location from which the photograph was taken.

Rendered View

Rendered views of the proposed development were generated to match the site views. This is achieved by programming in all of the data recorded at the time the site photos were taken i.e., surveyed position in relation to the development, angle of view and direction of view. This ensures that the size, position and height of the proposed development in the photograph is correct to at least an accuracy of 0.33%, i.e., +/- 1mm on an A3 print. Careful consideration is given to the direction of sunlight, time of day, weather conditions and distance of the viewer, so that the photomontage will match reality in terms of lighting, sharpness, density of colour etc.

Photomontages
Each rendered view of the proposed development is superimposed onto its matching photograph. The mathematical accuracy is then checked visually by ensuring that existing prominent features which are also modelled, line up exactly in the photo. Careful consideration is given to establishing which existing (retained) landscape features are in the foreground and therefore mark the proposal and those which are in the background.

11.3 Description of the Characteristics of the Proposed Development

John Connaughton Ltd. intend to apply to Meath County Council for a 10-year planning permission for development of a Large-Scale Residential Development on a sites of approx 21.9 ha in total and 15.74 ha net developable area respectively, at Lands at Station Road and Pace Line, Dunboyne, Co. Meath in the townlands of Dunboyne, Clonee, Castle Farm and Loughsallagh.

The principle application site is generally bounded by Station Road (L2228) to the south, Dunboyne Train Station and the Iarnród Éireann rail line to the West, a cluster of detached houses to the south east, greenfield lands to north and east. The application includes also 2 no. roundabouts on the R147 (Old Navan Road).

Permission is sought for a 10-year planning permission for a Large-Scale Residential Development, which in summary, will consist of the following: -

a) Construction of 853 no. residential units as follows:

   1) 398 no. Apartment Units in 3 no. 1-6 storey blocks (A-C) consisting of 121 no. 1-bedroom apartments; 258 no. 2-bedroom apartments; and 19 no. 3-bedroom apartments. All apartment units will be provided with private open space areas in the form of balconies/terraces.
   2) 112 no. Duplex Units in 6 no. 2-4 storey blocks (D-H) consisting of 60 no. 2-bedroom units, 52 no. 3-bedroom units. All duplex units will be provided with private open space areas in the form of balconies/terraces.
   3) 343 no. 1-3 storey houses consisting of 4 no. 2-bedroom units, 308 no. 3-bedroom units, 31 no. 4-bedroom units. Each house will have an associated rear private garden.

b) Residential amenity spaces in Block A (approx. 212 sqm), Block B (approx. 284 sqm) and Block C (approx. 81 sqm);

c) The proposed development also includes a proposed café (approx. 196sqm) with associated outdoor seating area, medical unit 1 (197 sqm), retail unit 2 (approx. 217 sqm), retail unit 3 (approx. 170 sqm), community room (approx. 52 sqm), 2 no. creche facilities (approx. 394 sq m and approx. 400 sqm);

d) Provision of 1192 no. car parking spaces across the development site (inclusive of accessible parking spaces (27 no.) and 1,634 no. bicycle parking spaces for residents and visitors of the scheme provided throughout the development site.

e) 13 no. landscaped public open space amenity areas (approx. 23,925 sqm total);

f) 7 no. communal open spaces associated with the proposed apartments and duplexes will be provided in the form of landscaped areas located in the vicinity of these units (approx. 6,279 sqm total);

g) Section of the Dunboyne Eastern Distributor Road (approx. 865 m long) from the southern site boundary with Station Road (L2228) to the northern boundary of the site. This includes all associated vehicular and pedestrian accesses, carriageways, paths and junctions;

h) New vehicular, pedestrian and cycle connections to Dunboyne Train Station and closure of the existing vehicular access from Station Road (L2228);

i) Upgrade of Station Road (L2228) – proposed Distributor Road junction;

j) Alterations to 2no. roundabouts on the R147 (Old Navan Road):

   a. Roundabout at the junction of Station Road (L2228) and Old Navan Road (R147)
   b. Roundabout at the entrance to Clonee Village on the R147, at the Ard Cluain apartment scheme and Dunboyne Tennis Club

k) All associated site development works, services provision, infrastructural and drainage works, internal access roads, homezones and cycle and pedestrian infrastructure, provision of ESB substations, bin stores, public lighting, landscaping, and boundary treatment works.

l) Temporary areas allowing for construction: 5m buffer zone along the Distributor Road, compound and spoil storage area

•

Previous applications have been made or permitted on lands within the red line boundary of the subject proposal: Reg. ref. 24/60063, Reg. ref. 23849, ABP NA29S.314232 DART+ West, Reg. ref. 212395 (ABP 304842), Reg. ref. RA180561 refers. The subject application does not materially amend any of these existing, permitted, or proposed development with only minor works proposed to same.

This planning application is accompanied by an Environmental Impact Assessment Report.

11.4.1 Site Layout and Architecture

The proposed site layout responds to the existing and emerging low to medium density residential development to the east of Dunboyne Town. In order to integrate the proposed development into the existing site context, three key character areas have been designed into this greenfield site, with a fourth sub character area to the south-west of the development off Station Road. The site layout of the character areas aims to provide an individual coherence and legibility through a clear pattern of housing types, with a legible street and open space hierarchy. Public open spaces are provided throughout the scheme in varying scales from main public parks to smaller scale incidental spaces with the aim of providing the range of amenity spaces for social interaction and gathering.

The key character areas are designed around a specific urban structure where the main public open spaces and streetscape networks will be legible and delineated through architectural typologies and materiality and landscape architectural treatments.

Character Area 1
Located at the south of the scheme, this character area is recognised as a strategic 'Gateway Hub' to Dunboyne Town from the east, and responds to the existing higher density scheme under construction at Castlefarm to the immediate south of the site, as well as the proposed distributor road that will form one of the main access points to the development from Station Road, and move north along the eastern edge of the scheme.

The proposed architectural typologies are a mix of six storey apartments, duplexs, two storey houses, creche and commercial units at ground floor to activate the public realm at street level, set-backs and variations to the architectural facades of the taller buildings. The architectural materiality includes buff brick finish at street level, clear-dark stone cladding, render panelling, metal cladding and zinc finishes to upper and penthouse levels for variation and visual interest.

Also within Character Area 1 is a proposed two-storey stand-alone crèche facility adjacent to a public open space (POS 1) and set within a high quality public realm of hard and soft landscape treatments. The two storey creche creates a transition between the taller six storey apartments to the south with the mix of three and four storey duplexs and two storey houses in Character Area 2. Again, brick finishes at streetscape level provide a continuation of the architectural materiality of the overall scheme. Buff brick and self-coloured render are the proposed materials with specific render panelling.

Character Area 2
This character area is within the central portion of the site with predominantly lower building height of two storey houses presenting a more traditional architectural typology with Victorian red brick materiality. Three storey duplex buildings with four storey elements to the east fronting onto the proposed distributor road. The largest of the public open spaces is located in this character area to the west (POS 2).

Character Area 3
This is the northern section of the scheme that bounds the proposed distributer road as it moves west to connect with the Navan Road and connect south to Dunboyne Town Centre. This character area is viewed as the northern hub, reflecting the architectural language of its southern counterpart at Station Road to the south. The architectural typology varies from two storey houses, four storey duplexes to a part 5 to part 6 storey apartment block the north-east with a second creche facility to the south east of the duplex units. The apartments and duplexes are designed around an expansive area of communal open space. Architectural materiality will include brown buff brick, self colour and dark renders to the two storey houses, four storey duplexes and streetscape level of the part 5 to part 6 apartment block.

Refer to Architectural Drawings and Architectural and Urban Design Statement by MCORM, Project Architects

Figure 11.13 – Site Layout by MCORM

Landscape Proposals

Refer to Landscape Masterplan and Landscape Strategy Report by KFLA, Project Landscape Architects

11.4.2 Landscape Masterplan & Landscape Strategy

A landscape masterplan for the site has been prepared by KFLA. A series of thirteen public open spaces are distributed throughout the scheme. Two of these spaces are located in 'Areas of Archaeological Interest', which aim to retain any subterranean archaeology in-situ.

Wayfinding through the scheme is defined by the aesthetic and design of each space through material finishes in the public realm, definition of public and private realm through the use of hard and softscape materiality.

Passive surveillance is ensured through house frontages overlooking the main communal and public open spaces. Home zones are proposed throughout the scheme to slow traffic and ensure safe play and resident movement.

Pedestrian and cycling permeability are provided throughout the scheme, with strong visual physical linkages to the proposed distributor road to the east and Dunboyne Train Station to the southwest, along with a proposed school complex to the southeast of the site.

Refer to Landscape Masterplan and Design Strategy for further details

Figure 11.15 – Landscape Masterplan (Northern Section) by KFLA, Landscape Architects

Figure 11.16 – Landscape Masterplan (Southern Section) by KFLA, Landscape Architects

11.5 Characteristics of the Construction and Operation Phases

Site Preparation Works and Establishment of construction Services

11.5.1 Potential Impacts of the Proposed Development

Demolition Phase - Landscape

Given the nature of the proposed development site as a green field site, there are no structures on-site to be demolished in their entirety, however there will be partial demolition of the existing boundary wall in the form of the three interventions proposed to facilitate vehicular and pedestrian access. There is the potential for likely moderate, adverse, and short-term effects on the landscape during this stage of the project resulting from the following elements associated with demolition work:

- The removal of sections of hedgerows and trees
- The removal of sections of boundaries for vehicular and pedestrian access
- Soil movement and stock piling of topsoil
- Removal/moving existing ESB pole and wire infrastructure

The effects on the landscape amenity of the site during this phase are unlikely to be significant and adverse given that there are no built structures on site to be demolished. Any effects will be short term, terminating at the completion of this phase.

Demolition Phase - Visual Impact

There is potential for moderate and adverse temporary visual effects on views into the site during the demolition stage. These will be short-term, terminating upon completion of the development. The effects on the visual amenity of the site during this phase are unlikely to be significant and adverse given that there are no built structures on site to be demolished. Any effects are likely to be short term, terminating at the completion of this phase.

Construction Phase – Landscape

There is the potential for likely significant and adverse temporary effects on the landscape during the construction stage of the project resulting from the following elements associated with construction works:

- Erection of physical structures such as site compounds and storage area
- Erection of site hoarding, signage, security fencing
- Presence of site machinery and delivery/storage of materials etc
- Lighting:

- Temporary security lighting
- Lighting at height associated with construction of structures
- Lighting in the contractor's compound and car parking areas
- Light spill and glare towards surrounding residential receptor areas to the north of the site
- Light spill which could impact ecology/biodiversity

Construction Phase – Visual

The proposed development will be constructed in four phases as follows :

Phase 1 – Character area one (315 units); 142 apartments, 50 duplex, 123 houses and includes retail unit and stand-alone creche.

Phase 2 - Character area two (183 units); 36 duplex and 147 houses.

Phase 3 - Character area three (213 units); 114 apartments, 26 duplex, 73 houses and creche.

Phase 4 - Character area one (142 units); 142 apartments.

The programme for the construction phase is approximately over 10 years. The visual effects due to construction are likely to be medium term, terminating upon completion of the development. There is potential for likely significant and adverse medium-term effects during construction from the following elements associated with construction and works:

- Dust
- Site huts
- Building materials
- Ground disturbance (e.g. topsoil, stockpiles, etc.)
- Site hoarding/security fencing
- Construction works

There is potential for likely significant and adverse medium-term visual effects from the use of temporary buildings, machinery necessary for construction works at proposed works, as well as stockpiling of materials.

There is potential for significant and adverse medium-term effects from the transportation of the material to be recycled and the recycled material to and from the site if applicable.

There is the potential for a likely significant and adverse medium-term visual effects on views into the site.

The main stages of the construction phasing will include the following:

- Site preparation works
- Site establishment and erection of temporary structures
- Diversion and connection of services and utilities
- Construction of foundations and structures
- Mechanical and electrical installation
- Fit-out and external works.

Temporary areas necessary for construction phases include :

- Provision temporary construction compounds necessary for construction phases
- Provision of temporary storage areas for excavated spoil material

- 5m buffer areas at identified locations along the proposed development, site compound and spoil storage areas
-

A CEMP (Construction and Environmental Management Plan) accompanies this planning application, prepared by Enviroguide Consulting, and includes for temporary storage areas and construction compounds to the south-east of the site.

Operational Phase

The potential impacts from the proposed development, once it is operational and construction is complete, will arise from the presence of a new suburban residential neighbourhood on the lands north of Station Road. Housing typologies will range from one storey bungalow, two storey semi detached and terraced houses, three and four storey duplexes, and part 5 to part 6 storey apartment blocks located at the northern and southern ends of the scheme.

The entirety of the development will sit within a high-quality public realm with a number (13) of large public open spaces, smaller open spaces and communal open spaces. A layered approach to planting from groundcovers through to street trees and larger trees within open spaces will add a high visual quality to the scheme.

SUDS features within the proposed design will ensure surface water discharge from the proposed development are managed appropriately as part of the surface water drainage design.

The lands which are currently in private ownership and used for agricultural purposes will be opened up and activated as a new residential neighbourhood on the east of Dunboyne Town with two creche facilities. The proposed development will be viewed as a new residential area on the eastern edge of Dunboyne Town. Day to day use will alter with the movement of vehicles, pedestrians and cyclists through the site. Lighting from within the built environment and surrounding public realm will be visible in the wider landscape, along with lighting from the proposed distributor road that is subject to a separate application.

11.5.2 Mitigation Measures Construction Phase

The following mitigation measures will be implemented:

A Hedgerow Management Plan (HMP) will be prepared in consultation with the project ecologist and landscape architects, and approved by Meath County Council prior to implementation on site.

To protect the trees, hedgerows and scrub being retained, the following measures will be implemented during Construction Phase:

- Establishment of tree protection measures as required (no-dig construction zones, tree protection fencing and existing hedgerow retention). Any trees which are not to be taken down shall remain undisturbed and undamaged.

- Tree protection fences are to be constructed in accordance with BS 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations" (BSI, 2012)

- A 'Construction Exclusion Zone' notice shall be placed on tree protection fencing at regular intervals

- Tree Protection Zones will not be used for car parking, storage of plant, materials etc
- A post construction assessment and review of retained trees will be carried out
- Height of temporary stockpiles to be restricted to a practicable minimum to avoid impact on local sensitive receptors
- Hoarding will be erected around site boundaries to reduce visual impact of construction works
-
- Plant will be held in designated compounds on site

Visual impacts during the construction phase will be mitigated somewhat by appropriate site management measures and work practices, outline in the CEMP, 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.

Appropriate site hoardings will be put in place around the perimeter of the site where required to minimise the landscape and visual impact.

11.5.2 Operational Phase

The major visual remediation of the project will be accomplished through the following mitigation measures which have been incorporated into the design:

- Through the positioning of various elements of the development on site to enhance the appearance of the development as a whole through the design of the site layout and built form
- The creation of high-quality public realm through the overall design of the scheme for the use and amenity of users of the proposed development

11.5.3 Residual Impacts

Designed in mitigation measures will be implemented to reduce the landscape and visual impact of the proposed development.

Following the completion of all mitigation measures, for the most part, there will be no significant residual impacts upon the landscape and visual resource.
The greatest effects on the landscape and visual resource will however be experienced at the northern end of the site. The height and scale of the proposed part 5 and part 6 apartment building of Block C will be visually prominent in the landscape, alongside the existing pylons and overhead wire infrastructure and will remove any positive features of the open rural landscape, tree lines and hedgerows in the background of view. The magnitude of change in this location on the landscape and visual resource is considered high given the height and scale of Block C. The quality of the effect is considered negative. The significance of effect is considered significant. The duration of effect is considered permanent.

11.6 Cumulative Impacts

Cumulative impacts may arise from the proposed construction of the following planning applications :

Dunboyne Distributor Road
Planning Authority: Meath County Council
Applicant: Conncarr Developments
Planning Ref : 2460063
Decision: Pending

If this project were to proceed, there will be negative and moderate impacts locally in the short term from the day and night time use of the proposed distributor road in terms of noise from vehicular movement, road lighting and lights from vehicles using the new route. However, it is anticipated that these impacts will reduce to neutral and slight once this proposed development is in full use in the medium term.

Planning Authority: Meath County Council
Planning Ref : 23849
Applicant: Azra Property Company Limited
Decision: Granted with conditions

This is a 10 year permission for a large scale residential development to the south of the site at Castlefarm, Ruskin and Clonee. The proposed development is on a site of approximately 16.92Ha overall and consists of 716no. dwellings in a mixture of terraced, semi-detached and detached houses, duplexes and apartments as follows:

517no. apartment units are accommodated in 8no.buildings of 4-7 storeys in height comprising:

10no. 1-bed apartments, 202no. 2-bed apartments and 24no. 3-bed apartments accommodated in 4no. 4-6 storey apartment blocks

55no. 1-bed apartments, 80no. 2-bed apartments and 12no. 3-bed apartments accommodated in 2no. 6-7 storey apartment blocks (Blocks Bl and B2);

36no. 1-bed apartments, 78no. 2-bed apartments and 20no. 3-bed apartments accommodated in 2no. 4-5 storey apartment blocks (Blocks Cl and C2)

If both projects were to proceed there will be cumulative impacts on the landscape and visual resource locally. The peri-urban nature of the landscape to the east of the railway line will continue to transition to a suburban residential neighbourhood on the north and south of Station Road.

There may be additional cumulative impacts in the future if additional developments are built adjacent to the proposed development.

11.7 Visual Impact Assessment

Photomontages

Fourteen photomontages were undertaken to assess the landscape and visual impacts of the proposed development on the local and wider landscape. Screening of potential impacts on the local and wider environment was undertaken through an initial desktop

study to identify key views in the public realm in tandem with the identification of sensitive receptors within the local and wider area.

The views were identified, which form part of this assessment, are a combination of short, medium and long-distance views.

Baseline photography and the preparation of digital photomontages has been undertaken by Digital Dimension. Their methodology for undertaking the photomontage production is contained within the photomontage document which accompanies this report. The A3 photomontages should be viewed in A3 Landscape format, in conjunction with the following visual analysis. (See Appendix 2 for Photomontage document).

Figure 11.16 – View Location Map (Digital Dimensions)

Existing View 1

This viewpoint is taken looking north towards the proposed development site from a new local access road to a new build residential development (Castle Farm) south of the L2228 (Station Road), on the eastern outskirts of Dunboyne Town. The new vehicular, pedestrian and cycling infrastructure is visible segregated by grass verges. To the right is three storey apartment complex (The Paddocks at Castle Farm) which is under construction. To the left is the wooden boundary railings, beech hedge and tree planting associated with Dunboyne Herbs, a Healthcare Clinic. New road lighting, road signage and bollards are visible in the middle distance.

The proposed development site is visible in the background of view; it presents as a flat open agricultural fieldscape with boundary hedgerows and some tree plantings. Older power infrastructure and road signage is visible along the L2228 in the middle distance.

View No. 1	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Peri urban/ Suburban)	Medium	Medium	Medium	Medium	Medium

Proposed View 1

The proposed development will be visible from this viewpoint location. The hedgerow to the north of Station Road and tree planting along with the view of the open fieldscape and skyline in the background of view will be removed and placed with a new urban residential development.

The six storey apartments at the gateway to the development on Station Road will feature prominently in the view adjacent to the four storey apartments under construction on Castlefarm to the right of view. The height of the building typologies reduces from character are 1 to character area 2, with duplexes and the two storey creche building visible in the background. The views through the two character areas, with building height reductions and the open space in the distance allow a substantial portion of open skyline view to be retained.

The proposed distributor road infrastructure is visible from Station Road in the middle distance and moving north within the scheme itself along with part of the new signal-controlled junction including turning lanes off Station Road, aligned opposite to an already constructed segment of a distributor road (entrance to Castlefarm Residential Development). New pedestrian and cycling infrastructure, new road lighting and signage and soft landscaping including street trees will be visible in the new public realm. The selection and variation of the materiality of the architectural treatments and typologies of architecture assist in creating a high quality and finish to the built environment within a high quality public realm, and assist in reducing the apparent massing of the taller built elements in character area 1 in the middle distance.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium, given the presence of the four storey apartments under construction at Castlefarm to the right of view.

The magnitude of change is considered medium. The quality of effect is considered positive. The significance of effect is considered moderate. The duration of effect is considered permanent.

Impact Assessment

View No. 1	Quality of Effects	Significance of Effects	Duration Of Effects
	Positive	Moderate	Permanent

Existing View 2

This viewpoint is taken looking north-west along the L2228 (Station Road) towards the proposed site. The view depicts the existing road infrastructure Station Road and its contiguous land uses. To the left of view are the completed phases of The Meadows, Castlefarm, along with recent upgrades to public realm and road infrastructure ie. new public footpath, cycle track, wide grassed verge, road signage and road lighting which combine to create a suburban landscape setting.

To the right of view are a number of private residential dwellings, mainly bungalows and outbuildings set behind a variety of private boundary walls with gate access with a peri-urban character. This point along Station Road marks the entry to the Dunboyne Town from the east. The hedgerow to the right is indicative of the large tracts of agricultural fieldscape that exist to north of Station Road and east of the proposed development site. Signage for the train station is visible in the middle distance. There are a number of larger trees visible along Station Road and within the boundaries of private lands locally.

View No. 2	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Suburban)	Medium	Medium	Medium	Medium	Medium

Proposed View 2

The proposed development will be visible from this viewpoint. The part 5 and six storey apartment blocks in character area 1 will be visible over the roofs of the bungalows to the right of view, creating a new urbanised neighbourhood adjacent to a peri-urban setting to the right of view and suburban setting to the left of view, and suburban setting to the left of view.

The stepping of the roof line, modulation of the facades along with the selection and variation of the materiality of the architectural treatments assist in reducing the overall apparent massing of the taller built elements in character area 1 in the middle distance. The roofline of the proposed development does not appear higher than roof and ridgelines of the residential development at Castlefarm, thereby retaining substantial views of the skyline from this viewpoint.

The infrastructure of the proposed distributor road will be partially visible from this viewpoint. These proposals will be seen predominantly as new road markings, changes in surface materials and a new entry point into the lands to the north of Station Road, to the east of the railway station.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium, given the presence of the three storey houses and four storey apartments under construction at Castlefarm to the left of view.

The magnitude of change is considered medium. The quality of effect is considered neutral. The significance of effect is considered moderate. The duration of effect is considered permanent.

Impact Assessment

View No. 2	Quality of Effects	Significance of Effects	Duration of Effect
	Neutral	Moderate	Permanent

Existing View 3

This viewpoint is taken further west along Station Road looking west/north-west towards the proposed development site, at a distance of 30.4m from the site boundary. The view depicts the road infrastructure with bus stop adjacent to The Paddocks, Castlefarm (out of view to the left of image). There is substantial tree and hedgerow coverage visible in the middle distance to the south of Station Road and on both sides of the railway bridge. Hedgerow coverage along the north side of Station Road is less robust and sparse in places. Concrete post and wire fence as well as agricultural field-gates form the predominant boundary along a substantial edge of the site to the right of view. There is one visually significant tree visible within the proposed development site (right of view) a Monterey Pine.

The spire of St Peter and Paul's Roman Catholic Church is visible in the middle distance to the right of the railway pedestrian bridge structure. The large white curved roof structure of the Dunboyne Train Station is visible beneath, to the right of the church spire.

There is substantial visual intrusion within the view in the form of road signage, road lighting, power masts and overhead wires along Station Road itself and also on the access road into the train station as well as the train station car park.

View No. 3	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Suburban)	Medium	Medium	Medium	Medium	Medium

Proposed View 3

The proposed development will be visible from this location. The concrete post and wire fence, hedge planting, agricultural gates and overhead wire infrastructure will be removed along with views of the open fieldscape in the background along with the view of the spire of St Peter and Paul's Roman Catholic Church, the built environment and infrastructure of and railway at Dunboyne Train Station. This view will be replaced with a new urban development with the six storey apartment blocks at the southern gateway to the development visibly prominent on Station Road, sitting within a high quality public realm and proposed distributor road infrastructure.

New pedestrian and cycling infrastructure, new road lighting and signage and soft landscaping including street trees will be visible in the new public realm. The selection and variation of the materiality of the architectural treatments and typologies of architecture assist in creating a high quality and finish to the built environment within a high quality public realm, and assist in reducing the apparent massing of the taller built elements in character area 1 in the middle distance.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered high. The quality of effect is considered positive. The significance of effect is considered significant. The duration of effect is considered permanent.

Impact Assessment

View No. 3	Quality of Effects	Significance of Effects	Duration Of Effect
	Positive	Significant	Permanent

Existing View 4

This view is taken looking north/north-east towards the proposed development site from the eastern side of the railway footbridge, south of Dunboyne railway station. As the view is taken from an elevation, there is a much wider and open view of the landscape. The infrastructure of Dunboyne train station is visible in the foreground and into the middle distance, with road and circulation access to the train station itself and surface car park.

A large part of the proposed development site is visible throughout the middle distance of view. The lands present as a generally flat agricultural landscape with treelined hedgerows and one mature Pine tree (Monterey Pine) which is a visually significant feature locally. The 3-4 storey built fabric of Bracetown Business Park and Dunboyne Business Park along with road signage for the M3 motorway is visible in the distance.

The infrastructure associated with the train station with includes palisade fencing, road lighting, signage etc combine to create the effect of visual clutter within the foreground and middle-distance of the view.

View No. 4	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-Urban)	Medium	Medium	Medium	Medium	Medium

Proposed View 4

The proposed development will be visible from this viewpoint. A substantial portion of the open views across the fieldscape in the background of view along with tree and hedgerows will be removed and replaced with a new urban neighbourhood, mainly of character area 1. Two storey houses (housetype C, and B) and one storey bungalows (housetype F) will be visible in the middle distance and to the left of view behind the concrete panel wall. Single storey bungalows (housetype F) are visible to the south of the two storey units. The proposed new distributor road is visible in the middle distance to the north of the two storey creche, where there are open views into the proposed development site, with views of one of public open space the public realm, ornamental and street tree plantings. Another pedestrian access to the train station is visible to the south west of the creche. The upper levels of Duplex Block D and a portion of its southern façade is visible behind the creche building. The north western portion of the six storey apartment block A is visible to the right of view.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered medium. The quality of effect is considered neutral. The significance of effect is considered moderate. The duration of effect is considered permanent.

Impact Assessment

View No. 4	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Moderate	Permanent

Existing View 5

This viewpoint is taken looking north, on the eastern side of the entrance/drop off zone to Dunboyne train station. The built environment of the station itself along with the surface car park, lighting and furniture elements such as bollards, railings etc dominate the view. A part of the northern section of the proposed development site is visible in the middle distance. It presents as an agricultural, flat, open fieldscape, with tree lined hedgerows and open palisade fence boundaries to the railway car park. The Elton Court and Elton Drive residential areas are partially visible behind the railway station to the left of view.

View No. 5	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Suburban)	Medium	Medium	Medium	Medium	Medium

Proposed View 5

The proposed development will be visible from this location. The agricultural, flat, open fieldscape, with tree lined hedgerows in the background of view will be removed and replaced with a view of two storey residential development and will be viewed against the existing two storey established residential areas of Elton Court and Elton Drive to the left of view.

Housetypes F, C and B are visible over the concrete panel boundary wall in the middle distance. The facades of the two storey housetypes C and single storey housetype F to the left are finished in a buff brick, while the rear facades of housetypes C and B are finished in a self coloured render, which appears stark and light reflective in comparison to the warmer brick tones of housetype F. There is little visual relief or softening of the concrete boundary wall against the concrete coloured render to the rear of the facades of housetypes C and B. Housetype B has a higher ridge-line height to the right of view.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered medium. The quality of effect is considered neutral. The significance of effect is considered moderate. The duration of effect is considered permanent.

Impact Assessment

View No. 5	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Moderate	Permanent

Existing View 6

This viewpoint is taken looking north-east towards the proposed development site from within the adjacent residential area at Elton Drive. The view presents as a suburban residential setting comprised of two storey detached houses with driveways and ornamental plantings. Tree planting appears young mature prunus species. A boundary wall with ornamental plantings is visible in the background of view. The proposed development site is located in the background presenting as a relatively open view of the skyline between built environment locally.

View No. 6	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-urban)	Medium	Medium	Medium	Medium	Medium

Proposed View 6

The proposed development will be visible form this viewpoint. The upper floor and roofscape of housetype C, which are two storey terraced houses in character area 1, will be visible from this location. The buff brick and self coloured render finish to the facades is visible and reflective of the materiality of the two storey houses in Elton Drive.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered low. The quality of effect is considered neutral. The significance of effect is considered slight. The duration of effect is considered permanent.

Impact Assessment

View No. 6	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Slight	Permanent

Existing View 7

This viewpoint is taken looking west towards the proposed development site from an area of open space at Willow Park, which is north of Elton Drive. The view presents as a green open space with mown grass, tree planting with a pathway for circulation through the housing estate. In the middle distance, the boundary with the proposed development site is comprised of a wall with tree plantings. Some of the two storey semi-detached houses on Willow Park (right and left of view) are visible. The proposed development site is located in the background presenting as a relatively open view of the skyline between built environment locally.

View No. 7	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-urban)	Medium	Medium	Medium	Medium	Medium

Proposed View 7

Some elements of the proposed development will be visible from this viewpoint. The upper levels of proposed two storey houses will be visible through the existing tree planting, particularly during winter months to the right and left of view. These are housetypes C1 and C in character area 2. A large are of public open space (POS 2) is located in the centre background of view. The red line indicates the location of the proposals in the background of view, which will be predominantly screened from view by distance, the boundary wall to Willow Park and existing boundary tree plantings.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered negligible. The quality of effect is considered neutral. The significance of effect is considered not significant. The duration of effect is considered permanent.

Impact Assessment

View No. 7	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Not Significant	Permanent

Existing View 8

This viewpoint is taken looking east towards the proposed development site from within the adjacent residential area, Silver Birches. The view presents as a suburban residential setting comprised of two storey detached houses with driveways and ornamental plantings and street trees. A boundary wall with ornamental plantings is visible in the background of view. The proposed development site is located in the background presenting as a relatively open view of the skyline between built environment of the Silver Birches and Silver Birch Cresent.

View No. 8	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-urban)	Medium	Medium	Medium	Medium	Medium

Proposed View 8

The proposed development will be visible from this viewpoint. The second floor and roofscape of the two storey houses, housetype C, character area 2, within the proposed development will be visible from this location. The buff brick and self coloured render finish to the facades is visible and reflective of the materiality of the two storey houses locally. The roofscapes of the proposed built environment will be viewed lower than the rooflines of the existing two storey residential house within the Silver Birches.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered low. The quality of effect is considered neutral. The significance of effect is considered slight. The duration of effect is considered permanent.

Impact Assessment

View No. 8	Quality of Effects	Significance of Effects	Duration Of Effect
	Neutral	Slight	Permanent

Existing View 9

This viewpoint is taken looking south-east towards the proposed development site from within the adjacent residential area at The Elms. The view presents as a suburban residential setting comprised of two storey detached houses with driveways and ornamental plantings. Tree planting appears young mature prunus species. A boundary wall with ornamental plantings is visible in the background of view. The proposed development site is located in the background presenting as a relatively open view of the skyline between built environment of the two storey houses locally.

View No. 9	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-urban)	Medium	Medium	Medium	Medium	Medium

Proposed View 9

The proposed development will be visible from this viewpoint. The upper floor and roofscape of housetype C1, which are two storey, semi-detached with higher ridge lines in character area 3, will be visible from this location. The buff brick and self coloured render finish to the facades is visible and reflective of the materiality of the two storey houses in The Elms.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered medium.

The magnitude of change is considered low. The quality of effect is considered neutral. The significance of effect is considered slight. The duration of effect is considered permanent.

Impact Assessment

View No. 9	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Slight	Permanent

Existing View 10

This view is taken at the eastern edge of the northern access road to the residential enclave (east of the Navan Road) and north of Cedar Drive. The view depicts an area of open space that bounds the northern edge of this residential area and south of the northern portion of the proposed development site. The area is predominantly mown grass with a boundary ditch, scrub, some hedgerow and scattered tree planting. There are rough pathways located in the middle distance that are used by dog walkers. A portion of the boundary is enclosed with green metal palisade fence. The development site lies beyond the fence line with hedgerows and treelines. A portion of the roofscape of Bracetown Business and aerial mast is visible in the background. A high voltage pylon is visible to the right of view along with overhead wire infrastructure.

View No. 10	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Peri Urban)	Low to Medium	Low to Medium	Low to Medium	Low to Medium	Medium

Proposed View 10

The proposed development be visible from this viewpoint. The open view of rural flat landscape in the background of view will be removed and replaced with the proposed development. The part 5 and part apartment building (Block C) will be visible and prominent on the skyline to the left of view as it steps up towards the northern boundary of the site. The proposed infrastructure of the bridge over the rail line as part of the proposed distributor road along with some proposed tree plantings will be visible to the left of view.

To the right of view, the upper levels of Duplex Block J will be visible along with the upper levels of the two storey houses along the north east of the site. The concrete boundary panel wall running along the eastern edge of the site will be visible behind the rail line palisade fence and scrub vegetation.

Once complete, the proposed development may be viewed as a new urban neighbourhood adjacent to and extending the existing residential built fabric to the west of the rail line (Old Fairgreen, Mill Farm, The Elms, Silver Birches etc).

However, the height and scale of the proposed part 5 and part 6 apartment building of Block C will be visually prominent in the landscape, alongside the existing pylons and overhead wire infrastructure and will remove any positive features of the open rural landscape, tree lines and hedgerows in the background of view.

Given the location and context of the view, the overall landscape sensitivity is considered low to medium and the landscape capacity is considered medium given the peri-urban context of the view on the outskirts of Dunboyne Town.

The magnitude of change is considered high given the height and scale of Block C. The quality of the effect is considered negative. The significance of effect is considered significant. The duration of effect is considered permanent.

Impact Assessment

View No. 10	Quality of Effects	Significance of Effects	Duration Of Effects
	Negative	Significant	Permanent

Existing View 11

This view is taken on Station Road looking east towards the railway bridge. The view is dominate by local road infrastructure. The Larchfield residential area is located to the left of view. With substantial boundary tree planting, and a low boundary wall with railing. The bridge over the rail line is visible in the distance with tree plantings within adjacent private properties on either side. A new two storey residential development is under construction in the middle distance in Elton Grove, left of view. To the immediate left of view is a three storey apartment complex, Kellys Court. A visually poor concrete wall with pillars and railings forms the boundary to Station Road. The public realm of this suburban character area is visually poor.

View No. 11	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes (Sub-urban)	Low to Medium	Low to Medium	Low to Medium	Low to Medium	Medium to High

Proposed View 11

The proposed development will be visible from this viewpoint. Four of the upper levels of the part 5 to part 6 storey apartment building (Block A) on the south west of the proposed development at Station Road will be visible from this location. The upper levels and the portions of the western façade of Block B will be visible through the gaps of two storey houses being constructed on Elton Grove, left of view, in the middle distance. Given the change in topography and distance from the site, the higher built elements within the proposed development will appear lower than the roofline of the three storey apartments in Kellys Court to the left of view, and will appear partially over the roof line of the houses under construction on Elton Grove.

Once complete, the proposed development will be viewed as part of the existing built fabric locally.

Given the location and context of the view, the overall landscape sensitivity is considered low to medium and the landscape capacity is considered medium to high given the suburban context of the view on the outskirts of Dunboyne Town.

The magnitude of change is considered negligible. The significance of effect is considered ranging from imperceptible to not significant. The duration of effect is considered medium term.

Impact Assessment

View No. 11	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Imperceptible to Not Significant	Medium Term

Existing View 12

This view is taken on the R147 looking west/south-west toward the site. The view is taken adjacent to some private residential properties. The view depicts a relatively flat agricultural landscape setting with hedgerows and treelines forming boundaries to the fieldscape.

View No. 12	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes	Medium	Medium	Medium	Medium	Low

Proposed View 12

A portion of the upper level of the six storey apartment building at the south of the site will be visible from this viewpoint. There will be glimpse views of the built fabric of the some of the three and four storey duplex buildings through the trees during the winter months when trees are not in leaf. The red line indicates the location of the proposals in the background of view.

A substantial portion of the proposed development will not be visible as it will be screened from view by distance, intervening topography and vegetation. It is anticipated that any views experienced from this viewpoint will be medium term (seven to 15 years years) as intervening tree planting grows and fully screens the proposed development from view. Once complete, there will be glimpse views of the proposed development during winter months.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered low.

The magnitude of change is considered negligible. The quality of effect is considered neutral. The significance of effect is considered 'Not Significant' The duration of effect is considered medium term.

Impact Assessment

View No. 12	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Not significant	Medium Term

Existing View 13

This view is taken further north-west along the R147 looking south-west towards the site. This location is more elevated as the lands and road rise over the adjacent M3 motorway. The built fabric of eastern edge Dunboyne town is visible in the middle distance. The agricultural fields, hedgerows and treelines that form the proposed development site are also visible adjacent to the towns build edge.

View No. 13	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes	Medium	Medium	Medium	Medium	Medium

Proposed View 13

The proposed development will be visible from this viewpoint. Some of the views of the wider landscape, tree lines and canopies in the middle-distance will be removed and replaced with the built environment of the proposed development forming a new urban edge to the east of Dunboyne town.

The predominantly low rise two storey housing typologies along the peri urban eastern edge of Dunboyne town will be replaced with a new neighbourhood comprising of two storey houses, three and four storey duplexes, and part 5 to part 6 storey apartment buildings set within a number of public and communal open spaces. The layout of the proposed development with views into the scheme through open spaces and soft landscaping will be apparent from this view. The lower levels of the six storey apartment buildings on Station Road will be screened from view by intervening tree planting.

The variation of housing typologies and materiality, the varying heights from one to six storeys will assist in retaining some of the key elements of the characteristics of this lowlands landscape character type such as some of the mature tree planting canopies and fieldscapes in the wider landscape and in the middle distance.

The proposed development will be viewed from this location as a change from peri-urban to urban and an extension of the existing urban built fabric of Dunboyne Town from this viewpoint, which is sequential, and will be experienced by motorists using the R147.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered low to medium.

Given the existing urban context of the proposed development, and the visibility of the some of the built fabric of Dunboyne town in the right of view in the middle distance, the quality of the effect is considered neutral.
The magnitude of change is considered medium. The significance of effect is considered moderate. The duration of effect is considered permanent.

It is considered that the proposed development will not have a significant effect on this view.

Impact Assessment

View No. 13	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Moderate	Permanent

Existing View 14

This view is taken from the R147/M3 overpass looking south-west towards the site. The elevated location provides a more open view towards the proposed development site. The wider urban fabric of the eastern portion Dunboyne town is visible. Prominent features include the church tower of St Peter and Paul's Roman Catholic Church, extensive mature tree planting and fieldscape in the wider landscape, electricity pylons and overhead wire infrastructure and aerial masts. The built infrastructure of the M3 motorway is visible in the foreground.

View No. 14	Landscape Character Type	Landscape Character Sensitivity	Visual Sensitivity	Overall Landscape Sensitivity	Landscape Value	Landscape Capacity
	Lowland Landscapes	Medium	Medium	Medium	Medium	Medium

Proposed View 14

The proposed development will be visible from this viewpoint. Some of the views of the wider landscape will be removed and replaced with the built environment of the proposed development forming a new urban edge to the east of Dunboyne town. The predominantly low rise two storey housing typologies along the east of the Dunboyne will be replaced with a new neighbourhood comprising of two storey houses, three and four storey duplexes, and part 5 to part 6 storey apartment buildings set within a number of public and communal open spaces. The layout of the proposed development with views into the scheme through open spaces and soft landscaping will be apparent from this view.

The variation of housing typologies and materiality, the varying heights from one to six storeys will assist in retaining some of the key elements of the characteristics of this lowlands landscape character type. Prominent features retained include the church tower of St Peter and Paul's Roman Catholic Church, mature tree planting canopies and fieldscapes in the wider landscape and in the middle distance. Views of the wider urban fabric of the north of Dunboyne Town will also be retained. The taller elements of the proposed development will be visually prominent, particularly to the north and south of the site. The electricity pylons will retain some visual prominence but will be viewed against the taller six storey apartment block to the north of the site.

The proposed development will be viewed as an extension of the existing urban built fabric of Dunboyne Town from this viewpoint which is sequential, and will be experienced by motorists using the R147/M3.

Given the location and context of the view, the overall landscape sensitivity is considered medium and the landscape capacity is considered low.

Given the existing urban context of the proposed development, and the visibility of the some of the built fabric of Dunboyne town in the right of view in the middle distance, the quality of the effect is considered neutral. The magnitude of change is considered medium. The significance of effect is considered moderate. The duration of effect is considered permanent

It is considered that the proposed development will not have a significant effect on this view.

Impact Assessment

View No. 14	Quality of Effects	Significance of Effects	Duration Of Effects
	Neutral	Moderate	Permanent

References

Environmental Protection Agency, 2002 'Guidelines on the Information to be Contained in Environmental Impact Statements'
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DoEHLG, 2000. 'The Landscape and Landscape Assessment Draft Guidelines for Planning Authorities".

Web Resources

www.meath.ie
www.googleearth.com
www.geohive.ie
www.heritagemaps.ie
www.npws.ie

12 ARCHAEOLOGY AND ARCHITECTURE

12.1 Introduction

The following chapter details an archaeological, architectural and cultural heritage assessment undertaken in advance of a Large-Scale Residential Development at Dunboyne, County Meath. The proposed development is located within agricultural fields to the east of Dunboyne town and west of the Tolka River. The assessment aims to ascertain any potential likely and significant impacts that the proposed development may have on the existing archaeological and architectural resource.

The chapter is authored by Faith Bailey of IAC Archaeology (MA, BA (Hons), MIAI, MCIfA). Faith is a Member of the Chartered Institute for Archaeologists and the Institute of Archaeologists of Ireland. She is also a licence eligible archaeologist and has over 20 years' experience in the compilation of archaeological, architectural and cultural heritage assessments for all types of development across the island of Ireland.

This study determines, as far as reasonably possible from existing records, the nature of the archaeological and architectural resource in and within the vicinity of the development using appropriate methods of study. The study area is defined as an area measuring 250m from the proposed development.

Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets (CIfA 2020a). In order to compile a complete baseline, a site inspection is carried out to complement the results of the desk-based assessment. This leads to the following:

- Determining the presence of known archaeological heritage sites and architectural sites that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Suggested mitigation measures based upon the results of the above research.

The study involved detailed interrogation of the archaeological, architectural and historical background of the development area. This included information from the Record of Monuments and Places of County Meath, the Meath County Development Plan (2021-2027); the topographical files of the National Museum of Ireland; cartographic and documentary records. A number of previous archaeological investigations have also be carried out within the proposed development area, including geophysical survey and archaeological test trenching.

12.1.1 Definitions

In order to assess, distil and present the findings of this study, the following definitions apply:

- 'Archaeological heritage' is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).
- 'Architectural heritage' is applied to structures, buildings, their contents and settings of an (assumed) age typically younger than AD 1700.

- the term 'cultural heritage', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

12.2 Methodology

12.2.1 Paper Survey

The following sources were consulted as part of the paper study of the proposed development:

- Record of Monuments and Places for County Meath;
- Sites and Monuments Record for County Meath;
- National Monuments in State Care Database;
- Preservation Orders List;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Meath County Development Plan (2021-2027);
- Aerial photographs;
- Place Name Analysis;
- Excavations Bulletin (1970–2024); and
- National Inventory of Architectural Heritage.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as 'un-located sites' and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. SMR sites are also listed on a website maintained by the Department of Housing, Local Government and Heritage (DoHLGH) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument.

The Minister for the DoHLGH may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be

reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The topographical files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological, architectural and cultural heritage landscape of the proposed development.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The Meath County Development Plan (2021-2027) was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey and Google Earth.

Place Names are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

Excavations Bulletin is a summary publication that has been produced every year since 1970. This summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. This information is also available online (www.excavations.ie) from 1970–2024.

The National Inventory of Architectural Heritage is a state initiative established under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 tasked with making a nationwide record of significant local, regional, national and international structures, which in turn provides county councils with a guide as to what structures to list within the Record of Protected Structures. The NIAH have also carried out a nationwide desk-based survey of historic gardens, including demesnes that surround large houses.

12.2.2 Consultation

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural heritage background of the baseline environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage – the Heritage Service, National Monuments and Historic Properties Section: Record of

Monuments and Places; Sites and Monuments Record; Monuments in State Care Database; Preservation Orders and Register of Historic Monuments;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Meath County Council: Planning Section; and
- Historical and Ordnance Survey Maps

12.2.3 Guidance and Legislation

The following legislation, standards and guidelines were consulted as part of the assessment:

- National Monuments Act, 1930 to 2014;
- The Planning and Development Acts, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2015, EPA;
- Guidelines on the Information to be contained in Environmental Impact Assessment Report 2022, EPA;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands; and
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Local Government (Planning and Development) Act 2000.

12.2.4 Impact Assessment Methodology

The quality and type of an effect can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports [EPA 2022]:

- negative effect: 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 effect: A change which does not affect the quality of the environment; or
- positive effect: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage sites.

The below terms are used in relation to the archaeological and architectural heritage and relate to whether a site will be physically affected upon or not:

- direct effect: 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 effect: 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.
- Neutral: No effects (either negative or positive) are predicted.

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 effects	***An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.***
Moderate effects	***An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.***
Significant effects	***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 effects	***An effect which obliterates sensitive characteristics.***

Table 12.1: Significance of Effect Definitions (as defined by the EPA 2022 Guidelines, 50-52)

12.3 The Existing Receiving Environment

12.3.1 Archaeological, Architectural and Historical Background

The proposed development area is located within the townlands of Dunboyne and Castlefarm, Parish of Dunboyne and Barony of Dunboyne, County Meath. There are three recorded monuments located within the proposed development area consisting of a ring ditch (ME050-031), an enclosure (ME050-032001) and a further ring ditch (ME050-032002) (Figure 12.1). There are five recorded archaeological sites within the 250m study area. The zone of archaeological potential (ME050-021) that surrounds Dunboyne town is located c. 578m west of the proposed development.

There are no protected structures included on the RPS within 250m of the proposed development. There are, however, two structures listed on the NIAH building survey (Figure 12.1). These structures consist of the Dunboyne Bridge (NIAH 14341002), c. 22m southwest and the Dunboyne water tower (NIAH 14341001), c. 36m southwest of the proposed development area (Figure 12.1).

12.1.1 Prehistoric Period

Mesolithic Period (c. 8000–4000 BC)

Recent discoveries may suggest the possibility of a human presence in the southwest of Ireland as early as the Upper Palaeolithic (Dowd and Carden 2016); however, the Mesolithic period is the earliest time for which there is clear evidence for prehistoric human colonisation of the island of Ireland. During this period people hunted, foraged and gathered food and appear to have led a primarily mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product of the production of flint implements.

Whilst there is no evidence for Mesolithic activity recorded in the study area of the proposed development area there are some indications in the wider landscape. During the construction of the M3 a late Mesolithic site at Clowanstown 1 (Bennett 2006:1533, Reg No. E003064), north of Dunshaughlin, was revealed in a raised bog, which was a lake land area during prehistory. Evidence for food processing and consumption was identified

through the recovery of acorn and hazelnut shells as well as animal remains. Furthermore, four conical fish baskets recorded on the former lakebed.

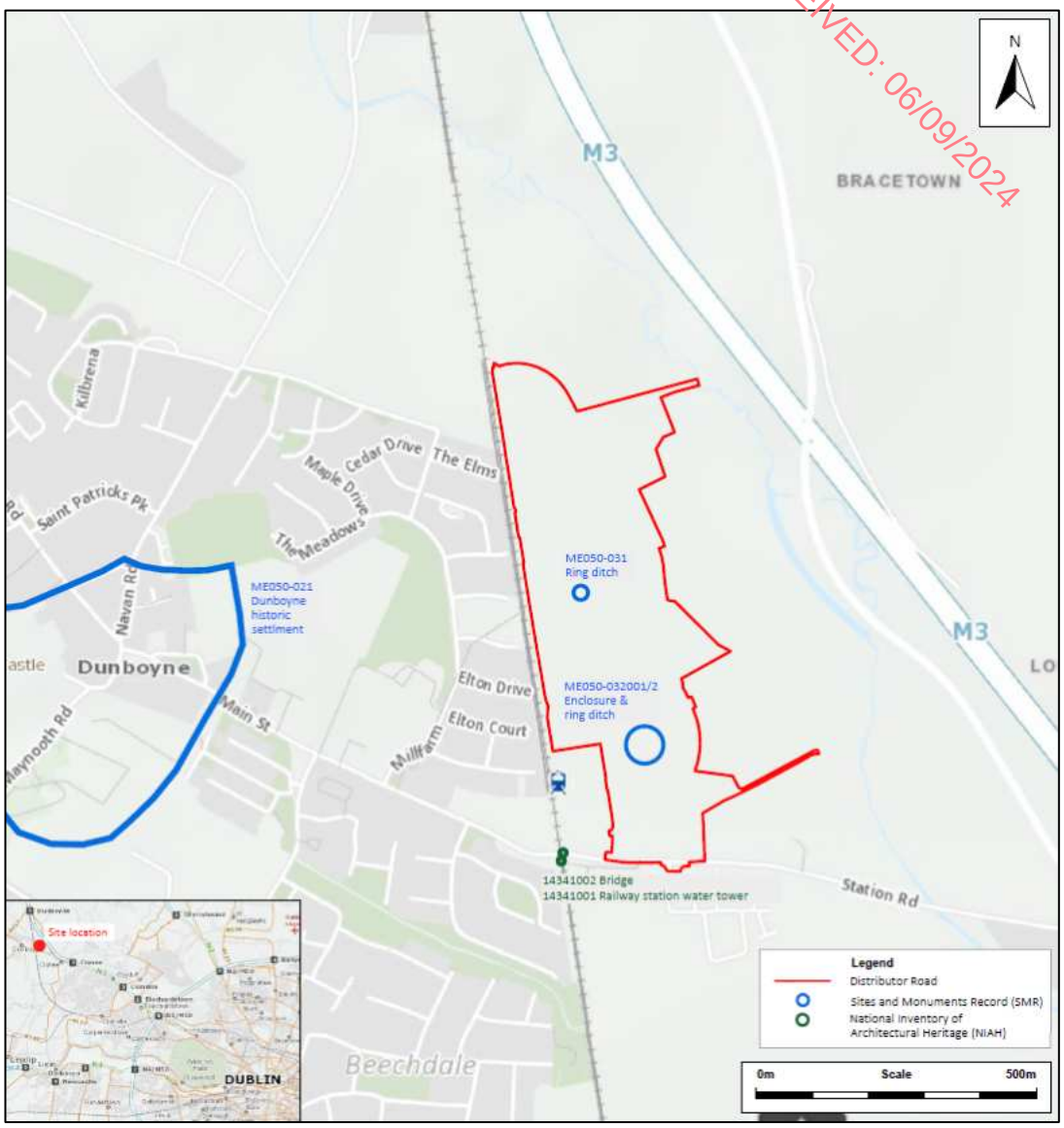

Figure 12.1 Proposed development area showing recorded archaeological and architectural heritage sites in the study area

Neolithic Period (c. 4000–2500 BC)

During this period communities became less mobile and their economy became based on the rearing of stock and cereal cultivation. The transition to the Neolithic was marked by major social change. Communities had expanded and moved further inland to more permanent settlements. This afforded the development of agriculture, which demanded an altering of the physical landscape. Forests were rapidly cleared and field boundaries were constructed. Pottery was also being produced, possibly for the first time. The advent of the Neolithic period also provided the megalithic tomb. There are four types of tomb in Ireland, namely the Court Cairn, Portal, Passage and Wedge; of which the latter style straddles the Neolithic to Bronze Age transition.

Meath has experienced a long sequence of prehistoric settlement, which appears to have been heavily focused close to the Boyne River. The early prehistory of the region is dominated by several important cores including the Boyne Valley, Tara, Fourknocks and, further to the west, Loughcrew. The most renowned of these centres of the large Neolithic complexes at Newgrange, Knowth and Dowth. These are protected as part of

the UNESCO World Heritage Site of *Brú na Bóinne.* The proposed development area is located in the southernmost section of the county where Neolithic tombs are less common.

As part of archaeological works associated with the construction of the M3 motorway to the east of the development, a number of excavations revealed the presence of Neolithic populations. Within the northern part of Dunboyne townland, c. 631m north of the development, a kidney-shaped pit (ME050-061) that contained charcoal, cremated bone, sherds of Neolithic pottery and a flint blade was revealed at Dunboyne 3 (Bennett 2005:AD10, Consent No. A017/013).

Bronze Age (c. 2500–800 BC)

This period is marked by the use of metal for the first time. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society. Megaliths were replaced in favour of individual, subterranean cist or pit burials that were either in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often, but not always, accompanied by a pottery vessel. Barrows are earthen burial monuments, which consist of a circular area surrounded by a fosse, often with an external bank. The term ring ditch is sometimes applied to barrows with a flat centre. These sites often contain a cist burial. A ring ditch (ME050-031) is located within the proposed development area and was first identified through geophysical survey (Grimson and Regan 2017, Licence No. 17R0075) and archaeologically tested (McIlreavy 2017, Licence No. 17E0399). A further ring ditch (ME050-032002) was revealed within a D-shaped enclosure (ME050-032001) within the southern extent of the proposed development area.

Approximately 267m east of the proposed development, two circular pits (ME050-046) containing cremated bone and charcoal were recorded at Dunboyne 1 (Bennett 2005:AD8, Consent No. A017/007). Aside from the cremated bone, no additional finds were recovered but the pits likely represented the remains of Bronze Age funerary activity.

Over 7,000 burnt mounds or *fulacht fia* sites have been recorded in the country and c. 1,500 examples excavated, making them the most common prehistoric monument in Ireland (Waddell 2022, 164). Although burnt mounds of shattered stone occur as a result of various activities that have been practised from the Mesolithic to the present day, the Bronze Age has long been believed to have seen the peak of this activity. Dating evidence from a growing number of burnt mounds, suggests activities resulting in burnt mounds were being carried over a span of 3,500 years in Ireland (Hawkes 2018). They are typically located in areas where there is a readily available water source, often in proximity to a river or stream or in places with a high-water table. In the field burnt mounds may be identified as charcoal-rich mounds or spreads of heat shattered stones, however, in many cases, the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless, even disturbed spreads of burnt mound material often preserve the underlying associated features, such as troughs, pits and gullies, intact.

In the townland of Bracetown, c. 117m to the east of the proposed development area, a disturbed spread (ME050-045) of heat-fractured stone and charcoal was found prior to the construction of the M3 (Bennett 2005:AD4, Consent No. A017/006). There were no discernible associated features except for four shallow depressions. It is possible that the site is related to burnt mound activity on the banks of the River Tolka (ibid).

Iron Age Period (c. 800 BC – c. AD 500)

There is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as Late Iron Age and Roman Ireland (Cahill Wilson 2014). Yet this period is distinguishable from the rather rich remains of the preceding Bronze Age and subsequent early medieval period, by a relative paucity

within the current archaeological record. The Iron Age in Ireland is problematic for archaeologists as few artefacts dating exclusively to this period have been found and without extensive excavation it cannot be determined whether several monument types, such as ring-barrows or standing stones, date to the late Bronze Age or Iron Age. It is likely that there was significant continuity in the Iron Age, with earlier monuments re-used in many cases.

There are no known Iron Age sites within the landscape surrounding the proposed development, although ring ditches, can sometimes date to this period.

Early Medieval Period (AD 500–1100)

The early medieval period is depicted in the surviving sources as entirely rural characterised by the basic territorial unit known as *túath*. Byrne (1973) estimates that there were probably at least 150 kings in Ireland at any given time during this period, each ruling over his own *túath*. During this period, enclosures known as ringforts were common throughout the country. These enclosed farmsteads were intimately connected to the division of land and the status of the occupant. A *bóaire*, for example, was a free farmer possessed of a plough team of oxen with household servants, workmen and dependants of various statuses, from free to unfree (MacCotter 2008). It is likely that many of the single univallate ringforts relate to residences of *bóaire*. Larger, more prominently placed ringforts, with more than one enclosing wall or bank are likely to have been the residences of local kings (Stout 1997). Extant dating evidence suggests they were primarily built between the 7th and 9th centuries AD (ibid, 22–31).

At this time, modern County Meath was part of *Míde* and *Brega*, which together formed one of the five provinces of early medieval Ireland. It contained a large power centre that formed a political, ceremonial, cultural and social centre of both the territory and Ireland, which was located at Tara. The proposed development was located within the territory that was controlled by the *Ciannachta*. They were the most prominent of the subject peoples of *Brega* during the early medieval period. Although typically associated with the Baronies of Ferrad, County Louth and Duleek, County Meath there is every indication that their influence extended much further south, well into County Dublin.

The ringfort or *rath* is the most common indicator of settlement during the early medieval period. One of the most recent studies of early medieval settlement enclosures has suggested that there is potential for at least 60,000 such sites to have existed on the island (O'Sullivan et al. 2014, 49). One of the most common indicators of settlement during this period is the ringfort (Stout 1997). Ringforts were often constructed to protect rural farmsteads and are usually defined as a broadly circular enclosure delineated by a bank and ditch. Ringforts can be divided into three broad categories – univallate sites, with one bank or ditch; multivallate sites with as many as four levels of enclosing features and platform or raised ringforts, where the interior of the ringfort has been built up. These enclosed sites were intimately connected to the division of land and the status of the occupant.

A recent geophysical survey (Dowling 2023, Licence No. 23R0167) carried out across lands to the south of the proposed development identified a probable early medieval ringfort in the townland of Castlefarm. The D-shaped enclosure (ME050-032001) as mentioned above, may date to this period. Whilst this enclosure is not a ringfort it has the potential to represent a similar settlement type comprising an enclosed farmstead and associated radial fields.

The early medieval period also saw the construction of a large number of ecclesiastical sites throughout Ireland during the centuries following the 5th century AD. These early churches tended to be constructed of wood or post-and-wattle (O'Sullivan et al. 2014). Many of the sites, some of which were monastic foundations, may have originally been defined by an elliptical or circular enclosing wall or bank similar to those found at the

coeval secular sites mentioned above. This enclosing feature was likely built to define a sacred area. Multiple enclosing elements can be seen at some of the more important sites with the inner enclosure surrounding the sacred area of church and burial ground and the outer enclosures providing boundaries around living quarters and craft areas. Where remains of an enclosure survive, it is often the only evidence that the site was an early Christian foundation as the buildings, typically constructed in wood, have long since disappeared.

The closest potential early medieval church (ME051-006) is located c. 419m southeast of the proposed development area in the townland of Loughsallagh. It comprises a church (ME051-006), graveyard (ME051-006001) and holy well (ME051-006002) dedicated to St Michael. This is a typical arrangement of early medieval ecclesiastical sites.

Medieval Period (AD1100–1600)

Norman involvement in Ireland began in 1169, when Richard de Clare and his followers landed in Wexford to support Diarmait MacMurchadha, deposed King of Leinster, in his bid to regain the Kingdom of Leinster. Two years later de Clare (Strongbow) inherited this kingdom through marriage to Diarmait's daughter Aoife. By the end of the 12th century, the Normans had succeeded in overthrowing the previous ruling elites in much of the country. Large land grants were given by the King to his followers meaning that great swathes of land were parcelled out among the Norman elites in a process known as sub-infeudation. The territories of Dunboyne (and Mullingar, County Westmeath), were granted by Hugh de Lacy to the Petit family in 1172. In 1227, the parish of Dunboyne of endowed to the newly constructed Augustinian priory at Mullingar by Ralph Petit, then Bishop of Meath. It remained associated with the priory until its suppression in 1538. The Petits continued to hold the manor of Dunboyne until it passed to Sinolda, William le Petit's daughter and her husband Thomas Butler. After this, it was part of the extensive Butler lordship.

The remains of a possible Anglo-Norman motte and bailey castle (ME050-021007) were investigated within Dunboyne in 2004 (Bennett 2004:1230, Licence No. 04E1040), where a ditch was identified during excavations. The exposed section possessed a length of c. 72m, was 8m wide and 4.5m deep and was located to the immediate north of the Georgian Dunboyne Castle. The ditch appears to have gone out of use during the 13th century. Edmond Butler was permitted to build a castle in Dunboyne in 1475-6, which may have replaced this earlier castle. A later tower house (ME050-021005) is recorded at this location c. 847m west of the proposed development, which may be part of the castle that Butler constructed in the 15th century.

A recorded medieval church is also located within the town to the northwest of the castle location. This church (ME050-021001) was listed as the second most wealthy in the deanery after Ratoath at 40 marks, in the ecclesiastical taxation (1302-06) of Pope Nicholas IV (Cal. doc. Ire., 5, 254). The manor of Dunboyne developed into a town and was a small borough with a weekly market and a yearly fair in the 13th century. The zone of archaeological potential that surrounds the town (ME050-021) is located c. 578m west of the proposed development area.

Post-medieval Period (AD 1600-1800)

The ending of the Williamite Wars saw the beginning of a comparative politically calm era, which allowed the country's landowners the security to experiment with the latest styles of architecture without the need to refer to defensive matters. Initially, constraints on available resources resulted in mansions of a relatively modest scale and relatively plain appearance. As the Irish aristocracy's sense of security grew over the following decades, their greater access to wealth helped foster a shift towards more ostentatious buildings

The 18th century saw a dramatic rise in the establishment of large residential houses around the country. The large country house was only a small part of the overall estate of

a large landowner and provided a base to manage land that could be located nationwide. During the late 18th and early 19th centuries, lands immediately associated with the large houses were generally turned over into a parkland estate (demesne). Although the creation of a parkland landscape involved working with nature, rather than against it, considerable constructional effort went into its creation. Earth was moved, field boundaries disappeared, streams were diverted to form lakes and quite often roads were completely diverted to avoid travelling anywhere near the main house or across the estate. Whilst the designed landscapes possessed an ornamental form, they still retained a valuable function; providing grazing for livestock and habitats for game.

During the post-medieval period, Dunboyne village was a small settlement with Lewis noting in 1837 that it had a population of 470 people and 82 houses and that the town was burnt down during the 1798 rebellion. The first edition Ordnance Survey map of 1843 shows the village centre c. 787m west of the proposed development. To the immediate south of the village, a large demesne landscape is shown in association with Dunboyne Castle, a Georgian property thought to contain the earlier fabric of a tower house (ME050-021005), which also occupied the site of an earlier Anglo-Norman motte and bailey castle with the country house, built in c. 1764. The northeastern extent of this demesne landscape is located c. 479m to the west of the development.

During this period the proposed development area occupied open fields located to the west of a series of gravel pits and mills close to the Dunboyne and Bracetown townland boundary. Mills were the most common form of rural industry within the Irish landscape during this period, with multiple examples located along the length of the River Tolka.

In 1995, the ruins of Dunboyne corn mill, located c. 45m east of the proposed development, was subject to survey by Emmet Byrnes (1995, 5-8). The survey included sections of the mill race. The eastern edge of the proposed development area includes a narrow part of the former mill pond, although this feature has now been backfilled and returned to arable production. The associated mill race, which was extant in 1995, has also been removed from the landscape. The mill building, which is now wholly covered by vegetation, was described as being rectangular in plan measuring 13.7m by 6.8m, and constructed from limestone. Two entrances were present in the southern wall with associated windows. Further smaller windows were identified at the first-floor level, although even in 1995, the building was heavily overgrown. The Ordnance Survey Field Name Book for the Parish of Dunboyne (1836) refers to the Dunboyne corn mill and states that the mill was "... in the northeast part of Dunboyne Townland. An undershot wheel which is supplied by the Tolka" (ibid).

12.3.2 Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2024) has revealed that previous investigations have been carried out within the proposed development and its surrounding environs. These are summarised below.

In 2017 a geophysical survey was carried out by Earthsound Archaeological Geophysics (Grimson and Regan, 2017, Licence No. 17R0075), within the proposed development (Figure 12.2). This survey confirmed the presence of ME050-032001 (enclosure), ME050-032002 (ring ditch) and ME050-031 (ring ditch). A number of additional potential archaeological anomalies were also identified. The survey was followed by the programme of archaeological testing in 2017 (McIlreavy 2017, Licence No. 17E0399). This confirmed the presence and extent of the recorded enclosure (ME050-032002). The two ring ditches (ME050-032001/ 031), were not tested as it was intended to preserve the features in-situ (AA1-2 2017). The enclosure likely represents a settlement site that either dates to the early medieval or medieval period. Two pieces of 13th century ceramic from the topsoil in trenches 45 and 51 were recorded.

Isolated archaeological activity was also identified within AA3, 4 and 5 (2017). Evidence of this activity consisted of a charcoal deposit in trench 2 (AA3 2017), charcoal within the upper ditch fill in trench 3 (AA4 2017), and a charcoal and ash deposit encountered within trench 28 (AA5 2017). The nature or date of the activity could not be discerned during testing, but the features were deemed to possess moderate archaeological potential. AA6 (2017), consisted of two parallel curvilinear ditches that may have represented a former trackway through the landscape. The results of the geophysical survey and archaeological testing are shown in Figure 12.2, including Archaeological Areas 1 to 6.

In 2018 a programme of geophysical survey was carried out within the northern portion of the proposed development area (Leigh 2018, Licence No. 18R0015) (12.3). The survey identified a number of potential archaeological anomalies, including a possible ring ditch. In 2018, archaeological testing was carried out on these lands (Kavanagh 2018, Licence No. 17E0399ext). A total of four areas containing features of archaeological potential were identified within test trenches (AA1-4 2017ext). The most significant features included a partial, circular enclosure, c. 18m in diameter, and two associated pits and a hearth (AA3 2017ext), a proposed ring ditch enclosure, c. 3.2m in diameter (AA1 2017ext), and a possible kiln (AA4 2017ext). Linear and pit features in AA2 (2017ext) were considered to be of less significance. AA1 is located to the immediate north of the proposed development area. The results of the geophysical survey and archaeological testing are shown in Figure 12.3, including Archaeological Areas 1 to 4.

In 2018 geophysical survey was carried out between the railway and Navan Road, to the immediate west of the proposed development area (Leigh 2018, Licence No. 18R0015). This work identified a number of archaeological anomalies, which were targeted by a programme of archaeological testing in 2018 (Kavanagh 2019b, Licence No. 18E0587). A total of four areas containing features of archaeological potential (AA1-4 2018) were identified during testing. AA1 (2018) comprised a large (6m x 1.8m) curvilinear feature filled with charcoal lenses and red baked clay. AA2 (2018) comprised a sub-oval pit marked on one edge by red baked clay. AA3 (2018) comprised an enclosure, (14.5m in diameter) with an associated internal linear feature and AA4 (2018) consisted of a possible large kiln. It was not possible to date any of the features during the course of the works, but the remains of the enclosure may have been related to prehistoric activity.

Archaeological monitoring (Bennett 2008:979, Licence No. 08E0988) was carried out to the immediate west of the proposed development area during the construction of a car park associated with Dunboyne Station. Nothing of archaeological significance was identified during the course of the works.

A site off Station Road to the immediate south of the proposed development was archaeologically monitored intermittently throughout 2020 (Bennett 2020:165, Licence No. 19E0525). This followed on from geophysical survey by J.M. Leigh Surveys in 2019 (Licence No. 19R0197). Two phases of agricultural field boundaries and drainage were revealed within the site. The existing field system appears to have been in place in the 19th century, although an earlier field system, possibly dating to the 17th century, was also uncovered. Two waste pits of unknown date were also excavated. One of these was truncated by one of the probable 17th century ditches, indicating they predated this phase of field layout.

Archaeological testing at Area 5 was carried out in advance of the M3 Clonee-North of Kells Motorway Scheme in 2004 (Bennett 2005:AD4, Consent No. A017/006), c. 117m to the east of the proposed development. A total of 119 test trenches were excavated through the townlands of Dunboyne, Pace and Bracetown. Bracetown 1 revealed the truncated remains of a burnt-stone spread, located within the floodplain of the River Tolka and may represent the remains of a *fulacht fia* (ME050-045). Four small shallow

depressions were located beneath the burnt-stone spread but no trough was identified and apart from the occasional fragment of animal bone, no finds were recovered.

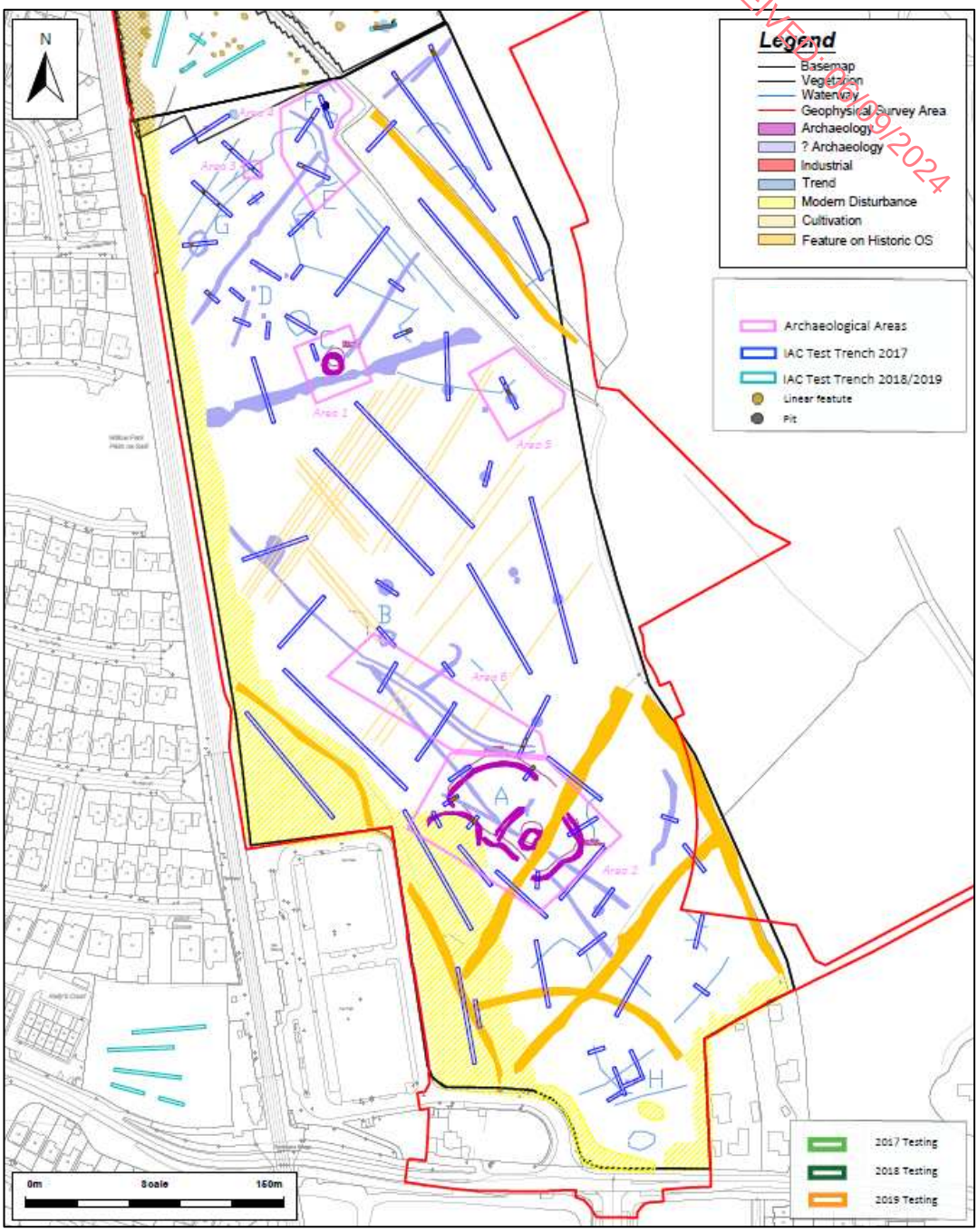

Figure 12.2 Results of geophysical survey and archaeological testing carried out in 2017 within the proposed development area

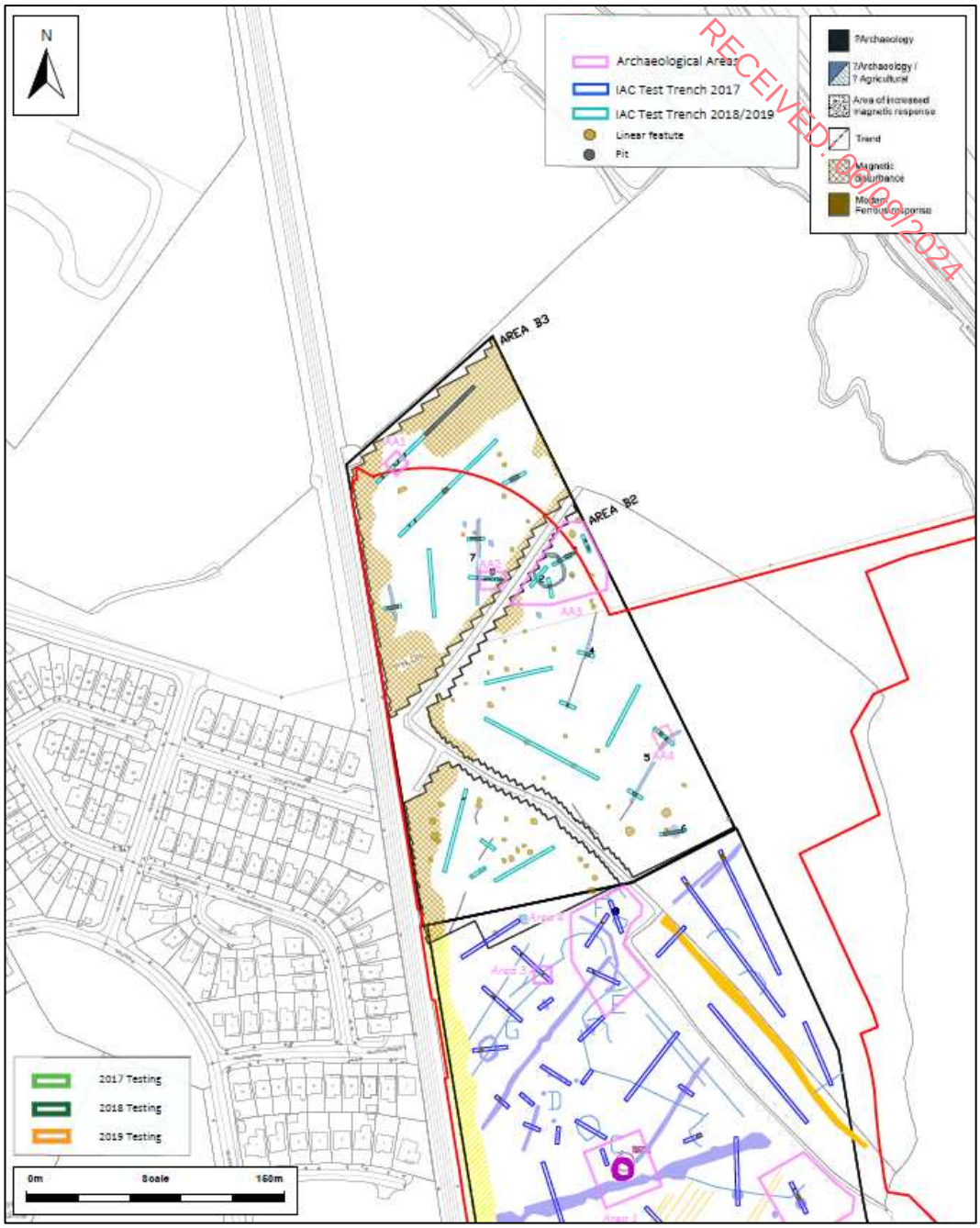

Figure 12.3 Results of geophysical survey and archaeological testing carried out in 2018 and 2019 within the northern portion of the proposed development area

Four trenches were excavated within lands to the west of Dunboyne Train Station (Kavanagh 2019a, Licence No. 18E0282) c. 195m to the west of the proposed development. No features of archaeological potential were uncovered within this area (Area C) as the site had been heavily disturbed by previous construction works

A number of archaeological investigations have been undertaken in the wider area, especially within the centre of Dunboyne and along the Navan Road, but nothing of archaeological significance has been revealed (Bennett 2003:1393, Licence No. 03E1939; Bennett 2003:1392, Licence No. 03E0262; Bennett 2001:964, Licence No. 01E0135; Bennett 2002:1451, Licence No. 01E0887).

12.3.3 Cartographic Analysis

William Petty's Down Survey: Maps of the Barony and Parish of Dunboyne, c. 1655
This map depicts the barony and the parish of Dunboyne. Whilst it is schematic it contains details of boundaries within the townlands especially in the town of Dunboyne and the areas immediately surrounding it. The site of the proposed development is depicted as fields. A dashed line, indicating the path of the Navan Road, is located to the west of the site. No buildings are marked within the approximate location of the proposed development or its surrounding environs.

William Larkin's Map of County Meath, 1812
The proposed development area is shown as an open landscape, with the Navan Road again marked to the west. No other detail is depicted. The settlement of Dunboyne is marked to the west, along with the detail of the demesne landscape surrounding Dunboyne Castle (ME050-021007).

First Edition Ordnance Survey Map, 1843, scale 1: 10,560
This is the first detailed depiction of the landscape containing the proposed development area, which is located within approximately ten fields and traverses the townland boundaries between Dunboyne and Castlefarm/ Loughsallagh (Figure 22.4). Three structures are marked within the footprint of the proposed development area, fronting onto the road to the south. A small section of the mill pond associated with Dunboyne corn mill is located in the eastern extent of the development. The mill is marked on either side of the mill race running south from the pond. The pond is fed by a mill race from the north, which is crossed by part of the development area. A sluice gate is marked c. 150m north of the mill and the site of a gravel pit is annotated to the northeast in proximity to the millrace.

Second Edition Ordnance Survey Map, 1871, scale 1:10,560
There is very little change to the area of the proposed development by the time of this map. In the wider area, the Dublin and Meath Railway line has been constructed to the west, defining the western boundary of the site. Dunboyne Station has also been developed c. 79m to the west and includes Dunboyne Bridge (NIAH 14341002) carrying Station Road across the tracks.

Ordnance Survey Map, 1911, scale 1: 2,500
By the time of this map, there are no major changes of note within the proposed development (Figure 12.5). There are now only two structures marked within the proposed development area, fronting onto Station Road to the south. Dunboyne mill is now marked as being in ruins and is no longer labelled. The mill pond is no longer extant and whilst parts of the mill race are marked, the feature does not appear to be in use. A stream runs through the landscape from Navan Road to Station Road, passing through the proposed development area in a northwest-southeast direction. Dunboyne Bridge (NIAH 14341002) and Dunboyne water tower (NIAH 14341001) are depicted to the southwest.

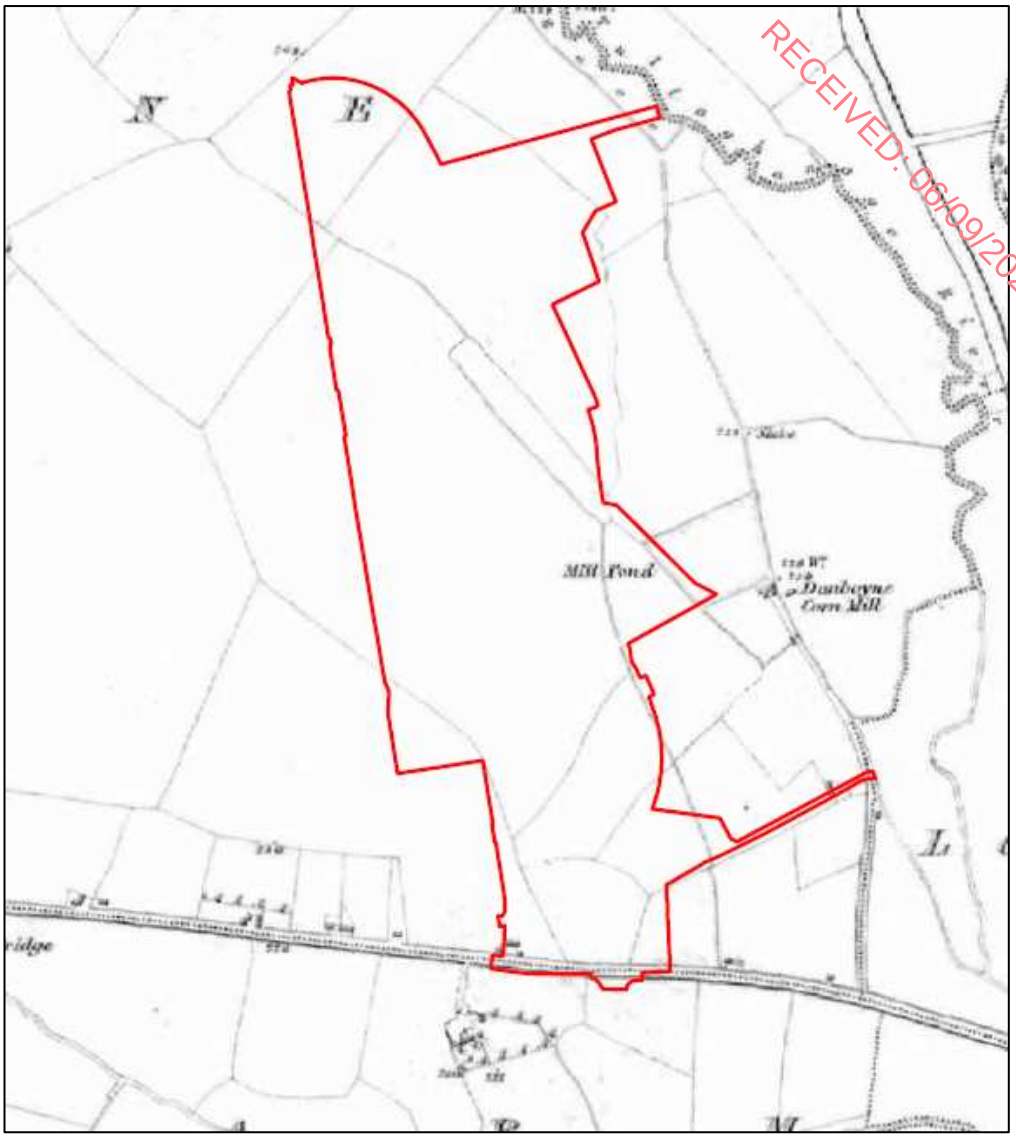

Figure 12.4 Extract from the first edition OS map (1843) showing the proposed development area

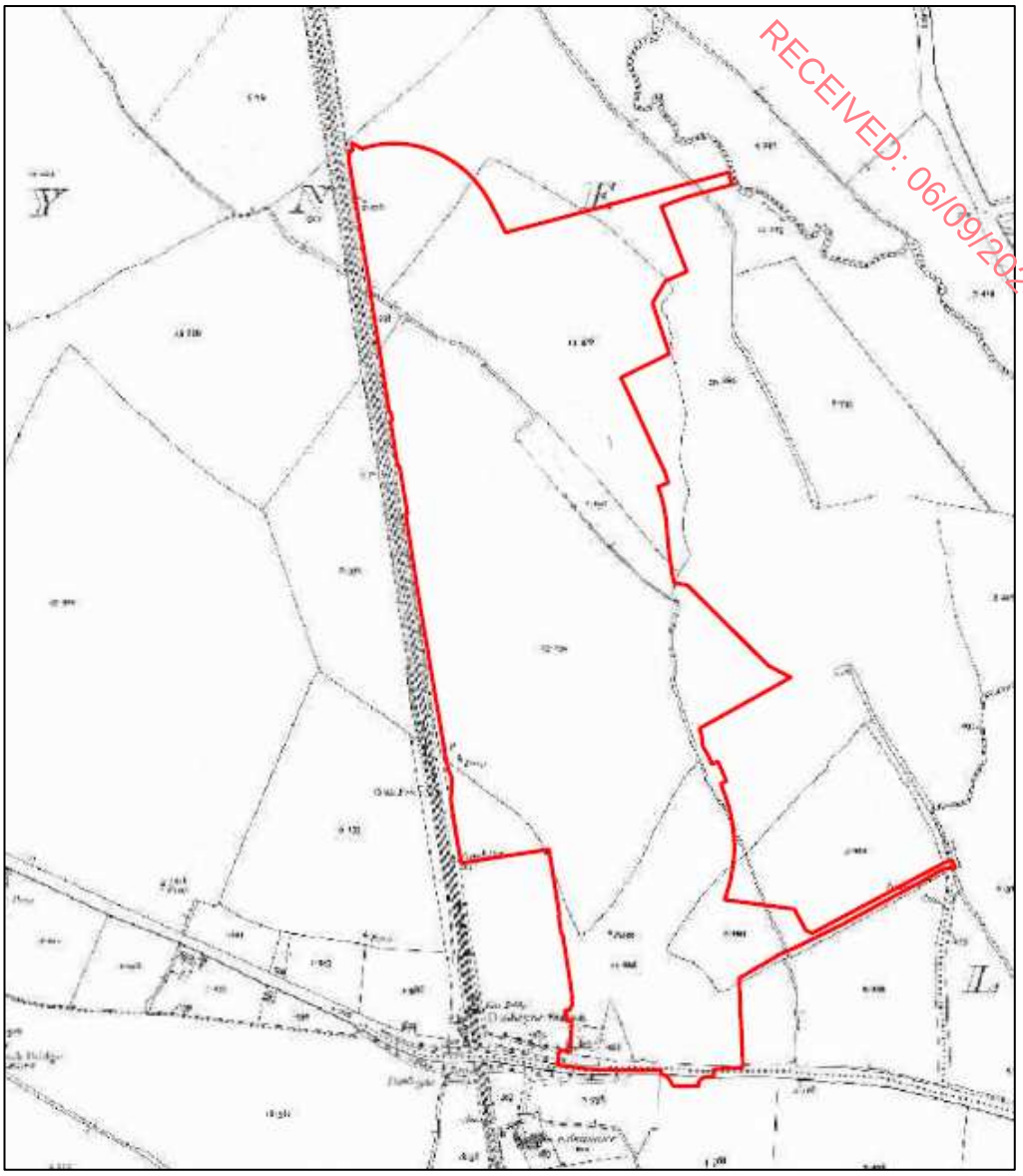

Figure 12.5 Extract from the 1911 OS map showing the proposed development area

12.3.4 Meath County Development Plan

12.3.4.1 Record of Monuments and Places

The Meath County Development Plan (2021-2027) recognises the statutory protection afforded to all RMP sites under the National Monuments Legislation (1930–2004). The development plan lists a number of aims and objectives in relation to archaeological heritage (Appendix 12.3).

There are three recorded monuments located within the proposed development area consisting of a ring ditch (ME050-031), an enclosure (ME050-032001) and a further ring ditch (ME050-032002). As per national policy and in accordance with the development plan, it is proposed to preserve these site in-situ as part of the residential development.

There are a further five archaeological sites within the 250m study area (Appendix 12.1, Table 12.2). The zone of archaeological potential (ME050-021) that surrounds Dunboyne town is located c. 578m west of the proposed development.

RMP NO.	LOCATION	CLASSIFICATION	DISTANCE
ME050-031	Dunboyne	Ring ditch	Within the site
ME050-032001	Dunboyne	Enclosure	Within the site
ME050-032002	Dunboyne	Ring ditch	Within the site
ME050-045	Bracetown	Fulacht fia	c. 117m southeast
ME051-019002	Loughsallagh	Ring ditch	c. 133m east
ME051-019001	Loughsallagh	Ring ditch	c. 181m east
ME051-019	Loughsallagh	Enclosure	c. 187m east
ME050-047	Loughsallagh	Road - road/trackway	c. 238m northeast

Table 12.2: Recorded archaeological sites in the study area

Record of Protected Structures

The Meath County Development Plan (2021-2027) recognises the value of the built heritage to the city and is committed to the protection and enhancement of this heritage by providing measures for the protection of architectural heritage. These include the establishment of a Record of Protected Structures (RPS) and the designation of Architectural Conservation Areas (ACAs) (Appendix 12.4).

There are no protected structures included on the RPS within 250m of the proposed development.

Architectural Conservation Areas

The proposed development is not located within an ACA.

12.3.4.1 National Inventory of Architectural Heritage

Building Survey

A review of the architectural survey was undertaken as part of this assessment and included buildings within the 250m study area. There are two structures listed on the NIAH building survey, neither of which are listed as protected structures (Table 12.3, Appendix 12.2).

NIAH NO.	LOCATION	DESIGNATION	DISTANCE
14341002	Dunboyne Bridge	NIAH	c. 22m southwest
14341001	Dunboyne water tower	NIAH	c. 36m southwest

Table 12.3: Recorded NIAH structures in the study area

12.3.5 Topographical Files of the National Museum of Ireland

Information on artefact finds from the study area in County Meath has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

No stray finds are recorded from within the proposed development area or its immediate environs.

12.3.6 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area, held by the Ordnance Survey (1995–2013), Google Earth (2003–2024), Bing Maps and Apple Maps, was carried out as part of this assessment. Ring ditches ME050-031 and ME050-032002 and enclosure ME050-032001 are visible on coverage from 2013 (Google Earth, December 2013). The coverage also revealed that the site has largely remained as greenfield. Ortho images from 2006 demonstrated groundworks within the southwestern corner of the site associated with the construction of the Dunboyne Station car park. No additional previously unrecorded archaeological sites are present within the footprint of the proposed development or its environs.

12.3.7 Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. The term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word *baile* refers to a place. It is possible that the word is derived from the Old English *tun land* and meant 'the land forming an estate or manor' (Culleton 1999, 174). The proposed development is located within the townland of Dunboyne, with a small section located in Castlefarm to the south.

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes were given more precise definitions (ibid.). Larger tracks of land were divided into a number of townlands, and named Upper, Middle or Lower, as well as Beg and More (small and large) and north, east, south, and west (Culleton 1999, 179). By the time the first Ordnance Survey had been completed a total of 62,000 townlands were recorded in Ireland.

The proposed development area is located within the townland of Dunboyne, which is also the name of the parish and the barony, signifying the importance of the settlement during the medieval period. It is a large townland and likely originally defined the settlement itself as well as surrounding common land. A very small section is located in Castlefarm to the south with Station Road forming the townland boundary separating the two.

12.3.8 Placename Analysis

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s, when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and Logainm.ie.

Dunboyne is likely to derive from *Dún Búinne,* or a similar derivation and refers to the fort or stronghold of *Búinne.*

Castlefarm, the townland to the south, relates directly to the lands associated with Dunboyne Castle and is English in origin.

Loughsallgh (*An Loch Salach*), the townland to the east, derives from 'Dirty Lake' and may refer to lands that flooded from the River Tolka.

Gunnocks and Bracetown are located to the east of the proposed development and the Tolka River. Bracetown may derive from '*Bregia*', who were Irish inhabitants of this portion of Meath. Gunnocks may be a corruption of *Gonóg,* which is noted on Logainm.ie in 1836 as possibly meaning 'a little gun'. The use of the name was recorded in 1540.

12.3.9 Cultural Heritage

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architecture. However, it also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period.

The remains of Dunboyne corn mill, located to the east of the proposed development area and the site of the mill pond (no longer extant) are considered to be cultural heritage features within the landscape, albeit the structure and associated features are extremely denuded.

The railway and its associated infrastructure are also an important cultural heritage feature. This was not in use up until recent years when the line was re-established. The original infrastructure was upgraded during the course of these works.

12.3.10 Field Inspection

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development and its surrounding environs were inspected (Figure 12.1).

The proposed development area occupies five agricultural fields that are bounded to the south by Station Road and to the west by the station car park and railway. Open fields are located to the north and east, along with the River Tolka and the M3. The fields slope gently from the north to the south and where field boundaries remain extant, they are mature and overgrown (Plates 12.1-3). The development area will include a section of mature field boundary, which on the historic OS maps is shown as a watercourse (Plate

12.3). A large portion of this boundary has been removed and no water was noted. The boundary is marked on the first edition OS map and contains a number of mature trees. The presence of the watercourse in the landscape, as well as the River Tolka to the east, lends archaeological potential to the landscape, as confirmed during previous programmes of archaeological testing.

The eastern most section of the proposed development area includes a small, narrow section of the mill pond associated with Dunboyne mill. The mill is very overgrown and not visible and the pond site has been backfilled and is under arable production. The path of the mill race has also been backfilled although part of the northern section may remain present, although is heavily overgrown. The proposed development will include services connecting to the River Tolka and will cross the path of the mill race.
No previously unrecorded features of archaeological, architectural or cultural heritage significance were identified during the course of the field inspection, with the exception of Dunboyne Mill and the site of associated infrastructure. None of the archaeological areas identified within the site during geophysical survey and archaeological testing possess upstanding remains.

Plate 12.1 Proposed development area, facing north

Plate 12.2 Existing car park at Dunboyne Station, facing west

Plate 12.3 Mature field boundary within the footprint of the proposed development area, facing east

12.4 Summary

The proposed development area is located within the townlands of Dunboyne and Castlefarm, Parish of Dunboyne and Barony of Dunboyne, County Meath. There are three recorded monuments located within the site, which consist of a ring ditch (ME050-031), an enclosure (ME050-032001) and a further ring ditch (ME050-032002). All three sites will be preserved in-situ as part of the development, and in accordance with national and regional policy. There are a further five archaeological sites within the 250m study area. The zone of archaeological potential (ME050-021) that surrounds Dunboyne town is located c. 578m west of the proposed development.

There are no protected structures included on the RPS within 250m of the proposed development area. There are, however, two structures listed on the NIAH building survey. These structures consist of the Dunboyne Bridge (NIAH 14341002), c. 22m southwest and the Dunboyne water tower (NIAH 14341001), c. 36m to the southwest.

A review of the Excavations Bulletin (1970-2024) and the available excavation reports has revealed that a large percentage of the proposed development footprint has been subject to geophysical survey and archaeological testing in 2017 and 2018/2019. The only areas not assessed as part of previous works comprise a proposed compound and services runs, to the east of the site. The initial programme of works containing the southern portion of the development revealed the presence of the three recorded monuments (ME050-032001/2, ME050-031) and a number of other areas of archaeological potential (AA1-6 2017). These comprised a charcoal deposit in AA3 (2017), charcoal within the upper ditch fills in AA4 (2017), and charcoal and ash deposits encountered within AA5 (2017). AA6 (2017) consisted of two parallel curvilinear ditches that may have represented a former trackway through the landscape. These identified archaeological areas are located within the footprint of the proposed development area.

Geophysical survey and archaeological testing within the northern portion of the proposed development revealed four areas of archaeological potential. The most significant features included a partial, circular enclosure and two associated pits and a hearth in AA3 (2017ext), a potential ring ditch enclosure (to the immediate north of the development area) in AA1 (2017ext) and a possible kiln in AA4 (2017ext). Linear and pit features in AA2 (2017ext) were considered to be of less significance.

Examination of the historic mapping shows that the proposed development area has been located within an agricultural landscape since the post-medieval period. This was characterised by a number of fields. A watercourse once crossed the landscape in a northwest-southeast direction, although the majority of this has since been removed.

Dunboyne corn mill is located c. 45m east of the proposed compound area associated with the development. Today it is ruinous and heavily overgrown. The site of a mill pond, formerly associated with the mill, is partially located within the proposed compound area, but this has been infilled and formed part of an agricultural field. The mill race that once fed the mill from the River Tolka, has also been removed.

The available aerial imagery was examined as part of this assessment and confirmed the presence of ring ditches ME050-031 and ME050-032002 and enclosure ME050-032001, which are visible on coverage from 2013. Images from 2006 demonstrated groundworks within the southwestern corner of the site associated with the construction of the Dunboyne Station car park. No previously unrecorded sites of archaeological potential were noted within the footprint of the proposed development area, or surrounding environs.

A field inspection has been carried out as part of the assessment and this confirmed the arable nature of the landscape containing the proposed development. None of the recorded archaeological sites, or the archaeological areas identified during testing, possess any surface expression. The ruins of Dunboyne corn mill are present but very heavily overgrown and not accessible. This site, although not subject to any statutory protection, is of cultural heritage significance. The associated mill pond and mill race has no surface expression having been infilled and subsumed back into an agricultural landscape.

12.5 Characteristics of the Proposed Development

Permission is sought for a 10-year planning permission for a Large-Scale Residential Development, which in summary, will consist of the following: -

a) Construction of 853 no. residential units as follows:

1) 398 no. Apartment Units in 3 no. 1-6 storey blocks (A-C) consisting of 121 no. 1-bedroom apartments; 258 no. 2-bedroom apartments; and 19 no. 3-bedroom apartments. All apartment units will be provided with private open space areas in the form of balconies/terraces.

2) 112 no. Duplex Units in 6 no. 2-4 storey blocks (D-H) consisting of 60 no. 2-bedroom units, 52 no. 3-bedroom units. All duplex units will be provided with private open space areas in the form of balconies/terraces.

3) 343 no. 1-3 storey houses consisting of 4 no. 2-bedroom units, 308 no. 3-bedroom units, 31 no. 4-bedroom units. Each house will have an associated rear private garden.

b) Residential amenity spaces in Block A (approx. 212 sqm), Block B (approx. 284 sqm) and Block C (approx. 81 sqm);

c) The proposed development also includes a proposed café (approx. 196sqm) with associated outdoor seating area, medical unit 1 (197 sqm), retail unit 2 (approx. 217 sqm), retail unit 3 (approx. 170 sqm), community room (approx. 52 sqm), 2 no. creche facilities (approx. 394 sqm and approx. 400 sqm);

d) Provision of 1192 no. car parking spaces across the development site (inclusive of accessible parking spaces (27 no.) and 1,634 no. bicycle parking spaces for residents and visitors of the scheme provided throughout the development site.

e) 13 no. landscaped public open space amenity areas (approx. 23,925 sqm total);

f) 7 no. communal open spaces associated with the proposed apartments and duplexes will be provided in the form of landscaped areas located in the vicinity of these units (approx. 6,279 sqm total);

g) Section of the Dunboyne Eastern Distributor Road (approx. 865 m long) from the southern site boundary with Station Road (L2228) to the northern boundary of the site. This includes all associated vehicular and pedestrian accesses, carriageways, paths and junctions;

h) New vehicular, pedestrian and cycle connections to Dunboyne Train Station and closure of the existing vehicular access from Station Road (L2228);

i) Upgrade of Station Road (L2228) – proposed Distributor Road junction;

j) Alterations to 2no. roundabouts on the R147 (Old Navan Road):
a. Roundabout at the junction of Station Road (L2228) and Old Navan Road (R147)
b. Roundabout at the entrance to Clonee Village on the R147, at the Ard Elain apartment scheme and Dunboyne Tennis Club
k) All associated site development works, services provision, infrastructural and drainage works, internal access roads, homezones and cycle and pedestrian infrastructure, provision of ESB substations, bin stores, public lighting, landscaping, and boundary treatment works.
l) Temporary areas allowing for construction: 5m buffer zone along the Distributor Road, compound and spoil storage area

12.6 Potential Effect of the Proposed Development

12.6.1 Construction Phase

Archaeology
As part of the proposed development it is intended to preserve the recorded archaeological monuments within the site in-situ (ring ditches ME050-031 and ME050-032002 and enclosure ME050-032001) (Figure 12.6). It remains possible that inadvertent ground disturbances associated with the development may have a direct, negative and permanent impact on the archaeological remains. Prior to the application of mitigation, the significance of effect has the potential to range from slight to significant.

Ground disturbances associated with the construction phase will result in a direct, negative and permanent impact on the archaeological remains identified during archaeological investigation on site. These comprise a charcoal deposit in AA3 (2017), charcoal within the upper ditch fills in AA4 (2017), a charcoal and ash deposit encountered within AA5 (2017) and two parallel curvilinear ditches in AA6 (2017). Further effected archaeological areas include AA1 2017ext (potential ring ditch), linear and pit features in AA2 (2017ext) and AA3 2017ext (partial enclosure and associated features). Prior to the application of mitigation significance of effect will be significant.

It remains possible that small or isolated archaeological features survive beneath the current ground level, outside the footprint of the excavated test trenches, which would be directly, negatively and permanently affected by ground disturbances associated with the construction phase. Effects may be moderate to significant in significance, depending on the significance of any remains that are present.

Architectural Heritage
No effects during construction are predicted upon the architectural heritage resource.

Cultural Heritage
Dunboyne corn mill will not be affected by works associated with the construction phase. The site of the mill pond will be affected by ground disturbances within the compound area to the east of the proposed development. Effects, prior to the application of mitigation, will be direct, negative and permanent with a moderate significance of effect.

12.6.2 Operation Phase

Archaeology
As part of the proposed development it is intended to preserve the recorded archaeological monuments within the site in-situ (ring ditches ME050-031 and ME050-032002 and enclosure ME050-032001) (Figure 12.6). It remains possible that inadvertent ground disturbances associated with the operation of the development may have a direct, negative and permanent impact on the archaeological remains. Prior to the

application of mitigation, the significance of effect has the potential to range from slight to significant.

Architectural Heritage
No effects during operation are predicted upon the architectural heritage resource.

Cultural Heritage
During the operation phase, there will be an indirect, temporary, negative effect on the setting of Dunboyne corn mill, due to the operation of the compound area to the west. Given the poor condition and overgrown nature of the site, this is a slight negative effect.

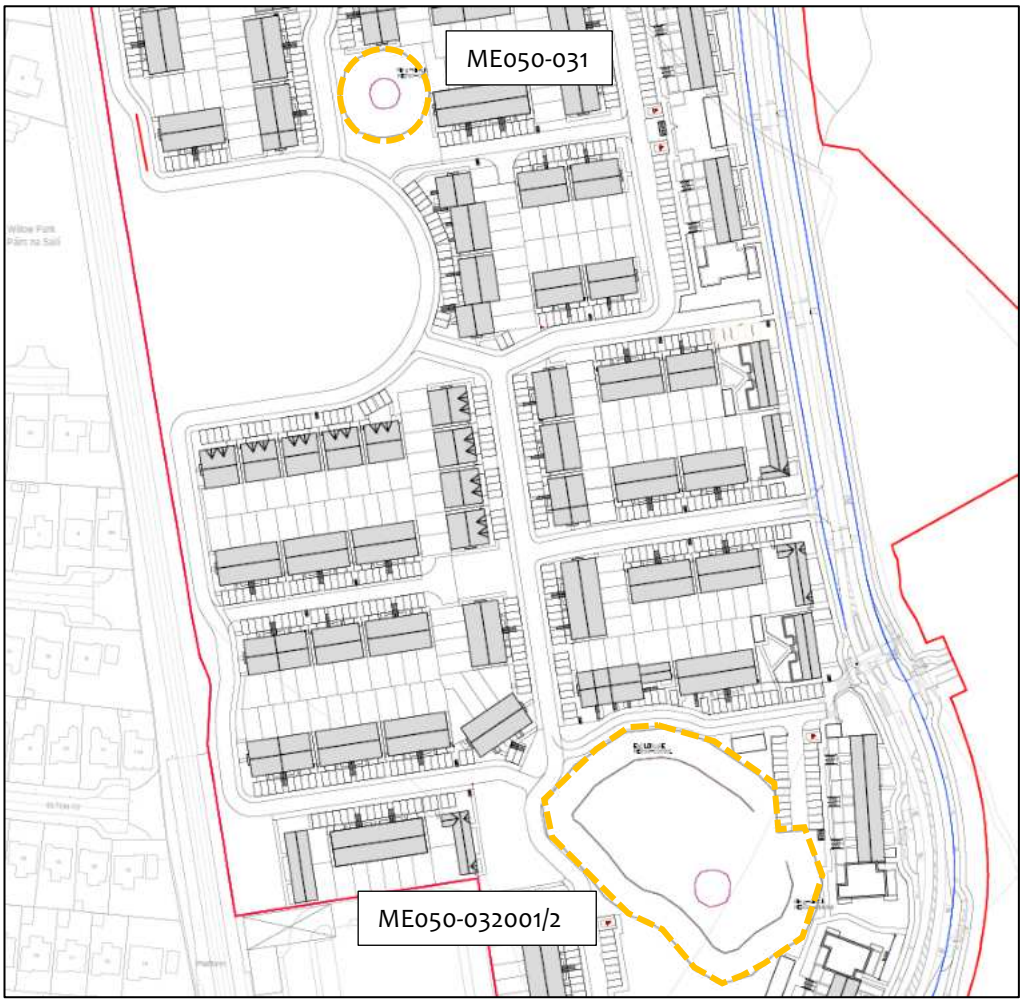

Figure 12.6 Proposed development layout showing the buffers established around ME050-031 and ME050-032001/2

12.7.3 Do-Nothing Impact

If the proposed development were not to proceed, there would be no negative effects on the archaeological, architectural and cultural heritage resource.

12.7.4 Cumulative

Construction Phase
All proposed and permitted developments within the study area of the proposed development have been reviewed. No cumulative effects upon the archaeological, architectural or cultural heritage resource have been identified. This is due to the fact that

the recorded monuments within the development area will be preserved in-situ and the remaining archaeological sites will be preserved by record and no other effects are predicted (from other developments) on the identified archaeological and architectural heritage resource in the study area.

Operation Phase
No cumulative effects during operation are predicted upon the archaeological, architectural and cultural heritage resource.

Do-Nothing Impact
If the proposed development were not to proceed, there would be no cumulative effects on the archaeological, architectural heritage or cultural heritage resource.

12.8 Mitigation Measure (Ameliorative, Remedial or Reductive Measures)

Archaeology
Preservation in-situ is the preferred method to conserve the archaeological resource and is this is reflected by national and regional policy. The recorded monuments within the site will be preserved in-situ within green areas associated with the development (ring ditches ME050-031 and ME050-032002 and enclosure ME050-032001). In order to prevent inadvertent impacts at construction and operation, these sites will be fenced off and in advance of construction a management plan will be submitted to the Local Authority, detailing the preservation of the sites during construction and operation. The management plan will be compiled by a suitably qualified archaeologist.

It is not possible to preserve the archaeological sites identified during geophysical survey and archaeological testing (charcoal deposit in AA3 (2017), charcoal within the upper ditch fills in AA4 (2017), a charcoal and ash deposit encountered within AA5 (2017) and two parallel curvilinear ditches AA6 (2017), AA1 2017ext (potential ring ditch), linear and pit features in AA2 (2017ext) and AA3 2017ext (partial enclosure and associated features)). As such, the sites will be fully preserved by record (archaeological excavation). This will be undertaken by an archaeologist under licence to the DoHLGH. Full provision will be made available for the required fieldwork and post-excavation works.

All topsoil stripping within the proposed development area will be monitored by a suitably qualified archaeologist. If any further features of archaeological significance are identified, including any remains associated with Dunboyne Mill, further mitigation may be necessary, such as preservation in situ or by record. Any further mitigation will be subject to approval from the National Monuments Service of the DoHLGH.

Architectural Heritage
No mitigation measures are necessary are there are no predicted impacts on the architectural resource.

Cultural Heritage
All topsoil stripping at the site of the mill pond will be monitored by a suitably qualified archaeologist. If any further features of archaeological significance are identified further mitigation may be necessary, such as preservation in situ or by record. Any further mitigation will be subject to approval from the National Monuments Section of the DoHLGH.

12.9 Residual Effect of the Proposed Development

Following the completion of all mitigation measures, there will be no significant residual impacts upon the archaeological, architectural or cultural heritage resource.

12.10 Monitoring

The mitigation measures will also function as a monitoring system during construction to allow the further assessment of the scale of the predicted effects and the effectiveness of the mitigation measures.

12.11 Reinstatement

Not applicable.

12.12 Difficulties Encountered

No difficulties were encountered during the compilation of this assessment.

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13 TRAFFIC AND TRANSPORTATION

13.1 Introduction

13.1.1 Overview

This chapter has been produced to assess and evaluate the likely impact of a proposed Large-Scale Residential Development (LRD) on the local Dunboyne transportation network, as well as identifying proposed mitigation measures to minimise any identified impacts during both the construction stage and operational stage.

Traffic surveys were commissioned for this assessment with the objective of providing up to date background information relating to the existing traffic movement patterns across the local road network.

The purpose of this chapter is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of any transport impact generated as a result of the proposed LRD at Station Road, Dunboyne, Co. Meath. The scope of the assessment covers transport and sustainability issues including vehicular and pedestrian access, cyclist and public transport connectivity and capacity. The findings of the assessment contained within this report are based on existing and proposed road infrastructure layout arrangements (e.g. mitigation works that are to be implemented by the applicant), site visits, traffic observations and junction vehicle turning count data commissioned specifically for the purpose of this assessment

Access to the proposed development will be facilitated via the Dunboyne Eastern Distributor Road (DEDR) which is subject to a separate planning application to be lodged soon. The DEDR is put forward as an objective of the Meath County Development Plan 2021-2027. Under MOV OBJ 52 of the plan, it is stated that it is an objective of the Council *"to continue to support the delivery of key strategic roads within Dunboyne to include an eastern distributor road to facilitate rail-focused development, new bus routes and reduce traffic levels in the town."*

13.1.2 Expertise

This chapter of the EIAR has been prepared by Shauna Kelly, Transportation Engineer, who holds a BAI and MAI in Civil, Structural & Environmental Engineering from Trinity College Dublin 2021. This chapter has been reviewed and approved by Thomas Jennings, who holds a BEng (Hons) in Civil Engineering and a MSc in International Transportation from Cardiff University (1998). Thomas is a Director with DBFL Consulting Engineers with 25 years' experience as a traffic engineer and transport planner with particular expertise in network management and design. Thomas currently leads the Transportation section within DBFL.

13.1.3 Assessment Methodology

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed road scheme. The scope of the assessment covers transport and sustainability issues including pedestrian, cyclist, and public transport connectivity.
This assessment is being carried out in accordance with the following guidance and established best practice:

- Environmental Protection Agency (EPA) Guidelines on the information to be contained in the EIAR;
- Transport Infrastructure Ireland (TII) Traffic and Transportation Assessment Guidelines.

The approach to the study accords with policy and guidance at EU, National and Local Level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, and local development framework, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include:

- '*Traffic Management Guidelines*' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- '*Guidelines for Traffic Impact Assessments*', The Institution of Highways and Transportation (1994);
- 'Meath County Development Plan 2021 - 2027'; and
- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).
- Dunboyne Transportation Study (2018)

Our methodology incorporated a number of key inter-related stages, including:

- **Site Audit:** A site audit was undertaken to quantify the existing road network issues and identify local infrastructure characteristics, in addition to establishing current levels of accessibility surrounding the subject site in terms of walking, cycling and public transport. An inventory of the local road network was developed during this stage of the assessment.
- **Traffic Counts:** Junction turning counts were undertaken and analysed with the objective of establishing local traffic characteristics across the local Dunboyne road network.
- **Review of Committed Developments:** Identification of third party committed developments that could have a material impact upon the operational performance of the local road transport system. Trip generation and assignment exercise to distribute additional trips across the local road network.
- **Trip Redistribution:** Based upon both the existing traffic characteristics and the network layout in addition to the spatial / land use configuration and density of the urban structure across the catchments area of the proposed road development, a redistribution exercise has been undertaken to understand the potential alterations to local traffic patterns upon the completion of the Business Park Link Road and Dunboyne Eastern Distributor Road.
- **Network Impact:** In accordance with the Institute of Highways and Transportation; Traffic Impact Assessment guidelines, the specific level of influence generated by the proposed development upon the local road network was ascertained and the junctions which required assessment in great detail identified.
- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy, more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2026, 2031 and 2041 development scenarios.

13.2 Receiving Environment

13.2.1 Land Use

Within the Meath County Development Plan 2021-2027, the proposed development lands are zoned as a mixture of:

- **A1 – Existing Residential:** To protect and enhance the amenity and character of existing residential communities;
- **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;
- **F1 – Open Space:** To provide for an improve open spaces for active and passive recreational amenities;
- **G1 – Community Infrastructure:** To provide for necessary community, social and educational facilities;
- TU – Transport and Utility Infrastructure: To provide for essential transport and public utilities and infrastructure including rail stations, park and ride facilities, water and wastewater infrastructure, electricity, gas and telecommunications.

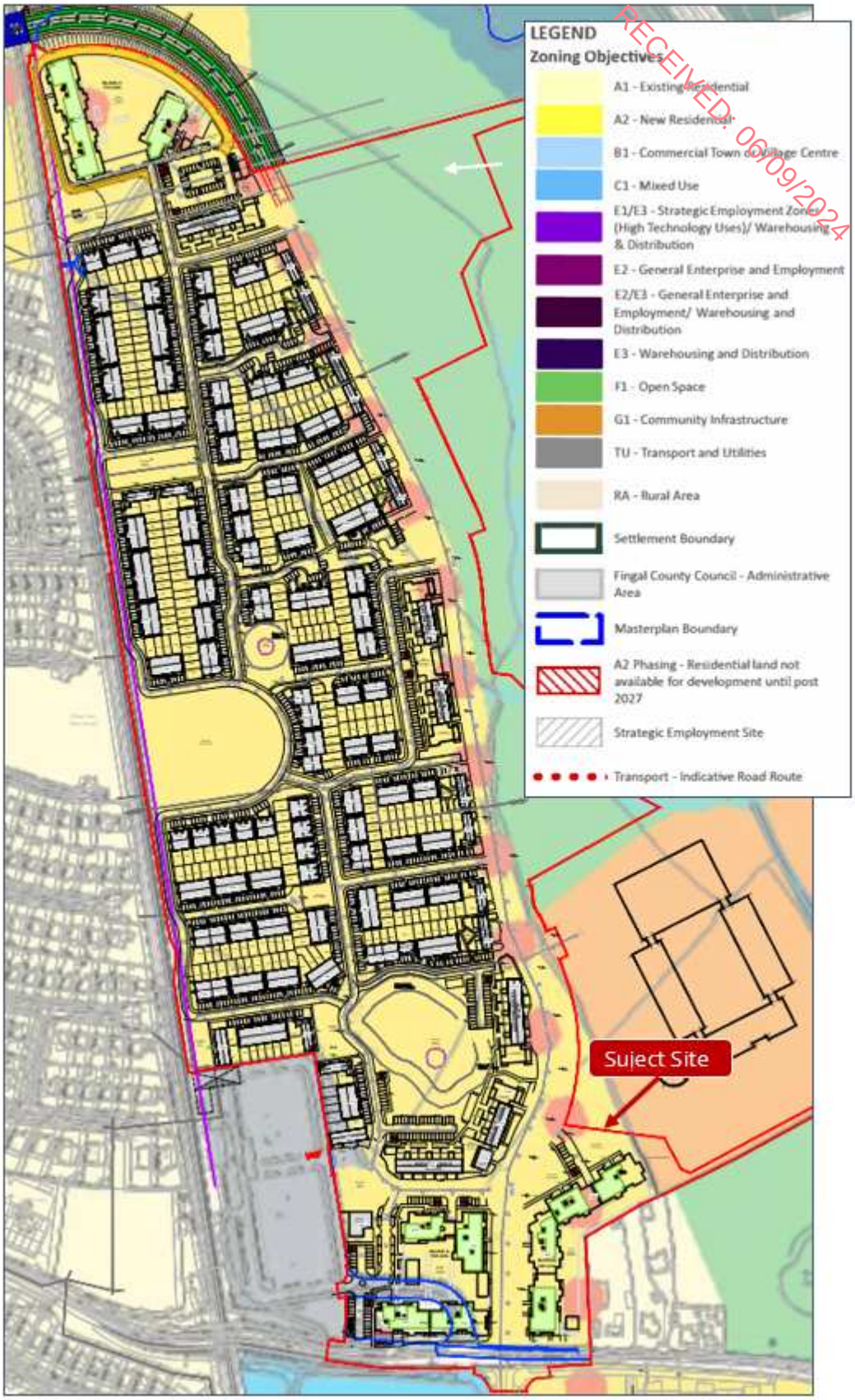

Figure 13.1 – Land Use Zoning Objectives (Source: Meath County Development Plan 2021-2027 Sheet No. 13 (a))

13.2.2 Location

The subject development site is located to the east of the Dublin to Dunboyne / M3 Parkway railway line and to the north of the L2228 Station Road corridor. The subject site is bound to the north and east by the future Dunboyne Eastern Distributor Road (DEDR) corridor, whilst Community Infrastructure zoned lands are also located to the east adjoining the LRD site. Once constructed, the DEDR will form the primary connection between the subject residential development and the local transport network.

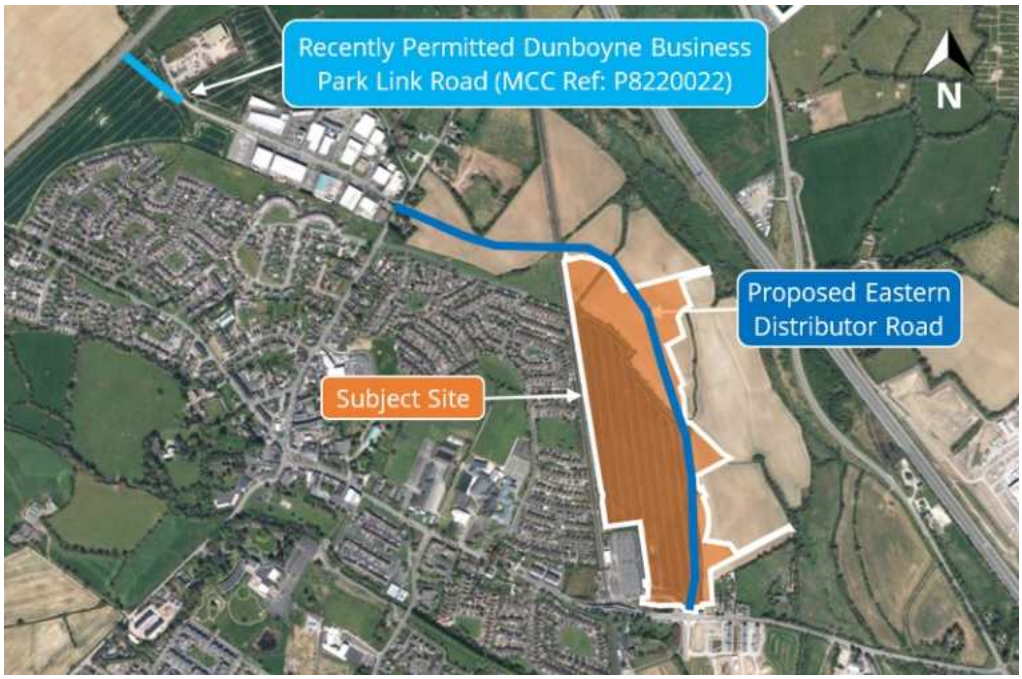

Figure 13.2 – Indicative Location of the Subject Site in relation to the Business Park Link Road (BPLR) and Dunboyne Eastern Distributor Road (DEDR) (Source: Bing Maps)

13.2.3 Existing Road Infrastructure

The proposed residential development will connect to the existing road network at Station Road, via a section of the proposed Dunboyne Eastern Distributor Road. Station Road (L2228) is the main east-west connection through Dunboyne and comprises a single carriageway road with one lane in each direction. Station Rd, classified as a 'Local' link, is subject to a speed limit of 50 km/h along the majority of its length, however, a section of approximately 600m length between Castle Farm and the R147 is subject to a speed limit of 60 km/h.

Travelling eastbound on Station Road leads to Clonee and the Old Navan Road (R147), which allows for travel to the M3 Motorway. Travelling westbound, Station Road leads to Dunboyne Town Centre, as well as the R157 Regional Road, which provides onward connection to Maynooth (to the south) and J5 M3 (to the north).

At its northern end, the DEDR will provide the subject residential development with a connection to the existing road network at the Navan Road / Dunboyne Business Park Junction. The Navan Road is the main north-south connection between Dunboyne Business Park and the Town Centre, being composed of a single carriageway road with one lane in each direction. Travelling north along Navan Road leads to established residential areas, Kennedy Road (which continues north-westwards into the rural catchment), and ultimately a Cul-De-Sac serving farmlands until such time that future road infrastructure objectives are implemented (extended to R157). Travelling south along the

Navan Road allows for access to the town centre, Station Road, and the larger road network.

Currently, Dunboyne Business Park is a cul-de-sac; however, it is projected that by the adopted opening year of the subject residential development, the Dunboyne Business Park Link Road will be constructed with a connection to the R157 Regional Road open to traffic. This Dunboyne Business Park Link Road scheme was granted planning permission by Meath County Council in April 2023 (Planning Ref: P822022). The existing road traversing along Dunboyne Business Park is made up of a single carriageway with one lane in each direction.

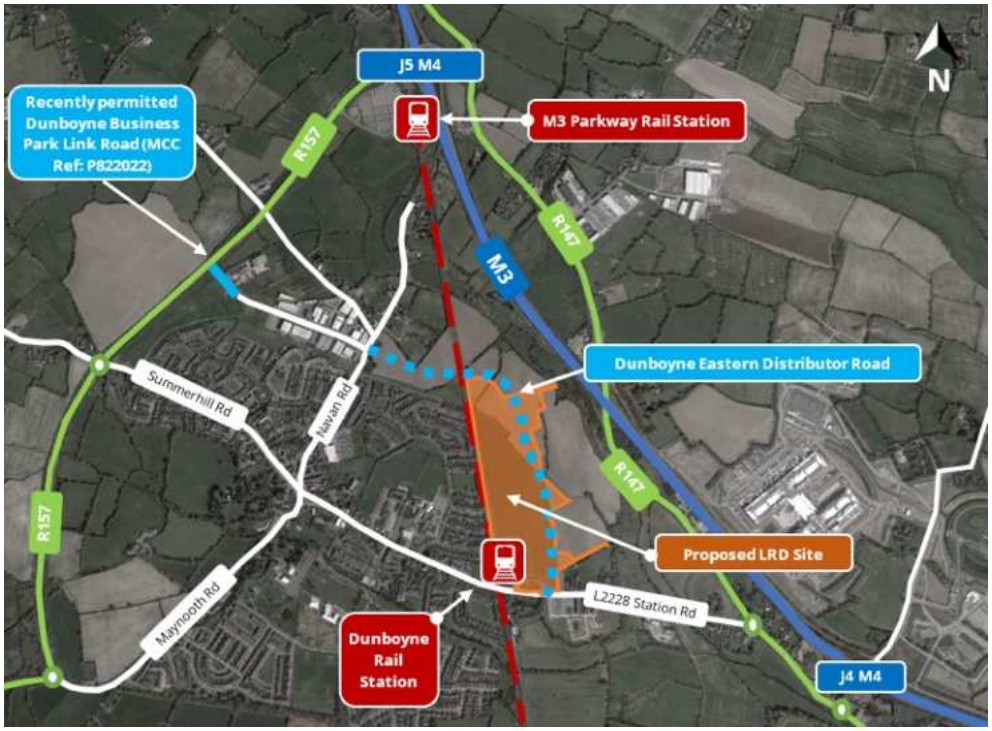

Figure 13.3 – Location of the Proposed Residential Development (Source: Google Maps)

13.2.4 Existing Pedestrian and Cyclist Facilities

All existing roads located adjacent to the proposed subject site access locations benefit from the provision of street lighting and pedestrian footways. To the south, Station Road incorporates dedicated footpaths on both sides for the majority of its length, with a short 600m section on approach to the R147 incorporating a footpath along its northern side. There is street lighting along one side of the road. A shared footpath / cycle track is provided over the rail corridor by means of a parallel bridge to the road bridge. Furthermore, a short distance to the west of the existing Dunboyne Station access/egress junction with Station Road, there is a signalised pedestrian crossing.

Figure 13.4 – Existing Pedestrian Facilities Along Station Road

Figure 13.5 – Existing Cyclist Facilities Along Station Road

At the northern end of the future DEDR, which will connect the proposed residential development to the local road network, Navan Road is a local road that incorporates dedicated footpaths on both sides of the road the entire way southwards to the town centre. There are currently no dedicated facilities for cyclists along Navan Road.

Figure 13.6 – Existing Pedestrian Facilities Along Navan Road

13.2.5 Existing Public Transport Facilities – Bus

The proposed residential development is ideally situated to avail of a number of existing bus services on Station Road, including Dublin Bus routes 70 and 70D, Bus Éireann route 105 and Go-Ahead Ireland route 270. The closest bus stop to the subject site is located approximately 100m from the subject site entrance.

Operator	Route No.	Route	Mon-Fri	Sat	Sun
Dublin Bus	70	Burlington Road – Dunboyne	28	17	16
		Dunboyne – Burlington Road	29	18	16
	70D	DCU – Dunboyne	1	-	-
		Dunboyne – DCU	1	-	-
Bus Éireann	105	Drogheda – Ashbourne – Rathoath - Blanchardstown	16	16	12
		Blanchardstown – Rathoath – Ashbourne – Drogheda	16	16	12
Go-Ahead Ireland	207	Dunboyne – Blanchardstown SC	17	17	16
		Blanchardstown SC - Dunboyne	17	17	16

Table 13.1: No. of Bus Services per day calling at Station Road

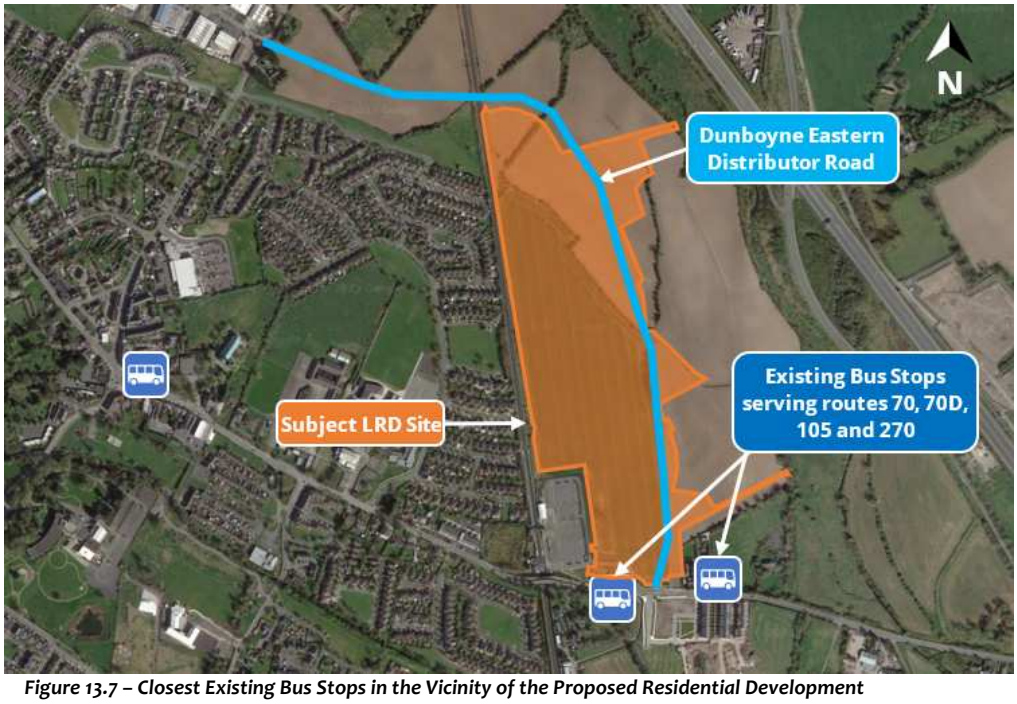

Figure 13.7 – Closest Existing Bus Stops in the Vicinity of the Proposed Residential Development

13.2.6 Existing Public Transport Facilities – Rail

The subject site is located to the immediate east of Dunboyne Railway Station. Facilities at the station include a Park and Ride for car parking and sheltered bike parking.
Iarnród Éireann serves the stations seven days a week; however, the service pattern varies depending on time of day. During peak hours on weekdays, trains operate between M3 Parkway and the Docklands Station in Dublin – offering interchange opportunities en route to access other stations in Dublin City Centre by rail, or the Luas at Broombridge. A few Dublin-bound trains operate to Connolly Station in place of the Docklands. Outside of peak hours, and all day on weekends, trains operate a shuttle service between M3 Parkway and Clonsilla, where timed connections may be made to Dublin.

Route	*Mon-Fri*	*Sat*	*Sun*
M3 Parkway – Dunboyne – Clonsilla – Broombridge – Docklands / Connolly	*15*	*-*	*-*
Docklands – Broombridge – Clonsilla – Dunboyne – M3 Parkway	*11*	*-*	*-*
M3 Parkway – Dunboyne - Clonsilla	*10*	*17*	*15*
Clonsilla – Dunboyne – M3 Parkway	*10*	*18*	*16*

Table 13.2: No. of Rail Services per Day calling at M3 Parkway and Dunboyne

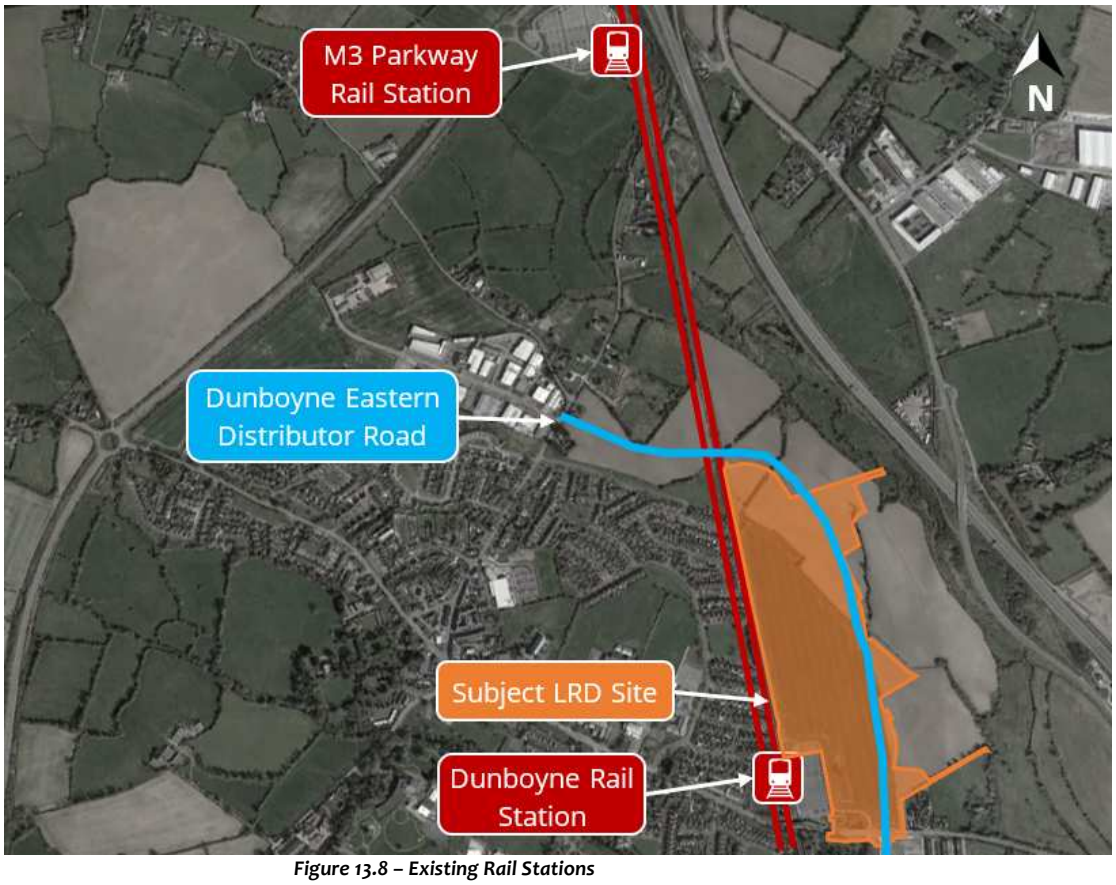

Figure 13.8 – Existing Rail Stations

13.2.7 Cycle Network Proposals

There are several new pieces of cycle network infrastructure planned by the Greater Dublin Area Cycle Network Plan (2022) for the area surrounding the proposed residential development. These NTA cycle infrastructure proposals include:

- **Secondary Route** along Station Road (L2228) – leading to Dunboyne town centre, from where another Secondary Route along Navan Road / Maynooth Road can be reached, allowing Inter Urban routes to be reached, which in turn offer connections to Leixlip and Dunshaughlin.

- **Secondary Route** along Navan Road / Maynooth Road (L2227) – leading to Dunboyne town centre, from where the aforementioned Secondary Route along Station Road can be reached, allowing for access towards Dublin. At each end of the route, Inter Urban routes can be joined to Dunshaughlin in the north and Leixlip in the south.
- **Primary Radial Route** along the Old Navan Road (R147) south of Station Road – offering a link to Ongar and to points in Dublin.
- **Inter Urban Route** along the Old Navan Road (R147) north of Station Road – offering a link to Dunshaughlin and points north.
- **Inter Urban Route** along Kennedy Road and the Dunboyne Western Bypass (R157) – offering a link to the Inter Urban Route along the Old Navan Road (R147), in turn allowing access to Dunshaughlin.
- **Inter Urban Route** connecting the southern portion of Dunboyne and Leixlip.
- Several **Greenway** (Utility) and **Feeder Routes** which will facilitate local connections within Dunboyne.

These proposals, when implemented, will significantly enhance the existing cycling facilities in the area and will encourage cycling to a much wider audience.

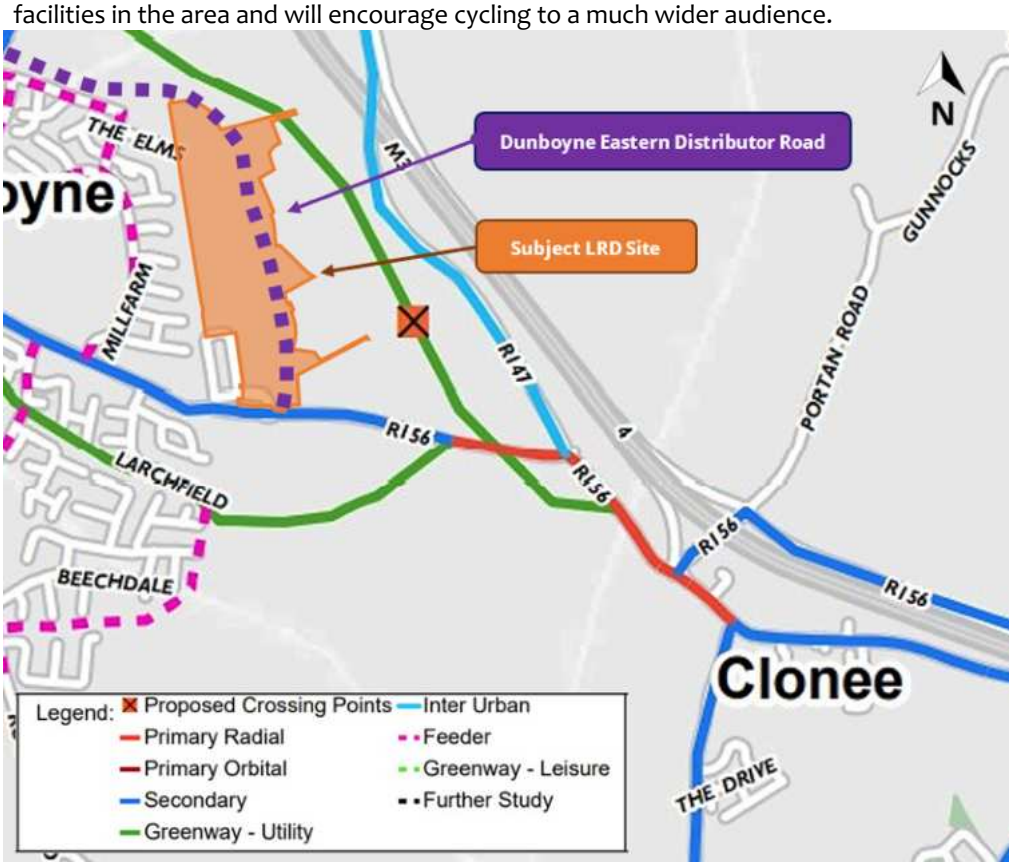

Figure 13.9 – Proposed Local Cycle Network (Source: GDA Cycle Network Plan 2022)

13.2.8 Public Transport Proposals – Bus

The DEDR, which will form the proposed residential development's eastern border, provides the opportunity to deliver enhanced accessibility levels that can be achieved

through the implementation of the NTA's BusConnects proposals. When implemented, subject proposed residential development adjoining the DEDR corridor will be directly serviced by the following BusConnects proposed routes:

- **Local Route No. L64:** Will travel from Dunboyne to Blanchardstown, via Littlepace Road. This route will have a frequency of every 15-20 minutes.
- **Peak-Only Route No. P64:** Will travel from Dunboyne to Dublin City Centre. The route will have 2 inbound trips in the morning, and 2 outbound trips in the afternoon.

The proposed routes will allow greater connectivity between the subject residential development and locations around Dublin, as a result of the significant improvement in frequencies.

Most notable is the **Local Route No. L64** which will run from the west side of Dunboyne to Blanchardstown, via Littlepace. The route is proposed to operate with a frequency of 15-20 minutes along Station Road, which will be a 1-2 minute walk from the primary proposed site access. This new bus route will provide the subject residential development with direct access to Blanchardstown, a proposed transport hub / key interchange between several radial and orbital services. BusConnects will introduce over 19% more services to the area when fully implemented.

Figure 13.10 – Proposed Future Bus Network (Source: BusConnects)

The Dunboyne Transportation Study (2018) put forward proposals for two additional bus routes. The first of these routes would comprise of an extension to the existing Dublin Bus route 70 to connect to M3 Parkway via Navan Road and Dunboyne Business Park. The second proposed route would comprise of a new route from Navan to Blanchardstown, operating via M3 Parkway and the Dunboyne Eastern Distributor Road.

Figure 13.11 – Proposed Bus Routes (Source: Fig. 6.1 and Fig 6.4 of the Dunboyne Transportation Study (2018))

13.2.9 Public Transport Proposals – DART+

The DART+ Programme is set to revolutionise travel in the Greater Dublin Area. It will see the DART network grow from its current 50km in length to over 150km. The programme will see rail electrification introduced on existing lines servicing locations such as Drogheda, Maynooth, Hazelhatch and Greystones. Electrification of the fleet will help to reduce greenhouse gas emissions from transport, provide more frequent services with higher capacity and support sustainable growth among existing communities.

The first phase of the wider DART+ programme to be implemented will be DART+ West. This project will increase services between Dublin City Centre and Maynooth and M3 Parkway from the current 6 trains per direction per hour at peak times to 12 trains per hour per direction. The project will see the electrification of the line between Dublin and M3 Parkway as well as the construction of a new station at Spencer Dock.

13.3 Baseline Description

13.3.1 Overview

The development will consist of 853 no. units, comprising 343 no. houses, 112 no. duplexes and 398 no. apartments to be constructed over four phases. The development will also feature a proposed café (approx. 196sqm) with associated outdoor seating area, medical unit (197 sqm), retail unit 1 (approx. 217 sqm), retail unit 1 (approx. 170 sqm), community room (approx. 52 sqm), 2 no. creche facilities (approx. 394 sqm and approx. 400 sqm).
Access to the proposed development will be facilitated via a section of the Dunboyne Eastern Distributor Road (DEDR) which is subject to a separate planning application to be lodged soon. It is envisioned that the DEDR will be opened / operational by the time the entire proposed LRD is complete.
The proposed development layout design provides a total of 1,192 no. car parking spaces. In terms of residential spaces, a total of 682 no. are provided for the houses, 281 no. are provided for the apartments and 112 no. are provided for the duplexes. All parking spaces for the houses and duplexes will be provided at surface level. All residential apartment spaces will be provided at the secured undercroft level.
A total of 31 no. dedicated car parking and drop off spaces are provided for the two creches (comprising 22 no. dual creche / visitor and 9 no. pick-up /drop-off spaces). A total of 64 no. spaces will be allocated for the residential element exclusively to visitors. The retail units will be served by 22 no. car parking spaces at surface.
A total of 1,634 no. cycle parking spaces will be provided as part of the proposed residential development and exceeds MCC's Development Plan's requirements. Residential cycle parking equates to a total of 1,288 no. spaces (comprising 708 no.

apartment spaces, 278 no. duplex spaces and 302 no. spaces for the houses). Of the 708 no. apartment spaces, 6no. will be capable of accommodating cargo bikes and 6 no. will provide charging facilities for e-bikes.
A total of 24 no. spaces have been assigned to the creche facilities while 42 no. spaces have been assigned to the retail element. A total of 310 no. short-stay cycle spaces will be allocated for the residential element exclusively to visitors.
A total of 302 no. long-stay residential parking spaces has been allocated for the 151 no. mid-terrace units that do not benefit from a side or rear access to rear gardens. These spaces will be in the form of bicycle storage units which will be located along the frontage of each unit.

Land Use	Unit Type	1-bed	2-bed	3-bed	4-bed	Total
Residential	Houses	-	4	308	31	343
	Duplexes	-	60	52	-	112
	Apartments	121	258	19	-	398
	Sub-Total	121	322	379	31	853
Commercial	Retail	387 sqm				
	Medical	197 sqm				
	Café	196 sqm				
	Creche	794 sqm				
Community	Community Room	51 sqm				

Table 13.3: Proposed LRD Development Schedule

Phase	Houses	Duplexes	Apartments	Total
Phase 1	123	50	142	315
Phase 2	147	36	-	183
Phase 3	73	26	114	213
Phase 4	-	-	142	142
Total	343	112	398	853

Table 13.4: Proposed LRD Phasing Strategy

Figure 13.12 – Proposed Development Layout

13.3.2 Transport Infrastructure

Access to the proposed LRD scheme will be facilitated via the Dunboyne Eastern Distributor Road (DEDR). Whilst the DEDR is subject to a separate planning application to be lodged soon, it is envisioned that the DEDR will be open (through connection to Navan Road) and operational by the time the entirety of this proposed LRD is complete / occupied. The subject LRD proposals include the delivery of the DEDR as it travels through the subject development site.

The completion of a section of the DEDR by this proposed LRD will also provide a protected signalised junction between Station Road and the DEDR, including signalised cycle and pedestrian crossings, two-way cycle tracks on the northern side of Station Road, extending from the proposed Station Road / DEDR signalised junction as far as the pedestrian and cyclist bridge over the rail line, segregated cycle tracks and footpaths on both sides of the carriageway and a segregated two-way cycle track on the northern side of the internal train station access road.

13.4 Assessment of Effects

The analysis of the predicted impacts of the proposed development on the local traffic and transportation network during and after the construction phase is presented in the following section.

The impact assessment was undertaken using the following considerations, as described in the EPA's 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (May 2022):

- *Quality of an Impact:* Described as being Positive, Neutral or Negative/Adverse.
- *Significance of an impact:* The significance of each impact was considered as being either an Imperceptible, Not Significant, Slight, Moderate, significant, Very Significant or Profound.
- *Duration of Impacts:* The duration of each impact was considered to be either momentary, brief, temporary, short-term, medium-term, long-term, permanent or reversible. Momentary impacts can last from seconds to minutes, Brief construction impacts are considered to last a day or so, temporary impacts last less than one year. Short-term impacts are seen as impacts lasting one to seven years. Medium-term impacts are impacts lasting seven to fifteen years. Long-term impacts are impacts lasting 15 to 60 years while Permanent impacts are impacts lasting over 60 years. Reversible impacts are considered those that can be undone through remediation or restoration.

13.4.1 Construction Stage

Management of Construction Activities

All construction activities on-site will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed in full with Meath County Council prior to the commencement of construction activities on site.

The principal objective of the Construction Traffic Management Plan is to ensure that the impacts of all building activities generated during the construction of the proposed residential development upon public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders 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 impact of the construction period will be temporary in nature.

Construction Traffic

Construction traffic will only be generated on weekdays (07:00-19:00, subject to conditions of a planning permission) and will consist of the following two principal categories:

- Private vehicles owned and driven by site construction staff and by full-time supervisory staff.
- Excavation plant, dumper trucks and delivery vehicles 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.

The likely impact on the transport network during the construction phase will be low 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. 40 staff will be on site at any one time, subsequently generating low levels of two-way vehicle trips during the peak AM and PM periods over the period of the construction works (construction workers will use shared transport). On-site employees will arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will depart after 16:00.

Likely deliveries to the site will arrive at a steady rate during the course of the day, the majority of which will be lorries that will be brought onto the site over the excavation period of the construction stage of the development. The number of vehicles per day is not yet known, however, basing this assessment on previous schemes, it can assumed as a conservative assessment that there will be 8 loads per hour. With an 8 hour working day, this equates to 64 loads per day approximately. This results in 128 vehicular movements per day over an 8 hour period.

A significant benefit of the subject development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network.

Considering the site's proximity to the strategic road network and following the implementation of an appropriately detailed CTMP, it is concluded that construction traffic will not give rise to any significant traffic concerns or impede the operational performance of the local road network and its surrounding junctions.

The scheme shall be constructed in a manner to minimise disruption to road users, local residents and businesses. All construction works are to be undertaken in a clearly delineated site area which will have specific entry and exit points for construction traffic

Haulage Routes

It is anticipated that vehicles travelling towards the subject site will approach via the R147 or M3 motorway and Station Road. It is noted that exact compound location, import/export locations and detailed traffic management and construction routing will be developed by the appointed contractor for the scheme and will be detailed in a construction management plan and Environmental Operating Plan. All exports/imports of material will be to be a suitably licenced facility.

An appropriate control and routing strategy for HGVs can also be implemented for the duration of site works as part of the Construction Traffic Management Plan. It is not proposed to utilise any roads with weight/height restrictions as part of the routing of HGVs during the construction phase.

Public Environment

The likely impact on the pedestrian and cycle environment during the construction phase will be short term in nature. During the construction stage, there will be an impact on the

existing pedestrians and cyclists in the surrounding area, including possible diversions and impact on air quality.

Taking the above into consideration, the impacts on the surrounding transportation environments during the Construction Stage are assessed as follows:

- **Increase in Vehicular Traffic on Road Network:** There will be an increase in construction vehicular traffic on the surrounding road network, including employee vehicles and HGVs. Without the consideration of mitigation measures, this impact will be negative, slight and short term in nature and will terminate with the completion of the construction stage.
- **Pedestrian & Cycle Environment:** Without the consideration of mitigation measures, the impact on the pedestrian and cycle environment during construction works will be negative, slight and short term in nature.

13.4.2 Operational Stage

A detailed assessment has been undertaken with regard to the generation of Development Traffic and the impact that this will have on the surrounding road network.

Trip Generation

Once the subject development is fully complete and occupied, there are two distinct peak arrival and departure times that are expected during a typical weekday. Specifically, there is expected to be a morning peak between 08:00 – 09:00 when people are leaving for work or educational purposes, and an evening peak between 16:45 – 17:45 when people are returning from work or school.
Once in operation, the proposed development is expected to establish permanent travel patterns and trip generation onto the surrounding road network.
With regard to generating trips for this development, the TRICS database was referenced as part of this assessment. TRICS data is primarily UK based, however, a number of Irish sites have been included within the last few years with these continuing to expand. The TRICS database provides a reasonable estimation of traffic generation from the proposed development based on previous similar development types of this nature.

Type	*No. of Units / sqm*	*AM Peak Hour*			*PM Peak Hour*		
		Arr	*Dep*	*2-way*	*Arr*	*Dep*	*2-way*
Apartments	*398*	*0.067*	*0.162*	*0.229*	*0.198*	*0.116*	*0.314*
Duplexes	*112*	*0.067*	*0.162*	*0.229*	*0.198*	*0.116*	*0.314*
Houses	*343*	*0.148*	*0.346*	*0.494*	*0.311*	*0.165*	*0.476*
Creche	*794*	*3.198*	*2.640*	*5.838*	*2.380*	*2.845*	*5.224*
Retail	*780*	*1.181*	*0.124*	*1.305*	*0.119*	*1.099*	*1.218*

Table 13.5 : Proposed Development Trip Rates (from TRICS)

Based on the above trip rates, the potential peak hour traffic generation is calculated based on 398 apartments, 112 duplexes, 343 houses, 794 sqm of creche space and 780sqm

of retail, medical and café space. The trip rates extracted above from TRICS have been discounted by 60% of the creches and 40% for the retail, to account for a large proportion of trips to these destinations being generated internally within the proposed development.

Type	No. of Units / sqm	AM Peak Hour			PM Peak Hour		
		Arr	Dep	2-way	Arr	Dep	2-way
Apartments	398	27	64	91	79	46	125
Duplexes	112	8	18	26	22	13	35
Houses	343	51	119	170	107	56	163
Creche	794	10	8	18	8	9	17
Retail	780	20	17	37	28	30	58
Total		116	226	342	244	154	398

Table 13.6 : Proposed Development Vehicle Trips

Traffic Growth

For this assessment, it is assumed that phase 1 of the development will be fully occupied by the subject residential development's Opening Year of 2026 with the full development complete and occupied by the 2031 Interim Design Year. A Future Design Year of 2041 has also been adopted.
The TII Project Appraisal Guidelines (PAG) have been utilised to determine the traffic growth forecast rates. The traffic growth forecast rates within the PAG ensures local and regional variations and demographic patterns are accounted for.
Table 6.1 within the TII Project Appraisal Guidelines Unit 5.3 provides Link-Based Annual Traffic Growth Factors for the different counties and metropolitan areas within Ireland. The town of Dunboyne lies within the 'Dublin Metropolitan Area'.

Central Growth Rates					
2016-2030		2030-2040		2040-2050	
LV	HV	LV	HV	LV	HV
1.0162	1.0295	1.0051	1.0136	1.0044	1.0162

Table 13.7 : Link-Based Growth Rates (TII PAG Unit 5.3)

Assessment Scenarios

In summary, a total of six different traffic scenarios have been investigated including three base 'Do-Minimum' and three potential 'Do-Something' scenarios as follows:

- **A1** Do Minimum 2026 – 2026 Base Flows + Committed Developments + Redistribution with BPLR
- **A2** Do Minimum 2031 – 2031 Base Flows + Committed Developments + Redistribution with BPLR and DEDR

- **A3** Do Minimum 2041 – 2041 Base Flows + Committed Developments + Redistribution with BPLR and DEDR
- **B1** Do Something – 2026 Do-Minimum (A1) + Proposed Development Flows;
- **B2** Do Something – 2031 Do-Minimum (A2) + Proposed Development Flows;
- **B3** Do Something – 2041 Do-Minimum (A3) + Proposed Development Flows;

Trip Redistribution – Do-Minimum Scenario

Changes to the local road network under the do-minimum scenario will include the completion of the Dunboyne Business Park Link Road, connecting the existing business park to the R157 via priority-controlled junction. The new link road was granted Part 8 planning permission by Meath County Council in March 2023. It is expected that construction of the road will be completed in 2025. The implementation of the link road extension will provide a new through connection from Navan Road to the R157 via Dunboyne Business Park.
As a result of the completion of this link road, it is predicted based upon the analysis of a local gravity model with fastest journey times, that 75% of traffic currently turning left from the L2228 Summerhill Road onto St. Patrick's Park and continuing towards Dunboyne Business Park will instead use the new Business Park Link Road to access both Dunboyne Business Park and the northern section of Navan Road.
In a similar fashion, it is predicted that 75% of traffic exiting the business park or travelling southbound from the northern section of Navan Road that would have turned right from Navan Road onto St. Patrick's Park and right again onto the L2228 Summerhill Road will now utilise the link road to access the R157.

Trip Redistribution – Do-Something Scenario

Under the do-something scenario, the existing traffic travelling across the local road network has been redistributed on the assumption that both the Business Park Link Road and the proposed Eastern Distributor Road are complete and operational. Under this scenario, all predictions for the redistribution of traffic under the do-minimum scenario remain in place.
Additionally, an extra 25% of traffic turning left onto St. Patrick's Park will divert via the Business Park Link Road and Eastern Distributor Road. Along the L2228, 20% of straight through traffic will travel via the link road and distributor road.
A total of 75% of traffic exiting Dunboyne Business Park will divert across the new road schemes. In the AM peak hour, the Business Park Link Road will be utilised by 29% of this traffic while 46% will use the Eastern Distributor Road. In the PM, 32% of traffic will travel via the link road while 43% travel via the distributor road.
An additional 33% of traffic exiting Navan Road and turning left onto the L2228 will divert along the Eastern Distributor Road during both peak hours. All traffic entering and exiting Dunboyne train station will also utilise the Eastern Distributor Road.

Impact of Proposals

In order to assess the impact of the proposed residential development on the local area, a traffic model of the existing network and the proposed link was created using Microsoft Excel. Existing traffic volumes were obtained from junction turning counts carried out by IDASO at 12 junctions across Dunboyne on 30th March 2023. The results of these surveys established that the local network's AM and PM peak hours occur between 08:00-09:00 and 16:45-17:45 respectively.

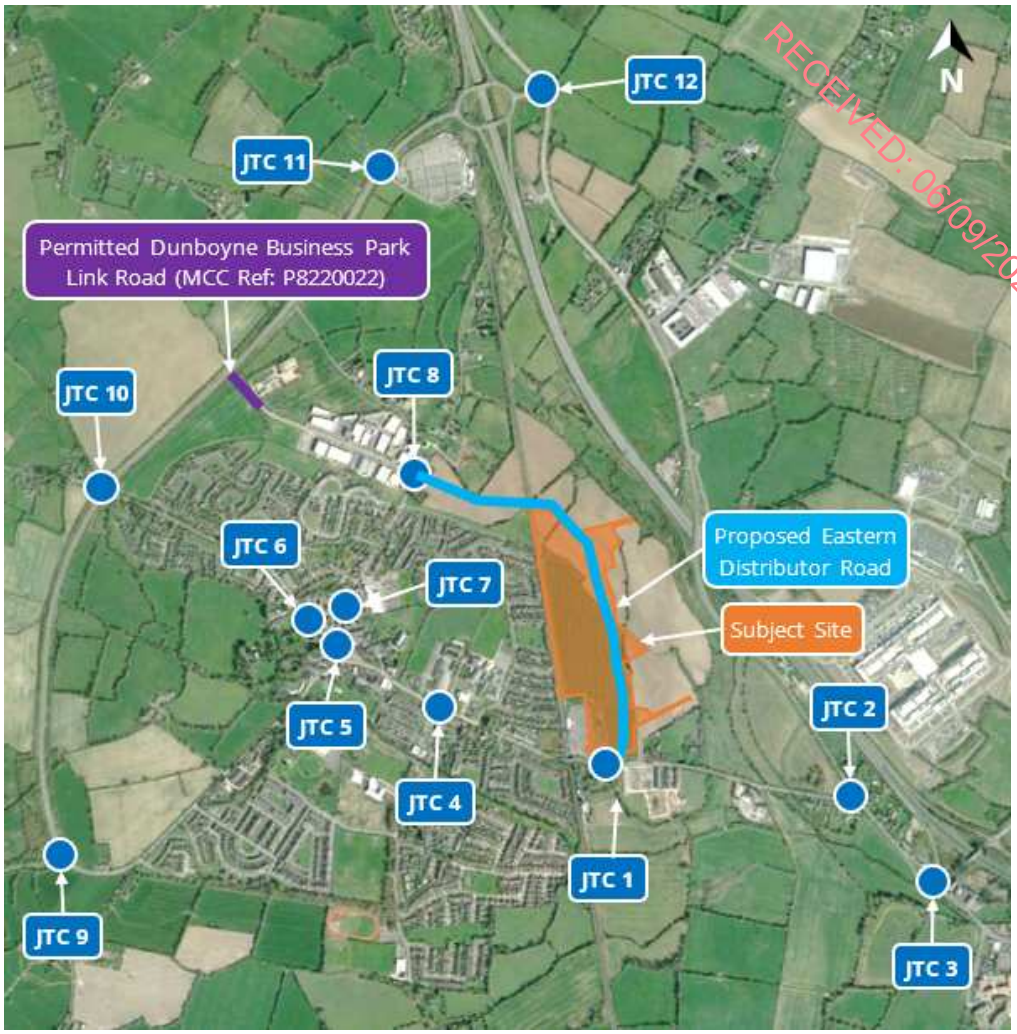

Figure 13.13 – Location of JTC Surveys and Junctions included within the Traffic Model

The Institution of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated, a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. These same thresholds are reproduced in the NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014).

The following key junctions were assessed in terms of percentage impact resulting from the implementation of the proposed development:

- Junction 1 – Dunboyne Train Station / L2228 Station Road / Private Lane
- Junction 2 – R147 / L2228
- Junction 3 – R147 / M3 Slip Road / R147
- Junction 4 – Private Access / L2228 / Main Street
- Junction 5 – Navan Road / L2228 / Main Street
- Junction 6 – L2228 / St. Patrick's Park
- Junction 7 – Navan Road / St. Patrick's Park
- Junction 8 – Navan Road / Dunboyne Business Park
- Junction 9 – R157 / L2227
- Junction 10 – R157 / L2228 / R156
- Junction 11 – R157 / M3 Parkway Train Station Access
- Junction 12 – R147 / R157

- Junction 13 – Dunboyne Business Park Link Road / R157
- Junction 14 – Proposed Eastern Distributor Road / L2228 Station Road
-

Shown in the table below is the percentage impact for each junction between the Do-Minimum and Do-Something Network scenarios for the 2026 Opening Year, 2031 Interim Design Year and 2041 Future Design Year scenarios during both the AM and PM peak hour periods.

No.	Location	2026 DS		2031 DS		2041 DS	
		AM	PM	AM	PM	AM	PM
1	Dunboyne Train Station / L2228 Station Road / Private Lane	-0.4%	8.2%	9.2%	14.0%	10.0%	15.5%
2	R147 / L2228	6.4%	7.6%	10.2%	7.8%	10.9%	8.5%
3	R147 / M3 Slip Road / R147	4.3%	3.0%	7.2%	4.9%	7.7%	5.3%
4	Private Access / L2228 / Main Street	3.3%	4.2%	8.4%	11.0%	9.1%	12.2%
5	Navan Road / L2228 / Main Street	1.6%	2.3%	2.9%	3.1%	3.2%	3.5%
6	L2228 / St. Patrick's Park	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	Navan Road / St. Patrick's Park	1.6%	2.3%	2.9%	3.1%	3.2%	3.5%
8	Navan Rd / Dunboyne Business Pk	1.5%	3.6%	4.1%	12.9%	4.4%	14.2%
9	R157 / L2227	0.0%	0.0%	1.3%	1.2%	1.3%	1.3%
10	R157 / L2228 / R156	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	R157 / M3 Parkway Train Station Access	0.0%	0.0%	0.7%	1.7%	0.7%	1.9%
12	R147 / R157	0.6%	1.5%	0.4%	0.5%	0.4%	0.3%
13	Dunboyne Business Park Link Rd / R157	0.0%	0.0%	0.9%	2.2%	0.9%	2.5%
14	Proposed Eastern Distributor Road / L2228 Station Road	13.7%	18.9%	16.3%	17.8%	17.8%	19.8%

Table 13.8: Network Impact at Key Junctions

Junction 1 and junction 14 experience an impact of greater than 10% in both the AM and PM peak hours. However, as junction 1 will be closed and replaced with junction 14 as part of the DEDR development, junction 1 has not been brought forward for detailed junction analysis. As junction 8 is also a newly proposed signalised junction as part of the DEDR development and is predicted to experience an impact of greater than 10% in the PM peak hour, it has also been brought forward for detailed junction analysis.
Junctions 2 and 3 are subject to further detailed analysis due to the alterations proposed to these roundabouts while junction 4 will be analysed in further detail due to the impact it will experience in the PM peak hour. Additionally, the signalised junction proposed to connect the Dunboyne Train Station Access Road to the Eastern Distributor Road will be modelled to assess its performance as a newly proposed junction.

The operational assessment of the above junctions has been undertaken using the Transport Research Laboratory (TRL) computer package TRANSYT for signal-controlled junctions and ARCADY for roundabouts.
When considering signal-controlled junctions, a Degree of Saturation of (DoS) of greater than 90% (0.90) would indicate that a junction is approaching capacity, as operation above this DoS value is poor and deteriorates quickly. When considering roundabout junctions, a Ratio of Flow to Capacity (RFC) of greater than 0.85 (85%) would indicate that a junction is approaching capacity, as operation above this RFC value is poor and deteriorates quickly.
For the TRANSYT analysis, a 60-minute AM and PM peak hour period has been simulated from 08:00-09:00 and 16:45-17:45 respectively. For the ARCADY analysis, a 90-minute AM and PM peak hour period has been modelled from 07:45-08:15 and 16:30-18:00 respectively. In all cases, flows were entered using an Origin-Destination table.

Junction 2 – R147 / L2228 / R147
The existing four arm roundabout junction will be upgraded to increase capacity as part of the works to be undertaken as part of this proposed development and as such has been analysed for the 'Do-Something' scenario using the TRL software ARCADY.
Within the ARCADY model, the arms of the junction were labelled as followed:

- Arm 1 – R147 (N)
- Arm 2 – Private Access
- Arm 3 – R147 (S)
- Arm 4 – L2228 Station Road

The operational assessment of this junction during the weekday morning and evening peak hours for the 'Do-Something' scenario is summarised in the table below.

Year	*Arm*	*AM Peak Hour*			*PM Peak Hour*		
		Queue (PCUs)	*Delay (s)*	*RFC*	*Queue (PCUs)*	*Delay (s)*	*RFC*
2026 DS	1	0.5	5.46	0.33	0.5	4.58	0.30
	2	0.0	0.00	0.00	0.0	0.00	0.00
	3	0.9	4.25	0.45	1.6	5.70	0.59
	4	1.9	7.84	0.64	1.0	5.67	0.48
2031 DS	1	0.6	6.30	0.37	0.5	4.72	0.31
	2	0.0	0.00	0.00	0.0	0.00	0.00
	3	1.0	4.52	0.48	2.0	6.53	0.64
	4	3.0	10.59	0.73	1.1	6.00	0.51
2041 DS	1	0.7	6.72	0.40	0.5	4.93	0.33
	2	0.0	0.00	0.00	0.0	0.00	0.00

	3	1.1	4.73	0.50	2.2	7.01	0.67
	4	3.4	11.96	0.76	1.2	6.37	0.53

Table 13.9: 'Do-Something' ARCADY Results for the proposed upgrade to Junction 2

The ARCADY results indicate that the proposed upgraded R147 / L2228 Station Road / R147 roundabout junction will operate within capacity for the 2026 AM peak hour 'Do-Something' scenario with a maximum RFC value of 0.64 occurring at Station Road with a corresponding maximum queue length of 1.9 PCUs. During the 2026 PM peak hour 'Do-Something' scenario, the roundabout junction will continue to operate within capacity with a maximum RFC of 0.59 recorded at the R147 (S) with a corresponding maximum queue length of 1.6 PCUs.
The proposed upgraded roundabout junction will continue to operate within capacity during the 2031 'Do-Something' AM peak hour scenario with a maximum RFC of 0.73 occurring on Station Road with a corresponding maximum queue length of 3.0 PCUs. During the 2031 'Do-Something' PM peak hour, a maximum RFC of 0.64 is recorded on the R147 (S) with a corresponding maximum queue length of 2.0 PCUs.
The proposed upgraded roundabout junction has been found to again continue to operate within capacity during the 2041 'Do-Something' AM peak hour scenario with a maximum RFC of 0.76 occurring on Station Road with a corresponding maximum queue length of 3.4 PCUs. During the 2041 'Do-Something' PM peak hour, a maximum RFC of 0.67 is recorded on the R147 (S) with a corresponding maximum queue length of 2.2 PCUs.

Junction 3 – R147 / M3 Slip Road / R147 Roundabout
The existing four arm roundabout junction will be upgraded to increase capacity as part of the works to be undertaken as part of this proposed development and as such has been analysed for the 'Do-Something' scenario using the TRL software ARCADY.
Within the ARCADY model, the arms of the junction were labelled as followed:

- Arm 1 – M3 Slip Road
- Arm 2 – R147 (NE)
- Arm 3 – R147 (SE)
- Arm 4 – R147 (NW)

The operational assessment of this junction during the weekday morning and evening peak hours for the 'Do-Something' scenario is summarised in the table below.

Year	Arm	AM Peak Hour			PM Peak Hour		
		Queue (PCUs)	Delay (s)	RFC	Queue (PCUs)	Delay (s)	RFC
2026 DS	1	Exit Only			Exit only		
	2	1.3	7.13	0.55	3.0	11.94	0.75
	3	1.9	8.31	0.64	5.0	19.54	0.84
	4	3.1	10.34	0.74	1.8	7.29	0.63
2031 DS	1	Exit Only			Exit Only		
	2	1.7	8.68	0.62	5.0	18.54	0.83
	3	2.4	9.92	0.69	12.6	46.03	0.94
	4	5.9	17.59	0.85	2.5	9.52	0.70
2041 DS	1	Exit Only			Exit Only		
	2	2.0	9.65	0.65	6.9	25.14	0.87
	3	2.8	11.07	0.72	22.5	74.46	0.99
	4	8.0	23.32	0.89	2.9	10.73	0.73

Table 13.10: 'Do-Something' ARCADY Results for the proposed upgrade to Junction 3

The ARCADY results indicate that the proposed upgraded R147 / M3 Slip Road / R147 roundabout junction will operate within capacity for the 2026 AM peak hour 'Do-Something' scenario with a maximum RFC value of 0.74 occurring along the R147 (NW) with a corresponding maximum queue length of 3.1 PCUs. During the 2026 PM peak hour 'Do-Something' scenario, the roundabout junction will continue to operate within capacity with a maximum RFC of 0.84 recorded along the R147 (SE) with a corresponding maximum queue length of 5.0 PCUs.
The proposed upgraded roundabout junction will operate approaching capacity during the 2031 'Do-Something' AM peak hour scenario with a maximum RFC of 0.85 occurring on the R147 (NW) with a corresponding maximum queue length of 5.9 PCUs. During the 2031 'Do-Something' PM peak hour, a maximum RFC of 0.94 is recorded on the R147 (SE) with a corresponding maximum queue length of 12.6 PCUs.
The proposed upgraded roundabout junction will operate approaching capacity during the 2041 'Do-Something' AM peak hour scenario with a maximum RFC of 0.89 occurring on the R147 (NW) with a corresponding maximum queue length of 8.0 PCUs. During the 2041 'Do-Something' PM peak hour, a maximum RFC of 0.99 is recorded on the R147 (SE) with a corresponding maximum queue length of 22.5 PCUs.

Junction 4 – Private Access / L2228 Station Road / Rooske Road
The existing three arm signalised junction has been analysed for the 'Do-Minimum' and 'Do-Something' scenario using the TRL software TRANSYT.
Within the TRANSYT model, the arms of the junction were labelled as followed:

- Arm A – Private Access
- Arm B – L2228 Station Road (E)
- Arm C – Rooske Road
- Arm D – L2228 Station Road (W)

The operational assessment of this junction during the weekday morning and evening peak hours for the 'Do-Minimum' and 'Do-Something' scenario is summarised in the tables below.

Year	Arm	Movement	AM Peak Hour			PM Peak Hour		
			DoS%	Mean Delay (s)	MMQ (PCUs)	DoS%	Mean Delay (s)	MMQ (PCUs)
2026 DM	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	57%	31.60	9.51	64%	26.87	14.20
	C	L	30%	33.59	4.22	40%	41.35	4.58
		R, S	55%	43.08	7.26	58%	51.32	5.72
	D	All	58%	25.20	11.17	48%	18.79	10.06
2031 DM	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	60%	33.81	10.67	62%	26.25	13.56
	C	L	28%	30.44	4.44	44%	42.26	5.11
		R, S	51%	38.65	7.83	65%	54.86	6.73
	D	All	37%	24.03	6.52	29%	15.77	5.27
2041 DM	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	61%	34.11	10.86	63%	26.72	14.08
	C	L	29%	30.61	4.65	46%	42.72	5.38
		R, S	52%	39.13	8.14	67%	55.64	6.91

	D	All	37%	24.03	6.52	29%	15.80	5.31

Table 13.11: 'Do-Minimum' TRANSYT Results for Junction 4

The TRANSYT indicate that the existing L2228 Station Road / Rooske Road signalised junction will operate within capacity for the 2026 AM peak hour 'Do-Minimum' scenario with a maximum Degree of Saturation (DoS) of 58% recorded on Station Road (W) with a corresponding mean maximum queue (MMQ) of 11.17 PCUs. During the 2026 PM peak hour 'Do-Minimum' scenario, a maximum DoS of 64% is recorded on Station Road (E) with a corresponding MMQ of 14.20 PCUs.

The existing L2228 Station Road / Rooske Road signalised junction will continue to operate within capacity for the 2031 AM peak hour 'Do-Minimum' scenario with a maximum Degree of Saturation (DoS) of 60% recorded on Station Road (W) with a corresponding mean maximum queue (MMQ) of 10.67 PCUs. During the 2031 PM peak hour 'Do-Minimum' scenario, a maximum DoS of 65% is recorded on Rooske Road with a corresponding MMQ of 13.56 PCUs recorded on Station Road (E).

The existing L2228 Station Road / Rooske Road signalised junction will continue to operate within capacity for the 2041 AM peak hour 'Do-Minimum' scenario with a maximum Degree of Saturation (DoS) of 61% recorded on Station Road (E) with a corresponding mean maximum queue (MMQ) of 10.86 PCUs. During the 2041 PM peak hour 'Do-Minimum' scenario, a maximum DoS of 67% is recorded on Rooske Road with a corresponding MMQ of 14.08 PCUs.

Year	Arm	Movement	AM Peak Hour			PM Peak Hour		
			DoS%	Mean Delay (s)	MMQ (PCUs)	DoS%	Mean Delay (s)	MMQ (PCUs)
2026 DS	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	61%	33.40	10.63	67%	27.79	15.20
	C	L	30%	33.70	4.26	40%	41.35	4.58
		R, S	57%	43.89	7.71	64%	54.31	6.60
	D	All	59%	25.42	11.21	50%	19.08	10.52
2031 DS	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	69%	37.18	13.08	68%	28.17	15.48
	C	L	28%	30.44	4.44	44%	42.26	5.11
		R, S	55%	39.88	8.66	86%	77.76	10.64
	D	All	38%	24.22	6.79	31%	16.00	5.69
2041 DS	A	All	3%	103.49	0.00	14%	107.05	0.54
	B	All	71%	38.03	13.64	70%	29.04	16.41
	C	L	29%	30.61	4.65	46%	42.72	5.38
		R, S	57%	40.55	9.12	90%	87.67	11.88
	D	All	39%	24.24	6.82	31%	16.06	5.77

Table 13.12: 'Do-Something' TRANSYT Results for Junction 4

The TRANSYT results indicate that the existing L2228 Station Road / Rooske Road signalised junction will operate within capacity for the 2026 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 61% recorded on Station Road (E) with a corresponding mean maximum queue (MMQ) of 11.21 PCUs on Station Road (W). During the 2026 PM peak hour 'Do-Something' scenario, a maximum DoS of 67% is recorded on Station Road (E) with a corresponding MMQ of 15.20 PCUs.

The existing L2228 Station Road / Rooske Road signalised junction will continue to operate within capacity for the 2031 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 69% recorded on Station Road (E) with a corresponding mean maximum queue (MMQ) of 13.08 PCUs. During the 2031 PM peak hour 'Do-Something' scenario, a maximum DoS of 86% is recorded on Rooske Road with a corresponding MMQ of 15.48 PCUs recorded on Station Road (E).
The existing L2228 Station Road / Rooske Road signalised junction will continue to operate within capacity for the 2041 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 71% recorded on Station Road (E) with a corresponding mean maximum queue (MMQ) of 13.64 PCUs. During the 2041 PM peak hour 'Do-Something' scenario, a maximum DoS of 90% is recorded on Rooske Road with a corresponding MMQ of 16.41 PCUs recorded on Station Road (E).

Junction 8 – Navan Road / Eastern Distributor Road / Dunboyne Business Park
The proposed four arm signalised junction has been analysed for the 'Do-Minimum' and 'Do-Something' scenario using the TRL software TRANSYT.
Within the TRANSYT model, the arms of the junction were labelled as followed:

- Arm A – Navan Road (N)
- Arm B – Eastern Distributor Road
- Arm C – Navan Road (S)
- Arm D – Dunboyne Business Park

The operational assessment of this junction during the weekday morning and evening peak hours for the 'Do-Minimum' and 'Do-Something' scenario is summarised in the tables below. As it is expected that the full DEDR will not be completed until after the subject development is complete, only the 2031 and 2041 Future Design Years have been analysed.

Year	Arm	Movement	AM Peak Hour			PM Peak Hour		
			DoS%	Mean Delay (s)	MMQ (PCUs)	DoS%	Mean Delay (s)	MMQ (PCUs)
2031 DM	A	All	58%	49.45	7.18	40%	53.14	3.03
	B	L	3%	29.62	0.40	7%	37.85	0.77
		R, S	53%	62.67	3.47	40%	54.22	2.81
	C	L, S	59%	53.43	6.70	39%	62.29	1.72
		R	4%	41.35	0.36	17%	55.46	0.71
	D	All	56%	39.97	9.71	45%	23.97	10.03
2041 DM	A	All	59%	50.53	7.53	39%	52.89	2.91
	B	L	3%	29.22	0.41	8%	37.52	0.82
		R, S	55%	63.44	3.55	39%	52.94	2.98
	C	L, S	58%	52.63	6.68	40%	63.60	1.70
		R	4%	40.85	0.38	19%	56.60	0.76
	D	All	57%	39.89	9.41	46%	24.63	10.49

Table 13.13: 'Do-Minimum' TRANSYT Results for Junction 8

The TRANSYT results indicate that the proposed Navan Road / Eastern Distributor Road signalised junction will operate under capacity for the 2031 AM peak hour 'Do-Minimum' scenario with a maximum Degree of Saturation (DoS) of 59% recorded on Navan Road (S) with a corresponding mean maximum queue (MMQ) of 9.71 PCUs recorded at Dunboyne Business Park. During the 2031 PM peak hour 'Do-Minimum' scenario, a maximum DoS of 45% is recorded at Dunboyne Business Park with a corresponding MMQ of 10.03 PCUs.

The proposed Navan Road / Eastern Distributor Road signalised junction will operate approaching capacity for the 2041 AM peak hour 'Do-Minimum' scenario with a maximum Degree of Saturation (DoS) of 90% recorded on Navan Road (N) with a corresponding mean maximum queue (MMQ) of 13.13 PCUs recorded at Dunboyne Business Park. During the 2041 PM peak hour 'Do-Minimum' scenario, a maximum DoS of 89% is recorded at Dunboyne Business Park with a corresponding MMQ of 16.31 PCUs.

Year	Arm	Movement	AM Peak Hour			PM Peak Hour		
			DoS%	Mean Delay (s)	MMQ (PCUs)	DoS%	Mean Delay (s)	MMQ (PCUs)
2031 DS	A	All	61%	51.83	7.79	44%	56.23	3.20
	B	L	3%	28.65	0.40	6%	34.85	0.79
		R, S	56%	61.10	4.29	42%	50.33	3.99
	C	L, S	60%	54.77	6.89	42%	64.53	1.84
		R	4%	41.98	0.37	18%	56.55	0.75
	D	All	59%	40.90	9.72	53%	27.33	12.19
2041 DS	A	All	63%	53.75	7.82	45%	57.28	3.24
	B	L	3%	28.03	0.42	7%	34.46	0.81
		R, S	57%	60.83	4.54	44%	50.26	4.26
	C	L, S	60%	54.09	7.03	40%	63.57	1.68
		R	4%	41.62	0.40	19%	56.57	0.75
	D	All	60%	41.44	10.23	55%	27.46	12.18

Table 13.14: 'Do-Something' TRANSYT Results for Junction 8

The TRANSYT results indicate that the proposed Navan Road / Eastern Distributor Road signalised junction will operate under capacity for the 2031 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 61% recorded on Navan Road (N) with a corresponding mean maximum queue (MMQ) of 9.72 PCUs recorded at Dunboyne Business Parl. During the 2031 PM peak hour 'Do-Something' scenario, a maximum DoS of 53% is recorded at Dunboyne Business Park with a corresponding MMQ of 12.19 PCUs.
The proposed Navan Road / Eastern Distributor Road signalised junction will operate under capacity for the 2041 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 63% recorded at Navan Road (N) with a corresponding mean maximum queue (MMQ) of 10.23 PCUs recorded at Dunboyne Business Park. During the 2041 PM peak hour 'Do-Something' scenario, a maximum DoS of 55% is recorded at Dunboyne Business Park with a corresponding MMQ of 12.18 PCUs.

Junction 14 – Station Road / Eastern Distributor Road

The proposed four arm signalised junction has been analysed for the 'Do-Something' scenario using the TRL software TRANSYT.
Within the TRANSYT model, the arms of the junction were labelled as followed:

- Arm A – Eastern Distributor Road
- Arm B – L2228 Station Road (E)
- Arm C – 3rd Party Development Site Access
- Arm D – L2228 Station Road (W)

The operational assessment of this junction during the weekday morning and evening peak hours for the 'Do-Something' scenario is summarised in the tables below.

Year	Arm	Movement	AM Peak Hour			PM Peak Hour		
			DoS%	Mean Delay (s)	MMQ (PCUs)	DoS%	Mean Delay (s)	MMQ (PCUs)
2031 DS	A	L	74%	29.92	10.93	67%	37.51	8.53
		S	4%	35.61	0.43	8%	46.45	1.00
		R	23%	36.54	2.10	36%	53.04	2.74
	B	L, S	59%	29.95	15.89	63%	23.16	20.50
		R	25%	21.87	3.04	20%	10.60	2.64
	C	L,S	21%	45.84	2.82	19%	54.36	1.81
		R	43%	50.28	6.70	36%	59.27	3.93
	D	L	6%	20.78	1.18	11%	14.52	2.11
		S	48%	27.42	14.48	23%	15.82	6.07
		R	6%	13.98	1.53	10%	11.42	1.54
2041 DS	A	L	77%	31.70	12.36	70%	41.63	8.04
		S	4%	38.82	0.42	8%	43.78	1.00
		R	25%	34.06	3.11	31%	39.31	2.64
	B	L, S	62%	31.93	16.35	63%	23.03	20.79
		R	27%	22.30	3.05	24%	12.34	3.03
	C	L,S	19%	45.84	2.48	16%	48.64	1.43
		R	42%	50.20	6.13	33%	51.87	3.36
	D	L	7%	22.01	1.31	12%	14.63	2.33
		S	51%	29.42	15.97	24%	15.93	6.32
		R	5%	13.36	1.53	9%	12.65	1.54

Table 13.15: 'Do-Something' TRANSYT Results for Junction 14

The TRANSYT results indicate that the proposed Station Road / Eastern Distributor Road signalised junction will operate within capacity for the 2031 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 74% recorded on the Eastern Distributor Road with a corresponding mean maximum queue (MMQ) of 15.89 PCUs recorded on Station Road (E). During the 2031 PM peak hour 'Do-Something' scenario, a maximum DoS of 67% is recorded on the Eastern Distributor Road with a corresponding MMQ of 20.50 PCUs recorded on Station Road (E).
The proposed Station Road / Eastern Distributor Road signalised junction will continue to operate within capacity for the 2041 AM peak hour 'Do-Something' scenario with a maximum Degree of Saturation (DoS) of 77% recorded on the Eastern Distributor Road with a corresponding mean maximum queue (MMQ) of 16.35 PCUs recorded along Station Road (W). During the 2041 PM peak hour 'Do-Something' scenario, a maximum DoS of 70% is recorded on the Eastern Distributor Road with a corresponding MMQ of 20.79 PCUs recorded on Station Road (E).

The significance of each of the projected impacts at each of the key local nodes is detailed within the following tables for the worst case (e.g., peak hours) during the 2041 Future Design Year scenario.

Node Ref	Environment Character	Quality / Scale of Impact	Impact Significance	Duration
1	Medium	Positive / Medium	Moderate	Long Term
2	Low	Neutral / Negligible	Imperceptible	Long Term
3	Low	Neutral / Negligible	Imperceptible	Long Term
4	Medium - High	Positive / Medium	Moderate	Long Term
5	High	Positive / Medium	Significant	Long Term
6	Medium - High	Positive / Medium	Moderate	Long Term
7	Medium - High	Positive / Medium	Moderate	Long Term
8	Medium	Negative / Medium	Moderate	Long Term
9	Low	Neutral / Negligible	Imperceptible	Long Term
10	Low	Positive / Low	Slight	Long Term
11	Medium	Neutral / Low	Slight	Long Term
12	Medium	Neutral / Low	Slight	Long Term
13	Medium	Negative / Low	Slight	Long Term
14	Medium	Negative / Low	Slight	Long Term

Table 13.16: Road Network Impact Significance – Operation Phase

13.5 Cumulative Impacts

13.5.1 Committed Developments

This assessment considered cumulative impacts that are:

1. Likely;
2. Significant; and
3. Relating to an event which has either occurred or is reasonably foreseeable together with the impacts from this development.

Third Party developments currently under construction and other committed developments in the vicinity of the site have been considered. The following committed development has been reviewed and included within the traffic analysis:

1. MCC Ref. RA180561 – Construction of 99 no. residential units (51 no. apartments and 48 no. houses). This development was granted full planning permission and is currently under construction. However, at the time of the traffic surveys, only the houses and 10 no. apartment units were constructed and occupied. As such, the remaining 38 no. apartments have been included in the assessment of the local road network.
2. MCC Ref. 23424 – Construction of 13,729 sqm office space. This development was granted conditional planning permission which was appealed in July 2024. However, due to its significant scale, it has been included as a

committed development as part of the assessment of the local road network.

3. MCC Ref. P822022 – Construction of a new link road to connect Dunboyne Business Park to the R157. The development has been granted full planning permission.
4. MCC Ref. 2360065 – Construction of 2,160 sqm of retail space to include a supermarket, class 1 (shop) and class 2 (financial, professional, and other services) or café. This development has received conditional planning permission and due to its significant scale, it has been included as a committed development as part of the assessment of the local road network.
5. MCC Ref. 23849 – Construction of 716 no. residential units (517 no. apartments, 44 no. duplexes and 155 no. houses) alongside a 602 sqm creche. This development has been granted full planning permission.
6. MCC Ref. 2360290 – Construction of 267 no. residential units (145 no. houses, 122 no. duplexes / apartments). This development has been granted conditional planning permission but was appealed in July 2024.
7. Dunboyne Eastern Distributor Road – 1.46km of new carriageway connecting Navan Road to Station Road via the subject LRD lands. A planning application for this development is set to be lodged soon.
8. Carroll's Development Lands – From discussions with the developer, it is understood that there is a desire to lodge a planning application for approximately 182 no. residential units along the northern section of the DEDR, to the west of the railway.
9. MCC Ref. 2460468 - 76 residential units at Castle Farm, comprising 34 no. houses and 42 no. apartments. A planning application for this development was lodged in June 2024.

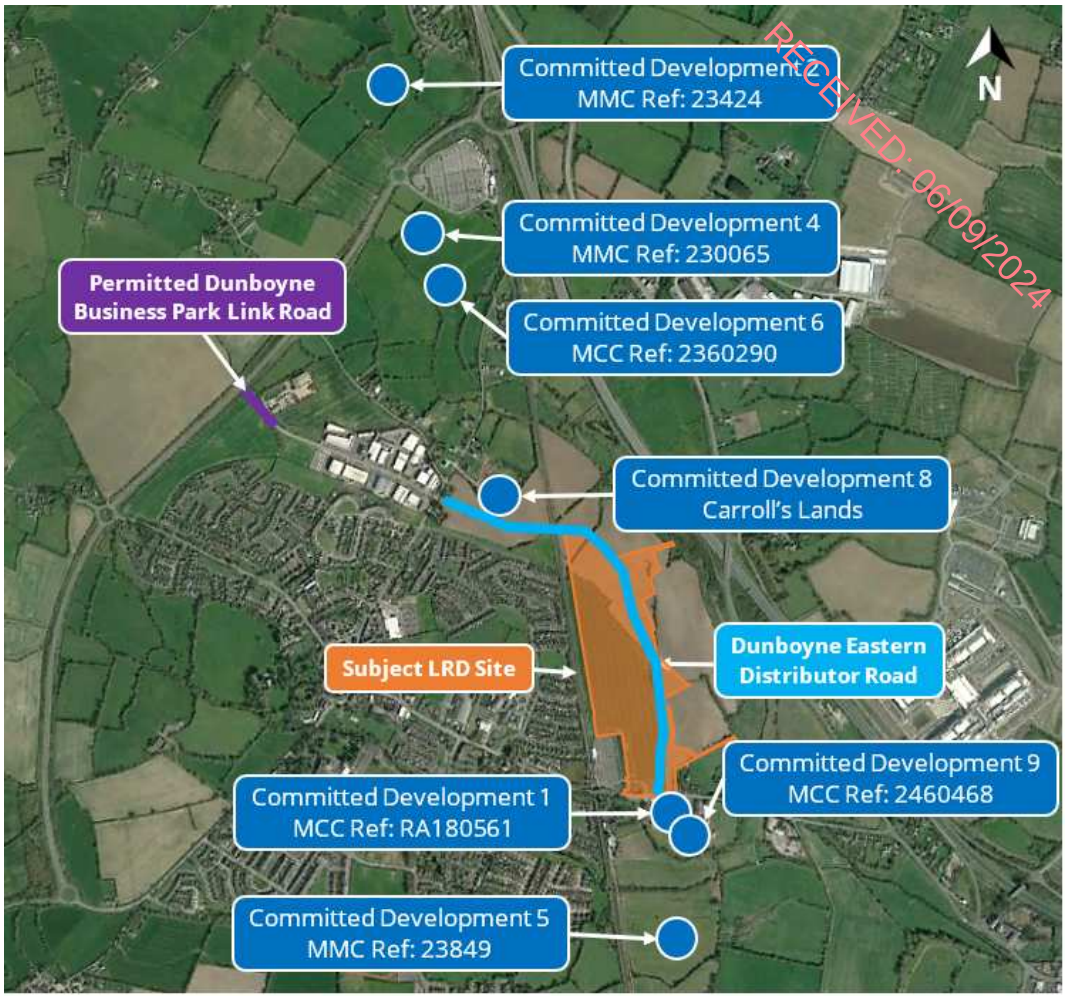

Figure 13.14 – Location of JTC Surveys and Junctions included within the Traffic Model

13.5.2 Interactions Arising

Noise and Vibration

Construction Phase

The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul routes. However, such effects will be temporary in nature.

Quality of Effect: Negative
Significance of Effect: Slight

Operational Phase

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 under section 13.6 will prevent and minimise the potential impacts of this interaction.

Quality of Effect: Negative
Significance of Effect: Slight

Air Quality

Construction Phase

During the construction phase, construction traffic will contribute to increased traffic volumes with majority of construction vehicles being HGVs. This will impact negatively on the surrounding air quality. This will be short term in nature and will be managed by means of an effective Construction Environmental Management Plan (CEMP), which has been developed and is submitted alongside this application.

Quality of Effect: Negative
Significance of Effect: Imperceptible

Operational Phase

During the operational phase, development traffic will contribute to increased traffic volumes on the surrounding road network which will in turn impact air quality in terms of additional emissions. Implementation of the mitigation measures described in Chapter 9 – Air Quality and Climate will minimise the potential impacts of this interaction. This will be long term in nature.

Quality of Effect: Negative
Significance of Effect: Imperceptible

Population and Human Health

Construction Phase

During the Construction Stage, impact on the population and human health may be negatively impacted with construction works contributing to an increase in noise and traffic volumes as well as a reduction in air quality. The scheme will be developed in line with the Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic, including health of pedestrians and cyclists along Station Road and Navan Road are minimised during the construction stage. Impact during the Construction Phase will be short term in nature.

Quality of Effect: Negative
Significance of Effect: Medium

Operational Phase

During the Operational Stage, the provision of good quality cycle and pedestrian facilities within the proposed development and along the Dunboyne Eastern Distributor Road will provide improvements in health and wellbeing for the general population. This impact will be long term in nature.

Quality of Effect: Positive
Significance of Effect: Medium

Land and Soil

Construction Phase

Delivery of materials to site (e.g. aggregates for road construction, concrete for foundations, delivery of construction plant to site) will lead to potential impact on the surrounding road network. As noted previously, the scheme will be developed in line with the separately enclosed Preliminary Construction Management Plan (PCMP) to ensure

any impacts on local traffic is minimised during the construction stage. This impact will be short term in nature.

Quality of Effect: Negative
Significance of Effect: Slight

Operational Phase

On completion of the Construction Phase, there will be no further impact on soils and the geographical environment.

13.6 Mitigation Measures

13.6.1 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 roads authority prior to the commencement of construction activities on site. 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 Construction Traffic Management Plan (CTMP) will incorporate 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.
All construction related parking will be provided on site. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site staff and management;
- Construction vehicles e.g. excavation plant, dump trucks;
- Materials delivery vehicles involved in site development works.

It is anticipated that the generation of HGVs during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.
Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Meath County Council will be adhered to

13.6.2 Operational Stage

A package of integrated mitigation measures has been identified and will be implemented to off-set the additional local demand that the proposed development could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme.
A Mobility Management Plan has been prepared as part of this planning application. The Mobility Management Plan (MMP) ultimately seeks to encourage sustainable travel practices for all journeys by residents and visitors travelling to and from the proposed development. It involves the incorporation of a wide range of possible 'hard' and 'soft' tools from which to choose from with the objective of influencing travel choices. The measures in the MMP comprise a number of different categories including:

- Management & Monitoring Strategy
- Walking Strategy
- Cycling Strategy
- Public Transport Strategy

- Private Car Strategy
- Marketing & Promotion Strategy

In order to reduce the number of private vehicles to and from the development, a number of walking and cycling connection points are proposed to encourage more active travel. These points connect to the high quality pedestrian and cyclist network proposed along the Dunboyne Eastern Distributor Road. The proposed development also provides a direct connection for pedestrians and cyclists to Dunboyne Train Station.

A total of 1,634 no. cycle parking spaces will be provided as part of the proposed residential development and exceeds MCC's Development Plan's requirements. Residential cycle parking equates to a total of 1,288 no. spaces (comprising 708 no. apartment spaces, 278 no. duplex spaces and 302 no. spaces for the houses). Of the 708 no. apartment spaces, 6no. will be capable of accommodating cargo bikes and 6 no. will provide charging facilities for e-bikes.

A total of 24 no. spaces have been assigned to the creche facilities while 12 no. spaces have been assigned to the retail element. A total of 310 no. short-stay cycle spaces will be allocated for the residential element exclusively to visitors.

A total of 302 no. long-stay residential parking spaces has been allocated for the 151 no. mid-terrace units that do not benefit from a side or rear access to rear gardens. These spaces will be in the form of bicycle storage units which will be located along the frontage of each unit.

13.7 Residual Impact of the Proposed Development

13.7.1 Construction Stage

Increase in Vehicular Traffic on Road Network

Implementing the proposed mitigation measures that employees will share vehicular transport and HGVs will be evenly distributed across the working day, the residual impact is considered to be neutral, slight and short term.

Public Environment

Implementing the proposed mitigation measures of a detailed Construction Traffic Management Plan, the residual impact is considered to be neutral, slight and short term.

13.7.2 Operational Stage

Increase in Vehicular Traffic on Surrounding Road Network

There will be a permanent increase in vehicular traffic across the surrounding road network. However, with the completion of the Dunboyne Eastern Distributor Road, a section of which will be facilitated by the subject development, there will be a permanent reduction in traffic through Dunboyne town centre.

Detailed junction assessments undertaken show that the increase in traffic as a result of the proposed development will result in only slight impact, with junctions continuing to operate within capacity. The implementation of the mitigation measures outlined in section 13.6 will result in the residual impact to be considered as neutral, slight and permanent.

13.8 Monitoring

During the construction stage the following monitoring exercises are likely to be required. The specific compliance exercises to be undertaken in regard to the range of measures

detailed in the final construction management plan will be agreed with the planning authority:

- Compliance with construction vehicle routing practices;
- Internal and external road conditions;
- Timing of construction activities.
-

The EPA EIAR Guidelines 2022 states the EIAR, or sections of an EIAR, should avoid including a 'Conclusions' section. Instead, an EIAR can include a summary of effects, a mitigation and monitoring measures compendium.

13.9 Difficulties Encountered

There were no material difficulties encountered in compiling and assessing the data for this EIAR to prevent modelling of the likely transport effects of the proposed development.

13.10 References

Dublin Transportation Office & Department of the Environment and Local Government. (2003). Traffic Management Guidelines.

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The Institution of Highways and Transportation. (1994). Guidelines for Traffic Impact Assessments.

Meath County Council. (2021). Meath County Development Plan 2021-2027.

14 WASTE MANAGEMENT

14.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Waste Management.

14.1.1 Author Information and Competency

This chapter was prepared by Laura Griffin, Environmental Consultant, Enviroguide. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration, and Material Assets (Waste and Utilities) of EIARs.

This chapter has been reviewed and approved by Harry Parker, Technical Director and EIA Lead at Enviroguide. Harry is an environmental consultant with 16 years' experience in consultancy, specialising in EIAs for large-scale residential and commercial developments, working closely with a range of developers, planning consultants and architects within the public and private sector.

14.2 Assessment Methodology

Regulations and Guidance

The methodology adopted for the assessment will take cognisance of relevant guidelines, in particular the following:

- Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR);
- EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects;
- Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851;
- European Union (Waste Directive) Regulations 2020, S.I. No. 323 of 202;
- Waste Management Acts 1996 (as amended);
- Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021; and
- Meath County Development Plan 2021-2027.

The scope of the work undertaken for the impact assessment will include desk-based study of waste management services within the defined study area. The desk study involve collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the Applicant and design team. Information on waste management in the vicinity of the Site of the Proposed Development will be assembled by reviewing the following information:

- Construction Environmental Management Plan (Enviroguide, 2024);
- Resource Waste Management Plan (Enviroguide, 2024)
- Operational Waste Management Plan (Enviroguide, 2024)
- http://mywaste.ie

14.3 Prediction and Assessment of Potential Impacts

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this chapter is described in Table 14-1.

Table 14.1:

QUALITY OF EFFECTS / IMPACTS	*DEFINITION*
Negative	*A change which reduces the quality of the environment.*
Neutral	*No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.*
Positive	*A change that improves the quality of the environment.*
SIGNIFICANCE OF EFFECTS / IMPACTS	*DEFINITION*
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 a sensitive aspect of the environment.*
Profound	*An effect which obliterates sensitive characteristics.*
DURATION OF EFFECTS / IMPACTS	*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*
Permanent	*Effects lasting over sixty years*
Reversible	*Effects that can be undone, for example through remediation or restoration*

Terminology Used to Assess the Duration of Potential Impacts and Effects (EPA, 2022)

14.4 Local and National Waste Action Plans

The National Waste Management Plan for a Circular Economy (NWMPCE) 2024 -2030, sets out the framework for the prevention and management of waste across Ireland. This document is a statutory document underpinned by national and EU waste legislation, and reflects the targets set out for C&D waste in the Waste Framework Directive (WFD).

The strategic vision of the Plan is to rethink the approach to managing waste, and to move towards a 'circular economy' approach where resources are reused or recycled as much as possible, and the overall generation of waste is minimised.
In order to achieve this vision, the Plan has set out a number of specific and measurable performance targets in relation to Construction and Demolition waste:

- Achieve a 2% reduction per annum is proposed for total construction and demolition waste to achieve a cumulative 12% reduction by 2030 (Baseline is 9 Million tonnes); and
- Achieve 70% of C&D waste sent for reuse, recycling and other recovery of construction and demolition waste (excluding natural soils and stones and hazardous wastes).

The Plan aims to "prioritise waste prevention and circularity in the construction and demolition sector to reduce the resources that need to be captured as waste".

In order to achieve the objectives set out in NWMPCE, it is imperative that robust resource and waste management plans are developed for and designed into the pre-construction, construction and operational phases of the Proposed Development.

14.5 Article 27 of the European Communities (Waste Directive) Regulations 2011

Under the Under Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27), uncontaminated soil and stone free from anthropogenic contamination which is excavated during the Construction Phase of a development can be considered a by-product and not a waste, if (a) further beneficial use of the material is certain, (b) it can be used directly without any further processing, (c) it is produced as an integral part of the development works and (d) the use is lawful and will not have any adverse environmental or human health impacts (EPA, 2019). For Article 27 to apply, the beneficial use mentioned in point (a) above must be identified for the entirety of the excavated soil from the Proposed Development prior to its production, with that use taking place within a definite timeframe, for it to be regarded as certain.

14.6 The Existing and Receiving Environment (Baseline Situation)

The site is generally bounded by y Station Road (L2228) to the south, Dunboyne Train Station and the Iarnród Éireann rail line to the west, cluster of detached houses to the southeast, greenfield lands to north and east. The application includes also two (2) roundabouts on the R147 (Old Navan Road).

14.7 Characteristics of the Proposed Development

Chapter 2 of this EIAR includes a detailed description of the Proposed Development.

The waste management objectives for the Proposed Development are as follows, and will facilitate material reuse and recycling, where possible, and seek to divert waste from landfill:

- Prevention: The Contractor will prevent and minimise waste generation where possible by ensuring large surpluses of construction materials are not delivered to the Site through coordination with the suppliers, operating a 'just-in-time' delivery scheme and ensuring sub-contractors conform to the Construction Environmental Management Plan;

- Reuse: Reusing wastes and surplus materials where feasible and in as many high value uses as possible;
- Recycle: Recycling wastes where possible such as introducing on-site crushers to produce waste derived aggregates which, subject to appropriate testing and approvals, may be re-used in the Proposed Development; and
- Disposal: Where disposal of waste is unavoidable, this will be undertaken in accordance with the Waste Management Act 1996, as amended.

14.8 Potential Impacts of the Proposed Development

14.8.1 Construction Phase

The Construction Phase will give rise to the requirement to remove and bring quantities of various materials to and from the site. Construction and excavation related wastes will be created during the Construction Phase. This has the potential to impact on the local waste management network.

A Resource Waste Management Plan (RWMP) (Enviroguide, 2024) has been prepared for the Construction Phase of the Proposed Development and is included in Volume 3 – Appendices.

The Contractor will have the responsibility to record resource and waste management at the site in line with the Resource and Waste Management Plan (RWMP). Some of the principal duties and responsibilities of this role include:

- Report to Project Manager on the management of resources and waste at the site.
- Identify all destinations for resources taken off-site.
- Address end-of-waste and by-product notifications with the EPA, where applicable.
- Maintain full records of all resources (both wastes and other resources) for the duration of the project
- Delegate responsibility to sub-contractors, where necessary.
- Coordinate with suppliers, service providers and sub-contractors.
- Prioritise waste prevention and resource salvage.

It is intended, where possible, to maximise the reuse of clean/non-hazardous excavation material following appropriate material testing and risk assessment to ensure the material is suitable for its proposed end use, to avoid importing raw materials. Excavated soil and stone pending reuse in the Proposed Development will be temporarily stockpiled in designated areas onsite during the construction phase.

Offsite removal of surplus clean soil and topsoil will be undertaken in accordance with the RWMP and relevant waste management legislation. The site management team will keep records of the removal and certification on file on site. The offsite re-use of material will be prioritised to minimise the potential loss of valuable good quality soil and subsoil to landfill as a waste. The re-use of soil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27. Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

The Contractor will vet the source of aggregate, fill material and topsoil imported to the Site in order to ensure that it is of a reputable origin and that it is "clean" (i.e., it will not contaminate the environment). The Contractor and/or Meath County Council will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance.

The waste materials generated during the construction phase will be stored in suitably size receptables and transferred offsite for appropriate processing, recycling and recovery. Waste materials generated from the Construction Phase that are unsuitable for reuse or recovery will be separately collected. Disposal of construction generated wastes will be considered a last resort and only after recycling or recovery options have been ruled out. Waste will be collected as appropriate by suitably qualified and permitted nominated waste management contractors.

It is not envisaged that there will be any hazardous waste generated throughout the construction works however, in the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify MCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Only authorised facilities will be used and as a result of this, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Waste will also be generated from construction workers e.g., organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the Construction Phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. Office and canteen waste, including food waste, will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility.

The potential impact from the construction phase on waste recovery and disposal is likely to be short-term, negative and minor in nature.

14.8.2 Operational Phase

The operational phase of the Proposed Development will result in an increase in the production of municipal waste in the region and will increase demand on waste collectors and treatment facilities, however, as the surrounding area is urban in nature, waste collection is commonplace. Anticipated wastes arising from the day-to-day operations at the Proposed Development are summarised in Table 14.2.

WASTE DESCRIPTION	***LISTOF WASTE CODES***
Mixed Municipal Waste	20 03 01
Dry Mixed Recyclables	20 03 01
Biodegradable Kitchen Waste	20 01 08
Glass	20 01 02

WASTE DESCRIPTION	*LISTOF WASTE CODES*
Bulky wastes	20 03 07
Waste electrical and electronic equipment*	20 01 35* 21 01 36
Batteries and accumulators*	20 01 33* 20 01 34
Textiles	20 01 11
Fluorescent tubes and other mercury containing waste*	20 01 21
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)*	20 01 13/19/27-28/29-30
Plastic	20 01 39
Metals	20 01 40
Paper and Cardboard	20 01 01

**Individual waste type may contain hazardous materials*

***Table 14.2:* Typical Waste Types and Generated List of Waste (LoW) Codes**

Municipal waste is made up of household waste and commercial waste that is compositionally comparable to household waste. It includes residual, recyclables, organic, bulky, and waste electrical and electronic equipment. An Operational Waste Management Plan (OWMP) has been prepared by Enviroguide (2024) and has been submitted with this planning application.

The OWMP has been prepared to ensure that the management of waste during the operational phase of the Proposed Development is undertaken in accordance with current legal and industry standards including the 'Waste Management Act 1996, as amended', and associated Regulations including, 'Protection of the Environment Act 2003 as amended', 'Litter Pollution Act 1997 as amended', the 'National Waste Management Plan for a Circular Economy 2024-2030' and 'Meath County Council bye-laws' (hereinafter referred to as 'the bye-laws').

The waste strategy presented in the Operational Waste Management Plan which sets out how waste storage and management has been designed in accordance with legal requirements, policies and good management guidelines.

Implementation of the Operational Waste Management Plan will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the operational phase. The potential impact from the operational phase on municipal waste disposal is likely to be long term, negative and moderate.

14.8.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

A review of other off-site developments and proposed developments listed in Chapter 16 was completed as part of this assessment.

With regard to other developments under construction and proposed in the in the vicinity of the site of the Proposed Development, there will be a greater demand on existing local waste management services and on regional waste acceptance facilities.

The capacity of waste collection companies and waste management facilities in County Meath have been designed with forward planning and expansion in mind to cater for a growing population. Existing waste collections currently take place in the local area and during the operational phase, the Proposed Development will be added to an existing collection route. The likely effect will be neutral and not significant on waste management facilities in the area in the long-term.

14.9 Avoidance, Remedial and Mitigation Measures

14.9.1 Construction Phase

The following mitigation measures are recommended for the Construction Phase of the Proposed Development regarding Waste Management:

- Waste materials will be separated at source and will follow the RWMP.
- Prior to the commencement of the Construction Phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous;
- Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011;
- A suitably competent and fully permitted waste management company will be employed to manage waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO);
- Similarly, all waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency; and
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the construction phase.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with provisions of the Waste Management Act 1996, as amended, associated Regulations and Litter Pollution Act 1997, and The National Waste Management Plan for a Circular Economy 2024-2030. The mitigation measures will also ensure optimum levels of waste reduction, reuse, recycling and recover are achieved and will promote more sustainable consumption of resources.

14.9.2 Operational Phase

As previously stated, an outlined Operational Waste Management Plan has been prepared by Enviroguide (2024) and is included in Volume 3 - Appendices of this EIAR. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of

recycling, reuse and recovery at the Proposed Development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in The National Waste Management Plan for a Circular Economy 2024-2030.

14.9.3 'Do Nothing' Scenario

In the 'Do Nothing' scenario, the Proposed Development does not proceed and there would be no excavation, construction or operational waste generated at the site. There would, therefore, be no additional demand or loading on waste management infrastructure locally or nationally and thus there would be a neutral effect on the environment in terms of waste.

14.10 Residual Impacts

14.10.1 Construction Phase

The residual effects on waste management are considered to be minor, negative and short-term, due to:

- The prevention and mitigation measures proposed within this and other chapters of the EIAR;
- Compliance with national legislation and the allocation of adequate time and resources dedicated to efficient waste management practices; and
- Continued use of permitted/licensed waste haulers and facilities. Waste removed from the facility will be managed appropriately and will avoid environmental impacts or pollution. In addition, the correct management and storage of waste will avoid litter or pollution issues at the site.

14.10.2 Operational Phase

Waste materials will be generated on an ongoing basis during the operational phase; these will for the most part consist of municipal waste and recyclable materials. Careful management of these, including segregation at source, will help to ensure a high level of waste recycling, reuse, and recovery at the development. A certain proportion of operational waste will nevertheless need to be disposed of at landfill. Given the provision of appropriate facilities, and their correct use by residents, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from operational waste storage and removal are expected to be minimal. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste. With the implementation of the proposed operational waste management measures, the proposed development is not expected to have a significant environmental impact with respect to operational waste. The likely effect of the operational phase on waste management will be neutral and imperceptible in the long-term.

14.11 Monitoring

14.11.1 Construction Phase

All waste transfer notes will be checked and filed in the environmental plan for regular review and monitoring.

- Signage on the site office/welfare bins to separate them as environmental/domestic waste bins; and

- Briefing for all sub-contractors via induction handouts.

14.11.2 Operational Phase

No operational phase monitoring is proposed.

14.12 Interactions

Waste management interacts with other environmental receptors as follows:

- Population and Human Health: The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers. Potential impacts on population and human health are addressed in Chapter 5.
- Biodiversity: The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 8 (Biodiversity).
- Land, Soils, Geology and Hydrogeology: Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the Site. Potential impacts on land and soils are addressed in Chapter 6.
- Traffic and Transportation: Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the Blessington area. Potential impacts on traffic are addressed in Chapter 13.

14.13 Difficulties Found

No difficulties have been encountered while compiling this Chapter.

14.14 References

Department of Communications, Climate Action and Environment (DCCAE) (2021) A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025

Environmental Protection Agency, 2022, Guidelines on the Information to Be Contained in Environmental Impact Assessment Reports.

Environmental Protection Agency, 2021, Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects

Environmental Protection Agency, 2019, Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011, Version 3.

Environmental Protection Agency, 2003, Advice Notes on Current Practice in the preparation of Environmental Impact Statements.

Environmental Protection Agency, 2002, Guidelines on the information to be contained in Environmental Impact Statements.

Litter Pollution Act 1997.

Meath County Council Litter Management Plan 2022 – 2024.

The National Waste Management Plan for a Circular Economy 2024-2030.

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.

Waste Management Acts 1996-2011 (as amended).

15 MATERIAL ASSETS

15.1 Introduction

This chapter prepared evaluates the protentional impacts, from the proposed development of Material Assets as defined in the EPA Guidelines 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022), Advice Notes Draft Advice Notes for preparing Environmental Impact Statements (EPA, 2015), and European Commission Guidance on Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2017)'.

This chapter will evaluate the following economic assets of the site and environs:

- Materials Assets of Natural Origin
  - Agriculture
  - Natural resources
- Material Assets of Human Origin
  - Local settlement
  - Property Prices
  - Gas Supply
  - Electricity supply
  - Telecommunications
  - Transport
  - Water supply and sewerage
  - Municipal Waste
  - Tourism

Where relevant several of these assets have been addressed in other chapters within this EIAR and therefore, they are not discussed in detail in this chapter. References are provided to these other chapters where appropriate.

15.2 Expertise

This chapter of EIAR has been prepared by Katarina Kanevova, planner, who completed her Master's Degree in Spatial Planning at Slovak University of Technology in Bratislava, Slovakia in 2010. Following her studies she worked in forward planning, specialised on land-use planning projects in Slovakia. Her main focus after moving to Ireland is on residential development. Katarina is a Corporate Member of the Irish Planning Institute.

15.3 Material Assets of Natural Origins

15.3.1 Agriculture

The proposed development site has most recently been used for agriculture activities; however, the lands upon which the proposed development is to be located are zoned as residential. It is not anticipated that the operation of the proposed development will have any significant impact on agriculture in the wider environs of the site. Emissions from the proposed developments with the potential to impact on local agriculture are addressed in the respective EIAR chapters including Chapter 5: Population and Human Health, Chapter 6: Land, Soils, Geology and Hydrogeology, Chapter 7: Hydrology, Chapter 8: Biodiversity, Chapter 9: Air Quality & Climate and Chapter 10: Noise and Vibration.

15.3.2 Planting

Chapter 11 Landscape and Visual Impact report assesses trees on site and provides an analysis of any potential impact on the existing trees and hedgerows. The chapter also provides recommendations for remedial works, preservation and or removal of trees and hedgerows.

13.3.3 Use of Natural Resources (Energy/ Fuel)

During construction, fuel for construction related machinery will be one of the main resources used. Use of natural resources, especially water, will be kept to a minimum during the construction phase.

During the operational phase, there will be on-going resource requirements which will reflect the nature of the development. Refer Chapter 9: Air Quality and Climate for details on potential emissions from the proposed development.

15.4 Material Assets of Human Origins

15.4.1 Local Settlement

Dunboyne, located directly west of the site is the nearest significant settlement to the proposed development. The Dunboyne railway station is located directly to the east of the subject site. This application incorporates improved access points to this public transport node. Further details on the nature of local settlements are presented in Chapter 5: Population and Human Health.

15.4.1.1 Property Prices

The development will consist of the construction of 853 residential units (398 no. apartments, 112 no. duplexes, 343 no. houses), residential amenity space in Blocks A – C. Apartment blocks are proposed as 1-6 storeys, duplexes 3-4 storeys and houses 1-3 storeys. The residential units proposed are of exceptional quality with generous floor areas and private open space and a high-quality palette of materials and finishes.

The development consists of 3 key areas: the Gateway Hub to the south of the site adjacent to the Dunboyne Station and Station Road with high residential density, an area of duplex development, houses up to 3 storeys and a focal point with apartment block to the north to enhance frontage along the distributor road and to enclose the subject site, an area of traditional house development to the centre of the site to reflect on existing residential development to the west.

The delivery of non-residential uses of café (c.196sqm) with associated outdoor seating area, medical unit 1 (197 sqm), retail unit 2 (170 sqm), retail unit 3 (217 sqm), community room (52 sqm) on the ground floor of Blocks A along with a stand-alone creche (c. 394 sqm) will provide an active urban frontage of the proposed high density Gateway Hub adjacent to Dunboyne Station and Station Road. The second creche (c. 400 sqm) forms a part of Block C and is envisaged to serve the northern part of the development.

The proposal delivers a portion of the Dunboyne Eastern Distributor Road from Station Road to bridge embankments including relocation of the existing station car park access.

The overall site is bounded by the railway line with Dunboyne Station to the west, Station Road to the south and predominantly agricultural lands to the east and north.

It is anticipated that the proposed development will have no negative impact on property prices. The commencement of the construction of the Dunboyne Eastern Distributor

Road road will facilitate further expansion of Dunboyne in the future. A proposed portion of the Eastern Distributor Road will contribute towards a construction of the full length of the distributor road which allow the removal of through traffic from the centre of the village hence improving the public realm experience within the village during peak commuting hours.

15.4.2 Gas Supply

There is an existing gas pipeline located within the surrounding road network. However, gas supply is not being proposed for this development.

15.4.3 Electricity Supply

The proposed development will require an electrical connection to the local network. ESB services will connect to the existing 10kV ESB MV network which is currently available in the area and supply the Residential development. A system of Modular unit substations will be installed to provide power to the development.

Electricity services will be brought from the existing MV network via underground ducting to the unit substations to be located on the site.

15.4.4 Telecom

The subject site is located in a well developed suburban area with excellent telecommunication links. It has been confirmed that Eir, Virgin and Sky can all provide a 500Mb service to the proposed development. Virgin have a fibre backbone in the area and this can be expended on to the subject site. Siro, an open platform fibre network is also available. This is a joint venture between Vodafone and ESB and is distributed in tandem with ESB Networks ducting system. Similar to other providers this will bring a fibre connection into the house but this platform is open to other service providers.

15.4.5 Transport

Chapter 13: Traffic and Transportation examines the traffic implications associated with the proposed development, in terms of integration with existing traffic in the area. The chapter presents a detailed review of the proposed development on the existing road network, through the operational assessment of the New distributor road in the vicinity of the development site.

It also examines the proposed development's vehicular access arrangements, site layout and facilities for pedestrians and cyclists.

15.4.6 Water Resources

Chapter 7: Hydrology deals with water resources associated with the proposed development.

According to the development's potable water demand, it has been calculated that the predicted peak water demand is 24.90 l/sec.

There is an existing 200mm watermain that runs along Station Road. There is no existing watermain infrastructure within the subject site. A watermain connection for the railway station is present within the existing station access road.

A pre-connection enquiry has been submitted to Irish Water for the subject site and a confirmation of feasibility has been received in response. . Furthermore, a Statement of Design Acceptance has been received from Irish Water.

15.4.7 Surface Water Drainage

There is an existing 300mm-750mm surface water sewer running along the entire length of the western boundary of the subject site. At the southwest corner of the site this surface water sewer crosses into the Dunboyne Railway Station lands where it then heads west under the railway tracks. This pipe shall be diverted within the subject lands to flow eastwards via a piped culvert where it is discharged at the River Tolka as directed by S247 comments.

As referred to above, there are a number of dry channels crossing the development site which provide drainage for the agricultural purposed of the land. There is also an existing culvert to the northwest of the site under the railway line which connects into one of these ditches. As part of the proposed development works the ditch crossing the track will be culverted eastwards to the River Tolka while the remaining ditches will be made redundant.

The site has been divided into 13 sub-catchments, each surface water sub-catchment will collect runoff via a combination of SuDS features and traditional piped connections prior to discharge to one of the proposed attenuation storage systems. After attenuation, the surface water is released at a controlled rate via a Hydrobrake manhole or similar approved to a discharge point on an existing surface water sewer or a receiving existing watercourse. As requested by MCC the majority of the site will discharge to the east, towards the Tolka, with a small portion of the site in the south west corner of the development unable to outfall to the east given the site levels. It is proposed for this sub-catchment to discharge to the existing surface water attenuation system within the Dunboyne Rail Station. The run-off directed to the existing network shall be equivalent to the drained area of the removed access road in order to utilise the existing attenuation system.

15.4.8 Sewerage

Chapter 7: Hydrology deals process and foul effluent associated with the proposed developments.

There is an existing 450mm diameter foul sewer which traverses the western lands outside of the subject site from Navan Road to the railway line before heading below the railways tracks and connecting into an existing 300mm/450mm foul sewer which flows south along the length of the western boundary of the development. This pipe receives foul sewer flows from the existing development to the west of the rail line through several rail crossings.

According to the Irish Water Guidelines, it has been calculated that the predicted peak will be 26.39 l/sec, however, the peak flow using the EN752 method in MICRODRAINAGE was also calculated. The pipes have been sized to accommodate the larger value. For more details we refer to Chapter 7 and Engineering Services Report prepared by DBFL.

The foul infrastructure for the development will be a standalone gravity sewer system, divided into the catchments. Each housing unit will be provided with an individual connection to a new sewer located under the development internal access roads. Foul sewage in apartment blocks will be drained on separate systems via 150mm diameter

pipes. The new sewer within the development will be 225mm in diameter unless noted otherwise.

Any surface water from the undercroft car parks in the proposed blocks, generated by incidental spillage only would drain through an underground system of collector pipes, gullies and ACO drains to collect water which will drain through a petrol interceptor prior to discharging into the gravity foul drainage system for the site in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS).

A pre-connection enquiry has been submitted to Irish Water and a confirmation of feasibility has been received in response. Furthermore, a Statement of Design Acceptance has been received from Irish Water.

15.4.8 Municipal Waste

The construction phase of the proposed development works will give rise to the requirement to remove or to bring on to the site significant quantities of construction materials.

Chapter 14: Waste Management addresses various measures which ensure that the waste arising at the development site is effectively manged to maximise recycling of construction waste, and to minimise the environment impact of construction waste.

All these measures are in compliance with the provisions of the Waste Management Act 1996 (as amended), the litter Act of 1997, and the Eastern-Midlands Region (EMR) Waste management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

The future development will increase demand on municipal waste services. The potential impact from the operational phase of the future development on municipal waste disposal is likely to be long term and moderate.

15.4.9 Tourism

The proposed developments are located in agricultural lands. In terms of tourism, the village is served by one hotel, Dunboyne Castle Hotel, which is located 1km to the west of the site. As such, there will be minimal impact on this hotel during the construction phase. It is noted that this hotel is accessible from multiple other roads. In order to reduce the negative impact various mitigation measures have been addressed in Chapter 10.

During the operation phase of the development, this hotel will be unaffected by the scheme.

15.5 Mitigation Measures

- Chapter 11: The layout of the proposed development will require the removal of 10 No. individual trees, two areas of scrub and approximately 1,810 lin. mc.1,810 of hedge sections to facilitate the proposed development application. The hedges ro be removed are made up predominantly of Hawthorn with some Elder and Blackthorn with an undergrowth of Bramble and Dog Rose.

  Tree and hedgerow removal is to be mitigated against with new plantings as proposed in the landscape masterplan. Tree sizes will range from whips to semi-mature sized trees, and a substantial proportion of native species in the planting mix. (Refer to Tree Survey and Arboricultural Impact Assessment and drawings by

the Tree File, and Landscape Masterplan and landscape planting specification by KFLA)

- As outlined mitigation measures in Chapter 12: Archaeological, Architectural and Cultural Heritage is carried out, then there will be no significant negative residual impacts on the archaeological, architectural or cultural heritage resource.

- Chapter 10: Noise & Vibration deals with a schedule of mitigation measures that has been proposed for both the construction and operational phases to reduce, where necessary, the outward noise and vibration from the development.

- Chapter 9: Air Quality and Climate deals with appropriate mitigation measures to prevent fugitive dust emissions which will ensure the prevention of significant emissions during the construction stage. These measures have been incorporated into the overall Construction Environmental Management Plan (CEMP) prepared in respect of the proposed development.

  The proposed mitigation measures will ensure that a potential significant adverse effect will not occur, therefore, the residual effect will not be significant.

  In the operational phase, no significant adverse residual impacts are anticipated from the proposed scheme in the context of air quality and climate.

- Chapter 7: Hydrology outlines various mitigation measures which are included during construction will ensure that the potential impacts of the proposed development on water and the hydrogeological environment do not occur during the construction phase and that any residual impacts will be negligible.

  As the surface water drainage design for the residential development site has been carried out in accordance with the GDSDS, and SuDS methodologies are being implemented the surface water runoff from both the proposed LRD development will be reduced and so the risk of flooding to the downstream drainage networks will also be reduced.

15.6 Residual Assessment

The proposed development will not have any significant impact on material assets including, most notably, public utilities and natural resources. The overall predicted impact of the proposed developments can be classed as long term and negligible with respect to material assets. The proposed development has been designed for, and the infrastructure constructed for, a residential development of this nature.

16 CUMULATIVE IMPACTS

16.1 Introduction

This chapter considers the cumulative impact of the proposed development with any future development, as far as is practically possible, on the site and the cumulative impacts with both planned and permitted developments in the immediate surrounding area. As described in chapter 2 Description of Development, the development will consist of a Large Scale Residential Development.

Cumulative impacts are the impacts that relate to the incremental/additive impacts of the planned development to historical, present, or foreseeable future actions within reason. Cumulative impacts generally arise through the following:

- Persistent additions or losses of the same material or resource,
- Compounding effects due to the coming together of two or more effects.

16.2 Methodology

Cumulative Impacts as relevant to the subject proposal have been assessed regarding the following relevant guidance, including but not limited to:

- EIA Directive (2011/92EU) as amended by EIA Directive (2014/52EU);
- Planning and Development Regulations 2001 (as amended);
- Guidelines for Planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018);
- Guidelines on the Information to be included in Environmental Impact Assessment Reports (EPA 2022);
- Guidance on the Preparation of Environmental Impact Assessment Report (European Union 2017); and
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, European Commission, 1999.
-

The EPA Guidelines (2022) define cumulative effects as *'The addition of many minor or insignificant effects, including effects of other projects, to create larger more significant effects.* The guidance clearly outlines that this assessment is required as while a single activity may have a minor impact, the impact may be more significant when combined with impacts from other projects, current or future. It could also be relevant to consider the potential environmental loadings that may arise from the development of lands in the vicinity of the subject project.

This chapter considers the potential for cumulative impacts of the development that may arise from the proposed development with any future development that related to the application as identified within Chapter 2 Description of Development and permitted development in the vicinity of the development site.

16.4 Receiving Environment

16.4.1 Existing Local Land Uses

The subject site is located on the eastern outskirt of Dunboyne to the east from a railway line.
The subject development site extends to approximately 21.9 ha (gross site area). The net developable area of c.15.74 ha excludes: the distributor road including temporary areas needed for a construction phase, engineering connections outside main development

area, 10m wide Irish Rail exclusion zone, 2no. roundabouts on R147, existing wayleave along the western boundary.

The site consists of 2 separate areas: the main part of the site proposed for residential development including a section of the Eastern Distributor Road and 2no. roundabouts located on R147.

The future residential development with ancillary 2 no. retail units, medical unit, cafe, community room and 2no. creches is located to the north of Station Road (L2228) and to the east from a railway line on the north east outskirt of Dunboyne and is identified in Figure 3 below for the purposes of this report. The subject area is located dominantly in Townland Dunboyne with a small southern section of the Station Road junction in Townland Castle Farm. Furthermore, 2 no. roundabouts at Old Navan Road (R147) proposed for alterations are located in Townlands Clonee and Loughsallagh.

The majority of the site is greenfield in nature relatively flat, and in agricultural use. A residential property known as Mill Farm Cottage in the southwest corner of the subject site has been demolished recently. An access road to the Dunboyne Train Station is located at the southern end of the site. There are a number of trees and hedgerows in the northern portion of the site. The wider area is generally comprised of suburban residential developments, Dunboyne Train Station and agricultural/greenfield space.

The lands are bound by the Iarnród Éireann railway line which services the Western Commuter (Dublin to Sligo) Railway service and Dunboyne train station to the west. Station Road runs along the southern boundary of the site. Loughsallagh (residential area) is adjacent to the subject site to the south east and agricultural land to the east and north. The site is c 1 km from the town centre and directly adjacent to Dunboyne train station.

The site is a natural extension of Dunboyne Town and is close to a range of public transport and employment nodes in the locality. Dunboyne is well serviced by a range of retail and commercial services, as well as a number of educational and community facilities (schools, library, community centre, etc) within easy reach of the site. For more details on social infrastructure we refer to Social Infrastructure Statement which forms a part of this submission. A Social Infrastructure Statement forms a part of the planning application.

2no. roundabouts are located at R147 (Old Navan Road): roundabout at the junction of Station Road (L2228) and Old Navan Road (R147) in Townland Loughsallagh and roundabout at the entrance to Clonee Village on the R147, at the Ard Cluain apartment scheme and Dunboyne Tennis Club in Townland Clonee.

Aside from availing of the many amenities that Dunboyne to the southwest of the subject lands has to offer, the development site is proximate to enterprise and employment sites with potential for rapid growth on the east of M3.

The subject site is located c.8 kilometres north-west of Blanchardstown, c.15 kilometres north-west of Dublin City Centre and c.18 kilometres west of Dublin Airport.

The application site is well served by public transport and we note specifically that it meets the accessibility designation *'High Capacity Public Transport Node or Interchange'* as defined in the *Sustainable Residential Development and Compact Settlements Guidelines Planning for Authorities (January 2024)*. Notably, the site is located in proximity to existing public transport services at Dunboyne Station, which is along the commuter railway line included in DART+ West project to provide an efficient and high-capacity service to and from Dublin City Centre.

There is a number of bus services available on Station Road with a nearest bus stop located at the southern boundary of the site at Station Road.

The Meath County Development Plan 2021-2027 as agreed governs the zoning of the lands. The site features a number of zoning objectives as follows:

- *A2 "New Residential" – majority of the site*
- *A1 "Existing Residential"*
- *F1 "Open Space"*
- *G1 "Community Infrastructure"*
- *TU "Transport and Utilities"*
- *RU "Rural Area" – lands where 2 no. roundabouts included in the proposal are located*

An indicative route for the Easter Distributor Road is also shown as an objective within the Meath County Development Plan 2021-2027. This can be seen below.

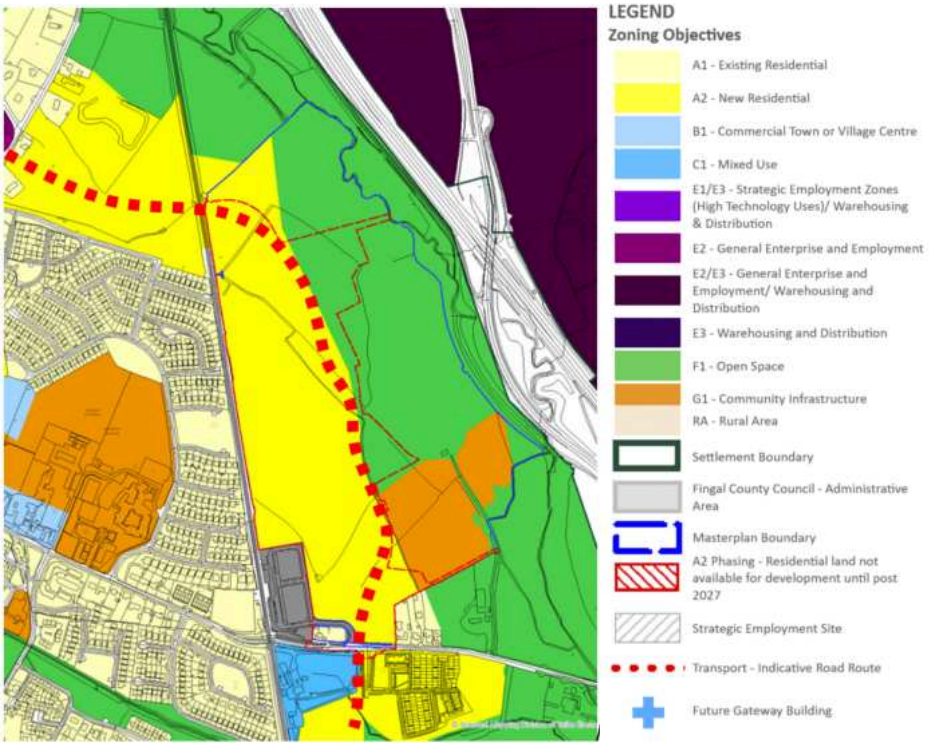

Figure 16.1 – Overview of Surrounding Land Uses

The residential zoning A2 extends upwards to the north and lands to the west. These lands have been earmarked by the applicant for future applications for residential development.

Permitted developments in the immediate surrounding area which have the potential for cumulative impacts with the proposed development within the immediate vicinity of the site are as follows:

RA180561 Castle Farm Development, Dunboyne
The site is located to the south of the entrance to the subject site. The applicant sought permission for the construction of 99 dwellings, apartments, duplex units, detached, semi-detached and terraced houses. There are also proposals for car parking spaces, a 117 sqm creche and open space.

Part 8 P8/22022 - Dunboyne Link Road - Dunboyne Business Park connection to the R157
Permission was granted in April 2023 for a development of a link road between Dunboyne Business Park the R157, Dunboyne, Co. Meath which forms a part of a Dunboyne Eastern Distributor Road.

LRD 23849 Castlefarm (Oakfield), Dunboyne
Permission GRANTED by MCC on 25th October 2023. The site is located further to the south of the entrance to the subject site. The applicant south 10-years permission for a Large-Scale Residential Development comprising of 716no. dwellings and a creche. The application also includes provision of 470m of new distributor road and alternations to the junction of the southern distributor road and Station Road. Alterations are also proposed to 2 no. roundabouts on the R147 (Old Navan Road) including enlarging the roundabout at the junction of the R147 (Old Navan Road) and L2228 (Station Road) and, widening of approach roads of the roundabout (including adjustments to footpaths and revised road markings) at the junction of the R147 and R156 (including northbound slip road to M3); both with ancillary site development and landscape works and being in the townlands of Clonee and Loughsallagh, Dunboyne, Co. Meath.

Reg. Ref. 24/60063 Distributor Road/Railway Bridge Application – FI requested on 22nd March 2024
A planning application has been lodged on behalf of a joint venture agreement between Carroll Estates and John Connaughton Ltd. This application will seek permission for the distributor road between Navan Road and Station Road including a railway bridge demarcated in the Development Plan that traverses both landholdings.

LRD 2460625 at lands at Old Navan Road
A live LRD application for lands at Old Navan Road, Dunboyne was lodged for the development of 171 no. units, creche, section of the Eastern Distributor Road and ancillary works. Decision is due on 07 October 2024.

2460468 – Castlefarm Phase 2
The application is sought for development, on a site located at Station Road, Dunboyne, Co. Meath, south and east of the existing Castle Farm residential development. The proposed development consists of 76 no. dwellings. Permission is also sought for a creche (c. 324sq.m) located on the ground floor of Block L, which will replace the creche permitted (under Ref. RA/180561) in the adjoining phase of the Castle Farm development. This application is not decided yet.

As part of this assessment of the cumulative impacts that could arise from the proposal in combination with other projects, account has been taken of relevant developments currently permitted, under construction and currently live within the planning system for the consideration of Meath County Council. Existing surrounding land uses have also been considered.

When reviewing existing and permitted development in the surrounding area, it was noted that there was a number of established constructed permissions, permissions for small alterations to single residential dwellings and extensions. As these permissions were relating to established developments surrounding the site, they have been considered to not have a significant impact in relation to the overall development at the subject site.

It is noted that all permitted projects in the vicinity of the site are subject to an appropriate level of environmental assessment or planning conditions which include measures intended to minimise the potential for environmental impacts in the area. Any new development proposed on the lands that follows the subject development should be

subject to an appropriate level of environmental assessment that will take into consider the subject development on the lands.

16.5 Assessment of Potential Cumulative Impacts

16.5.1 Human Health and Population

The proposed development has been carefully designed to ensure that there are no significant effects on human health and population during the construction and operational phases, considering the surrounding land uses in the vicinity of the development site as well as the population in the relevant electoral divisions. It is considered that no significant effects will occur once appropriate mitigation measures are correctly implemented.

It is considered that the proposed development and any future envisioned residential development proximate to the site will have a positive short-term impact on the area during the construction phase. Short term employment is created in the area during the construction phase of a large residential development, which can have a short-term positive impact on the local economy.

The development proposed and any future development surrounding the site will be required to implement mitigation measures during the construction period such as noise management, traffic management and dust management etc, to ensure that the cumulative impacts of any development will not have a significant impact on human health.

It is considered that the proposed development, and any future development surrounding the site will have a long-term positive impact on Human Health and Population. Future residential developments on the A2 zoned lands to the north and west will significantly increase the population of Dunboyne and will have a positive impact on the local economy and possible job creation and business growth in the area.

It is considered that the impact on Human Health and population in the short term will be short term positive in terms of population and short-term negative in terms of human health. It is considered that the impact on Human Health and population in the long term will be long term positive in terms of human population and long term neutral in terms of environmental factors.

16.5.2 Land, Soils, Geology and Hydrogeology

Due to the lack of significant residual impacts from the development of the DEDR route that would affect the wider geological environment, there will be no significant cumulative impacts to land, soil and (hydro)geology resulting from this project, and other local existing developments, projects and plans. All impacts on soils and geology relating to the proposed project will be localised and within the development footprint.

16.5.3 Hydrology

Construction Phase

The mitigation measures to be detailed and implemented by site specific Construction Environmental Management Plan (CEMP) and Surface Water Management Plan (SWMP) will be adhered to. The objective of these mitigation measures is to manage all existing surface water and construction waters at the site in such a way that the development will not have an adverse impact on the receiving surface water system. All waters which are managed on site will be pumped and discharged through an active management

treatment train and under condition of a discharge licence. Potential temporary accidental releases present a residual potential impact which will contribute negatively to the cumulative impact on the receiving water system to a slight to moderate extent depending on the severity of the event.

Operational Phase

The proposed DEDR drainage and SuDS network will be fully engineered during the detailed design phase. As part of this process, the rate, velocity and inundation times of the drainage network under a 1 in 100 year (+ climate change) event will be modelled and the systems configured to achieve the stated permissible discharge rates are achievable. Initial modelling of this type has already been undertaken as part of the planning submission and is included within the appendices of the Engineering Services Report. The assessment will also include for and mitigate against the potential for excess runoff overtopping and circumventing the established drainage/suds and migrating as overland flows. The process is in line with guidance on advanced flood risk assessment.

Achieving this will equate to a beneficial impact in terms of hydrological response to rainfall and flood risk, therefore contributing to cumulative impact beneficially i.e. reducing impacts on and downstream of the site.

16.5.4 Biodiversity

The local policies and plans as detailed in Appendix I as part of Chapter 8 were revied and considered for possible in-combination effects with the Proposed Development. Each of these plans has undergone AA, and where potential for likely significant effects has been identified (e.g. in the case of the Meath County Development Plan), an NIS has been prepared which will not result in in-combination effects with the Proposed Development. The Meath County Development Plan 2021-2027 has directly addressed the protection of European sites and biodiversity through specific objectives. The above listed plans are not being relied upon to rule out potential significant effects on any KERs.

Based on the location of the Site in agricultural land on the outskirts of Dunboyne town and the nature and scale of the Proposed Development as a residential project, a 500m radius is deemed sufficient to capture any projects that could act in-combination with the Proposed Development to cause likely significant effects on European Sites.

It is noted that many of the developments within the vicinity of the Site of the Proposed Development are applications granted for small scale residential upgrades to private dwellings and are unlikely to contribute to any in-combination effects involving the Proposed Development.

The 'CE LRD' application is submitted concurrently with this Proposed Development application. Therefore, there is the potential for the construction phases of the distributor road, the CE LRD and the Proposed Development to overlap if planning is granted for all three projects at around the same time.

The combined construction phases will lead to combined impacts on the immediate area of the three sites; through loss of existing farmland habitats, increased noise and dust, and potentially surface water run-off to the Tolka and its tributaries to the east. It is not envisaged that the combined construction phases of each development would act cumulatively to cause any likely significant effects on any designated sites nearby or downstream.

All three applications will be accompanied by AA screenings, NIS and either EcIA or EIAR Biodiversity Chapters, to ensure that all potentially significant effects on ecological receptors are identified and assessed appropriately. All three developments overlap on

the same land parcels and so their immediate effects are localised in the single area; agricultural fields to the west of the River Tolka. All three developments share the same impact pathway to downstream designated sites in Dublin Bay i.e., a ca. 20km hydrological connection via the River Tolka and its tributaries.

The combined construction phases of the two LRDs and the eastern distributor road will lead to combined impacts on the immediate area of the three sites; through loss of existing farmland habitats, increased noise and dust, and potentially surface water run-off to the Tolka and its tributaries to the east.

The construction activities that pose the highest risk of pollution to the Tolka will be the modification of three surface water outfalls to this River and its tributaries, due the immediate proximity of these new outfalls to the waterbodies. These are relatively minor and short-term interventions and therefore do not have the capacity to cause likely significant effects to designated sites located a considerable distance downstream. The dense overgrown nature of the flood plain and channels of the Naulswood Stream and River Tolka as they pass the lands containing the Site of the Proposed Development and the Distributor Road, would further filter and limit the potential for any pollutants or sediments to make their way to these waterbodies, with a significant natural vegetated buffer present in the form of the floodplain containing both channels.

However, in an abundance of caution the potential for cumulative impacts in the form of a combined reduction in water quality in Dublin Bay; as a result of a worst-case scenario pollution events at the Site and other unknown ongoing developments located along the route of the River Tolka between the Proposed Development and its outfall in Dublin Bay, have been considered. Any potential for cumulative impacts on downstream European sites (and other overlapping designated sites) are therefore addressed with the mitigation described in the NIS (Enviroguide, 2024c) that accompanies this application under separate cover.

The surface water management systems of all three applications will be linked, with surface waters generated along the distributor road and the two LRD sites managed onsite via their independent SuDS, before being directed west to the Naulswood Stream, the River Tolka and Bracetown Stream via the distributor road's drainage infrastructure, the existing drainage ditches and a new surface water connection for the Proposed Development. As such, the potential for likely significant effects on designated sites in Dublin Bay (ca. 20km downstream) due to Operational Phase surface waters discharging to the River Tolka system is deemed to be negligible.

16.5.5 Air Quality and Climate

Cumulative impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

Cumulative air quality impacts have the potential to arise locally when construction activities associated with the Proposed Development take place at the same time as other developments in a specific location.

A review of other off-site developments and proposed developments (listed in Chapter 16 – Cumulative Impacts) was completed as part of this assessment.

The cumulative effects on the air quality and climate of the Proposed Development and other permitted or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions.

The potential impacts on air quality and climate are assessed in Section 9.5.1 and it is considered that there are no other potential significant cumulative impacts associated with the Proposed Development and considered offsite permitted developments.

In terms of dust, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the Proposed Development site. Due to the implementation of good construction practices at the Site of the Proposed Development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur.

Assessment of operational stage impacts on air quality involved traffic data which is inclusive of traffic associated with other existing and permitted developments on the road networks surrounding the site both in current and future years. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as insignificant.

It is considered that there are no other potential significant cumulative impacts associated with the Proposed Development and considered offsite permitted developments.

16.5.6 Noise and Vibration

The cumulative noise impact from the construction noise and operational noise has been predicted. In the event that the construction of the developments is phased there is the potential for both operational noise and construction noise impact. It is not predicted that this will have a significant impact provided the advice and guidance in this chapter is followed. The operational noise impact considers the cumulative impact from the proposed Carroll Estates site which includes traffic and plant noise sources. The cumulative impact considers noise from the operation of the new road. Given the location of the receivers and the guidance provided in the application for the Carroll Estates development it is not predicted that the developments will have a negative in combination noise impact for the operational phase.

With regard to noise impact and the in combination effects, an Acoustic Design Statement has been produced which outlines the acoustic mitigation measures for operational phase for both the Carroll Estates Site and this site to reduce the noise impact from the distributor road, aircraft noise, train noise and the existing roads. Please refer to Acoustic Design Statements:

WDA230212RP_B _01-Noise Impact Assessment (Dunboyne Distributor Road – Reference 2460063)
WDA231008RP_A_01 Acoustic Design Statement (Carroll Estates)
WDA231120RP_A_01 Acoustic Design Statement (JCL)

The existing operational noise of the development at the boundaries have been considered with the future operational noise levels. Taking into consideration the assessment outlined above, the predicted levels from the operational noise of the development, the existing noise levels and the distance from the development to the noise sensitive receptors it is not predicted that the development will have a significant impact on the receivers from operational noise.

16.5.7 Landscape and Visual Impact – Awaiting Final Version

Cumulative impacts may arise from the proposed construction of the following planning applications :

Dunboyne Distributor Road
Planning Authority: Meath County Council
Applicant: Conncarr Developments
Planning Ref : 2460063
Decision: Pending

If this project were to proceed, there will be negative and moderate impacts locally in the short term from the day and night time use of the proposed distributor road in terms of noise from vehicular movement, road lighting and lights from vehicles using the new route. However, it is anticipated that these impacts will reduce to neutral and slight once this proposed development is in full use in the medium term.

Planning Authority: Meath County Council
Planning Ref : 23849
Applicant: Azra Property Company Limited
Decision: Granted with conditions

This is a 10 year permission for a large scale residential development to the south of the site at Castlefarm, Ruskin and Clonee. The proposed development is on a site of approximately 16.92Ha overall and consists of 716no. dwellings in a mixture of terraced, semi-detached and detached houses, duplexes and apartments as follows:

517no. apartment units are accommodated in 8no.buildings of 4-7 storeys in height comprising:

10no. 1-bed apartments, 202no. 2-bed apartments and 24no. 3-bed apartments accommodated in 4no. 4-6 storey apartment blocks

55no. 1-bed apartments, 80no. 2-bed apartments and 12no. 3-bed apartments accommodated in 2no. 6-7 storey apartment blocks (Blocks Bl and B2);

36no. 1-bed apartments, 78no. 2-bed apartments and 20no. 3-bed apartments accommodated in 2no. 4-5 storey apartment blocks (Blocks Cl and C2)

If both projects were to proceed there will be cumulative impacts on the landscape and visual resource locally. The peri-urban nature of the landscape to the east of the railway line will continue to transition to a suburban residential neighbourhood on the north and south of Station Road.

There may be additional cumulative impacts in the future if additional developments are built adjacent to the proposed development.

16.5.8 Archaeology and Cultural Heritage

Construction Phase
All proposed and permitted developments within the study area of the proposed development have been reviewed. No cumulative effects upon the archaeological, architectural or cultural heritage resource have been identified. This is due to the fact that the recorded monuments within the development area will be preserved in-situ and the

remaining archaeological sites will be preserved by record and no other effects are predicted (from other developments) on the identified archaeological and architectural heritage resource in the study area.

Operation Phase
No cumulative effects during operation are predicted upon the archaeological, architectural and cultural heritage resource.

Do-Nothing Impact
If the proposed development were not to proceed, there would be no cumulative effects on the archaeological, architectural heritage or cultural heritage resource.

16.5.9 Traffic and Transportation

Noise and Vibration - Construction Phase
The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul routes. However, such effects will be temporary in nature.

Quality of Effect: Negative
Significance of Effect: Slight

Noise and Vibration - Operational Phase
The proposed development will not result in any 'new' additional vehicle trips but facilitates a reassignment of baseline traffic around the town centre area. Accordingly a projected decrease or increase in vehicle traffic during the operational stage is predicted at a number of the junctions across the local road network. This may lead to a slight decrease or increase in noise levels during peak trip generation periods, however, implementation of the mitigation measures describes under section 2.7 will prevent and minimise the potential impacts of this interaction at the junction were a slight increase is projected.

Quality of Effect: Positive and Negative (depending upon specific network node)
Significance of Effect: Slight

Air Quality - Construction Phase

During the construction phase, construction traffic will contribute to increased traffic volumes with majority of construction vehicles being HGVs. This will impact negatively on the surrounding air quality. This will be short term in nature and will be managed by means of an effective Construction Environmental Management Plan (CEMP), which has been developed and is submitted alongside this application.

Quality of Effect: Negative
Significance of Effect: Imperceptible

Air Quality - Operational Phase

During the operational phase, the proposed development will reduce traffic volumes on the existing road network in he Town Centre which in turn will impact air quality in terms of reduced emissions. However, there will be an increase in traffic volumes along the proposed road corridor, particularly at the junction with Dunboyne Business Park. This will result in an impact on air quality in terms of increased emissions. Implementation of the mitigation measures described in Chapter 9 –Air, Dust and Climatic Factors will minimise the potential impacts of this interaction. This will be long term in nature.

Quality of Effect: Positive and Negative (depending upon specific network node)
Significance of Effect: Imperceptible

Population and Human Health - Construction Phase
During the Construction Stage, impact on the population and human health may be negatively impacted with construction works contributing to an increase in noise and traffic volumes as well as a reduction in air quality. The scheme will be developed in line with the Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic, including health of pedestrians and cyclists along Station Road and Navan Road are minimised during the construction stage. Impact during the Construction Phase will be short term in nature.

Quality of Effect: Negative
Significance of Effect: Medium

Population and Human Health - Operational Phase
During the Operational Stage, the provision of good quality cycle and pedestrian facilities along the Dunboyne Eastern Distributor Road will provide improvements in health and wellbeing for the general population. This impact will be long term in nature.

Quality of Effect: Positive
Significance of Effect: Medium

Land and Soil - Construction Phase
Delivery of materials to site (e.g. aggregates for road construction, concrete for foundations, delivery of construction plant to site) will lead to potential impact on the surrounding road network. As noted previously, the scheme will be developed in line with the separately enclosed Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic is minimised during the construction stage. This impact will be short term in nature.

Quality of Effect: Negative
Significance of Effect: Slight

Land and Soil - Operational Phase
On completion of the Construction Phase, there will be no further impact on soils and the geographical environment.

16.5.10 Material Assets

The proposed development is not considered to have any significant impact on public utilities or natural resources. It is predicted that there will be a minimal use of material assets during the construction phase of the proposed development. Throughout the construction process there will be coordination between the project team and relevant services providers such as Irish Water and ESB to ensure that works are not impacting services in the locality of the development site.

Therefore, the cumulative impact of the proposed development in combination with other permitted and planned projects is considered to be short term and not significant during the construction phase if any planned service interruptions are necessary, and long term not significant during the operational phase of the development.

16.5.11 Waste Management

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

A review of other off-site developments and proposed developments listed in Chapter 16 was completed as part of this assessment.

With regard to other developments under construction and proposed in the in the vicinity of the Site of the Proposed Development, there will be a greater demand on existing local waste management services and on regional waste acceptance facilities.

The capacity of waste collection companies and waste management facilities in the Eastern Midlands Region have been designed with forward planning and expansion in mind to cater for a growing population. Existing waste collections currently take place in the local area and during the Operational Phase, the Proposed Development will be added to an existing collection route. The likely effect will be neutral and not significant on waste management facilities in the area in the long term.

17 INTERRELATIONSHIPS BETWEEN THE ASPECTS

17.1 Introduction

The chapter has been prepared under the guidance within the EIA Directive, the Planning and Development Act 2000 (as amended), the Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2017) and the EPA Guidance on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022).

In accordance with the guidance not only are the individual significant impacts required to be considered when assessing the impact of a development on the environment, but so must the interrelationships between these factors be identified and assessed.

The majority of the EIA report chapters have already included and described assessments of potential interactions between aspects, considered by the various specialists contributing to this impact assessment. This chapter presents a summary and assessment of the identified interactions.

Section 171A of the Planning and Development Act requires that the interactions between the following be assessed:

- Population and Human Health
- Land, Soil, Water, Air and Climate
- Biodiversity, with particular attention to species and habitats protected under the habitats Directive and the Birds Directive

Material assets, cultural heritage and the landscape

17.1.1 Expertise

This chapter of EIAR has been prepared by Katarina Kanevova, a planner, who completed her Master's Degree in Spatial Planning at Slovak University of Technology in Bratislava, Slovakia in 2010. Following her studies she worked in forward planning, specialised on land-use planning projects in Slovakia. Her main focus after moving to Ireland is on residential development. Katarina is a Corporate Member of the Irish Planning Institute.

17.2 Discussion – Positive Impacts

The reasoning behind the interactions that are considered to have a positive effect (i.e., a change which improves the quality of the environment) is outlined in this section.

Traffic, Population and Human Health

During the Operational Stage, the provision of good quality cycle and pedestrian facilities within the proposed development and along the Dunboyne Eastern Distributor Road will provide improvements in health and wellbeing for the general population. This impact will be long term in nature. The effects of such will be **positive and medium.**

The implementation of the mitigation measures described above for the operational stage of the proposed scheme will result in the residual impact to be considered **positive, significant, and permanent.**

The subject proposal will stand to deliver a sustainable and practical approach to residential development at Dunboyne. The development of the Eastern Distributor Road as part of the proposed development will result in a permanent reduction in traffic through Dunboyne town centre. The junction assessments undertaken have

demonstrated that the increase in traffic will only result in a slight impact and that the junctions will continue to operate within capacity and therefore have a **positive, significant and permanent** effect on human health of both residents and visitor.

It is considered that the proposed development and any future envisioned residential development proximate to the site will have a positive short-term impact on the area during the construction phase. Short term employment is created in the area during the construction phase of a large residential development, which can have a short-term positive impact on the local economy.

The proposed development will create temporary jobs during the construction phase, which will have a **short-term, positive** effect on employment in the local area.

Furthermore, the proposed residential development will contribute to the consolidation of the lands to the east of Dunboyne as well as providing a significant number of new housing units and expanding the population and subsequently increasing the opportunities that correspond with it therefore having a **positive, significant and permanent** effect.

During the Operational Stage, the provision of good quality cycle and pedestrian facilities within the proposed development and along the Dunboyne Eastern Distributor Road will provide improvements in health and well-being for the general population. This will **medium, positive** effect.

Landscape and Visual Impact

The proposed development will have a **positive, significant and permanent** effect on views along Station Road by significant public realm improvement.

Biodiversity

'Positive', 'permanent', 'significant' residual impacts are envisaged through a net increase in habitat diversity, tree and woodland planting, and floral diversity across the Site, and provision of new bat roosts and swift nesting habitat on Site. It is considered that provided the mitigation measures proposed are carried out in full, there will no significant negative impact to any valued habitats, designated sites or species as a result of the Proposed Development.
The Proposed Development will result in an overall slight positive impact through the landscaping plan, which includes the retention and enhancement of the existing western hedgerows at the Site and a net increase in total native and non-native trees through supplementary planting. This will in turn provide additional suitable foraging, commuting and nesting habitat for local populations of fauna including birds, bats and small mammals in an otherwise relatively ecologically poor agricultural landscape, and will provide connectivity between the Site and the wider area. The inclusion of bat boxes and Swift bricks in the design of the Proposed Development will also provide new roosting habitat for bats at the Site and new nesting habitat for Swifts, respectively. The Proposed Development will therefore provide an overall slight net gain in biodiversity at the Site.

17.3 Discussion – Neutral Impacts

The reasoning behind the interactions that are considered to have a neutral effect (i.e., no effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error) is outlined in this section.

Noise

During the operational phase of development, it can be concluded that based on the assessment and assumptions outlined in Chapter 10 of the EIAR that once operational,

noise levels associated with the proposed development will not contribute to any significant noise impact to its surrounding development. The likely operational noise impact is expected to be **neutral, imperceptible and long-term.**

Traffic

In construction stage, Implementing the proposed mitigation measures that employees will share vehicular transport and HGVs will be evenly distributed across the working day, the residual impact is considered to be **neutral, slight, and short term**.

Regarding the public environment in the construction stage, implementing the proposed mitigation measures as detailed in the Construction Traffic Management Plan, the residual impact is considered to be **neutral, slight and short-term.**

Detailed junction assessments undertaken show that the increase in traffic as a result of the proposed development will result in only slight impact, with junctions continuing to operate within capacity. The implementation of the mitigation measures outlined in section 13.6 will result in the residual impact to be considered as **neutral, slight and permanent.**

There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed as not significant. Therefore, the **impact of the interaction between air quality and climate is not significant.**

Waste

The use of suitably licensed waste contractors will ensure compliance relevant legal requirements and appropriate off-site management of waste. The implementation of the proposed operational waste management resources will result in the proposed development being unlikely to have a significant environmental impact with respect to operational waste. The likely effect of the operational phase on waste management will be **neutral and imperceptible in the long-term**.

Waste materials will be generated in an ongoing basis during the operational phase; these will for the most part consist of municipal waste and recyclable materials. Careful management of these, including segregation at source, will help to ensure a high level of waste recycling, reuse and recovery at the development. A certain proportion of operational waste will nevertheless need to be disposed of at landfill. Given the provision of appropriate facilities, and their correct user by residents, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from operational waste storage and removal are expected to be minimal. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste. With the implementation of the proposed operational waste management measures, the proposed development is not expected to have a significant environmental impact with respect to operational waste. The likely effect of the operational phase on waste management will be **neutral and imperceptible in the long-term.**

Material Assets, Cultural Heritage & Landscape

No effects during construction or operation are predicted upon the architectural heritage resource and following the completion of all mitigation measures that have been outlined in Chapter 12 there will be **no significant residual impacts** upon the archaeological, architectural or cultural heritage resource.

In the demolition phase the effects on landscape amenity during the construction phase **are unlikely to be significant and adverse** given that there are no structures on the site to be demolished.

Verified views were assessed with a conclusion that it is considered that the proposed development will not have a significant effect on majority of views and that the impact assessment is **neutral, imperceptible to moderate and permanent.**

Air Quality & Climate

It has been predicted in the construction phase of the proposed development that there will be minor impacts on air quality, however they will not have a significant adverse impact on the existing ambient air quality in the vicinity of the site. There are no predicted impacts on air quality and climate arising from the operational phase of the operational phase of the proposed development. Accordingly, the predicted impact will be **long-term-imperceptible-neutral**.

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed

Interactions between Air Quality and Biodiversity have been considered as the construction phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna **are not significant.**

There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed as not significant. Therefore, the impact of the interaction between air quality and climate **is not significant**.

Interactions between Air Quality and Population and Human Health have been considered as the Proposed Development has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as having an overall insignificant impact, therefore air quality impacts from the Proposed Development are **not expected to have a significant impact** on population and human health.

Biodiversity

It is considered that, provided the mitigation measures proposed within Chapter 8 of this report together with all best practice development standards as outlined in the CEMP are carried out in full, there will be **no significant negative impact** to any KER habitat, species group or overall biodiversity as a result of the Proposed Development.

Interactions between Air Quality and Biodiversity have been considered as the construction phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna **are not significant.**

Lands, Soil, Geology and Hydrogeology

As a result of the proposed LRD development the current land use will change from a greenfield to a residential development with associated landscaping. Implementation of the measures outlined in the sections above will ensure that the potential impacts of the proposed development on soils and the geological environment do not occur during the construction phase and that any residual impacts will be **short term / imperceptible.**

There are no predicted impacts arising from the operational phase. Accordingly, the predicted impact will be **long-term-imperceptible-neutral.**

As noted above post-development the predicted impact will be **long-term-imperceptible-neutral** and as such there will be no perceptible interaction between the subsoils of the developed site and other environmental impactors discussed within this EIAR.

Should the development not proceed the site would remain in its current state with the only likely impact on the underlying soil and/ or aquifer due to natural processes and current agricultural use. The continued vacancy of the site is likely to have a **neutral and imperceptible effect** on the surrounding environment.

Air Quality and Climate

The Air Quality and Climate Chapter provides various mitigation measures that will be put in place during construction of the proposed development which 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. The increased traffic movements is likely to contribute to increases in greenhouse gas emissions however these will be marginal in terms of Ireland's overall greenhouse gas emissions and will therefore be unlikely to have an adverse effect on climate

The operational phase of the proposed development will be in compliance with Building Regulations Part L, 2021, Conservation Energy and Fuel. The design and construction of all buildings will be in accordance with Building Regulations Technical Guidance Document Part L 2022 to ensure that modern building materials are used and that they are designed to be thermally efficient

It is predicted that there will be **no negative residual impacts** in the context of air quality and climate regarding the proposed development. Similarly, air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health, traffic and biodiversity due to the mitigation measures that have been proposed.

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development **are negligible**, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods.

Increased LDV and HGV traffic flow as a result of the Proposed Development is likely to contribute to increases in GHG emissions such as CO_2 and N_2O. However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Paris Agreement, and therefore **unlikely to have an adverse effect on climate.**

It has been determined that the Operational Phase **air quality impact is negligible** and therefore no site-specific mitigation measures are proposed.

17.4 Discussion – Negative Impacts

Material Assets, Cultural Heritage and the Landscape

Chapter 12 of the EIAR outlines what sites of significance are at risk of disturbance in the construction phase of development. Ground disturbances associated with the construction phase will result in a direct, negative and permanent impact on the archaeological remains which have been identified during the archaeological investigation on site. It remains possible that small or isolated archaeological features survive between beneath the current ground level, outside the footprint of the excavated test trenches, which would be **directly, negatively and permanently affected** by ground disturbances associated with the construction phase. Effects may be moderate to significant in significance, depending on the significance of any remains that are present.

During the construction phase, ground disturbances will result in a **direct, negative and permanent impact** on the archaeological remains identified during the archaeological investigation on site.

During the operation phase, there will be an **indirect, temporary, negative effect** on the setting of Dunboyne corn mill due to the operation of the compound area to the west. Given the poor condition and overgrown nature of the site, this is a slight negative effect.

There is the potential for **likely significant and adverse temporary effects** on the landscape during the construction stage due to the erection and installation of site construction related elements and structures as well as light spill and glare towards residential receptor areas to the north of the site.

There is potential for likely **significant and short-term visual effects** from the use of temporary buildings, machinery necessary for construction works at proposed works as well as stockpiling of materials.

There is the potential for a likely **significant and adverse short-term visual impact** on views into the site from the transportation of the material to be recycled and the recycled material to and from the site.

Waste

All waste materials generated during the construction and operational phases of the Proposed Development will be managed in accordance with the respective waste management plans. During the construction phase, the residual effects on waste management are considered to be **minor, negative and short-term** as a result of the prevention and mitigation measures proposed in the Waste Management chapter and other chapters of the EIAR, the compliance with national legislation and the allocation of adequate time and resources dedicated to efficient waste management practices, and the continued use of permitted/ licensed waste haulers and facilities as well as the correct storage of waste to avoid litter or pollution issues at the site.

Traffic

The projected increase in heavy vehicle traffic during the construction stage may lead to a slight increase in noise and vibration levels along the adopted construction haul routes. The effects of such will be **temporary, negative and slight.**

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 under section 13.6 of the Transport EIAR chapter will

prevent and minimise the potential impacts of this interaction. The effects of such will be **temporary, negative and slight.**

Land, Soil, Water, Air & Climate

During the construction phase, construction traffic will contribute to increased traffic volumes with majority of construction vehicles being HGVs. This will impact negatively on the surrounding air quality. This will be short term in nature and will be managed by means of an effective Construction Environmental Management Plan (CEMP), which has been developed and is submitted alongside this application. The effects of such will be **negative/ imperceptible**.

During the operational phase, development traffic will contribute to increased traffic volumes on the surrounding road network which will in turn impact air quality in terms of additional emissions. Implementation of the mitigation measures described in Chapter 9 – Air Quality and Climate will minimise the potential impacts of this interaction. This will be long term in nature. The effects of such will be **negative/ imperceptible.**

Delivery of materials to site (e.g. aggregates for road construction, concrete for foundations, delivery of construction plant to site) will lead to potential impact on the surrounding road network. As noted previously, the scheme will be developed in line with the separately enclosed Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic is minimised during the construction stage. This impact will be short term in nature. The effects of such will be **slight and negative.**

Noise

There is the potential for some construction noise to impact during the construction phase of the development on nearby noise sensitive properties due to emissions from site activities. Set noise limits, hours of construction and the implementation of mitigation measured in EIAR Chapter 10 will ensure that construction noise and vibration is limited to short term with slight/ no significant effect. The effects of such will be **short-term, negative and slight.**

Population and Human Health

During the Construction Stage, impact on the population and human health may be negatively impacted with construction works contributing to an increase in noise and traffic volumes as well as a reduction in air quality. The scheme will be developed in line with the Preliminary Construction Management Plan (PCMP) to ensure any impacts on local traffic, including health of pedestrians and cyclists along Station Road and Navan Road are minimised during the construction stage. Impact during the Construction Phase will be short term in nature. The effects of such will be **medium and negative.**

Biodiversity

In terms of residual impacts, the construction mitigation measures detailed in this Chapter and those included within the NIS, along with the design features to be adopted to offset/minimise adverse impacts to habitats animals at the Site, will be sufficient to reduce any identified potential impacts to KERs associated with the Site to **'negative', 'imperceptible' to 'slight', 'short-term' to 'permanent'** in nature.

Landscape and Visual Impact

Following the completion of all mitigation measures, for the most part, there will be no significant residual impacts upon the landscape and visual resource.
The greatest effects on the landscape and visual resource will however be experienced at the northern end of the site. The height and scale of the proposed part 5 and part 6

apartment building of Block C will be visually prominent in the landscape, alongside the existing pylons and overhead wire infrastructure and will remove any positive features of the open rural landscape, tree lines and hedgerows in the background of view. The magnitude of change in this location on the landscape and visual resource is considered high given the height and scale of Block C. The quality of the effect is considered **negative**. The significance of effect is considered **significant**. The duration of effect is considered **permanent**.

17.5 Conclusion

In accordance with EPA '*Guidelines on the Information to be contained in Environmental Impact Statements*' (2022) all environmental factors are inter-related to some extent. A synergistic effect occurs when:

'*The resultant effect is of greater significance than the sum of its constituents*'

All environmental topics are interlinked to a degree such that interrelationships exist on numerous levels as outlined as per each topic above. In summary, it is concluded that the proposed development will not result in any significant synergistic effects on the environment.

	Planning & Alternatives		Population & Human Health		Biodiversity		Noise & Vibration		Land, Soil, Water, Air & Climate		Material Assets, Cultural Heritage & Landscape		Traffic and Transportation		Waste	
	Con.	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*	*Con.*	*Op.*
Planning & Alternatives			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Population & Human Health					X	X	-	O	X	X	X	X	-	+	-	-
Biodiversity			-	-			-	O	X	X	X	X	X	X	-	-
Noise & Vibration			-	O	-	O			O	O	-	-	-	-	-	X
Land, Soil, Water, Air & Climate			O	O	X	+	O	O			X	X	-	-	-	-
Material Assets, Cultural Heritage & Landscape			X	X	O	+	X	X	X	X			X	X	X	X
Traffic and Transportation			-	+	O	O	-	O	-	-	-	O			-	-
Waste			-	-	O	O	X	X	-	-	O	O	X	X		

	X	No Interaction		-	Negative		Con.	Construction
	+	Positive		O	Neutral		Op.	Operation

Table 17.1 – Comparison of Interrelationships