M1 Business Park – Zones A & F



Environmental Impact Assessment

Report Volume 3: Appendices 1-6

M1 Vida

April 2024

Appendix 1: EIA Scoping Report

M1 Business Park Zone A & Zone F

EIAR Scoping Report

M1 VIDA Ltd

October 2023

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Report Sign Off Page

CLIENT REF:	GEO00003-1		
DEVELOPMENT ADDRESS	M1 BUSINESS PARK, ROWANS LITTLE, CO. DUBLIN.		
REVISION	DATE	ORIGINATOR	REVIEWER
DRAFT FOR CLIENT REVIEW	26/10/2023	TK	EG
FINAL	02/11/2023	TK	EG

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1. Introduction

1.1 Purpose of this Report

This Environmental Impact Assessment (EIA) Scoping Report sets out the proposed scope of work and methods to be applied in the development of an Environmental Impact Assessment Report (EIAR) for the proposed provision of civil infrastructure to service future-planned commercial properties on the lands located on the western side of the M1 Business Park and M1 motorway, referred to as Zone A and F.

Scoping is the process of determining what information should be included in the EIAR and which methods should be used to collect and assess that information.

The main objectives of this report are:

- Identify environmental effects which may arise during the construction and operation of the proposed Project and which should therefore be addressed in more detail as part of the EIAR;
- Outline proposed assessment methodologies for completing the EIAR;
- Outline the likely contents of the EIAR; and
- Form a basis of common reference regarding the scope and methodology for the EIAR

1.2 EIA Scoping Report Structure

The EIA Scoping Report structure is as follows:

Section 1: Provides an overview of the purpose and objectives of this EIA Scoping Report.

Section 2: Provides a description of the proposed Project which is under consideration for this EIA Scoping Report.

Section 3: Provides an overview of the EIA process and the approach to the development of the EIAR.

Sections 4 – 15: These sections identify possible effects on the environment and outline the proposed assessment methodology that will be adopted in assessing the effects. The environmental aspects that will be considered in the EIAR are outlined below:

- Section 4: Population and Human Health;
- Section 5: Biodiversity;
- Section 6: Soils and Geology;
- Section 7: Hydrology (inc. Water Quality) and Hydrogeology;
- Section 8: Air Quality and Climate;
- Section 9: Noise and Vibration:
- Section 10: Landscape and Visual;
- Section 11: Road, Traffic and Transport;
- Section 12: Waste Management
- Section 13: Archaeology, Cultural Heritage and Architectural Heritage.
- Section 14: Material Assets
- Section 15: Cumulative Impacts and Interaction of Foregoing

2. Proposed Project Description

2.1 Overview of the Proposed Project

The proposed development comprises the provision of the key infrastructure to facilitate the future development of the lands for a logistics/warehousing development. This development will become an extension of the existing M1 Business Park at Courtlough. The proposals involve the demolition of all existing buildings on site. Provision of internal roads and services infrastructure (surface water, foul and water supply) to facilitate the future development of the lands including public lighting, utility connections (power, telecommunications and gas) and SuDS drainage. Provision of new access roads from 'Bhailsigh Road' (L1140) to Zone A and Zone F and a new cycle and pedestrian route over the M1 motorway via the (L1140) towards the R132. Upgrades and modifications to the existing roundabout along the L1140. All ancillary landscaping, road works, boundary treatments and site development works to support the development.

2.2 Site location

The site is located in the townland of Rowans Big and Rowans Little, approximately 6km south of Balbriggan, Co Dublin and just west of the existing M1 Motorway and M1 Business Park as shown in **Figure 1** below. Zone A and F lands are located north and south of Bhailsigh Road (L1140), respectively, which connect to Junction 5 of the M1 Motorway. The proposed site is 33.81ha as shown in **Figures 2** and **Figure 3** below.

Figure 1: Site Location

2.3 Existing Land Use

The site is currently used predominately for agriculture with an abandoned water storage reservoir and associated pump station located on the western boundary of Zone A. 10 No. existing agricultural sheds, stables, warehouses and residential homes are also located in the north western portion of Zone F. The

existing land uses within the redline boundary are shown in **Figure 2** below. An existing substantial roundabout, public footpath and signage are located to the south of Zone A and north of Zone F and provides access points for the proposed development. A section of the LL140/R132 is included within the site boundary to provide upgrades to the road to improve accessibility for pedestrians and cyclists. The upper reach of the Bracken River flows through Zone F, originating from aculvert crossing underneath Bhailsigh Road (LL140) and draining in a southeasterly direction before crossing the M1 Motorway via another culvert. An existing crossing over the Bracken River is located near the Bhailsigh Road roundabout to access the existing agricultural buildings and dwellings.

Figure 2: Existing Land Use within Proposed Redline Boundary

2.4 Detailed Project Description

It is envisaged that the proposed works would consist of the following:

- Provision of civil infrastructure to service future-planned commercial properties on the lands located on the western side of the M1 Business Park and M1 motorway, referred to as Zone A and F;
- Masterplan of Zone A and F contain future planned commercial properties, consisting of mixed-use, warehousing and distribution units including associated loading bays for Heavy Goods Vehicles (HGVs), service compounds, ESBN substations and parking areas to service each commercial unit site, which would be subject to individual site planning permission applications;

- Provision of civil infrastructure designed to service various mixed-use buildings consisting of 20,000 ft^2 / 1,860m^2 to 105,000 ft²)/ 14,000m^2 units with the potential to combine plots should larger units be required;
- In Zone A and F the civil infrastructure will consist of main access roads including pedestrian/cycle paths; watermains, surface water and foul drainage networks; utility services including power and telecommunications;
- The primary access roads into Zone A and F will consist of 7.5-metre-wide single-carriageways originating from Bhailsigh Road (L1140) roundabout including segregated cycle tracks and pedestrian footpaths with associated verges;
- Individual access spurs will be provided from the primary access road to each of the commercial land parcels;
- Provision of utility connections and associated ducting infrastructure for Power and Telecommunications to service future-planned commercial properties;
- Provision of pipelines and associated infrastructure for watermains to service future-planned commercial properties;
- Provision of surface water drainage infrastructure for future-planned commercial properties consisting of Sustainable Urban Drainage Systems (SUDs) features such as attenuation ponds, raingardens, swales, Nature-Based Solutions (NBS) and conveyance networks;
- Provision of pipelines and associated infrastructure for foul drainage to service future-planned commercial properties;
- The foul drainage network will be connected to the existing network located on the eastern side of the M1 Motorway which drains to the existing M1 Business Park Wastewater Treatment Plant;
- Utility ducts and foul drainage pipelines will be provided at a crossing point under the M1 Motorway on the north-eastern corner of Zone A which will utilise pipe-jacking and/or horizontal directional drilling technology to cross the motorway;
- Provision of hard and soft landscaping, boundary treatments and incorporated with Nature-based Solutions (NbS) and Sustainable Urban Drainage System (SuDS);
- Demolition of a single-storey 200-square-metre (m²) house, an abandoned water storage reservoir and associated pump station, all located on the western boundary of Zone A;
- Demolition of 10 No. existing agricultural sheds, stables, warehouses and residential homes located in Zone F;
- Upgrading and modification of the existing Bhailsigh Road (L1140) roundabout in accordance with current road design standards;
- Provision of a pedestrian path and cycle track, from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132, providing connectivity to existing pedestrian infrastructure and the Grooms Bus Stop (ID: 100231) east of the M1 Balbriggan Applegreen;

- All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings and appropriate signage;
- Bridge/culverted stream crossing for Zone F access road to cross the Bracken River;
- All associated site ancillary works and earthworks

The proposed site layout overview is shown in summary **Figure 3** below with more details provided in attached drawings as summarised in the drawing register provided in **Table 1** below.

Table 1: Drawing Register

COVER SHEET								
JOB NUMBER	ORIG	ZONE	LEVEL	TYPE	ROLE	NUMBER	SHEET TITLE	REVISION
16_206A	CSE	GEN	XX	DR	C	1500	COVER SHEET	P01
16_206A	CSE	GEN	XX	DR	C	1501	SITE LOCATION MAP	P01
16_206A	CSE	GEN	XX	DR	C	1503	TOPOGRAPHICAL SURVEY OVERALL	P01
16_206A	CSE	GEN	XX	DR	C	1504	TOPOGRAPHICAL SURVEY ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1505	TOPOGRAPHICAL SURVEY ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1600	OVERALL SITE LAYOUT & LEVELS	P01
16_206A	CSE	GEN	XX	DR	C	1601	SITE LAYOUT & LEVELS ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1602	SITE LAYOUT & LEVELS ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1610	PROPOSED OVERALL INTERNAL ROAD LAYOUT	P01
16_206A	CSE	GEN	XX	DR	C	1611	PROPOSED INTERNAL ROAD LAYOUT ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1612	PROPOSED INTERNAL ROAD LAYOUT ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1625	PROPOSED OVERALL PEDESTRIAN & CYCLE LINKS	P01
16_206A	CSE	GEN	XX	DR	C	1626	PROPOSED PEDESTRIAN & CYCLE LINKS ZONE A - SHEET 01 OF 02	P01
16_206A	CSE	GEN	XX	DR	C	1627	PROPOSED PEDESTRIAN & CYCLE LINKS ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1700	PROPOSED SURFACE WATER LAYOUT OVERALL	P01
16_206A	CSE	GEN	XX	DR	C	1701	PROPOSED SURFACE WATER LAYOUT ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1702	PROPOSED SURFACE WATER LAYOUT ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1750	PROPOSED FOUL SEWER OVERALL LAYOUT	P01
16_206A	CSE	GEN	XX	DR	C	1751	PROPOSED FOUL SEWER LAYOUT ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1752	PROPOSED FOUL SEWER LAYOUT ZONE F - SHEET 2 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1910	PROPOSED WATERMAIN LAYOUT OVERALL	P01
16_206A	CSE	GEN	XX	DR	C	1911	PROPOSED WATERMAIN LAYOUT ZONE A - SHEET 1 OF 2	P01
16_206A	CSE	GEN	XX	DR	C	1912	PROPOSED WATERMAIN LAYOUT ZONE F - SHEET 2 OF 2	P01

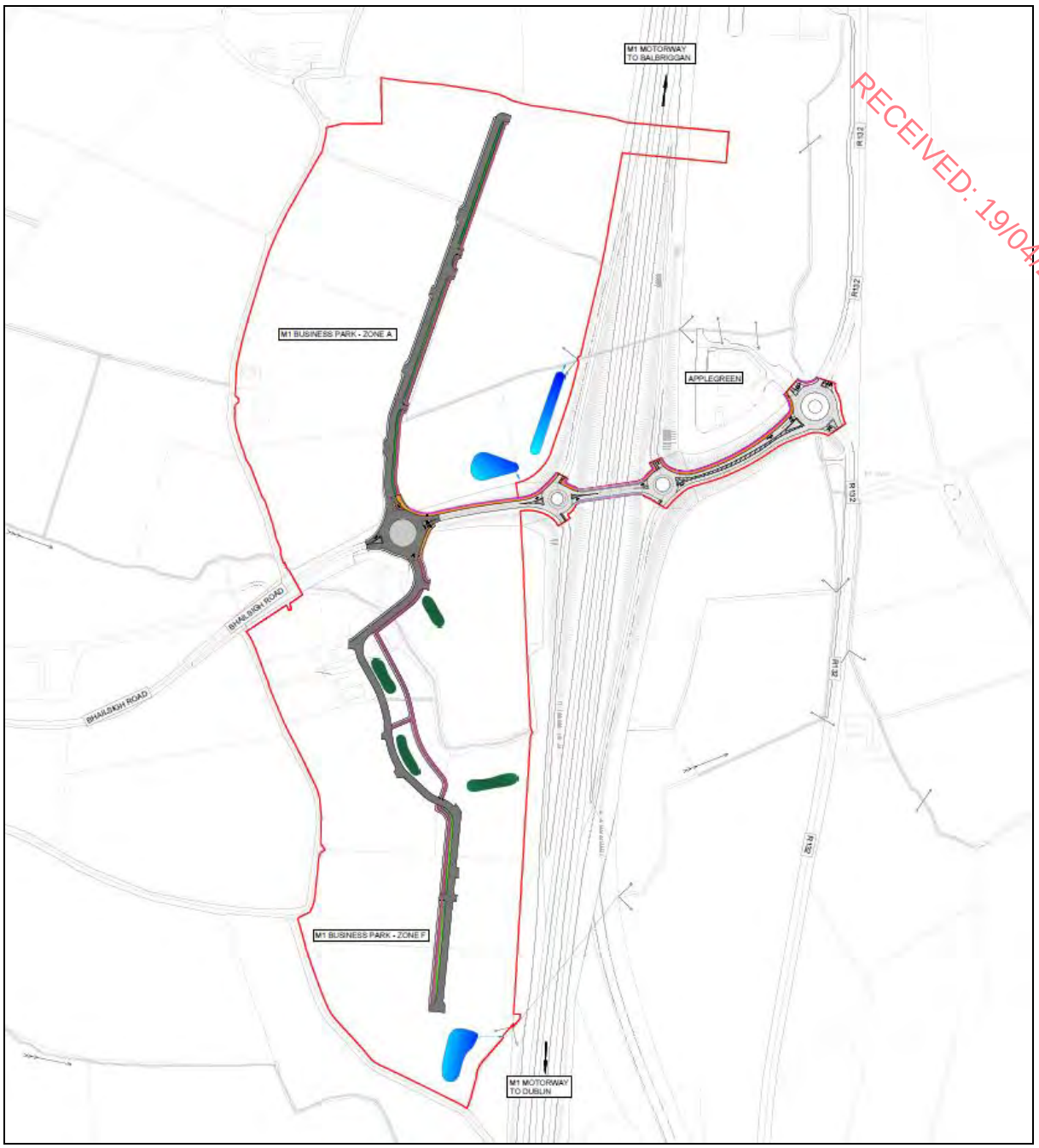

Figure 3: Proposed Site Layout Overview

The planning application will be submitted to Fingal County Council (FCC) and will be accompanied by an EIAR, Stage 1 Appropriate Assessment (AA) Screening Report and associated documents. It is currently expected that the application will be submitted in Q4 of 2023.

3. Approach to the Environmental Impact Assessment

3.1 Introduction to the EIA Process

EIA is the process for anticipating the effects on the environment caused by a proposed project or development at a site. Where effects are unacceptable, design or other measures can be taken to avoid or reduce these effects to acceptable levels. The initial EIA Directive is in place since 1985 (85/337/EEC). This Directive along with three amendments was amalgamated into Directive 2011/92/EU in December 2011. Proposed changes to the Directive were adopted by the Council of the European

Union in May 2014 (2014/52/EU) with a 3-year period to transpose the changes. These changes formed the first revision of the Directive 2011/92/EU.

The EU (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of Directive 2014/52/EU into planning law in Ireland and came into effect from the 1st September 2018.

The EIA Directive requires that certain developments be assessed for likely environmental effects before planning permission can be granted. When submitting a planning application for such a development, the applicant must submit an EIAR.

The EIA process can generally be summarised as follows:

- Screening – Is an EIA required;
- Scoping – What issues should be considered within the EIAR?
- Baseline Data Collection – Establishing a robust baseline of the existing environment on and around the proposed Project. This stage includes a review of existing available information and undertaking any surveys identified during the scoping phase;
- Impact Assessment – Assessment of the environmental impacts and establishing their significance;
- Mitigation – Formulation of mitigation measures to ameliorate the potential impacts of the proposed Project which cannot be avoided practically through site design;
- Consultation – With Statutory Stakeholders, the public, and other bodies as required;
- Decision – The competent authority decides, taking into consideration the results of consultations, if the proposed Project can be authorised;
- Announcement – The public is informed of the decision; and
- Monitoring – Monitoring of the effectiveness of implemented mitigation measures.

3.2 EIA Screening Assessment

Screening is the first stage of the EIA process, whereby a decision is made on whether or not a mandatory EIA is required. The EIA Screening Assessment was undertaken by the applicant and their agents, concluding that the proposed Project would fall within paragraph 11 of Part 2 of Schedule 5 of the Planning and Development regulations as:

10. Infrastructure projects

(a) Industrial estate development projects, where the area would exceed 15 hectares.

(b)..

> *(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area* ***and 20 hectares elsewhere****.*

14. Works of Demolition

> *Works of demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.*

15. Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

It is proposed to have a pre planning meeting with Fingal County Council (FCC) to discuss the proposed project and the contents of this EIAR scoping report to ensure all areas of potential concerns are assessed and that the project aligns with the Councils County Development Plan.

3.3 Environmental Impact Assessment Scoping

Following screening, 'scoping' is the process of determining the content and extent of matters that should be covered in the environmental information contained within the EIAR. Scoping requires the consideration of the nature and likely scale of the potential environmental impacts likely to arise from a proposed Project. Consultation will be undertaken with a number of stakeholders during the EIAR process, including, but not limited to the following;

- NPWS - DAU
- Fáilte Ireland
- An Taisce
- The Heritage Council
- Inland Fisheries Ireland
- Transport Infrastructure Ireland
- Environmental Protection Agency
- HSE
- Department of Communications Climate Action & Environment
- GSI
- Irish Water
- ESB

3.4 EIAR Methodology

This assessment of environmental impacts will be conducted giving consideration to best practice.

The Environmental Protection Agency (EPA) has produced the following guidance which will be considered in the development of the EIAR for the proposed Project:

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, August 2017); and
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA, September 2015).

In addition to these overarching guidance documents for an EIAR, the assessment of each environmental aspect addressed in sections 4 – 15 will also be undertaken with specific consideration to aspect specific guidance and best practice.

The following key stages will form the basis of the assessment process.

- Establishing a baseline of the existing environment on and around the proposed Project;
- Assessment of the environmental impacts and establishing their significance (primarily the assessment of residual impacts once mitigation has been adopted); and
- Formulation of mitigation measures to ameliorate the potential impacts of the proposed Project that cannot be avoided practically through site design.

3.1.1 Baseline Data Collection

The existing environmental baseline for the proposed Project and its surroundings will be established for each environmental aspect under consideration. This will be achieved through a desktop review of existing data and literature and site surveys for various aspects including but not limited to;

- Biodiversity;
- Soils, Geology, Hydrology and Hydrogeology;
- Noise and Vibration:
- Landscape and Visual; and
- Traffic and Transport;

3.1.2 Potential Impacts

The assessment will evaluate the construction and operational phases of the proposed Project and the potential impacts will be described. The potential for cumulative impacts to arise will also be considered.

For all environmental aspects, the significance of residual impacts, i.e. those impacts predicted once mitigation is taken account of, will be assessed.

3.1.3 Mitigation Measures

The EIAR will address potential environmental effects associated with the proposed Project and propose mitigation where significant effects are identified. All measures proposed as mitigation for the proposed Project will be reported within the relevant Chapter of the EIAR.

3.5 EIAR Structure and Content

The EIAR will be submitted to the Planning Authority (WCC) to support the planning application for the proposed Project. It will consist of 3 Volumes;

- Vol 1 – Non-Technical Summary
- Vol 2 – Main Report
- Vol 3 – Appendices

Broadly the following key sections will form the content of the EIAR document:

- Introduction
- The Environmental Impact Assessment Process
- Proposed Project Description
- Consideration of Alternatives
- Planning and Policy
- The following environmental topics will be addressed:
    - Population and Human Health;
    - Biodiversity;
    - Soils and Geology;
    - Hydrology (inc. Water Quality) and Hydrogeology;
    - Air Quality and Climate;
    - Noise and Vibration:
    - Landscape and Visual;
    - Road, Traffic and Transport;
    - Waste Management
    - Archaeology, Cultural Heritage and Architectural Heritage.
    - Material Assets

- Cumulative Impacts and Interaction of Foregoing

For each of the environmental aspects being assessed, the EIAR Chapter will be structured broadly as follows;

- Introduction to the topic area;
- Methodology;
- Baseline conditions;
- Predicted Impacts (Construction And Operational Phases);
- Mitigation Measures;
- Residual Impacts;
- Difficulties Encountered in Compiling Information; and
- Cumulative Impacts and Impact Interrelations.

3.6 Appropriate Assessment

European Sites (Natura 2000), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the European Union Birds Directive (2009/147EC) and Habitats Directive (92/43/EEC). The procedures that must be followed when considering developments affecting a Natura 2000 site are specified in Articles 6(3) and 6(4) of Habitats Directive.

A Stage 1 AA Screening Report (and Stage 2 NIS if deemed required) will be undertaken for the site and this will be considered in and provided with the EIAR, but both processes will be clearly distinguished.

3.7 Flood Risk Assessment

A Stage 1 Site Specific Flood Risk Assessment (FRA) will be carried out in accordance with the Office of Public Works Guidelines for Planning Authorities (GPA) 20: The Planning System and Flood Risk Management and provided as part of the planning application.

4. Population and Human Health

4.1 Potential Impacts

4.1.1 Potential Construction and Operational Phase Impacts

The main construction phase impacts would be associated with the potential nuisance and disturbance caused by construction activities. This would potentially include increases in noise and dust from the construction site and construction traffic on the roads surrounding the facility, resulting in some potential disruption to local people or groups. Roadworks will also likely be required during installation of additional utility services, improvement of existing footpaths and upgrade of existing rod infrastructure as required for the project. Such impacts may also result in impact to human health in the vicinity of the proposed Project. There may also be beneficial impacts to the local economy during construction with some increases in local economic activity, with construction staff using local businesses for items such as food and fuel.

The operational phase will cover increased traffic movements which again could result in increased noise from the proposed development.

The potential of significant residual impacts (either adverse or beneficial) occurring in relation to population and human health is generally considered low at this stage.

4.2 EIAR Scope

The assessment will comprise of a desk-based analysis of publicly available data, a site visit and review of relevant policies and plans. The following aspects will be considered, and information detailed, where relevant to the proposed Project:

- Population;
- Economic Activity;
- Employment;
- Land Use and Development;
- Commuting Patterns; and
- Tourism, Recreation, and Access.

The significance of impacts on receptors such as primary public services and residential buildings located in proximity to the proposed Project will be assessed.

Human health will be considered as required by Directive 2015/52/EU. This will likely be focused on identifying the environmental topics that have the potential to effect human health and the assessment of those impacts elsewhere within the EIAR. These environmental topics could include the likes of noise and vibration, air quality and traffic.

5. Biodiversity

5.1 Potential Impacts

5.1.1 Potential Construction Phase Impacts

Potential impacts for the construction phase of the proposed Project, in the absence of mitigation would be associated with the:

- loss of habitat due to the footprint of the proposed Project and its construction;
- some potential disturbance of bird, bat or mammal species in close proximity to the proposed Project; and
- the potential spread of invasive species.

It is recognised that the proposed Project is being constructed within predominately existing agricultural land use. An Fingal County Council designated ecological corridor is also present onsite and preliminary development layout has been designed to reduce the development footprint within this area, this area will need to be assessed in full within the EIAR. The presence of habitats or notable species of ecological value will be assessed in full through ecological baseline data gathering exercises.

5.1.2 Potential Operational Phase Impacts

Potential adverse effects for the operational phase of the proposed Project, in the absence of mitigation have been identified as:

- noise and lighting impacts – disturbance to nocturnal species, including, badgers, bats, and birds;
- permanent loss of habitat within the footprint of the proposed Project.
- impacts to the FCC ecological corridor associated with Balrickard River (EPA code 08B23)

5.2 EIAR Scope

A field walkover will be undertaken alongside a desk study of available ecological information and relevant plans and policies. The impact assessment process will involve:

- Identifying any potential habitats or notable species of ecological value;
- Assessing potential direct, indirect and cumulative ecological impacts as a result of the construction and operation of the proposed Project;
- Consultation with NPWS;
- Identifying and characterising potential significant impacts;
- Incorporating measures to avoid and mitigate (reduce) significant impacts where required; and
- Assessing the significance of any residual impacts after mitigation.

An Stage 1 AA Screening Report will be undertaken for the proposed Project and this will be provided with the planning application.

6. Soils, Geology

6.1 Potential Impacts

6.1.1 Potential Construction Phase Impacts

Potential impacts associated with the construction phase of the proposed Project may include:

- Loss of soil cover, soil erosion and compaction
- Removal and storage of spoil / overburden;
- Risk of encountering contaminated ground in unknown locations;

6.1.2 Potential Operational Phase Impacts

Potential impacts associated with the operational phase of the proposed Project may include:

- Changes in local surface run-off patterns resulting in local changes to recharge into the soils and bedrock over the operational life of the proposed Project;
- Potential for the permanent loss of localised soils; and
- Potential contamination of soils through accidental spillages of fuels or chemicals during operational and/or maintenance works.

6.2 EIAR Scope

A field walkover will be undertaken alongside a desk study of available information and relevant policies and plans. Based on the initial field walkover and desktop study a site investigation programme will be developed in order to collect soil samples and establish baseline conditions onsite. The assessment will cover potential impacts on soils and geology will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed Project.

The impact assessment process will involve:

- Identifying and characterising the significance of potential impacts;
- Incorporating measures to avoid and mitigate significant impacts where required; and
- Assessing the significance of any residual impacts after mitigation.

The assessment to be carried out will include the following elements:

- Identification of issues relevant to the proposed Project;

- Review of current soil, bedrock and groundwater conditions in the vicinity of the proposed Project;
- Site investigation were carried out in June 2023 comprising trial pitting, soil sampling, installation of two groundwater wells (one per zone) and subsequent GW sampling. Results will be reviewed as part of the EIAR.
- Assessment of potential impacts of construction and operational activities on soils, and geology;
- Incorporating measures to avoid and mitigate (reduce) significant impacts where required; and
- Assessing the significance of any residual impacts after mitigation.

7. Water Hydrology and Hydrogeology

7.1 Potential Impacts

7.1.1 Potential Construction Phase Impacts

During the construction phase there is the potential for impact on the hydrological environment such as pollution of surface water features through surface water run-off and also flood risk. Sources of pollution include sediment and on-site spillages, which if uncontrolled may flow into local surface water drainage and outfall into the local watercourses. There is also a risk of contamination of existing soils and groundwater by the construction activities such as accidental spills.

7.1.2 Potential Operational Phase Impacts

During the operational phase there is the potential for pollution of surface water features through surface water run-off. Sources of pollution associated with the proposed Project would be from potential spills, such as fuel / oil from vehicles on site. If such substances were allowed to flow into surface water drainage, there is the potential for them to reach nearby surface water bodies. Another potential impact could be flooding risk resulting from increased hardstanding introduced by the proposed Project.

7.2 EIAR Scope

A field walkover will be undertaken alongside a desk study of available information and relevant policies and plans. The assessment will describe the existing water environment and any potential significant impacts associated with the construction and operation of the proposed Project on these aspects.

The impact assessment process will involve:

- A review surface and waste water management plans for the proposed Project;
- Review of the receiving surface water drainage system and quality;
- Inspection of data that may be available relating to surface water quality, such as from the EPA or Local Authority;
- Potential for impacts on the surrounding groundwater table as material is accepted and placed into the facility over its operational life;
- Review any potential sensitive receptors relevant to the proposed Project, such as homes and businesses which may use and abstract groundwater in the vicinity;
- Review of the relevant River Basin Management Plan;
- Identifying and characterising the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) significant impacts (where they occur);
- Design of surface and storm water drainage in compliance with Fingal County Development Plan 2023 – 2029 and Sustainable Drainage Systems (SuDS),
- Assessing the significance of any residual impacts after mitigation.

It is proposed that up to two no. groundwater wells will be installed at the site and the information gathered from these will inform this section of the EIAR. Whilst from a preliminary review, no significant impacts to/from flood risk are anticipated, a Stage 1 Site Specific Flood Risk Assessment (FRA) will be carried out and appended to the EIAR.

The FRA will be carried out in accordance with the Office of Public Works (OPW) Guidelines for Planning Authorities (GPA) 20: The Planning System and Flood Risk Management (OPW and Department of Environment, Heritage and Local Government 2009).

8. Air Quality and Climate

8.1 Potential Impacts

8.1.1 Potential Construction Phase Impacts

During the construction phase there is potential for an impact on air quality from the following sources:

- Potential for construction dust emissions and nuisance dust from activities such as excavation, soil movement, soil storage and backfilling. Dust tends to be deposited within 500m of the generation site, and therefore sensitive receptors which fall within this distance of construction activities would be more at risk; and
- Emissions from Heavy Goods Vehicles (HGVs) and on-site construction plant and equipment which may give rise to emissions including; particulates (PM10 and PM2.5), benzene, nitrogen oxides (NOx) and carbon monoxide (CO).

In order to minimise dust emissions during construction, mitigation measures will be included in the EIAR and be implemented at the facility.

8.1.2 Potential Operational Phase Impacts

Similar to the construction phase, during the operational phase there is potential for an impact on air quality from the following sources:

- Potential for dust emissions and nuisance dust from activities such as excavation, soil movement, soil storage and backfilling; and
- Emissions from Heavy Goods Vehicles (HGVs) and on-site plant and equipment which may give rise to emissions including; particulates (PM10 and PM2.5), benzene, nitrogen oxides (NOx) and carbon monoxide (CO).

8.2 EIAR Scope

The air quality assessment carried out on the proposed Project will include the following elements:

- Identification of air quality issues relevant to the components of the proposed Project, including exhaust gases;
- Review of background ambient air quality in the vicinity of the proposed Project (relevant air quality baseline data will be obtained from the EPA and publicly available information);
- Assessment of potential construction related air quality impacts;
- Assessment of potential impacts of plant and equipment processes on air quality;
- Assessment of potential impacts of traffic on ambient air quality;
- Identifying the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) significant impacts (where they occur); and
- Assessing the significance of any residual impacts after mitigation.

The assessment will identify potential sensitive receptors relevant to the proposed Project. Sensitive receptors include locations where people spend significant periods of time, such as domestic properties. Sensitive receptors within the vicinity of the proposed Projects may include:

- Residential dwellings;
- Industrial or commercial uses sensitive to dust;
- Recreational areas and sports grounds;
- Schools and other educational establishments;
- Buildings of religious sensitivity;
- Designated ecological area of conservation (either Irish or European designation);
- Hospitals and nursing homes; and
- Offices or Shops.

Given the nature of the proposed Project, detailed air quality dispersion modelling is not proposed to inform the impact assessment process.

9. Noise and Vibration

9.1 Potential Impacts

9.1.1 Potential Construction Phase Impacts

The potential construction phase noise and vibration impacts will be associated with the operation of machinery on the site. The actual noise level produced by construction work will vary depending on a number of factors including the type of plant in use, plant location, duration of operation, hours of operation and intervening topography and vegetation screening.

Vibration impacts are predicted to be low given the nature of the work to be undertaken.

9.1.2 Potential Operational Phase Impacts

Similar to the operational phase, the noise and vibration impacts will be associated with the operation of machinery on the site. In addition, there may be some percussive noise generated as a result of the need to concreating breaking / crushing on part of the site. The actual noise level produced by construction work will vary depending on a number of factors including the type of plant in use, plant location, duration of operation, hours of operation and intervening topography vegetation screening.

9.2 EIAR Scope

The assessment will cover potential impacts from noise and vibration and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed Project.

The noise and vibration assessment carried out on the proposed Project will include the following elements:

- Identification of noise and vibration issues relevant to the proposed Project;
- Review of background noise in the vicinity of the proposed Project. A field walkover and baseline noise survey will be undertaken alongside a desk study of any relevant baseline information.;
- Assessment of potential noise and vibration impacts resulting from construction activities;
- Assessment of potential impacts of operational phase plant processes on noise and vibration in and around the applicable parts of the proposed Project;

- Assessment of potential impacts of traffic on noise levels in and around the proposed Project.

Given the nature of the proposed Project, and its location proximate to receptors, detailed noise modelling is not proposed to inform the impact assessment process. Noise predicative calculations will however be undertaken and will take account Noise Sensitive Locations (NSL's) relevant to the proposed Project. Sensitive receptors will comprise places where it would be reasonable to expect people to be exposed to local noise and vibrations. The EPA NG4 definition of an NSL will be used in the assessment, as reproduced below:

> *NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels:*

10. Landscape and Visual

10.1 Potential Impacts

10.1.1 Potential Construction and Operational Phase Impacts

Potential construction and operational phase impacts relevant to the Landscape and Visual Assessment may include;

- Visual impacts from the movement of traffic and machinery to and from the facility and associated ancillary construction requirements i.e. water drainage, power and lighting etc to and from the facility; and
- Landscape and visual impacts arising from the movement of construction materials;
- Landscape and visual impacts associated with the operational traffic to and from the commercial building when developed onsite.

At this stage, no significant residual impacts on the landscape and visual environment are anticipated.

10.2 EIAR Scope

The assessment will include a field walkover undertaken alongside a desk study of available information and relevant policies and plans. The impact assessment process will involve:

- Describing the existing environment (both landscape and visual) taking into account the landscape character assessment published in the Fingal County Development Plan (CDP) 2023-2029;
- Identifying potential landscape and visual issues relevant to the proposed Project;
- Assigning landscape and visual receptor sensitivity;
- Identifying the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) significant impacts (where they occur);
- Assessing the significance of any residual landscape effects and visual effects after mitigation.
- Photomontages

11. Traffic and Transport

11.1 Potential Impacts

11.1.1 Potential Construction Phase Impacts

Potential impacts during the construction phase may include:

- An increase in noise and potentially dust generated from construction related traffic may cause some level of disruption; and
- An increase in road traffic levels due to construction related activities, supplying and accessing the site and using the existing road network.

11.1.2 Potential Operational Phase Impacts

Potential impacts during the operational phase may include:

- Increase in traffic levels due to traffic accessing/ egressing the proposed Project; and
- An increase in noise and potentially dust generated from traffic may cause some level of disruption.

11.2 EIAR Scope

The assessment will address potential impacts from traffic and transport movements, will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed Project. The Traffic Impact Assessment process will involve:

- Scoping of TIA with FCC Roads personnel;
- Traffic Survey counts were requested for the following:
    - Junction Turning Counts (JTC) at 4 no. junctions.
    - Pedestrian Count (PC) at 2 no. junctions.
    - Automatic Traffic Counts (ATC) -both sides of the M1 Motorway (Northbound and Southbound).
- Undertaking AM and PM classified vehicle counts as follows:
    - Site 1: 2-arm priority-controlled roundabout -L1140 (E/W) / Future Site Access (N) / Future Site Access (S).
    - Site 2: 4-arm priority-controlled roundabout – L1140 (E/W) / M1 Northbound Off Slip (S) / M1 Northbound On Slip (N).
    - Site 3: 4-arm priority-controlled roundabout – L1140 (E/W) / M1 Southbound Off Slip (N) / M1 Southbound On Slip (S).
    - Site 4: 4-arm priority-controlled roundabout – L1140 (SW) / R132 (NE/SE) / Access Road to Applegreen Petrol Station (NW).
    - Site 5: M1 Northbound.
    - Site 6: M1 Southbound.

- The traffic counts surveys will be undertaken for a 48-hour time period (from 12:00am Tuesday to 12:00am Thursday or 12:00am Wednesday to 12:00am Friday) and shall include the following vehicle / user classifications:
    - Car
    - LGV (Light Goods Vehicle)
    - OGV 1 (Other Goods Vehicle)-OGV 2 (Other Goods Vehicle)
    - PSV (Passenger Service Vehicle)-M/C (Motorcycle)
    - P/C (Pedal Cycle)
    - Pedestrian Count is required for Site1 and Site 4 only.

Figure 7 : Proposed Traffic Assesment Locations

- Evaluating the proposed Project in relation to all road users including general traffic, HGV's, cyclists and pedestrians;
- Reviewing the future road and public transport proposals in the area surrounding the proposed Project;
- Parking and loading availability at the facility during the construction and operational phases;
- Identifying and characterising the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) any significant impacts (where they occur); and
- Assessing the significance of any residual impacts after mitigation.

12. Waste Management

12.1 Potential Impacts

12.1.1 Potential Construction Phase Impacts

Potential impacts during the construction phase may include:

- Production of waste material, arising from excavation/installation works (i.e. access road, weighbridge etc) ;
- Excavation of possible contaminated lands, which would require disposal off site at a suitably licensed facility;
- Surplus materials and waste may occur where material supply exceeds material demand.
- Asbestos survey of proposed building for demolition,

- Demolition of an abandoned water storage reservoir and associated pump station, all located on the western boundary of Zone A and
- 10 No. existing agricultural sheds, stables, warehouses and residential homes located in the north western portion of Zone F.

12.1.2 Potential Operational Phase Impact

No operational waste impacts are envisaged at this stage of the development.

12.2 EIAR Scope

The assessment will cover the potential impacts of waste generation, describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed Project. The impact assessment process will involve:

- Review of current and future waste plans and/or requirements relevant to the proposed Project i.e. national and regional waste management policies and objectives;
- Describing the waste streams arising from the construction and operational phase of the proposed Project;
- Review of any waste materials expected to be generated during the construction phase;
- Review of proposals relating to waste (material) acceptance, inspection, management, quarantine, facility closure and aftercare;
- Identifying and characterising the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) any significant impacts (where they occur); and
- Assessing the significance of any residual impacts after mitigation.

13. Archaeololgy, Architectural and Cultural Heritage

13.1 Potential Impacts

13.1.1 Potential Construction Phase Impacts

No significant impacts are currently anticipated upon the cultural heritage resources as a result of the proposed Project.

13.1.2 Potential Operational Phase Impacts

Similar to the construction phase, no significant impacts are currently envisaged as a result of the operational phase of the proposed Project.

13.2 EIAR Scope

It is proposed that an assessment of cultural heritage will be carried out in and will be tailored accordingly based on professional judgement and local circumstances.

The assessment will cover potential for impacts on archaeology, architectural and cultural heritage, and will describe the existing conditions and any likely potential impacts associated with the construction and operation of the proposed Project (where relevant). The impact assessment process will involve:

- Undertaking a search of the Record of Monuments and Places (RMPs), Site and Monuments Record (SMR), the Record of Monuments and Places (RPS) and National Inventory of Architectural Heritage (NIAH)
- Review of aerial photographic and cartographic sources available online;

- Review of the Excavation Bulletin;
- Identifying and characterising the significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these any significant impacts (where they occur); and
- Assessing the significance of any residual impacts after mitigation.
-

14. Material Assets

14.1 Potential Impacts

The following sections of the project description will be assessed under the Material Assets chapter:

- The primary access roads into Zone A and F will consist of 7.5-metre-wide single-carriageways originating from Bhailsigh Road (L1140) roundabout including segregated cycle tracks and pedestrian footpaths with associated verges;
- Individual access spurs will be provided from the primary access road to each of the commercial land parcels;
- Provision of utility connections and associated ducting infrastructure for Power and Telecommunications to service future-planned commercial properties;
- Provision of pipelines and associated infrastructure for watermains to service future-planned commercial properties;
- Provision of surface water drainage infrastructure for future-planned commercial properties consisting of Sustainable Urban Drainage Systems (SUDs) features such as attenuation ponds, raingardens, swales, Nature-Based Solutions (NBS) and conveyance networks;
- Provision of pipelines and associated infrastructure for foul drainage to service future-planned commercial properties;
- The foul drainage network will be connected to the existing network located on the eastern side of the M1 Motorway which drains to the existing M1 Business Park Wastewater Treatment Plant;
- Utility ducts and foul drainage pipelines will be provided at a crossing point under the M1 Motorway on the north-eastern corner of Zone A which will utilise pipe-jacking and/or horizontal directional drilling technology to cross the motorway;
- Upgrading and modification of the existing Bhailsigh Road (L1140) roundabout in accordance with current road design standards;
- Provision of a pedestrian path and cycle track, from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132, providing connectivity to existing pedestrian infrastructure and the Grooms Bus Stop (ID: 100231) east of the M1 Balbriggan Applegreen;
- All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings and appropriate signage;
- Bridge/culverted stream crossing for Zone F access road to cross the Bracken River;

14.1.1 Potential Construction Phase Impacts

It is anticipated that significant engagement and consultation with the roads department of Fingal County Council and Transport and Infrastructure Ireland (TII) will be required during the construction phase of the development to ensure any impacts are appropriately mitigated. Utility providers (ESB, Irish Water) and Fingal County Council will also need to be engaged with with regard to provision of new connection to and from the site for electricity supply and foul water connection. Stormwater will also require temporary controls.

14.1.2 Potential Operational Phase Impact

Engagement pre and during the construction stage should ensure potential impacts to Material Assets during the operational stage is minimal. Surface and stormwater will be managed by onsite Sustainable Urban Drainage Systems (SUDs) features such as attenuation ponds, raingardens, swales, Nature-Based Solutions (NBS) and conveyance networks.

14. 2 EIAR Scope

The EIAR Scope for Material Assets will outline the appropriate engagement and guidelines which will need to be adhered to ensure minimal impacts from the proposed development. Traffic and Waste Management will be assessed under separate chapters but will considered cross reference as appropriate between chapters and considered collectively under cumulative impacts.

15. Cumulative Impacts and Interaction of the Foregoing

The interaction of environmental aspects is an important factor which will be considered in the full evaluation of the environmental impacts associated with the proposed Project. While all environmental factors are inter-related to some extent, the significant interactions and interdependencies will be taken into consideration by the EIAR when preparing the assessments and impacts. A planning and desktop review of all public available resources will be completed to assess cumulative impacts.

16. Conclusion

Rowan Engineering Consultants on behalf of M1 VIDA Ltd are inviting submissions on this EIA Scoping Report. Please:

- Provide comment on the issues and methodologies outlined in this Report;
- Advise if there are other developments planned or existing in the area that should be considered in the cumulative impact assessment of the EIAR.

The consultation period will be from November to December 2023 and all relevant submissions on the proposed Project are welcomed.

Appendix 2: Planning & Engineering Report

Clifton Scannell Emerson Associates

Engineering Planning Report

M1 Business Park – Zones A & F

Client: Vida M1 Limited

Date: March 2024

Job Number: 16_206A

CONSULTING ENGINEERS

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Document Control Sheet

Project Name:	M1 Business Park – Zones A & F
Project Number:	16_206A
Report Title:	Engineering Planning Report
Filename:	RPT-16_206A-012

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Planning Issue	28/03/2024	HB	LP

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1 Introduction

1.1 Commissioning

Clifton Scannell Emerson Associates (CSEA) was commissioned by Vida M1 Limited to prepare this Planning Engineering Report for the proposed M1 Business Park Zone A and F development, situated in the townlands of Rowans Big and Rowans Little located south of Balbriggan, Co. Dublin. The proposed development comprises of the provision of key civil infrastructure to facilitate the future development of the lands for a commercial logistics/warehousing development. This development will become an extension of the existing M1 Business Park, situated at Courtlough, Co. Dublin.

1.2 Purpose and Scope of Report

The purpose of this report is to highlight the technical design information of the civil infrastructure to facilitate the future development of the lands. The elements highlighted in this report is set out as follows:

- Section 1 highlights pertinent information such as the Identification of Need, Objectives and Planning Policy Context of the proposed development;
- Section 2 describes the site location, constraints and contains the detailed Project Description;
- Section 3 highlights the existing access routes and roads to the site for vehicles and vulnerable road users; the proposed alterations to existing roads and highlights new internal roads required to facilitate future developments;
- Section 4 describes the design methodology of the proposed surface water drainage systems to cater for the key civil infrastructure and to accommodate future developments;
- Section 5 highlights the design of the foul drainage systems which will cater for future developments;
- Section 6 highlights the design of the water supply network to cater for future developments; and
- Section 7 highlights the design of electricity supply and telecommunications ducting proposed to service any future developments;

1.2.1 Exclusions

An Environmental Impact Assessment has been prepared for the proposed development in support of the Planning Application. The scope of this engineering report has thus been reduced to avoid duplication of information. The following engineering aspects are not covered in this report, which are appended to their respective Environmental Impact Assessment Report (EIAR) Chapters as highlighted below:

- EIAR Chapter 8: Hydrology and Hydrogeology;
  - Flood Risk Assessment Stage 1 and 2 (Ref M02103-02_DG08), prepared by McCloy Consulting in (March 2024);
  - Flood Study Summary Report (RefM02103-02_DG01), prepared by McCloy Consulting in (October 2018);
  - Technical Note - Supporting Hydrological and Hydraulic Information for Office of Public Works (OPW) Application for Consent under Section 50 of the Arterial Drainage Act, 1945 & EU Regulations SI 122 of 2010 (Ref M02103-02), prepared by McCloy Consulting in (March 2024); Section 50 Application was submitted to the OPW on 14th March 2024.
- EIAR Chapter 12: Road, Traffic and Transport.
  - Mobility Management Plan (RPT-16_206A-005), prepared by CSEA in February 2024;
  - Traffic & Transport Impact Assessment (RPT-16_206A-006), prepared by CSEA in February 2024;

1.3 Planning Strategy

Permission for a 10-year duration is sought under the Planning and Development Act, 2000 (as amended), by Vida M1 Limited for a Business Park Development which comprises of the demolition of all existing buildings on site, provision of internal roads and services infrastructure (surface water, foul and water supply) to facilitate the future development of the lands including public lighting, utility connections (power and telecommunications) and Sustainable Drainage Systems (SuDS). Provision of new access roads from 'Bhailsigh Road' (L1140) to Zone A and Zone F and new shared cycle and pedestrian routes over the M1 motorway via the (L1140) towards the R132. Upgrades and modifications to the existing roundabout along the L1140. All ancillary landscaping, road works, boundary treatments and site development works to support the development. All future developments will be subject to their own respective planning application approvals.

1.4 Planning Policy Context

The following National, Regional and Local Planning Policy documents were reviewed to ensure that the proposed development aligns with the various European and Irish hierarchical sustainability goals and objectives. This review is documented in the EIAR Chapter 4: Planning Context and Need for the Development.

National Policy Context

- Project Ireland 2040, National Planning Framework
- National Development Plan 2021-2030
- Project Ireland 2040, National Development Plan 2018 – 2027
- National Investment Framework for Transport in Ireland, December 2021
- Climate Action Plan 2023
- Project Ireland 2040, National Sustainable Mobility Policy
- National Implementation Plan for the Sustainable Development Goals 2022-2024
- Our Rural Future Rural Development Policy 2021-2025

Regional Policy Context

- Regional Spatial Economic Strategy for the Eastern and Midlands Regional Assembly, 2019-2031

Local Policy Context

- Fingal Development Plan 2023 – 2029

1.5 Need for the Development

Fingal is strategically location within the Eastern and Midlands Regional Assembly, part of the Dublin City Region and within the Dublin–Belfast Economic Corridor, which places it in an ideal position from an economic perspective. National Strategic Outcomes (NSO) No. 5 of the National Development Plan indicates the need to build a strong economy, supported by Enterprise, Innovation and Skills. In this regard, there is a need to create places that can foster enterprise and innovation and attract investment and talent. In addition, there is a need to invest in 'placemaking' to create places that are attractive to live, work, study, visit and invest in.

1.5.1 County Employment and Economic Objectives

The need for the scheme is further identified in the Fingal Development Plan 2023-2029 in terms of Employment and Economic Needs which states:

The proposed development aligns with various Policies and Objectives highlighted in the Fingal Development Plan 2023-2029 which are briefly described below. The Need for the proposed development and alignment with the development plan is further detailed in the EIAR Chapter 4: Planning Context and Need for the Development.

Table 1-1: Project Need and alignment of Employment and Economic Objectives

Policy EEP1 – Overarching Policy for Employment and Economic Development
The lands are zoned for General Employment (GE) as highlighted in Section 2.1 and an indicative Masterplan has been developed for the future development of Zone A and F which forms part the M1 Business Park cluster.
Objective EEO1 – Implementation of Land Use Management Plans
A Masterplan has been prepared for the proposed future development which highlights appropriate land use management plans within the lifetime of the Plan for strategically important General Employment Zones.
Policy EEP2 – General Employment (GE) Lands
The proposal maximises the potential of GE lands, ensuring that they are developed for intensive employment purposes, where appropriate, and which are highly accessible, well designed, permeable and legible.
Policy EEP3 – Maximising Fingal's Economic Potential
The proposed development contributes to the economic potential of Fingal's unique strengths and advantageous position within the Eastern and Midlands region.
Policy EEP4 – Employment Intensive Land Uses
The proposed development makes provision for and is located adjacent to public transport networks and active travel links are proposed for this employment intensive land use zoning.
Objective EEO3 – Quality Supporting Infrastructure and a Sequential Approach
Require that proposals for economic development are served by quality supporting infrastructure with sufficient capacity. A sequential approach may be used for assessing economic developments to ensure their appropriate and sustainable delivery.
Policy EEP5 – Land Extensive Uses
Support the development of land extensive uses where appropriate, having regard to infrastructural, transport and environmental considerations and the need for orderly growth.
Policy EEP6 – Regeneration Of Employment Areas
Utilise the measures and powers available to Fingal to encourage and promote the regeneration of employment areas in need of renewal, for instance in underperforming or outdated commercial and/ or industrial areas.
Policy EEP10 – Quantum of Employment Lands
Ensure there are sufficient quanta and appropriate types of lands zoned for commercial, enterprise and/ or industrial uses in urban and rural located centres in accordance with the Settlement Hierarchy.
Objective EEO12 – Supporting Existing Clusters

Support existing successful clusters in Fingal, such as those in the ICT, pharmaceutical, aviation and agri-food sectors, and promote new and emerging clustering opportunities across all economic sectors within the County
Policy EEP11 – Variety of Employment Lands
Consider the allocation of various sizes of land parcels for commercial, office, industrial uses in order to cater for a wide range of employment and enterprise formats.
Objective EEO14 – Permeability in General Employment Lands
Encourage high quality sustainable design, permeability and pedestrian and/ or cyclist friendly environments within general employment zoned areas.

1.6 Development Objectives

The objectives of the development and road upgrading proposals have been reviewed in accordance with the guidance provided in Transport Infrastructure Ireland (TII) Project Appraisal Guidelines (PAG) Unit 12.0: Minor Projects (€5m to €20m). This document includes a recommendation that project objectives are established which are independent of each other, and specifically relevant to the current project. These are as follows:

- Economy;
- Environment;
- Accessibility and Social Inclusion;
- Integration; and
- Safety;

1.6.1 Economic Objectives

The economic objectives of the proposed development are to:

- Create Employment Opportunities: The development will result in job creation during the construction and operational phases of the project. It is envisaged that approximately 100 jobs during the construction phase and 850 office and warehouse staff positions will be required for the proposed development.
- Increase Direct Economic Output: The development will contribute to the local economy by generating direct output, which includes the value of goods produced, processed, or assembled within the area. This output contributes to the region's Gross Domestic Product (GDP) and can stimulate economic growth within the region.
- Benefit Supply Chain Support: The development will rely on local suppliers for raw materials, components, and various services, thus leading to the growth of a local supply chain ecosystem, providing additional business opportunities for local companies and entrepreneurs.
- Increase Tax Revenue: The development will increase property tax revenues, as well as additional business and sales taxes. This revenue can be used to fund public infrastructure projects, education, healthcare, and other essential services.
- Attracting Investments: The development may result in attracting further investment from both local and international sources.

1.6.2 Environmental Objectives

The environmental objectives of the proposed development are to:

- To avoid any significant impacts on any Special Area of Conservation, Special Protection Area and Natural Heritage Areas;

- To mitigate potential environmental impacts by conducting screening and assessment by incorporating mitigation and best-practice measures into the design and implementation;
- To improve the drainage and flooding regime of the area by implementing Sustainable Urban Drainage Systems;

1.6.3 Accessibility and Social Inclusion Objectives

The accessibility and social inclusion objectives are:

- To improve accessibility from public transport infrastructure to the proposed development;
- To support social and economic development within this strategically located economic corridor;

1.6.4 Integration Objectives

The integration objectives of the proposed development are:

- To offset the negative effects of peripherality and foster balanced regional development in Ireland by improving the economic functioning of the Fingal County Council areas;
- To increase the attractiveness of the region for young working professionals;
- To support initiatives to bring investment into the rural setting; and to support economic integration within the wider region, thus maximising the benefits of previous and future investments;
- To support the integration objectives set out in European, National, Regional and Local planning policies.

1.6.5 Safety Objectives

The safety objectives of the proposed development are:

- To reduce the potential for collisions along Bhailsigh Road (L1140);
- To reduce the severity of potential collisions along Bhailsigh Road (L1140);
- To improve safety for all road users including pedestrians and cyclists along Bhailsigh Road (L1140) and the R132;
- To support the RSA Road Safety Strategy 2013-2020;
- To improve the security of vulnerable road users by providing for non-motorised users;

2 Site and Project Description

This section of the report highlights the proposed development site topography, constraints and proposed development Project Description. Refer to Drawings 16_206A-CSE-GEN-XX-DR-C-1501 to 1505 for a locality map of the site and topographical survey drawings included in **Appendix A**.

2.1 Site Location and Constraints

The site is located approximately 6.9 km south of Balbriggan and situated in the townlands of Rowans Big and Rowans Little. The subject site is located on the western edge of the M1 Motorway situated at Junction No. 5. Zone A is situated to the north of Bhailsigh Road (L1140) and comprises of an area of 16.8 ha, with Zone F encompassing an area of 14.5 ha located to the south of Bhailsigh Road (L1140) as shown in Figure 2-1.

The existing land-use of Zone A is agricultural, mainly used for growing grain crops, where Zone F is predominantly utilised as horse pastures. Existing agricultural buildings consisting of residential, warehouses, stores and stables are located on both Zone A and F. Zone A contains a singular derelict residential building and a disused water storage reservoir and associated pump stations which was constructed c. 2001-2005, both of which will be demolished. Zone F contains 13 structures in total consisting of residential, warehouses, stores and stables which will be demolished due to their derelict and generally unsafe state. A detailed survey of the buildings was carried out in January 2024.

The lands are zoned for General Employment (GE) as per Sheet No. 2 Fingal North of the Fingal Development Plan 2023-2029 as shown in Figure 2-2.

Figure 2-1: Locality map

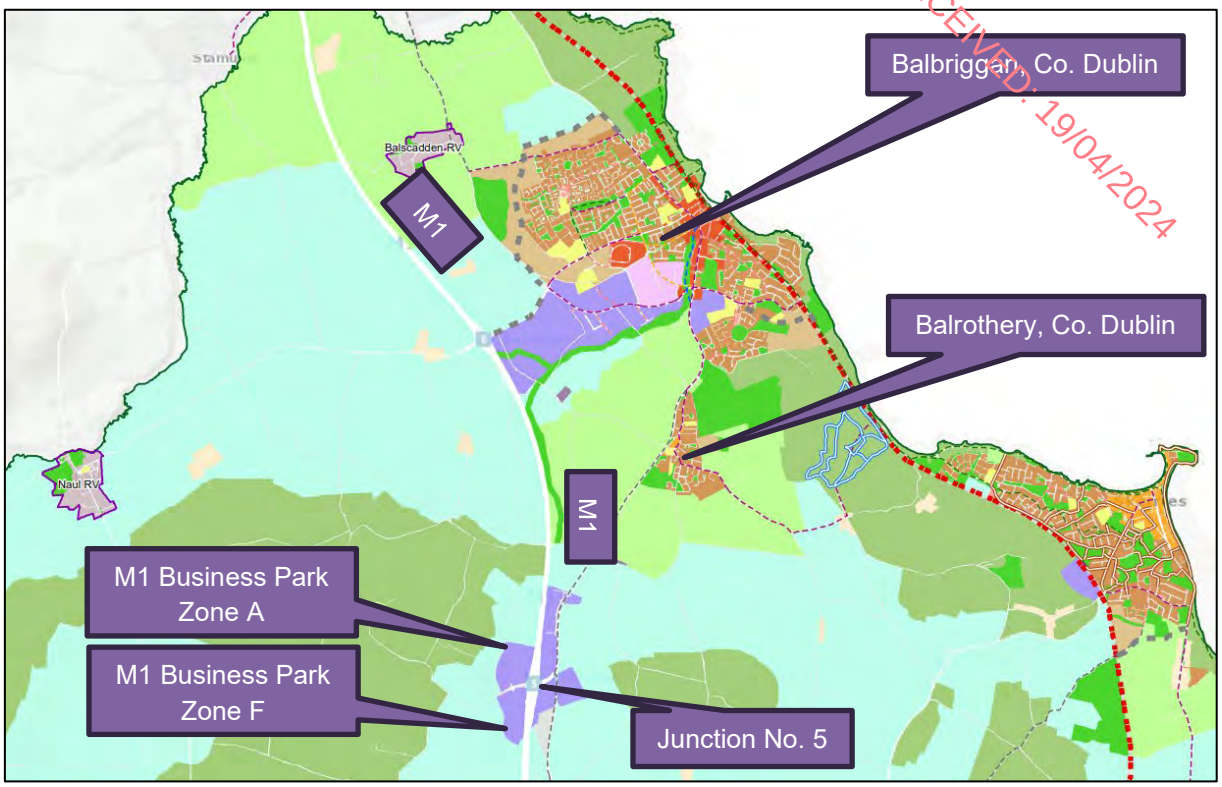

Figure 2-2: Zoning Map (Fingal Development Plan 2023-2029, Sheet No. 2 Fingal North)

The topography of Zone A falls steeply from west-to-east towards the motorway with an average elevation difference of approximately 12.5m. The low point is located on the south-eastern corner of the site where an existing agricultural channel drains via a culvert underneath Bhailsigh Road (L1140) along the eastern boundary of Zone F to the Balrickard Stream (Environmental Protection Agency (EPA) Code 08B23). Zone A contains multiple agricultural drainage channels, two primary channels draining west-to-east which crosses underneath the M1 Motorway via existing culverts and secondary channels connecting the primary channels in a north-south direction. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1504 included in **Appendix A** for a layout of the site and topography. An aerial photograph of Zone A is shown in Figure 2-3.

The topography of Zone F is generally flatter compared to Zone A, with the northern half of the Zone F draining towards the Balrickard Stream. The stream crosses underneath Bhailsigh Road (L1140) via an existing 1m x 0.7m box culvert and drains through Zone F in a northwest-to-southeast direction for a distance of 260m, before turning east and crossing underneath the motorway via an existing 650mm diameter concrete culvert. An existing 7.7m wide agricultural stream crossing is located near the Zone F entrance which consists of a 1.2m x 0.7m box culvert with headwalls providing access to the agricultural and residential buildings. The southern half of Zone F is drained via existing agricultural drainage ditches, either draining to the Balrickard Stream or to a small unnamed stream located on the southern boundary of the site. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1505 included in **Appendix A** for a layout of the site and topography. An aerial photograph of Zone F is shown in Figure 2-4.

According to the Bedrock Geology of Ireland, scale of 1:100,000, Zone F is generally underlain by dark micrite and calcarenite shale from the Loughshinny Formation where Zone A is underlain by coarse sandstone and shale from Balrickard Formation with some limestone present on the western edge from the Walshestown Formation. Geotechnical site investigations were conducted in July/August 2023 and no major constraints were noted in relation to the geology or subsoils. Slit trenches were carried out to

confirm the depth of the existing 250mm diameter steel high-pressure (70-bar) distribution gasmain which runs through Zone A and F. Geology and Soils is further highlighted in EIAR Chapter 7: Lands Soils & Geology.

The sites are located in an area demarcated as "Highly Sensitive Landscape" as shown in the Fingal Development Plan Green Infrastructure Map 1 (Sheet No. 14). Having regard to the Green Infrastructure Map No. 2 (Sheet No. 15), ecological corridors are indicated on the Balrickard Stream and the unnamed southern stream draining through Zone F as indicated on Drawing 16_206A-CSE-GEN-XX-DR-C-1965 included in **Appendix A**. According to the EPA River Water Quality Status (2013-2018 Water Framework Directive (WFD), the rating of Moderate Status has been applied to the above watercourses. In line with Fingal Development Management Standards an ecological buffer of 48m from top of bank has been applied to the Balrickard stream and 10m to the unnamed southern stream in Zone F.

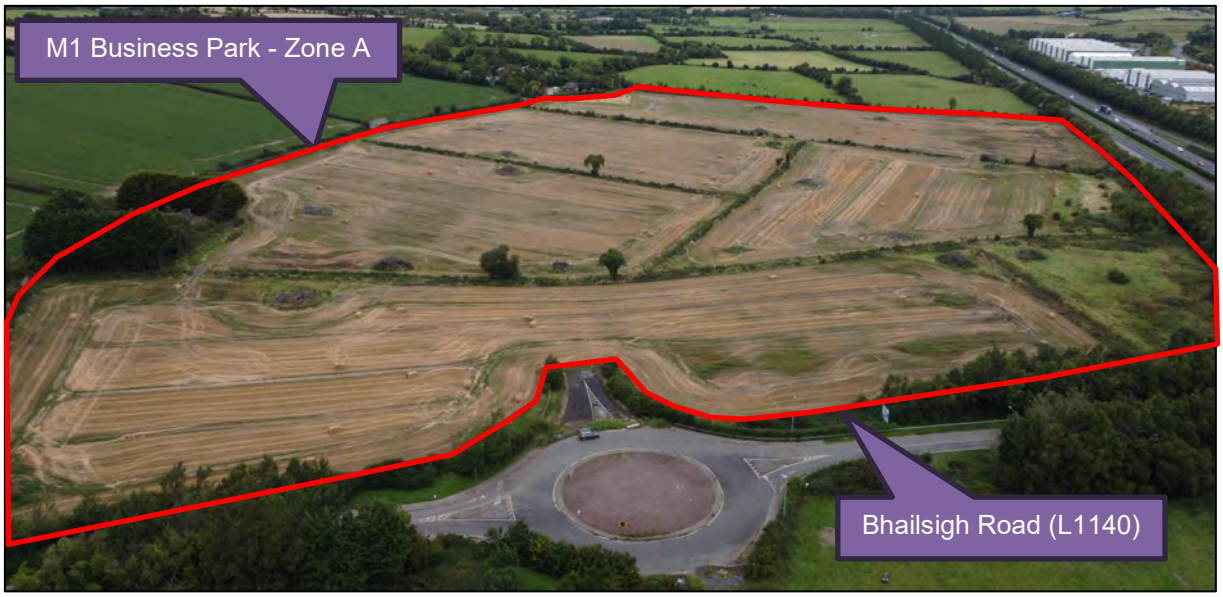

Figure 2-3: Zone A aerial photograph

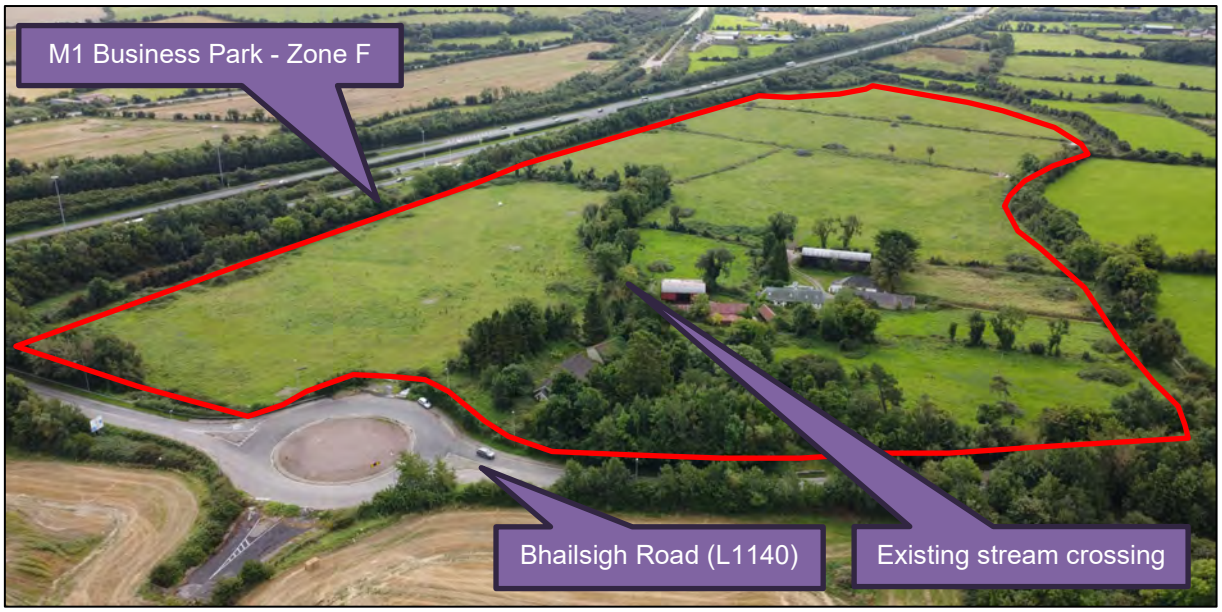

Figure 2-4: Zone F aerial photograph

2.2 Project Description

As highlighted in **Section 1.1**, the proposed development comprises of the provision of key civil infrastructure to facilitate the future development of the lands for a commercial logistics/warehousing development. This development will become an extension of the existing M1 Business Park development and this planning application entails the following:

- Demolition of a single-storey 200-square-metre (m²) house, an abandoned water storage reservoir and associated pump stations, all located on the western boundary of Zone A;
- Demolition of 13 No. existing buildings consisting of agricultural sheds, stables, warehouses and residential dwellings located in Zone F;
- Provision of civil infrastructure to service future-planned commercial properties on the lands located on the western side of the M1 Business Park and M1 motorway, referred to as Zone A and F;
- Zone A and F lands are located north and south of Bhailsigh Road (L1140), respectively, which connect to Junction 5 of the M1 Motorway and are located in the townlands of Rowan's Big and Rowan's Little;
- Preparation of indicative Masterplan for Zone A and F which contains layouts of the future planned commercial properties, consisting of mixed-use, warehousing and distribution units including associated loading bays for HGVs, service compounds, ESBN substations and parking areas to service each commercial unit site, which would be subject to individual planning permission applications;
- Provision of civil infrastructure designed to service various mixed-use buildings consisting of 20k- to 105k-square-feet (ft²) units with the potential to combine plots should larger units be required;
- In Zone A and F, the civil infrastructure will consist of primary access roads including pedestrian/cycle paths, watermains, surface water and foul drainage networks. utility ducting for services consisting of power and telecommunications;
- The primary access roads into Zone A and F will consist of 7.5-metre-wide single-carriageways originating from Bhailsigh Road (L1140) roundabout including segregated cycle tracks and pedestrian footpaths with associated verges;
- Upgrading of the existing Balrickard stream crossing located in Zone F in accordance with the Office of Public Works Section 50 of the Arterial Drainage Act (1945), guidelines;
- Individual access spurs will be provided from the primary access road to each of the future-planned commercial land parcels;
- Provision of pipelines and associated infrastructure for watermains to service future-planned commercial properties; and
- Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features such as attenuation ponds, raingardens, bioretention ponds, Nature-based Solutions (NBS) and conveyance networks.

An overall site plan layout of the above proposals is shown on Figure 2-5. Refer to Drawings 16_206A-CSE-GEN-XX-DR-C-1600 to 1606 included in **Appendix A** for detailed layouts of the proposed development. The proceeding headings in the report describes the design methodology, technical information and highlights compliance with relevant Codes of Practices and guidelines of the various key civil infrastructure elements.

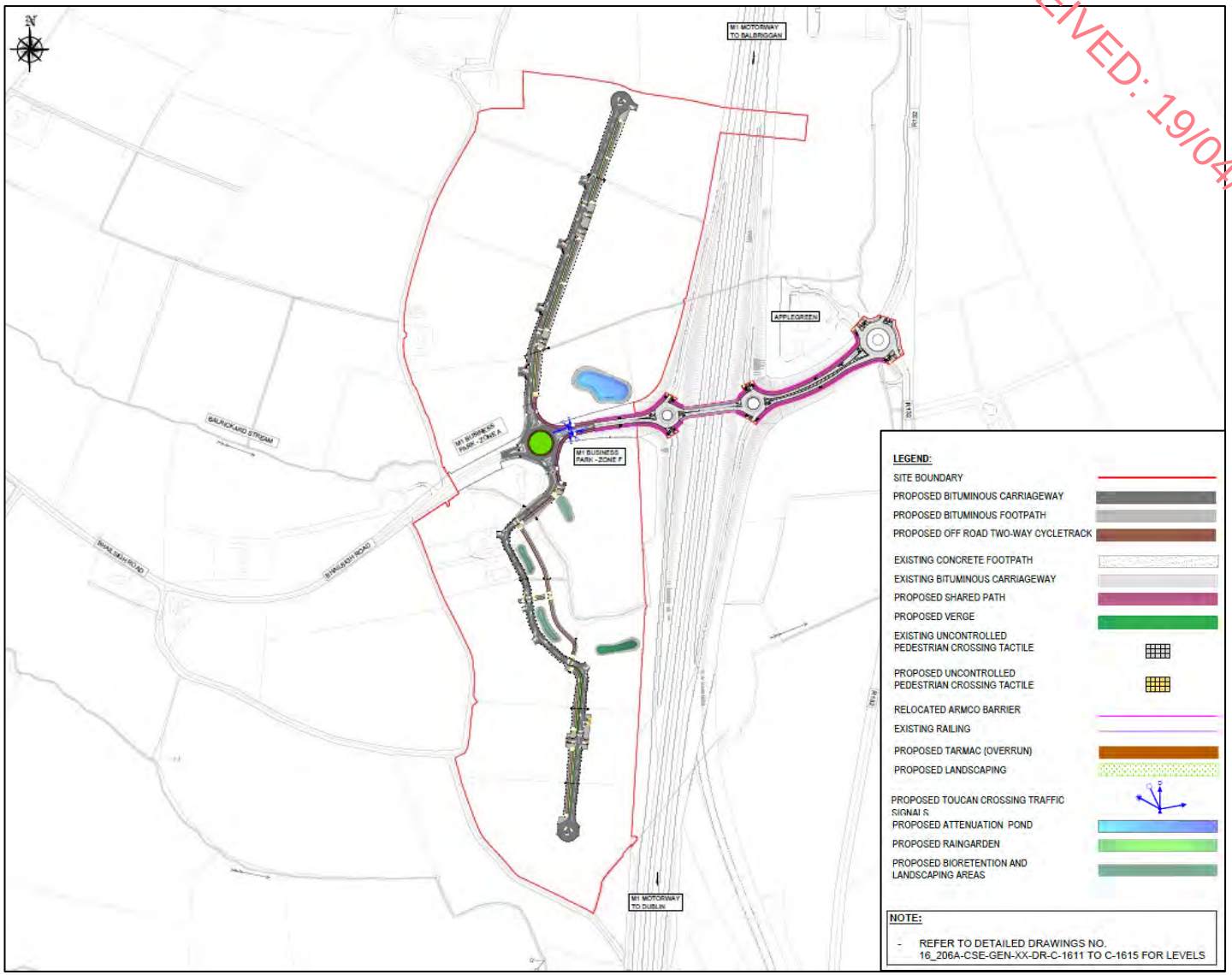

Figure 2-5: Proposed development layout

3 Access and Road Upgrades

This section of the report highlights the existing conditions of public road infrastructure for vehicles and vulnerable road users to access the sites, details the development proposals for internal site access roads and any modifications proposed to the existing Bhailsigh Road, R132 and M1 Junction No. 5 bridge crossing. Refer to **Appendix A** Drawings 16_206A-CSE-GEN-XX-DR-C-1610 to 1615 for internal road details and Drawings 16_206A-CSE-GEN-XX-DR-C-1625 to 1628 for pedestrian and cycle links.

3.1 Existing Road Network

3.1.1 Internal Roads

No formalised internal roads are available in Zone A or F. Gravel tracks and/or agricultural tram lines exist in Zone A and F which generally leads around drainage ditches, croplands and pastures. Zone A and F are accessible via spurs constructed on the existing Bhailsigh Road (L1140) roundabout as shown in Figures 2-3 and 2-4. As noted in **Section 2.1** and shown on Figure 2-4, an existing 7.7m wide Balrickard stream crossing is available near the access spur originating from the roundabout. The crossing consists of a 1.2m x 0.7m box culvert and is shown in Figure 3-1 below.

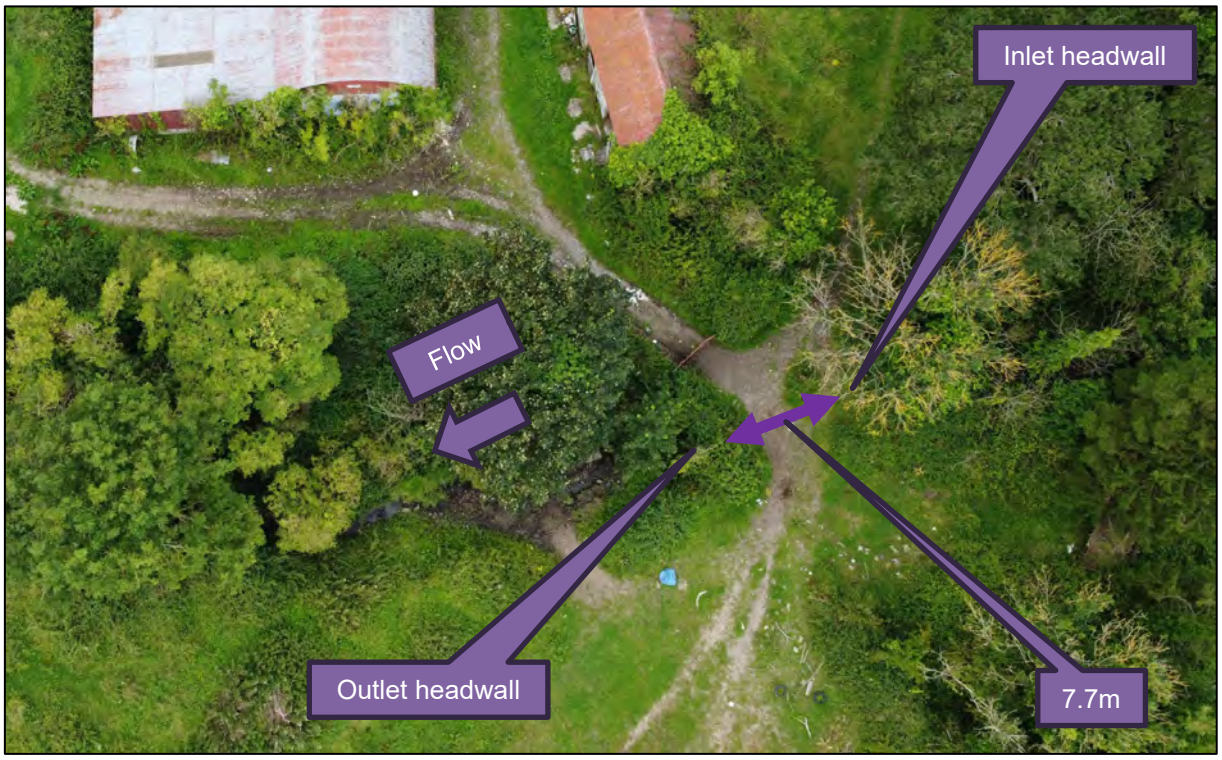

Figure 3-1: Zone F existing stream crossing

3.1.2 Bhailsigh Road and R132

Bhailsigh Road (L1140) consists of a single carriageway with a speed limit of 60 km/h. Between the roundabout and the Junction No. 5 (Dublin-outbound) roundabout, the lane widths vary between 3.66m to 3.86m as indicated in Figure 3-2. A 1.9m grass verge is available with Armco crash barriers located along both road shoulders, which extends the full length between the two roundabouts. The embankment falls off steeply on either side of the crash barrier with the slopes containing mature hedges and trees as indicated in Figure 3-5. The carriageway cross fall equates to 1.15% between the kerbs with the vertical alignment rising by 2.33m at a relatively constant slope of 1.3% to the Junction No. 5 roundabout.

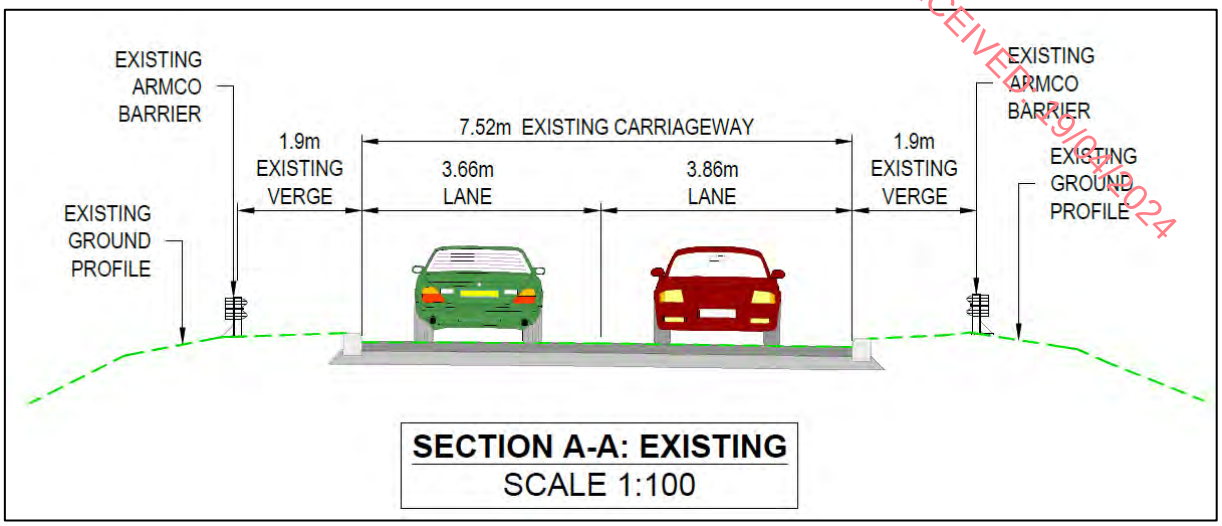

Figure 3-2: Bhailsigh Road (L1140) section near roundabout

The bridge section crossing over the M1 Motorway located between the Junction No. 5 roundabouts is shown in Figure 3-3. As indicated, the carriage way width equates to almost 9m in width, with lane widths consisting of approximately 4.5m. A 2m wide concrete footpath is available on each shoulder and the road cross fall consists of a camber with slopes ranging between 1.5% and 1.8%.

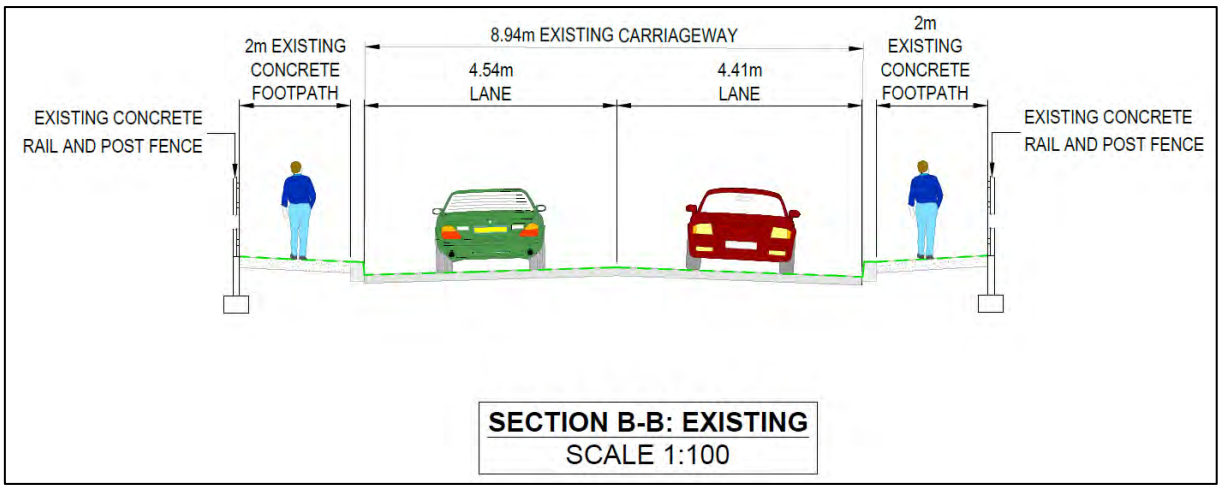

Figure 3-3: Junction No. 5 bridge section

The R132 section located near the Applegreen roundabout consists of a single carriageway with a speed limit of 60 km/h. Between the Applegreen roundabout and the Junction No. 5 (Dublin-inbound) roundabout, the lane widths vary between 3.75m to 4.9m as indicated in Figure 3-4. A 1.9m grass verge is available with Armco crash barriers located along both road shoulders which extends the full length between the two roundabouts. The embankment falls off steeply on the northern side of the crash barrier with the slopes containing mature hedges and trees as indicated in Figure 3-5. The carriageway cross fall equates to 3.3% between the kerbs with the vertical alignment falling by 5.75m at a relatively constant slope of 3.2%, measured from the Junction No. 5 roundabout to the Applegreen R132 roundabout.

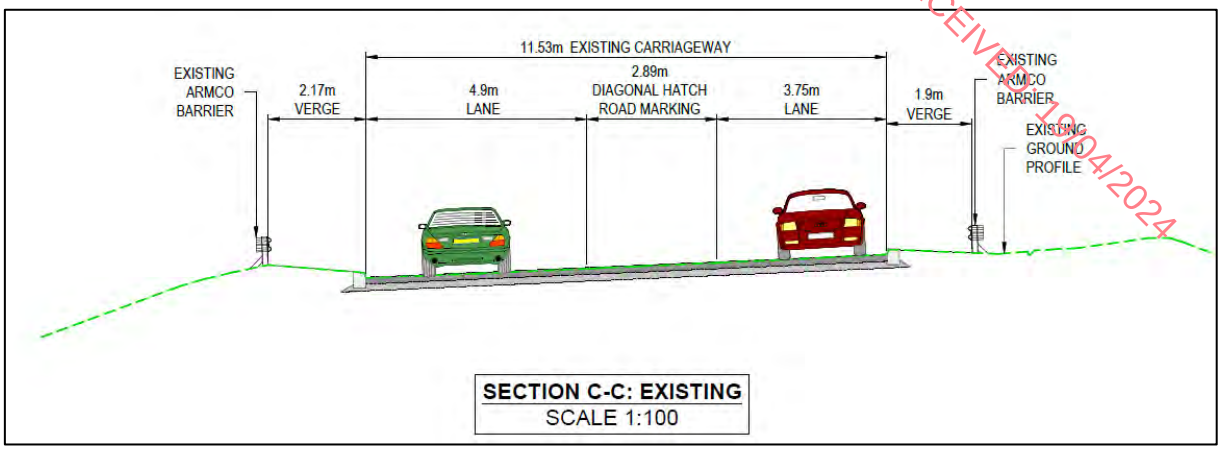

Figure 3-4: R132 section near Applegreen

Figure 3-5: Section A, B and C Streetview (Google Earth, April 2023)

3.2 Proposed Alterations to the Road Network

3.2.1 Pedestrian and Cycle Linkages

As indicated in Figure 3-5 above, no pedestrian or cycle facilities are available along the R132 or Bhailsigh Road (L1140) between the proposed development and the nearest public transport infrastructure link which is located near Applegreen. The nearest public transport infrastructure link is located 300m north of the Applegreen Roundabout on the R132, consisting of the Bus Éireann Grooms Stop (I.D. 100231) running between Dublin and Drogheda.

In line with other Fingal County Council projects planned along the R132 (R132 Blake's Cross to Minister's Road) to facilitate connectivity for pedestrian and cyclists and to promote the use of sustainable transport methods, 3m-wide shared pedestrian and cycle pathways are proposed from the Applegreen R132 roundabout to the proposed development entrances located on the Bhailsigh Road (L1140) roundabout as indicated in Figures 3-6 to 3-7. The proposal includes shared paths on both carriageway shoulders, which will connect to existing pathways located around the R132 roundabout.

The shared paths are proposed to tie into the existing 2m wide concrete footpaths located on the Junction No. 5 bridge crossing indicated on Figures 3-3 and 3-5. No modifications or upgrading of the 2m footpaths are proposed.

CSEA investigated various options for the pedestrian and cycle linkages which included segregated cycle and footpaths layouts in accordance with the Cycle Design Manual published by the National Transport Authority (NTA) in September 2023. The segregated cycle and footpath option was considered to be less desirable from an environmental impact aspect compared to the shared path layout, which would require the removal of mature hedgerows/trees indicated on Figure 3-5 along the entire length.

The proposed shared path facilities will consist of the following materials:

- 35mm thick Stone Mastic Asphalt (SMA) 6 Beige Duracolour PBM 65/105-60 des Surface Course; on
- 150mm thick granular sub-base Type B to Clause 804; on
- 150mm thick Class 6F1 or 6F2 capping (if required).

All pedestrian crossings associated with the proposed linkages will consist of uncontrolled crossings. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1625 to 1628 included in **Appendix A** for details on the proposed pedestrian and cycle linkages to Applegreen/R132 roundabout.

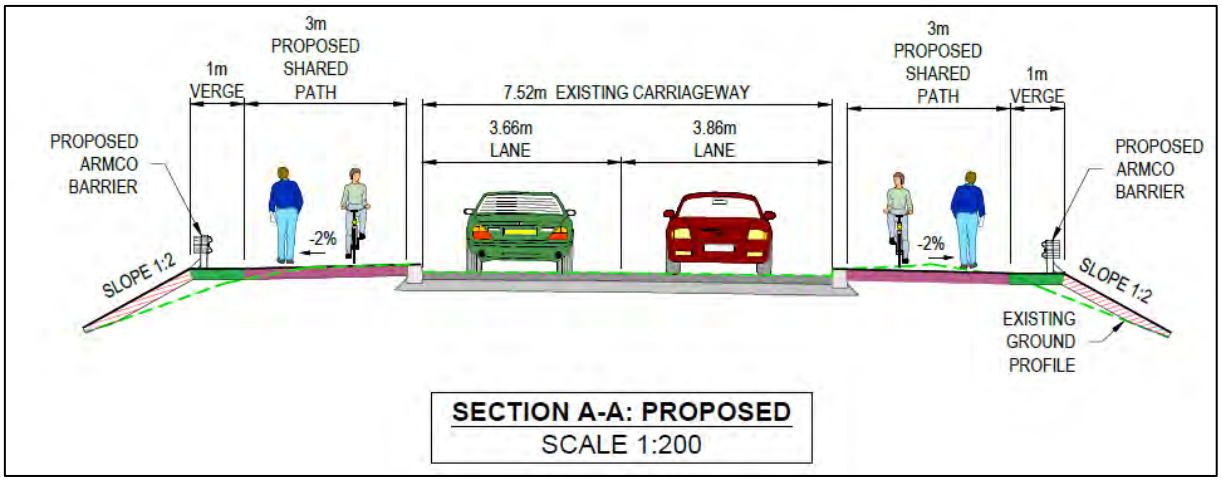

Figure 3-6: Section A proposed shared path section

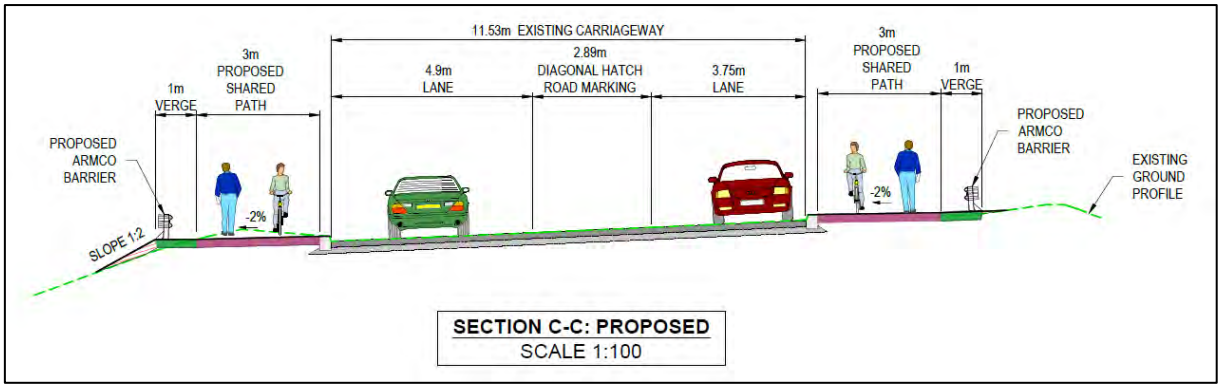

Figure 3-7: Section C proposed path section

3.2.2 Alterations to Bhailsigh Road (L1140) Roundabout

As indicated on Figures 2-3 and 2-4, the existing Bhailsigh Road (L1140) roundabout was constructed with access spurs to Zone A (north) and Zone F (south). CSEA undertook a geometric design review of the existing roundabout in accordance with the Transport Infrastructure Ireland (TII) Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) published in May 2023. Figure 3-8 below shows the plan layout of the proposed roundabout relative to the existing kerb lines and islands indicated by red linework. As shown minor amendments are proposed to the kerblines, access spurs and islands of the roundabout which was constructed in c. June 2008 to comply with the present-day design standards of TII. To cater for the future pedestrian and cyclists' movements accessing the proposed development, a Toucan Crossing is proposed on Bhailsigh Road (L1140). New uncontrolled pedestrian crossings are proposed upon entering the proposed Business Park sites. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1612 and 1613 included in **Appendix A** for more information.

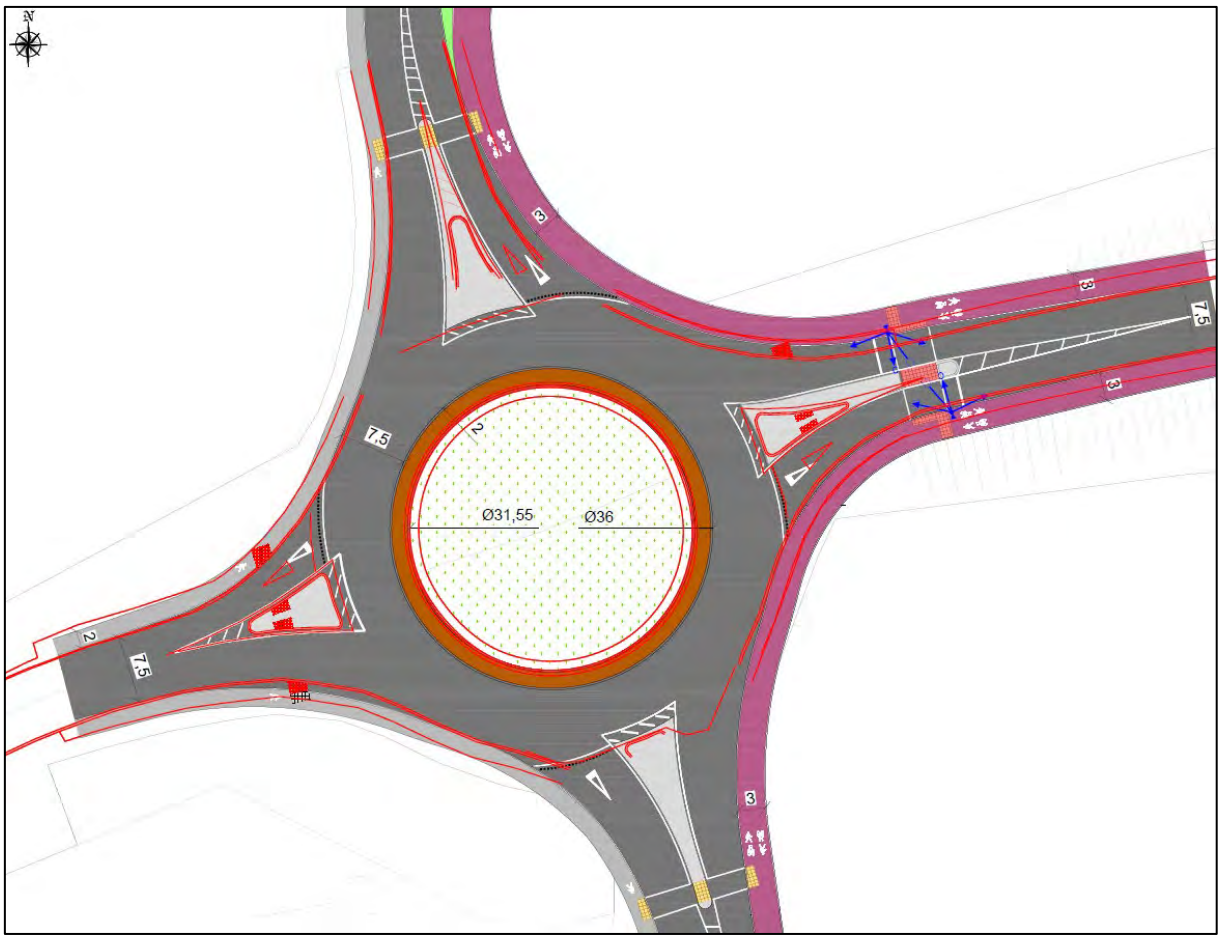

Figure 3-8: Proposed alterations to Bhailsigh Road (L1140) roundabout

3.2.3 Interim Closures of Zone A and F Access Spurs

As highlighted previously, this planning application entails the construction of the key civil infrastructure to facilitate future business park developments on the sites. In the event that the roundabout upgrading works highlighted above are completed and access should be prevented to the undeveloped Zone A and F sites, interim closures of the access spurs shall be maintained by the applicant as per the example shown in Figure 3-9 below (taken from the Grange Castle Business Park located in South Dublin).

Figure 3-9: Interim closure example of newly constructed access road

3.3 Proposed Internal Access Roads

The proposed internal access roads for Zone A and F consists of 7.5m wide, single carriageways as shown on Drawings 16_206A-CSE-GEN-XX-DR-C-1610 to 1615 included in **Appendix A**. For Zone A, 2m wide pedestrian footpaths are proposed on both shoulders along with a 3m wide, two-way cycle track which is to be constructed along the eastern carriageway shoulder as indicated on Figure 3-10.

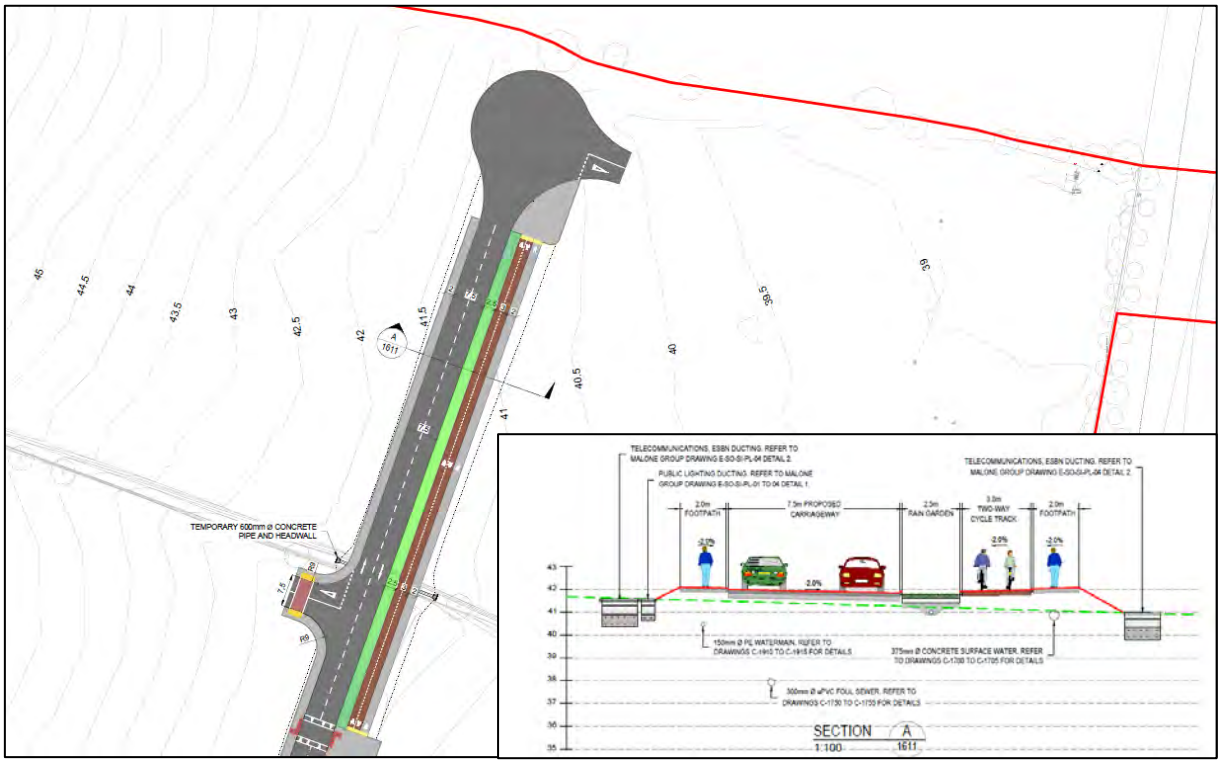

Figure 3-10: Zone A internal road layout Section A

As indicated above, the road crossfall equates to 2% which falls towards the 2.5m wide raingarden which will serve as the primary collection point for surface water runoff from the roadway, cycle track and footpaths. Refer to **Section 4** for more details relating to the raingardens. The cycle track and footpath will be segregated by a trapezoidal delineator strip 60mm (height) in accordance with the NTA Cycle Design Manual.

As indicated in Figure 3-11, uncontrolled crossings are proposed for pedestrian and cyclists which consist of the following:

- Primary access road carriage: uncontrolled raised crossings to calm traffic; and
- Access spurs to future developments: uncontrolled, not raised but with change in surface colour.

The above crossings were designed having regard to the NTA Cycle Design Manual, TII Geometric Design of Junctions, Design Manual for Urban Roads and Streets (DMURS) published by Department of Transport in April 2013 and the United Kingdom Department of Transport Guidance on the Use of Tactile Paving Surfaces published in December 2021. A Stage 1 Road Safety Audit was carried out by PMCE Consultants in February 2024, refer to report no. P24027-PMCE-XX-XX-RP-SA-3_0001 for details. Traffic signage, road marking and kerb drawings are available in **Appendix A**, which have been design in accordance with the Department of Transport Traffic Signs Manual published in February 2021. Where pedestrian and cyclist interface with each other at the below crossing locations, cyclists will be required to dismount to prevent accidents with more vulnerable pedestrians.

Figure 3-11: Zone A internal road layout Section B

Figure 3-12 below shows the interface between the 3m shared paths proposed to provide pedestrian and cycle linkages to Applegreen and public transport infrastructure. Section C also denotes the location of the existing 250mm diameter high-pressure gasmain which traverses the site. Protection slabbing will be provided where the roads and services cross the existing gasmain as per the requirements of Gas Networks Ireland (GNI).

Where the access roads cross existing agricultural drainage ditches, culverts with diameter not less than 600mm will be provided as an interim measure to mitigate any potential for flooding. It should be noted

that all the drainage ditches will be infilled as part of future developments and the construction of commercial buildings.

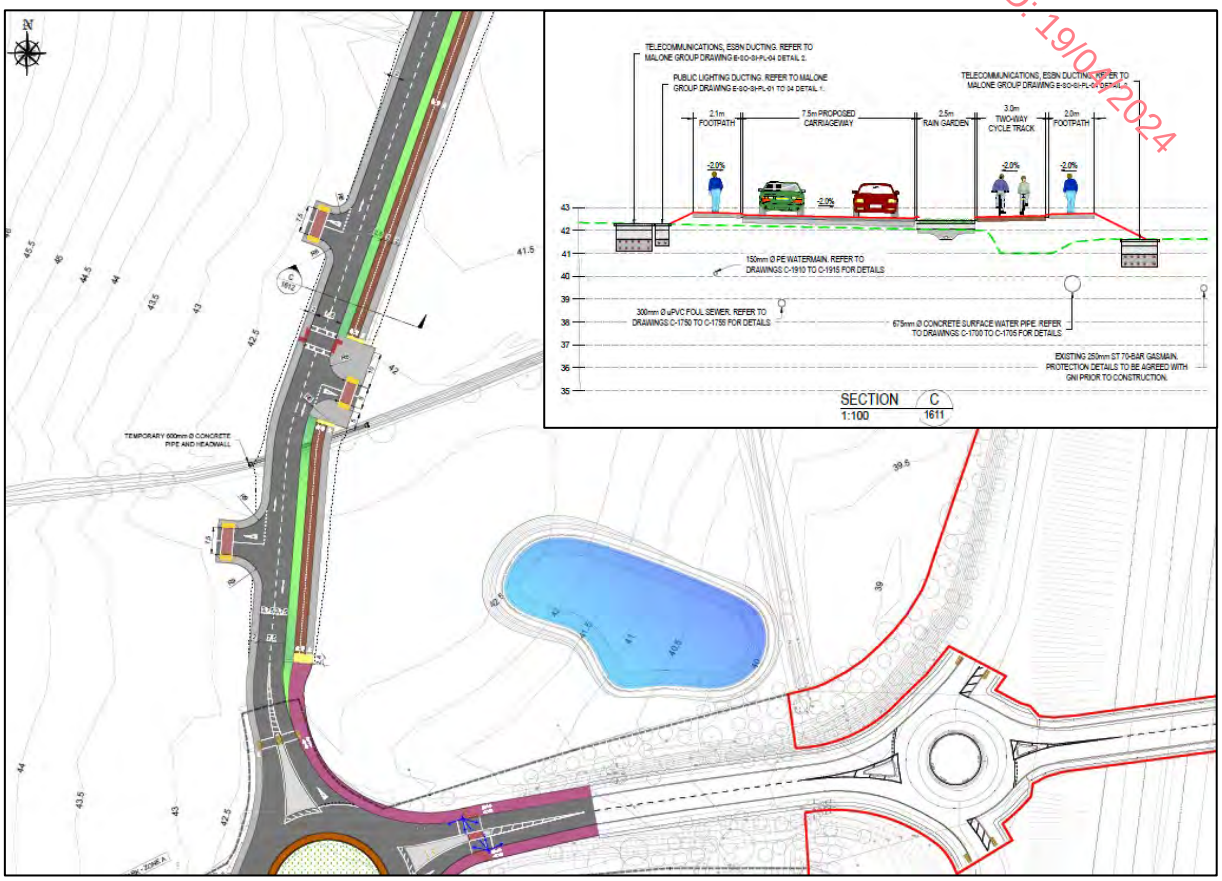

Figure 3-12: Zone A internal access road Section C

Figure 3-13 shows the internal access road layout for Zone F where it originates from the Bhailsigh Road (L1140) roundabout. Similar to Zone A, the single carriageway width equates to 7.5m with 2m wide footpaths and a 3m wide two-way cycle track available on the road shoulders just past the proposed Balrickard Stream crossing where the footpath and cycle track deviates from the carriageway and heads southeast through the 48m wide riparian corridor. The pedestrian and cycle infrastructure utilises the "Middle Zone" of the riparian corridor as demarcated in the Inland Fisheries Ireland (IFI) guidelines "*Planning For Watercourses In The Urban Environment*" published in November 2020.

As noted in **Section 2.1**, the topography of the northern section of Zone A drains towards the Balrickard Stream which will be crossed via a proposed 1.2m x 0.9m box culvert as indicated on Figure 3-13. Instead of utilising raingardens in this section similar to Zone A, the drainage will consist of gullies and distribution pipelines discharging to bioretention ponds which will be located in the riparian corridor "Outer Zone" as highlighted in the above IFI guideline document. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1965 included in **Appendix A** for the riparian corridor details.

As shown on Figure 3-14, the pedestrian and cycle paths reconnect to the main carriageway in the southern section of Zone F, where the cross section changes to a similar layout of that in Zone A, where raingardens are reintroduced as shown on Figure 3-15 and Section G. As shown in Figures 3-10 and 3-15, cul-de-Sac style turning circles are proposed in the event that Heavy Goods Vehicles (HGVs) erroneously drives to the end of the access roads and needs to turn around.

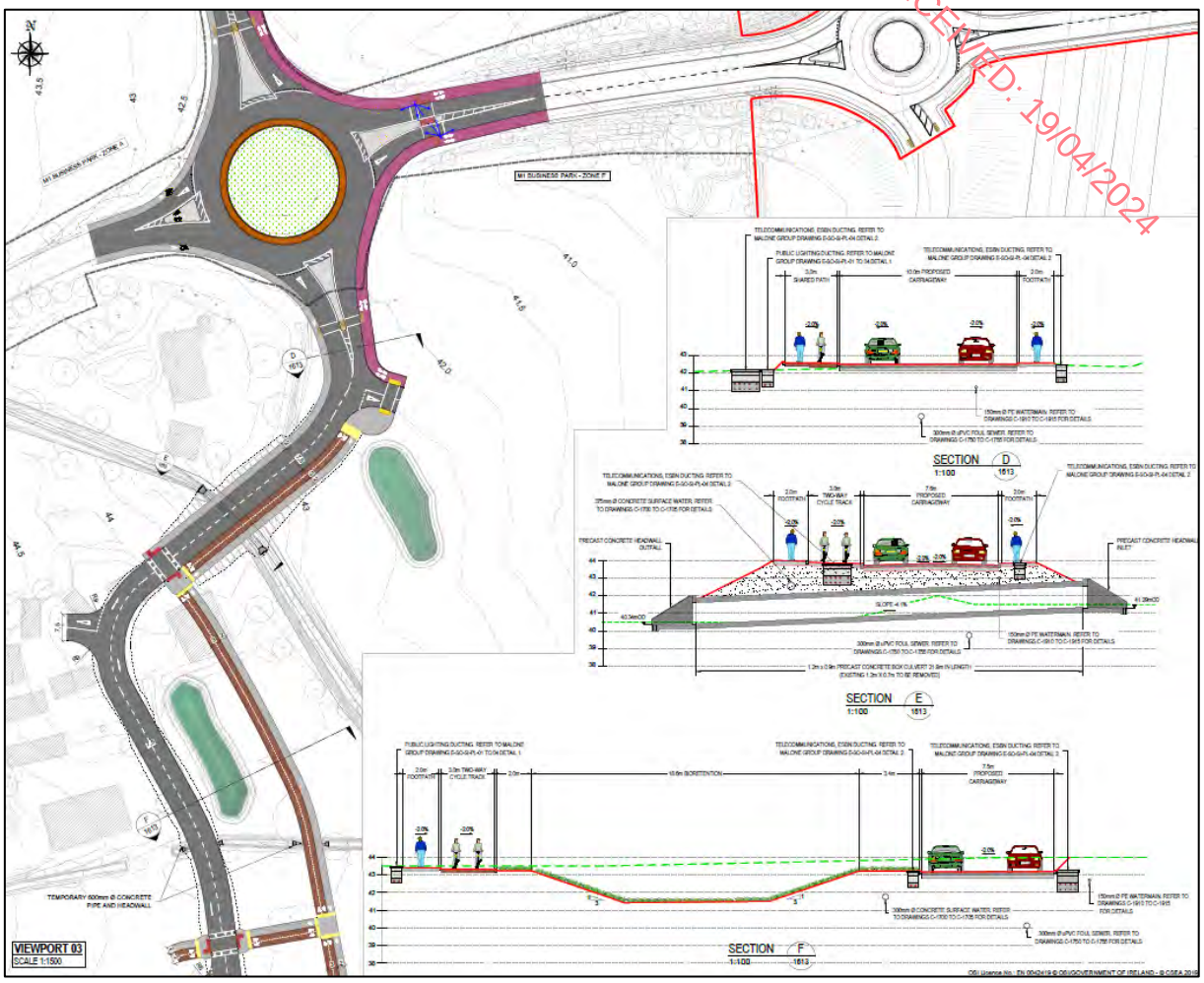

Figure 3-13: Zone F internal access roads Section D, E and F

Figure 3-14: Zone F internal access road

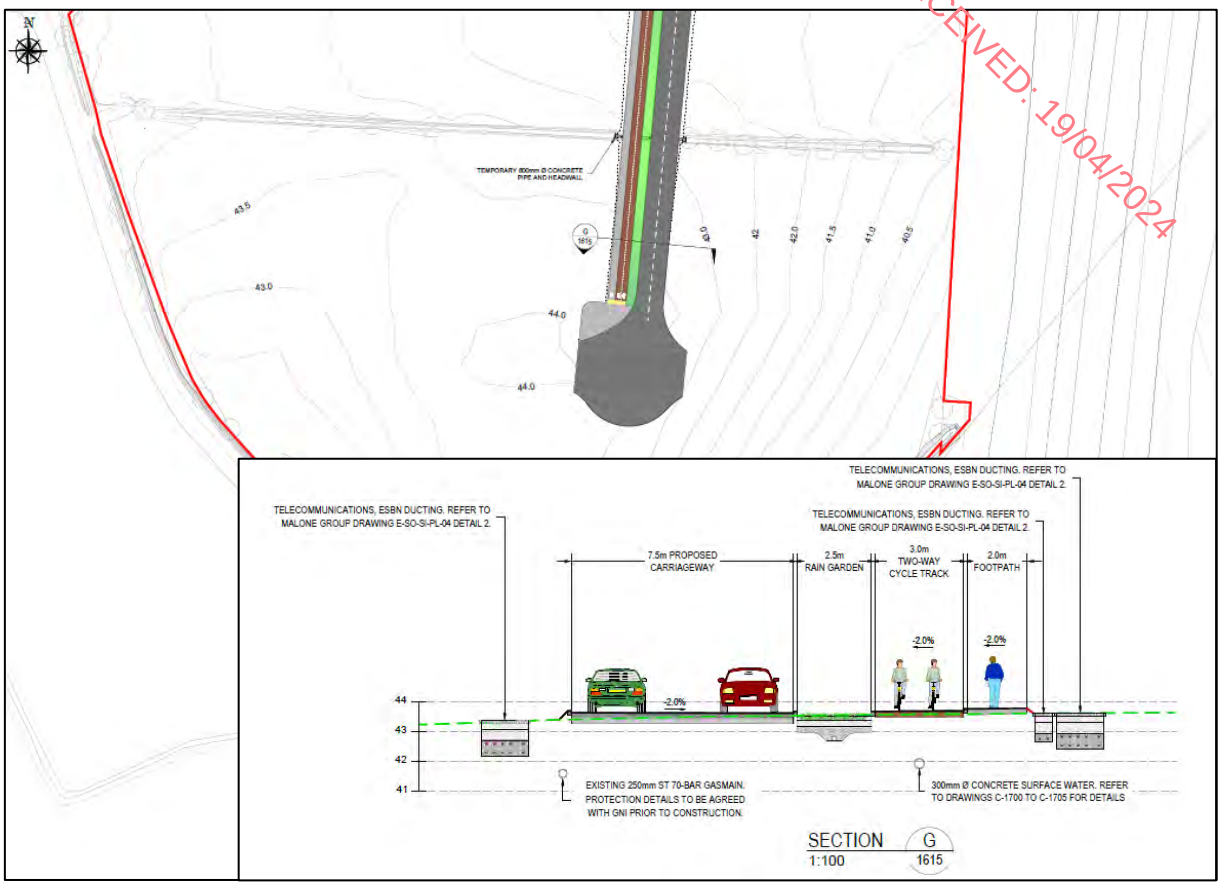

Figure 3-15: Zone F internal access road Section G

As shown in Figure 3-13, Section E, to cross the Balrickard Stream, it is proposed to remove and upgrade the existing 1.2m x 0.7m box culvert indicated in Figure 3-1. In line with the OPW Section 50 Application guidelines, the minimum diameter of culvert shall be 0.9m to facilitate access for maintenance purposes, thus the culvert will be upgraded to a 1.2m x 0.9m precast concrete culvert with precast concrete bases and headwalls. The use of precast concrete structures negates any risk of spillages of cementitious materials, minimising impacts and duration of works occurring within the stream. To ensure mammal are able to traverse the extended culvert crossing, it is proposed to install mammal passages/ledges in the culverts as indicated in Figure 3-16.

Figure 3-16: Example of mammal ledges

3.4 Swept Path Analysis

Swept Path Analyses were carried out on the proposed access roads, access spurs, cul-de-Sac style turning circles for Zone A and F as well as on the proposed Bhailsigh Road (L1140) roundabout. Refer to Drawings 16_206A-CSE-GEN-XX-DR-C-1675 to 1677 included in **Appendix A** for details. The

analyses were carried out for 16.5m long articulated and 12m long rigid HGVs. The rigid vehicles require of a larger kerb-to-kerb turning radius of 11.9m compared to the 6.987m radius for articulated vehicles.

3.5 Sightlines

A sight line analysis was carried out on the proposed Bhailsigh Road (L1140) roundabout in accordance with the TII Geometric Design of Junctions guidelines document. Refer to Drawing 16_206A-CSE-GEN-XX-DR-C-1665 to 1666 included in **Appendix A** for details.

3.6 Public Lighting

Malone Group carried out an assessment of the existing public lighting infrastructure located along Bhailsigh Road (L1140) and the R132 to determine if supplementary lighting would be required for the proposed pedestrian and cycle linkages to Applegreen highlighted in **Section 3.2.1**. The assessment concluded that sufficient lux levels are provided in accordance with IS EN 13201:2015 / BS 5489-1:2020 for pathways/subsidiary roads/pedestrian areas – Class P2, by the existing infrastructure and no supplementary lighting is required along the arterial and regional roads. Class P2 dictates an average lux level of 10 with a minimum not less than 2. The existing lux levels are indicated on Drawing E-SL-PL-03 included in **Appendix E** and Figure 3-17. For the proposed internal access roads for Zone A and F, new public lighting infrastructure is proposed to comply with the abovementioned standards. Refer to Drawing P23-291-E-LG-SI-PL-01 to 04 included in **Appendix E** for the details of the lighting assessment, calculation summaries, designed lux levels and schedule of luminaries which were designed by Malone Group. Table 3-1 provides a summary of the lighting schedules and calculations.

Along the primary access roads for Zone A and F, lighting will consist of Metro Floodlight Size 3 as indicated in Figure 3-18. For Zone F, where the pedestrian and cycle paths deviate from the main road through the riparian corridor “Middle Zone”, the lighting columns will consist of Metro Floodlight Size 1.

Site lighting, while providing a minimum ground illumination for the local task, will be minimised to reduce any impact to local fauna. Refer to **Appendix E** for the Malone Group Lighting Design Report (Ref No. P23-291-DOC-RPT-01).

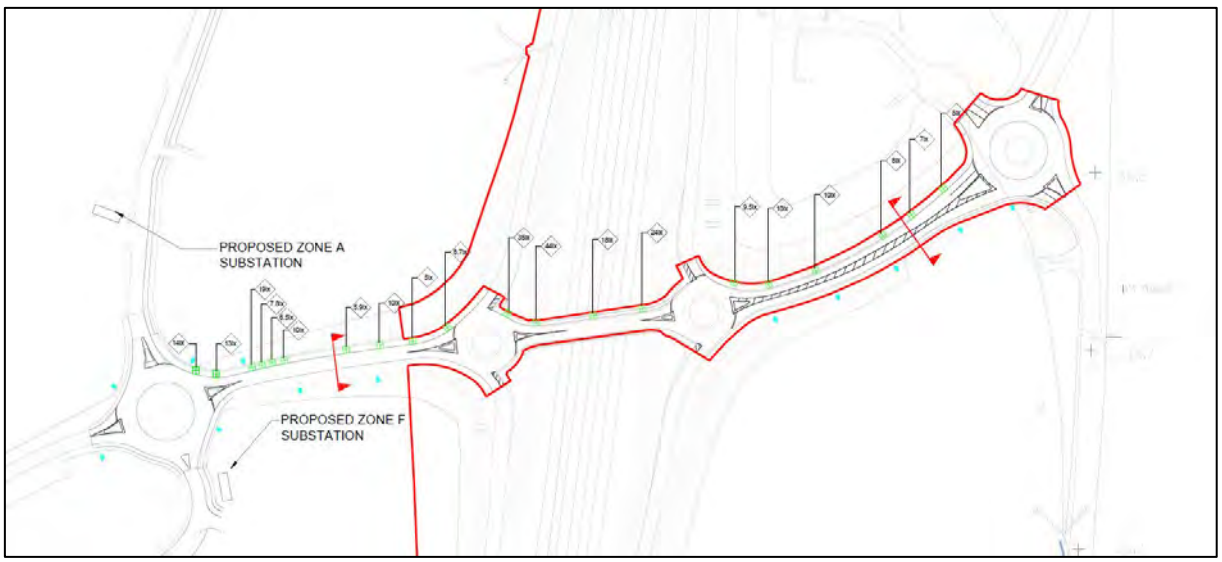

Figure 3-17: Existing Lux levels on Bhailsigh Road/R132

Figure 3-18: Metro Floodlight Size 3, 134W 64LED 700mA, 2700K Street Optic R03

Table 3-1: Lighting assessment summary and schedule

Calculation Summary									
Description	Avg	Max	Min	Min/Avg	Min/Max	Units	PtSpcLr	PtSpcTb	# Pts
Footpath & Cycle Path 1	15.56	45.5	3.5	0.22	0.08	Lux	1.5	1.5	1885
Footpath & Cycle Path 1	6.93	25.9	1.5	0.22	0.06	Lux	1.5	1.5	533
Access Road 1	23.38	45.0	9.3	0.40	0.21	Lux	2	2	1110
Access Road 2	21.66	48.9	8.6	0.40	0.18	Lux	2	2	1512
Roundabout	21.41	46	9	0.42	0.20	Lux	1.5	1.5	1773

Luminaire Schedule						
Symbol	Qty	Label	Lum. Lumens	MF	Description	Filename
	6	MS27-R01-27K	2851	0.860	Metro Streetlight Size 1, 27W 12LED 700mA 2700K Street Optic R01	5MTA10LGA-R01.ies
	45	MS13-R3-27K	16055	0.860	Metro Floodlight Size 3, 134W 64LED 700mA, 2700K Street Optic R03	5MTC22LGA-R03.ies

Public lighting ducting is proposed as indicated in Figure 3-19 and Drawing P23-291-E-SO-SI-PL-01 to 04 included in **Appendix E** designed by Malone Group.

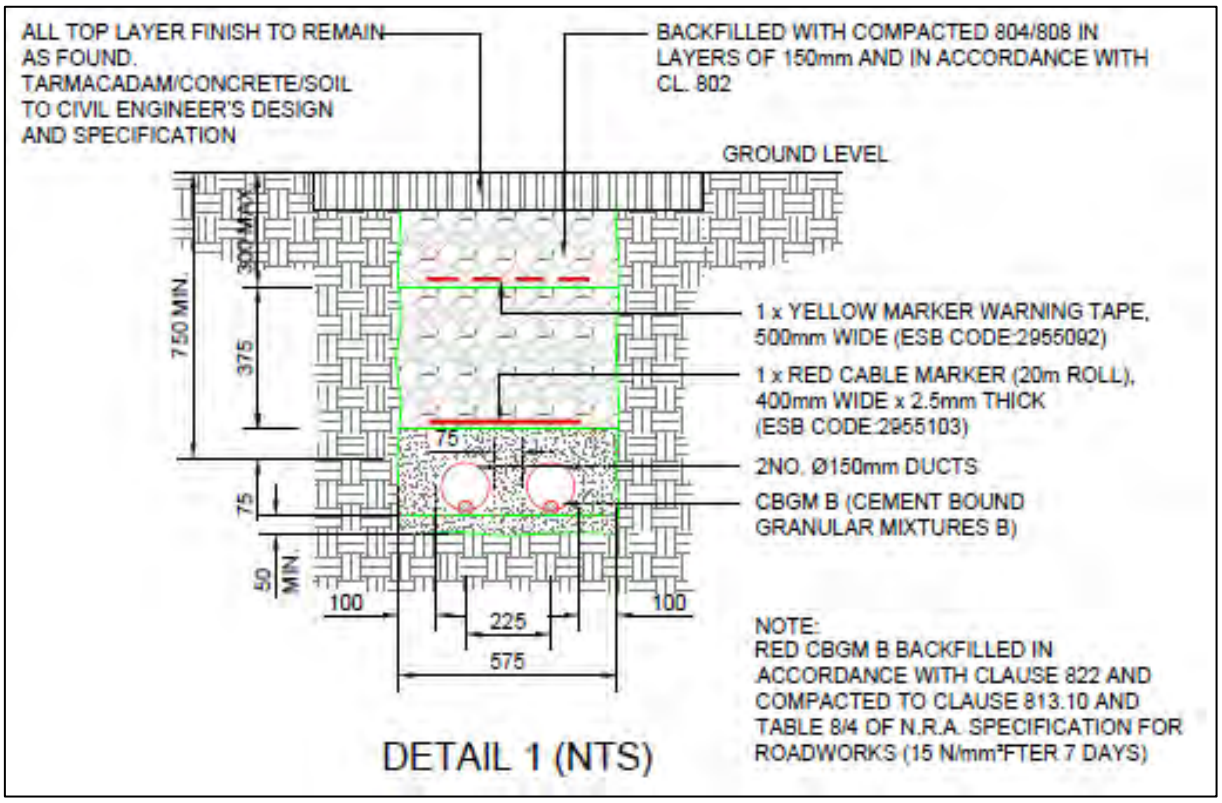

Figure 3-19: Public lighting ducting detail

4 Surface Water Drainage

This section of the report highlights the Surface Water Drainage design completed to cater for the proposed civil infrastructure as well as future developments. This section should be read in conjunction with the drawings and supporting information included in **Appendix B**.

4.1 Surface Water Management Design Statement

The surface water design is based on a multi-disciplinary approach incorporating Engineering, Landscape Architecture, Architecture and Planning aspects which has been used in the design of SuDS and the surface water management for the development, with a view of integrating the proposed engineering intervention into an attractive and useful landscape setting. The surface water design was carried out having regard to:

- Appendix 11 of Fingal Development Plan 2023 – 2029, Sustainable Drainage Systems (SuDS) Guidance Document – Green/ Blue Infrastructure for Developments;
- Greater Dublin Strategic Drainage Study (GDSDS) published in March 2005;
- The SuDS Manual (C753) published by CIRIA in 2015;
- Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Water Sensitive Urban Design: Best Practice Interim Guidance Document, Department of Housing, Local Government and Heritage, 2022;
- Inland Fisheries Ireland (IFI) guidelines “Planning For Watercourses In The Urban Environment” published in November 2020;

Figure 4-1 represents the four pillars of the proposed SuDS Design Methodology, which aims to maximise the potential benefits provided by SuDS, not only to reduce flow volumes but also to control the quality of runoff, provide amenity benefits to people and to support, promote and sustain the local biodiversity and habitats.

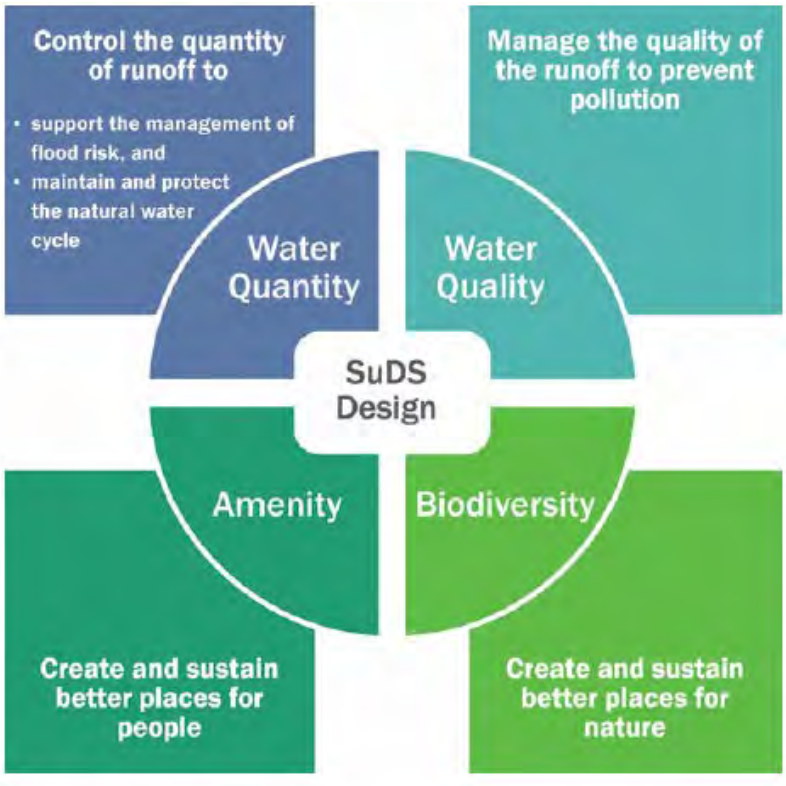

Figure 4-1: Proposed development SuDS Design Framework (CIRIA, C753)

4.2 Site characteristics

4.2.1 Topography and soils

As highlighted in **Section 2.1**, the topography of Zone A falls steeply from west-to-east towards the M1 motorway with an average elevation difference of approximately 12.5m. The low point is located on the south-eastern corner the site where an existing agricultural channel drains via a culvert underneath Bhailsigh Road (L1140) along the eastern boundary of Zone F to the Balrickard Stream. Zone A contains multiple agricultural drainage channels, two primary channels draining west-to-east which crosses underneath the M1 Motorway via existing culverts and secondary channels connecting the primary channels in a north-south direction.

The topography of Zone F is generally flatter compared to Zone A, with the northern half of the Zone F falling towards the Balrickard Stream. The stream crosses underneath Bhailsigh Road (L1140) via an existing 1m x 0.7m box culvert and drains through Zone F in a northwest-to-southeast direction for a distance of 260m, before turning east and crossing underneath the motorway via a 650mm diameter concrete culvert. An existing 7.7m wide agricultural stream crossing is located near the Zone F entrance which consists of a 1.2m x 0.7m box culvert providing access to the agricultural and residential buildings. The southern half of Zone F is drained via existing agricultural drainage ditches, either draining to the Balrickard Stream or to a small unnamed stream located on the southern boundary of the site.

Figure 4-2 (left) provides a clearer image of the site topography and also indicates the subsoils (right) of Zone A and F. The Teagasc Subsoils map classifies the subsoils of Ireland into 16 themes, using digital stereo photogrammetry supported by field work.

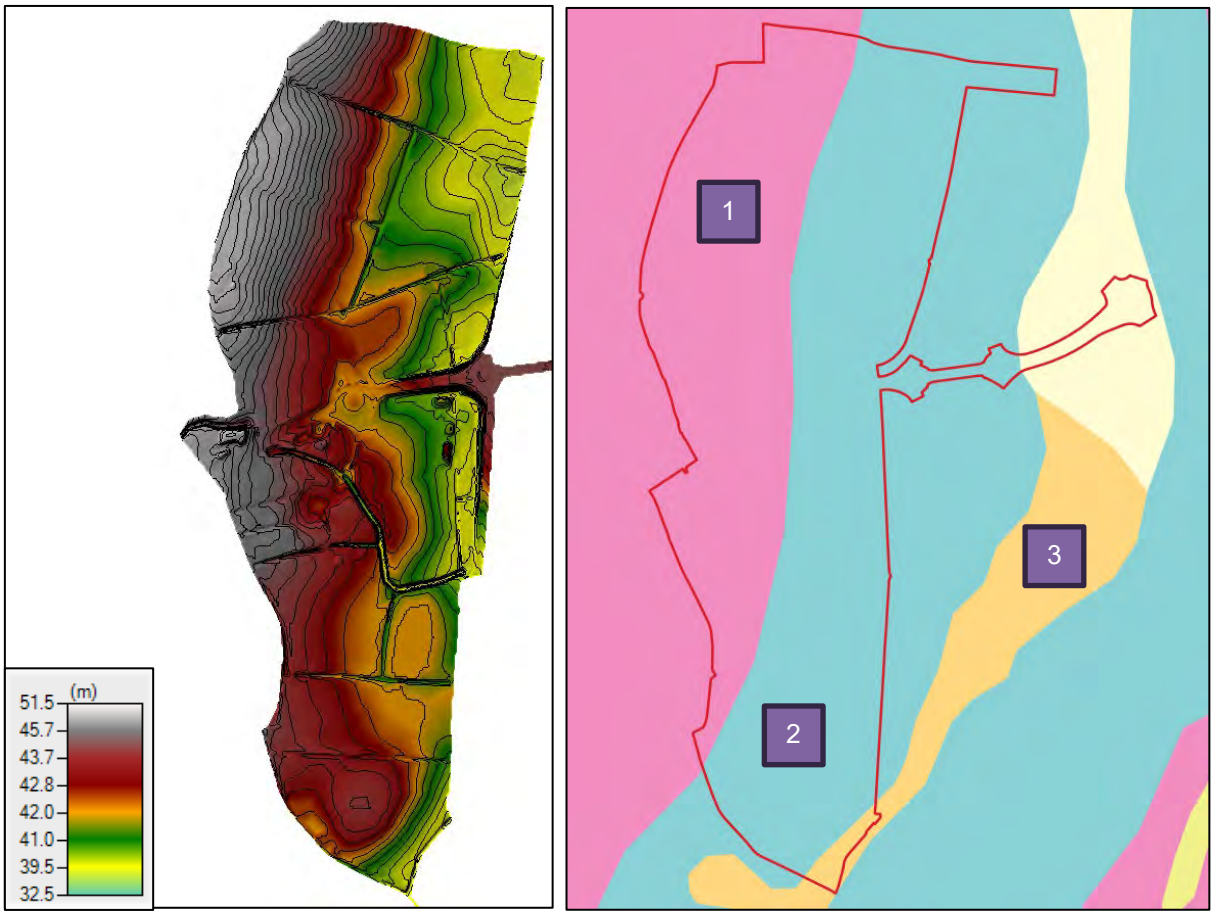

Figure 4-2: Topography and Teagasc subsoil maps

The subsoil maps, produced by Teagasc (Kinsealy), Environmental Protection Agency (EPA) and the Geological Survey Ireland (GSI) classifies the sites are underlain by:

1. Shales and sandstones till (Namurian) as demarcated by Pink coloured hatching. Till is sediment deposited by or from glacier ice.
2. Sandstone and shale till (Lower Paleozoic) with matrix of Irish Sea Basin origin as demarcated by Cyan coloured hatching.
3. The subsoils alluvium: post glacial sand and gravel deposits demarcated by Beige/Bisque coloured hatching.

4.2.2 Rainfall

Table 4-1 summarises the adopted design rainfall return parameters used in the design of the surface water drainage infrastructure components. The “Design Storms” were calculated using the Flood Studies Report (FSR) methodology. The FSR rainfall-runoff method was developed by the Institute of Hydrology (now Centre for Ecology and Hydrology (CEH)) in the UK. The FSR rainfall-runoff method was published in the mid-1970s and used rainfall from 1941 - 1970. As noted in the table below, updated rainfall figures were utilised from the Depth-Duration-Frequency (DDF) model which estimates point rainfall frequencies in Ireland (Technical Note No. 68).

Table 4-1: Summary of Design Rainfall and Soil Characteristics

Characteristic	Value
Mean Annual Rainfall (SAAR) (mm)	754(1)
Ratio “r”	0.273
M5-60 (mm)	15.6
M5-2day (mm)	56.4
Soil SPR value % runoff	0.3 (SOIL TYPE 2)
Allowable discharge per 1 hectare area (Qbar)	1.96 ≈ 2.0 (2)

(1) From https://www.met.ie/climate/services (Depth Duration Frequency (DDF) Model

Mateus, C., and Coonan, B. 2023. Estimation of point rainfall frequencies in Ireland. Technical Note No. 68. Met Éireann.

(2) Calculation of Qbar based on IH-124 method

4.3 Design Criteria

The design of the surface water drainage network was carried out using InfoDrainage™ Ultimate 2024 Version 2024.4. InfoDrainage is an automated stormwater design software program that provides comprehensive assessment of stormwater designs and is enhanced by "one-click" methodology, optimising for all Runoff Reduction practices. Table 4-2 summarises the program design criteria and program analysis settings. Refer to **Appendix B** for InfoDrainage Analysis reports for Zone A and F.

Table 4-2: Summary of Design Rainfall Return Period, storm durations and Climate Change Allowances

Drainage infrastructure	Rainfall Return period	Climate Change Allowance
Stormwater Networks	5-year	n/a
	30-year	+10% (+10% Urban Creep)

Attenuation system	100-year 1000-year	+20% (+10% Urban Creep)
Culverts	100-year	+20% (+10% Urban Creep)
Treatment system	1-year	n/a
Storm durations (run time)	Minimum duration: 15 mins (30 mins) Maximum duration: 10 080 mins (20 160 mins)	
Other Analysis Criteria	Output Interval: 10 mins Time step: Shortest Urban Creep: 10% global value Flood Risk Margin: 300mm No Discharge Analysis (First Flush): Rainfall depth 5mm and run time 1440mins	

4.3.1 Allowances and Restrictions Imposed on Future Developments

This section highlights how the surface water design and dynamic modelling has catered for future developments. An indicative Scott Talon Walker Architects Master Plan for Zone A and F has been prepared by Scott Tallon Walker Architects which shows the potential layouts of the future developments. The indicative Master Plan shows the development of 7 and 6 smaller land parcels in Zone A and F, respectively. Thus, the following allowances have been made in the modelling which will be developed into restrictions imposed on future developments:

- Zone A and F were subdivided into 7 and 6 smaller catchment areas, respectively (See Table 4-3 for a schedule of areas and hydrological parameters);
- Each land parcel will be permitted to discharge into the surface water drainage network but strictly only at Qbar rates calculated by the Institute of Hydrology (IH) Research Paper 124 Methodology, which generally equates to a maximum unit discharge rate of 2 l/s/ha;
- Thus, each land parcel which will be developed in the future would need to demonstrate how surface water runoff would be collected, attenuated and treated using suitable SuDS and/or Nature-base Solutions prior to discharging into the main surface water networks which services Zone A and F;

Table 4-3: Allowances and restrictions for future developments

Building/Land Parcel	Size (ha)	Qbar (l/s)
Zone A		
Building/Site A1	2.01	4.02
Building/Site A2	1.68	3.35
Building/Site A3	1.73	3.45
Building/Site A4	1.66	3.32
Building/Site A5	1.88	3.76
Building/Site A6	2.98	5.96
Building/Site A7	2.96	5.92
Sub-total	**14.89**	**29.79**

Total Site Area including open/green spaces (10% Urban Creep Area)	**16.795 (17.721)**	**35.44**
Zone F		
Building/Site F1	1.32	2.65
Building/Site F2	1.43	2.87
Building/Site F3	1.60	3.19
Building/Site F4	0.72	1.43
Building/Site F5	1.72	3.44
Building/Site F6	0.99	1.99
Sub-total	**7.78**	**15.57**
Total Site Area including open/green spaces (10% Urban Creep Area)	**9.8 (10.030)**	**20.06**

Hydrological Model Parameters:

Volumetric Runoff Coefficients = 1.0 (Summer and Winter)

Building/Site Areas Percentage Impervious = 100%, Open/greenspace areas = 30%

Time of Concentration = 5 mins (default)

Urban Creep = 10% global value

Individual land parcels introduced into network by Hydro-Brake Design Head of 1.2m, Design Flow = Qbar, Objective to Minimise Upstream Storage Requirements

As highlighted in the table above, the above inflows were introduced to the surface water network via manholes (junctions) containing a hydro-brake flow control designed to limit flows to Qbar at a design head of 1.2m for each of the individual land parcels. This method resulted in more realistic flow volumes compared to the alternative method of introducing the above Qbar flows as "Base Flows" when analysing the longer rainfall/storm duration events of 10 080 mins (7 days). The flow volumes are still considered to be conservative considering the other hydrological model parameters highlighted above for example Volumetric Runoff Coefficients, Percentage Impervious and allowances for Climate Change and Urban Creep.

4.4 Implementation Sustainable Drainage Systems (SuDS)

Implementation of Sustainable Drainage Systems (SuDS) and Nature-based Solutions (NBS)

The proposed surface water management systems to service the present and future developments will incorporate several on-site SuDS and NBS mechanisms to achieve the maximum potential benefits as highlighted in **Section 4.1**.

It is proposed to incorporate the following elements as part of the overall surface water drainage strategy for the development site:

Table 4-4: SuDS/NBS Implementation Strategy

Zone A Strategy	**Zone F Strategy**
Source Control: Future developments: - Permeable paving, rainwater harvesting, swales, filter drains and if required, attenuation storage systems Civil infrastructure: - Raingardens	**Source Control:** Future developments: - Permeable paving, rainwater harvesting, swales, filter drains and if required, attenuation storage systems Civil infrastructure: - Raingardens for southern section
Site Control: Attenuation/Detention Pond A detention basin consists of a dry vegetated depression which impounds stormwater during the 1 in 100 years storm event and gradually releases it with the aid of a flow control device. It will be used mostly for volume control, but some pollutant removal will be achieved via settlement of suspended solids, biological treatment and minor infiltration.	**Site Control:** Bioretention Ponds Bioretention ponds are vegetated drainage elements which can be used as components of a drainage system to store and treat surface water runoff before its outfalls to the receiving stream. It is an effective treatment element which assists in the removal of suspended solids and associated heavy metals through the physical processes of settlement and filtration. The biological processes which occur as surface water passes through a bioretention pond is effective in the reduction of nutrients concentration in surface water resulting in an enhanced runoff water quality prior to discharge to the receiving stream.

Rain gardens:

Rain gardens are proposed along the main access roads of Zones A and the southern portion of Zone F. The raingardens will act as the primary collection feature for runoff originating from the primary access roads, pedestrian paths and cycle tracks. Rain gardens are to consist of layers of compost/sand-amended native soils or specified soil mixes (engineered soils). The gardens are designed to have a maximum storage of 200mm which includes 50mm freeboard, before overflowing/under-draining to the surface water conveyance network and ultimately being stored in attenuation or bioretention ponds. A typical detail of the 2.5m wide raingarden is indicated in Figure 4-3 and a schedule of areas consisting of raingardens is summarised in Table 4-5. As indicated below, the raingardens overflow and underdrain pipes will consist of 200mm diameter pipes installed at 20m intervals, with a 450mm deep planting/growing medium and 250mm deep drainage layer consisting of Type B granular materials.

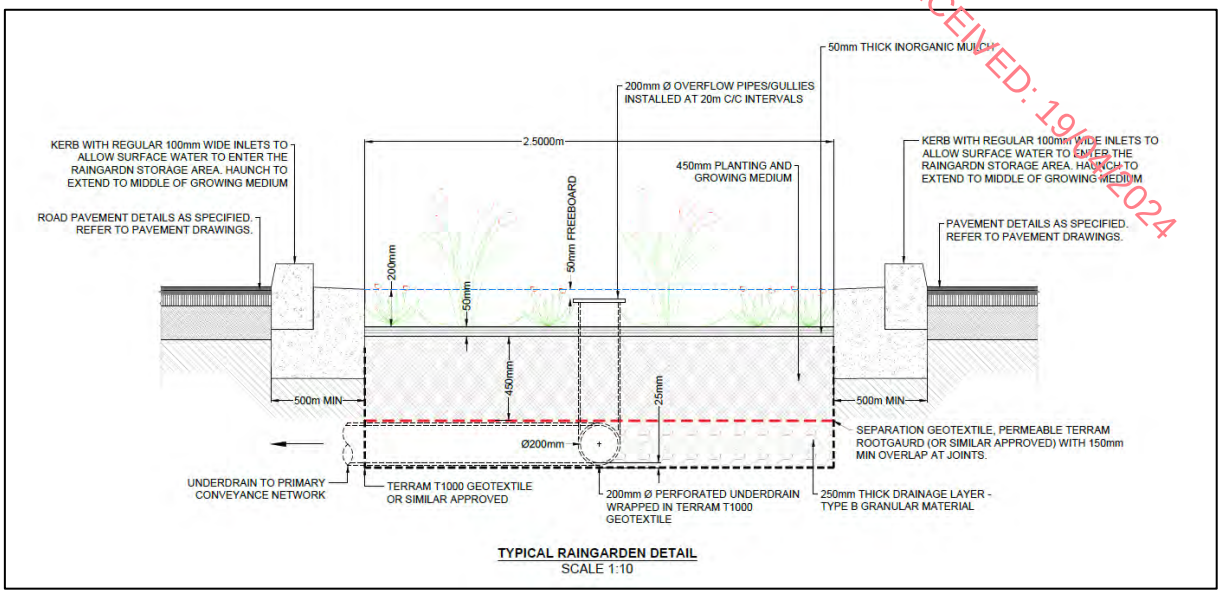

Figure 4-3: Typical raingarden detail

Table 4-5: Raingarden schedule of areas

Parameter	Area (m^2)
Zone A Raingarden 1	192
Zone A Raingarden 2	340
Zone A Raingarden 3	307
Zone F Raingarden 1	268
Zone F Raingarden 2	239

Bioretention Ponds:

Bioretention ponds are proposed in the "Outer Zone" of the riparian corridor located in Zone F. These ponds will consist of mixed planting into a specially designed engineered soil. These Nature-based Solutions (NBS) features will promote biodiversity with natural flowing and filtration of surface water runoff. As noted in the design criteria in **Section 4.3** previously, the design of the attenuation storage systems will be designed based on the 1 in 100-year storm event with a 20% allowance for climate change (+10% urban creep). All proposed ponds are proposed to have an outlet headwall modelled as an orifice in InfoDrainage along with a Hydrobrake flow control device manhole. Refer to Table 4-5 below for details on the bioretention ponds. Refer to **Appendix B** Drawings 16_206A-CSE-GEN-XX-DR-C-1711 & 1712 for detailed sections through the Bioretention Ponds.

Table 4-6: Zone F Bioretention Ponds

Parameter	Bioretention Pond No. 1	Bioretention Pond No. 2	Bioretention Pond No. 3	Bioretention Pond No. 4
Maximum Storage Capacity	582 m^3	697 m^3	442 m^3	777 m^3

Non-Overspill Crest Level	42.8 mOD	43.7 mOD	42.5 mOD	42.0 mOD
Freeboard	150mm			
Full Supply Level Area	650 m^2	650 m^2	550 m^2	800 m^2
Side slopes	1V:3H (excavation); 1V:2H (fill)			
Inlet level and pipe diameter	41.250mOD and 225mm Ø	41.7mOD and 300mm Ø	41.250mOD and 225mm Ø	40.25mOD and 450mm Ø
Outlet level and pipe diameter	41.250mOD and 200mm Ø	41.7mOD and 200mm Ø	41.250mOD and 200mm Ø	40.25mOD and 200mm Ø
Maximum Water Surface Elevation and Critical Storm	42.365 mOD: 1:100 yr + 20% CC: 8640min Winter Storm Duration	42.124 mOD: 1:100 yr + 20% CC: 120min Summer Storm Duration	41.888 mOD: 1:100 yr + 20% CC: 5760min Winter Storm Duration	41.889 mOD: 1:100 yr + 20% CC: 5760min Winter Storm Duration

Zone A SuDS Attenuation Pond;

As noted in the design criteria in **Section 4.3**, the design of the attenuation pond will be designed based on the 1 in 100-year storm event with a 20% allowance for climate change (+10% urban creep). Refer to **Appendix B** Drawing 16_206A-CSE-GEN-XX-DR-C-1710 for detailed section through the Attenuation Ponds

Table 4-7: Zone A Attenuation Pond Details

Parameter	Value
Maximum Storage Capacity	3,350 m^3 to Full Supply Level
Non-Overspill Crest Level	40.6 mOD
Freeboard and Full Supply Level	300mm and 40.30mOD
Full Supply Level Area	1,950 m^2
Side slopes	1V:3H (excavation); 1V:2H (fill)
Inlet level and pipe diameter	38.8mOD and 750mm Ø
Outlet level and pipe diameter	38.8mOD and 300mm Ø
Maximum Water Surface Elevation and Critical Storm	39.914 mOD: 1:100 yr + 20% CC: 2880min Summer Storm Duration

Hydrobrakes:

Table 4-6 summarises the location, design criteria and reference numbers of the flow control units designed for the proposed development. Refer to **Appendix B** for Hydrobrake design details for each of the ponds.

Table 4-8: Summary of hydro-brake flow control units

Hydro-Brake Location	Design Head (m) and Flow (l/s)	Reference Number	Model Maximum Discharge (l/s)
Zone A Attenuation Pond	1.5m and 35 l/s	SHE-0230-3000-1500-3000	35.44 l/s
Zone F Bioretention Pond 1	1.5m and 3 l/s	SHE-0075-3000-1500-3000	2.9 l/s
Zone F Bioretention Pond 2	1.5m and 4 l/s	SHE-0087-4000-1500-4000	3.5 l/s
Zone F Bioretention Pond 3	1.5m and 4 l/s	SHE-0087-4000-1500-4000	4.1 l/s
Zone F Bioretention Pond 4	3.5m and 8.6 l/s	SHE-0106-8600-3500-8600	8.3 l/s

Pollution Control Measures for the Site

As part of the surface water drainage network, it is proposed to provide a Class (I) bypass separator model (or similar approved) with a suitable capacity downstream of the proposed Hydrobrakes located near the outfall discharge points. The function of the separator is to intercept pollutants such as petroleum and oil and prevent their entry to the public drainage system or downstream watercourse, thus providing protection against contaminated surface water run-off.

4.5 FCC SuDS Selection Hierarchy

Fingal City Council SuDS/ Green Infrastructure feasibility checklist has been completed as shown in Table 4-6.

Table 4-9: FCC SuDS Selection Hierarchy

Item	SuDS Measures	Measures proposed	Justification rationale
1	**Source Control**		
1.1	Swales	Y	Where suitable and space available in future developments, to be integrated in open space areas and will contribute as part of on-site 1:30 years storage.
1.2	Tree Pits	Y	Where suitable, to be integrated in open space areas in future developments.
1.3	Rainwater butts	N	Not suitable in industrial sites
1.4	Rainwater harvesting	Y	Future developments

1.5	Soakaways	N	Soakaway testing has been conducted in accordance with BRE Digest 365. the investigation found the rate of infiltration was too low to calculate due to low permeability fine-grained Soil which are considered poor infiltration media. The findings specified that the site is unsuitable for the use of infiltration elements as part of drainage system.
1.6	Infiltration trenches	N	See item 1.5 above
1.7	Permeable pavement - Grasscrete - Block paving - Porous asphalt	Y	Permeable paving with bottom layers of granular materials in future developments (stone-fill underneath all car parking areas are proposed to reduce the total volume of run-off discharged outside the development units; thereby reducing the total attenuation storage required, typically up to 1 in 30 years storm event, in addition to delivering interception and contributing to water quality treatment.
1.8	Green roofs	N	Not suitable in industrial sites
1.9	Filter strips	N	Alternative water quality measures will be applied such as item 1.7, 3.2 and 3.3
1.10	Bioretention systems (Raingardens and Bioretention)	Y (Zone A and F)	To be provided as primary collection and source control elements which will control flow, improve quality, provide amenity and ecological benefits.
1.11	Blue roofs	N	Not suitable in industrial sites
1.12	Filter drain	Y	To be applied in grass verge areas adjacent to individual parcel access road for future developments which will reduces the total volume of run-off discharged outside the development units; thereby reducing the total attenuation storage required, typically up to 1 in 30 years storm event, in addition to delivering interception and contributing to water quality treatment.
2	**Site Control**		
2.1	Detention basins	Y (Zone A)	A detention basin is a dry vegetated depression which impounds stormwater during the 1 in 100 years storm event and gradually release it with the aid of a flow control device. It will be used mostly for volume control, but some pollutant removal achieved via settlement of suspended solids and some infiltration.
2.2	Retentions basins	N	See item 1.5 above
3	**Regional Control**		

3.1	Ponds	N	Not applied due to site constraints and H&S provisions.
3.2	Wetlands	N	Not applied due to site constraints.
3.3	Infiltration /Storage	N	See item 1.5 above
4	**Other**		
4.1	Petrol/Oil interceptor	N	Not deemed required. Alternative water quality measures will be applied such as item 1.7, 3.2 and 3.3
4.2	Attenuation tank	Y	As a last resort for future developments to comply with the restrictions highlighted in **Section 4.3.1**.
4.3	Oversized pipes	Y	Large conveyance system, typically pipe size larger than 450mm dia., might contribute as part of the storage system during high surcharge condition

5 Foul Drainage

This section of the report highlights the proposed foul drainage network designed to cater for the future development of the site into commercial warehousing units. This section of the report should be read in conjunction with the drawings and documents included in **Appendix C**.

5.1 Existing Foul Drainage

As indicated on the Uisce Éireann Drawing No. IW-AGG-2018-000 included in **Appendix C**, no existing foul drainage systems are available on the proposed development sites Zone A and F. The existing M1 Business Park, located on the eastern side of the M1 Motorway in Courtlough, is serviced by a privately owned wastewater treatment plant (WWTP) located on the northern boundary of the business park as indicated in Figure 5-1. A plan layout of the WWTP is shown on the O'Connor Sutton Cronin Drawing Site Layout STP DWG-224-100 included in **Appendix C**.

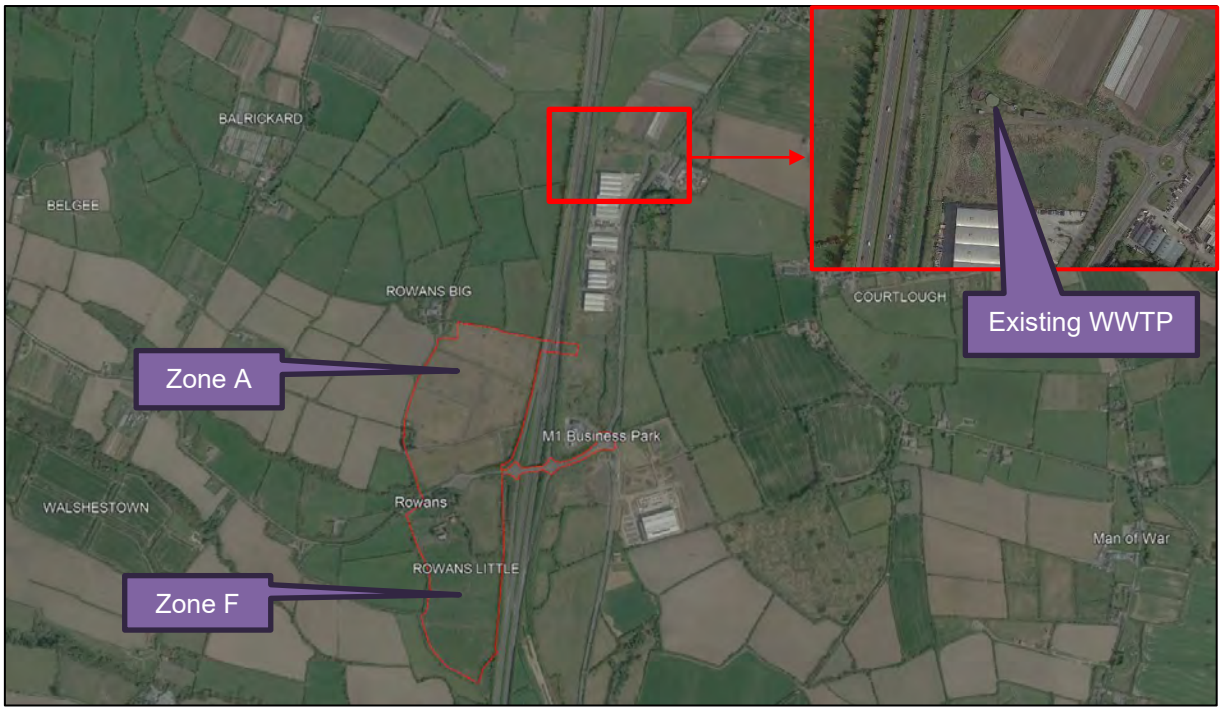

Figure 5-1: Location of existing M1 Business Park WWTP

The WWTP is managed by Turbine, who confirmed the following:

- The WWTP capacity was designed to accommodate a Dry Weather Flow capacity of 225 m^3/day or a Population Equivalency (P.E.) of 1,125 persons and a Biological Oxygen Demand (BOD) of 68 kg;
    - PE equates to per capita usage of 200 l/day/c and 60g BOD_5/day/c;
    - PE can also be calculated with 150 l/day/c which equates to capacity of 1,500 PE;
    - 200 l/day/c used in calculations.
- The current daily operating capacity of the plant does not exceed 30 m^3/day which equates to 150 PE and 9 kg BOD_5/day;

The above equates to an available capacity of 195 m^3/day. In July 2022, planning permission (F22A/0255) was received for the decommissioning of the existing wastewater treatment plant (888 sq.m) located at the northern end of the M1 Business Park and replacing it with a proposed foul pumping station (317 sq.m). The development proposals also included for the pumping of wastewater for a

distance of 2.8 km approx. via a proposed 125mm diameter DN ductile iron rising main with all ancillary works along the R132 as far as the northern end of Balrothery village.

5.2 Proposed Foul Drainage Network

5.2.1 Dry Weather Flow Calculation

Table 5-1 summarises the Dry Weather Flow (DWF) calculations carried out on the future development layouts presented in the M1 Business Park Master Plan. Each of the individual land parcels were estimated to have a low industrial water demand of 14 m^3/ha/day with one parcel per zone to be a high demand user of 20 m^3/ha/day. The demand calculations are based on the Uisce Éireann Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) published in July 2020. Refer to full demand calculations included in **Appendix C**.

As indicated below, the future development of Zone A and F would result in a combined P.E. of 927 persons, 55.62 kg BOD_5/day and a DWF of 185 m^3/day, which does not exceed the current available capacity of 975 PE, 59 kg BOD_5/day or 195 m^3/day highlighted above.

Table 5-1: Dry Weather Flow demand calculations

SITE	BUILDING	Population	DWF = Dry Weather Flow (litres/day)	DWF = Dry Weather Flow (m^3/day)
			DWF = PG + I + E	DWF = PG + I + E
Zone A	Building A1	47	9,886	10
	Building A2	67	14,119	14
	Building A3	67	14,119	14
	Building A4	67	18,445	18
	Building A5	47	9,886	10
	Building A6	113	23,629	24
	Building A7	113	23,629	24
	Sub-Total	**521**	**113,714**	**114**
Zone F	Building F1	42	8,830	9
	Building F2	67	18,430	18
	Building F3	77	16,230	16
	Building F4	21	4,549	5
	Building F5	77	16,230	16
	Building F6	35	7,403	7
	Sub-Total	**320**	**71,673**	**72**
	Total	**841**	**185,387 (l/day)**	**185 (m^3/day)**
Population Equivalency (PE)		**927**	**2.15 (l/s)**	**0.0021 (m^3/s)**

5.2.2 Proposed foul drainage infrastructure

The proposed foul drainage infrastructure is shown on Drawing 16_206A-CSE-GEN-XX-DR-C-1750 to 1760 included in **Appendix C**. As indicated on the drawings, it is proposed to drain by gravity from the southern portion of Zone F all the way to the northern section of Zone A via a 300mm diameter foul sewer pipeline at a slope of 1:300. A pump station and 24-hour emergency storage tank are proposed on the northeastern corner of Zone A, where wastewater would be pumped underneath the M1 Motorway via a new 125mm diameter ductile iron rising main, which will be sleeved through an existing abandoned 200mm diameter watermain. Refer to Figure 5-1 for a layout of the above pumping station, emergency storage tank and rising main. The proposed rising main will discharge to a new manhole located on the eastern side of the motorway, which will be connected to the existing 300mm diameter foul sewer which drains northwards towards the M1 Business Park WWTP.

CSEA investigated various options to cross the motorway with new pipelines, making use of the latest trenchless technologies available such as micro tunnelling, pipe jacking and horizontal directional drilling. The investigation found that crossing the motorway with these methods would not be feasible considering the low topography of the motorway, which would result in cover depths not exceeding 1.8m, which poses too great of a risk.

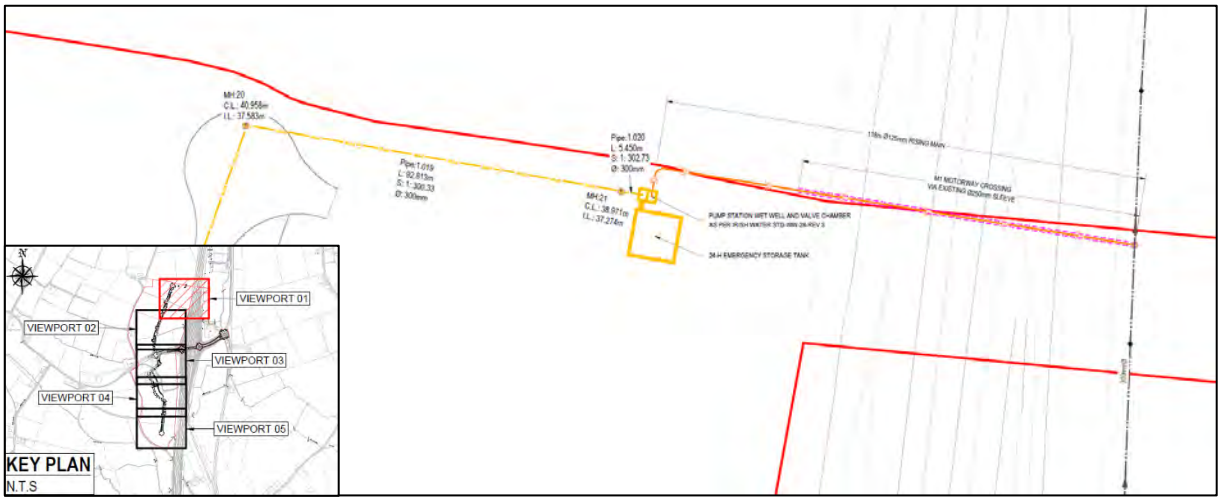

Figure 5-2: Layout of proposed pumping station and rising main

In accordance with the Uisce Éireann Code of Practice, a 24-hour emergency storage tank will be provided which equates to a storage volume of 200m^3 based on the DWF. The insitu concrete tank shall be designed to have a minimum factor of safety against floatation for the empty emergency storage structure subjected to groundwater upward pressure of 1.2. The pump station design shall be carried out in accordance with the Uisce Éireann standard details drawing STD-WW-28, 28A and 28B.

The proposed foul drainage infrastructure was modelled using InfoDrainage Ultimate 2024 Version 2024.4 to analyse the velocities of the network. Refer to the analysis report included in **Appendix C**. As the future development discharge patterns for the commercial units are unknown, a hypothetical discharge pattern was used, consisting of a double-peak hydrograph, with one peak occurring at 11:00am and another between 15:00pm-17:00pm. The first peak equals the design flow peak calculated in the demand figures included in **Appendix C**. The model shall be updated as discharge patterns becomes available in the planning for future developments. Figure 5-3 shows an example of the trade discharge pattern. From the dynamic modelling, the maximum inflow of 18.6 l/s was recorded, thus a pump capacity of 20 l/s was utilised which activates at a storage depth of 250mm. This resulted in 86% storage availability in the emergency storage tank. On the eastern side of the motorway, an energy

dissipating manhole will be provided to reduce the velocities of the rising main before being connected to the existing 300mm diameter foul main, which drains to the existing M1 Business Park WWTP.

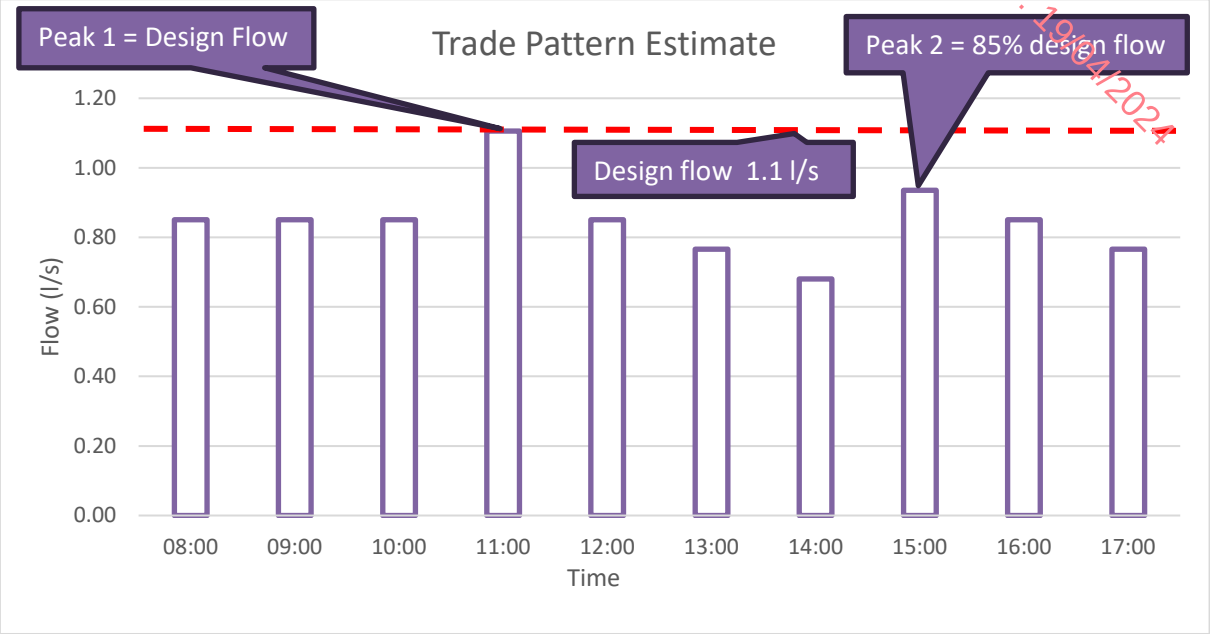

Figure 5-3: Trade discharge pattern Zone A Building A1 example

6 Water Supply

This section of the report highlights the existing and proposed water supply network designed to cater for the future development of the site into commercial warehousing units. This section of the report should be read in conjunction with the drawings and documents included in **Appendix D**.

6.1 Existing Water Supply

Figure 6-1 shows the layout of the existing water supply mains located along the northern and western boundary of Zone A. No existing pipelines are available for Zone F. Figure 6-1(left) was extracted from the Uisce Éireann (UÉ) Drawing W-AGG-2018-000 included in **Appendix D**. The UÉ map indicates two pipelines crossing the M1 Motorway into Zone A consisting of a 150mm and 200mm diameter pipeline feeding to/from the storage reservoir located on the western boundary and that the pipelines are under private ownership, indicated by green linework. This reservoir and pump station was constructed c. 2001-2005 with the first M1 Business Park building located on the eastern side of the motorway. According to the Savills Leak Detection Report compiled in January 2022, one pump station is utilised for domestic supply and the other for fire pumps. The Savills report is included in **Appendix D**.

Figure 6-1 (right) was extracted from the Savills report Drawing March 2016 Ref SC12497, which indicates that the 200mm diameter pipeline is abandoned and closed with a gate/sluice valve on the eastern side of the motorway. This 200mm watermain will be utilised for the foul sewer crossing as highlighted in **Section 5**.

The privately owned 200mm diameter pipeline supplying the M1 Business Park feeds off the UÉ mains running along the R132, which consists of 250mm diameter ductile iron pipeline constructed c. 1996, 300mm diameter uPVC constructed c. 1981 and 9” diameter Asbestos pipe constructed in 1968. The M1 Business Park 200mm diameter main is connected to all of the existing mains. As indicated on the Savills drawing, a connection between the 150mm diameter and 250mm diameter mains is available upstream of the closed gate/sluice valve located on the eastern side of the motorway.

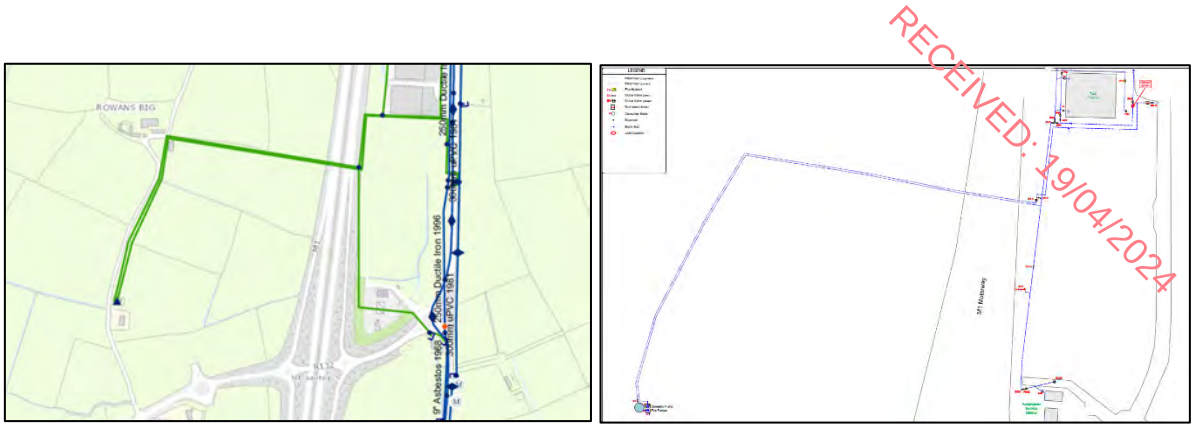

Figure 6-1: Existing water supply infrastructure Zone A

6.2 Proposed Water Supply

Figure 6-2 shows the proposed connection point to the existing 150mm diameter pipeline located on the northern boundary of Zone A, which will feed both Zone A and Zone F via a proposed 150mm diameter uPVC main. The proposed watermain details are shown on Drawing 16_026A-CSE-GEN-XX-DR-C-1910 to 1915 included in **Appendix D**. Connection spurs will be provided for future developments as indicated on the proposed development drawings.

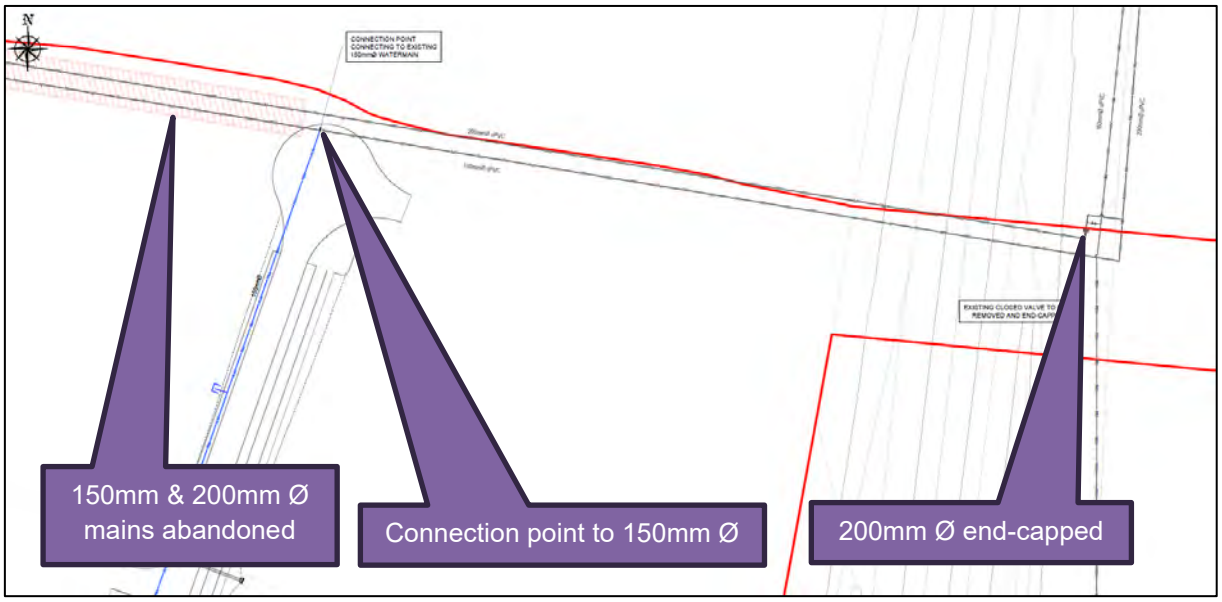

Figure 6-2: Proposed watermain connection point for Zone A and F

Table 6-1 shows the summary of the water demand calculations carried out in accordance with the UÉ Code of Practice Document IW-CDS-5020-03 Revision 2 published in July 2020. A Pre-Connection Enquiry (PCE) was submitted to UÉ in October 2023 to supply the proposed Zone A and F from the existing supply highlighted in **Section 6.1** above, and Confirmation of Feasibility (CoF) (CDS23007701) was received in December 2023. A copy of the UÉ PCE CoF is included in **Appendix D**. UÉ requested that a bulk water meter be installed on the privately owned 200mm diameter pipeline on the eastern side of the motorway. An existing bulk water meter chamber is shown on the Savills report included in **Appendix D**.

Table 6-1: Total Average Daily Demand (ADD) summary

SITE	BUILDING	Total Population Equivalency (PE) (Office and Warehouse Areas)	Total PE Demand (m^3/day)	Total Industrial Demand (1 high-capacity user of 20 m^3/ha/day, other 14 m^3/ha/da)	Total Average Daily Demand (ADD) (m^3/d)
Zone A	Building A1	47	2.1	5.1	7.3
	Building A2	67	3.0	7.4	10.4
	Building A3	67	3.0	7.4	10.4
	Building A4	67	3.0	11.7	14.7
	Building A5	47	2.1	5.1	7.3
	Building A6	113	5.1	12.4	17.4
	Building A7	113	5.1	12.4	17.4
	Total	**521**	**23.5**	**61.4**	**84.9**
Zone F	Building F1	42	1.9	4.6	6.5
	Building F2	67	3.0	11.7	14.7
	Building F3	77	3.5	8.5	12.0
	Building F4	21	1.0	2.3	3.3
	Building F5	77	3.5	8.5	12.0
	Building F6	35	1.6	3.8	5.4
	Total	**320**	**14.4**	**39.4**	**53.8**

7 Electrical and Telecommunications Ducting

7.1 Existing Electrical Supply

The existing ESB electrical supply networks are shown on Drawing 20230707-034_A0 included in **Appendix E**. As indicated, a 250 kVA transformer is available on the northeastern corner of Zone A, which feeds the 10kVA Medium Voltage (MV) line feeding the disused reservoir pump stations mentioned previously. Another MV line feeds the existing residential dwelling located to the northwest of Zone A which originates from Walshestown. Low Voltage (LV) feeds are available to the residential dwellings located in Zone F as shown on the abovementioned ESBN drawing.

7.2 Existing Telecommunications

Existing Open EIR ducting is available on the northern road shoulder of Bhailsigh Road (L1140) as indicated on the Open Eir Map 1 and 2 included in **Appendix E**. An Eircom manhole was surveyed on the northeastern corner of Zone A but no further information could be obtained regarding this manhole.

7.3 Proposed Electrical Supply and Telecommunication Ducting

The proposed public lighting highlighted in **Section 3.6**, will require 2 x 15kVA connections to the existing 250kVA pole mounted transformer located on the northeastern corner of Zone A. An ESBN Connection Application will be submitted following the confirmation of the planning application reference number. The existing 250kVA transformer has sufficient capacity to cater for the Zone A and F public lighting requirements. All future developments will be subject to their own ESBN connection applications and availability of supply in the local network can only be assessed once power consumption/requirements are known. Telecommunications ducting will be provided to service future developments within the proposed Zone A and F. Future connections applications to service providers will be required to service individual land parcels. A typical detail of telecommunications and power ducting is shown in Figure 7-1. Refer to Drawing P23-291-E-SO-SI-PL-01 to 04 included in **Appendix E** for layouts of the electrical and public lighting ducting design by Malone Group.

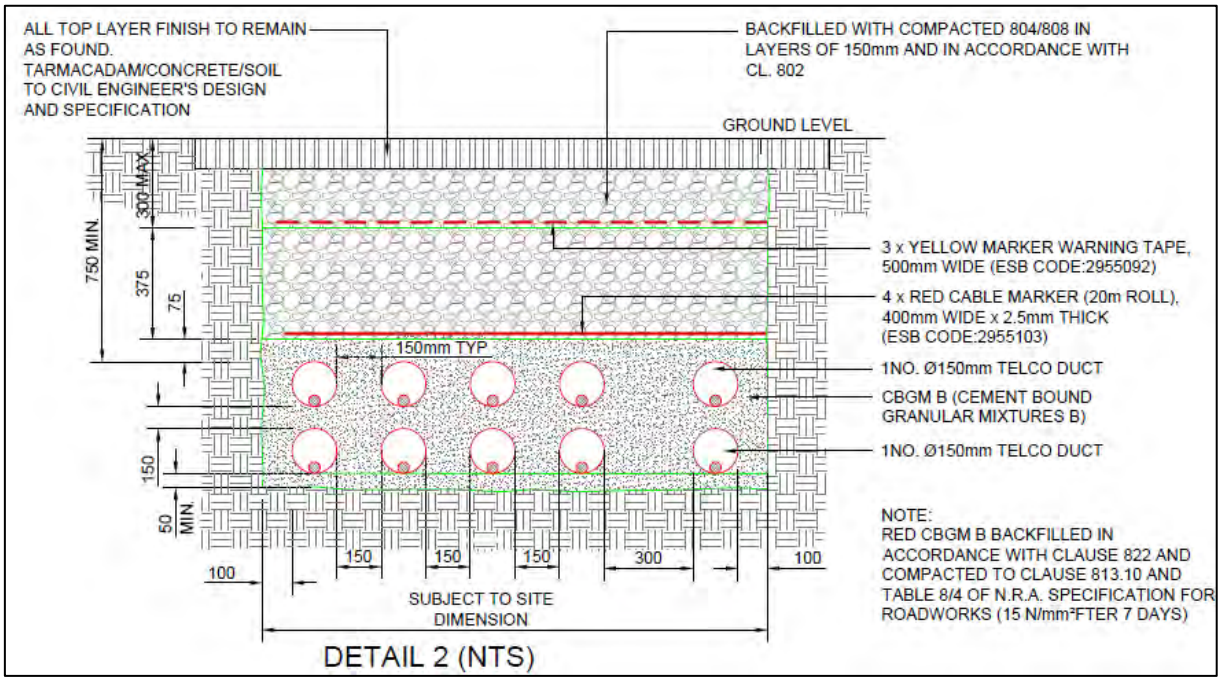

Figure 7-1: Electrical and telecommunications ducting detail

Appendix A – Proposed Development Drawings

Document Ref:	Document Name:
16_206A-CSE-GEN-XX-DR-C-1500	Cover Sheet
16_206A-CSE-GEN-XX-DR-C-1501	Site Location Map
16_206A-CSE-GEN-XX-DR-C-1503	Topographical Survey Overall Layout
16_206A-CSE-GEN-XX-DR-C-1504	Topographical Survey Zone A
16_206A-CSE-GEN-XX-DR-C-1505	Topographical Survey Zone F
16_206A-CSE-GEN-XX-DR-C-1600	Proposed Layout – Overall
16_206A-CSE-GEN-XX-DR-C-1601	Proposed Layout – Sheet 01 of 06
16_206A-CSE-GEN-XX-DR-C-1602	Proposed Layout – Sheet 02 of 06
16_206A-CSE-GEN-XX-DR-C-1603	Proposed Layout – Sheet 03 of 06
16_206A-CSE-GEN-XX-DR-C-1604	Proposed Layout – Sheet 04 of 06
16_206A-CSE-GEN-XX-DR-C-1605	Proposed Layout – Sheet 05 of 06
16_206A-CSE-GEN-XX-DR-C-1606	Proposed Layout – Sheet 06 of 06
16_206A-CSE-GEN-XX-DR-C-1610	Proposed Internal Road Layouts – Overall
16_206A-CSE-GEN-XX-DR-C-1611	Proposed Internal Road Layout – Sheet 01 of 05
16_206A-CSE-GEN-XX-DR-C-1612	Proposed Internal Road Layout – Sheet 02 of 05
16_206A-CSE-GEN-XX-DR-C-1613	Proposed Internal Road Layout – Sheet 03 of 05
16_206A-CSE-GEN-XX-DR-C-1614	Proposed Internal Road Layout – Sheet 04 of 05
16_206A-CSE-GEN-XX-DR-C-1615	Proposed Internal Road Layout – Sheet 05 of 05
16_206A-CSE-GEN-XX-DR-C-1625	Proposed Pedestrian & Cycle Links – Overall
16_206A-CSE-GEN-XX-DR-C-1626	Proposed Pedestrian & Cycle Links – Sheet 01 of 03
16_206A-CSE-GEN-XX-DR-C-1627	Proposed Pedestrian & Cycle Links – Sheet 02 of 03
16_206A-CSE-GEN-XX-DR-C-1628	Proposed Pedestrian & Cycle Links – Sheet 03 of 03
16_206A-CSE-GEN-XX-DR-C-1655	Proposed Road Longsection – Overall
16_206A-CSE-GEN-XX-DR-C-1656	Proposed Road Longsection – Zone A
16_206A-CSE-GEN-XX-DR-C-1657	Proposed Road Longsection – Zone F
16_206A-CSE-GEN-XX-DR-C-1665	Bhailsigh Road Roundabout – Sightlines – Sheet 01 of 02
16_206A-CSE-GEN-XX-DR-C-1666	Bhailsigh Road Roundabout – Sightlines – Sheet 02 of 02
16_206A-CSE-GEN-XX-DR-C-1675	Swept Path Analysis – Sheet 01 of 03
16_206A-CSE-GEN-XX-DR-C-1676	Swept Path Analysis – Sheet 02 of 03
16_206A-CSE-GEN-XX-DR-C-1677	Swept Path Analysis – Sheet 03 of 03
16_206A-CSE-GEN-XX-DR-C-1850	Kerbs and Edging Layout Overall

16_206A-CSE-GEN-XX-DR-C-1851	Kerbs and Edging Layout Sheet 01 of 06
16_206A-CSE-GEN-XX-DR-C-1852	Kerbs and Edging Layout Sheet 02 of 06
16_206A-CSE-GEN-XX-DR-C-1853	Kerbs and Edging Layout Sheet 03 of 06
16_206A-CSE-GEN-XX-DR-C-1854	Kerbs and Edging Layout Sheet 04 of 06
16_206A-CSE-GEN-XX-DR-C-1855	Kerbs and Edging Layout Sheet 05 of 06
16_206A-CSE-GEN-XX-DR-C-1856	Kerbs and Edging Layout Sheet 06 of 06
16_206A-CSE-GEN-XX-DR-C-1870	Road Markings Overall
16_206A-CSE-GEN-XX-DR-C-1871	Road Markings Sheet 01 of 06
16_206A-CSE-GEN-XX-DR-C-1872	Road Markings Sheet 02 of 06
16_206A-CSE-GEN-XX-DR-C-1873	Road Markings Sheet 03 of 06
16_206A-CSE-GEN-XX-DR-C-1874	Road Markings Sheet 04 of 06
16_206A-CSE-GEN-XX-DR-C-1875	Road Markings Sheet 05 of 06
16_206A-CSE-GEN-XX-DR-C-1876	Road Markings Sheet 06 of 06
16_206A-CSE-GEN-XX-DR-C-1880	Road Signage Overall
16_206A-CSE-GEN-XX-DR-C-1881	Road Signage Sheet 01 of 06
16_206A-CSE-GEN-XX-DR-C-1882	Road Signage Sheet 02 of 06
16_206A-CSE-GEN-XX-DR-C-1883	Road Signage Sheet 03 of 06
16_206A-CSE-GEN-XX-DR-C-1884	Road Signage Sheet 04 of 06
16_206A-CSE-GEN-XX-DR-C-1885	Road Signage Sheet 05 of 06
16_206A-CSE-GEN-XX-DR-C-1886	Road Signage Sheet 06 of 06
16_206A-CSE-GEN-XX-DR-C-1965	Zone F Riparian Corridor

Appendix 4: Outline Construction Environmental Management Plan

Clifton Scannell Emerson Associates

Outline Construction Environmental Management Plan

M1 Business Park – Zones A & F

Client: Vida M1 Limited

Date: March 2024

Job Number: 16_206A

CONSULTING ENGINEERS

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Document Control Sheet

Project Name:	M1 Business Park – Zones A & F
Project Number:	16_206A
Report Title:	Outline Construction Environmental Management Plan
Filename:	RPT-16_206A-013

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Planning Issue	10/04/2024	HB	LP

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1 Introduction

1.1 Overview

This document sets out the Outline Construction Environmental Management Plan (OCEMP) for the construction of the M1 Business Park Zone A and F proposed development ("the Project") on behalf of Vida M1 Limited (The Client).

This OCEMP applies to all works associated with the construction of the proposed works highlighted in **Section 2.1**.

As a contractor has not yet been appointed, the Construction Environmental Management Plan (CEMP) has not been formally adopted and further development and commitment to the CEMP will be undertaken following selection of Contractors and prior to the commencement of site works.

The OCEMP provides the environmental management framework for the appointed Contractors and Subcontractors as they incorporate the mitigating principles to ensure that the work is carried out with minimal impact to the environment. The construction management team and Contractor's staff shall comply with the requirements and constraints set forth in this OCEMP, and in developing their final CEMP(s). The key environmental constraints associated with the construction of the project, the appropriate mitigation and monitoring controls, are identified in the OCEMP and its supporting documentation. The Contractor shall comply with all Environmental Planning Conditions and mitigation measures highlighted in the Environmental Impact Assessment Report (EIAR).

The implementation of the CEMP will ensure that the construction phase of the project is carried out in accordance with the commitments made by Fingal County Council in the planning application process for the development, EIAR and as required under the conditions of the planning approval.

Following construction commencement, the CEMP is considered to be a living document that will be updated according to changing circumstances of the project and to reflect current construction activities. The CEMP will be reviewed on an ongoing basis during the construction process and will include information on the review procedures.

1.2 Document Structure

The CEMP has been structured as follows:

- Section 1 outlines the purpose of the OCEMP and highlights the minimum requirements of the CEMP to be compiled by the appointed contractor.
- Section 2 describes the proposed development, site and other project particulars.
- Section 3 sets out the framework and mechanisms through which environmental requirements would be managed.
- Section 4 outlines the procedures to be employed during construction to manage environmental aspects.
- Section 5 describe the general requirements to be implemented to minimise potential significant negative effects on the environment during the construction phase of the proposed development.

1.3 Purpose of CEMP

This OCEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that shall be implemented throughout the construction phase. Compliance with this "Outline" CEMP does not absolve the contractor or its sub-contractors from compliance with all legislation and by-laws relating to their construction activities.

This OCEMP has been produced as part of the application for planning consent to ensure compliance with legislative requirements and the EIAR that has been prepared for the proposed development.

The purpose of the OCEMP is to provide a framework for the appointed Contractor to:

- Describe the programme for environmental management during construction.
- Implement those monitoring and mitigation measures.
- Outline the principles and minimum standards required of the contractor during the development of the detailed CEMP (and associated Method Statements) and throughout construction.
- Identify the relevant roles and responsibilities for developing, implementing, maintaining and monitoring environmental management and
- Outline the procedures for communicating and reporting on environmental aspects of the proposed development throughout construction.

It is intended that this OCEMP be utilised as a baseline for the detailed or final CEMP, which will be compiled by the appointed contractor and be expanded upon prior to the commencement of any construction activities on site.

1.4 Requirements of CEMP

The appointed contractor shall be required to comply with all the performance requirements set out in tender documentation included the statutory consent approvals which may be granted by Fingal County Council, Office of Public Works, Environmental Protection Agency (EPA), Inland Fisheries Ireland (IFI) and any other statutory bodies or stakeholders.

The contractor is required to develop a detailed CEMP(s) that:

- Is in accordance with the mitigation measures specified in any of the applicable documents such as the EIAR, Ecological Impact Assessment (EcIA), Natura Impact Statement (NIS) and this CEMP.
- Is in accordance with any conditions that may be prescribed as part of the planning consent(s) for the proposed development.
- Aligns with design and construction details described in the EIAR, EcIA and NIS which ensure there is no material change in terms of significant effects on the environment and
- Where practicable the contractor should seek to identify opportunities for further reducing negative environmental impacts by the implementation of best practices.

Further, the contractor is required to develop the following plans (as applicable), and any others considered relevant, and incorporate accordingly into the detailed CEMP(s).

- Heritage Management Strategy.
- Construction Compound Management Plan.
- Construction Traffic Management Plan.
- Noise and Vibration Management Plan.
- Water Quality Management Plan.
- Dust Management Plan.
- Resource and Waste Management Plan.
- Invasive Species Management Plan.
- Protected Species Management Plan. and
- Emergency Incident Response Plan.

2 Description of the Proposed Development

2.1 Project Description

The proposed development comprises of the provision of key civil infrastructure to facilitate the future development of the lands for a commercial logistics/warehousing development. This development will become an extension of the existing M1 Business Park development and this planning application entails the following:

- Demolition of a single-storey 200-square-metre (m²) house, an abandoned water storage reservoir and associated pump stations, all located on the western boundary of Zone A;
- Demolition of 13 No. existing buildings consisting of agricultural sheds, stables, warehouses and residential dwellings located in Zone F;
- Provision of civil infrastructure to service future-planned commercial properties on the lands located on the western side of the M1 Business Park and M1 motorway, referred to as Zone A and F.
- Zone A and F lands are located north and south of Bhailsigh Road (L1140), respectively, which connect to Junction 5 of the M1 Motorway and are located in the townlands of Rowan's Big and Rowan's Little.
- Preparation of indicative Masterplan for Zone A and F which contains layouts of the future planned commercial properties, consisting of mixed-use, warehousing and distribution units including associated loading bays for HGVs, service compounds, ESBN substations and parking areas to service each commercial unit site, which would be subject to individual planning permission applications.
- Provision of civil infrastructure designed to service various mixed-use buildings consisting of 20k- to 105k-square-feet (ft²) units with the potential to combine plots should larger units be required.
- In Zone A and F, the civil infrastructure will consist of primary access roads including pedestrian/cycle paths, watermains, surface water and foul drainage networks. utility ducting for services consisting of power and telecommunications.
- The primary access roads into Zone A and F will consist of 7.5-metre-wide single-carriageways originating from Bhailsigh Road (L1140) roundabout including segregated cycle tracks and pedestrian footpaths with associated verges.
- Upgrading of the existing Balrickard stream crossing located in Zone F in accordance with the Office of Public Works Section 50 of the Arterial Drainage Act (1945), guidelines.
- Individual access spurs will be provided from the primary access road to each of the future-planned commercial land parcels.
- Provision of pipelines and associated infrastructure for watermains to service future-planned commercial properties and
- Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features such as attenuation ponds, raingardens, bioretention ponds, Nature-based Solutions (NBS) and conveyance networks.

2.2 Site Description and Constraints

The site is located approximately 6.9 km south of Balbriggan and situated in the townlands of Rowans Big and Rowans Little. The subject site is located on the western edge of the M1 Motorway situated at Junction No. 5. Zone A is situated to the north of Bhailsigh Road (L1140) and comprises of an area of 16.8 ha, with Zone F encompassing an area of 14.5 ha located to the south of Bhailsigh Road (L1140) as shown in Figure 2-1.

The existing land-use of Zone A is agricultural, mainly used for growing grain crops where Zone F is predominantly utilised as horse pastures. Existing agricultural buildings consisting of residential, warehouses, stores and stables are located on both Zone A and F. Zone A contains a singular derelict residential building and a disused water storage reservoir which was constructed c. 2001-2005, both of which will be demolished. Zone F contains 13 structures in total consisting of residential, warehouses, stores and stables which will be demolished due to their derelict and generally hazardous state. A detailed survey of the buildings was carried out in January 2024.

The lands are zoned for General Employment (GE) as per Sheet No. 2 Fingal North of the Fingal Development Plan 2023-2029.

Figure 2-11: Locality map

The topography of Zone A falls steeply from west-to-east towards the motorway with an average elevation difference of approximately 12.5m. The low point is located on the south-eastern corner the site where an existing agricultural channel drains via a culvert underneath Bhailsigh Road (L1140) along the eastern boundary of Zone F to the Balrickard Stream (Environmental Protection Agency (EPA) Code 08B23). Zone A contains multiple agricultural drainage channels, two primary channels draining west-to-east which crosses underneath the M1 Motorway via existing culverts and secondary channels connecting the primary channels in a north-south direction. An aerial photograph of Zone A is shown in Figure 2-2.

The topography of Zone F is generally flatter compared to Zone A, with the northern half of the Zone F falling towards the Balrickard Stream. The stream crosses underneath Bhailsigh Road (L1140) via an existing 1m x 0.7m box culvert and drains through Zone F in a northwest-to-southeast direction for a distance of 260m, before turning east and crossing underneath the motorway via an existing 650mm diameter concrete culvert. An existing 7.7m wide agricultural stream crossing is located near the Zone

F entrance which consists of a 1.2m x 0.7m box culvert providing access to the agricultural and residential buildings. The southern half of Zone F is drained via existing agricultural drainage ditches, either draining to the Balrickard Stream or to a small unnamed stream located on the southern boundary of the site. An aerial photograph of Zone F is shown in Figure 2-3.

According to the Bedrock Geology of Ireland, scale of 1:100,000, Zone F is generally underlain by dark micrite and calcarenite shale from the Loughshinny Formation where Zone A is underlain by coarse sandstone and shale from Balrickard Formation with some limestone present on the western edge from the Walshestown Formation. Geotechnical site investigations were conducted in July/August 2023 and no major constraints were noted in relation to the geology or subsoils. Slit trenches were carried out to confirm the depth of the existing 250mm diameter steel high-pressure (70-bar) distribution gasmain which runs through Zone A and F. Geology and Soils is further highlighted in EIAR Chapter 7: Lands Soils & Geology.

The sites are located in an area demarcated as “Highly Sensitive Landscape” as shown in the Fingal Development Plan Green Infrastructure Map 1 (Sheet No. 14). Having regard to the Green Infrastructure Map No. 2 (Sheet No. 15), ecological corridors are indicated on the Balrickard Stream and the unnamed southern stream draining through Zone F as indicated on Drawing 16_206A-CSE-GEN-XX-DR-C-1965 included in the Planning Application. According to the EPA River Water Quality Status (2013-2018 Water Framework Directive (WFD), the rating of Moderate Status has been applied to the above watercourses. In line with Fingal Development Management Standards an ecological buffer of 48m from top of bank has been applied to the Balrickard stream and 10m to the unnamed southern stream in Zone F.

Figure 2-22: Zone A aerial photograph

Figure 2-33: Zone F aerial photograph

2.3 Indicative Project Programme and Construction Phasing

It is anticipated that the construction of the proposed development will be phased. The construction of the access roads will be progressed as the demand for the individual land parcels identified in the Scott Tallon Walker Masterplan increases over time. It is anticipated that Phase 1 will consist of a construction period of 8 months which will open the development, with Phase 2 involving a construction period of 6 months as indicated in the indicative Figure 2-4 below. Phase 1 would entail the construction of all the services, utilities and drainage infrastructure required to service both Zone A and F in its entirety.

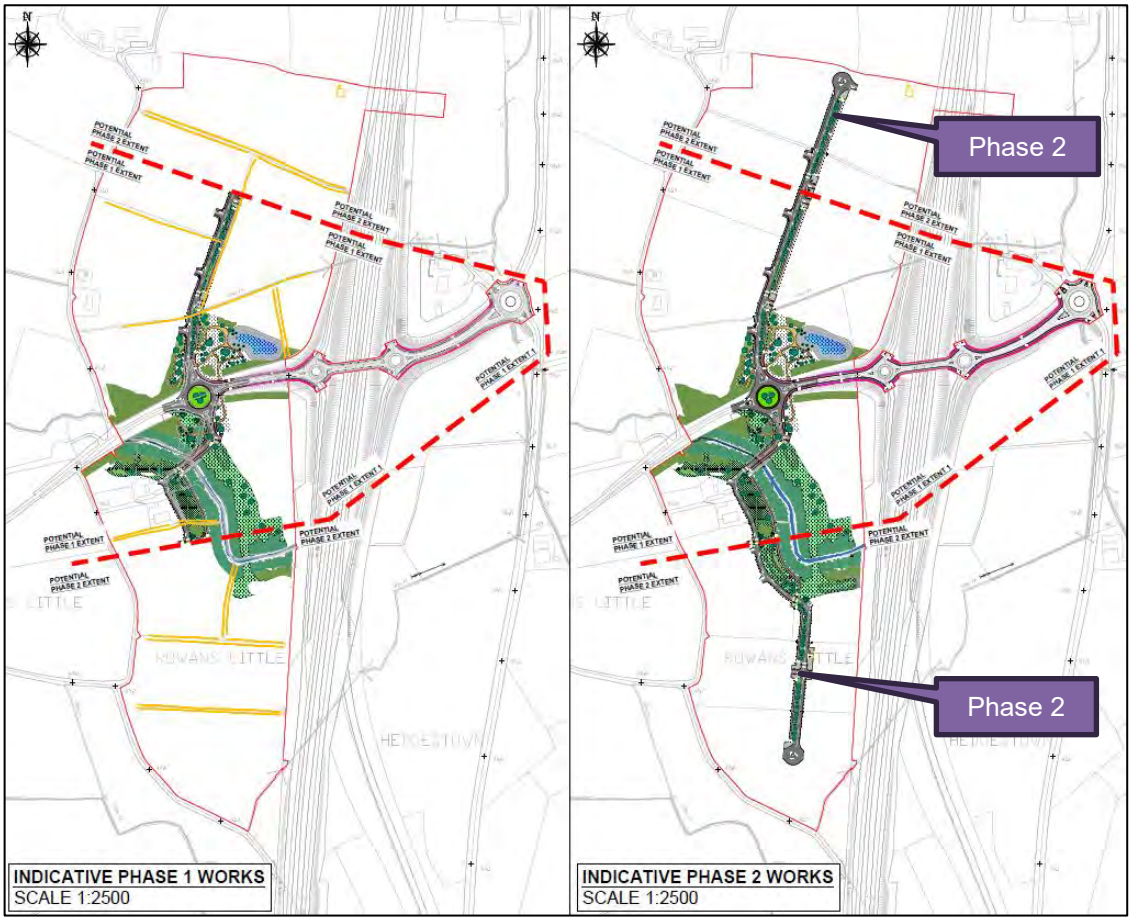

Figure 2-44: Indicative construction phasing

3 Environmental Management Framework

3.1 Overview

The CEMP will be developed by the contractor to meet the requirements of ISO 14001 and all site works will be undertaken in compliance with this CEMP. The CEMP shall include details of the topics listed below, further information on which is given in the following section.

- Environmental Policy;
- Environmental Aspects Register;
- Project Organisation and Responsibilities;
- Project Communication and Co-ordination;
- Training;
- Operational Control;
- Checking and Corrective Action;
- Environmental Control Measures; and
- Complaints Procedure.

The CEMP details all the environmental aspects and impacts associated with this contract such as waste management, pollution prevention and protection of flora and fauna with particular emphasis on Water Quality in watercourses.

3.2 Environmental Policy

The contractor will complete an Environmental Policy with consideration for impacts on the natural and built environment. All project personnel will be accountable for the environmental performance of the project and will be made aware of the Environmental Policy at induction. The environmental policy will consider and make commitments with regard to the site emissions to the atmosphere, maintenance of water quality, resource usage energy consumption and waste management.

3.3 Environmental Aspect Register

Once appointed, the Contractor will prepare a register of all sensitive environmental features which have the potential to be affected by the construction works, together with details of commitments and agreements made within the EIAR, EcIA, the Contract Documentation, Planning conditions imposed by the local authority, and conditions identified by Statutory Authorities with regards mitigation of potential impacts.

The Environmental Aspects Register provides the relevant information for the preparation of construction method statements and will be regularly updated during the works. A non-exhausted list of sensitive environmental features/receptors is listed below:

- Identification off all waterways for the protection against ingress of suspended solids or any pollutant;
- Air emissions;
- Noise emissions;
- Light emissions;
- Waste generation;
- Use hazardous materials;
- Energy usage;
- Water usage;
- Discharge of wastewater;
- Traffic generation;
- Terrestrial ecology;
- Aquatic ecology;
- Visual impacts;
- Hydrogeology; and
- Archaeology and Cultural Heritage.

3.4 Project Organisation and Responsibilities

3.4.1 Employer

The Employer is responsible for ensuring that the competent parties are appointed to undertake construction activities and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

3.4.2 Employers Representative

The Employers Representative (ER) appointed by the Employer will be responsible for the monitoring compliance with the CEMP. The ER may be required to appoint a temporary or permanent specialist(s) with appropriate experience as required to implement on site procedures and monitoring construction on behalf of the Employer i.e. competent experts in biodiversity, architecture, archaeology and heritage, noise, vibration, dust, waste, land, soils, contamination and/or water.

3.4.3 Employer's Ecological Clerk of Works

The Employer's Ecological Clerk of Works (ECoW) appointed by the Employer will be responsible for monitoring compliance with the CEMP and other relevant regulations, and conduct inspections and audits as highlighted in this document. The Employer's ECoW will liaise with the Employer, ER and other relevant stakeholders to obtain the necessary approvals of Construction Method Statements and the CEMPs which will be prepared by the appointed contractor. Further details on the ECoW responsibilities are highlighted in **Appendix A** of this report.

3.4.4 Project Manager

The overall responsibility lies with the Contractor's Project Manager, whose responsibility it will be to approve key personnel required for employment on the project. The Project Manager shall liaise with the Site Environmental Manager (SEM) throughout the project construction phase.

The Project Manager will lead the operations in/on the site and will be responsible for the management and control of the activities and will have overall responsibility for the implementation of the CEMP.

The Project Managers main duties and responsibilities in relation to the CEMP include liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project staff.

3.4.5 Site Environmental Manager

The main duties and responsibilities of the SEM include, but is not limited to the following:

- Liaise with the Project Manager during the finalisation of the CEMP to assign individual duties and responsibilities bearing in mind the overall organisational structure, the nature of the Environmental Commitments and requirements and the proposed development.
- Ensuring that the CEMP is finalised, implemented and continuously updated.
- Liaise with ECoW and the ER on all Method Statements, any alternations to live documents and any other works to ensure protection of environmental receptors identified in the EIAR.
- Being familiar with the information in the pre-construction surveys, construction requirements, planning approval conditions and all relevant method statements.
- Being familiar with the contents, environmental commitments and requirements continued within the reference documentation listed in this CEMP.
- Being familiar with the baseline data collated during the compilation of the EIAR.

- Assisting Management in liaising with the ER/ECoW and the provision of information on environmental management during the construction of the Project.
- Assigning duties and responsibilities in relation to the CEMP, to individual members of the main contractor's project staff.
- Overseeing, ensuring coordination and playing a lead role in third-party consultations required statutorily, contractually and in order to fulfil best practice requirements.
- Liaising with the ER/ECoW in the approving of site-specific construction method statements.
- Bring any legal constraints that may occur during certain tasks to the attention of the relevant stakeholders.
- Hold copies of all permits and licenses provided by waste contractors.
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc have appropriate authorisation.
- Gathering and holding documentation with respect to waste disposal.
- Keeping up to date with changes in environmental best-practices, legislation and advising staff of such changes and incorporating them into the CEMP.
- Liaising with contractors and consultants prior to works.
- Procuring the services of specialist environmental consultants as required.
- Ensuring that all specialist environmental consultants are legally accredited and proven to be competent.
- Coordinating all the activities of the specialist environmental contractors.
- Ensuring that Environmental Induction Training is carried out on all personnel on site and ensuring that toolbox talks include aspects of Environmental Awareness and Training.
- Responsible for notifying the relevant statutory authority when environmental incidents occur and producing the relevant reports as required.
- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licenses, certificates and planning permissions.
- Liaising with the designated licence holders and specific agent defined in the licence with respect to licences granted pursuant to the European Commission (EC) (Natural Habitats) Regulations 1997.
- Carrying out regular documented inspections and audits of the site to ensure that work is being carried out in accordance with the environmental control measures and relevant site-specific method statements.
- Preparation of the Emergency Incident Response Plan.
- Responsible for reviewing all environmental monitoring data and ensuring that they all comply with stated guidelines and requirements. and
- Liaising with management in preparing and inspection of site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment.

3.4.6 Site Manager

The Contractor's Site Manager will be appointed to oversee the day-to-day management of working areas within the site and ensure effective, safe, planned construction activities are delivered on an ongoing basis to the highest standards practically possible. The Site Manager will be a suitably qualified, competent and experienced professional that will oversee site logistics, communicate regularly with site staff, accommodate project-specific inductions for staff on site and ensure that all work is compliant with the relevant design standards and Health and Safety legislation.

3.4.7 Environmental Specialist Appointed by Contractor

To fulfil its obligations under the CEMP and to support its Site Environmental Manager, the contractor will be responsible for engaging suitably qualified and experienced professionals including where necessary the following (i.e. depending on the scope of the contract) competent experts:

- Archaeologist;
- Ecologist;
- Aquatic Ecologist/Geohydrologist;
- Noise and Vibration Specialist;
- Air Quality and Dust Specialist;
- Land, Soils, and Contamination Specialist; and
- Water Specialist

3.5 Project Communication and Coordination Procedures

3.5.1 Community and Stakeholder Engagement

The contractor will take all practical steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups.

Communication with the local community, and other relevant stakeholders shall be undertaken at an appropriate level and frequency throughout construction. The ER will establish a Communications Management Plan that will specify obligations in relation to community and stakeholder engagement that the contractor must adhere to. Where communications are related to environmental issues the Site Environmental Manager will be informed and engaged with, as appropriate.

3.5.2 Regular Consultation and Public Communications

The Communications Management Plan will also specify obligations in relation to regular consultation and public communications activities required during the construction of the proposed development. The contractor will facilitate regular consultation in accordance with the specifications and cooperate with this plan.

Where communications are related to environmental issues the Site Environmental Manager would be informed and engaged with, as appropriate. Details of the available communication channels/points of contact for members of the public to contact the project team during construction will be established in advance of the commencement of construction and displayed around working areas.

3.5.3 Advance Notice of Works

The contractor will ensure that local residents, businesses, occupants, general users of the area and stakeholders are informed in advance of construction activities that may affect them. Relevant obligations and procedures in relation to advance notice of works will be identified in the detailed CEMP(s) and in the Communications Management Plan.

All notifications will detail the nature, estimate duration and working hours. All notifications will include a project-specific contact number to which any enquiries can be directed. The contractor will be responsible for preparing and issuing the notifications subject to the relevant approval and consents.

3.5.4 Contacts

An emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction

activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

3.5.5 Enquiries and Complaints

The contractor shall establish a process for handling all enquiries including complaints. All enquiries will be recorded and a log would be maintained to include details of the response and actions taken. This will be available upon request for inspection to ER. All enquiries, whether a query or a complaint, will be dealt with in a timely manner.

The Site Environmental Manager will be immediately informed of any environmental related issues that have been raised. Where appropriate, the Site Environmental Manager would be responsible for informing ER, ECoW, relevant stakeholders and statutory bodies.

4 Environmental Management Procedures

4.1 Training, Awareness and Competence

The contractor (and subcontractors) would be selected with due consideration of relevant qualifications and experience. The contractor will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

All employees and subcontractors involved on site will be given a comprehensive induction prior to commencement of the works. This environmental training can be run concurrently with safety awareness training. Training will include:

- Overview of the Environmental Policy and Environmental Management Plan, goals and objectives.
- Awareness in relation to risk, consequence and methods of avoiding environmental risks as identified within the Register of Aspects and with the planning conditions.
- Awareness of roles and individual environmental responsibilities and environmental constraints to specific jobs.
- Location of and sensitivity of Special Area of Conservations, Special Protection Areas, protected monuments, structures etc.
- Location of habitats and species to be protected during construction, how activities may affect them and methods necessary to avoid impacts.

A record will be kept of a signed register on the project files of all attendees of the environmental induction. Toolbox talks based on specific activities being carried out will be given to personnel by the nominated project representative. These will be based on specific activities being carried out and will include environmental issues particular to the Project, including the impact on the environment and ecology:

- Oil/Diesel spill prevention and safe refuelling practice.
- Storage of materials including oil/diesels and cement.
- Emergency response processes used to deal with spills.
- Minimising disturbance to wildlife.
- Emergency response to include water pollution hotline to the EPA and Fingal County Council for regulatory response. Identification of registered / accredited spill clean-up company for oil etc. and
- Consideration of importance of containment of vehicle washing, containments of concrete /cement / grout washout etc, bank protection using hessian to prevent excessive scour and mobilisation of suspended solids, maintenance of vegetation corridors etc

In relation to ecological controls related to the storage/ use of material, plant and equipment the following controls will be implemented:

Storage/Use of Materials, Plant & Equipment

- Materials, plant and equipment shall be stored in the proposed site compound location;
- Plant and equipment will not be parked within 50m of the onsite watercourse at the end of the working day;
- Hazardous liquid materials or materials with potential to generate run-off shall not be stored within 50m of the onsite watercourse.
- All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater;
- Fuel may be stored in the designated bunded area or in fuel bowsers located in the proposed compound location. Fuel bowsers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages;
- Waters collected in drip trays must be assessed prior to discharge. If classified as contaminated, they shall be disposed by a permitted waste contractor in accordance with current waste management legal and regulatory requirements;
- All persons working will receive work specific induction in relation to material storage arrangements and actions to be taken in the event of an accidental spillage. Daily environmental toolbox talks / briefing sessions will be conducted for all persons working to outline the relevant environmental control measures and to identify any environment risk areas/works.

4.2 Meetings

The ER will arrange regular meetings to discuss environmental matters and ensure effective coordination to be attended by:

- The Client.
- Fingal County Council Representative (if applicable).
- Employers Representative.
- Contractor.
- Site Environmental Manager. and
- Environmental Specialists – engaged by either the Client and/or Contractor.

4.3 Monitoring, Inspections, Audits

For the duration of the contract, the environmental performance of the contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract and it is likely to be a combination of internal inspections and independent external audits that may be either random or routine.

Records of all inspections carried out should be recorded on standard forms and all actions should be closed out in a reasonable time. The detailed CEMP(s) would include further details of inspection procedures.

4.3.1 Monitoring

Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR, EcIA and/or NIS (if applicable) so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented, and assessed (with potential follow up) in accordance with the specification outlined in the detailed CEMP(s).

The results of all environmental monitoring activities would be reviewed by the SEM on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented, as necessary. The contractor will be required to inform the Employer's Representative of any continuous exceedances of criteria.

4.3.2 Inspections

Routine inspections of construction activities will be carried out by the Site Environmental Manager on a daily basis to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity. More detailed inspections would be undertaken by the Site Environmental Manager on a weekly basis.

The weekly inspections would be appropriately documented by the Environmental Manager and copies of these records and any action required to be undertaken should be made available to the ER and ECoW.

Each month one of the weekly inspections will include a review of environmental documentation and records. The monthly inspection will be recorded on a standard form and reported to the Employers Representative within five days of the inspection taking place. This standard form will address the following as a minimum:

- Summary of compliance/non-compliance with the CEMP.
- Results of the monitoring programme.
- Summary of key findings.
- Summary of environmental complaints and queries received. and
- Record of environmental training undertaken by staff.

4.3.3 Audits

The ER will arrange for independent environmental audits to be carried out by a third-party during construction. External audits provide the opportunity for an independent auditor to advise on compliance with applicable environmental regulatory requirements, the efficacy of the environmental management approaches used, and recommendations for reducing identified environmental risks (if considered appropriate).

Further, regulatory and statutory bodies may undertake site visits to monitor compliance with legislative and regulatory requirements. These site visits may occur randomly throughout the construction period. The contractor will facilitate these visits and the SEM will be available to provide information as required and deal with any issues that may arise during, or as a result of, these visits.

The contractor will be required to prepare standard forms for reporting and audit items shall include but not be limited to the following activities:

- Review of environmental documentation to establish if relevant requirements are being met and if continual improvement is occurring;
- Site inspection and interviews with on-site personnel; and
- Reporting with recommendations.

For any environmental nonconformities found, the auditor will prepare a Corrective Actions Report to describe and record the findings of the nonconformance (Refer to **Section 4.4.2**). The verification of previous Corrective Actions Reports should be also recorded.

Upon completion of an audit, the auditor will review all Corrective Actions Reports prepared and prepare Audit Report to summarise the following:

- Corrective action requests raised;
- Previous corrective actions requests and close-out; and
- Observations made during the audit.

The Environmental Manager will be entitled to participate in all audits. Notwithstanding this, the Employers Representative shall produce and provide the contractor with a copy of each audit report within five working days of the audit. Each audit report will detail the findings from the auditor, specify nonconformances identified and outline the proposed corrective action.

4.4 Incident Responses and Corrective Actions

4.4.1 Overview

Corrective actions are measures to be implemented to rectify any nonconformances (i.e. exceedance of criteria or targets) identified during monitoring, inspections and/or audits.

In the first instance, an investigation should be undertaken by the Environmental Manager to identify the cause of any non-conformances. Appropriate remedial measures shall be identified and implemented as soon as practicable to prevent further exceedances. If necessary, the appropriate statutory authority and stakeholders will be notified.

Where new or amended measures are proposed, the relevant CEMP(s) will be updated accordingly by the Environmental Manager and the Employer's Representative should be informed at the earliest opportunity.

4.4.2 Corrective Action Reports

A Corrective Actions Report is prepared following any non-conformances identified during environmental monitoring, inspections and/or audits on site. The Corrective Actions Report will describe in detail the cause and effect of a non-conformance on site and describe the recommended corrective action that is required to remedy it.

An appropriate timeline for closing out the corrective actions will be identified by the contractor in their detailed CEMP(s) as well as arrangements for the Environmental Manager verifying the Corrective Actions Report and informing appropriate authorities and stakeholders in a timely manner.

4.4.3 Emergency Incident Report

Emergency incidents are those occurrences that give rise to significant negative environmental effects including but not limited to the following:

- Any malfunctions of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with the contract requirements and relevant licences;
- Any circumstance with the potential for environmental pollution; or

- Any emergency that may give rise to environmental effects.

4.4.4 Accidental Spill Control Measures

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure. The following steps provide the procedure to be followed in the event of an oil/fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity.
- Notify the Environmental Manager immediately confirming information on the location, type, extent of the spill.
- If applicable, eliminate any sources of ignition in the vicinity of the incident.
- Contain the spill using control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and or/or sensitive habitats.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further contamination from occurring. and
- The Environmental Manager will notify the appropriate stakeholders of the incident.

4.4.5 Emergency Incident Response Plan

A set of standardised emergency response procedures will govern the management of emergency incidents. The contractor will be required to detail emergency incident response procedures in the detailed CEMP(s) and to develop an Emergency Incident Response Plan.

The Emergency Incident Response Plan will contain emergency phone numbers and the method of notifying local authorities, statutory authorities and stakeholders. Contact numbers for key personnel will also be included therein. Contractors will be required to adhere to, implement these procedures, and ensure that all staff and personnel on site are familiar with the emergency arrangements.

The contractor will consult with the relevant statutory authorities, stakeholders and relevant parties such as the Health and Safety Authority, the Fire Authority, the Ambulance Service, the EPA, utilities companies and Fingal County Council when preparing and developing response measures. Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan that should be disseminated accordingly to construction staff, Fingal County Council and the Employer's Representative.

4.4.6 Emergency Access

The contractor will be required to maintain emergency access routes throughout construction and identify site access points for each working area. This should be developed in partnership with the emergency services and documented as part of the detailed CEMP(s) and Emergency Incident Response Plan.

4.4.7 Extreme Weather Events

The contractor will consider the impacts of extreme weather events and related conditions during construction. The contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

The detailed CEMP(s) should consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements should also consider extreme weather events where risks have been identified, e.g. flood risks on the site (if any).

4.4.8 Unexpected Discoveries

The contractor is obliged to put in place appropriate procedures to be employed in the event of encountering unexpected archaeological or cultural heritage assets or subsurface contamination during intrusive ground works.

The contractor will be required to develop appropriate procedures as part of their detailed CEMP(s) and the Environmental Manager will ensure that specialists (e.g. archaeologist) are facilitated to ensure management in accordance with industry best practice and effective compliance with the relevant legislation. All unexpected discoveries will be reported to the appropriate authorities and documented in an appropriate manner.

4.5 Reporting

4.5.1 Environmental Compliance Reporting

The contractor will be required to submit a monthly report to the Employer's Representative/ECoW for review and approval. The report shall address the following as a minimum:

- Summary of compliance with the CEMP including identification of any non-conformances.
- Interpretation of the results of ongoing monitoring.
- Detailed description of any issues and/or non-compliances identified during inspection and/or audits.
- Record of incidents and corrective actions
- Synopsis of environmental complains received/queries raised by stakeholders. and
- Records of environmental training and/or inductions.

4.5.2 Incident Investigation Reports

The contractor will inform the Employer's Representative of all emergency incidents immediately and prepare an initial report within 24 hours setting out the details of the incident and cause(s) if known. The contractor will be required to complete the Environmental Incident Report and any further documentation requested by the Employer's Representative in relation to the incident within 7 days of the incident occurring. The Contractor will respond to all comments made by the ER on any incident.

The Environmental Incident Report will contain details of the incident including the location, known and suspected causes and weather conditions. It will define the scale and effects (short, medium, long term, temporary/permanent) as well as required corrective actions and mitigation/ remediation/compensation measures (as appropriate).

4.6 Environmental Records

The Contractor shall maintain records of all environmental documentation including monitoring, test results, method statements and plans. All records will be kept up to date and be made available for

audits, inspections and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer's Representative and the relevant authorities, if required:

- Management Plans;
- Records of environmental incidents;
- Monthly environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspections and audit reports;
- All monitoring data;
- Waste and chemical inventories; and
- Health and Safety records.

5 General Requirements

5.1 Overview

It is the responsibility of the contractor to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified where practicable. Where the contractor diverts from the methodologies and working areas outlined herein and/or defined in the granted planning consent and associated conditions that may be granted, it would be the responsibility of the contractor to obtain the relevant licenses, permits and consents for such changes.

5.2 Good Housekeeping

The Contractor will employ a "good housekeeping" policy at all times. This will include, but not necessarily be limited to, the following requirements:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas.
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc.
- Maintain all plant, material and equipment required to complete the construction work in good order, clean, and tidy.
- Keep construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times.
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas.
- Provision of adequate welfare facilities for site personnel.
- Installation of appropriate security, lighting, fencing and hoarding at each working area.
- Effective prevention of oil, grease or other objectionable matter being discharged from any working area.
- Provision of appropriate waste management at each working area and regular collections to be arranged.
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soil shall be recovered or disposed of to a suitably authorised waste facility site.
- Effective prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests will be implemented. If infestation occurs the contractor will take appropriate action to eliminate and prevent further occurrence.

- Maintenance of wheel washing facilities and other contaminant measures as required in each working area.
- No discharge of site runoff or water discharge without agreement of the relevant authorities, the ER or ECoW.
- Open fires will be prohibited at all times.
- The use of less intrusive noise alarms which meet the safety requirements, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms.
- Maintenance of public rights of way, diversions and entry/ exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access.
- All loading and unloading of vehicles will take place off the public highway wherever this is practicable.
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.
- No storage of materials shall be permitted within the Riparian Corridors.
- No compounds shall be permitted within or near the Riparian Corridors.
- Dewatering of construction areas shall strictly be carried out in accordance with **Section 5.8**.

5.3 Working Hours

5.3.1 Core Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant effects. The core construction working hours for the proposed development will be:

- 7am – 7pm: Monday to Friday.
- 8am – 1pm: Saturday (Approval required by ER and/or Fingal County Council)

The contractor may require a period of up to one hour before and one hour after core working hours for start-up and shut down activities in working areas. Activities permitted may include deliveries and unloading of materials, movement of staff to their place of work, maintenance and general preparation works. The use of plant or machinery likely to cause disturbance, other than for piling, will not be permitted outside of the core working hours.

5.3.2 Additional Working Hours

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the contractor in advance with the ER and scheduling of such works shall have regard to nearby sensitive receptors.

In the case of work required in an emergency or which if not completed would be unsafe or harmful to workers, the public or local environment, the ER will be informed as soon as reasonably practicable of the reasons and likely duration and timing (outside of the core working hours).

5.4 Security

Security will be the responsibility of the contractor who will provide adequate security to prevent unauthorised entry to or exit from any working areas. The following measures may be used to prevent unauthorised access:

- Install CCTV and alarm systems where required;

- CCTV and security systems will be site and directed so that they do not intrude into occupied residential properties;
- Provide adequate security guards and patrols;
- When there is no site activity, close and lock site gates and set appropriate site security provisions in motion;
- Consult with neighbouring properties and local crime prevention officers including Fingal County Council and An Garda Síochána on site security matters as required; and
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as scaffolding and ladders.

5.5 Hoarding and Fencing

A site boundary in the form of hoarding or fencing will be established around each of the Zone A and F entrances in the interim until permanent accesses are established before any significant construction activity commences in that working area. The hoarding/fencing shall be 2.4m high to provide a secure boundary to what can be a dangerous environment for those that have not received the proper training and are unfamiliar with construction operations.

The erection of hoarding would be of a similar nature to what is carried out on most construction sites. Mounting posts would be erected by using a mini-digger and the posts would be set in concrete. The size and nature of the posts and hoarding would depend on the requirements for any acoustic mitigation as well as preferences that the contractor may have. Where practicable, hoarding and fencing would be retained and re-configured and re-used between working areas as the construction activities progress.

The following measures will be applied in relation to hoarding and fencing:

- Maintenance of adequate fencing and hoardings to an acceptable condition to prevent unwanted access to working areas and provide noise attenuation, screening, and site security where required.
- Appropriate sight lines/visibility splays will be maintained around working areas to ensure safety of both vehicles and pedestrians is preserved.
- Use of different types of fencing and hoarding (e.g. mesh fence of solid hoarding including hoardings used for noise control).
- Temporary fences may be used in certain areas, such as for short term occupation of working areas.
- Display information boards with out of hours contact details, telephone helpline number (for comments/complaints) and information on the works.
- Erect notices on site boundaries to warn of hazards on site such as deep excavations, construction access, etc.
- Ensure suitable measures for tree protection are implemented as required.
- Keep hoarding and fencing free of graffiti or posters.
- Retain existing walls, fences, hedges and earth banks as far as reasonably practicable. and
- Appropriate positioning of the fencing or hoarding to minimise the noise transmitted to nearby receptors or from plant, equipment and vehicles entering or leaving the working area.

5.6 Services and Facilities

5.6.1 Services and Utilities

Site services shall be installed as part of the enabling works in parallel with the rearrangement and diversion of existing utilities. Working areas will be powered by mains supplies or diesel generators where an electrical supply is not available.

The contractor will be responsible for undertaking their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications.

5.6.2 Welfare Facilities

Welfare facilities will be provided, as appropriate, for construction staff and site personnel such as locker rooms, toilets, showers etc. The location of these will be agreed with the ER and identified as part of the detailed CEMP(s).

5.7 Reinstatement of Working Areas on Completion

The contractor will reinstate all working areas and access routes as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition. Pre-condition and post-condition surveys shall be carried out by the Contractor to ensure reinstatement conditions and requirements are agreed upon with the Engineers Representative.

5.8 Dewatering of Works Areas

The Contractor shall be required to follow the following dewatering methodology as summarised below:

- Dewatering operations shall not be permitted to discharge directly to any watercourse, drainage ditch or any waterbody.
- The contractor will allow for the excavation of sumps in all excavations.
- Dewatering of trenches and chambers excavations will be clarified by the use of settlement/clarification tanks or similar approved systems, as indicated in Figure 5-1.
- Discharges from these clarification systems shall be discharged overland, prior to entering any stream, watercourse or waterbody.
- Continuous water quality testing and monitoring will be conducted during the dewatering operations before discharging.
- Continuous removal of settled/filtered solids in the hopper shall be carried out during the operations and shall be adequately disposed of.
- The clarifier unit will be set-up at one end of the 50m (or less) excavations and continuously dewater the trench during trench/chamber installation and excavation reinstatement.
- All pumps shall be placed in a movable and suitably sized bund or drip-tray during the dewatering operations and special care shall be taken during refuelling operations.
- Additional pumps shall be kept on standby at all times in case of mechanical failures or service requirements.

Figure 5-11: Example of settlement tanks, dirtbag boxes and utility bags

5.9 Health & Safety

The contractor shall be required to ensure all relevant health and safety, fire safety and security requirements are in place prior to the commencement of construction and in accordance with relevant legislative requirements in addition to the specifications of Fingal County Council.

Relevant Irish and EU health and safety legislation shall be complied with at all times by all construction staff and personnel during construction. Further, contractors shall also have to ensure that all aspects of their works comply with good industry practice and all necessary consents, licences and authorisations that have been put in place for the proposed development.

6 Environmental Management

This section describes the specific environmental requirements identified as part of the specific design and Environmental Impact Assessment (EIAR) Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) that will need to be adhered to by the contractor.

It should be noted that **Sections 6.1 - 6.12** provides a summary of minimum requirements that should be built upon by the contractor when developing the detailed CEMP(s). It is intended that the measures set out herein will be discussed in more detail with relevant stakeholders as required in order to support the identification of any additional measures to be taken account of during construction.

6.1 Traffic and Transportation

The contractor is required to implement the following minimum measures in relation to traffic and transportation during construction:

- All trucks entering and exiting the site will be covered with tarpaulin.
- Adequate parking will be provided near the contractor's compounds to avoid queuing at the site entrances and prevent disruption to neighbouring roads. Construction vehicles will not be allowed to park on the public road either outside the site or on any of the approach roads leading to the site.
- All trucks entering the site will be restricted to suitable speed limits and will be directed to the relevant area by the Site Manager.
- Trucks required to wait on site will switch off engines to avoid unnecessary fuel usage and noise.
- All trucks exiting the site will be required to pass through a wheel wash. A lance will be provided to clean down the bodies and sides of the truck prior to leaving site.
- Roads outside the site will be visually inspected on a daily basis and power swept and washed as and when required.
- All site staff including truck drivers will be required to abide by the normal rules of the road.
- The contractor shall prepare a Detailed Construction Traffic Management Plan (CTMP) covering all construction stages that takes into account other potential construction works in the area. The CTMP will demonstrate how pedestrians, cyclists and motorised vehicles are prevented from passing through the sites and that measures are in place which ensure traffic is not disrupted.
- The CTMP will include a detailed consultation plan to deal with third party queries from both residents and commercial operators. The CTMP will require agreement with both Fingal County Council and An Garda Síochána prior to the commencement of construction.
- The contractor will appoint a single point of contact to facilitate the communication of the various traffic management plans and the preparation of a project specific website to aid communications would also be beneficial.
- As part of the CTMP a Mobility Management Plan will be prepared to ensure access to the site by sustainable travel modes is encouraged. The following measures will need to be considered within the Mobility Management Plan:
    - The provision of facilities for construction staff.
    - The provision of cycle and parking for construction staff.
    - The promoting of car sharing among staff, including van pooling to travel between different work sections.

6.2 Air Quality and Climate

The contractor is required to implement the following measures in relation to air quality and climate during construction:

- Implementation of 'standard mitigation' measures as stated in the Transport Infrastructure Ireland (TII), (formerly the National Roads Authority (NRA) (2011)), Good Practice Guidance for the Treatment of Air Quality during the Planning and Construction of National Road Schemes:
- Spraying of exposed earthwork activities and site haul roads during dry weather.
- Provision of wheel washes at exit points.
- Covering of stockpiles.
- Control of vehicle speeds, speed restrictions and vehicle access.
- Sweeping of hardstand surfaces.
- Erection of the hoarding will be provided around the working areas to minimise the dispersion of dust from working areas as per **Section 5.5** of this CEMP.
- Generators will be located away from sensitive receptors as far as practicable.
- Stockpiles will be located as far as possible from sensitive receptors, floodplains, riparian corridors and covered/dampened during dry weather conditions.
- Employee awareness shall be promoted by actively training staff on management of operations and dust suppression.
- Where asbestos is uncovered on site, a competent contractor shall remove the ACM from site and disposed of in accordance with relevant procedures and legislations.

From an ecological perspective in the following control measures will be put in place in relation to Air & Dust.

- The pro-active control of fugitive dust will ensure prevention of significant emissions arising, rather than a less effective attempt to control them once they have been released.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and / or windy conditions.
- Vehicles exiting the Site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20kph, and on hard surfaced roads as site management dictates.
- Public roads outside the Site will be regularly inspected for cleanliness and cleaned as necessary.
- Material handling systems and Site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Dust may enter the onsite watercourse via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on the onsite watercourse. The main activities that may give rise to dust emissions during construction include the following:
- Excavation of material;
- Materials handling and storage;
- Movement of vehicles (particularly HGV's) and mobile plant.
- Contaminated surface runoff
- Trucks leaving the site with excavated material will be covered so as to avoid dust emissions along the haulage routes.

- Speed limits on site (15kmh) to reduce dust generation and mobilisation.
- The stream is to be protected from dust on site. This may require additional measures in the vicinity of the bridge (east of the site) if this road is used for machinery e.g. placing of terram/protective material over the stream.
- Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces within 100 m of site boundary, integrity of the silt control measures, with cleaning and / or repair to be provided if necessary.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Maintain a vegetated strip and vehicle exclusion zone between the works and the Balrickard Stream (where possible) in consultation with the project ecologist.
- Regular inspection of surface water run-off and any sediment control measures e.g. silt traps will be carried out during the Construction Phase. Regular auditing of construction / mitigation measures will be undertaken e.g. concrete pouring, refuelling in designated areas etc.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the Site and the suitable distance of topsoil piles from surface water drains will be maintained.

6.3 Odour

No mitigation measures are required during the construction of the proposed development with regards to odour.

6.4 Noise and Vibration

The Noise and Vibration Management Plan (NVMP) will outline how the appointed Contractor(s) will comply with the noise criteria set out in this section and will deal specifically with construction activities in a strategic manner to remove or reduce significant noise and vibration impacts associated with the construction of the proposed development. The NVMP will detail the provision and installation of localised acoustic screens (if applicable), the best practice noise measures that the appointed Contractor(s) will be required to adhere to for construction activities and the noise and vibration

monitoring programme that the appointed Contractor(s) will be required to undertake during the construction works.

In addition, the appointed Contractor will prepare detailed method statements addressing the likely ground-borne noise and vibration levels that will be generated as a result of the construction activities once the specific details of the proposed plant items and construction methodologies are known.

The contractor is required to implement the following measures in relation to noise and vibration during construction:

- The contractor will take specific noise reduction measures and comply with the recommendations of the standards and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 and 2016 so as to acknowledge the EC (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations 2006.
- A site representative (SEM) shall be appointed to be responsible for matters relating to noise and vibration.
- Unnecessary revving of engines should be avoided and equipment should be switched off when not required.
- Generators will be located away from sensitive receivers and will be enclosed.
- Careful selection of equipment, construction methods and programming with the objective of reducing noise and vibration where possible. Only equipment, including road vehicles, conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions, will be used.
- Selecting electrically powered plant that is quieter than diesel or petrol-driven plant, if interchangeable.
- Fitting suitable anti-vibration mountings where practicable, to rotating and/or impacting equipment.
- Locating plant, as far as is reasonably practicable, away from receptors or as close as possible to noise barriers or hoardings where these are located between the source and receptor.
- Regular and effective maintenance by trained personnel shall be carried out to reduce noise and/or vibration from plant and machinery.
- Ensuring that all plant is maintained regularly to comply with relevant national or international standards and operation of plant and equipment that minimises noise emissions.
- Ensuring that plant is shut down when not in use.
- Ensuring that air lines are maintained and checked regularly to prevent leaks.
- Designing all audible warning systems and alarms to minimise noise. Nonaudible warning systems can be used in preference, i.e. cab-mounted CCTV or the use of banksmen. If required, ensure that audible warning systems are switched to the minimum setting required by the Health and Safety Authority and where practicable use ‘white noise’ reversing alarms in place of the usual ‘siren’ style reversing alert.
- A c. 2.4m hoarding shall be provided around the entry to Zone A and F or construction works as directed by the ER.
- Handling all materials, particularly steelwork, in a manner that minimises noise. For example, storing materials as far as possible away from sensitive receptors and using resilient mats around steel handling areas.
- During construction, regular inspections will be undertaken to ensure that the noise and vibration minimising methods, plant and mitigation identified in the specimen design stage are adopted on site and are working effectively. If applicable, it is proposed that construction method inspections be integrated into any health and safety or quality surveillance regime.

- A Communications Management Plan shall be prepared to provide for effective community liaison to help ensure the smooth running of construction activities and to address any issues that may arise.
- Noise monitoring should be undertaken at the start of each new activity to determine the compliance with limit values (if applicable). This may involve monitoring on a daily basis initially (for the first three weeks), but subject to satisfactory results, this could be relaxed to once a week/twice-weekly depending upon the site activities. The frequency will be increased again if particularly noisy activities (piling) are undertaken.
- Continuous noise and vibration monitoring will take place at three of the nearest sensitive receptors Environmental noise monitoring will be undertaken only by suitably trained and experienced staff (if applicable).

6.5 Biodiversity

All mitigation measures outlined in the EIAR Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) (if applicable) that pertain to the construction stage of the proposed development will be implemented by the Contractor.

These measures are outlined under the following broad category headings.

6.5.1 Implementation of Best Practice Guidelines

All construction works, relating to the activities and construction works outlined in **Section 2.1** above, will be undertaken in accordance with the following:

- Inland Fisheries Ireland's Requirements for the Protection of Fisheries Habitat during Construction and Development Works.
- CIRIA (Construction Industry Research and Information Association) Guidance Documents
- Control of water pollution from construction sites (C532)
- Control of water pollution from linear construction projects: Technical Guidance (C648)
- Control of water pollution from linear construction projects: Site Guide (C649)
- Environmental Good Practice on Site (C692)
- NRA Guidance Documents
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes
- Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
- Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes.
- All work completed should be in compliance with the Wildlife Acts, 1976 – 2012.
- Guidance for the Treatment of Otters during the construction of national road schemes.
- Guidance for the Treatment of Badgers during the construction of national road schemes.

An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase. The roles and responsibilities of the ECoW are outlined in **Appendix A**.

6.5.2 Measures to Minimise Construction Phase Impacts to Habitats

- The construction corridor will be marked out prior to the commencement of construction.
- All construction work will be confined strictly to the construction corridor. Any construction works required outside the construction corridor will require prior approval from the ER.
- Excavation and infilling will be carried out in small progressive stages.
- Any topsoil that is of use for landscaping will be stored on the site. Where this is required during the construction phase, it will be stored suitably far away from the drainage ditches, streams

and riparian corridors and other surface water features and covered to avoid excessive sediment run-off or wind blow.

- Given the proposed construction methodology the construction phase of the project is not anticipated to result in significant levels of silt laden run off. Nevertheless, the site will be regularly monitored by construction staff for signs of run-off such as silt in surrounding vegetation and measures will be put in place to prevent this where necessary.
- Excavations will be carried out using a suitably sized excavator.
- Any excavated soil that is not re-used will be disposed of to an approved waste disposal facility as directed by the ER and Contract Documentation.
- In all circumstances, excavation depths and volumes will be minimised to the depths in accordance with the design of the cable trenches and excavated material will be re-used where possible.

6.5.3 Measures to Protect Water Quality and Surface Water Bodies

To prevent the ingress of any surface water or dust emissions to watercourses during the construction phase, temporary silt trap and impermeable barrier will be placed along the edge of the works.

Suitable prevention measures should be put in place at all times to prevent the release of sediment to the watercourses and other drainage channels associated with construction areas and migration to adjacent watercourses.

Excavated material will not be stored immediately adjacent to locations in close proximity to watercourses and riparian corridors. No construction activities should be undertaken at watercourses in wet weather conditions.

Any refuelling or lubrication of machinery will only be undertaken at construction compounds on the located sufficiently far enough from watercourses and riparian corridors. Refuelling near the Zone F riparian corridors shall not be permitted.

A method statement for dewatering of excavations will be prepared by the appointed contractor in liaison with the ECoW in line with **Section 5.8**.

Prevention of Contamination of Watercourses Leading to European Sites

- Prior to construction the appointment of an ecologist to oversee enabling works and the implementation of mitigation measures will be carried out. No works will commence on site until the ecologist submits a letter to the local council authority to state that he/she has been appointed and has developed a Construction Environmental Management Plan which includes a) Phasing of the project, b) Full details of the works programme including methodologies for all works, surface water management and watercourse and pond works c) maps containing details of mitigation measures and any invasive species on site within 30m of site works including haul routes, site compounds etc. d) approval of the instream methodologies outlined by Inland Fisheries Ireland.
- Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing.
- Any discharges to the watercourse during construction must be discussed with the ecologist, undergo desilting and petrochemical interception and have twice daily turbidity monitoring.
- Local watercourses must be protected from dust, silt and contaminated surface water throughout the works.
- Local silt traps established throughout site as discussed with the ecologist.
- Mitigation measures on site include dust control, stockpiling away from watercourse and drains.
- Stockpiling of loose materials will be kept to a minimum of 20m from watercourses and drains.

- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses.
- Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches or the watercourse, excavations and other locations where it may cause pollution.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, which require pumping will not directly discharge to the stream. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality.
- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination.
- During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the watercourse.
- Planting in the vicinity of the stream crossings should be put in place as soon as possible to allow biodiversity corridors to establish.
- On-site inspections will be carried out by project ecologist during enabling works and until drainage connection is complete.
- Maintenance of any drainage structures (e.g. de-silting operations) must not result in the release of contaminated water to the surface water network.
- No entry of solids or concrete to the associated stream or drainage network during the connection of pipework

6.5.4 Fauna

The following surveys will be undertaken with regard to preventing impacts to Fauna:

- A pre-construction inspection for mammals of conservation importance will be carried out.
- A pre-construction inspection for roosting bats importance will be carried out.
- A post construction light spill assessment will be carried out.

6.5.5 Wintering Birds

The following mitigation measure will be undertaken with regard to preventing impacts to Wintering Birds.

- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- All mitigation measures outlined in the EIAR Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) (if applicable) that pertain to the construction stage of the proposed development will be implemented by the Contractor.
- The effectiveness of the proposed mitigation will be monitored throughout the construction period.
- The construction corridor will be marked out prior to the commencement of construction.
- All construction work will be confined strictly to the construction corridor. Any construction works required outside the construction corridor will require prior approval from the ER.
- Lighting during construction should not spill outside the proposed development.

6.5.6 Bats

The project site is located in an area of high bat habitat potential for a number of bat species. No roost sites were identified as occurring within the project site. A roost site for pipistrelle species occurs at the Mill buildings to the west of the project site. High levels of foraging activity by Soprano pipistrelle, Common pipistrelle and Leisler's bat were recorded during monitoring sessions. Low levels of foraging activity for all other species were recorded.

The presence of Soprano pipistrelle, Leisler's bat and Common pipistrelle foraging within and surrounding the project site is not unexpected. Common pipistrelle and Soprano pipistrelle are widespread and commonly occurring throughout the country and is “commonly encountered during bat surveys” (NPWS, 2019). Common pipistrelle is also “very general in its habitat preference, foraging in woodland, riparian habitats and parkland, along linear features in farmland, and in towns and cities” (NPWS, 2019). The national population of this species is increasing and no existing pressures or threats to the conservation status of this species at a national level have been identified. Overall the future prospects for this species in terms of range, population and habitat are Good (NPWS, 2019). Leisler's bat is also abundant in Ireland, being identified as one of the most common and widespread species in Ireland. It prefers to forage over parkland, cattle pasture, meadows, tree crowns over and along woodland habitats (Russ, 2012) as well as urban areas (NPWS, 2019). The national population of this species is increasing and the overall future prospects for this species in terms of range, population and habitat are Good (NPWS, 2019). Existing threats to this species, as identified by the NPWS, include wind energy development. and the deliberate or accidental exclusion of Leisler's bats from roosts in houses.

The proposed development will change the local environment as infrastructure will be constructed and some of the existing vegetation will be removed. No bat roosts or potential bat roosts will be lost due to this development. A minor loss in foraging by common species of bats will be noted as a result of the proposed development and lighting. The proposed development would not be seen to have a significant collision risk for bat strikes.

- A pre-construction inspection for roosting bats importance will be carried out.
- Control of light spill and a post construction light spill assessment will be carried out.

The appointed contractor shall include a site-specific risk and mitigation register for the works specific to the protection of Bats in liaison with the project ECoW and relevant TII guideline documents.

6.6 Archaeology, Architecture and Cultural Heritage

The contractor is required to implement the following measures in relation to Archaeology, Architectural and Cultural Heritage during construction:

- A site representative shall be appointed to be responsible for matters relating to Archaeology, Architectural and Cultural Heritage.
- The contractor will be required to develop appropriate procedures as part of their detail CEMP(s) and the Environmental Manager will ensure that specialists (e.g. archaeologist) are facilitated to ensure management in accordance with industry best practice and effective compliance with the relevant legislation. All unexpected discoveries will be reported to the appropriate authorities and documented in an appropriate manner.
- The contractor shall monitor excavation for any findings on a continuous basis throughout the construction duration.
- A c. 2.4m hoarding shall be provided around protected structures with appropriate signage.

- Site staff shall undergo regular training and be made cognisant of the requirements set out in the CEMP.

6.7 Hydrology, Geohydrology and Water Quality

All construction works, relating to the activities and construction sequence outlined in **Section 2.1** above, will be undertaken in accordance with the following:

- Inland Fisheries Ireland's Requirements for the Protection of Fisheries Habitat during Construction and Development Works.
- CIRIA (Construction Industry Research and Information Association) Guidance Documents
    - Control of water pollution from construction sites (C532)
    - Control of water pollution from linear construction projects: Technical Guidance (C648)
    - Control of water pollution from linear construction projects: Site Guide (C649)
    - Environmental Good Practice on Site (C692)
    - CIRIA Handbook C650 Environmental good practice on site.
    - CIRIA Handbook C651 Environmental good practice on site checklist.
- TII/NRA Guidance Documents.
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes
- Management of any discharges to surface water must meet S.I. No. 272 of 2009 and amendments (2015 and 2019) European Communities Environmental Objectives (Surface Waters) Regulations.

In general, all works will be subject to a specific method statement agreed in advance. The method statement will be specific to each construction area and activity but will incorporate the following points:

- To avoid water laden with silt discharging to the streams and watercourses, toe boards will be required around all sites.
- To avoid excessive silt runoff, site clearance is not to be undertaken during wet conditions, when rainfall of more than 0.5 mm/hour is forecast within the next 24 hours or rainfall of more than 3mm/hour is forecast within the next five days in the catchment
- No long-term soil storing will be allowed within 30m of the water bodies or within floodplains or riparian corridors where sufficent working areas are available within the site boundaries, which is in line with Inland Fisheris Ireland guidelines. Temporary daily soil storage will be allowable to facilitate works, however soil mounds to be removed daily to a safe distance or covered.
- Fuels, lubricants and hydraulic fluids for equipment used, as well as any solvents and oils etc.are to be carefully handled to avoid spillage. Properly secured against unauthorised access or vandalism, and provided with spill containment. All staff to be trained in management of chemicals and spill response.
- As far as reasonably practicable, fuelling and lubrication of equipment is not to be carried out within 100m to the open water where sufficent working areas are available within the site boundaries. Fueling should only be undertaken in compounds with spill control measures in place. All fuel storage should be within containers with 110 % containment and located on hardstand. These measures are in line with the Inland Fisheris Ireland guidelines.
- Weedkillers not be used.
- Any spillage of fuels, lubricants of hydraulic oils is to be immediately contained and the contaminated soil removed from the site and properly disposed off.
- The washing of any plant equipment will be carried out in designated areas to prevent potentially polluting material from contaminating aquifers and soils/subsoils.

- Excavations will be backfilled (daily preferably) as soon as possible to prevent any infiltration of potentially polluting compounds.
- Where feasible prefabricated concrete should be used. Where necessary to pour concrete, a dry working area will be created for pouring of any concrete. Raw or uncured waste concrete is not to be disposed of within 50m of the river. No washing out of concrete tankers will be allowed on any of the construction areas.
- A Siltbuster/similiar concrete washwater will be used where there is insufficient space on site to achieve the required clearance distances between the works and channel/watercourse.
- All vehicles will be regularly checked for oil leaks and ruptured hose pipes.
- Dewatering of any construction works shall strictly comply with **Section 5.8**.

Specifically in relation to preventing ecological impacts to watercourses the following controls are to be implemented:

Watercourses

- In stream works to be carried out in full consultation with and to the advice of Inland Fisheries Ireland and the project ecologist.
- Staging of project to initially stabilise, isolate, fence off watercourse on site
- Mitigation measures on site include dust control, stockpiling away from watercourses and drains
- Pollution control and mitigation on site
- Stockpiling of loose materials will be kept away from watercourses and drains. A risk based approach will be taken.
- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses.
- During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the watercourse.
- Petrochemical interception and bunds in refuelling area
- Planting in the vicinity of the stream crossings should be put in place as soon as possible to allow biodiversity corridors to establish.
- On-site inspections to be carried out by project ecologist. Twice daily monitoring of turbidity (from 11am) will be carried out on site.
- During the works silt traps will be put in place
- No discharges will be to the watercourse during works
- Silt traps established throughout site including a double silt fence between the site and the watercourse.
- Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks.
- The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained.
- The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area.
- A project ecologist must be appointed and be consulted in relation to all onsite drainage during construction works. Consultation with the project ecologist will not involve the formulation of new mitigation measures for the purposes of protecting any European Site and relate only to the implementation of those mitigation measures already stated in the submission or the formulation of mitigation for other purposes.
- Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for

suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site into the Balrickard Stream during the works. Trenched double silt fencing shall be put in place along boundary of the proposed development site with 10m buffer from the Stream. This fencing must be in place as one of the first stages on site and prior to the full site clearance. The silt fencing will act as a temporary sediment control device to protect the watercourse from sediment and potential site water runoff but also act as a tree protection zone for the riparian buffer. The fencing will be inspected twice daily, based on site and weather conditions, for any signs of contamination or excessive silt deposits.

- Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches.
- Abstraction of water from watercourses is not to be permitted.
- Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis.
- All site personnel will be trained in the importance of good environmental practices including reporting to the site manager when pollution, or the potential for pollution, is suspected. All persons working on-site will receive work specific induction in relation to surface water management and run off controls. Daily environmental toolbox talks / briefing sessions will be conducted to outline the relevant environmental control measures and to identify any environment risk areas/works.
- Environmental risks due to construction and operation of the proposed development do potentially exist, particularly in relation runoff from sloping site, drains that could lead to the Balrickard Stream. Ecological supervision will be required during diversion, excavation and enabling works stages. Silt interception measures will need to be in place to ensure that the watercourses are not impacted during works and in particular during the site clearance, in-stream works and reprofiling stages. Landscaping of the grassed areas of the site proximate to the Stream will take place immediately following re-profiling, to act as a buffer to protect the watercourse.

6.8 Soils and Geology

In addition to the items listed under **Section 6.7** the following measures should apply:

Soil Storage

Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open water bodies and floodplains and any adjacent channels. Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust. Where temporary storage of soil is required, it will be covered and moved as quickly as possible. No long-term storage within 30m of water bodies will be permitted.

Soil Contamination

Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor.

Infill materials

All aggregate or soil imported should be from a reputable source. Certification shall be provided.

From an ecology perspective the following specific controls should be put in place in relation to earthworks:

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.
- Due to the proximity of the onsite watercourse an ecologist will oversee works in particular the excavation of material from the perimeter of the site.
- The Contractor will be required to consult with an ecologist prior to the beginning of works to identify any additional measures that may be appropriate and/or required.

6.9 Resource and Waste Management

The contractor is required to implement the following in relation to resource and waste management during construction:

- The contractor is required to prepare, implement and maintain a Construction and Demolition Waste Management Plan throughout construction that addresses the following as a minimum:
    - Description of the proposed development.
    - Wastes arising including procedures for minimisation/reuse/recycling.
    - Estimated cost of waste management.
    - Roles including training and responsibilities for construction and demolition waste.
    - Procedures for education of workforce and plan dissemination programme.
    - Record keeping procedures.
    - Waste collectors, recycling and disposal sites including copies of relevant permits or licences. and
    - Waste auditing protocols.
- The Contractor will minimise waste disposal as far as is reasonably practicable.
- Waste from the proposed development will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations 2007 to 2016 to take into account the Waste Management (Collection Permit) (Amendment) Regulations 2016.
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2011 and the Waste Management (Collection Permit) (Amendment) Regulations 2016.
- Source segregation: Where possible metal, timber, glass and other recyclable material will be segregated during construction works and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding, and photographs of wastes to be placed in each container as required, will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental impact.
- Material management: ‘Just-in-time’ delivery will be used as far as is reasonably practicable to minimise material wastage.
- Supply chain partners: The contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse.

- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase.
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a contractor who holds the appropriate waste collection permit.
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavation material may not be re-used within the proposed works the contractor will endeavour to send material for recovery or recycling as far as is reasonably practicable.
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and which is disposed of. and
- The contractor(s) will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place.

6.10 Population and Human Health

The contractor is required to implement the following measures in relation to population and human health during construction:

- Provide for safe pedestrian access at all times;
- Stagger works wherever possible and remove hoarding as soon as it is no longer needed to mitigate against severance;
- Avoid works that could involve high noise or visual intrusion;
- Provide temporary signalling at all sites;
- Maintain regular proactive consultation with local residents and businesses.

The appointed contractor shall include a site-specific risk and mitigation register for the works specific to the protection of Population and Human Health in liaison with the project ECoW and relevant guideline documents as well as the Environmental Impact Assessment (EIAR) Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS).

6.11 Material Assets

The contractor is required to implement the following measures in relation to material assets during construction:

- A Property Protection Scheme will be put in place by ER prior to works commencing on site. This will involve advance condition surveys prior to construction for all properties within the zone of influence of the proposed development. If it is determined that any reported minor cosmetic damage has been caused by construction of the proposed development, suitable remedial works will be undertaken to repair the damage to the properties with the use of the appropriate conservation technique.
- Access to all existing properties around the sites will be maintained at all times during the construction of the proposed development.

6.12 Major Accidents and Natural Disasters

The contractor is required to implement the following measures in relation to major accidents and natural disasters during construction:

- A detailed Incident Response Plan and Emergency Response Plan shall be compiled by the Contractor, which shall detail appropriate responses in accordance with the Fingal County Emergency Response Plan.

Appendix A: Ecological Clerk of Works Specification

Appendix A - Ecological Clerk of Works (ECoW)

Background

An appropriately qualified Environmental/Ecological Clerk of Works (ECoW) will be employed for the duration of the Civil Works Contract. The ECoW must be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) or equivalent body. The ecologist performing the ECoW role will attend the site on a weekly basis to check that all works are being completed to the appropriate standards.

As the delivery of the environmental protection measures in this Appendix is highly dependent on the roles and responsibilities of the ECoW some detail is provided here regarding this position.

Term of Appointment

The ECoW will be on site for minimum 1 day per week during the construction works, provision will be made for an initial briefing to all contractors, and a final visit to report on the ecological aspects of construction. Some office time is also required for weekly reporting.

ECoW Tasks

Overview

The purpose of the ECoW helps to monitor, control, and direct the ecological and environmental protection aspects as set out in the Environmental Impact Assessment Report (EIAR) or Ecological Impact Assessment (EcIA) and any Environmental Planning Conditions which may be stipulated, Construction Environmental Management Plans (CEMP) and Construction Method Statements (CMS) to ensure that all measures are fully adhered to during the construction phase. It also allows any issues arising to be dealt with in an appropriate manner.

Taking account of the requirements set out in the list of measures above and also in the EIAR/EcIA documentation, the following are deemed to be required services under the ECoW.

- Construction surveys.
- Visual inspection of construction safeguards such as temporary construction boundary fencing.
- Monitoring environmental controls (including briefing of digger drivers).
- Monitoring of construction activity in the vicinity of sensitive habitats (if any).
- Maintaining records of checks and issues.
- Providing a report detailing the implementation of all ecological and environmental protection measures during the construction phase.
- Survey the site for sensitive and protected species prior to construction (due diligence survey).

Pollution Prevention Plan

- Review, agreement and approval of Contractor's Pollution Prevention Plan prior to commencement of work.
- Conduct weekly inspection of site pollution prevention measures (silt traps boards, etc.) and visually assess their effectiveness. This will include inspection of water management measures installed by Contractor such as excavation pumping and diversion channels, as well as containment of silt away from watercourses and advice on the implementation of mitigation measures.
- Maintain a Pollution Prevention Measures Register of the weekly inspections, to include an inventory of all measures on the site, their effectiveness, as well as any advice provided.
- Suspension of work where potential risk from pollution is identified, or where construction methods and mitigation measures are not specified in construction method statements and/or plans as agreed at commencement of works.

- Provide advice and recommendations to the contractors regarding the above.

Waste Management

a) Review, agreement and approval of the Contractor's Resource and Waste Management Plan
b) Review of the Contractor's records for all inspections of fuel, oil or chemical storage areas, including the integrity of storage facilities.
c) Review of Contractors on site waste management, segregation and storage facilities and methodologies including removal and appropriate disposal.

Drainage Management

a) Review, agreement and approval of the Contractor's Site Drainage Management Plan
b) Inspection of drainage management works.
c) Liaison with Statutory Bodies if and when required.
d) Agreement of monitoring standards to be applied by Contractor's personnel.
e) Assessment in advance of habitats and species for ground to be affected by drainage management.
f) Review of Contractor's records for plant inspections, evidence of contamination and checks made after extreme weather conditions.

Water Quality Monitoring

a) Review, agreement and approval of the Contractor's and independent Site Water Quality Monitoring Plans where undertaken.
b) Inspection of Contractor's records for water environmental monitoring and comparison of those records with independent records.
c) Presentation of independent water environmental monitoring results at weekly site meetings.

Excavated Materials and Reinstatement

a) Review, agreement and approval of the Contractor's Spoil Management and Reinstatement Plan.
b) Marking working areas and route corridors, in consultation with the Geo-technical/Civil Designer and/or Archaeologist, as necessary.
c) Agreeing proposals temporary storage areas as development proceeds.
d) Agreeing timing of restoration and reinstatement of path surfaces.
e) Monitoring the condition of stored turf.
f) Issuing instruction to cease work if unexpected risks arise, until an agreed alternative solution is identified and risks are avoided or minimised.

Recording

The ECoW will keep a record of the following:

a) Notable animal sightings and signs (including birds, in addition to other site ornithological monitoring).
b) The Pollution Prevention Measures Register (as detailed above).

c) The habitats and soil (including peat depth) of ground to be developed via survey at least a week in advance of construction work.
d) Record of tasks carried out.
e) Written record of all oral advice given

The ECoW will maintain a GIS database of key recordings made during the construction period. ECoW weekly site visit notes will be made available for all personnel on site to consult and incorporates the following:

- Monitoring of requirements listed under the EcIA, EIA Screening, CEMP and CMS
- Pollution Prevention Measures Register

On-Site Communication

The success of ECoW appointment is largely dependent on well-defined lines of communication. In theory, robust construction method statements will incorporate many of the areas of ECoW concern into the daily activities of construction personnel. However, the ECoW will always inform the Civil Contractor and their Designer of areas of particular concern, who will then make a decision as to the subsequent action.

The ECoW will be involved in the delivery of biodiversity-related Toolbox Talks as part of the site induction process Toolbox talks will be given to the work force at regular intervals to highlight the environmental issues that are unique to the proposed development. All staff will know of the circumstances when the ECoW will be contacted, and the relevant phone numbers.

Liaison with Consultees

The ECoW will provide a liaison between Statutory Bodies and the Contractor.

Final Report

The ECoW will produce a final report documenting the environmental and ecological effects of the construction period. The evidence for effects will be based on findings included in the minutes of weekly meetings, together with other recording information maintained by the ECoW. The report will be made available to the Contractor, the Planning Authority, NPWS, IFI and Other Statutory Bodies as required and where appropriate.

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Appendix 5: Landscape Management Plans & Indicative Masterplan Plans

Standard Tree Notes:

Qp *Quercus petraea* - oak
Bp *Betula pubescens* - downey birch
Pt *Populus tremula* - aspen
Psy *Pinus sylvestris* - Scots pine
Ag *Alnus glutinosa* - alder
Ms *Malus sylvestris* - crab apple
Sa *Sorbus aucuparia* - rowan
Pp *Prunus padus* - bird cherry

Multi-Steamed Tree Notes:

Sc *Salix Caprea* - goat willow
Sau *Salix aurita* - eared willow
Cm *Crataegus monogyna* - hawthorn
Ps *Prunus spinosa* - sloe
Ca *Corylus avellana* - hazel
Vo *Viburnum opulus* - guelder rose
Lv *Ligustrum vulgare* - wild privet
Ee *Euonymus europaeus* - European spindle

Planting Notes:

P1 Full/ Partial Flowering Mix (Narrow Areas)
P2 Shade Tolerant Mix
P3 Native Groundcover (Wetland Inspired) Mix

M1 Biodiversity WF Meadow Mixture (tolerates light shade)
M2 Short-Cut Meadow Mixture (cut every 6 weeks)
M3 Woodland (Shade) Wildflowers

H1 Native Hedgerow

W1 Native Willow Scrub

T1 Native Woodland Buffer Transplant Planting
T2 Native Woodland (Wetland Inspired) Transplant Planting
T3 Native Woodland Pocket Transplant Planting
T4 Native Low Growing Scrub Transplant Planting

PLANTING SCHEDULE & SOFT LANDSCAPE MAINTENANCE

SOFT LANDSCAPE WORKS MAINTENANCE PROGRAMME

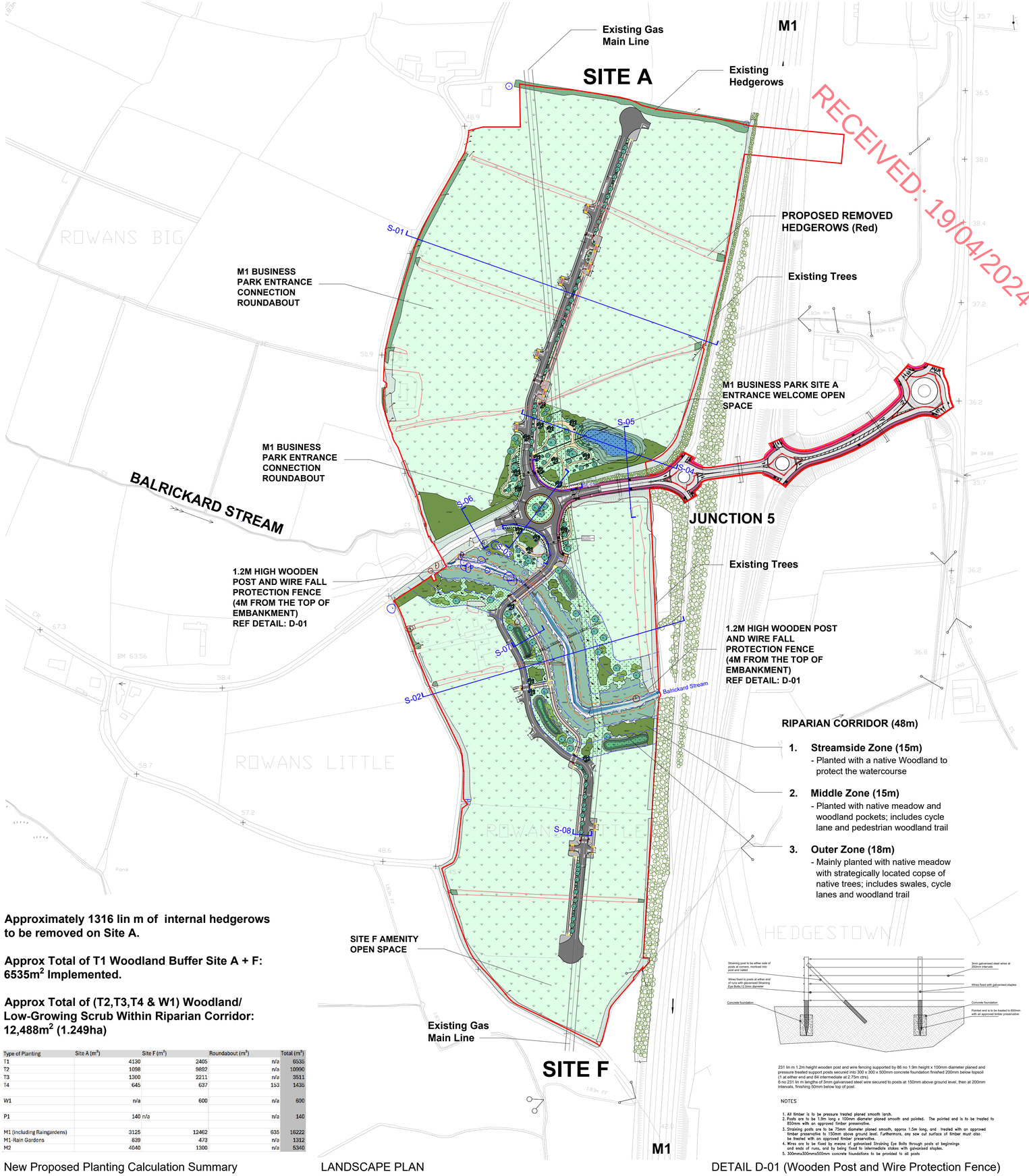
NOTE: All specified Irish native plants are to be of Irish Province.
Province Declaration Form to be provided to confirm the Province of each plant/Tree

a. Bare root transplants, hedging and rootballed trees
b. Containerised shrubs, perennials
c. 12 months maintenance & defects liability period, to commence on practical completion of soft landscape works. Planted beds, trees, hedges and transplant planting 16 no. maintenance visits required per annum (April- October) carried out on a fortnightly basis and 2 additional visits over winter period. 16 no. maintenance visits required per annum.
d. 12 months maintenance & defects liability period to planted beds, trees, hedges and transplant planting to be carried out at the same time as grass cutting, 16 no. maintenance visits required.

Qty.	Species	Irish Native Yes/No	Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality Specification	Irish Province Plant Required (Yes/No)
	Trees							
	All trees to be provided with 1.2m³ multi-purpose grade topsoil to BS3882 and planted as per planting details drawings, with root restrictor membrane where appropriate to ensure adjacent paving/services are not disturbed by root growth, and provided with irrigation where appropriate. **NOTE: Trees above podium and at roof garden levels to be planted using dead man anchor system Ref 'Tree Planting Detail A' (both multi-stemmed and clear stemmed).Trees along site perimeter to be double staked - Ref 'Tree Planting Detail B'.**							
	Clear Steamed							
8	*Betula pubescens (Downy Birch)* - **Bp**	Yes	14-16 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
10	*Betula pubescens (Downy Birch)* - **Bp**	Yes	16-18 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
76	*Betula pubescens (Downy Birch)* - **Bp**	Yes	18-20 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
8	*Betula pubescens (Downy Birch)* - **Bp**	Yes	20-25 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
4	*Betula pubescens (Downy Birch)* - **Bp**	Yes	25-30 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
15	*Populus tremula* (Aspen) - **Pt**	Yes	12-14 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
6	*Populus tremula* (Aspen) - **Pt**	Yes	14-16 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
23	*Pinus sylvestris* (Scots Pine) - **Psy**	Yes	16-20 cm	g clear stem m-ed to 2m height		planted to Planting Detail A	m-in 6m ht (min 4m canopy)	Yes
25	*Pinus sylvestris* (Scots Pine) - **Psy**	Yes	18-20 cm	g clear stem m-ed to 2m height		planted to Planting Detail A	m-in 7m ht (min 4m canopy)	Yes
8	*Alnus glutinosa* (Alder) - **Ag**	Yes	16-18 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
40	*Alnus glutinosa* (Alder) - **Ag**	Yes	18-20 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
14	*Alnus glutinosa* (Alder) - **Ag**	Yes	20-25 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
11	*Sorbus aucuparia* (Rowan) - **Sa**	Yes	18-20 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
26	*Sorbus aucuparia* (Rowan) - **Sa**	Yes	20-25 cm	g clear stem m-ed to 2m height		planted to Planting Detail A		Yes
273	**Total**							
	Multi-stemmed							
84	*Salix aurita* (Eared Willow) - **Sau**	Yes	2.00m height multi-stem m-ed planted to Planting Detail A					Yes
72	*Salix caprea (Goat Willow)* - **Sc**	Yes	3.00m height multi-stem m-ed planted to Planting Detail A					Yes
36	*Crataegus monogyna* (Hawthorn) - **Cm**	Yes	3.00m height multi-stem m-ed planted to Planting Detail A					Yes
5	*Corylus avellana* (Hazel) - **Ca**	Yes	3.00m height multi-stem m-ed planted to Planting Detail A					Yes
197	**Total**							
	Shrubs & Perennials							
	Lightweight topsoil mix by Elrich to various depths as shown finished with 75mm depth medium grade bark much .							

Qty.	Species		Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality Specification	
P1	**Native Groundcover (Wetland Inspired) Mix**			4 plants per m² m²		(To be planted in single species drifts of min. 8-12 plants per drift min. double row)		
	Deschampsia cespitosa (Tufted Hairgrass)	Yes	40-60cm	2B		cg		Yes
	Lysimachia vulgaris (Yellow Loosestrife)	Yes	40-60cm	P9		cg		Yes
	Lythrum salicaria (Purple Loosestrife)	Yes	40-60cm	P9		cg		Yes
	Agrimonia procera (Fragrant Agrimony)	Yes	40-60cm	P9		cg		Yes
	Single Species							
	Lightweight topsoil mix by Elrich to various depths as shown finished with 75mm depth medium grade bark much .							
G1	**Groundcover**			3 plants per m² m²				
	Ilex aquifolium (Holly)	Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
H1	**Hedgerow**			3 plants per lin m				
	Corylus avellana (Hazel)	Yes	40-60cm	Transplant 1+1		br		Yes
	Crataegus monogyna (Common Hawthorn)	Yes	40-60cm	Transplant 1+1		br		Yes
	Ilex aquifolium (Holly)	Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
	Salix aurita (Eared Willow)	Yes	40-60cm	Transplant 1+1		br		Yes
	Viburnum opulus (Guelder Rose)	Yes	40-60cm	Transplant 1+1		br		Yes
	Ligustrum vulgare (Privet)	Yes	40-60cm	Transplant 1+1		br		Yes
	Prunus spinosa (Sloe)	Yes	40-60cm	Transplant 1+1		br		Yes

Qty.	Species	Irish Native Yes/No	Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality Specification	Irish Province Plant Required (Yes/No)
T1	**Native Woodland Buffer transplant mix in double staggered row**			2 plants per m² m²				
	Ilex Aquifolium (Holly) - 2.5%	Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
	Corylus avellana (Hazel) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Crataegus monogyna (Common Hawthorn) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Prunus spinosa (Blackthornfloe) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Viburnum opulus (Guelder Rose) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Ligustrum vulgare (Privet) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix caprea (Goat Willow) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix pentandra (Bay Willow) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Quercus petraea (Sessile Oak) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Quercus robur (Common Oak) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Betula pubescens (Downy Birch) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Malus Sylvestris (Apple) - 5%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Prunus padus (Bird Cherry) - 5%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Populus tremula (Aspen) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Sorbus aucuparia (Rowan) - 5%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Pinus sylvestris (Scots Pine) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Alnus glutinosa (Alder) - 5%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
T2	**Native Woodland (Wetland Inspired) transplant mix in double staggered row**			2 plants per m² m²				
		Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
	Ilex Aquifolium (Holly) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Corylus avellana (Hazel) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Crataegus monogyna (Common Hawthorn) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Prunus spinosa (Blackthornfloe) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Viburnum opulus (Guelder Rose) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Ligustrum vulgare (Privet) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix caprea (Goat Willow) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix pentandra (Bay Willow) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Quercus petraea (Sessile Oak) - 15%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Quercus robur (Common Oak) - 15%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Betula pubescens (Downy Birch) 15%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Populus tremula (Aspen) - 10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Alnus glutinosa (Alder) - 15%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
T3	**Native Woodland Pocket transplant mix in double staggered row**			2 plants per m² m²				
	Ilex Aquifolium (Holly) - 2.5%	Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
	Corylus avellana (Hazel) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Crataegus monogyna (Common Hawthorn) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Prunus spinosa (Blackthornfloe) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Viburnum opulus (Guelder Rose) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Ligustrum vulgare (Privet) - 2.5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix caprea (Goat Willow) - 5%	Yes	40-60cm	Transplant 1+1		br		Yes
	Betula pubescens (Downy Birch) 25%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Malus Sylvestris (Apple) 15%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Prunus padus (Bird Cherry) 20%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
	Pinus sylvestris (Scots Pine) -10%	Yes	40-60cm	Transplant 1+1	1 per m2	br		Yes
T4	**Native Low Growing Woodland Scrub transplant mix in double staggered row (Low Scrub Layer 100%)**			2 plants per m² m²				
	Ilex Aquifolium (Holly) 15%	Yes	40-60cm	2B		cg	Bushy 5 brks in Lower 1/3	Yes
	Corylus avellana (Hazel) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Crataegus monogyna (Common Hawthorn) 15%	Yes	40-60cm	Transplant 1+1		br		Yes
	Prunus spinosa (Blackthornfloe) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Viburnum opulus (Guelder Rose)10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Ligustrum vulgare (Privet) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix aurita (Eared Willow) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix caprea (Goat Willow) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix pentandra (Bay Willow) 10%	Yes	40-60cm	Transplant 1+1		br		Yes
W1	**Willow Scrub**			3 plants per m² m²				
	Salix aurita (Eared Willow)	Yes	40-60cm	Transplant 1+1		br		Yes
	Salix caprea (Goat Willow)	Yes	40-60cm	Transplant 1+1		br		Yes
	Native Wildflower Meadow							
	Species List (TBC): Birdsfoot Trefoil, Black Medick, Corn Chamomile, Corn Marigold, Corn Poppy, Cornsockle, Cornflower, Cowslip, Devils bit Scabious, Eyebright, Meadow Buttercup, Field Poppy, Fleabane, Greater Trefoil , Ladys Bedstraw, Lesser Knapweed, Scented Mayweed, Meadowsweet, Oxeye Daisy, Purple Loosestrife, Ragged Robin, Red Bartsia, Rillwort Plantain, Selfheal, Water Avens, Wild Carrot, Yellow Flag Iris, Yellow Rattle.							
	Additional species: Meadow Cranesbill, Wild Valerian, Marsh Marigold – **Sowing rate: 1.5g/m²**							
M1	**(WPO3) Biodiversity WF Meadow Mixture (tolerates light shade) by Design By Nature**	Yes		m²			Cut 1/2 a year	Yes
M2	**(DW01) Short-Cut Meadow Mixture (cut every 6 weeks) by Design By Nature**	Yes		m²			Cut Every 6 Weeks	Yes
M3	**(EC03) Woodland (Shade) Wildflowers by Design By Nature**	Yes		m²			Cut 1/2 a year	Yes



Approximately 1316 lin m of internal hedgerows to be removed on Site A.

Approx Total of T1 Woodland Buffer Site A + F: 6535m² Implemented.

Approx Total of (T2,T3,T4 & W1) Woodland/ Low-Growing Scrub Within Riparian Corridor: 12,488m² (1.249ha)

Type of Planting	Site A (m²)	Site F (m²)	Roundabout (m²)	Total (m²)
T1	4130	2405	n/a	6535
T2	1098	9802	n/a	10990
T3	1300	2211	n/a	3511
T4	645	637	153	1435
W1	n/a	600	n/a	600
P1	140 n/a		n/a	140
M1 (including Raingardens)	3125	12462	635	16222
M1-Rain Gardens	839	473	n/a	1312
M2	4040	1300	n/a	5340

New Proposed Planting Calculation Summary

LANDSCAPE PLAN
Scale 1:2500

231 lin m 1.2m height wooden post and wire fencing supported by 86 no 1.9m height x 100mm diameter planed and pressure treated support posts secured into 300 x 300 x 500mm concrete foundation finished 200mm below topsoil (1 at either end and 84 intermediate at 2.75m ctrs).
6 no 231 lin m lengths of 3mm galvanised steel wire secured to posts at 150mm above ground level, then at 200mm intervals, finishing 50mm below top of post.

NOTES

1. All timber is to be pressure treated planed smooth larch.
2. Posts are to be 1.9m long x 100mm diameter planed smooth and pointed. The pointed end is to be treated to 850mm with an approved timber preservative.
3. Straining posts are to be 75mm diameter planed smooth, approx 1.5m long, and treated with an approved timber preservative to 150mm above ground level. Furthermore, any saw cut surface of timber must also be treated with an approved timber preservative.
4. Wires are to be fixed by means of galvanised Straining Eye Bolts through posts at beginnings and ends of runs, and by being fixed to intermediate stakes with galvanised staples.
5. 300mmx300mmx500mm concrete foundations to be provided to all posts

DETAIL D-01 (Wooden Post and Wire Protection Fence)
Scale 1:50

SPECIFICATION KEY

HARD SURFACE: MODULAR PAVING

HARD SURFACE: PERMEABLE MODULAR PAVING (VEHICULAR SPEC)

HARD SURFACE: HARD COMPACTED GRAVEL PATH
- Incorporate falls and profiles to the regulating course, which is required to provide free drainage. Provide 50mm depth granular Type 1 sub-base material on 150mm hardcore sub-base to engineer's design detail & specification.
- Compact with a min. 6 ton roller. Apply a quality weed-killer to the regulating course before laying
- 10mm dolomitious blinding dust material to seal all interstices.
- 50mm compacted depth golden-coloured Ballylusk or equilvant approved hard-compacting golden gravel. Spread and level aggregate whilst damp/moist and then compact to manufacturer's instructions with a min 1 ton roller.
- At end of defects liability period provide top-up application of compacted Ballylusk to ensure level finish along all paving surfaces and interfaces

HARD SURFACE: EXPOSED AGGREGATE SURFACE TO BICYCLE PARKING AREAS

HARD SURFACE: INSITU CONCRETE PAVING BRUSHED FINISH
- Subgrade improvement layer: to engineers specification. Compacted thickness: to engineers specification.
- Geotextile filter: to engineers specification.
- Granular sub-base: to engineers specification. Compacted thickness: to engineers specification.
- Separation membrane: Polyethylene sheet 150 micrometres thick, edges lapped 300 mm.
- Embedded metal: to engineer's specification
- Concrete: To BS 8500-2.
  - Designation: PAV2.
  - Fibres: Refer to Engineers design detail & specification.
  - Cement: Approved Irish sourced cement and 'GGBS' to achieve approved colour.
  - Aggregate:
    Size (maximum): 10 mm PCG and 20mm PCG.
    Coarse recycled concrete aggregate: Not permitted.
- Slab thickness (minimum): 150mm C40 concrete.
- Finish: Brushed.
- 10mm saw-cut expansion joints at 3m ctrs: not less than one quarter the depth of the slab in depth Sawing sufficiently early to prevent random cracking (within 24 hours of casting slab) and to produce strong, well defined arrises.
- 125mm trowel finish edging with a 21mm radius bullnose to the outer edge only.

STREET FURNITURE: HARDWOOD BENCHES / CHAIRS
- Iroko

STREET FURNITURE: PICNIC TABLES
- Seating space for min 4 people

STREET FURNITURE: SHEFFIELD-STYLE CYCLE STANDS (15 Stands Required)
- Sheffield Cycle stand by Kent Stainless or equivalent approved
- Dimensions: height 870mm, width 750mm, outside diameter 48mm, wall thickness 2.50mm.
- Finish of AISI 316 grade stainless steel.
- Fixed with appropriate concrete screw fixings directly to exposed aggregate concrete base to manufacturer's details.

STREET FURNITURE: ENTRANCE COLUMNS 4-12M IN HEIGHT
- Painted exterior Ral 7016; interior - Ral 1021
- Galvanised Mild Steel
- 1m square base, hollow structure
- Some columns include uplighters inside

STREET FURNITURE: ENTRANCE BLOCKS 0.5M IN HEIGHT
- Painted exterior Ral 7016
- Galvanised Mild Steel
- 1m square base; hollow structure

STREET FURNITURE: SCULPTURE

ARTWORK: TREE LOGS (LINEAR ARRANGEMENT)
- It is the intention to not remove any organic material from the sites.
- Any felled tree will be arranged within the site as a land art installation to create focal points which will aid people with way-finding, and create a habitat for various insects and othe microorganism decomposers as the wooden logs gradually degrade over time.
- Arrangement is inspired by the agricultural activity that is currently practiced within A and in the vicinity.

ARTWORK: TREE LOGS (PILES)
- It is the intention to not remove any organic material from the sites.
- Any felled tree will be arranged within the site as a land art installation to create focal points which will aid people with way-finding, and create a habitat for various insects and othe microorganism decomposers as the wooden logs gradually degrade over time.

SOFT SURFACE: GRASSCRETE
- Vehicle Accessible Areas
- Product reference: 'Turfstone' by Tobermore or equivalent
- Laid on 60mm Base Layer for Grasscrete Area by Enrich or equivalent approved base layer suitable for grasscrete areas
- Filled with Grasscrete Areas modified topsoil by Enrich, 25mm below top of paving (75mm depth) or equivalent approved modified structural with sufficient nutrients content soil appropriate for grasscrete areas
- Sown with hard-wearing amenity grass mix

SOFT SURFACE: NATIVE MEADOW INTO GROUND
- Seeded into low fertility subsoil (min 100mm depth) into ground,
- Seed between September and February (Late autumn, winter, early spring period) with approved native wildflower meadow seed mix as indicated on plans.
- M1 - WF02 Biodiversity WF Meadow Mixture (tolerates light shade)
- M2 - DW01 Short-Cut Meadow Mixture (cut every 6 weeks)
- M3 - EC03 Woodland (Shade) Wildflowers

PLANTING: NATIVE HEDGEROW
- Native species broadleaf and evergreen hedgerow to provide biodiversity, support for wildlife & screening as they mature.
- Hedgerow planting into 300mm depth BS3882 multi-purpose approved topsoil on free-draining sub-base, topped 75mm depth approved medium-grade bark mulch.
- Hedgerows to be Cut-Back and maintained regularly

T1

T2

T3

T4/W1

PLANTING: NATIVE TRANSPLANT MIXES (T1,T2,T3,T4,W1)
- Excavate planter to 600mm depth and break up sub-base of planted area to ensure free-drainage to subsoil.
- Remove excavated material and any builder's rubble before back-filling with min. 500mm depth multi-purpose grade topsoil to BS-3882 (to be approved by LA).
- Cover topsoil with 75mm depth approved medium grade bark mulch topping.

PLANTING: LOW GROWING LOW-MAINTENANCE PERENNIAL PLANTING
- **Refer to plan drawings for type of perrenial mix for each area**
- Planting to BS3882 approved multi-purpose topsoil on free-draining sub-base,
- Top with 75mm depth approved medium-grade bark mulch.
- Ornamental/native perennial planting to comprise ornamental grasses, flowering perennials and climbers to soften the visual impact of the development.
- P1 - Native Wetland Inspired Mix

PLANTING: CLEAR-STEMMED TO 2M HEIGHT and MULTI-STEAMED SEMI-MATURE TREES
- Semi-mature trees provided with 1200mm³ approved multi-purpose grade topsoil to BS: 3882, topped with 75mm depth approved medium-grade bark mulch.
- Trees double- staked & supplied with planting accessories, and provided with root restrictors within 2m of paving, underground services and foundations.
- Prior to staking check for underground services

PLANTING: EXISTING HEDGEROWS/TREES GROUPS RETAINED
- Ref Arborist Survey and Report

PLANTING: EXISTING TREES/SCRUB M1 MOTORWAY BUFFER PLANTING
- Not surveyed by Arborist
- Approximate Location
- Existing Green Corridor and woodland habitat

PLANTING: EXISTING GROUND RETAINED
- Pasture
- Crop/Tillage/Hay Making

STEPHEN **DIAMOND** ASSOCIATES
CHARTERED LANDSCAPE ARCHITECTS

68 Pearse Street Dublin 2 tel: 01 6775670
email: mail@sdacla.ie fax: 01 6775669

Client	VIDA M1 Limited	Project No.:	23-598
Project	M1 Business Park Site A & F	Date Issued	2024-04-08
Title	Landscape and Blue-Green Infrastructure Plan (Planning Application)		
Drg No	23-598-SDA-PD-DR-GF-002	Scale	1:2500 / 1:50@ A1
Drawn	BS	Purpose / Checked	Planning / SD

Precedent Image of Open Space punctuated by native woodland planting and amenity pathways

Precedent Image of Open Space punctuated by native woodland planting and amenity pathways accompanied by an attenuation pond

Precedent Image of Open Space planted with a meadow accompanied by an attenuation pond with a development in the background

Standard Tree Notes:

Qp	*Quercus petraea* - oak
Bp	*Betula pubescens* - downey birch
Pt	*Populus tremula* - aspen
Psy	*Pinus sylvestris* - Scots pine
Ag	*Alnus glutinosa* - alder
Ms	*Malus sylvestris* - crab apple
Sa	*Sorbus aucuparia* - rowan
Pp	*Prunus padus* - bird cherry

Multi-Steamed Tree Notes:

Sc	*Salix Caprea* - goat willow
Sau	*Salix aurita* - eared willow
Cm	*Crataegus monogyna* - hawthorn
Ps	*Prunus spinosa* - sloe
Ca	*Corylus avellana* - hazel
Vo	*Viburnum opulus* - guelder rose
Lv	*Ligustrum vulgare* - wild privet
Ee	*Euonymus europaeus* - European spindle

Planting Notes:

P1	Native Groundcover (Wetland Inspired) Mix
M1	Biodiversity WF Meadow Mixture (tolerates light shade)
M2	Short-Cut Meadow Mixture (cut every 6 weeks)
M3	Woodland (Shade) Wildflowers
H1	Native Hedgerow
W1	Native Willow Scrub
T1	Native Woodland Buffer Transplant Planting
T2	Native Woodland (Wetland Inspired) Transplant Planting
T3	Native Woodland Pocket Transplant Planting
T4	Native Low Growing Scrub Transplant Planting

0m 100m 150m

SPECIFICATION KEY

HARD SURFACE: MODULAR PAVING

HARD SURFACE: PERMEABLE MODULAR PAVING (VEHICULAR SPEC)

HARD SURFACE: HARD COMPACTED GRAVEL PATH
- Incorporate falls and profiles to the regulating course, which is required to provide free drainage. Provide 50mm depth granular Type 1 sub-base material on 150mm hardcore sub-base to engineer's design detail & specification.
- Compact with a min. 6 ton roller. Apply a quality weed-killer to the regulating course before laying
- 10mm dolomitious blinding dust material to seal all interstices.
- 50mm compacted depth golden-coloured Ballytusk or equilvant approved hard-compacting golden gravel. Spread and level aggregate whilst damp/moist and then compact to manufacturer's instructions with a min 1 ton roller.
- At end of defects liability period provide top-up application of compacted Ballytusk to ensure level finish along all paving surfaces and interfaces

HARD SURFACE: EXPOSED AGGREGATE SURFACE TO BICYCLE PARKING AREAS

HARD SURFACE: INSITU CONCRETE PAVING BRUSHED FINISH
- Subgrade improvement layer: to engineers specification. Compacted thickness: to engineers specification.
- Geotextile filter: to engineers specification.
- Granular sub-base: to engineers specification. Compacted thickness: to engineers specification.
- Separation membrane: Polyethylene sheet 125 micrometres thick, edges lapped 300 mm.
- Embedded metal: to engineer's specification
- Concrete: To BS 8500-2.
  - Designation: PAV2.
  - Fibres: Refer to Engineers design detail & specification.
  - Cement: Approved Irish sourced cement and 'GGBS' to achieve approved colour.
  - Aggregate:
    Size (maximum): 10 mm PCG and 20mm PCG.
    Coarse recycled concrete aggregate: Not permitted.
- Slab thickness (minimum): 150mm C40 concrete.
- Finish: Brushed.
- 10mm saw-cut expansion joints at 3m c/rs: not less than one quarter the depth of the slab in depth Sawing sufficiently early to prevent random cracking (within 24 hours of casting slab) and to produce strong, well defined arrises.
- 125mm trowel finish edging with a 21mm radius bullnose to the outer edge only.

STREET FURNITURE: HARDWOOD BENCHES / CHAIRS
- Iroko

STREET FURNITURE: PICNIC TABLES
- Seating space for min 4 people

STREET FURNITURE: SHEFFIELD-STYLE CYCLE STANDS (15 Stands Required)
- Sheffield Cycle stand by Kent Stainless or equivalent approved
- Dimensions: height 870mm, width 750mm, outside diameter 48mm, wall thickness 2.50mm.
- Finish of AISI 316 grade stainless steel.
- Fixed with appropriate concrete screw fixings directly to exposed aggregate concrete base to manufacturer's details.

STREET FURNITURE: ENTRANCE COLUMNS 4-12M IN HEIGHT
- Painted exterior Ral 7016; interior - Ral 1021
- Galvanised Mild Steel
- 1m square base, hollow structure
- Some columns include uplighters inside

STREET FURNITURE: ENTRANCE BLOCKS 0.5M IN HEIGHT
- Painted exterior Ral 7016
- Galvanised Mild Steel
- 1m square base; hollow structure

STREET FURNITURE: SCULPTURE

ARTWORK: TREE LOGS (LINEAR ARRANGEMENT)
- It is the intention to not remove any organic material from the sites.
- Any felled tree will be arranged within the site as a land art installation to create focal points which will aid people with way-finding, and create a habitat for various insects and othe microorganism decomposers as the wooden logs gradually degrade over time.
- Arrangement is inspired by the agricultural activity that is currently practiced within A and in the vicinity.

ARTWORK: TREE LOGS (PILES)
- It is the intention to not remove any organic material from the sites.
- Any felled tree will be arranged within the site as a land art installation to create focal points which will aid people with way-finding, and create a habitat for various insects and othe microorganism decomposers as the wooden logs gradually degrade over time.

SOFT SURFACE: GRASSCRETE
- Vehicle Accessible Areas
- Product reference: 'Turfstone' by Tobermore or equivalent
- Laid on 60mm Base Layer for Grasscrete Area by Enrich or equivalent approved base layer suitable for grasscrete areas
- Filled with Grasscrete Areas modified topsoil by Enrich, 25mm below top of paving (75mm depth) or equivalent approved modified structural with sufficient nutrients content soil appropriate for grasscrete areas
- Sown with hard-wearing amenity grass mix

SOFT SURFACE: NATIVE MEADOW INTO GROUND
- Seeded into low fertility subsoil (min 100mm depth) into ground,
- Seed between September and February (Late autumn, winter, early spring period) with approved native wildflower meadow seed mix as indicated on plans.
- M1 - WFO2 Biodiversity WF Meadow Mixture (tolerates light shade)
- M2 - DW01 Short-Cut Meadow Mixture (cut every 6 weeks)
- M3 - EC03 Woodland (Shade) Wildflowers

PLANTING: NATIVE HEDGEROW
- Native species broadleaf and evergreen hedgerow to provide biodiversity, support for wildlife & screening as they mature.
- Hedgerow planting into 300mm depth BS3882 multi-purpose approved topsoil on free-draining sub-base, topped 75mm depth approved medium-grade bark mulch.
- Hedgerows to be Cut-Back and maintained regularly

T1
T2
T3
T4/W1

PLANTING: NATIVE TRANSPLANT MIXES (T1,T2,T3,T4,W1)
- Excavate planter to 600mm depth and break up sub-base of planted area to ensure free-drainage to subsoil.
- Remove excavated material and any builder's rubble before back-filling with min. 500mm depth multi-purpose grade topsoil to BS:3882 (to be approved by LA).
- Cover topsoil with 75mm depth approved medium grade bark mulch topping.

PLANTING: LOW GROWING LOW-MAINTENANCE PERENNIAL PLANTING
- **Refer to plan drawings for type of perrenial mix for each area**
- Planting to BS3882 approved multi-purpose topsoil on free-draining sub-base,
- Top with 75mm depth approved medium-grade bark mulch.
- Ornamentalnative perennial planting to comprise ornamental grasses, flowering perennials and climbers to soften the visual impact of the development.
- P1 - Native Wetland Inspired Mix

PLANTING: CLEAR-STEMMED TO 2M HEIGHT and MULTI-STEAMED SEMI-MATURE TREES
- Semi-mature trees provided with 1200mm² approved multi-purpose grade topsoil to BS: 3882, topped with 75mm depth approved medium-grade bark mulch.
- Trees double- staked & supplied with planting accessories, and provided with root restrictors within 2m of paving, underground services and foundations.
- Prior to staking check for underground services

PLANTING: EXISTING HEDGEROWS/TREES GROUPS RETAINED
- Ref Arborist Survey and Report

PLANTING: EXISTING TREES/SCRUB M1 MOTORWAY BUFFER PLANTING
- Not surveyed by Arborist
- Approximate Location
- Existing Green Corridor and woodland habitat

PLANTING: EXISTING GROUND RETAINED
- Pasture
- Crop/Tillage/Hay Making

STEPHEN **DIAMOND** ASSOCIATES
CHARTERED LANDSCAPE ARCHITECTS

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Client	VIDA M1 Limited	Project No.	23-598
Project	M1 Business Park Site A & F	Date Issued	2024-04-08
Title	Landscape Masterplan (Indicative Architectural Layout)		
Drg No	23-598-SDA-PD-DR-GF-001	Scale	1:2500@ A1
Drawn	BS	Purpose Planning	Checked SD

Appendix 6: Biodiversity

ALTEMAR

Marine & Environmental Consultancy

Appropriate Assessment Screening & Natura Impact Statement – Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA for a Proposed Development at Junction 5, M1, Rowans, Co. Dublin.

10th April 2024

Prepared by: Bryan Deegan of Altemar Ltd.
On behalf of: Vida M1 Ltd.

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Document Control Sheet			
Project	Appropriate Assessment Screening and Natura Impact Statement – Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA for a proposed development at Junction 5, M1, Rowans, Co. Dublin.		
Report	Appropriate Assessment Screening & Natura Impact Statement		
Date	10th April 2024		
Version	Author	Reviewed	Date
Draft 01	Bryan Deegan	Jeff Boyle	27th March 2024
Planning	Bryan Deegan		10th April 2024

Table of Contents

Introduction

The following Appropriate Assessment Screening and Natura Impact Statement – Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA has been prepared by **Altemar Ltd**, at the request of Vida M1 Ltd for a proposed development at Junction 5, M1, Rowans, Co. Dublin.

An Appropriate Assessment is an assessment of the potential effects of a proposed project or plan, on its own, or in combination with other plans or projects, on one or more European sites (Special Areas of Conservation (SAC) or Special Protection Areas (SPA)).

The AA Screening stage examines the likely significant effects of the proposed development, either on its own, or in combination with other plans and projects, upon a European site and considers whether, on the basis of objective scientific evidence, it can be concluded, in view of best scientific knowledge and the conservation objectives of the relevant European sites, that there are not likely to be significant effects on any European site.

The Natura Impact Statement examines whether the plan or project, either alone, or in combination with other plans and projects, in the view of best scientific knowledge and in view of the sites' conservation objectives, will adversely affect the integrity of the European sites.

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include residential, infrastructural, renewable, oil & gas, private industry, local authorities, EC projects and State/semi-State Departments. Bryan Deegan is the managing director of Altemar. Bryan is an environmental scientist and marine biologist with 30 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). This report has also been prepared by Bryan Deegan and Emma Peters BSc Environmental Science. Emma is skilled in bat detection through static detector surveys, dusk emergence, and down re-entry surveys and is a member of Bat Conservation Ireland. She is skilled in habitat identification, native and non-native species identification and ecological conservation, having experience in mitigation measures in ecological assessment.

Background to the Appropriate Assessment

The Habitats Directive 92/43/EEC (together with the Birds Directive (2009/1477/EC)) forms the cornerstone of Europe's nature conservation policy. The Directive protects over 1000 animals and plant species and over 200 "habitat types" which are of European importance. In the Habitats Directive, Articles 3 to 9 provide the legislative means to protect habitats and species of European Community interest through the establishment and conservation of an EU-wide network of conservation sites (NATURA, 2000). These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive), Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the [EUROPEAN] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the component national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

As outlined in "Managing European sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC" (European Commission, 21 November 2018) *"The purpose of the appropriate assessment is to assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in combination with other plans or projects. The conclusions should enable the competent authorities to ascertain*

whether the plan or project will adversely affect the integrity of the site concerned. The focus of the appropriate assessment is therefore specifically on the species and/or the habitats for which the European site is designated."

As outlined in the EC guidance document on Article 6(4) (January 2007)[1]:

"Appropriate assessments of the implications of the plan or project for the site concerned must precede its approval and take into account the cumulative effects which result from the combination of that plan or project with other plans or projects in view of the site's conservation objectives. This implies that all aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those objectives must be identified in the light of the best scientific knowledge in the field.

Assessment procedures of plans or projects likely to affect European sites should guarantee full consideration of all elements contributing to the site integrity and to the overall coherence of the network, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts. These determine what has to be compensated, both in quality and quantity. Regardless of whether the provisions of Article 6(3) are delivered following existing environmental impact assessment procedures or other specific methods, it must be ensured that:

- *Article 6(3) assessment results allow full traceability of the decisions eventually made, including the selection of alternatives and any imperative reasons of overriding public interest.*
- *The assessment should include all elements contributing to the site's integrity and to the overall coherence of the network as defined in the site's conservation objectives and Standard Data Form, and be based on best available scientific knowledge in the field. The information required should be updated and could include the following issues:*
    - *Structure and function, and the respective role of the site's ecological assets;*
    - *Area, representativity and conservation status of the priority and nonpriority habitats in the site;*
    - *Population size, degree of isolation, ecotype, genetic pool, age class structure, and conservation status of species under Annex II of the Habitats Directive or Annex I of the Birds Directive present in the site;*
    - *Role of the site within the biographical region and in the coherence of the European network; and,*
    - *Any other ecological assets and functions identified in the site.*
- *It should include a comprehensive identification of all the potential impacts of the plan or project likely to be significant on the site, taking into account cumulative impacts and other impacts likely to arise as a result of the combined action of the plan or project under assessment and other plans or projects.*
- *The assessment under Article 6(3) applies the best available techniques and methods, to estimate the extent of the effects of the plan or project on the biological integrity of the site(s) likely to be damaged.*
- *The assessment provides for the incorporation of the most effective mitigation measures into the plan or project concerned, in order to avoid, reduce or even cancel the negative impacts on the site.*
- *The characterisation of the biological integrity and the impact assessment should be based on the best possible indicators specific to the European assets which must also be useful to monitor the plan or project implementation."*

[1] European Commission. (2007).Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission;

Stages of the Appropriate Assessment

This Appropriate Assessment screening was undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001), Part XAB of the Planning and Development Act 2000, as amended, in addition to the December 2009 publication from the Department of Environment, Heritage and Local Government; 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities' and the European Communities (Birds and Natural Habitats) Regulations 2011. In order to comply with the above Guidelines and legislation, the Appropriate Assessment process must be structured as follows:

1) Screening stage:
    - Description of plan or project, and local site or plan area characteristics;
    - Identification of relevant European sites, and compilation of information on their qualifying interests and conservation objectives
    - Identification and description of individual in combination effects likely to result from the proposed project;
    - Assessment of the likely significance of the effects identified above. Exclusion of sites where it can be objectively concluded that there will be no likely significant effects; and,

      Conclusions
2) Appropriate Assessment (Natura Impact Statement):
    - Description of the European sites that will be considered further;
    - Identification and description of potential adverse impacts on the conservation objectives of these sites likely to occur from the project or plan; and,
    - Mitigation Measures that will be implemented to avoid, reduce or remedy any such potential adverse impacts
    - Assessment as to whether, following the implementation of the proposed mitigation measures, it can be concluded, beyond all reasonable scientific doubt, that there will be no adverse impact on the integrity of the relevant European Site in light of its conservation objectives"
    - Conclusions.

If it can be demonstrated during the AA screening phase (Stage 1), that the proposed project will not have a significant effect, whether alone or in combination with other plans or projects, on the conservation objectives of a European site, then no further AA (Stage 2) will be required. It is important to note that there is a requirement to apply a precautionary approach to AA screening. Therefore, where effects are possible, certain or unknown at the screening stage, AA will be required.

In addition, it should be noted that Article 6(3) of the Habitats Directive must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an AA of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

Stage 1 Screening Assessment

Management of the Site

The project is not directly connected with, or necessary to, the management of European sites.

Description of the Proposed Project

The proposed development includes:

•Provision of civil infrastructure to service future-planned commercial properties, comprising main access roads including pedestrian/cycle paths; watermains, surface water and foul drainage networks; utility services including power and telecommunications.

•Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features including an attenuation pond and raingardens.

•Upgrading and modification of the existing L1140 roundabout.

•Provision of 3.0m wide shared paths from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132.

•All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings

Landscape

The landscape strategy for the proposed development has been prepared by Stephen Diamond Associates to accompany this planning application. The landscape plan is shown in Figure 5.

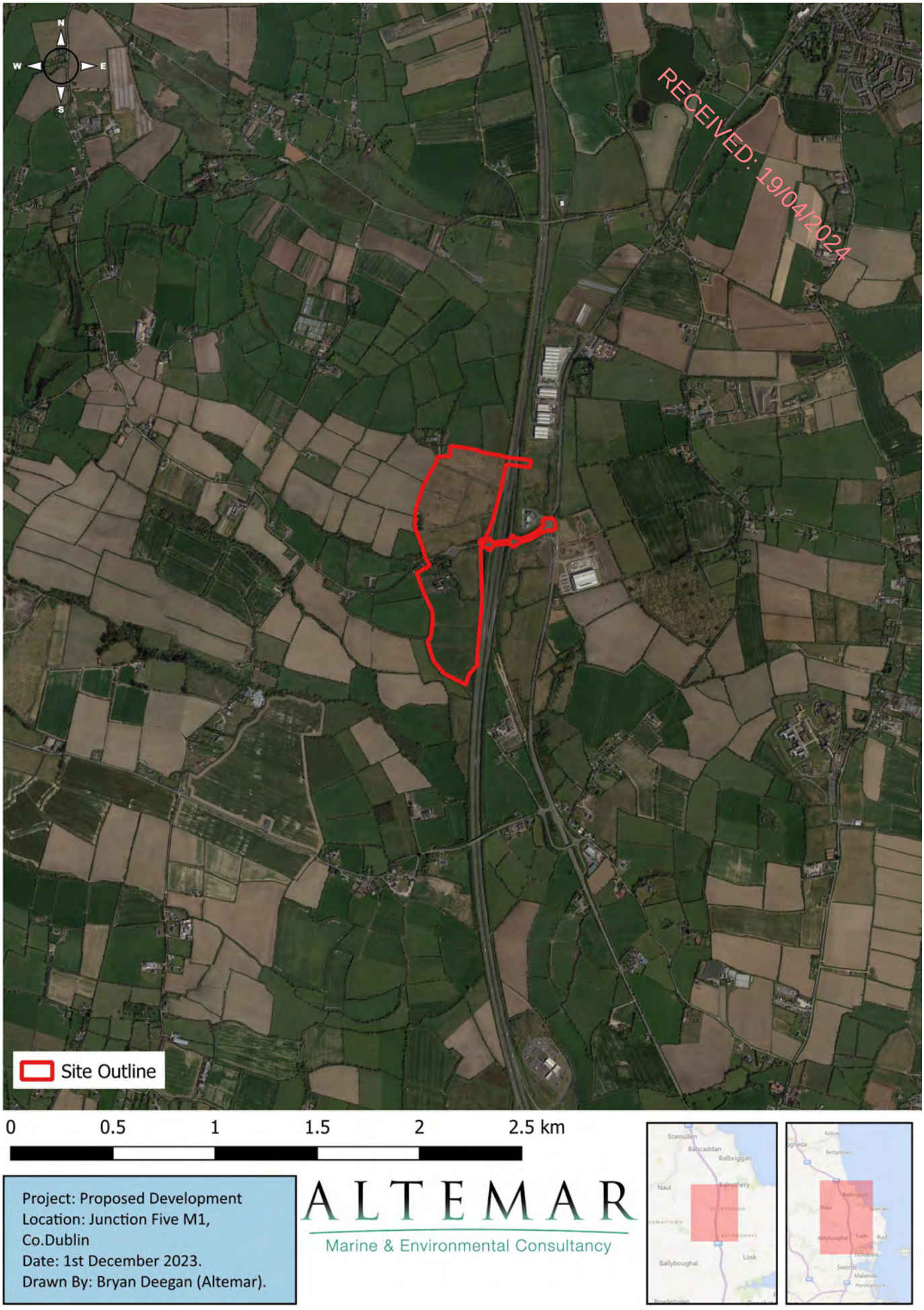

Figure 1. *Proposed site outline and location*

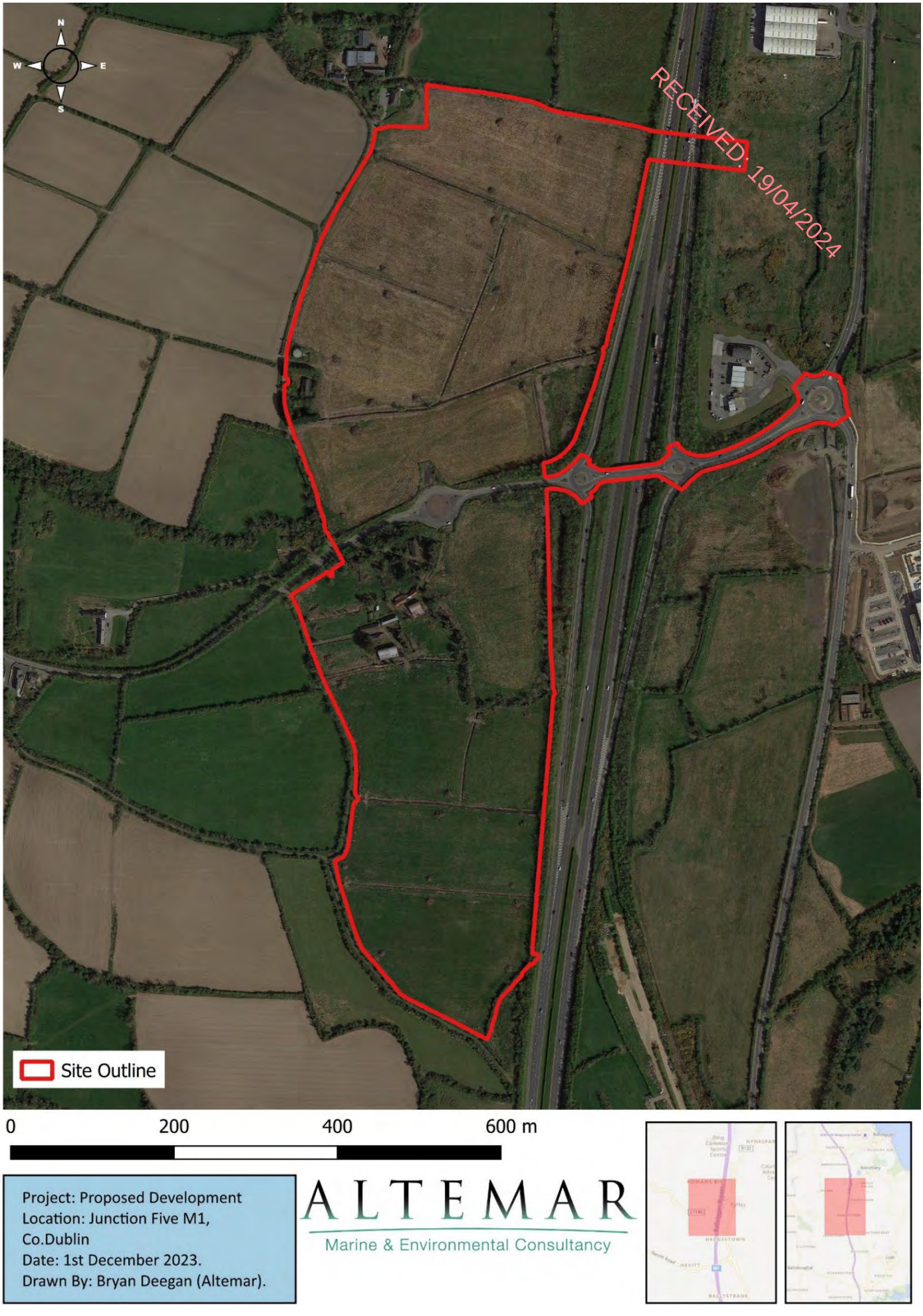

Figure 2. *Proposed site outline*

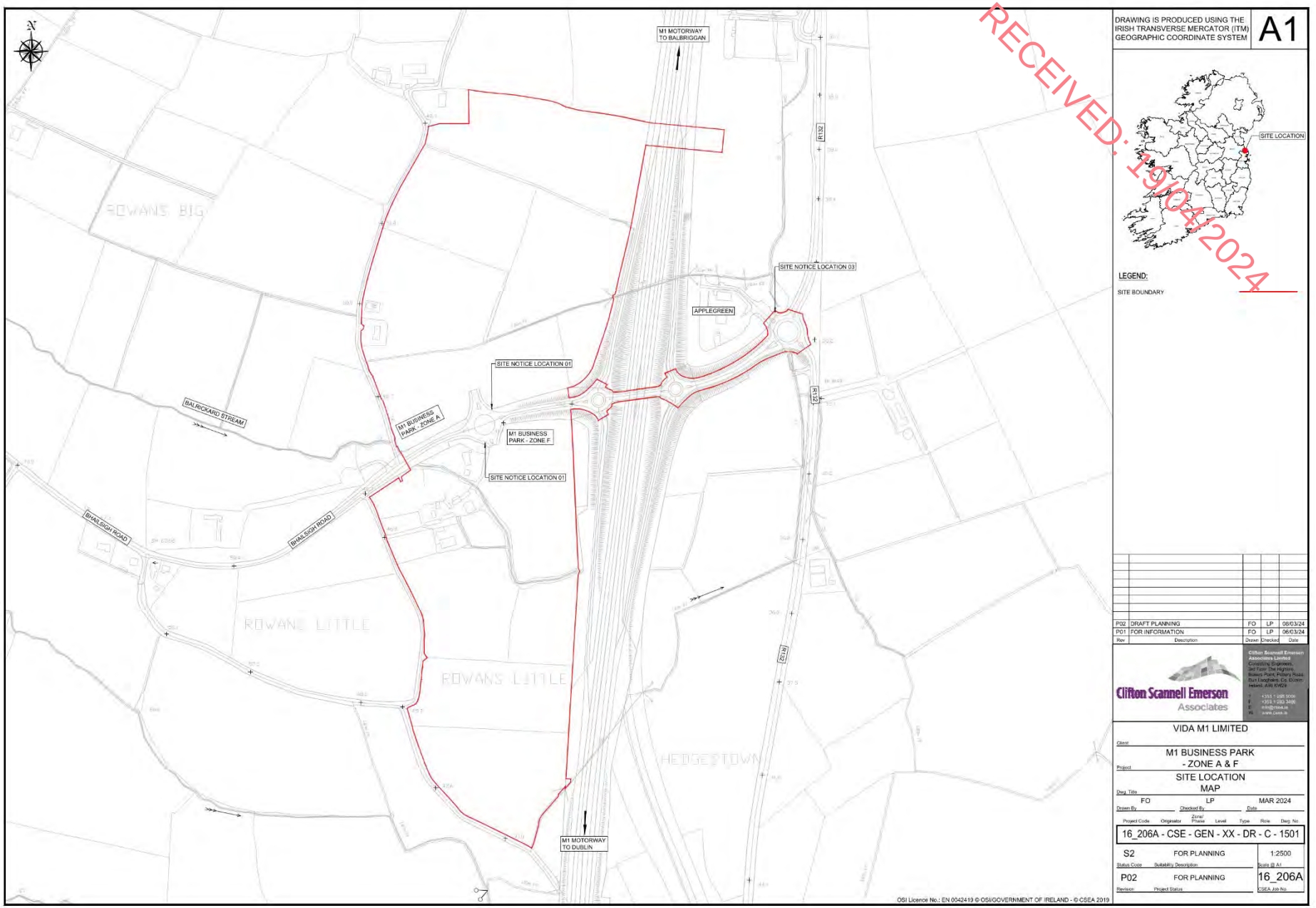

Figure 3. *Site location OS map*

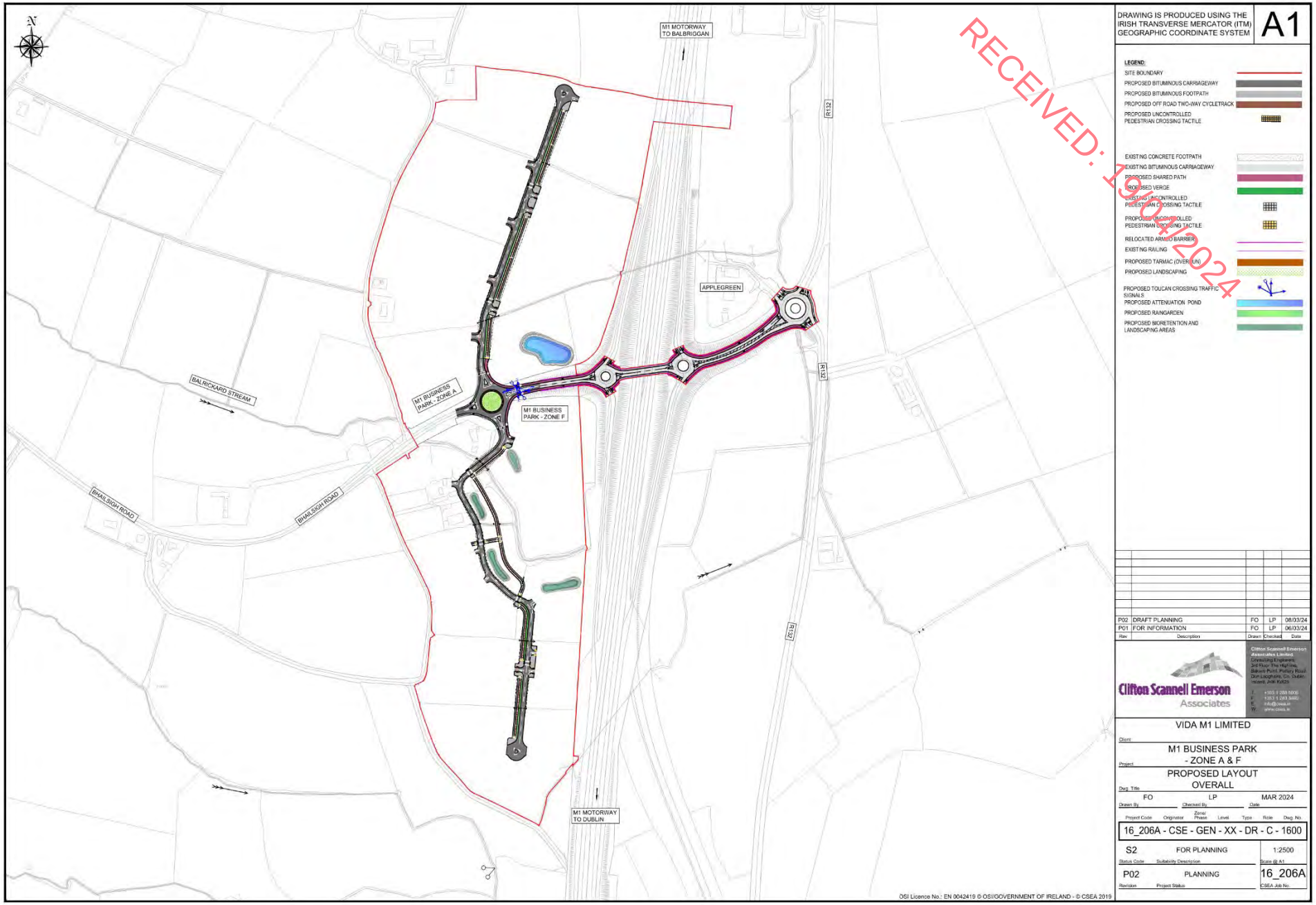

Figure 4. *Proposed overall layout*

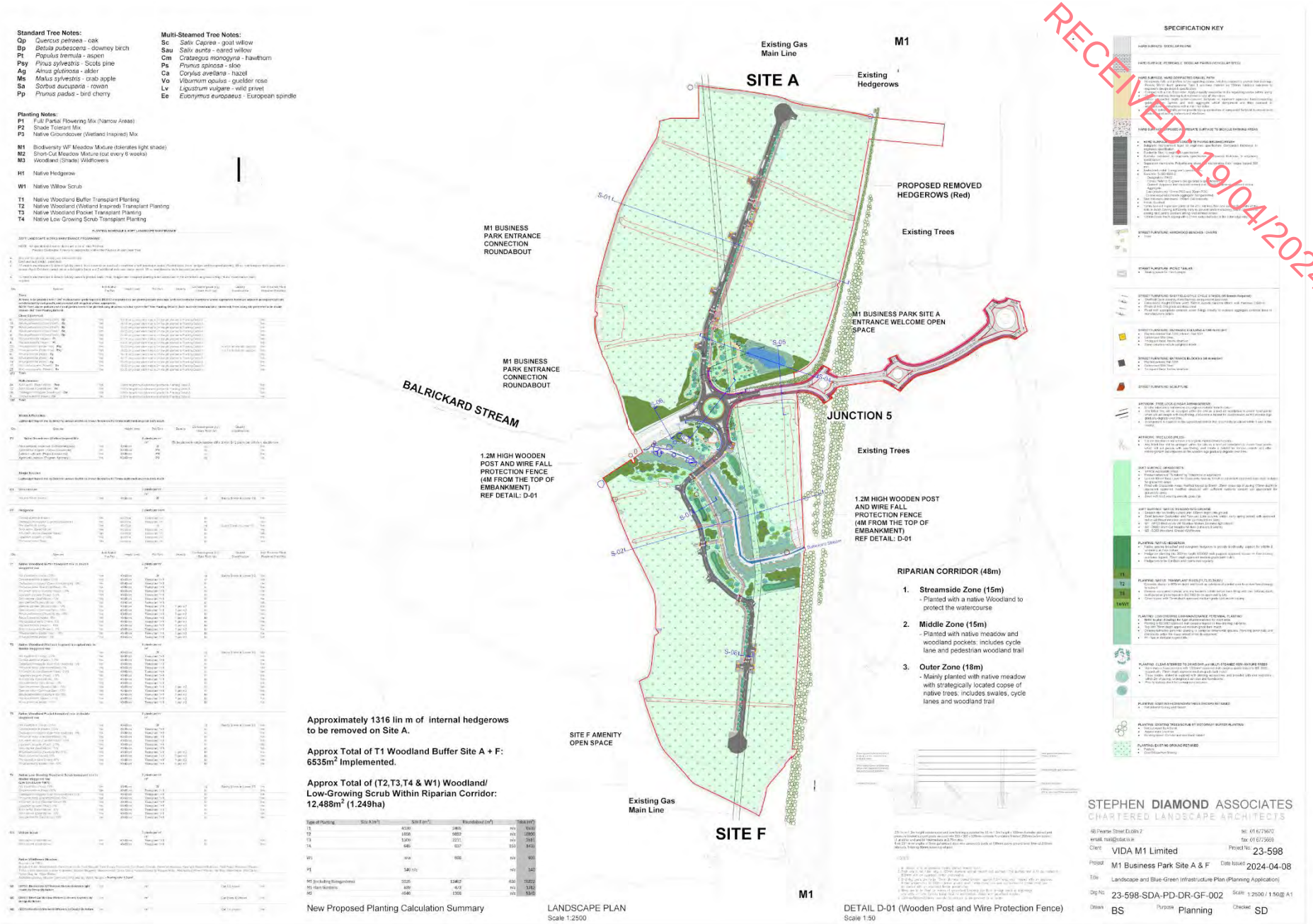

Figure 5. *Proposed landscape plan*

Drainage

An Engineering Planning Report has been prepared by Clifton Scannell Emerson Associates to accompany this planning application. It outlines the following drainage strategy for the proposed development:

'4. Surface Water Drainage

4.2 Site characteristics

4.2.1 Topography and soils

*As highlighted in **Section 2.1**, the topography of Zone A falls steeply from west-to-east towards the M1 motorway with an average elevation difference of approximately 12.5m. The low point is located on the south eastern corner the site where an existing agricultural channel drains via a culvert underneath Bhailsigh Road (L1140) along the eastern boundary of Zone F to the Balrickard Stream. Zone A contains multiple agricultural drainage channels, two primary channels draining west-to-east which crosses underneath the M1 Motorway via existing culverts and secondary channels connecting the primary channels in a north-south direction.*

The topography of Zone F is generally flatter compared to Zone A, with the northern half of the Zone F falling towards the Balrickard Stream. The stream crosses underneath Bhailsigh Road (L1140) via an existing 1m x 0.7m box culvert and drains through Zone F in a northwest-to-southeast direction for a distance of 260m, before turning east and crossing underneath the motorway via a 650mm diameter concrete culvert. An existing 7.7m wide agricultural stream crossing is located near the Zone F entrance which consists of a 1.2m x 0.7m box culvert providing access to the agricultural and residential buildings. The southern half of Zone F is drained via existing agricultural drainage ditches, either draining to the Balrickard Stream or to a small unnamed stream located on the southern boundary of the site.

4.4 Implementation Sustainable Drainage Systems (SuDS)

Implementation of Sustainable Drainage Systems (SuDS) and Nature-based Solutions (NBS)

*The proposed surface water management systems to service the present and future developments will incorporate several on-site SuDS and NBS mechanisms to achieve the maximum potential benefits as highlighted in **Section 4.1**.*

It is proposed to incorporate the following elements as part of the overall surface water drainage strategy for the development site:

Zone A Strategy

Source Control:

Future developments:

- Permeable paving, rainwater harvesting, swales, filter drains and if required, attenuation storage systems

Civil infrastructure:

- Raingardens

Site Control:

Attenuation/Detention Pond

A detention basin consists of a dry vegetated depression which impounds stormwater during the 1 in 100 years storm event and gradually releases it with the aid of a flow control device. It will be used mostly for volume control, but some pollutant removal will be achieved via settlement of suspended solids, biological treatment and minor infiltration.

Zone F Strategy

Source Control:

Future developments:

- Permeable paving, rainwater harvesting, swales, filter drains and if required, attenuation storage systems

Civil infrastructure:

- Raingardens for southern section

Site Control:

Bioretention Ponds

Bioretention ponds are vegetated drainage elements which can be used as components of a drainage system to store and treat surface water runoff before its outfalls to the receiving stream.

It is an effective treatment element which assists in the removal of suspended solids and associated heavy metals through the physical processes of settlement and filtration. The biological processes which occur as surface water passes through a bioretention pond is effective in the reduction of nutrients concentration in surface water resulting in an enhanced runoff water quality prior to discharge to the receiving stream.

***Rain gardens**:*
Rain gardens are proposed along the main access roads of Zones A and the southern portion of Zone F. The raingardens will act as the primary collection feature for runoff originating from the primary access roads, pedestrian paths and cycle tracks. Rain gardens are to consist of layers of compost/sandamended native soils or specified soil mixes (engineered soils). The gardens are designed to have a maximum storage of 200mm which includes 50mm freeboard, before overflowing/under-draining to the surface water conveyance network and ultimately being stored in attenuation or bioretention ponds. A typical detail of the 2.5m wide raingarden is indicated in Figure 4-3 and a schedule of areas consisting of raingardens is summarised in Table 4-5. As indicated below, the raingardens overflow and underdrain pipes will consist of 200mm diameter pipes installed at 20m intervals, with a 450mm deep planting/growing medium and 250mm deep drainage layer consisting of Type B granular materials.

Bioretention Ponds:
*Bioretention ponds are proposed in the "Outer Zone" of the riparian corridor located in Zone F. These ponds will consist of mixed planting into a specially designed engineered soil. These Nature-based Solutions (NBS) features will promote biodiversity with natural flowing and filtration of surface water runoff. As noted in the design criteria in **Section 4.3** previously, the design of the attenuation storage systems will be designed based on the 1 in 100-year storm event with a 20% allowance for climate change (+10% urban creep). All proposed ponds are proposed to have an outlet headwall modelled as an orifice in InfoDrainage along with a Hydrobrake flow control device manhole. Refer to Table 4-5 below for details on the bioretention ponds.*

Pollution Control Measures for the Site
As part of the surface water drainage network, it is proposed to provide a Class (I) bypass separator model (or similar approved) with a suitable capacity downstream of the proposed Hydrobrakes located near the outfall discharge points. The function of the separator is to intercept pollutants such as petroleum and oil and prevent their entry to the public drainage system or downstream watercourse, thus providing protection against contaminated surface water run-off.

5. Foul Water Drainage

5.1 Existing Foul Drainage

*As indicated on the Uisce Éireann Drawing No. IW-AGG-2018-000 included in **Appendix C**, no existing foul drainage systems are available on the proposed development sites Zone A and F. The existing M1 Business Park, located on the eastern side of the M1 Motorway in Courtlough, is serviced by a privately owned wastewater treatment plant (WWTP) located on the northern boundary of the business park as indicated in Figure 5-1. A plan layout of the WWTP is shown on the O'Connor Sutton Cronin Drawing Site Layout STP DWG-224-100 included in **Appendix C**.*
The WWTP is managed by Turbine, who confirmed the following:
• The WWTP capacity was designed to accommodate a Dry Weather Flow capacity of 225 m3/day or a Population Equivalency (P.E.) of 1,125 persons and a Biological Oxygen Demand (BOD) of 68 kg;
o PE equates to per capita usage of 200 l/day/c and 60g BOD5/day/c;
o PE can also be calculated with 150 l/day/c which equates to capacity of 1,500 PE;
o 200 l/day/c used in calculations.
• The current daily operating capacity of the plant does not exceed 30 m3/day which equates to 150 PE and 9 kg BOD5/day;
The above equates to an available capacity of 195 m3/day. In July 2022, planning permission (F22A/0255) was received for the decommissioning of the existing wastewater treatment plant (888 sq.m) located at the northern end of the M1 Business Park and replacing it with a proposed foul pumping station (317 sq.m). The development proposals also included for the pumping of wastewater for a distance of 2.8 km approx. via a proposed 125mm diameter DN ductile iron rising main with all ancillary works along the R132 as far as the northern end of Balrothery village.

5.2 Proposed Foul Drainage Network

5.2.1 Dry Weather Flow Calculation

Table 5-1 summarises the Dry Weather Flow (DWF) calculations carried out on the future development layouts presented in the M1 Business Park Master Plan. Each of the individual land parcels were estimated to have a low industrial water demand of 14 m3/ha/day with one parcel per zone to be a high demand user of 20 m3/ha/day. The demand calculations are based on the Uisce Éireann Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) published in July 2020. Refer to full demand calculations included in ***Appendix C****.*

As indicated below, the future development of Zone A and F would result in a combined P.E. of 927 persons, 55.62 kg BOD5/day and a DWF of 185 m3/day, which does not exceed the current available capacity of 975 PE, 59 kg BOD5/day or 195 m3/day highlighted above.

5.2.2 Proposed foul drainage infrastructure

The proposed foul drainage infrastructure is shown on Drawing 16_206A-CSE-GEN-XX-DR-C-1750 to 1760 included in ***Appendix C****. As indicated on the drawings, it is proposed to drain by gravity from the southern portion of Zone F all the way to the northern section of Zone A via a 300mm diameter foul sewer pipeline at a slope of 1:300. A pump station and 24-hour emergency storage tank are proposed on the northeastern corner of Zone A, where wastewater would be pumped underneath the M1 Motorway via a new 125mm diameter ductile iron rising main, which will be sleeved through an existing abandoned 200mm diameter watermain. Refer to Figure 5-1 for a layout of the above pumping station, emergency storage tank and rising main. The proposed rising main will discharge to a new manhole located on the eastern side of the motorway, which will be connected to the existing 300mm diameter foul sewer which drains northwards towards the M1 Business Park WWTP.*

CSEA investigated various options to cross the motorway with new pipelines, making use of the latest trenchless technologies available such as micro tunnelling, pipe jacking and horizontal directional drilling. The investigation found that crossing the motorway with these methods would not be feasible considering the low topography of the motorway, which would result in cover depths not exceeding 1.8m, which poses too great of a risk.

In accordance with the Uisce Éireann Code of Practice, a 24-hour emergency storage tank will be provided which equates to a storage volume of 200m3 based on the DWF. The insitu concrete tank shall be designed to have a minimum factor of safety against floatation for the empty emergency storage structure subjected to groundwater upward pressure of 1.2. The pump station design shall be carried out in accordance with the Uisce Éireann standard details drawing STD-WW-28, 28A and 28B.

The proposed foul drainage infrastructure was modelled using InfoDrainage Ultimate 2024 Version 2024.4 to analyse the velocities of the network. Refer to the analysis report included in ***Appendix C****. As the future development discharge patterns for the commercial units are unknown, a hypothetical discharge pattern was used, consisting of a double-peak hydrograph, with one peak occurring at 11:00am and another between 15:00pm-17:00pm. The first peak equals the design flow peak calculated in the demand figures included in* ***Appendix C****. The model shall be updated as discharge patterns becomes available in the planning for future developments. Figure 5-3 shows an example of the trade discharge pattern. From the dynamic modelling, the maximum inflow of 18.6 l/s was recorded, thus a pump capacity of 20 l/s was utilised which activates at a storage depth of 250mm. This resulted in 86% storage availability in the emergency storage tank. On the eastern side of the motorway, an energy dissipating manhole will be provided to reduce the velocities of the rising main before being connected to the existing 300mm diameter foul main, which drains to the existing M1 Business Park WWTP.'*

The foul and surface water layouts are shown in Figures 6 & 7 below.

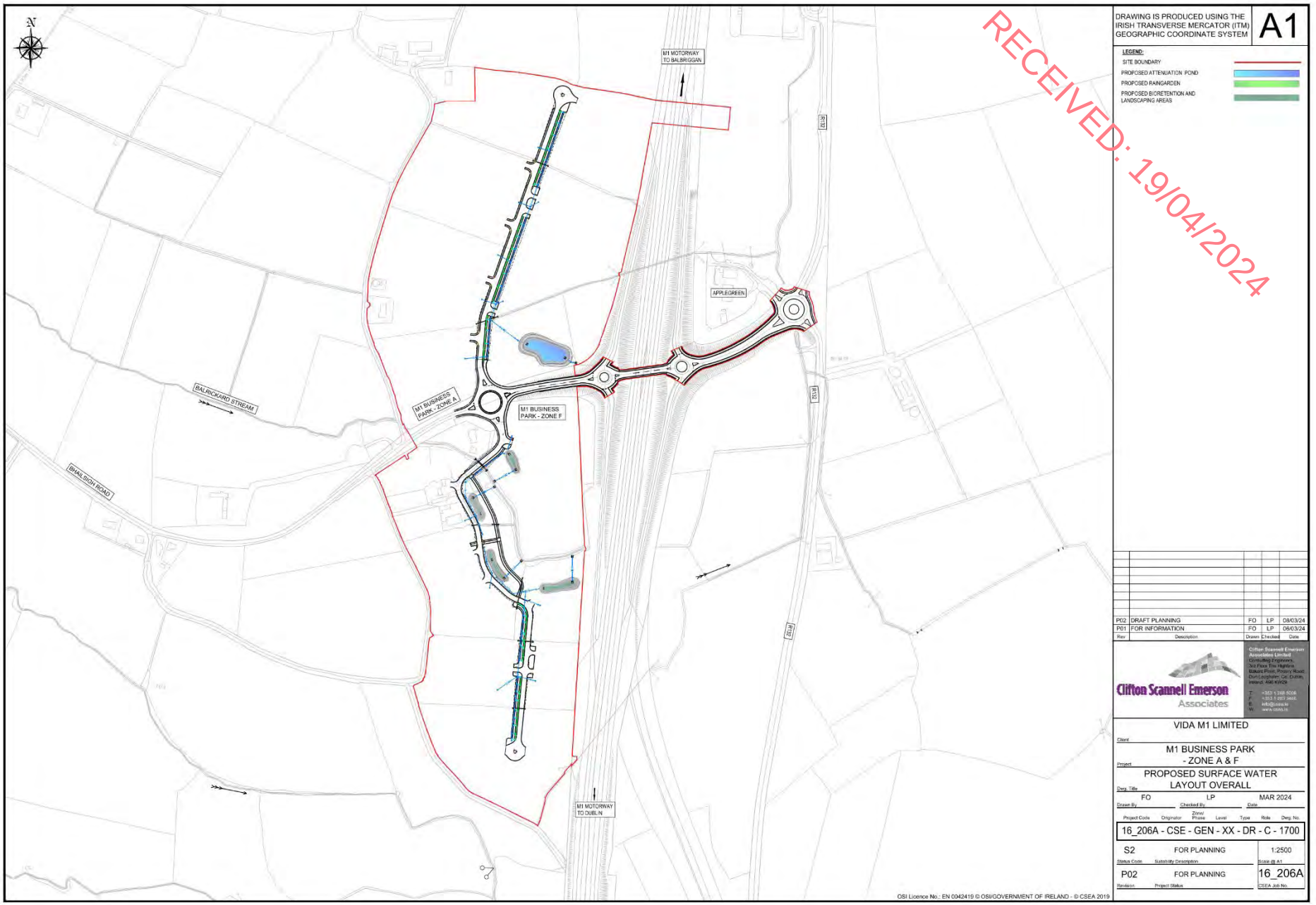

Figure 6. *Proposed surface water layout*

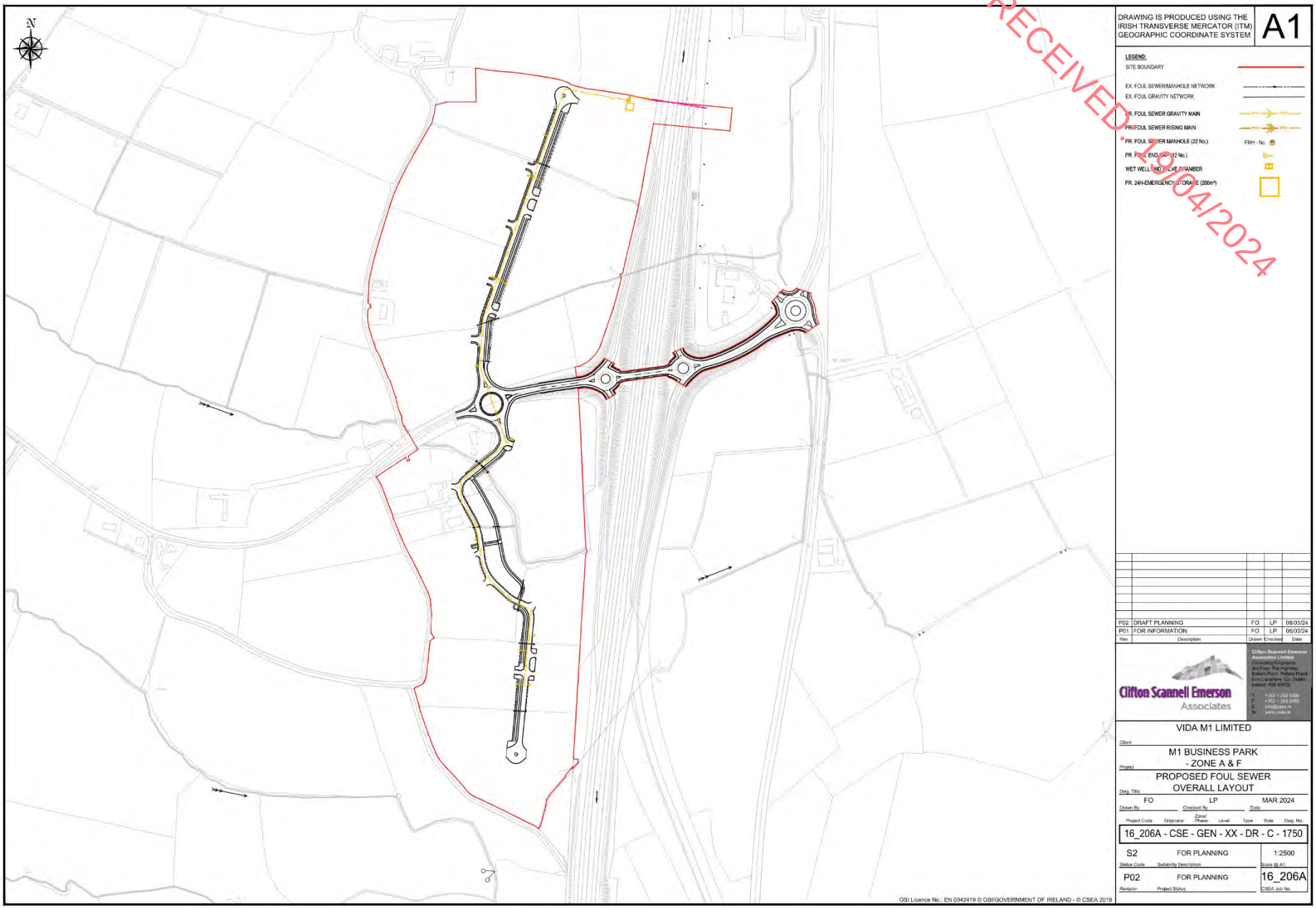

Figure 7. *Proposed foul water layout*

Flood Risk Assessment

A site-specific flood risk assessment was undertaken by McCloy Consulting. It concluded with the following table:

Identified Flood Mechanism	***Consequence***	***Summary & Mitigating Measures***
Fluvial flooding	*Risk to life and property*	*All proposed development is sited in Flood Zone C with the exception of the watercourse crossing which will provide freeboard to the design flood level.*
Effect of climate change	*Risk to life and property*	*All proposed development will be outside the climate change floodplain.*
Effect of the Development	*Increased risk to adjacent lands and developments*	*All proposed development is in Flood Zone C and as such, can have no impact on flood risk elsewhere. Hydraulic modelling has demonstrated that the watercourse crossing will not impact flood risk elsewhere.*
Pluvial / Surface Water flooding	*Risk to property on site, risk to adjacent lands and property.*	*On-site surface water flooding shall be mitigated by a site drainage system to comply with local authority drainage standards.* *Off-site surface water effects shall be mitigated by provision of SuDS components and no increase in rate and volume of runoff of surface water from the site as a result of the development.*

Construction Environment Management Plan

A Construction Environment Management Plan has been prepared by Clifton Scannell Emerson Associates to accompany this planning application. This report outlines the following:

'2.3 Construction Stage

It is anticipated that the construction of the proposed development will be phased. The construction of the access roads will be progressed as the demand for the individual land parcels identified in the Scott Tallon Walker Masterplan increases over time. It is anticipated that the Phase 1 will consist of a construction period of 12 months, with Phase 2 involving a construction period of 6 months as indicated in Figure 2-4 below. Phase 1 would entail the construction of all the services, utilities and drainage infrastructure required to service both Zone A and F in its entirety.

3.4.5 Site Environmental Manager

The main duties and responsibilities of the SEM include, but is not limited to the following:

- *Liaise with the Project Manager during the finalisation of the CEMP to assign individual duties and responsibilities bearing in mind the overall organisational structure, the nature of the Environmental Commitments and requirements and the proposed development.*
- *Ensuring that the CEMP is finalised, implemented and continuously updated.*
- *Liaise with ECoW and the ER on all Method Statements, any alternations to live documents and any other works to ensure protection of environmental receptors identified in the EIAR.*
- *Being familiar with the information in the pre-construction surveys, construction requirements, planning approval conditions and all relevant method statements.*
- *Being familiar with the contents, environmental commitments and requirements continued within the reference documentation listed in this CEMP.*
- *Being familiar with the baseline data collated during the compilation of the EIAR.*

- *Assisting Management in liaising with the ER/ECoW and the provision of information on environmental management during the construction of the Project.*
- *Assigning duties and responsibilities in relation to the CEMP, to individual members of the main contractor's project staff.*
- *Overseeing, ensuring coordination and playing a lead role in third-party consultations required statutorily, contractually and in order to fulfil best practice requirements.*
- *Liaising with the ER/ECoW in the approving of site-specific construction method statements.*
- *Bring any legal constraints that may occur during certain tasks to the attention of the relevant stakeholders.*
- *Hold copies of all permits and licenses provided by waste contractors.*
- *Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc have appropriate authorisation.*
- *Gathering and holding documentation with respect to waste disposal.*
- *Keeping up to date with changes in environmental best-practices, legislation and advising staff of such changes and incorporating them into the CEMP.*
- *Liaising with contractors and consultants prior to works.*
- *Procuring the services of specialist environmental consultants as required.*
- *Ensuring that all specialist environmental consultants are legally accredited and proven to be competent.*
- *Coordinating all the activities of the specialist environmental contractors.*
- *Ensuring that Environmental Induction Training is carried out on all personnel on site and ensuring that toolbox talks include aspects of Environmental Awareness and Training.*
- *Responsible for notifying the relevant statutory authority when environmental incidents occur and producing the relevant reports as required.*
- *Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licenses, certificates and planning permissions.*
- *Liaising with the designated licence holders and specific agent defined in the licence with respect to licences granted pursuant to the European Commission (EC) (Natural Habitats) Regulations 1997.*
- *Carrying out regular documented inspections and audits of the site to ensure that work is being carried out in accordance with the environmental control measures and relevant site-specific method statements.*
- *Preparation of the Emergency Incident Response Plan.*
- *Responsible for reviewing all environmental monitoring data and ensuring that they all comply with stated guidelines and requirements. and*
- *Liaising with management in preparing and inspection of site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment.*

3.4.7 Environmental Specialist Appointed by Contractor

To fulfil its obligations under the CEMP and to support its Site Environmental Manager, the contractor will be responsible for engaging suitably qualified and experienced professionals including where necessary the following (i.e. depending on the scope of the contract) competent experts:

- *Archaeologist;*
- *Ecologist;*
- *Aquatic Ecologist/Geohydrologist;*
- *Noise and Vibration Specialist;*
- *Air Quality and Dust Specialist;*
- *Land, Soils, and Contamination Specialist; and*
- *Water Specialist'*

Identification of Relevant European Sites

The proposed development site is not within a European site. As outlined in Practice Note PN01 from the Office of the Planning Regulator "Appropriate Assessment Screening for Development Management" (March 2021) "*The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source- Pathway-Receptor framework and not by arbitrary distances (such as 15 km)*."

The proposed development site is primarily a greenfield site consisting of arable land located within a suburban/agricultural environment at Rownas Big and Rowans Little, Balbriggan, Co. Dublin. The nearest European site is the North-West Irish Sea SPA (4.5 km) (Figure 9). A waterbody, The Balrickard Stream (also known as the Bracken/ Matt Stream) (Figure 10), traverses the site. The entire site, including Zone A and F, consists of existing agricultural drainage channels that flow to the Balrickard Stream, which drains the site flowing north-east to the Balrickard for approximately 6km to its outfall at Balbriggan (Figure 11). The North-West Irish Sea SPA is located at this outfall and so it is considered that there is a direct hydrological connection between the subject site and this SPA during construction and operational phases of the proposed development (Figure 12). In the absence of mitigation measures, there is the potential for pollutants to enter the Balrickard Stream via surface water discharge during operational phases of the proposed development and to impact upon designated downstream sites (North-West Irish Sea SPA). As the watercourse traverses the site, and drainage works are required in and around the Balrickard Stream, in the absence of mitigation measures, there is the potential for dust and other pollutants to become airborne and impact upon the Balrickard stream and downstream designated sites during the construction phase of development. Therefore, there is the potential for significant effects on the North-West Irish Sea SPA during construction and operation via this surface water pathway. It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage.

In the interest of carrying out a thorough assessment in line with both the Habitats Directive, and the precautionary principle, the ZoI was expanded for this assessment to include designated sites within 15km of the proposed development site, and sites beyond 15km with the potential for a hydrological connection. This was done in the interest of ensuring that any pathways, however indirect or remote, were considered. The Natura 2000 sites within 15km are seen in Figures 8 & 9. Watercourses and Natura 2000 sites proximate to the proposed development are demonstrated in Figures 10 - 12. All Natura 2000 sites within 15km are listed in Table 1. The conservation objectives, qualifying interests, and the potential impact of the development on each European site and qualifying interest, are outlined in Table 2. There is no direct or indirect pathway to Natura 2000 sites beyond 15km. No European Sites outside of the 15km could be impacted by the proposed development.

Table 1. Distances to NATURA 2000 sites within 15km (and beyond with a potential hydrological connection)

Natura 2000 Site	Distance	Direct Hydrological / Biodiversity Connection
Special Areas of Conservation (SAC)		
Rockabill to Dalkey Islands SAC	9.5 km	No
Rogerstown Estuary SAC	6.2 km	No
Malahide Estuary SAC	9.8 km	No
Special Protection Areas (SPA)		
North-West Irish Sea SPA	4.5 km	**Yes**
River Nanny Estuary and Shore SPA	9.2 km	No
Skerries Islands SPA	7.7 km	No
Rockabill SPA	10 km	No
Rogerstown Estuary SPA	6.4 km	No
Malahide Estuary SPA	9.9 km	No
Lambay Island SPA	13.9 km	No

Table 1. Initial screening of European sites within 15km and European sites beyond 15km with potential of hydrological connection to the proposed development

European Site Code	Name	Screened IN/OUT	Details/Reason
Special Areas of Conservation			
IE003000	Rockabill to Dalkey Island SAC	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Reefs [1170] *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** The proposed development is located approximately 9.5 km from the SAC. There is no direct pathway from the site to this SAC. There is a weak indirect hydrological pathway to this SAC via surface water drainage to The Balrickard Stream during operation and construction. However, given the minimum distance from the proposed development site to this SAC 9.5km) and the substantial marine environment between the Balrickard Stream outfall at Balbriggan Beach and this SAC, any pollutants, dust or silt laden run off will be dispersed, diluted, and ultimately settle within the surface water drainage network and marine environment at Balbriggan Beach. It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**

European Site Code	Name	Screened IN/OUT	Details/Reason
IE000208	Rogerstown Estuary SAC	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **Potential Impact** The proposed development is located approximately 6.2 km from the SAC. There is no direct or indirect pathway from the site to this SAC. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**
IE000205	Malahide Estuary SAC	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **Potential Impact** The proposed development is located approximately 9.8 km from the SAC. There is no direct or indirect pathway from the site to this SAC. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**
Special Protection Areas			
IE004236	North-West Irish Sea SPA	**IN**	**Conservation Objectives** The maintenance of habitats and species within European sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

European Site Code	Name	Screened IN/OUT	Details/Reason
			Qualifying Interests Red-throated Diver (*Gavia stellata*) [A001] Great Northern Diver (*Gavia immer*) [A003] Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Common Scoter (*Melanitta nigra*) [A065] Little Gull (*Larus minutus*) [A177] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Great Black-backed Gull (*Larus marinus*) [A187] Kittiwake (*Rissa tridactyla*) [A188] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Little Tern (*Sterna albifrons*) [A195] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204] **Potential Impact** The development site is located within a suburban area approximately 4.5 km from this SPA. There is a direct hydrological pathway from the proposed development to this SPA during construction and operation via the Balrickard stream. In the absence of mitigation measures, there is the potential for pollutants to enter the Balrickard Stream via surface water discharge during operational phases of the proposed development and to impact upon this SPA. As the watercourse traverses the site and works will be required in and around the stream, in the absence of mitigation measures, there is the potential for dust and other pollutants to impact upon the Balrickard Stream and cause significant effects on this SPA during the construction phase of development. Out of an abundance of caution, and in the absence of mitigation, it is considered that there is the potential for significant downstream effects on the qualifying interests of The North-West Irish Sea via this direct hydrological pathway. It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage. Mitigation measures are required to protect the qualifying interests of this SPA due to the direct hydrological pathway via the Balrickard Stream during construction and operational phases of the proposed development. **Stage 2 AA (NIS) is Required.**
IE004158	River Nanny Estuary and Shore SPA	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall

European Site Code	Name	Screened IN/OUT	Details/Reason
			maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Herring Gull (*Larus argentatus*) [A184] Wetland and Waterbirds [A999] **Potential Impact** The proposed development is located over 9.2 km from the SPA. There is no direct pathway to this SPA. There is an indirect hydrological pathway to this SPA via surface water drainage to The Balrickard Stream during operation and construction. However, given the minimum distance from the proposed development site to this SPA (9.2km) and the substantial marine environment between the Balrickard Stream outfall at Balbriggan Beach and this SPA, any pollutants, dust or silt laden run off will be dispersed, diluted, and ultimately settle within the surface water drainage network and marine environment at Balbriggan Beach. It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage. In the absence of mitigation, no significant effects on the qualifying interests of this SPA are likely. **No significant effects likely**
IE004122	Skerries Islands SPA	**OUT**	**Conservation Objectives** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interests** Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Purple Sandpiper (*Calidris maritima*) [A148] Turnstone (*Arenaria interpres*) [A169] Herring Gull (*Larus argentatus*) [A184] **Potential Impact** The proposed development is located over 7.7 km from the SPA. There is no direct pathway to this SPA. There is an indirect hydrological pathway to this SPA via surface water drainage to The Balrickard Stream during operation and construction. However, given the minimum distance from the proposed development site to this SPA (7.7km) and the substantial marine environment between the Balrickard Stream outfall at Balbriggan Beach and this SPA, any pollutants, dust or silt laden run off will be dispersed, diluted, and ultimately settle within the surface water drainage network and marine environment at Balbriggan Beach.

European Site Code	Name	Screened IN/OUT	Details/Reason
			It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage. In the absence of mitigation, no significant effects on the qualifying interests of this SPA are likely. **No significant effects are likely.**
IE004014	Rockabill SPA	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Purple Sandpiper (*Calidris maritima*) [A148] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] **Potential Impact** The proposed development is located over 10 km from the SPA. There is no direct pathway to this SPA. There is an indirect hydrological pathway to this SPA via surface water drainage to The Balrickard Stream during operation and construction. However, given the minimum distance from the proposed development site to this SPA (10km) and the substantial marine environment between the Balrickard Stream outfall at Balbriggan Beach and this SPA, any pollutants, dust or silt laden run off will be dispersed, diluted, and ultimately settle within the surface water drainage network and marine environment at Balbriggan Beach. It is proposed to discharge foul drainage from the proposed development site to the M1 Business Park WwTP once the required works are completed. No significant effects on Natura 2000 sites are foreseen via foul drainage. In the absence of mitigation, no significant effects on the qualifying interests of this SPA are likely. **No significant effects are likely.**
IE004015	Rogerstown Estuary SPA	**OUT**	**Conservation Objectives** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. To maintain or restore the favourable conservation condition of the wetland habitat at Lough Iron SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. **Qualifying Interests** Greylag Goose (*Anser anser*) [A043] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Shoveler (*Anas clypeata*) [A056] Oystercatcher (*Haematopus ostralegus*) [A130]

European Site Code	Name	Screened IN/OUT	Details/Reason
			Ringed Plover (*Charadrius hiaticula*) [A137] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999] **Potential Impact** The proposed development is located over 6.4 km from the SPA. There is no direct or indirect pathway from the site to this SPA. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**
IE004025	Malahide Estuary SPA	**OUT**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Goldeneye (*Bucephala clangula*) [A067] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999] **Potential Impact** The proposed development site is located within a suburban / agricultural environment, 9.9 km from this SPA. There is no direct or indirect pathway from the site to this SPA. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**
IE004069	Lambay Island SPA	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall

European Site Code	Name	Screened IN/OUT	Details/Reason
			maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Fulmar (*Fulmarus glacialis*) [A009] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Greylag Goose (*Anser anser*) [A043] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204] **Potential Impact** The proposed development site is located within a suburban / agricultural environment, 13.9 km from this SPA. There is no direct or indirect pathway from the site to this SPA. No potential impact is foreseen. The construction and operation of the proposed development will not impact on the conservation interests of the site. **No significant effects are likely.**

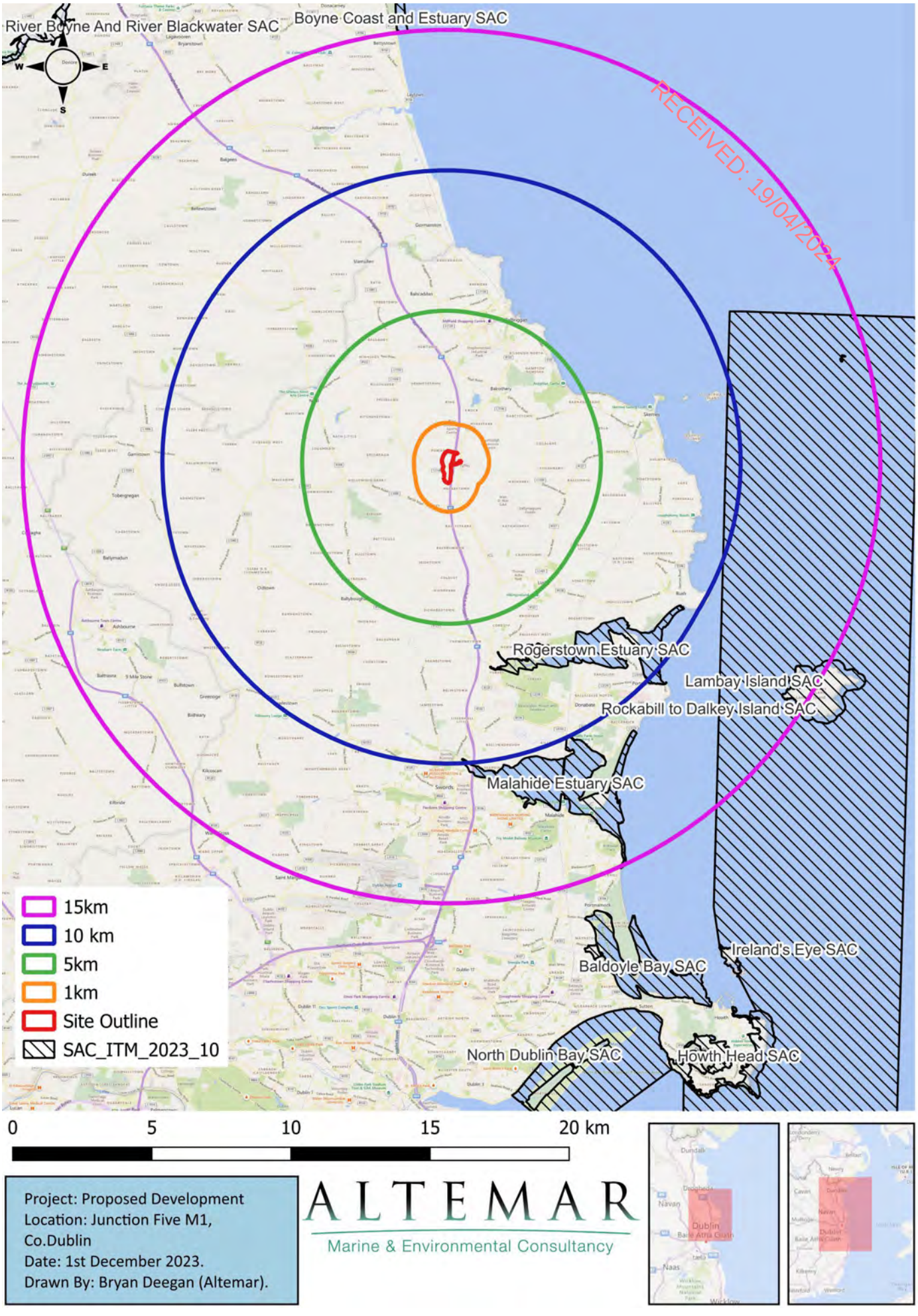

Figure 8. *Special Areas of Conservation (SAC) within 15km of the subject site*

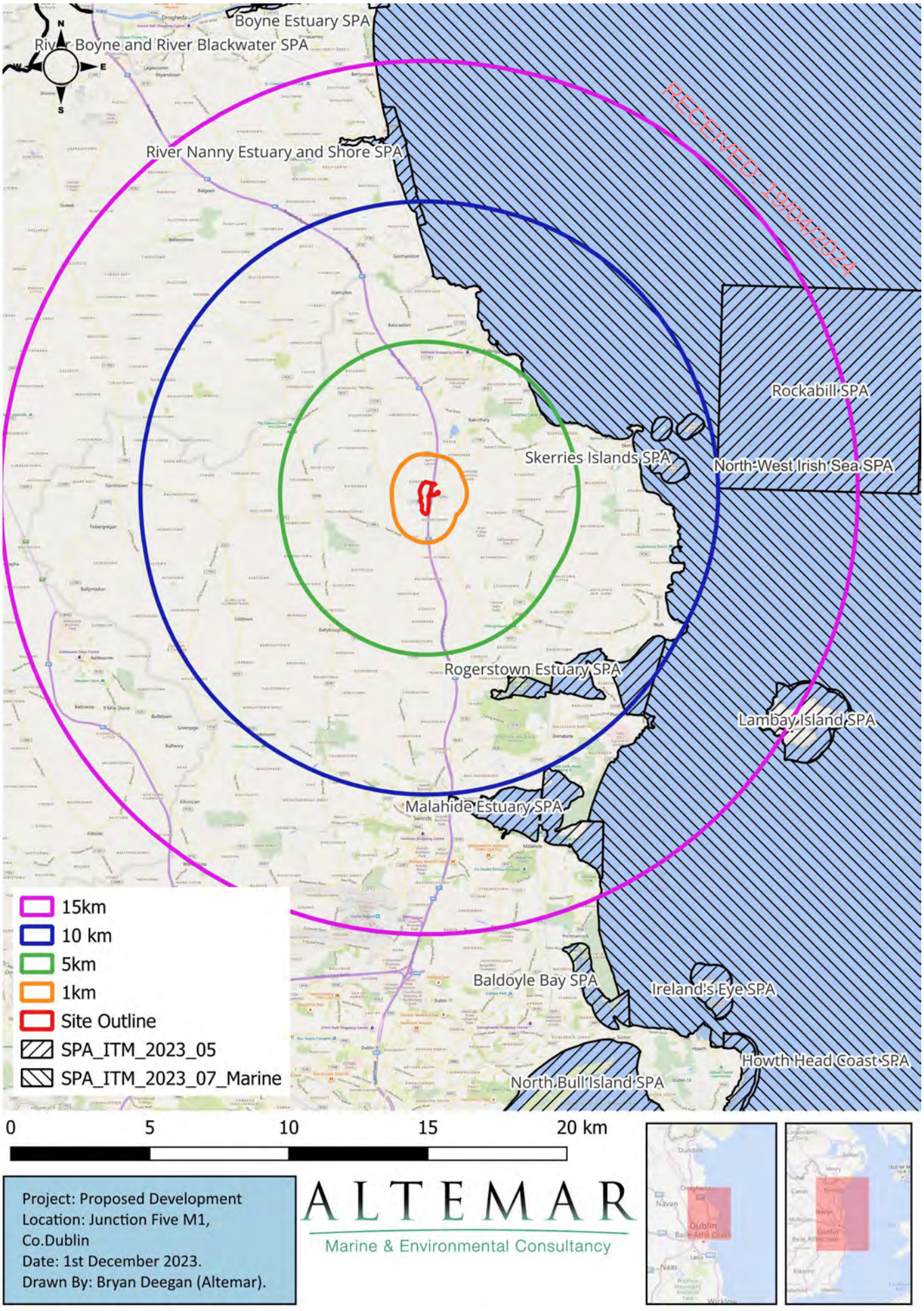

Figure 9. *Special Protection Areas (SPA) and Marine SPAs within 15km of the subject site*

Figure 10. *Waterbodies within and surrounding the subject site*

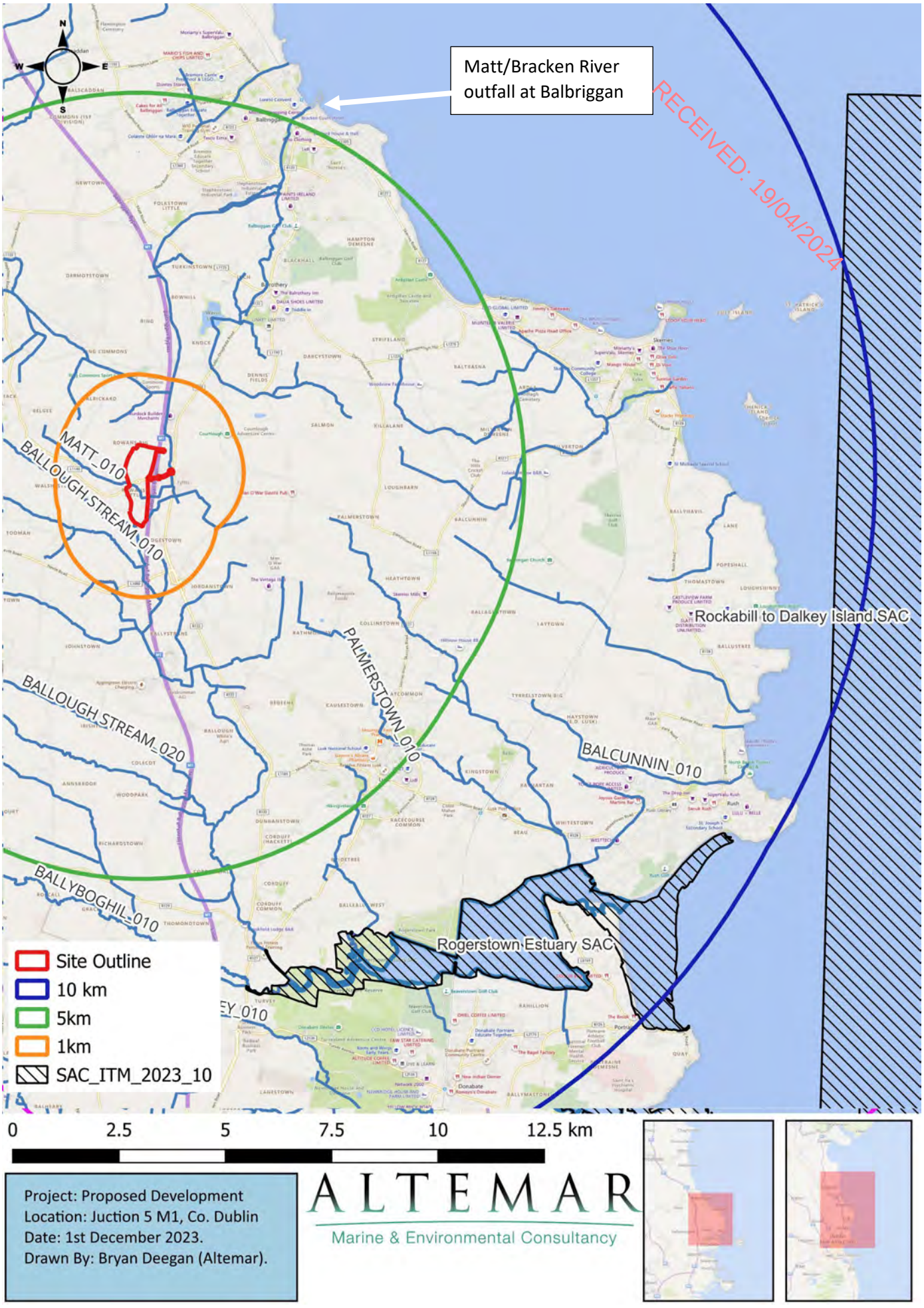

Figure 11. *Waterbodies and SACs located proximate to the subject site*

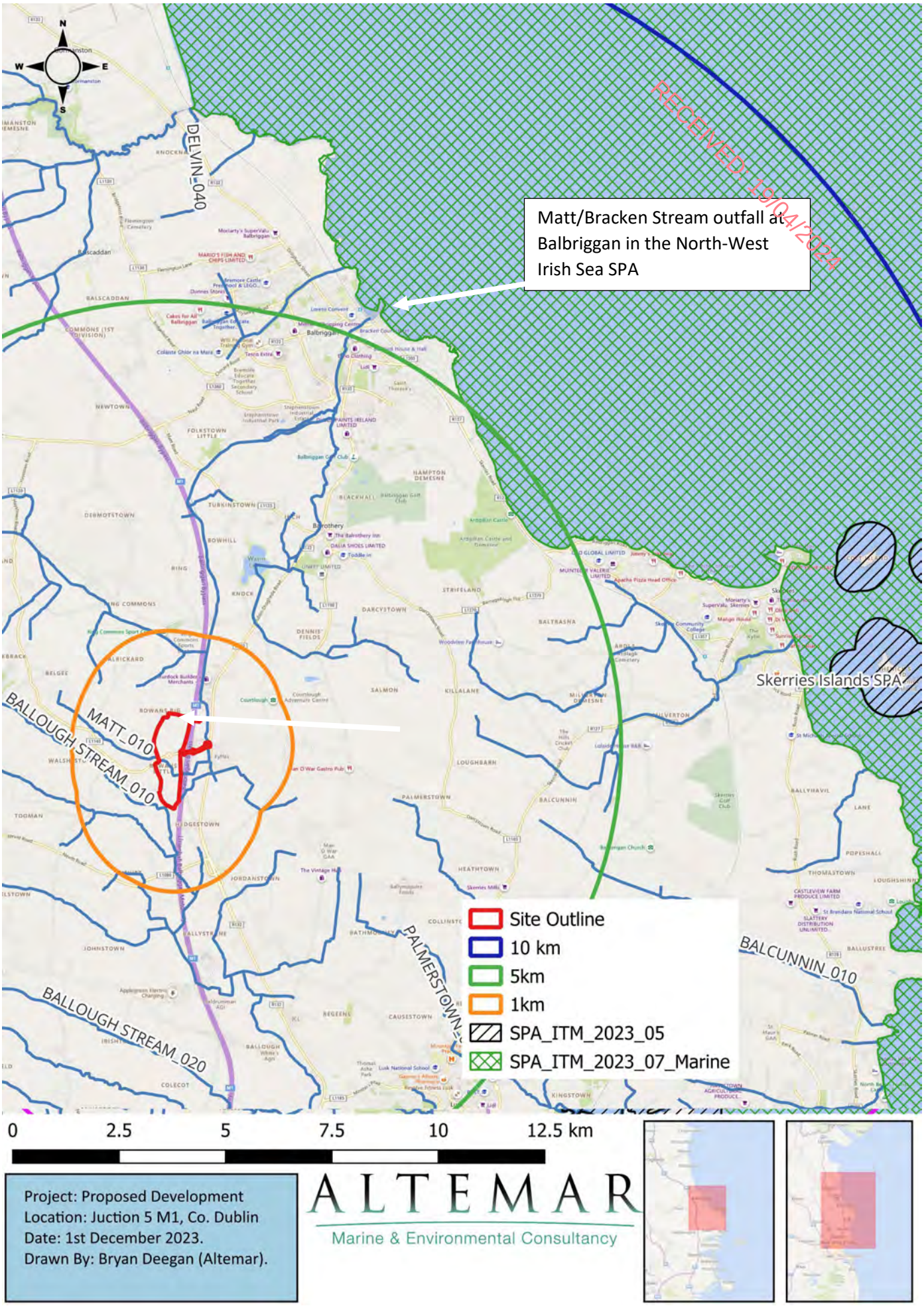

Figure 12. *Waterbodies and SPAs located proximate to the subject site*

In-Combination Effects

There are several development proposals located in the areas surrounding the subject site. The following is a list of planning application(s) as identified on the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal:

Table 3. In-combination effects considered

Ref. No.	Address	Proposal
F18A/0565	M1 Business Park, Courtlough, Balbriggan, Co. Dublin	The development will consist of the demolition of an existing single storey derelict building and clearance of existing site vegetation to allow for the construction of an access road, junction treatments works with the R132, pedestrian facilities, surface water drainage, foul water drainage, water main infrastructure, flood attenuation basin, landscaping and all other associated site services and utilities necessary to facilitate the site development.
F18A/0593	M1 Business Park, Courtlough, Balbriggan, Co. Dublin	For the construction of a production and distribution warehouse building of 7939 sq.m with loading bays and yard for articulated lorries; and attached 2-storey office building of 1385 sq.m with first floor terrace and setback roof plant enclosure of 68 sq.m; external single storey plant enclosure at ground level of 622 sq.m separate single storey ESB substation, electrical switch room and transformer room at ground level of 49 sq.m; landscaped surface staff and visitor car parking; covered bike parking, smoking shelter, 2 no. vehicular entrances from access road, one of which is also a pedestrian entrance; signage on building and at entrances; boundary fencing and extensive boundary landscaping and all other associated site services and utilities necessary to facilitate the site development.
F22A/0258	Unit 1 & 2,, Courtlough,, M1 Business Park, County Dublin	The installation of 700 Sqm of roof mounted solar panels and all associated site works.
F22A/0255	M1 Business Park, Courtlough, Balbriggan, Co. Dublin.	The decommissioning of an existing wastewater treatment plant (888 sq.m) located at the northern end of the M1 Business Park and replacing it with a proposed foul pumping station (317 sq.m), construction of an access road and footpath, berm embankment and landscaping with all ancillary works necessary to facilitate the site development. The proposed development also includes for the pumping of wastewater for a distance of 2.8 km approx, via a proposed 125mm diameter DN ductile iron rising main with all ancillary works along the R132 as far as the northern end of Balrothery village.
F18A/0733	Ace Express, M1 Business Park, Balbriggan, Co Dublin	For new 67.5 x 18 x 11.7 m high (1184m²) single storey storage extension to south elevation and 52 x 12.8 x 5.8m high (643m²) single storey storage extension to west elevation.
F23A/0361	Courtlough, Balbriggan, Co. Dublin	Permission Consequent on a Grant of Outline Permission , reference No. F21A/0591 for (i) construction of 1no. two storey four bedroom dwelling; (ii) new vehicular access from existing lane off L1155 Balrothery Road; and (iii) all associated ancillary works necessary to facilitate the development including wastewater treatment system and percolation area, SUDS water drainage, site works, Boundary treatments and Landscaping.
F21A/0211	Courtlough Shooting Grounds, Courtlough, Balbriggan, Co Dublin, K32 KD	(1) Construction of single storey changing facility (356m²) comprising reception area, WC, changing rooms (male and female), wet suit room, shower room, mechanical room and covered outdoor patio. (2) Construction of a 2-storey indoor activity centre (979m²) comprising open plan activity area, reception, cafe, seating area, WC, stairwell, and covered outdoor patio at ground floor level. First floor will comprise an office, 3 no. classrooms, and WC. (3) Provision of new 1-way vehicular entrance into the site from the Balrothery Road (LP01155). Vehicles will exit via the existing entrance onto the same road. (4) Provision of car parking comprising 42 no. car parking spaces and 3 no. mobility parking spaces and

Ref. No.	Address	Proposal
		(5) SUDS drainage, foul treatment system, landscaping, boundary treatments and all associated works necessary to facilitate the development.
F23A/0361	Courtlough, Balbriggan, Co. Dublin	Permission Consequent on a Grant of Outline Permission , reference No. F21A/0591 for (i) construction of 1no. two storey four bedroom dwelling; (ii) new vehicular access from existing lane off L1155 Balrothery Road; and (iii) all associated ancillary works necessary to facilitate the development including wastewater treatment system and percolation area, SUDS water drainage, site works, Boundary treatments and Landscaping.
F22A/0066	Hazardstown Road (Matt Lane), Ring, Balbriggan, Dublin	Planning permission is requested for extension to front of existing garage and change of use to a Montessori-pre-school use, along with all associated siteworks (proposed operating hours from 09.15am - 12.30 pm). AI received 13/10/2022 AI deemed significant **

Following an analysis of development proposals proximate to the subject site, it is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on Natura 2000 sites are likely as a result of the proposed development in combination with other projects. No in combination effects are foreseen.

No projects in the vicinity of the proposed development would be seen to have a significant in combination effect on Natura 2000 sites.

AA Screening Conclusions

An initial screening of the proposed works, using the precautionary principle (without the use of any mitigation measures) and the Source/Pathway/Receptor links between the proposed works and Natura 2000 sites with the potential to result in significant effects on the conservation objectives and qualifying interests of the Natura 2000 sites was carried out in Table 2. Based on best scientific knowledge and objective information and assessment, the possibility of significant effects caused by the proposed project was excluded for the following Natura 2000 sites:

Special Areas of Conservation
Rockabill to Dalkey Islands SAC
Rogerstown Estuary SAC
Malahide Estuary SAC

Special Protection Areas
River Nanny Estuary and Shore SPA
Skerries Islands SPA
Rockabill SPA
Rogerstown Estuary SPA
Malahide Estuary SPA
Lambay Island SPA

The project is limited in scale and extent and the potential zone of influence is restricted to the immediate vicinity of the proposed development. However, in the absence of mitigation measures there is potential for silt laden material and contaminated surface water drainage to enter the Balrickard Stream and impact upon downstream Natura 2000 sites, in this case the North-West Irish Sea SPA.

An NIS is required in respect of the effects of the project on North-West Irish Sea SPA because it cannot be excluded on the basis of best objective scientific information following screening, in the absence of control or mitigation measures in relation to pollution (silt, dust, pollution and runoff) during construction and operation, that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the named European Site/s.

An NIS or Stage 2 Appropriate Assessment is not required for the effects of the project on all other listed Natura 2000 sites above because it can be excluded on the basis of the best objective scientific information following screening that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the European Site/s.

NIS is required due to the potential for significant effects on the North-West Irish Sea SPA in the absence of mitigation.

Further Information on European Site Screened in for NIS

North-west Irish Sea SPA 004236

The North-west Irish Sea SPA is a recently designated SPA. As outlined in the North-west Irish Sea Synopsis[2] (NPWS, version date 17.7.2023)

"*The North-west Irish Sea cSPA constitutes an important resource for marine birds. The estuaries and bays that open into it along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands. These marine areas are also important for seabirds outside the breeding period.*

This SPA extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333km^2 in area. This SPA is ecologically connected to several existing SPAs in this area.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Common Scoter, Red-throated Diver, Great Northern Diver, Fulmar, Manx Shearwater, Shag, Cormorant, Little Gull, Kittiwake, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Little Tern, Roseate Tern, Common Tern, Arctic Tern, Puffin, Razorbill and Guillemot.

The breeding seabird species listed for those SPAs, which abut the North-West Irish Sea SPA are: Fulmar (Lambay Island SPA); Cormorant (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Shag (Skerries Island SPA; Lambay Island SPA); Lesser Black-backed Gull (Lambay Island SPA); Herring Gull (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Kittiwake (Lambay Island SPA; Ireland's Eye SPA; Howth Head SPA); Roseate Tern (Rockabill SPA); Common Tern (Rockabill SPA;); Arctic Tern (Rockabill SPA); Little Tern (Boyne Estuary SPA); Guillemot (Lambay Island SPA, Ireland's Eye SPA); Razorbill (Lambay Island SPA, Ireland's Eye SPA); and Puffin (Lambay Island SPA). The Common Tern population that is listed for the nearby South Dublin Bay and River Tolka Estuary SPA is also likely to use this SPA as a foraging resource.

Informed by two surveys of the western Irish Sea region in 2016 an estimated 120,232 and 34,626 individual marine birds occurred in this SPA during autumn and winter respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are: Red-throated Diver (538), Fulmar (506), Little Gull (391), Kittiwake (944), Black-headed Gull (508), Common Gull (2,866), Herring Gull (6,893), Great Black-backed Gull (2,096), Razorbill (4,638) and Guillemot (13,914).

The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea SPA is 13,010 and is of international importance. The estimated 2016 autumn and winter abundances of Great Northern Diver in the North West Irish Sea SPA is 248 and 230 respectively and are of international importance. The estimated abundances of Common Scoter over parts of this SPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of international importance."

[2] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004236.pdf

Conservation Objectives of North-west Irish Sea SPA 004236 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed development on each of the features of interest of North-west Irish Sea SPA 004236 are seen in Table 4.

Table 4. *The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of North-west Irish Sea SPA.*

Annex Species/Habitats-Qualifying Interest	**Overall Conservation Status**	*Site Specific Conservation Objectives*, attributes, targets and perceived impacts.
Common Scoter (*Melanitta nigra*) [A065] Red-throated Diver (*Gavia stellata*) [A001] Great Northern Diver (*Gavia immer*) [A003] Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Cormorant (*Phalacrocorax carbo*) [A017] Little Tern (*Sterna albifrons*) [A195] Kittiwake (*Rissa tridactyla*) [A188] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Roseate Tern (*Sterna dougallii*) [A192] Arctic Tern (*Sterna paradisaea*) [A194] Puffin (*Fratercula arctica*) [A204] Razorbill (*Alca torda*) [A200] Guillemot (*Uria aalge*) [A199] Little Gull (*Hydrocoloeus minutus*) (A862) Common Tern (*Sterna hirundo*) (A193)	**[A065] Red;** **[A001] Amber;** **[A003] Amber;** **[A009] Amber;** **[A013] Amber;** **[A017] Amber;** **[A195] Amber;** **[A188] Red;** **[A179] Amber;** **[A182] Amber;** **[A183] Amber;** **[A184] Amber;** **[A192] Amber;** **[A194] Amber;** **[A204] Red;** **[A200] Amber;** **[A199] Amber;** **[A862] Amber;** **[A193] Amber;**	**To maintain the favourable conservation condition of the qualifying interests in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:** *(Attribute.* Target) *Population Size.* Long term SPA population trend is stable or increasing *Spatial Distribution.* Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population *Forage spatial distribution, extent, abundance and availability.* Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target *Disturbance across the site*. The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution. *Barriers to connectivity.* The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA. **Potential Effect** Given the nature of the works, all of these effects would be expected to be localised in nature restricted to the immediate vicinity of the site. However, without the presence of mitigation measures there is a potential for downstream effects if significant quantities of pollution or silt were introduced into the Bremore Stream via construction works with potential for downstream impacts on North-West Irish Sea SPA. The habitats of conservation interest of this SPA are not on site. However, the range of the species that are of conservational interest may be located downstream of the proposed works. Construction works have the potential for downstream impacts on aquatic biodiversity through the introduction of silt and petrochemicals. Existing drainage networks, surface water runoff, haulage, storage of topsoil or works in the vicinity of the drainage networks onsite and

Annex Species/Habitats-Qualifying Interest	Overall Conservation Status	*Site Specific Conservation Objectives*, attributes, targets and perceived impacts.
		adjacent to the subject site could lead to dust, hazardous material, soil or silt laden runoff entering the Bremore Stream via drainage networks. Impacts on the SPA from upstream sources have the potential to directly impact on the qualifying interests of the SPA in the absence of mitigation measures. In the absence of mitigation measures there is the potential to impact on the distribution number and range of the following qualifying interests if significant quantities of silt and pollution were to enter the Bremore Stream: • Common Scoter (*Melanitta nigra*) [A065] • Red-throated Diver (*Gavia stellata*) [A001] • Great Northern Diver (*Gavia immer*) [A003] • Fulmar (*Fulmarus glacialis*) [A009] • Manx Shearwater (*Puffinus puffinus*) [A013] • Cormorant (*Phalacrocorax carbo*) [A017] • Little Tern (*Sterna albifrons*) [A195] • Kittiwake (*Rissa tridactyla*) [A188] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Lesser Black-backed Gull (*Larus fuscus*) [A183] • Herring Gull (*Larus argentatus*) [A184] • Roseate Tern (*Sterna dougallii*) [A192] • Arctic Tern (*Sterna paradisaea*) [A194] • Puffin (*Fratercula arctica*) [A204] • Razorbill (*Alca torda*) [A200] • Guillemot (*Uria aalge*) [A199] • Little Gull (*Hydrocoloeus minutus*) (A862) • Common Tern (*Sterna hirundo*) (A193) Mitigation measures are required to remove the potential of impacts on the SPA from indirect pathways via the Bremore Stream.

Analysis of the Potential Impacts on Natura 2000 Sites.

Construction Impacts

In the absence of mitigation, the construction of the proposed development would impact on the existing ecology of the site, the surrounding area and designated sites downstream of the proposed works. These potential construction effects would include effects that may arise during the site clearance, reprofiling and construction works. It should be noted that the works are proposed in and around the Balrickard Stream so this waterbody is considered a sensitive receptor of pollution from the construction site. There is potential for significant effects on the qualifying interests of The North-West Irish Sea SPA in the absence of mitigation measures. Construction phase mitigation measures are required on site particularly as construction works can lead to silt laden and contaminated runoff travelling downstream. There is potential for silt laden runoff and contamination to have downstream effects on Natura 2000 sites. Potential construction effects are outlined in Table 5.

Operational Impacts

Once constructed, all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS and will be directed to the Balrickard Stream just north of the subject site. Mitigation measures will be required to ensure that surface water quality is maintained prior to discharge to this watercourse.

Mitigation Measures and Monitoring

Construction and operational mitigation will be incorporated into the proposed development project to minimise the potential negative impacts within the Zone of Influence (ZoI) including the Balrickard Stream and downstream European sites (Table 6).

Designated Natura 2000 sites

As the main potential vector for impacts to European sites would be seen to be via the surface water runoff and the Balrickard Stream, no additional controls are required besides those outlined below, during the construction and operational phases of the development, to mitigate against potential negative impacts on designated conservation sites. All construction and operational phase controls outlined will be followed.

Table 5. Potential for adverse effects on the qualifying interests and conservation objectives of European sites		
European Site & Site Code	Qualifying Interests	Potential for Adverse Effects
North-West Irish Sea SPA [IE004236]	Common Scoter (*Melanitta nigra*) [A065] Red-throated Diver (*Gavia stellata*) [A001] Great Northern Diver (*Gavia immer*) [A003] Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Shag (*Phalacrocorax aristotelis*) [A018] Cormorant (*Phalacrocorax carbo*) [A017] Little Gull (*Larus minutus*) [A177] Kittiwake (*Rissa tridactyla*) [A188] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Great Black-backed Gull (*Larus marinus*) [A187] Little Tern (*Sterna albifrons*) [A195] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Puffin (*Fratercula arctica*) [A204] Razorbill (*Alca torda*) [A200] Guillemot (*Uria aalge*) [A199]	Works on site, dust, and surface water runoff in addition to truck movements during construction may lead to silt or contaminated materials from the site entering the Balrickard Stream. Concrete, silt, or pollution could enter the watercourse during enabling works, including site clearance, reprofiling, and dewatering of foundations (if required during construction). If on-site concrete production is required or cement works are carried out in the vicinity of drains or the Stream, there is potential for contamination of the watercourses. The construction of the proposed development may have a significant impact on the water quality of this stream, which flows to Balbriggan Beach where it meets the North-West Irish Sea SPA. There is potential for accidental pollution to enter the stream in the absence of mitigation. The use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels, and chemicals in addition to exporting materials offsite, could lead to pollution on site or in the adjacent watercourse. The storage of topsoil or works onsite could lead to dust, soil or silt laden runoff entering adjacent watercourses. The use of haul roads could lead to silt laden runoff or dust with downstream effects on the SPA. Contaminated wastewater from onsite toilets could cause localised pollution. Without the presence of mitigation measures there is a potential for downstream effects if significant quantities of pollution or silt entered the Balrickard Stream. Out of an abundance of caution, given the nature of the potential effects outlined above, assuming worst case scenario events and if the proposed project on the adjacent site was to be carried out concurrently, in the absence of mitigation, the proposed project could potentially impact on the attributes of the Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210], Alkaline fens [7230] as a result of the direct pathway via surface water drainage. The mitigation measures outlined will be carried out to ensure that no silt or pollution enters the Balrickard Stream from the construction or operation phases of the proposed project and create localised pollution. In the event of a pollution incident, it would be expected to be small e.g., maximum capacity of truck/digger fuel tank. However, by following the precautionary principal mitigation measures will be in place.

Table 6. Mitigation measures

Sensitive Receptors	Potential Impacts	Mitigation Measures to Prevent Impacts on North-West Irish Sea SPA
The Balrickard Stream North-West Irish Sea SPA	• Habitat degradation • Dust deposition • Pollution • Silt ingress from site runoff • Downstream impacts • Negative impacts on aquatic and bird fauna. • Disturbance.	As outlined in the CEMP by Clifton Scannell Emerson, the following mitigation measures will be in place: ***'5.2 Good Housekeeping*** *The Contractor will employ a "good housekeeping" policy at all times. This will include, but not necessarily be limited to, the following requirements:* • *General maintenance of working areas and cleanliness of welfare facilities and storage areas.* • *Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc.* • *Maintain all plant, material and equipment required to complete the construction work in good order, clean and tidy.* • *Keep construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish, piles, scrap wood, etc. at all times.* • *Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas.* • *Provision of adequate welfare facilities for site personnel.* • *Installation of appropriate security, lighting, fencing and hoarding at each working area.* • *Effective prevention of oil, grease or other objectionable matter being discharged from any working area.* • *Provision of appropriate waste management at each working area and regular collections to be arranged.* • *Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soil shall be recovered or disposed of to a suitably authorised waste facility site.* • *Effective prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests will be implemented. If infestation occurs the contractor will take appropriate action to eliminate and prevent further occurrence.* • *Maintenance of wheel washing facilities and other contaminant measures as required in each working area.* • *No discharge of site runoff or water discharge without agreement of the relevant authorities, the ER or ECoW.* • *Open fires will be prohibited at all times.* • *The use of less intrusive noise alarms which meet the safety requirements, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms.* • *Maintenance of public rights of way, diversions and entry/ exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access.* • *All loading and unloading of vehicles will take place off the public highway wherever this is practicable.* • *Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.* • *No storage of materials shall be permitted within the Riparian Corridors.* • *No compounds shall be permitted within or near the Riparian Corridors.* • *Dewatering of construction areas shall strictly be carried out in accordance with Section 5.8.* ***5.8 Dewatering of Works Areas***

The Contractor shall be required to follow the following dewatering methodology as summarised below:

- *Dewatering operations shall not be permitted to discharge directly to any watercourse, drainage ditch or any waterbody.*
- *The contractor will allow for the excavation of sumps in all excavations.*
- *Dewatering of trenches and chambers excavations will be clarified by the use of settlement /clarification tanks or similar approved systems, as indicated in Figure 5-1.*
- *Discharges from these clarification systems shall be discharged overland, prior to entering any stream, watercourse or waterbody.*

- *Continuous water quality testing and monitoring will be conducted during the dewatering operations before discharging.*
- *Continuous removal of settled/filtered solids in the hopper shall be carried out during the operations and shall be adequately disposed of.*
- *The clarifier unit will be set-up at one end of the 50m (or less) excavations and continuously dewater the trench during trench/chamber installation and excavation reinstatement.*
- *All pumps shall be placed in a movable and suitably sized bund or drip-tray during the dewatering operations and special care shall be taken during refuelling operations.*
- *Additional pumps shall be kept on standby at all times in case of mechanical failures or service requirements.*

6.1 Traffic and Transportation

The contractor is required to implement the following minimum measures in relation to traffic and transportation during construction:

- *All trucks entering and exiting the site will be covered with tarpaulin.*
- *Adequate parking will be provided near the contractor's compounds to avoid queuing at the site entrances and prevent disruption to neighbouring roads. Construction vehicles will not be allowed to park on the public road either outside the site or on any of the approach roads leading to the site.*
- *All trucks entering the site will be restricted to suitable speed limits and will be directed to the relevant area by the Site Manager.*
- *Trucks required to wait on site will switch off engines to avoid unnecessary fuel usage and noise.*
- *All trucks exiting the site will be required to pass through a wheel wash. A lance will be provided to clean down the bodies and sides of the truck prior to leaving site.*
- *Roads outside the site will be visually inspected on a daily basis and power swept and washed as and when required.*
- *All site staff including truck drivers will be required to abide by the normal rules of the road.*
- *The contractor shall prepare a Detailed Construction Traffic Management Plan (CTMP) covering all construction stages that takes into account other potential construction works in the area. The CTMP will demonstrate how pedestrians, cyclists and motorised vehicles are prevented from passing through the sites and that measures are in place which ensure traffic is not disrupted.*
- *The CTMP will include a detailed consultation plan to deal with third party queries from both residents and commercial operators. The CTMP will require agreement with both Fingal County Council and An Garda Síochána prior to the commencement of construction.*
- *The contractor will appoint a single point of contact to facilitate the communication of the various traffic management plans and the preparation of a project specific website to aid communications would also be beneficial.*

As part of the CTMP a Mobility Management Plan will be prepared to ensure access to the site by sustainable travel modes is encouraged. The following measures will need to be considered within the Mobility Management Plan:

O The provision of facilities for construction staff.
O The provision of cycle and parking for construction staff.
O The promoting of car sharing among staff, including van pooling to travel between different work sections.

6.2 Air Quality and Climate

The contractor is required to implement the following measures in relation to air quality and climate during construction:

- *Implementation of 'standard mitigation' measures as stated in the Transport Infrastructure Ireland (TII), (formerly the National Roads Authority (NRA) (2011)), Good Practice Guidance for the Treatment of Air Quality during the Planning and Construction of National Road Schemes:*
- *Spraying of exposed earthwork activities and site haul roads during dry weather.*
- *Provision of wheel washes at exit points.*
- *Covering of stockpiles.*
- *Control of vehicle speeds, speed restrictions and vehicle access.*
- *Sweeping of hardstand surfaces.*
- *Erection of the hoarding will be provided around the working areas to minimise the dispersion of dust from working areas as per* ***Section 5.5*** *of this CEMP.*
- *Generators will be located away from sensitive receptors in so far as practicable.*
- *Stockpiles will be located as far as possible from sensitive receptors, floodplains, riparian corridors and covered/dampened during dry weather conditions.*
- *Employee awareness shall be promoted by actively training staff on management of operations and dust suppression.*
- *Where asbestos is uncovered on site, a competent contractor shall remove the ACM from site and disposed of in accordance with relevant procedures and legislations.*

Additionally, the following measures are proposed in conjunction with the above:

Construction

<u>Contamination of watercourses leading to European Sites</u>

- Prior to construction the appointment of an ecologist to oversee enabling works and the implementation of mitigation measures will be carried out. No works will commence on site until the ecologist submits a letter to the local council authority to state that he/she has been appointed and has developed a Construction Environmental Management Plan which includes a) Phasing of the project, b) Full details of the works programme including methodologies for all works, surface water management and watercourse and pond works c) maps containing details of mitigation measures and any invasive species on site within 30m of site works including haul routes, site compounds etc. d) approval of the instream methodologies outlined by Inland Fisheries Ireland.
- Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing.
- Any discharges to the watercourse during construction must be discussed with the ecologist, undergo desilting and petrochemical interception and have twice daily turbidity monitoring.
- Local watercourses must be protected from dust, silt and contaminated surface water throughout the works.
- Local silt traps established throughout site as discussed with the ecologist.
- Mitigation measures on site include dust control, stockpiling away from watercourse and drains.
- Stockpiling of loose materials will be kept to a minimum of 20m from watercourses and drains.
- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses.

		• Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches or the watercourse, excavations and other locations where it may cause pollution. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the stream. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality. • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. • During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the watercourse. • Planting in the vicinity of the stream crossings should be put in place as soon as possible to allow biodiversity corridors to establish. • On-site inspections will be carried out by project ecologist during enabling works and until drainage connection is complete. • Maintenance of any drainage structures (e.g. de-silting operations) must not result in the release of contaminated water to the surface water network. • No entry of solids or concrete to the associated stream or drainage network during the connection of pipework <u>Air & Dust</u> • The pro-active control of fugitive dust will ensure prevention of significant emissions arising, rather than a less effective attempt to control them once they have been released. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. • Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and / or windy conditions. • Vehicles exiting the Site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads. • Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20kph, and on hard surfaced roads as site management dictates. • Public roads outside the Site will be regularly inspected for cleanliness and cleaned as necessary. • Material handling systems and Site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. • During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions. • Dust may enter the onsite watercourse via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on the onsite watercourse. The main activities that may give rise to dust emissions during construction include the following: • Excavation of material; • Materials handling and storage; • Movement of vehicles (particularly HGV's) and mobile plant. • Contaminated surface runoff • Trucks leaving the site with excavated material will be covered so as to avoid dust emissions along the haulage routes.

		• Speed limits on site (15kmh) to reduce dust generation and mobilisation. • The stream is to be protected from dust on site. This may require additional measures in the vicinity of the bridge (east of the site) if this road is used for machinery e.g. placing of terram/protective material over the stream. • Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged. • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. <u>Monitoring</u> • Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces within 100 m of site boundary, integrity of the silt control measures, with cleaning and / or repair to be provided if necessary. • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. • Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. • Maintain a vegetated strip and vehicle exclusion zone between the works and the Balrickard Stream (where possible) in consultation with the project ecologist. • Regular inspection of surface water run-off and any sediment control measures e.g. silt traps will be carried out during the Construction Phase. Regular auditing of construction / mitigation measures will be undertaken e.g. concrete pouring, refuelling in designated areas etc. • Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the Site and the suitable distance of topsoil piles from surface water drains will be maintained. <u>Measures Specific to Earthworks</u> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

		• Due to the proximity of the onsite watercourse an ecologist will oversee works in particular the excavation of material from the perimeter of the site. • The Contractor will be required to consult with an ecologist prior to the beginning of works to identify any additional measures that may be appropriate and/or required. <u>Storage/Use of Materials, Plant & Equipment</u> • Materials, plant and equipment shall be stored in the proposed site compound location; • Plant and equipment will not be parked within 50m of the onsite watercourse at the end of the working day; • Hazardous liquid materials or materials with potential to generate run-off shall not be stored within 50m of the onsite watercourse. • All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater; • Fuel may be stored in the designated bunded area or in fuel bowsers located in the proposed compound location. Fuel bowsers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages; • Waters collected in drip trays must be assessed prior to discharge. If classified as contaminated, they shall be disposed by a permitted waste contractor in accordance with current waste management legal and regulatory requirements; • All persons working will receive work specific induction in relation to material storage arrangements and actions to be taken in the event of an accidental spillage. Daily environmental toolbox talks / briefing sessions will be conducted for all persons working to outline the relevant environmental control measures and to identify any environment risk areas/works. <u>Watercourses</u> • In stream works to be carried out in full consultation with and to the advice of Inland Fisheries Ireland and the project ecologist. • Staging of project to initially stabilise, isolate, fence off watercourse on site • Mitigation measures on site include dust control, stockpiling away from watercourses and drains • Pollution control and mitigation on site • Stockpiling of loose materials will be kept away from watercourses and drains. A risk based approach will be taken. • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses. • During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the watercourse. • Petrochemical interception and bunds in refuelling area • Planting in the vicinity of the stream crossings should be put in place as soon as possible to allow biodiversity corridors to establish. • On-site inspections to be carried out by project ecologist. Twice daily monitoring of turbidity (from 11am) will be carried out on site. • During the works silt traps will be put in place • No discharges will be to the watercourse during works • Silt traps established throughout site including a double silt fence between the site and the watercourse. • Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks.

		• The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained. • The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area. • A project ecologist must be appointed and be consulted in relation to all onsite drainage during construction works. Consultation with the project ecologist will not involve the formulation of new mitigation measures for the purposes of protecting any European Site, and relate only to the implementation of those mitigation measures already stated in the submission or the formulation of mitigation for other purposes. • Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site into the Balrickard Stream during the works. Trenched double silt fencing shall be put in place along boundary of the proposed development site with 10m buffer from the Stream. This fencing must be in place as one of the first stages on site and prior to the full site clearance. The silt fencing will act as a temporary sediment control device to protect the watercourse from sediment and potential site water runoff but also act as a tree protection zone for the riparian buffer. The fencing will be inspected twice daily, based on site and weather conditions, for any signs of contamination or excessive silt deposits. • Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches. • Abstraction of water from watercourses is not to be permitted. • Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis. • All site personnel will be trained in the importance of good environmental practices including reporting to the site manager when pollution, or the potential for pollution, is suspected. All persons working on-site will receive work specific induction in relation to surface water management and run off controls. Daily environmental toolbox talks / briefing sessions will be conducted to outline the relevant environmental control measures and to identify any environment risk areas/works. • Environmental risks due to construction and operation of the proposed development do potentially exist, particularly in relation runoff from sloping site, drains that could lead to the Balrickard Stream. Ecological supervision will be required during diversion, excavation and enabling works stages. Silt interception measures will need to be in place to ensure that the watercourses are not impacted during works and in particular during the site clearance, in-stream works and reprofiling stages. Landscaping of the grassed areas of the site proximate to the Stream will take place immediately following re-profiling, to act as a buffer to protect the watercourse.

Adverse Effects on the conservation objectives of Natura 2000 sites likely to occur from the project (post mitigation)

A robust series of mitigation measures are outlined. These would ensure that surface water runoff from the proposed works site is clean, uncontaminated and that dust from the works would not significantly impact on the Bracken/ Matt River and the downstream Natura 2000 site (North-West Irish Sea SPA). It should be noted that the early implementation of ecological supervision on site prior to the initial mobilisation and enabling works will be an important element of the project. This will ensure the implementation of surface water runoff mitigation strategies and the mitigation to protect the watercourse from proximate works from the outset.

With the successful implementation of the mitigation measures to limit surface water impacts on Bracken/ Matt River , including mitigation/supervision, no significant impacts are foreseen from the construction and operation of the proposed project. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed works and would not impact on the integrity of the proximate Natura 2000 site.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on North-West Irish Sea SPA, through the application of the standard construction and operational phase controls as outlined above. No significant adverse impacts on the conservation objectives of North-West Irish Sea SPA are likely following the implementation of the mitigation measures outlined above.

It is essential that these measures outlined are complied with, to ensure that the proposed development does not have “downstream” environmental impacts. These measures are to protect the surface water, which is the primary vector of impacts from the site, and to ensure that it is not impacted during construction and operation.

Conclusion

It has been concluded that significant effects on the North-West Irish Sea SPA are likely from the proposed works in the absence of mitigation measures, primarily as a result of direct hydrological connection to the site via dust pollution and surface water runoff to the Balrickard Stream which drains the site. For this reason, an NIS was carried out to assess whether the proposed project, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites’ conservation objectives, will adversely affect the integrity of the European Site. All other Natura 2000 sites were screened out at initial screening.

Construction works will create localised noise disturbance that will not impact on Natura 2000 sites. Mitigation measures will be in place to ensure that there are no significant impacts on the surface water that leads to the marine environment. Following the implementation of the mitigation measures outlined, the construction and operation of the proposed development would not be deemed to adversely affect the integrity of the North-West Irish Sea SPA, alone in combination with other plans and projects. No significant adverse effects are likely on all other Natura 2000 sites, in the absence of mitigation, alone in combination with other plans and projects.

This report presents an Appropriate Assessment Screening and NIS for the proposed development. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites’ conservation objectives, will adversely affect the integrity of the European site.

On the basis of the content of this report, the competent authority is enabled to conduct an Appropriate Assessment and consider whether, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites’ conservation objectives, will adversely affect the integrity of the European site.

No significant effects are likely on Natura 2000 sites, their features of interest or conservation objectives. The proposed project will not will adversely affect the integrity of European sites.

Data used for the AA Screening/NIS Assessment

NPWS site synopses and Conservation objectives of sites within 15km were examined. There is no direct pathway to any Natura 2000 sites beyond 15km of the proposed development site. The most recent SAC and SPA boundary shapefiles were downloaded and overlaid on Bing maps and satellite imagery.

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6. Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging; ec.europa.eu/environment/nature/Natura2000/management/docs/guidance_doc.pdf
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13. NPWS (2012) Conservation Objectives: River Nanny Estuary and Shore SPA 004158. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
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16. NPWS (2013) Conservation Objectives: Rogerstown Estuary SPA 004015. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
17. NPWS (2013) Conservation Objectives: Boyne Estuary SPA 004080. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht
18. NPWS (2013) Conservation Objectives: Malahide Estuary SPA 004025. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
19. NPWS (2023) Site Synopsis: North-West Irish Sea SPA: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004236.pdf
20. NPWS (2023) Conservation Objectives: North-west Irish Sea SPA 004236.Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

1.1 Appendix I: Bat Fauna Assessment

ALTEMAR
Marine & Environmental Consultancy

Bat Fauna Impact Assessment for the proposed development a Junction 5 M1, Rowans, Co. Dublin.

27th March 2024

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
On behalf of: M1 VIDA Ltd

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Directors: Bryan Deegan and Sara Corcoran
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www.altemar.ie

SUMMARY

Structure:	Derelict houses and farm buildings. Proposed development on a greenfield site with treelines and hedgerows.
Location:	Junction 5 M1, Rowans, Co. Dublin.
Bat species present:	Common pipistrelle (*Pipistrellus pipistrellus*), Soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*). No bats were detected emerging from any of the onsite trees or buildings. However, it would be expected that the large mature trees on site have the potential to act a bat roosts as numerous trees have large cracks and hollows.
Proposed work:	Development of greenfield site.
Impact on bats:	No bats emerging onsite trees or buildings were observed. Numerous large trees on site on site have the potential for bat roosting. It is not proposed to remove any large trees on site as a result of the proposed development.
Survey by:	Emma Peters
Survey date:	15th of August and 13th September 2023.

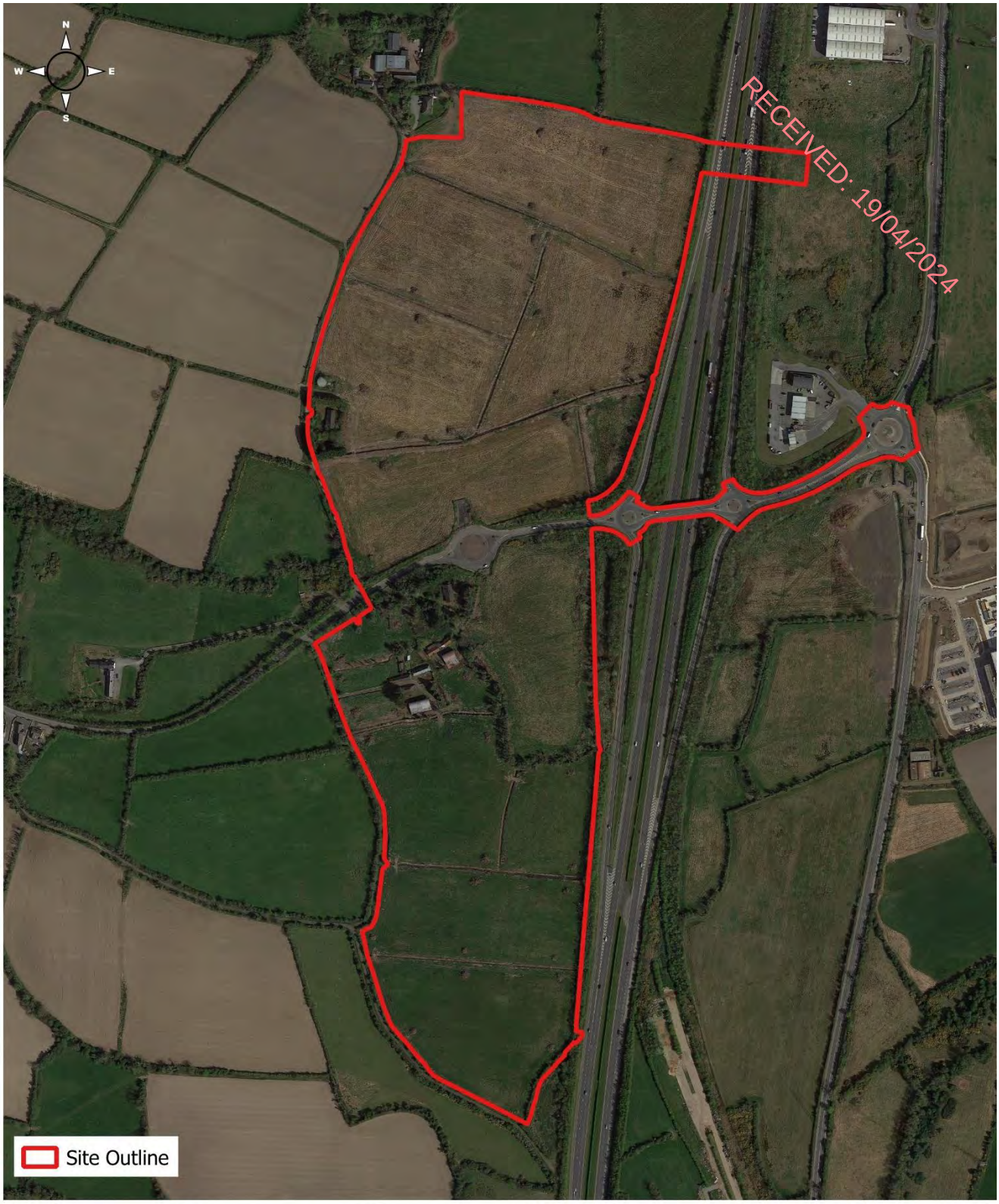
1.2 Receiving Environment

1.2.1 Background

Altemar Limited was requested by Tom and Pat Redmond to carry out a bat survey of the proposed development site at the Junction 5 M1, Rowans, Co. Dublin.
The proposed site outline, location, and proposed site plan are demonstrated in Figures 1 & 2.

1.2.2 Tree Roosting Potential Survey

The surveys on the 15th of August and 13th September 2023 showed a small number of low roosting potential trees. Old farm buildings were onsite and two derelict houses. In relation to bat roosting potential, the site comprised of large fields. A woodland is noted on site and contains numerous trees of bat roosting potential.



Project: Proposed Development
Location: Junction Five M1,
Co.Dublin
Date: 1st December 2023.
Drawn By: Bryan Deegan (Altemar).

ALTEMAR
Marine & Environmental Consultancy

Figure 1. *Proposed site outline and location*

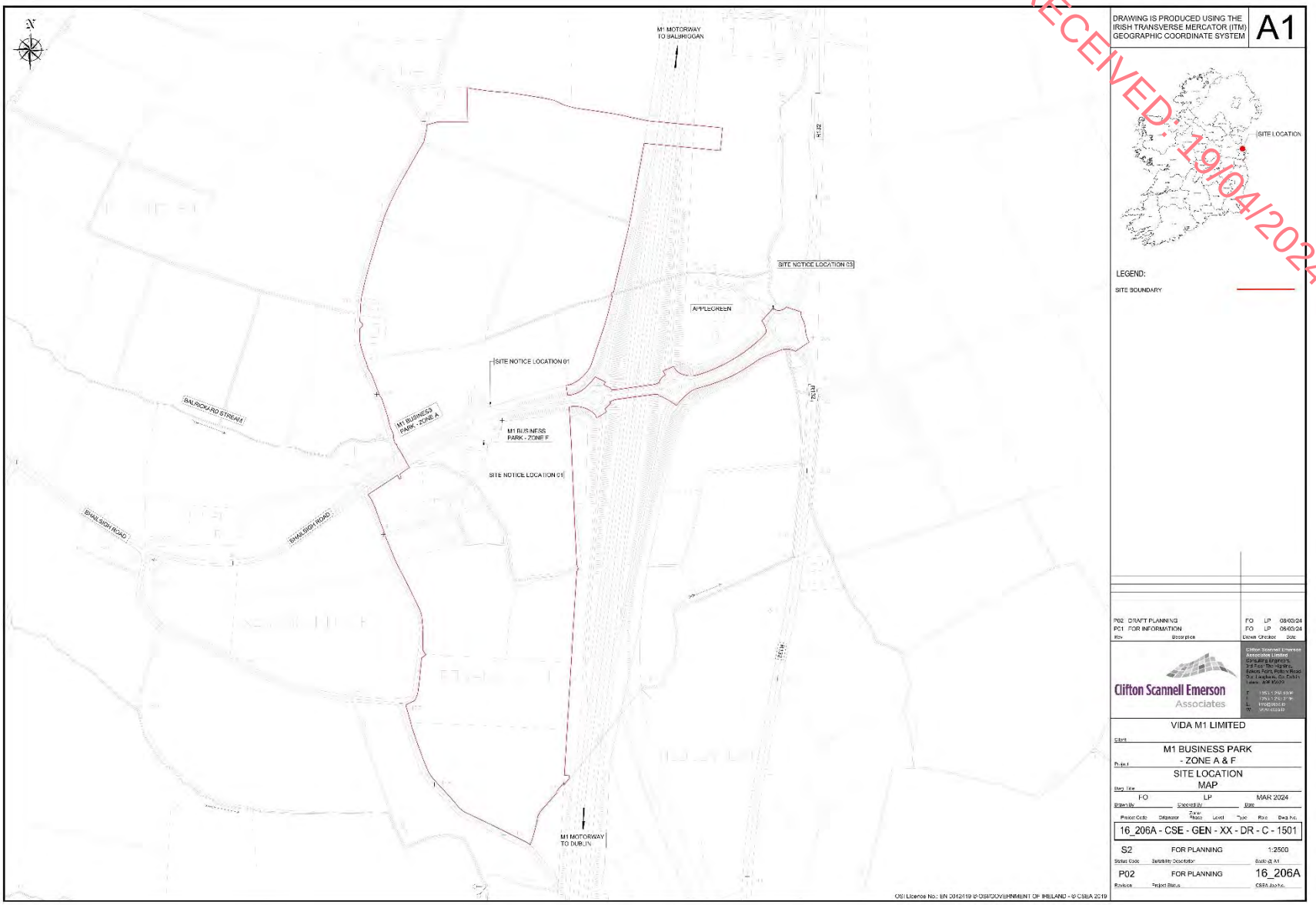


Figure 2. *Overall site layout.*

1.3 Arboricultural Assessment

An Arboricultural & Impact Report was carried out by \CMK Hort and Arb Ltd. In relation to trees to be and not to be removed. The report displays the following table;

Tree categories	Number	No to be removed	% of total
A	0	0 -	
B	20	24	
C	45	55	
U	17	21	21

Table 1. Tree Categories

The Tree Protection Plan and the Arboricultural Imapct Assessment drawings are seen in Figures 4 & 5.

2. Competency of Assessor

This report has also been prepared by ecologist, Emma Peters BSc Environmental Science. Emma is skilled in bat detection through static detector surveys, dusk emergence, and down re-entry surveys and is a member of Bat Conservation Ireland. She is skilled in habitat identification, native and non-native species identification and ecological conservation, having experience in mitigation measures in ecological assessment.

3. Legislative Context

Wildlife (Amendment) Act 2000.
Bats in Ireland are protected by the Wildlife (Amendment) Act 2000. Based on this legislation it is an offence to wilfully interfere with or destroy the breeding or resting place of any species of bat. Under this legislation it is an offence to "*Intentionally kill, injure or take a bat, possess or control any live or dead specimen or anything derived from a bat, wilfully interfere with any structure or place used for breeding or resting by a bat, wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose. "*
Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora transposed into Irish Law i.e. European Communities (Natural Habitats) Regulations, 1997 (SI No. 64/1997).
Annex II of the Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) lists animal and plant species of Community interest, the conservation of which requires the designation of Special Areas of Conservation (SACs); Annex IV lists animal and plant species of Community interest in need of strict protection. All bat species in Ireland are listed on Annex IV of the Directive, while the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is protected under Annex II which related to the designation of Special Areas of Conservation for a species.
Under section 23 of SI No. 64/1997 all bats are listed under the first schedule of Section 23 which makes it an offence to:

- deliberately capture a bat
- deliberately disturb a bat,
- damage or destroy a breeding site or resting place of a bat.

4. Survey methodology.

At dusk, a bat detector survey was carried out onsite using a *echometer touch 2 pro* detector to determine bat activity. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations. Surveys were carried out having regard to the following guidelines:

- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016);
- Bat Mitigation Guidelines for Ireland (NPWS, 2006); and,
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006).

5. Bat survey.

This report presents the results of site visit by Emma Peters and Jeff Boyle on the 15th of August and 13th September 2023.

6. Survey constraints.

Bat surveys were undertaken during the active bat season August and the latter end of the season in September. Weather conditions were good with mild temperatures of 14°C. Winds were light and there was no rainfall during the surveys.

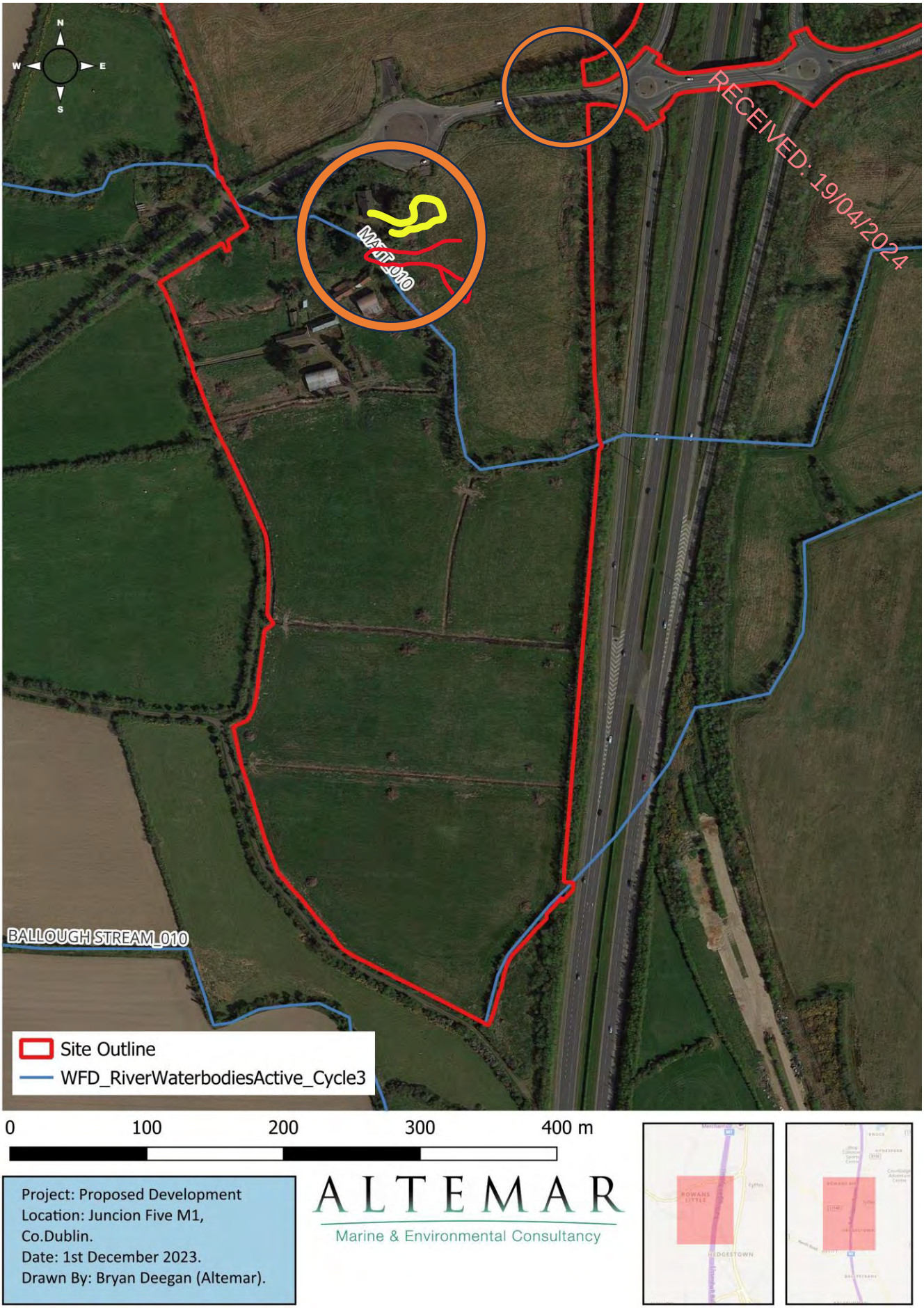


Figure 4. Soprano pipistrelle(red) and Leisler's bat (yellow) feeding activity and main area of bat roosting potential (orange circles).

7. Bat Assessment Findings

7.1 Review of local bat records

The review of existing bat records (sourced from Bat Conservation Ireland's National Bat Records Database) within a 2km2 been observed locally (Table 1). The National Biodiversity Data Centre's online viewer was consulted in order to view the relative grid (Reference grid O15Z) encompassing the study area reveals that one of the nine known Irish species have been recorded in this area.

Table 1: *Status of bat species within a 2km2 grid encompassing the subject site (Reference O15Z)*

Species name	Record count	Date of last record	Note
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	1	22/06/2004	National Bat Database of Ireland

Figure 4. Brown Long-eared Bat (*Plecotus auritus*) (yellow), Lesser horseshoe bat (*Rhinolophus hipposideros*) (purple) and both Brown Long-eared Bat and lesser horseshoe bat (orange) (Source:NBDC) (Site – red circle)

Figure 5. Lesser Noctule (*Nyctalus leisleri*) (purple) and Natterer's Bat (*Myotis nattereri*) and both the Lesser Noctucle and Natterer's Bat (orange) (Source:NBDC) (site: red circle)

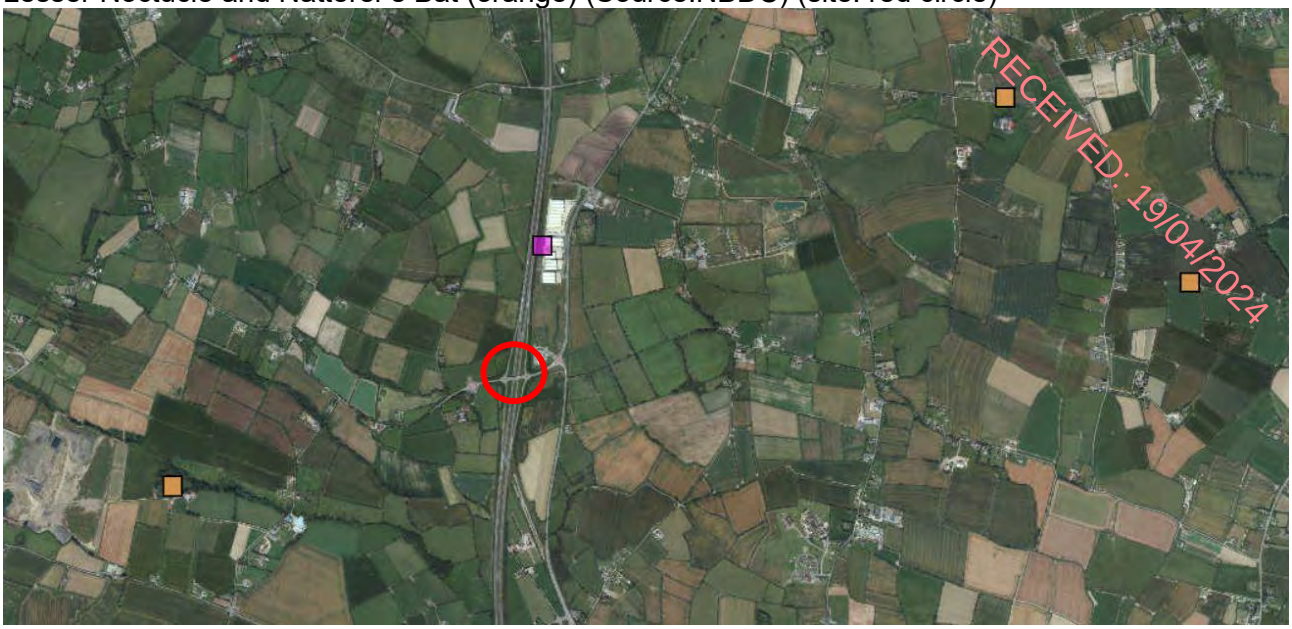


Figure 6. Soprano Pipistrelle (*Pipistrellus pygmaeus*) (yellow) and Soprano pipistrelle (*Pipistrellus pipistrellus*) (Source: NBDC) (site: red circle)

7.2 Detector survey

As seen in Figure 1 bat activity on site was relatively low but concentrated in specific places where insects are likely to be plentiful and have the ability to swarm. Two species were noted on site :

- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Leisler's bat (*Nyctalus leisleri*)

No bats were detected emerging from any of the onsite trees or buildings. However, it would be expected that the area of larger trees (Figure 1) would have bat roosting potential.

8. Potential impacts of proposed redevelopment on bats

The farm buildings and derelict houses onsite have high bat roosting potential, however, during field surveys no bats were noted emerging from said buildings. It is possible that trees of bat roosting potential will be removed. Foraging activity within the area may be lost unless light spill is controlled.

9. Mitigation measures

As there are many buildings on site of high bat roosting potential, a pre-demolition inspection will be completed. Trees of bat roosting potential will be inspected for bat roosts before they are felled. Lighting has involved mitigation through design and will be restricted to key areas and will not be within foraging zones. Lighting will be placed where necessary for mainlining movement within key areas of site and open space areas including the pond will not be lit.

10. Predicted and residual impact of the proposal

No bats were noted emerging from buildings or trees onsite. Numerous large trees on site on site have the potential for bat roosting. It is not proposed to remove any large trees on site or impact on these areas through lighting. The trees to be removed as part of the proposed development are limited in their potential for bat roosts primarily because of their small size. Lighting on site could result in a reduction in foraging. Foraging would expect to improve as landscaping matures as there would be an increase in foraging areas for insects.

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11.1 Appendix II: Wintering Bird Assessment

ALTEMAR
Marine & Environmental Consultancy

Wintering Bird Assessment for a proposed development at Junction 5 M1, Co. Dublin

26th March 2024

Prepared by: Frank Spellman of Altemar Ltd.
On behalf of: M1 VIDA Ltd

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Document Control Sheet			
Client	M1 VIDA Ltd		
Project	Wintering Bird Assessment for a proposed development at Junction 5 M1, Co. Dublin		
Report	Wintering Bird Assessment		
Date	26th March 2024		
Version	Author	Reviewed	Date
Final	Frank Spellman	Bryan Deegan	26th March 2024

Contents

Summary

Structure/features:	The survey area consists of arable fields, agricultural grassland grazed by horses and sheep, abandoned farmhouse (including yard and sheds), and abandoned house and garden, underground gas network, a silo, hedgerows, treelines, and pockets of scrub.
Location:	Junction 5 M1, Co. Dublin
Bird species present:	Blackbird, Black-headed Gull, Blue Tit, Buzzard, Chaffinch, Coal Tit, Dunnock, Goldcrest, Goldfinch, Great Tit, Greenfinch, Herring Gull, Hooded Crow, House Sparrow, Jackdaw, Linnet, Long-tailed Tit, Magpie, Meadow Pipit, Mistle Thrush, Pheasant, Pied Wagtail, Redwing, Robin, Rook, Siskin, Skylark, Snipe, Song Thrush, Starling, Woodpigeon, Wren.
Proposed work:	Infrastructure development.
Impact on wintering birds:	The main area of wintering bird activity is located in the centre of the northern half of the survey area, comprising of three arable crop fields. Habitat removal will result in the loss of foraging habitat. Mitigation measures are proposed.
Surveys by:	Frank Spellman & Emma Peters.
Survey dates:	27th/31st October 2023, 8th/16th November, 5th/21st December, 19th/24th January, 7th/12th February, 1st/15th March.

Receiving environment

Background

The proposed development includes:

•Provision of civil infrastructure to service future-planned commercial properties, comprising main access roads including pedestrian/cycle paths; watermains, surface water and foul drainage networks; utility services including power and telecommunications.

•Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features including an attenuation pond and raingardens.

•Upgrading and modification of the existing L1140 roundabout.

•Provision of 3.0m wide shared paths from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132.

•All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings

The proposed site outline, location, and landscape plan are demonstrated in figures 3-5.

Landscape

The landscape strategy for the proposed development has been prepared by Stephen Diamond Associates to accompany this planning application.

The proposed landscape plans is demonstrated in figure 5.

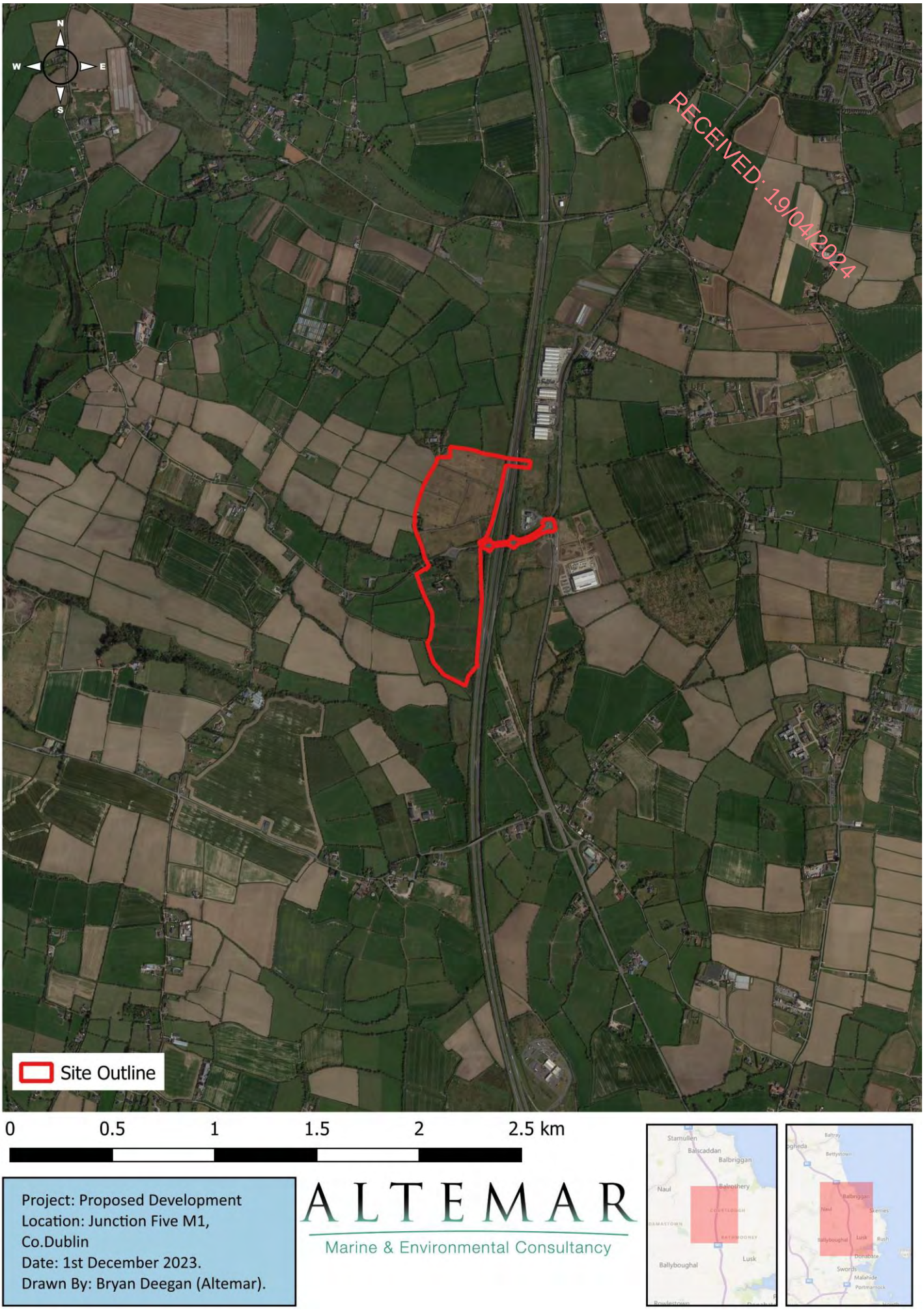

Figure 1. *Proposed site outline and location*

Figure 2. *Survey area.*

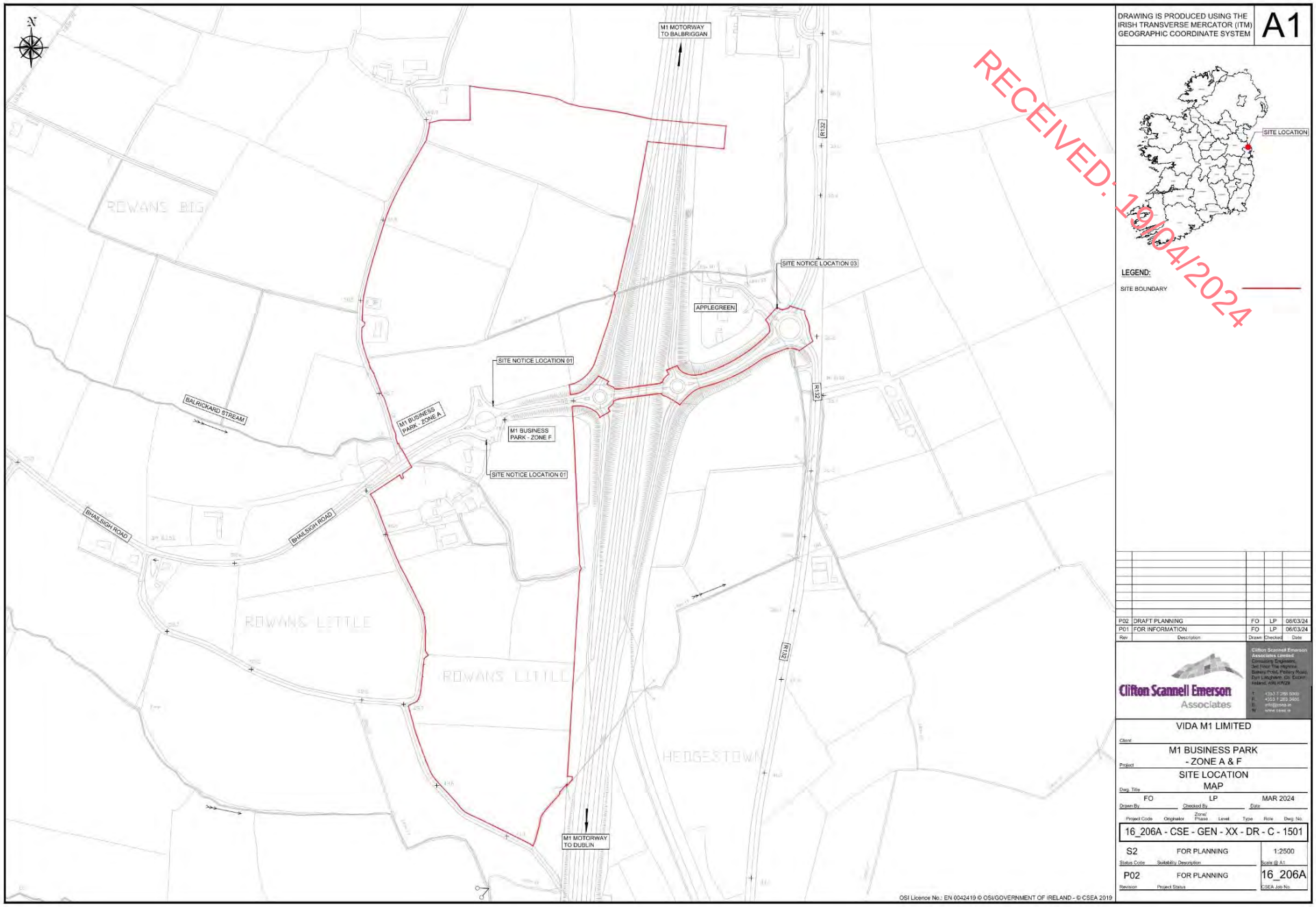

Figure 3. *Site location OS map*

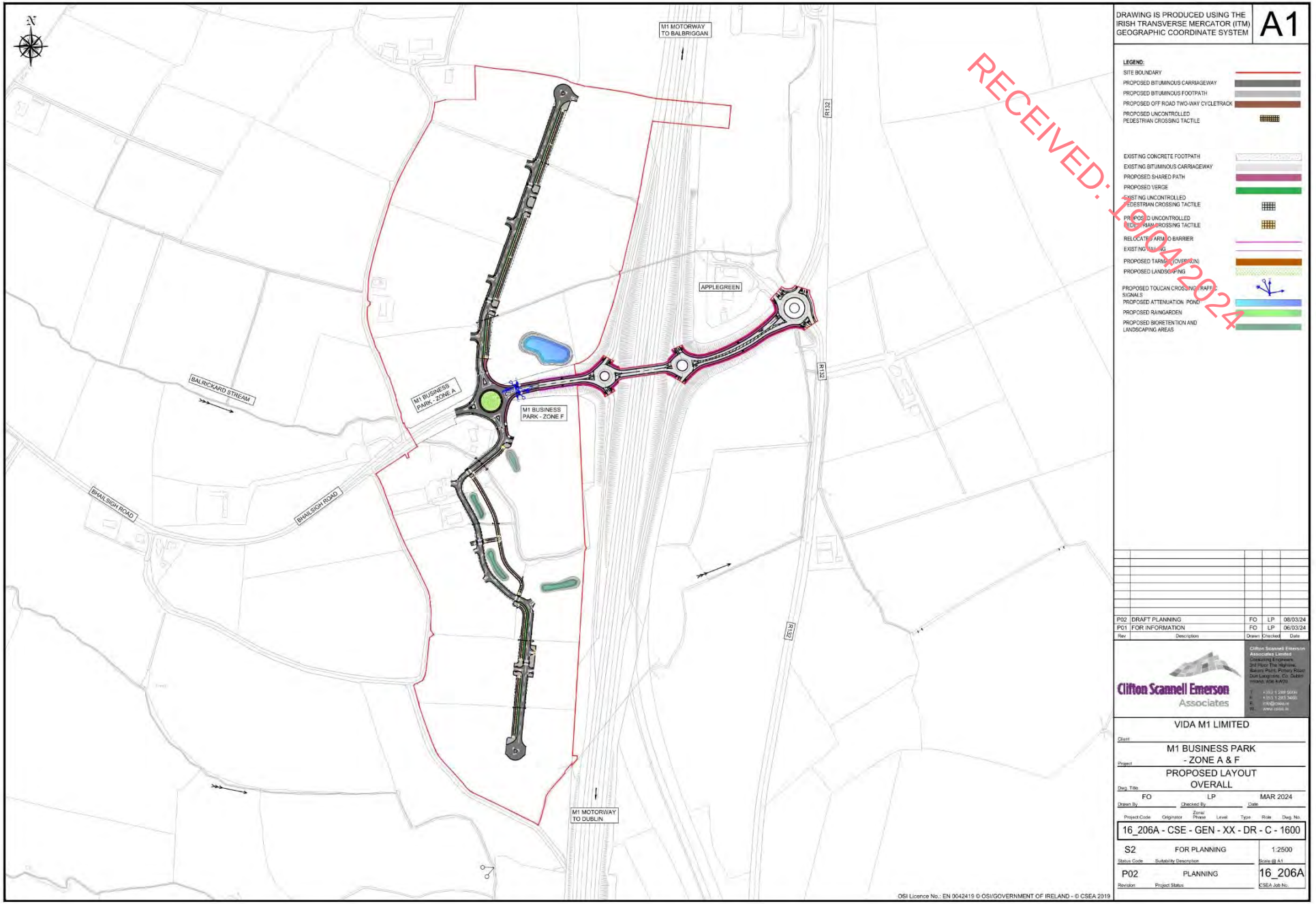

Figure 4. *Proposed overall layout*

Figure 5. *Proposed landscape plan*

Competency of assessor

This report has been prepared by Frank Spellman (BSc Zoology, MSc Zoology). Frank has previous experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. The desk and field surveys were carried out using techniques approved and recommended by CIEEM.

Legislative context

The Wildlife Act 1976 protects wild birds in Ireland. Based on this legislation it is an offence to wilfully interfere with or destroy wild birds and their nests and eggs (other than the wild species mentioned in the Third Schedule of this Act). Under this legislation it is an offence for any person who "*wilfully takes or removes the eggs or nest of a protected wild bird otherwise than under and in accordance with such a licence, wilfully destroys, injures or mutilates the eggs or nest of a protected wild bird, wilfully disturbs a protected wild bird on or near a nest containing eggs or unflown young.*"

Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish Law, including, via, *inter alia*, the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Council Directive 2009/147/EC 2010 on the conservation of wild birds provides for the conservation of wild birds by, among other things, classifying important ornithological sites as Special Protection Areas. The Directive relates to the conservation of all species of naturally occurring birds in the wild state, their eggs, nests and habitats in the European territory of the Member States. The Directive prohibits in particular:

- deliberate killing or capture by any method;
- deliberate destruction of, or damage to, their nests and eggs or removal of their nests;
- taking their eggs in the wild and keeping these eggs even if empty;
- deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of this Directive;
- keeping birds of species the hunting and capture of which is prohibited.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule:

- deliberately captures or kills any specimen of these species in the wild,
- deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
- deliberately takes or destroys eggs of those species from the wild,
- damages or destroys a breeding site or resting place of such an animal, or
- keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive, shall be guilty of an offence.

Wintering bird surveys

This report presents the results of bimonthly site visits by Frank Spellman and Emma Peters from October 2023 to March 2024. A Wintering bird transect and vantage point survey was carried out on each occasion.

Survey methodology

This wintering bird survey was carried out based on the BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) and following CIEEM guidelines.

A 15-minute settlement period was given following arrival to allow resumption of bird activity after any possible disturbance caused by arrival to the site. Various features and habitats such as agricultural fields, woodlands, hedgerows, tree lines, a watercourse, ditches, scrub and built land were present within the survey area. A single transect following the full perimeter of the survey area was carried out on each occasion, covering all areas and features available for wintering bird activity within and adjacent to the survey area. Two vantage points (north and south) were used for assessing flight lines, however flight lines were also recorded when observed during the transect. Each survey was carried out by a single surveyor.

Due to the complex nature of the survey area, a single roving transect following the full perimeter and circumnavigating all habitats and features within the survey area was carried out in the northern half and southern half (divided by Bhailsigh Road) by a single surveyor.

The transect for the area north of Bhailsigh Road began on the east of the M1, crossing the M1 entering the agricultural fields at the roundabout to the west of the M1 junction, and in a general anti-clockwise direction circumnavigating all margins, road/field boundaries, hedgerows, pockets of scrub, treelines, ditches and the abandoned residential property. Fields within the survey area were observed carefully for foraging/resting birds. A vantage point in the northwest of this area provided excellent views over this area, and views from the majority of the transect also provided excellent views of flight paths over this area.

The transect for the area south of Bhailsigh Road began along the wooded boundary in the northeast between the M1 junction and agricultural fields. The transect took a general anti-clockwise direction around the survey area margin, circumnavigating field boundaries, wooded/scrub areas, investigating ditches, and finally the farmyard/farmhouse and surrounding fields/woodland/scrub including the wooded area along the south of Bhailsigh Road. Fields within the survey area were observed carefully for foraging/resting birds. A vantage point in the west of this area provided excellent views overhead, and similarly to the northern half of the survey area views from the majority of the transect also provided excellent views overhead.

Each survey took approximately 2.5-5 hours to complete, ending once all areas/features had been surveyed. Care was taken not to double count any observations. Surveys were initiated at varying times (morning/midday/afternoon) and at varying tide levels to account for potential associated fluctuations in bird activity. Local temperatures varied from 5 – 12°C. Winds varied from 1 – 6 on the Beaufort scale.

Survey results

Habitats of wintering bird potential

A desk and ground level wintering bird habitat assessment were carried and used to examine the structures and vegetation on site for features that could provide wintering bird habitat. Potential features associated with foraging/resting included agricultural fields, grassland/scrub, a watercourse and drainage ditches. All open and vegetated areas, built areas and water-holding features on site were assessed for wintering bird potential.

Areas of high wintering bird potential included the agricultural fields, grassland, watercourse and drainage ditches throughout the survey area and its boundaries.

Wintering bird activity survey

A total of 32 species were recorded within the survey area across twelve surveys (see Appendix I for individual observations).

21 green-listed bird species of conservation concern were recorded within the survey area.

Eight amber-listed bird species of conservation concern were recorded within the survey area: black-headed gull, goldcrest, greenfinch, house sparrow, herring gull, linnet, skylark and starling.

Three red listed bird species of conservation concern were recorded within the survey area: meadow pipit, redwing and snipe.

Herring gull flight paths altitude averaged 51.4 m based on observation estimates. Flight paths occurred over the entire site. This species was observed foraging in the field between farm buildings and M1 on 2 occasions, in ploughed fields to west of northern half of survey area (outside of survey outline) on one occasion, and the most southerly field of the survey area. The only significant foraging event was the observation in fields to the northwest of the survey area while ploughing was taking place.

Black-headed gull flight path altitude averaged 45 m based on observation estimates. None were observed foraging within the survey area.

Goldcrest individual was observed on two separate occasions; foraging in scrub along watercourse to the southwest of the farmyard, and within the farmyard itself.

Greenfinch was observed on one occasion within a hedgerow along the southeast survey area boundary.

House sparrow individual was observed on one occasion foraging in the field to the south of the farmyard.

Linnets were observed on six surveys in numbers ranging from 1 – 27 individuals throughout the northern half of the survey area.

Skylark was observed on three occasions (individuals and a pair) foraging in the northwest of the northern half of the survey area, particularly around stacks of vegetative debris.

Starlings were observed on three surveys foraging in the northwesternmost field, perched on northeast boundary treeline, and flying over the south of the survey area and over Bhailtigh Road (20 m).

Meadow pipit was observed on seven surveys. Foraging was observed regularly in throughout fields in the northern half of the survey area, and on one occasion in the southernmost field of the survey area.

Redwing were observed on the final survey. Seven individuals flew over the southern portion of the survey area (20 m) and two individuals were observed perched in treeline adjacent to farmyard.

Snipe were observed on two surveys. Two individuals were flushed from the northwesternmost field of the survey area, and an individual was observed flying southerly across the service station to the east of the M1 (30 m).

Table 1. *Species observed on site.*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Black-headed Gull	BH	*Larus ridibundus*	Amber
Blue Tit	BT	*Cyanistes caeruleus*	Green
Buzzard	BZ	*Buteo buteo*	Green
Chaffinch	CH	*Fringilla coelebs*	Green
Coal Tit	CT	*Periparus ater*	Green
Dunnock	D.	*Prunella modularis*	Green
Goldcrest	GC	*Regulus regulus*	Amber
Goldfinch	GO	*Carduelis carduelis*	Green
Great Tit	GT	*Parus major*	Green
Greenfinch	GR	*Chloris chloris*	Amber
Herring Gull	HG	*Larus argentatus*	Amber
Hooded Crow	HC	*Corvus cornix*	Green
House Sparrow	HS	*Passer domesticus*	Amber
Jackdaw	JD	*Corvus monedula*	Green
Linnet	LI	*Carduelis cannabina*	Amber
Long-tailed Tit	LT	*Aegithalus caudatus*	Green
Magpie	MG	*Pica pica*	Green
Meadow Pipit	MP	*Anthus pratensis*	Red
Mistle Thrush	M.	*Turdus viscivorus*	Green
Pheasant	PH	*Phasianus colchicus*	Green
Pied Wagtail	PW	*Motacilla alba yarrellii*	Green
Redwing	RE	*Turdus iliacus*	Red
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Siskin	SK	*Spinus spinus*	Green
Skylark	S.	*Alauda arvensis*	Amber
Snipe	SN	*Gallinago gallinago*	Red
Song Thrush	ST	*Turdus philomelos*	Green
Starling	SG	*Sturnus vulgaris*	Amber
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

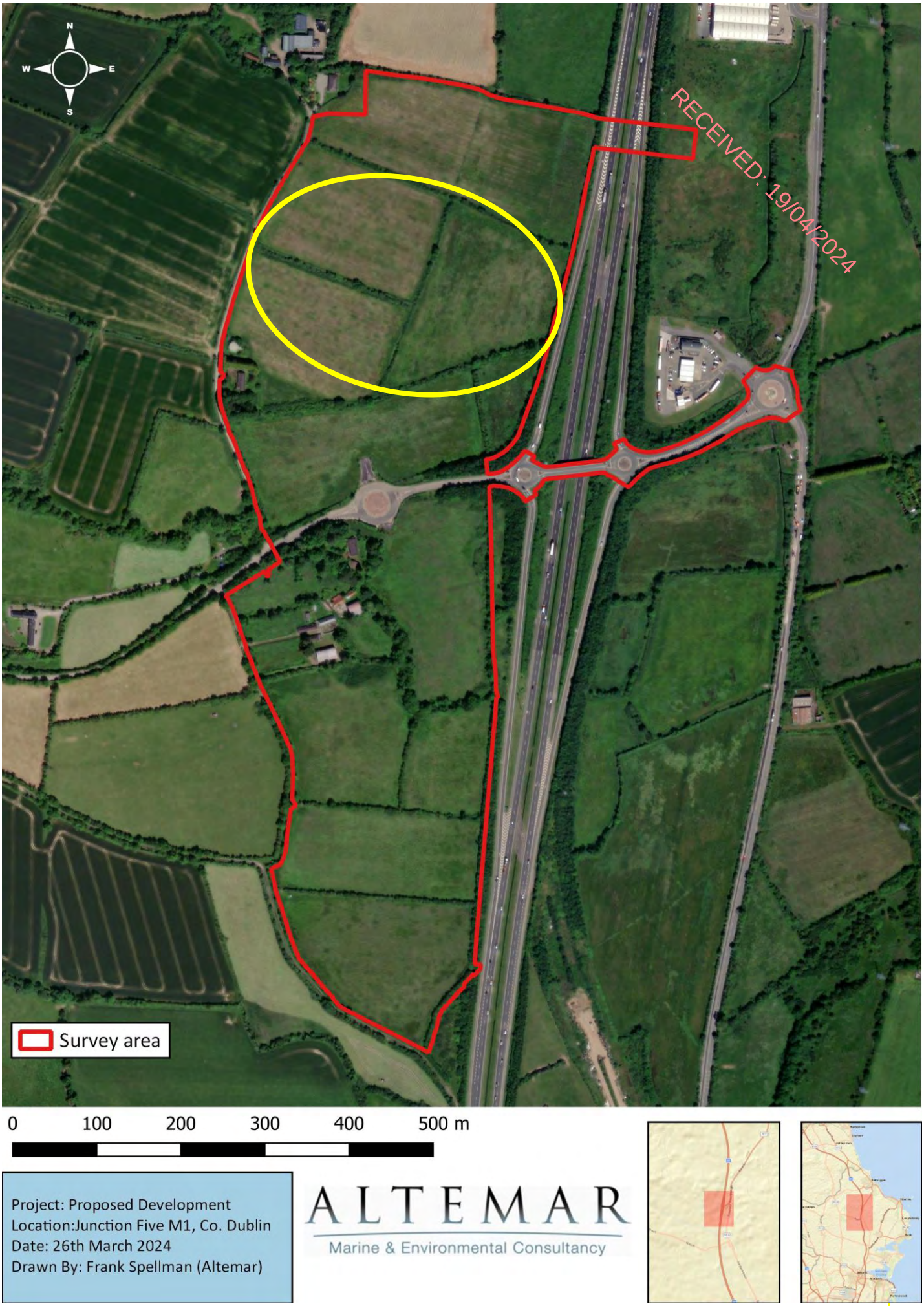

Figure 2. *Primary Wintering bird area within the survey area based on observations.*

Wintering bird assessment findings

Review of local bird records

The review of existing bird records (sourced from NBDC Database) within a 4 km^2 grid (Reference grids O1859, O1858, O1857 & O1758) encompassing the study area reveals that two known bird species have previously been observed and recorded locally, of which one is currently red listed BoCCI (*Table 2*).

***Table 2:** Status of bird species within 4 km^2 (grids O1859, O1858, O1857 & O1758)*

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
Common Buzzard (*Buteo buteo*)	1	08/01/2011	Birds of Ireland	Green
Common Kestrel (*Falco tinnunculus*)	1	12/10/2017	Birds of Ireland	Red

Mitigation

The proposed site outline within the survey area is of relatively low importance to the local wintering bird population. However, the impact of the development during construction phase will be a loss of existing habitats and species. The following mitigation measures relevant to birds, as well as those outlined within the accompanying NIS and EIAR, shall be implemented to minimise any potential negative impact on biodiversity:

- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- All mitigation measures outlined in the EIAR Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) (if applicable) that pertain to the construction stage of the proposed development will be implemented by the Contractor.
- The effectiveness of the proposed mitigation will be monitored throughout the construction period.
- The construction corridor will be marked out prior to the commencement of construction.
- All construction work will be confined strictly to the construction corridor. Any construction works required outside the construction corridor will require prior approval from the ER.
- Lighting during construction should not spill outside the proposed development.

Conclusion

Twelve wintering bird surveys (bimonthly) were carried out at this site between October 2023 and March 2024. The surveys comply with bird survey guidance documentation including BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) and following CIEEM guidelines. Wind conditions were sub-optimal for the survey on the 21th December 2023 (Beaufort scale 6), but were considered favourable on all other occasions.

A total of 32 species were recorded within the survey area across twelve surveys (see Appendix I for individual observations).

21 green-listed bird species of conservation concern were recorded within the survey area.

Eight amber-listed bird species of conservation concern were recorded within the survey area: black-headed gull, goldcrest, greenfinch, house sparrow, herring gull, linnet, skylark and starling.

Three red listed bird species of conservation concern were recorded within the survey area: meadow pipit, redwing and snipe. The hotspot of bird activity observed within the survey area (*Figure 15.*) were the central arable fields in the northern half of the survey area. Mitigation measures are proposed.

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Appendix I

Table 1: Individual observations recorded

Survey	Date	Time	Species	No.	Behaviour	Metres	Details
1	27/10/2023	15:15	Jackdaw	3	Flight path	30	East flight path across M1 Business Park
1	27/10/2023	15:19	Robin	1	Calling		From treeline along north of road between M1 and M1 Business Park.
1	27/10/2023	15:38	Jackdaw	38	Flight path	30	Northeast flight across centre of northern half of survey area.
1	27/10/2023	15:43	Woodpigeon	1	Flight path	20	Southwest flight across centre of site.
1	27/10/2023	15:49	Goldfinch	12	Flight path	10	Southeast flight across centre of northern half of site.
1	27/10/2023	15:59	Linnet	27	Perched		Within vegetated field boundary in centre of northern half of survey area.
1	27/10/2023	16:05	Dunnock	1	Calling		From vegetated field boundary in centre of northern section of survey area.
1	27/10/2023	16:14	Jackdaw	1	Flight path	20	Southern flight across southwest corner of site.
1	27/10/2023	16:15	Dunnock	1	Singing		Within hedgerow along path along southwestern boundary of site.
1	27/10/2023	16:15	Wren	1	Singing		Within hedgerow along path along southwestern boundary of site.
1	27/10/2023	16:17	Woodpigeon	1	Flight path	30	North flight across southern section of site.
1	27/10/2023	16:20	Meadow pipit	9	Foraging		Foraging in southern field of survey area
1	27/10/2023	16:22	Jackdaw	2	Flight path	30	Northeast flight across centre of site.
1	27/10/2023	16:24	Black-headed gull	1	Flight path	40	Southwest flight across southern half of survey area.
1	27/10/2023	16:28	Robin	1	Foraging		In field margin south of boundary to buildings in south of site.
1	27/10/2023	16:36	Jackdaw		Flight path	30	West flight across centre of survey area.
2	31/10/2023	09:40	Jackdaw	5	Perched		On treeline between M1 and service station.
2	31/10/2023	09:42	Robin	1	Foraging		Adjacent to entrance of service station.
2	31/10/2023	09:50	Wren	1	Calling		Within roadside treeline adjacent to southeast corner of northern survey area fields.
2	31/10/2023	09:58	Herring gull	28	Foraging		In field between farm buildings and M1.
2	31/10/2023	09:58	Jackdaw	12	Foraging		In field between farm buildings and M1.
2	31/10/2023	09:58	Rook	5	Foraging		In field between farm buildings and M1.
2	31/10/2023	10:11	Jackdaw	6	Flight path		Southeast flight across southern half of survey area.
2	31/10/2023	10:15	Robin	1	Foraging		In scrub in field to north of abandoned house and farmyard.

2	31/10/2023	10:19	Blackbird	1	Foraging		Along vegetated field boundary adjacent to rear of agricultural shed.
2	31/10/2023	10:21	Pheasant	1	Flushed		Flushed from field to south of abandoned house.
2	31/10/2023	10:26	Robin	1	Foraging		Foraging on pavement adjacent to front of abandoned house in centre of survey area.
2	31/10/2023	10:37	Woodpigeon	2	Flight path		Southeast flight across southern half of survey area.
2	31/10/2023	10:39	Robin	1	Foraging		On path along western boundary of fields in southern survey area.
2	31/10/2023	10:41	Blackbird	1	Foraging		On path along western boundary of fields in southern survey area.
2	31/10/2023	10:47	Blackbird	1	Foraging		Along road to west of northern half of survey area.
2	31/10/2023	10:48	Dunnock	1	Calling		From hedgerow immediately west of road to west of northern half of survey area.
2	31/10/2023	10:56	Herring gull	15	Large flight		Over road through centre of survey area.
2	31/10/2023	10:59	Linnet	3	Foraging		On pile of cleared vegetation in field in centre of northern half of survey area.
2	31/10/2023	11:05	Linnet	1	Flight path	10	South flight across west of northern half of survey area.
2	31/10/2023	11:09	Dunnock	1	Calling		Vegetated dividing field boundary in west of northern half of site.
2	31/10/2023	11:13	Rook	1	Flight path	30	North flight across northern half of survey area.
2	31/10/2023	11:19	Meadow pipit	2	Foraging		Adjacent to central vegetated field boundary in northern half of site.
2	31/10/2023	11:25	Robin	1	Calling		From treeline adjacent to standalone roundabout in centre of survey area.
2	31/10/2023	11:29	Herring gull	1	Flight path	30	South flight across service station.
3	08/11/2023	10:18	Herring gull	2	Flight path	20	South flight across service station.
3	08/11/2023	10:20	Woodpigeon	1	Flight path	10	North flight path across service station.
3	08/11/2023	10:21	Jackdaw	1	Flight path	10	South flight across service station.
3	08/11/2023	10:23	Rook	1	Perched		On treeline on south verge of road from M1 to service station.
3	08/11/2023	10:25	Rook	1	Flight path	20	Northeast flight across centre/east of survey area.
3	08/11/2023	10:27	Herring gull	2	Flight path	20	West flight from over service station area over M1 and northern half of survey area.
3	08/11/2023	10:43	Rook	2	Flight path	30	East flight across northern half of survey area and M1.
3	08/11/2023	10:43	Jackdaw	2	Flight path	30	East flight across northern half of survey area and M1.
3	08/11/2023	10:45	Blue tit	1	Foraging		In southeast verge of fields in northern half of survey area.
3	08/11/2023	10:46	Rook	40	Flight path	30	East flight across northern half of survey area and M1.
3	08/11/2023	10:52	Dunnock	1	Foraging		In scrub in eastern field of northern half of survey area.

3	08/11/2023	10:56	Rook	1	Flight path	30	East flight across northern half of survey area and M1.
3	08/11/2023	10:57	Magpie	1	Foraging		In eastern field of northern half of survey area.
3	08/11/2023	10:59	Dunnock	1	Calling		In central vegetated field boundary in northern half of survey area.
3	08/11/2023	11:10	Dunnock	1	Calling		From hedgerow dividing lane and western field of northern half of survey area.
3	08/11/2023	11:13	Jackdaw	1	Flight path	10	West flight across northern half of survey area.
3	08/11/2023	11:15	Jackdaw	2	Flight path		West flight across southern field of northern half of survey area.
3	08/11/2023	11:22	Jackdaw	3	Flight path	30	Southeast flight across north half of survey area.
3	08/11/2023	11:25	Blackbird	1	Foraging		Along road to west of fields in northern half of survey area.
3	08/11/2023	11:26	Linnet	26	Foraging		In field to north of storage tank in northern half of survey area.
3	08/11/2023	11:27	Great tit	1	Foraging		In vegetation surrounding storage tank in west of northern half of survey area.
3	08/11/2023	11:30	Wren	1	Calling		Within garden of abandoned house in west of northern half of survey area.
3	08/11/2023	11:35	Rook	2	Perched		In treeline along southern verge of road in west of survey area.
3	08/11/2023	11:37	Woodpigeon	25	Perched		In cypress tree within farmyard in centre of survey area.
3	08/11/2023	11:37	Jackdaw	30	Perched		In cypress tree within farmyard in centre of survey area.
3	08/11/2023	11:40	Woodpigeon	5	Flight path	20	West flight across fields in southern half of survey area.
3	08/11/2023	11:41	Magpie	1	Flight path	10	West flight from treeline on west field boundary in south of site into adjacent field to west.
3	08/11/2023	11:42	Buzzard	1	Flight path	30	Southeast flight across centre of survey area.
3	08/11/2023	11:43	Woodpigeon	1	Flight path	10	East flight across southern half of survey area.
3	08/11/2023	11:46	Rook	15	Large flight		Over road and fields between M1 exit and roundabout in centre of survey area.
3	08/11/2023	11:51	Blue tit	1	Foraging		In vegetated field boundary dividing south of farmyard to fields.
3	08/11/2023	11:54	Woodpigeon	3	Perched		In cypress tree within farmyard in centre of survey area.
3	08/11/2023	11:59	Jackdaw	1	Flight path	10	West flight across centre of survey area.
3	08/11/2023	12:05	Robin	1	Singing		In woods to south of roundabout in centre of survey area.
3	08/11/2023	12:15	Rook	6	Flight path	20	Southeast flight across M1 and service station area.
4	16/11/2023	16:45	Blackbird	1	Perched		In treeline on southern verge of road from M1 to service station.
4	16/11/2023	13:35	Jackdaw	16	Perched		In treeline between M1 and service station.

4	16/11/2023	15:32	Jackdaw	1	Flight path	20	Southwest flight from M1 over centre of survey area.
4	16/11/2023	16:04	Blackbird	1	Flight path	10	East flight across field to north of abandoned farmhouse.
4	16/11/2023	14:25	Woodpigeon	15	Flight path	10	West flight across field to north of abandoned farmhouse.
4	16/11/2023	16:08	Herring gull	11	Flight path	50	South flight across centre and south survey area.
4	16/11/2023	16:06	Wren	1	Foraging		In courtyard of abandoned farmhouse/sheds.
4	16/11/2023	16:03	Woodpigeon	4	Flight path	10	Southwest flight from abandoned farmyard over west boundary of survey area.
4	16/11/2023	16:01	Robin	1	Foraging		Within vegetated field boundary in southwest of survey area.
4	16/11/2023	15:58	Herring gull	2	Flight path	100	South flight over M1.
4	16/11/2023	15:59	Robin	1	Foraging		Within vegetated field boundary in southwest of survey area.
4	16/11/2023	15:55	Blackbird	1	Foraging		Along lane along southwest survey area boundary.
4	16/11/2023	15:53	Woodpigeon	2	Flight path	10	Southwest flight from farmyard across southwestern survey area boundary.
4	16/11/2023	15:50	Starling	2	Flight path	20	West flight over road dividing north and south survey areas.
4	16/11/2023	15:49	Pheasant	1	Foraging		Along road dividing north and south survey areas.
4	16/11/2023	15:44	Woodpigeon	1	Flight path	20	West flight over road dividing north and south survey areas.
4	16/11/2023	13:54	Buzzard	1	Large flight	30	Circling over northern half of southern survey area.
4	16/11/2023	14:20	Herring gull	5	Flight path	20	South flight over fields to west of survey area.
4	16/11/2023	13:50	Dunnock	1	Foraging		In southwest corner of fields in northern half of survey area.
4	16/11/2023	14:09	Herring gull	1	Flight path	20	West flight path across centre of survey area.
4	16/11/2023	13:44	Pheasant	1	Flight path	10	Southwest flight across west end of road dividing survey area.
4	16/11/2023	13:53	Robin	1	Foraging		In southwest corner of fields in northern half of survey area.
4	16/11/2023	13:48	Robin	1	Calling		In northern vegetated treeline along road to west of roundabout.
4	16/11/2023	14:35	Buzzard	1	Flight path	10	South flight across fields to west of northern half of survey area.
4	16/11/2023	14:08	Robin	3	Foraging		Field margin to west of abandoned house in northern half of survey area.
4	16/11/2023	13:58	Jackdaw	22	Flight path	20	West flight across southern field of northern half of survey area.
4	16/11/2023	14:44	Herring gull	85	Foraging		Foraging in ploughed fields to west of northern half of survey area.
4	16/11/2023	14:44	Herring gull	85	Large flight		Large flight of foraging birds from fields to west of northern half of survey area.

4	16/11/2023	14:54	Dunnock	1	Calling		From vegetated boundary between fields in west of northern half of survey area.
4	16/11/2023	14:53	Linnet	1	Flight path	10	From centre of northern half of survey area west over field boundary.
4	16/11/2023	15:41	Linnet	16	Flight path	10	North from field east of abandoned farmyard over road into field in north of survey area.
4	16/11/2023	15:40	Jackdaw	2	Flight path	20	Northwest flight from M1 junction over fields in north of survey area.
4	16/11/2023	15:19	Magpie	1	Foraging		In centre-east field on northern half of survey area.
4	16/11/2023	15:17	Woodpigeon	1	Flight path	20	Northwest flight across north end of survey area.
4	16/11/2023	14:50	Magpie	1	Foraging		In centre field of northern half of survey area.
4	16/11/2023	15:15	Dunnock	1	Calling		Within boundary of central fields in northern half of survey area.
5	05/12/2023	14:45	Buzzard	1	Flight path	30	Southeast flight over abandoned farmyard and M1.
5	05/12/2023	15:03	Jackdaw	8	Perched		On treeline between service station and M1.
5	05/12/2023	15:03	Rook	7	Perched		On treeline between service station and M1.
5	05/12/2023	15:06	Black-headed gull	10	Flight path	30	Northeast flight across southern survey area and M1 junction.
5	05/12/2023	15:10	Woodpigeon	4	Flight path	10	West flight across northeastern field of southern half of survey area.
5	05/12/2023	15:14	Blue tit	2	Foraging		Along eastern boundary of northeast field of southern half of survey area.
5	05/12/2023	15:30	Black-headed gull	50	Large flight		Large east flight over roughly 30 minutes across centre of southern half of survey area over M1.
5	05/12/2023	15:40	Wren	1	Foraging		In vegetated ditch dividing fields in east of southern half of survey area.
5	05/12/2023	15:48	Wren	1	Foraging		Along ditch dividing fields in southeast of southern half of survey area.
5	05/12/2023	15:51	Rook	1	Flight path	20	Southwest flight across fields to south of service station towards south of survey area.
5	05/12/2023	15:55	Song thrush	1	Foraging		In second southernmost field of survey area along vegetated field boundary.
5	05/12/2023	15:57	Wren	1	Foraging		Within vegetated field boundary in west of southern half of survey area.
5	05/12/2023	16:00	Robin	1	Foraging		Along lane to west of southern half of survey area.
5	05/12/2023	16:03	Blackbird	2	Foraging		Along lane to west of southern half of survey area.
5	05/12/2023	16:03	Woodpigeon	2	Perched		In treeline along lane to west of southern half of survey area.
5	05/12/2023	16:15	Woodpigeon	26	Perched		In cypress treeline to south of abandoned house in northern half of survey area.

5	05/12/2023	16:17	Woodpigeon	5	Perched		In deciduous treeline to south of abandoned house in northern half of survey area.
5	05/12/2023	16:20	Wren	1	Calling		Within hedgerow along western boundary of northern half of survey area.
5	05/12/2023	16:24	Robin	1	Calling		In vegetated boundary between fields in centre of northern section of survey area.
5	05/12/2023	16:26	Robin	1	Calling		In vegetated boundary between fields in north of northern section of survey area.
6	21/12/2023	14:34	Woodpigeon	1	Flight path	10	North flight path across service station.
6	21/12/2023	14:39	Herring gull	3	Flight path	50	North flight over M1.
6	21/12/2023	14:51	Chaffinch	4	Foraging		In hedgerow between field and roundabout in centre of survey area.
6	21/12/2023	14:59	Magpie	2	Foraging		In centre-east field of northern half of site.
6	21/12/2023	15:12	Chaffinch	1	Foraging		In vegetated boundary between fields in northwest of site.
6	21/12/2023	15:20	Herring gull	8	Flight path	60	Northwest flight across centre of survey area.
6	21/12/2023	15:26	Rook	1	Flight path	60	North flight over M1.
6	21/12/2023	15:34	Herring gull	1	Flight path	60	Northeast flight across northern half of survey area.
6	21/12/2023	15:40	Woodpigeon	1	Flight path	20	South flight across west of northern half of survey area.
6	21/12/2023	15:53	Snipe	2	Flushed		Flushed from northwest field of northern half of survey area.
6	21/12/2023	15:56	Jackdaw	6	Flight path	40	South flight across west of northern half of survey area.
6	21/12/2023	16:02	Woodpigeon	27	Perched		In cypress treeline to north of abandoned house in west of northern half of survey area.
6	21/12/2023	16:18	Blackbird	1	Foraging		Along lane to west of southern half of survey area.
6	21/12/2023	16:20	Rook	2	Flight path	20	Northwest flight across abandoned farmyard.
6	21/12/2023	16:23	Woodpigeon	2	Flight path	30	West flight across northeast of southern half of survey area.
6	21/12/2023	16:31	Chaffinch	1	Foraging		Within vegetated ditch in northeast of southern half of survey area.
6	21/12/2023	16:37	Blackbird	1	Foraging		Within field to south of abandoned farmyard.
6	21/12/2023	16:38	Wren	1	Foraging		Within field to south of abandoned farmyard.
6	21/12/2023	16:44	Woodpigeon	2	Perched		Within treeline in southwest corner of northern half of survey area.
6	21/12/2023	16:50	Blackbird	1	Foraging		On verge of roundabout in centre of survey area.
6	21/12/2023	16:58	Jackdaw	1	Flight path	30	Southwest flight across M1 junction.
7	19/01/2024	14:23	Jackdaw	8	Flight path	40	West flight across M1 into southern half of survey area.

7	19/01/2024	14:29	Woodpigeon	1	Flight path	30	North flight across west end of M1 junction.
7	19/01/2024	14:40	Robin	1	Foraging		Foraging in field to east of abandoned farmyard.
7	19/01/2024	14:46	Rook	2	Flight path	30	East flight across south half of survey area.
7	19/01/2024	15:03	Robin	1	Foraging		In drainage ditch to east of abandoned farmyard.
7	19/01/2024	15:16	Blackbird	1	Foraging		In field in west of southern half of survey area.
7	19/01/2024	15:25	Rook	2	Flight path	40	West flight across north portion of southern half of survey area.
7	19/01/2024	15:35	Herring gull	9	Flight path	80	East flight across south of southern half of survey area.
7	19/01/2024	15:38	Song thrush	2	Foraging		On southeast verge of field of southeasternmost field in survey area.
7	19/01/2024	15:43	Black-headed gull	1	Flight path	30	Southeast flight across southern half of survey area.
7	19/01/2024	15:46	Wren	1	Foraging		On southeast verge of field of southeasternmost field in survey area.
7	19/01/2024	15:48	Long-tailed tit	3	Foraging		Within treeline in wood in southeast of survey area.
7	19/01/2024	15:58	Pied wagtail	2	Foraging		On field margin in southwest of southern half of survey area.
7	19/01/2024	16:08	Herring gull	12	Flight path	100	Northeast flight across south of southern half of survey area.
7	19/01/2024	16:12	Robin	1	Foraging		Foraging in lane west of abandoned farmyard.
7	19/01/2024	16:15	Herring gull	8	Flight path	120	East flight across south half of survey area.
7	19/01/2024	16:18	Blackbird	2	Foraging		Within southwest corner of southwest field of northern half of survey area.
7	19/01/2024	16:22	Woodpigeon	2	Perched		In treeline between lane and field in southwest of northern half of survey area.
7	19/01/2024	16:24	Woodpigeon	28	Perched		In cypress treeline surrounding abandoned house in northern half of survey area.
7	19/01/2024	16:30	Meadow pipit	1	Foraging		Within field in centre of northern half of survey area.
7	19/01/2024	16:33	Dunnock	1	Calling		Within vegetated field boundary between field in northeast of northern half of survey area.
7	19/01/2024	16:37	Herring gull	42	Flight path	200	East flight across south end of northern half of survey area.
7	19/01/2024	16:38	Herring gull	28	Flight path	200	Northeast flight across northern half of survey area.
7	19/01/2024	17:01	Buzzard	1	Flight path	60	West flight from east of M1 into northern half of survey area.
8	24/01/2024	10:18	Rook	3	Perched		On railing along entrance to service station.
8	24/01/2024	10:26	Rook	28	Perched		In treeline between service station and M1.
8	24/01/2024	10:28	Robin	1	Calling		In vegetation between M1 and west entrance ramp.

8	24/01/2024	10:35	Robin	1	Foraging		Along verge of field adjacent to treeline on southern boundary of northern half of survey area.
8	24/01/2024	10:37	Chaffinch	1	Foraging		Along verge of field adjacent to treeline on southern boundary of northern half of survey area.
8	24/01/2024	10:43	Woodpigeon	18	Foraging		In centre of fields in centre of northern half of site.
8	24/01/2024	10:48	Meadow pipit	1	Foraging		In field in east of northern half of survey area.
8	24/01/2024	10:53	Buzzard	1	Perched		Perched on field in northwest of northern half of survey area.
8	24/01/2024	11:02	Blackbird	1	Foraging		In vegetated field division in northern half of survey area.
8	24/01/2024	11:03	Chaffinch	2	Foraging		In vegetated field division in northern half of survey area.
8	24/01/2024	11:09	Linnet	22	Large flight		Area over northwest boundary of northern half of survey area.
8	24/01/2024	11:16	Chaffinch	2	Foraging		In scrub adjacent to abandoned house in northern half of survey area.
8	24/01/2024	11:21	Rook	3	Flight path	20	East flight across northern half of survey area.
8	24/01/2024	11:22	Pheasant	1	Foraging		In southwest corner of southwestern most field of northern half of survey area.
8	24/01/2024	11:30	Woodpigeon	2	Perched		In treeline along lane to west of southern half of survey area.
8	24/01/2024	11:35	Rook	13	Foraging		In central field of southern half of survey area.
8	24/01/2024	11:42	Blackbird	1	Foraging		Along field margin in southwest of southern survey area.
8	24/01/2024	11:48	Blackbird	1	Foraging		Along survey area boundary in south of site.
8	24/01/2024	11:56	Woodpigeon	2	Perched		In trees bordering field on southeasternmost field boundary.
8	24/01/2024	11:59	Magpie	2	Foraging		In centre of southernmost field.
8	24/01/2024	12:12	Goldcrest	2	Foraging		In scrub along drainage ditch in east of southern half of survey area.
8	24/01/2024	12:19	Black-headed gull	2	Flight path	80	East flight across southern half of survey area over abandoned farmyard.
8	24/01/2024	12:23	Woodpigeon	4	Perched		In canopy lining boundary of abandoned farmyard courtyard.
8	24/01/2024	12:27	Jackdaw	4	Perched		In canopy between abandoned farmhouse and road in centre of survey area.
8	24/01/2024	12:35	Woodpigeon	1	Perched		In woods between abandoned farmhouse and road in centre of survey area.
8	24/01/2024	12:35	Blackbird	1	Singing		In woods between abandoned farmhouse and road in centre of survey area.
9	07/02/2024	14:20	Jackdaw	35	Perched	35	On treeline between M1 and service station.
9	07/02/2024	14:20	Rook	18	Perched	18	On treeline between M1 and service station.

9	07/02/2024	14:26	Woodpigeon	2	Perched		On treeline between M1 and entrance ramp northbound.
9	07/02/2024	14:28	Herring gull	1	Flight path	50	Northwest flight over north of survey area.
9	07/02/2024	14:38	Rook	21	Flight path	30	Southwest flight across south of survey area.
9	07/02/2024	14:52	Great tit	1	Perched		On treeline between M1 and south half of survey area.
9	07/02/2024	15:02	Jackdaw	2	Perched		On treeline along ditch dividing fields in south of survey area.
9	07/02/2024	15:12	Wren	1	Perched		On fence along southeast survey area boundary.
9	07/02/2024	15:16	Wren	1	Perched		On scrub along ditch dividing fields in south of survey area.
9	07/02/2024	15:43	Woodpigeon	1	Flight path	10	Southeast flight across southern corner of survey area.
9	07/02/2024	15:58	Blackbird	1	Foraging		On path along southwest survey area boundary.
9	07/02/2024	15:59	Robin	1	Foraging		On path along southwest survey area boundary.
9	07/02/2024	16:03	Robin	1	Foraging		On path along southwest survey area boundary.
9	07/02/2024	16:06	Blackbird	1	Foraging		On path along southwest survey area boundary.
9	07/02/2024	16:11	Woodpigeon	6	Perched		In large cypress tree adjacent to farmyard.
9	07/02/2024	16:16	Robin	1	Foraging		Along road boundary.
9	07/02/2024	16:18	Woodpigeon	1	Flight path	20	Southeast flight across centre of site.
9	07/02/2024	16:25	Woodpigeon	40	Perched		Within cypress treeline surrounding abandoned house and garden in north of survey area.
9	07/02/2024	16:25	Buzzard	1	Perched		Within cypress treeline surrounding abandoned house and garden in north of survey area.
9	07/02/2024	16:29	Blackbird	2	Foraging		In abandoned garden adjacent to abandoned house in north of survey area.
9	07/02/2024	16:47	Rook	22	Flight path		Northwest flight over north of survey area.
9	07/02/2024	16:53	Jackdaw	110	Flight path		Northwest flight over north of survey area.
9	07/02/2024	16:53	Rook	80	Flight path		Northwest flight over north of survey area.
9	07/02/2024	17:01	Meadow pipit	1	Foraging		In field in northeast of survey area.
9	07/02/2024	17:23	Pied wagtail	1	Foraging		Around service station.
10	12/02/2024	11:08	Chaffinch	1	Foraging		In boundary between M1 exit roundabout and northern half of survey area.
10	12/02/2024	11:14	Buzzard	1	Perched		On stack of cut vegetation in northwest of survey area, to the south of 12:28 observation.
10	12/02/2024	11:23	Chaffinch	19	Large flight		Over fields in northeast of survey area, occasionally landing to forage.

10	12/02/2024	11:28	Meadow pipit	1	Foraging		In field in northeast of survey area.
10	12/02/2024	11:36	Song thrush	1	Foraging		On margin of field in northeast corner of survey area.
10	12/02/2024	11:39	Woodpigeon	1	Perched		On treeline along northern boundary of survey area.
10	12/02/2024	11:45	Jackdaw	5	Flight path		Southwest flight over northwest corner of survey area.
10	12/02/2024	11:49	Hooded crow	1	Flight path	5	South flight across northern half of survey area.
10	12/02/2024	11:54	Skylark	1	Foraging		In field in northwest corner of survey area.
10	12/02/2024	12:07	Herring gull	2	Flight path	10	South flight over northwest of survey area.
10	12/02/2024	12:12	Rook	12	Flight path	50	East flight across centre-north of survey area.
10	12/02/2024	12:21	Blackbird	1	Perched		On hedgerow along northwest survey area boundary.
10	12/02/2024	12:28	Skylark	1	Foraging		On stack of cut vegetation in northwest of survey area.
10	12/02/2024	12:28	Chaffinch	7	Foraging		On stack of cut vegetation in northwest of survey area.
10	12/02/2024	12:33	Woodpigeon	1	Perched		In cypress treeline adjacent to abandoned house.
10	12/02/2024	12:35	Woodpigeon	1	Perched		In cypress treeline adjacent to abandoned house.
10	12/02/2024	12:41	Woodpigeon	1	Flight path	10	North flight over farmhouse.
10	12/02/2024	12:43	Woodpigeon	1	Foraging		Along western drive to farmhouse/yard.
10	12/02/2024	12:49	Jackdaw	27	Foraging		In field in southwest of survey area.
10	12/02/2024	12:53	Woodpigeon	5	Perched		In treeline along path on southwest boundary of survey area.
10	12/02/2024	12:55	Blackbird	1	Foraging		Along path on southwest survey area boundary.
10	12/02/2024	13:13	Rook	9	Flight path	20	West flight over farmhouse/yard.
10	12/02/2024	13:13	Jackdaw	18	Flight path	20	West flight over farmhouse/yard.
10	12/02/2024	13:21	Woodpigeon	1	Perched		In wood canopy between farmhouse and Bhailsigh Road.
10	12/02/2024	13:23	Woodpigeon	1	Perched		In cypress tree adjacent to farmyard.
10	12/02/2024	13:29	Jackdaw	2	Flight path	30	East flight across centre-south of survey area.
10	12/02/2024	13:33	Rook	9	Flight path	30	Southeast flight over M1 junction.
10	12/02/2024	13:33	Jackdaw	20	Flight path	30	Southeast flight over M1 junction.
10	12/02/2024	13:34	Rook	4	Flight path	20	West flight over south half of survey area.
10	12/02/2024	13:40	Snipe	1	Flight path	30	South flight over service station.
11	01/03/2024	13:07	Herring Gull	1	Flight Path	20	E along field N of the roundabouts onsite.
11	01/03/2024	13:16	Chaffinch	1	Perched		E of most W roundabout.
11	01/03/2024	13:18	Herring Gull	3	Flight Path	30	W across S field of N portion.
11	01/03/2024	13:30	Woodpigeon	1	Flight Path	10	N through centre of N portion.
11	01/03/2024	13:31	Robin	1	Perched		By the house in Northern portion of the site.

11	01/03/2024	13:31	Wren	1	Perched		By the house in Northern portion of the site.
11	01/03/2024	11:02	Woodpigeon	1	Perched		At the most E roundabout within the site.
11	01/03/2024	11:03	Robin	1	Perched		At the most E roundabout within the site.
11	01/03/2024	11:07	Woodpigeon	1	Flight Path	20	NW across series of roundabouts.
11	01/03/2024	11:09	Woodpigeon	2	Flight Path	20	NW across series of roundabouts.
11	01/03/2024	11:14	Jackdaw	4	Flight Path	20	N across site
11	01/03/2024	11:14	Hooded crow	2	Flight Path	20	N across site
11	01/03/2024	11:15	Jackdaw	35	Flight Path	20	NW across series of roundabouts.
11	01/03/2024	11:16	Robin	1	Perched		Central roundabouts.
11	01/03/2024	11:19	Herring Gull	5	Large Flight	30	Around the southern portion of the site.
11	01/03/2024	11:19	Woodpigeon	1	Flight Path	15	E over N field of S portion.
11	01/03/2024	11:20	Dunnock	1	Perched		E hedgerow of N field.
11	01/03/2024	11:22	Chaffinch	3	Perched		E hedgerow of N field.
11	01/03/2024	11:24	Blackbird	1	Perched		At the most W roundabout within the site.
11	01/03/2024	11:25	Wren	1	Perched		E hedgerow of N field.
11	01/03/2024	11:28	Blackbird	1	Perched		Treeline east of farm yard.
11	01/03/2024	11:30	Woodpigeon	1	Flight Path	15	E across southern portion of site.
11	01/03/2024	11:37	Woodpigeon	2	Flight Path	10	East across farm yard.
11	01/03/2024	11:38	Woodpigeon	8	Flight Path	10	East across farm yard.
11	01/03/2024	11:42	Blackbird	2	Perched		Farm yard.
11	01/03/2024	11:44	Blue tit	1	Perched		N hedgerow of S portion.
11	01/03/2024	11:45	Robin	1	Perched		S of most W roundabout.
11	01/03/2024	11:45	Blie tit	1	Perched		S of most W roundabout.
11	01/03/2024	11:45	Robin	1	Perched		N hedgerow of S portion.
11	01/03/2024	11:49	Woodpigeon	1	Perched		N on W hedgerow in S portion of site.
11	01/03/2024	11:50	Herring Gull	5	Foraging		N of southern portion of site.
11	01/03/2024	11:51	Jackdaw	7	Foraging		N of southern portion of site.
11	01/03/2024	11:53	Robin	1	Perched		Farm yard.
11	01/03/2024	11:54	Jackdaw	35	Perched		E of farm yard.
11	01/03/2024	11:54	Magpie	2	Perched		Farm yard.
11	01/03/2024	11:55	Woodpigeon	1	Perched		Farm yard.
11	01/03/2024	11:56	Starling	30	Large Flight	20	Over S portion of site.
11	01/03/2024	11:58	Blue tit	1	Perched		Farm yard.
11	01/03/2024	11:59	Woodpigeon	12	Flight Path	10	S along W hedgerow of N portion.
11	01/03/2024	12:00	Great tit	1	Perched		Centre of southern W hedgerow.
11	01/03/2024	12:00	Blackbird	1	Perched		S on W hedgerow in S portion of site.
11	01/03/2024	12:02	Herring Gull	20	Large Flight	20	Over S portion of site.
11	01/03/2024	12:09	Hooded crow	4	Foraging		Most S field on site.
11	01/03/2024	12:11	Magpie	2	Foraging		Most S field on site.
11	01/03/2024	12:11	Blackbird	1	Perched		On the farm yard in southern portion of the site.
11	01/03/2024	12:12	Blue tit	1	Perched		On the farm yard in southern portion of the site.

11	01/03/2024	12:13	Herring Gull	1	Flight Path	20	E across S field of Northern portion.
11	01/03/2024	12:18	Jackdaw	85	Foraging		Most S field on site.
11	01/03/2024	12:19	Rook	6	Foraging		Most S field on site.
11	01/03/2024	12:20	House sparrows	4	Foraging		N field of S portion by the gate to the farm yard.
11	01/03/2024	12:24	Blackbird	1	Perched		E hedgerow of N field.
11	01/03/2024	12:26	Pied wagtail	2	Foraging		N field of S portion by the gate to the farm yard.
11	01/03/2024	12:26	Chaffinch	1	Perched		E hedgerow of N field.
11	01/03/2024	12:29	Robin	1	Perched		By the house in Northern portion of the site.
11	01/03/2024	12:30	Blue tit	1	Perched		By the house in Northern portion of the site.
11	01/03/2024	12:31	Dunnock	1	Perched		By the house in Northern portion of the site.
11	01/03/2024	12:32	Robin	1	Perched		W hedgerow of N portion.
11	01/03/2024	12:35	Herring Gull	12	Large Flight	30	S field of N portion.
11	01/03/2024	12:38	Dunnock	1	Perched		NE corner of site.
11	01/03/2024	12:41	Magpie	2	Flight Path	15	E across most N field.
11	01/03/2024	12:42	Jackdaw	50	Foraging		Centre of northern portion.
11	01/03/2024	12:45	Dunnock	1	Perched		W hedgerow of N portion.
11	01/03/2024	12:47	Pied wagtail	2	Foraging		Centre of northern portion.
11	01/03/2024	12:48	Magpie	1	Foraging		Most N field.
11	01/03/2024	12:55	Woodpigeon	1	Flight Path	10	E across most N field.
11	01/03/2024	12:56	Starling	4	Perched		Centre of E treeline in N portion.
12	15/03/2024	06:10	Wren	1	Perched		Gate at W hedgerow of N portion of the site.
12	15/03/2024	06:10	Dunnock	1	Perched		Gate at W hedgerow of N portion of the site.
12	15/03/2024	06:10	Robin	1	Perched		Gate at W hedgerow of N portion of the site.
12	15/03/2024	06:11	Robin	1	Perched		Treeline by house in N portion of the site.
12	15/03/2024	06:30	Jackdaw	2	Perched		Gate at W hedgerow of N portion of the site.
12	15/03/2024	06:35	Woodpigeon	2	Flight path	15	Across S hedgerow of N portion of site.
12	15/03/2024	06:36	Herring Gull	2	Flight path	30	W across N portion of site
12	15/03/2024	06:38	Chaffinch	1	Call		In treeline beside house in N portion.
12	15/03/2024	06:39	Robin	1	Perched		In tree line by house in N portion
12	15/03/2024	06:40	Blackbird	1	Perched		In tree line by house in N portion
12	15/03/2024	06:41	Woodpigeon	2	Perched		Treeline by house in N portion of the site.
12	15/03/2024	06:42	Mistle thursh	1	Call		In treeline beside house in N portion.
12	15/03/2024	06:48	Mistle thursh	1	Call		Most S field of N portion of site.
12	15/03/2024	06:49	Skylark	2	Foraging		Centre of N portion of site.
12	15/03/2024	06:51	Jackdaw	1	Flight path	30	NE over N portion of site.
12	15/03/2024	06:53	Hooded crow	5	Large flight	25	S hedgerow of N portion.
12	15/03/2024	07:00	Dunnock	1	Foraging		Centre of N portion of site,

12	15/03/2024	07:04	Meadow pipit	1	Foraging		Centre of N portion of site.
12	15/03/2024	07:08	Skylark	1	Perched		Centre of N portion of site.
12	15/03/2024	07:10	Woodpigeon	1	Perched		Centre of N portion of site,
12	15/03/2024	07:15	Black faced Gulls	2	Flight path	20	NW over SW corner of N portion.
12	15/03/2024	07:16	Blackbird	2	Flight path	10	E across N portion of site.
12	15/03/2024	07:17	Robin	1	Perched		Hedgerow within N portion of site
12	15/03/2024	07:21	Jackdaw	3	Flight path	20	S across N portion site.
12	15/03/2024	07:26	Blackbird	2	Flight path	2	S across N portion site.
12	15/03/2024	07:28	Woodpigeon	1	Flight path	20	S across site.
12	15/03/2024	07:28	Jackdaw	1	Flight path	20	S across site.
12	15/03/2024	07:28	Rook	1	Foraging		Centre of N portion of site,
12	15/03/2024	07:31	Rook	1	Flight path	15	SE across N portion of the site.
12	15/03/2024	07:44	Chaffinch	2	Perched		E hedgerow of N portion of the site.
12	15/03/2024	07:45	Meadow pipit	1	Flight path	5	NE over N portion of site.
12	15/03/2024	07:49	Jackdaw	2	Flight path	10	W across N portion of site
12	15/03/2024	07:57	Pheasant	1	Foraging		Most N field.
12	15/03/2024	09:08	Herring Gull	1	Flight path	10	NE over NE field.
12	15/03/2024	09:20	Starlings	40	Foraging		in NE field.
12	15/03/2024	09:24	Herring Gull	2	Perched		Along most E roundabout
12	15/03/2024	09:34	Hooded crow	1	Foraging		Moat W roundabout.
12	15/03/2024	09:36	Jackdaw	10	Foraging		Most S field in N portion.
12	15/03/2024	09:36	Hooded crow	4	Foraging		Most S field in N portion.
12	15/03/2024	09:42	Wren	1	Foraging		S of NE field
12	15/03/2024	09:42	Robin	1	Foraging		S of NE field
12	15/03/2024	09:43	Meadow pipit	2	Foraging		S of NE field
12	15/03/2024	09:48	Wren	1	Perched		Treeline on N of S portion of the site.
12	15/03/2024	09:48	Robin	1	Perched		Treeline on N of S portion of the site.
12	15/03/2024	09:50	Chaffinch	1	Perched		NE corner of S portion of site.
12	15/03/2024	09:56	Siskin	2	Perched		N of E hedgerow in S portion of site.
12	15/03/2024	10:01	Buzzard	1	Large flight	25	Over farm yard and S portion of site.
12	15/03/2024	10:06	Blackbird	1	Perched		Treeline beside farmyard.
12	15/03/2024	10:07	Redwing	2	Perched		Treeline beside farmyard.
12	15/03/2024	10:09	Woodpigeon	20	Flight path		SE over S portion of site.
12	15/03/2024	10:10	Redwing	7	Flight path		SE over S portion of site.
12	15/03/2024	10:10	Herring Gull	3	Large flight	20	Over farm yard.
12	15/03/2024	10:11	Chaffinch	2	Perched		Farm yard.
12	15/03/2024	10:14	Coal tit	1	Call		Farm yard.
12	15/03/2024	10:14	Great tit	1	Call		Farm yard.
12	15/03/2024	10:16	Jackdaw	2	Perched		Hedgerow within S portion of site.
12	15/03/2024	10:17	Chaffinch	1	Perched		Farm yard.
12	15/03/2024	10:18	Goldcrest	1	Perched		Farm yard.
12	15/03/2024	10:22	Mistle thrush	1	Perched		W of farm yard.
12	15/03/2024	10:23	Robin	1	Perched		W of farm yard.

12	15/03/2024	10:28	Blackbird	1	Flight path	2	S along W hedgerow.
12	15/03/2024	10:35	Herring Gull	2	Flight path	20	NW over E of S portion of site.
12	15/03/2024	10:40	Herring Gull	2	Foraging		Most S of site.
12	15/03/2024	10:50	Herring Gull	2	Flight path	20	NW over E of S portion of site.
12	15/03/2024	11:04	Greenfinch	1	Perched		E hedgerow of S portion.

11.2 Appendix III: Non-Avian Terrestrial Mammal Assessment

ALTEMAR
Marine & Environmental Consultancy

Non-avian terrestrial mammal impact assessment for a proposed development at Junction 5 M1, Co. Dublin

26th March 2024

Prepared by: Frank Spellman of Altemar Ltd.
On behalf of: M1 Vida Ltd

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Document Control Sheet			
Client	M1 Vida Ltd		
Project	Non-avian terrestrial mammal impact assessment for a proposed development at Junction 5 M1, Co. Dublin.		
Report	Non-avian terrestrial mammal impact assessment		
Date	16th November 2023 & 7th February 2024		
Version	Author	Reviewed	Date
Final	Frank Spellman	Bryan Deegan	26th March 2024

Contents

Summary

Structure/features:	The survey area consists of arable fields, agricultural grassland grazed by horses and sheep, abandoned farmhouse (including yard and sheds), and abandoned house and garden, underground gas network, a silo, hedgerows, treelines, and pockets of scrub.
Location:	Junction 5 M1, Co. Dublin.
Fauna species present:	Brown rat (*Rattus norvegicus*), fox (*Vulpes vulpes*).
Proposed work:	Infrastructure development.
Impact on non-avian mammals:	The overall impact on the ecology of the proposed development will result in a long term minor adverse, not significant, residual impact on the ecology of the site and locality overall. A NPWS derogation licence is not required at this time.
Survey by:	Frank Spellman.
Survey date:	16th November 2023 and 7th February 2024.

Receiving environment

Background

The proposed development includes:

•Provision of civil infrastructure to service future-planned commercial properties, comprising main access roads including pedestrian/cycle paths; watermains, surface water and foul drainage networks; utility services including power and telecommunications.

•Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features including an attenuation pond and raingardens.

•Upgrading and modification of the existing L1140 roundabout.

•Provision of 3.0m wide shared paths from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132.

•All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings

The proposed site outline, location, and landscape plan are demonstrated in figures 3-5.

Landscape

The landscape strategy for the proposed development has been prepared by Stephen Diamond Associates to accompany this planning application.

The proposed landscape plans is demonstrated in figure 5.

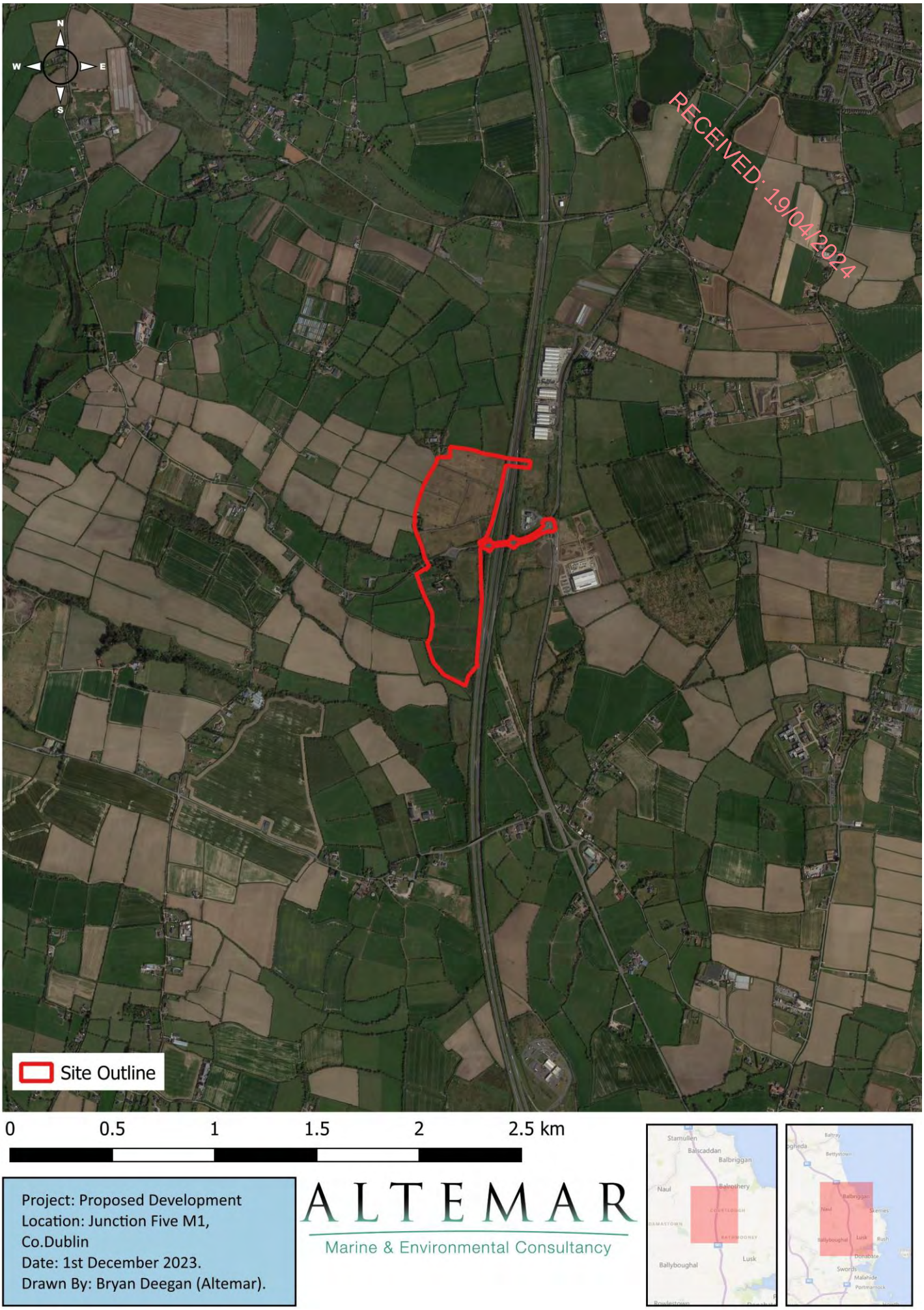

Figure 1. *Proposed site outline and location*

Figure 2. *Survey area.*

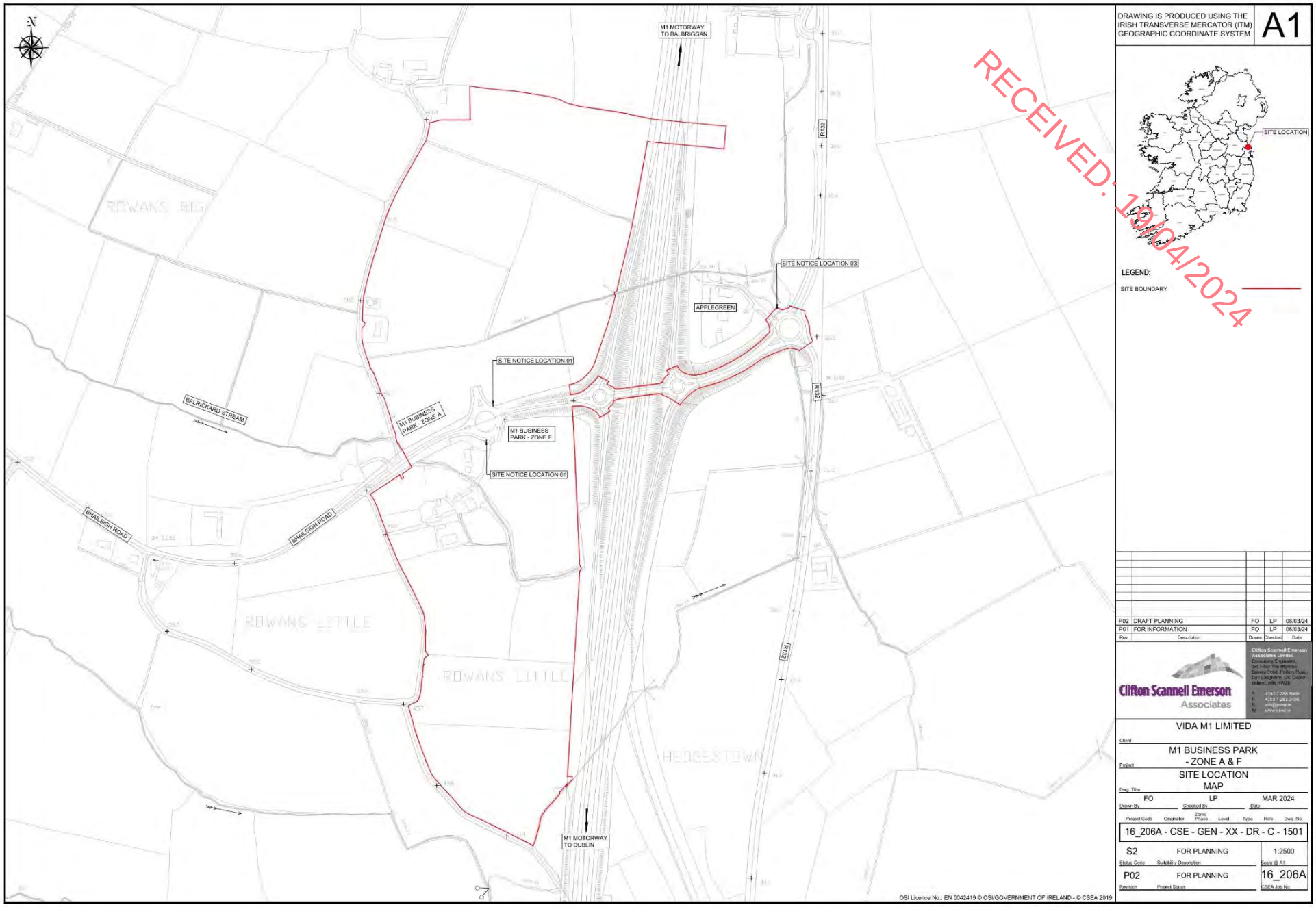

Figure 3. *Site location OS map*

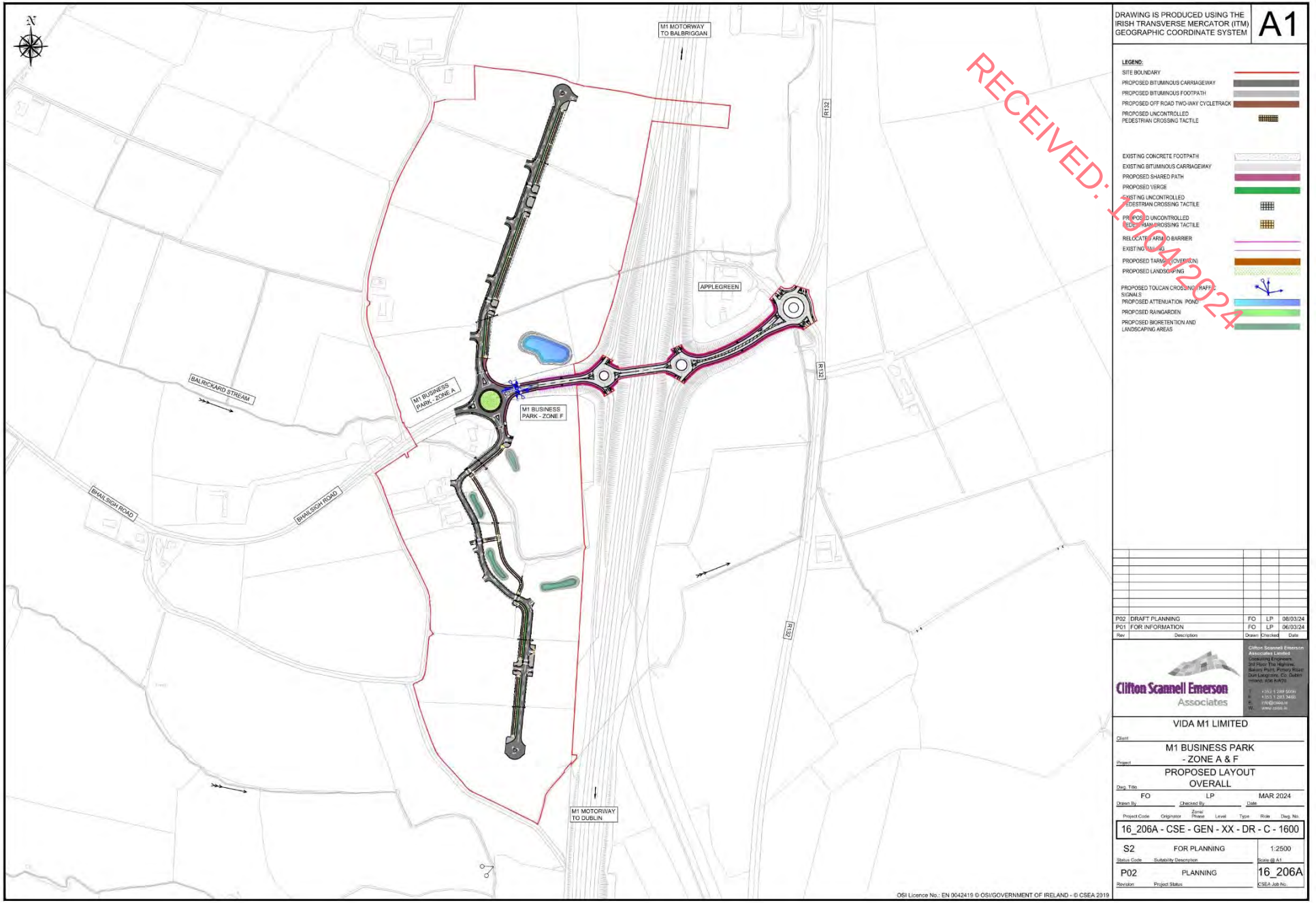

Figure 4. *Proposed overall layout*

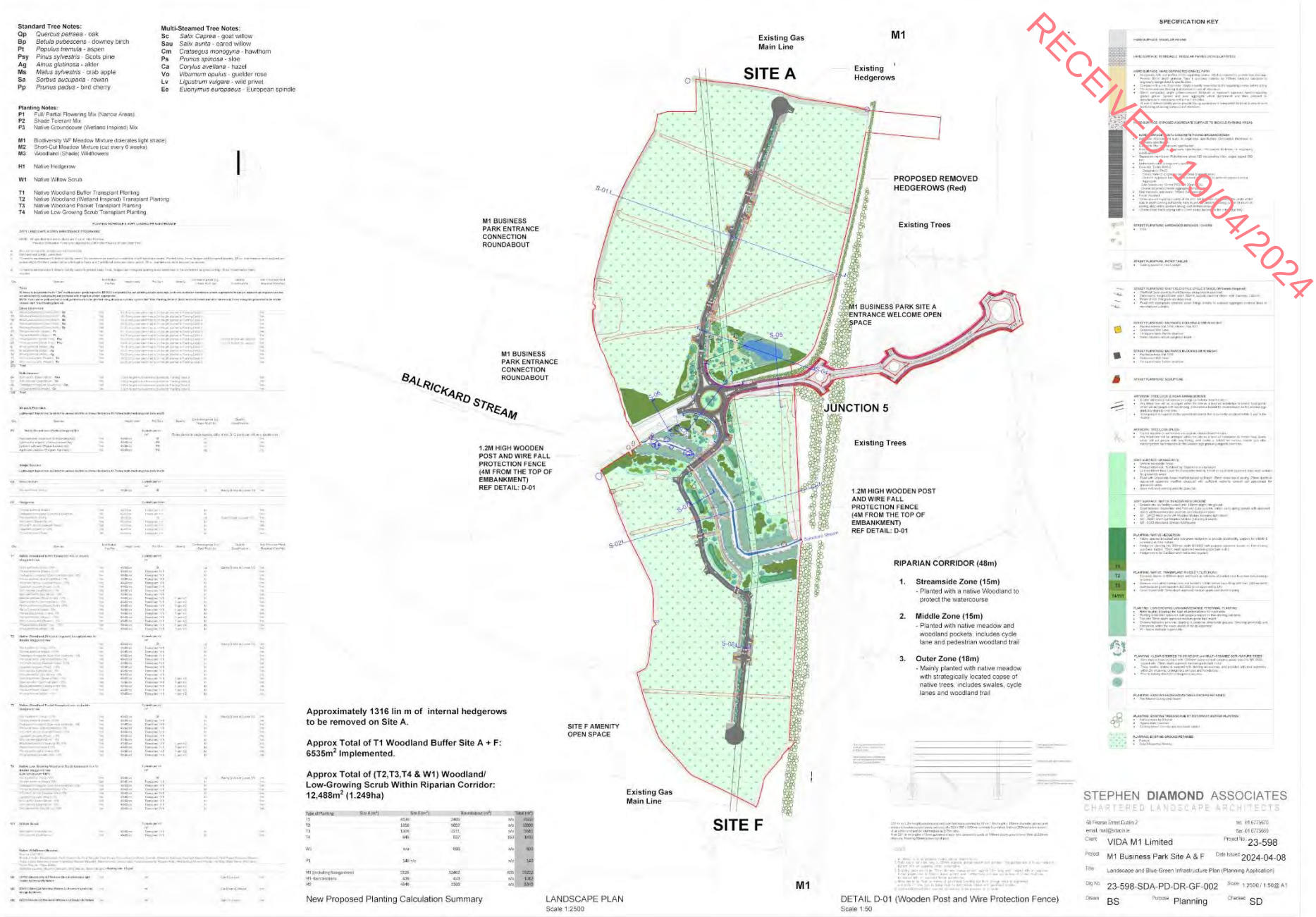

Figure 5. *Proposed landscape plan*

Competency of assessor

This report has been prepared by Frank Spellman (BSc Zoology, MSc Zoology). Frank has previous experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. The desk and field surveys were carried out using techniques approved and recommended by CIEEM.

Legislative context

A number of non-avian terrestrial mammal species are protected under the Wildlife Act (1976), Wildlife [Amendment] Acts (2000 to 2012), and Annex IV of the Habitats Directive (transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021. These include species such as badger, Irish stoat, Irish hare, brown hare, pine marten, red squirrel, otter, hedgehog, all deer species, and pygmy shrew.

The badger is also a Red Data Book species, but it is a relatively common species and ubiquitous through much of the Irish countryside (Smal, 1995).

It is standard best practice to make special provisions for badgers affected by development. Whilst the species is common in much of the Irish landscape, badgers are notable for their practice of constructing large underground tunnel and chamber systems (setts). Provisions are made for their humane removal or for their conservation on site where feasible or practicable. The Wildlife [Amendment] Act (2000-2012) protects all resting places of protected species.

Otters are protected under the Irish Wildlife Acts and are also listed under Annex II and Annex IV of the EU Habitats Directive.

Otters are relatively common in Ireland and they do occur on most rivers in this country. Protection of this species is important and provisions are made to ensure that holts are not interfered with except under especial circumstances and to ensure the quality of their foraging habitat.

Non-avian mammal survey

This report presents the results of site visits by Frank Spellman on the 16th November 2023 and 7th February 2024. A badger/mammal transect survey was carried out on each occasion. Surveys were carried out using techniques approved and recommended by CIEEM.

Survey methodology

These non-avian mammal surveys were carried out based on techniques approved and recommended by CIEEM.

Surveys were undertaken in an area that consisted of agricultural fields and associated hedgerows, ditches, tree lines, margins, a watercourse and built land, to the west of the M1 in an area known locally as Rowans Big and Rowans Little, as well as two smaller areas to the east of the M1. Due to the complex nature of the survey area, a single roving transect following the full perimeter and circumnavigating all habitats and features within the survey area was carried out in the northern half and southern half (divided by Bhailsigh Road) by a single surveyor on two separate occasions.

The transect for the area north of Bhailsigh Road began on the east of the M1, crossing the M1 entering the agricultural fields at the roundabout to the west of the M1 junction, and in a general clockwise direction circumnavigating all margins, road/field boundaries, hedgerows, pockets of scrub, treelines, ditches and the abandoned residential property. This survey took approximately three hours to complete.

The transect for the area south of Bhailsigh Road began along the wooded boundary in the northeast between the M1 junction and agricultural fields. The transect took a general clockwise direction around the survey area margin, circumnavigating field boundaries, wooded/scrub areas, investigating ditches, and finally the farmyard/farmhouse and surrounding fields/woodland/scrub including the wooded area along the south of Bhailsigh Road.

Movements were carried out slowly, with pauses to observe open spaces, further following trails to determine their direction and investigate recipient areas for potential dens/setts/scatt/prints/scrapes/latrines etc. Camera traps were brought to place in areas where high evidence of mammal activity and/or an active den/sett was likely. However, no areas requiring the deployment of a camera trap were detected. Each visit took 3-4 hours to complete.

Survey results

Habitats of non-avian terrestrial fauna potential

A walkover assessment was carried out and used to examine the structures and vegetation on site for features that could facilitate non-avian terrestrial mammals. Potential features include heavy scrub, hedgerows, piles of vegetative debris, woodlands etc. All vegetated areas on site were assessed for evidence of non-avian mammals.

Areas of high non-avian mammal potential in the survey area included the woodlands/treelines bounding the circumference of the survey area and dividing the survey areas from the Bhailsigh Road and M1, large piles of vegetative debris in the north of the site, vegetated ditches in the north and south survey areas, and hedgerows/scrub in the north and south of the survey area.

Non-avian terrestrial fauna surveys.

A total of two fauna species were confirmed within the survey area by visual confirmation and behavioural evidence: brown rat (*Rattus norvegicus*) and fox (*Vulpes vulpes*). These are visually represented in Figure 2.

An area of high mammal activity was observed surrounding a large pile of vegetative debris within a field in the west of the northern half of the survey area. Trails originating from this pile led into the adjacent scrub field boundary. Print and faeces identified the species responsible as brown Rat (*Rattus norvegicus*).

An individual fox was observed within the wooded boundary between the southeasternmost field in the northern half of the survey area and the M1. No clear trails or evidence of burrows were detected in this area. Fox faeces were discovered in the southeast corner of the southernmost field in the northern half of the survey area.

A deceased horse was found in a heavily vegetated ditch to the southeast of the farmyard. High brown rat activity surrounding the carcass was evident.

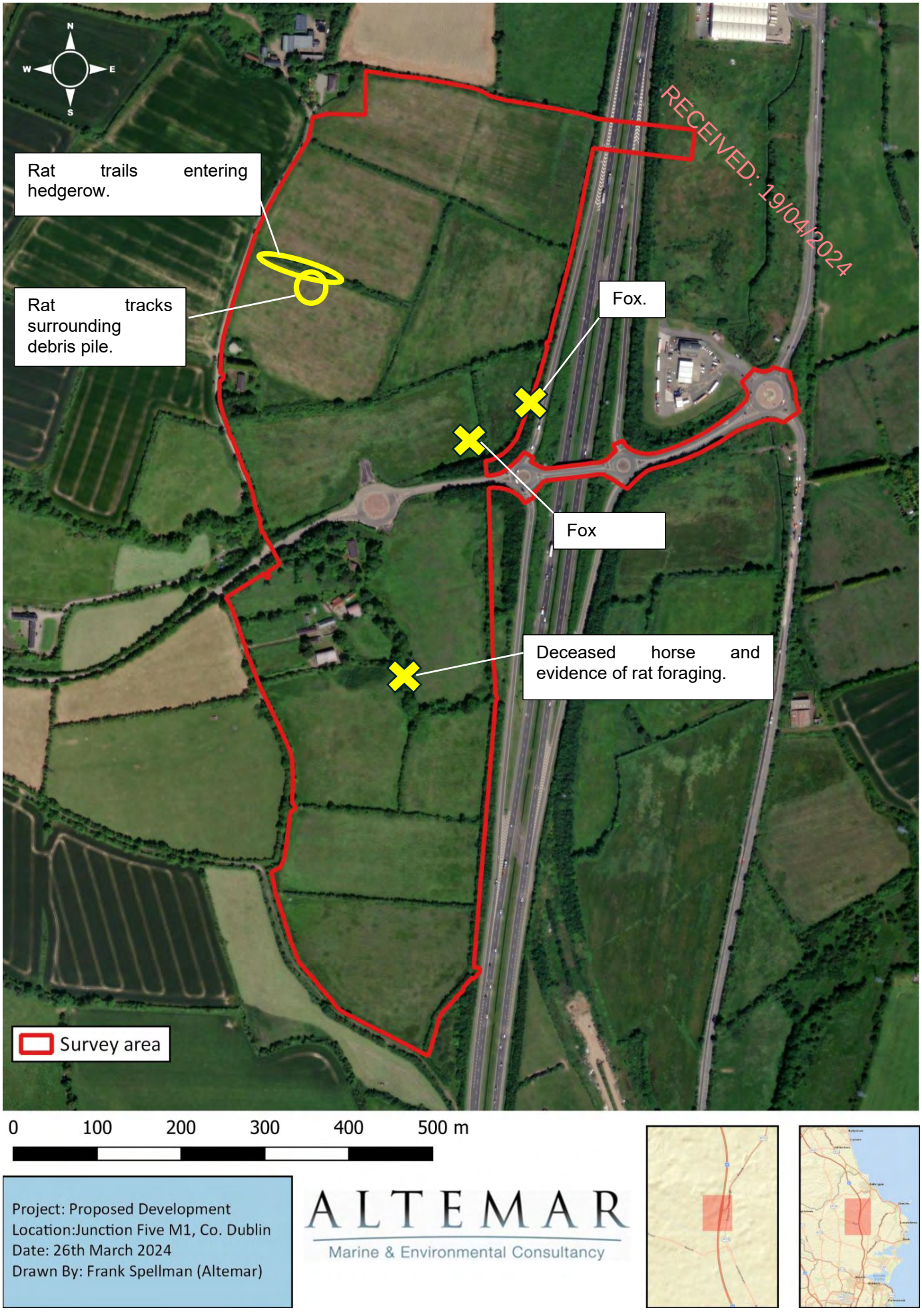

Figure 6: *Non-avian fauna activity/evidence observed.*

Non-avian mammal assessment findings

Review of local mammal records

The review of existing terrestrial mammal records (sourced from NBDC Database) within a 4km^2 grid (Reference grids O1859, O1858, O1857 & O1758) encompassing the study area reveals that three known Irish species have been observed locally (Table 1).

Table 1: *Status of non-avian mammal species within the 4km^2 grid (*O1859, O1858, O1857 &

4.1 Species Name	4.2 Record Count	4.3 Date of Last Record	4.4 Designation
Eurasian Badger (*Meles meles*)	1	28/03/2011	Protected Species: Wildlife Acts
West European Hedgehog (*Erinaceus europaeus*)	1	10/08/2008	Protected Species: Wildlife Acts
European Rabbit (*Oryctolagus cuniculus*)	1	04/08/2008	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Evaluation of results

The mammal surveys comply with CIEEM guidelines.

A total of two mammal species were confirmed within the survey area by visual confirmation and behavioural evidence: brown rat (*Rattus norvegicus*) and fox (*Vulpes vulpes*).

An individual fox was observed within the wooded boundary between the southeasternmost field in the northern half of the survey area and the M1. Fox faeces were discovered nearby in the southeast corner of the southernmost field in the northern half of the survey area.

High brown rat activity surrounding a horse carcass in a ditch in the southern half of the survey area was evident.

High brown rat activity was observed amongst a large pile of vegetative debris in the northern half of the survey area. Tracks and faeces confirmed brown rat as the species responsible for adjacent trails leading into the scrub field boundary.

A review of existing records revealed that three additional species, Eurasian Badger (*Meles meles*), West European Hedgehog (*Erinaceus europaeus*) and European Rabbit (*Oryctolagus cuniculus*) have been recorded in the vicinity of the survey area. These records originated from the National Roadkill Surveys dataset, dating between 2007 and 2011. No evidence of these three species were observed within the survey area.

Overall, the survey area is of low importance to mammal species.

Potential impact of the development on non-avian fauna

Due to the low levels of mammal activity and lack of evidence to support the presence of any protected species within the survey area, no impact on protected non-avian terrestrial mammals is foreseen as a result of the proposed development.

Limitations

Due to the active use of the southern half of the survey area (south of Bhailsigh Road) for horse and sheep grazing, it is likely that any potential evidence of mammals traversing this area would be obscured.

Mitigation measures

The proposed site outline within the survey area is of low importance to the local non-avian terrestrial mammal population. However, the impact of the development during construction phase will be a loss of existing habitats and species. The following mitigation measures relevant to mammals, as well as those outlined within the accompanying NIS and EIAR, shall be implemented to minimise any potential negative impact on biodiversity:

- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- All mitigation measures outlined in the EIAR Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) (if applicable) that pertain to the construction stage of the proposed development will be implemented by the Contractor.
- Preconstruction surveys for mammals will be carried out given the nature of the double hedgerow and the time between the original surveys and possible site clearance.
- Construction operations outside of daylight hours should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species.
- The effectiveness of the proposed mitigation will be monitored throughout the construction period.
- The construction corridor will be marked out prior to the commencement of construction.
- All construction work will be confined strictly to the construction corridor. Any construction works required outside the construction corridor will require prior approval from the ER.
- Excavation and infilling will be carried out in small progressive stages.
- Excavations will be carried out using a suitably sized excavator.

Predicted residual impact of development

The overall impact on the ecology of the proposed development will result in a long term minor adverse, not significant, residual impact on the ecology of the site and locality overall.

A pre-construction inspection will be carried out for terrestrial mammals of conservation importance. A NPWS derogation licence is not required at this time.

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11.3 Appendix IV: Breeding Bird Assessment

ALTEMAR
Marine & Environmental Consultancy

Breeding Bird Assessment for a proposed development at Junction 5 M1, Co. Dublin

26th March 2024

Prepared by: Frank Spellman of Altemar Ltd.
On behalf of: M1 Vida Ltd

Document Control Sheet			
Client	M1 Vida Ltd		
Project	Breeding bird assessment for a proposed development at Junction 5 M1, Co. Dublin		
Report	Breeding Bird Assessment		
Date	26th March 2024		
Version	Author	Reviewed	Date
Final	Frank Spellman	Bryan Deegan	26th March 2024

Contents

Summary

Structure/features:	The survey area consists of arable fields, agricultural grassland grazed by horses and sheep, abandoned farmhouse (including yard and sheds), and abandoned house and garden, underground gas network, a silo, hedgerows, treelines, and pockets of scrub.
Location:	Junction 5 M1, Co. Dublin
Bird species breeding:	Blackbird, blue tit, chaffinch, coal tit, dunnock, goldcrest, great tit, greenfinch, linnet, mistle thrush, redwing, robin, rook, skylark, starling, stonechat, woodpigeon, wren.
Proposed work:	Infrastructure development.
Impact on breeding birds:	The proposed development will result in a long-term low adverse effect on breeding birds due to habitat loss. Mitigation measures are proposed.
Surveys by:	Frank Spellman.
Survey date:	15th March 2024

Receiving environment

Background

The proposed development includes:

•Provision of civil infrastructure to service future-planned commercial properties, comprising main access roads including pedestrian/cycle paths; watermains, surface water and foul drainage networks; utility services including power and telecommunications.

•Provision of surface water drainage infrastructure for the access road and associated infrastructure consisting of Sustainable Urban Drainage Systems features including an attenuation pond and raingardens.

•Upgrading and modification of the existing L1140 roundabout.

•Provision of 3.0m wide shared paths from the proposed Zone A and F site entrances, over the M1 Motorway via the L1140 to the existing roundabout intersection between the L1140 and R132.

•All associated road works including surfacing, line marking, landscaping, controlled and uncontrolled pedestrian crossings

The proposed site outline, location, and landscape plan are demonstrated in figures 3-5.

Landscape

The landscape strategy for the proposed development has been prepared by Stephen Diamond Associates to accompany this planning application.

The proposed landscape plans is demonstrated in figure 5.

Figure 1. *Proposed site outline and location*

Figure 2. *Survey area.*

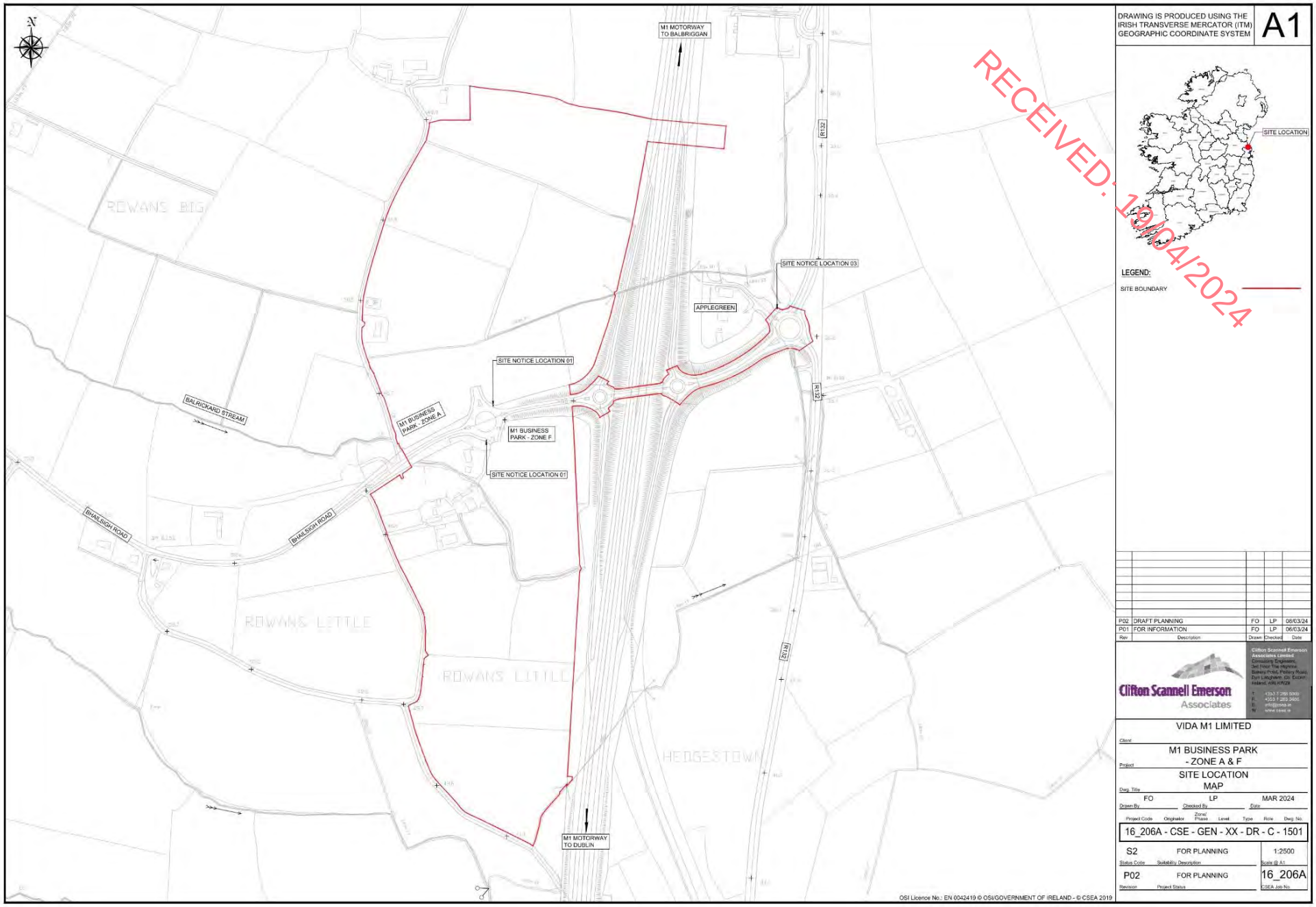

Figure 3. *Site location OS map*

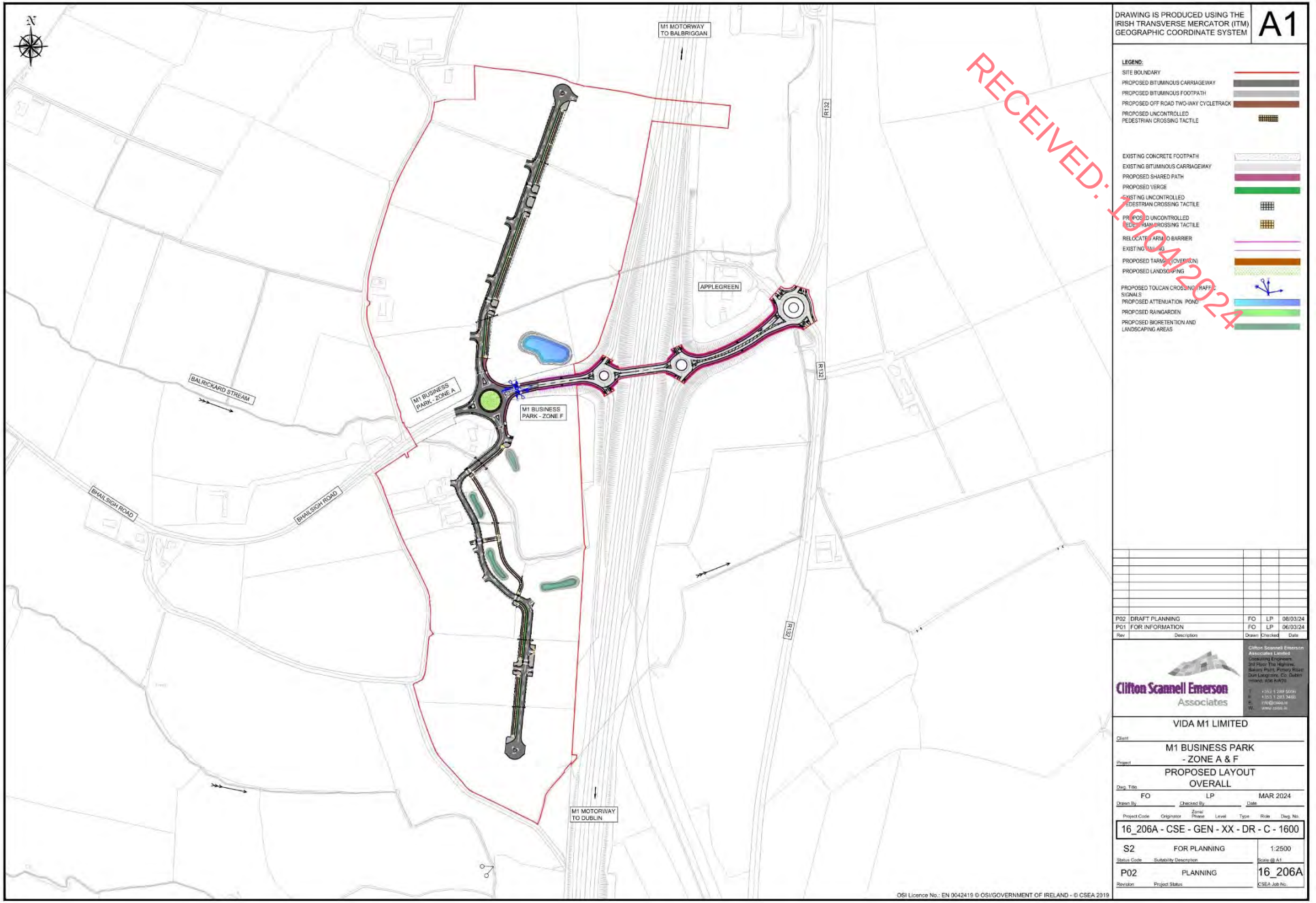

Figure 4. *Proposed overall layout*

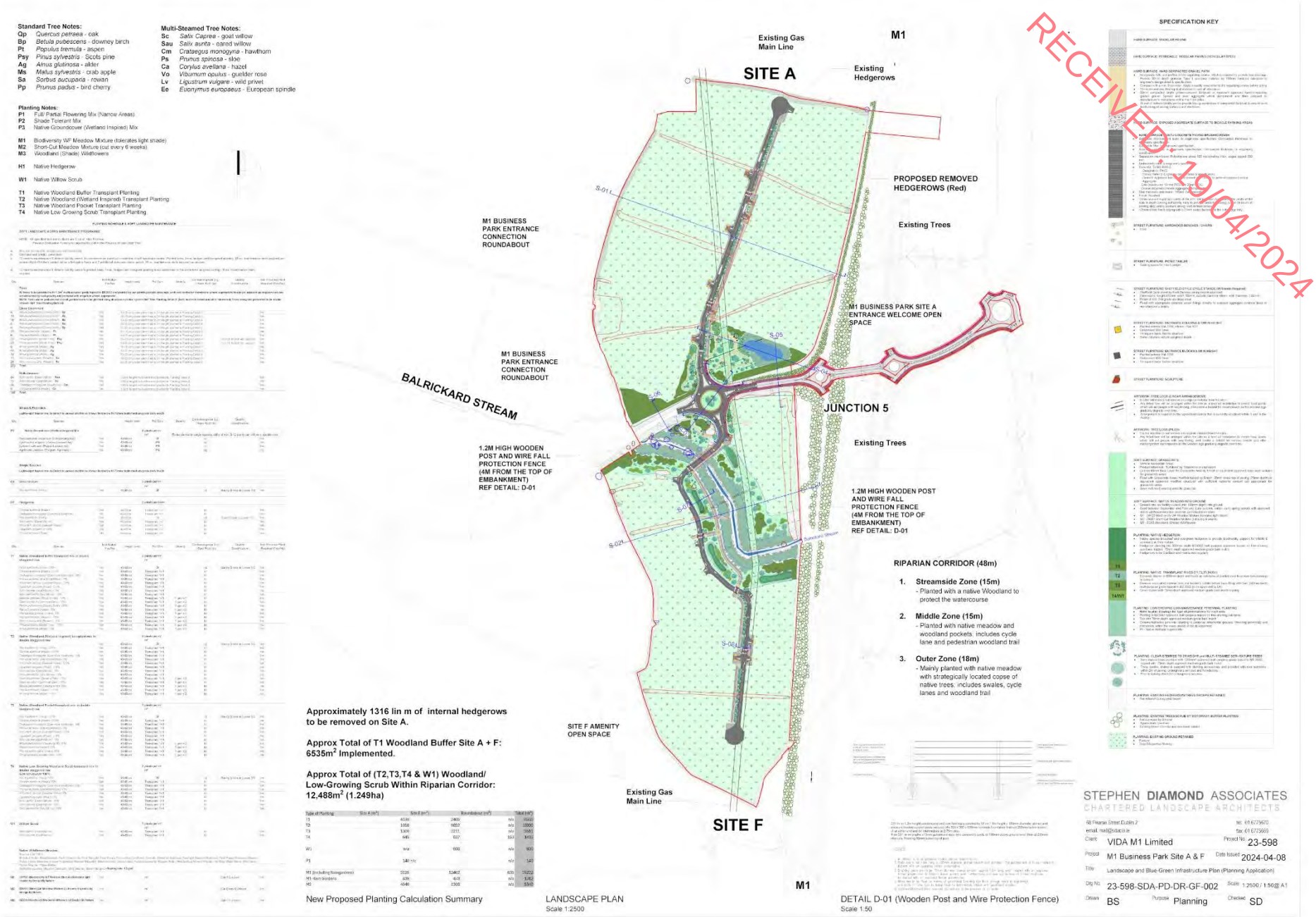

Figure 5. *Proposed landscape plan*

Competency of assessor

This report has been prepared by Frank Spellman (BSc Zoology, MSc Zoology). Frank has previous experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. The desk and field surveys were carried out using techniques approved and recommended by CIEEM.

Legislative context

The Wildlife Act 1976 protects wild birds in Ireland. Based on this legislation it is an offence to wilfully interfere with or destroy wild birds and their nests and eggs (other than the wild species mentioned in the Third Schedule of this Act). Under this legislation it is an offence for any person who "*wilfully takes or removes the eggs or nest of a protected wild bird otherwise than under and in accordance with such a licence, wilfully destroys, injures or mutilates the eggs or nest of a protected wild bird, wilfully disturbs a protected wild bird on or near a nest containing eggs or unflown young.*"

Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish Law, including, via, *inter alia*, the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Council Directive 2009/147/EC 2010 on the conservation of wild birds provides for the conservation of wild birds by, among other things, classifying important ornithological sites as Special Protection Areas. The Directive relates to the conservation of all species of naturally occurring birds in the wild state, their eggs, nests and habitats in the European territory of the Member States. The Directive prohibits in particular:

- deliberate killing or capture by any method;
- deliberate destruction of, or damage to, their nests and eggs or removal of their nests;
- taking their eggs in the wild and keeping these eggs even if empty;
- deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of this Directive;
- keeping birds of species the hunting and capture of which is prohibited.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule:

- deliberately captures or kills any specimen of these species in the wild,
- deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
- deliberately takes or destroys eggs of those species from the wild,
- damages or destroys a breeding site or resting place of such an animal, or
- keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive,

shall be guilty of an offence.

Breeding bird survey

This report presents the results of a single site visit by Frank Spellman on the 15th March 2024. A breeding bird transect survey was carried out on each occasion.

Survey methodology

This Breeding bird survey was carried out based on the BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) and following CIEEM guidelines.

A 15-minute settlement period was given following arrival to allow resumption of bird activity after any possible disturbance caused by arrival to the site. Various features and habitats such as agricultural fields, woodlands, hedgerows, tree lines, a watercourse, ditches, scrub and built land were present within the survey area. A single transect following the full perimeter of the survey area was carried out on each occasion, covering all areas and features available for breeding activity within and adjacent to the survey area. Each survey was carried out by a single surveyor.

Due to the complex nature of the survey area, a single roving transect following the full perimeter and circumnavigating all habitats and features within the survey area was carried out in the northern half and southern half (divided by Bhailsigh Road) by a single surveyor.

The transect for the area north of Bhailsigh Road began on the east of the M1, crossing the M1 entering the agricultural fields at the roundabout to the west of the M1 junction, and in a general anti-clockwise direction circumnavigating all margins, road/field boundaries, hedgerows, pockets of scrub, treelines, ditches and the abandoned residential property.

The transect for the area south of Bhailsigh Road began along the wooded boundary in the northeast between the M1 junction and agricultural fields. The transect took a general anti-clockwise direction around the survey area margin, circumnavigating field boundaries, wooded/scrub areas, investigating ditches, and finally the farmyard/farmhouse and surrounding fields/woodland/scrub including the wooded area along the south of Bhailsigh Road.

The survey was carried out over 6 hours, beginning at dawn and ending once all areas/features had been surveyed. Care was taken not to double count any observations. Weather conditions were optimal.

Survey results

Habitats of breeding bird potential

A desk and ground level breeding habitat assessment were carried and used to examine the structures and vegetation on site for features that could provide breeding habitat. Potential nesting features include woodlands, heavy ivy growth, tree lines, scrub, hedgerows, grassland, buildings/sheds with openings, rooftops etc. All vegetated areas and man-made structures on site were assessed for breeding bird potential.

Areas of high breeding bird potential included the woodlands, treelines, hedgerows and structures throughout the survey area and its boundaries.

Breeding activity survey

A total of 18 species were recorded displaying breeding behaviour within the survey area.

12 green-listed bird species of conservation concern were recorded breeding within the survey area.

Five amber-listed bird species of conservation concern were recorded breeding within the survey area.

One red listed bird species of conservation concern was recorded breeding within the survey area.

Table 1. *Species confirmed breeding on*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Blue Tit	BT	*Cyanistes caeruleus*	Green
Chaffinch	CH	*Fringilla coelebs*	Green
Coal Tit	CT	*Periparus ater*	Green
Dunnock	D.	*Prunella modularis*	Green
Goldcrest	GC	*Regulus regulus*	Amber
Great Tit	GT	*Parus major*	Green
Greenfinch	GR	*Chloris chloris*	Amber
Linnet	LI	*Carduelis cannabina*	Amber
Mistle Thrush	M.	*Turdus viscivorus*	Green
Redwing	RE	*Turdus iliacus*	Red
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Skylark	S.	*Alauda arvensis*	Amber
Starling	SG	*Sturnus vulgaris*	Amber
Stonechat	SC	*Saxicola rubicola*	Green
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

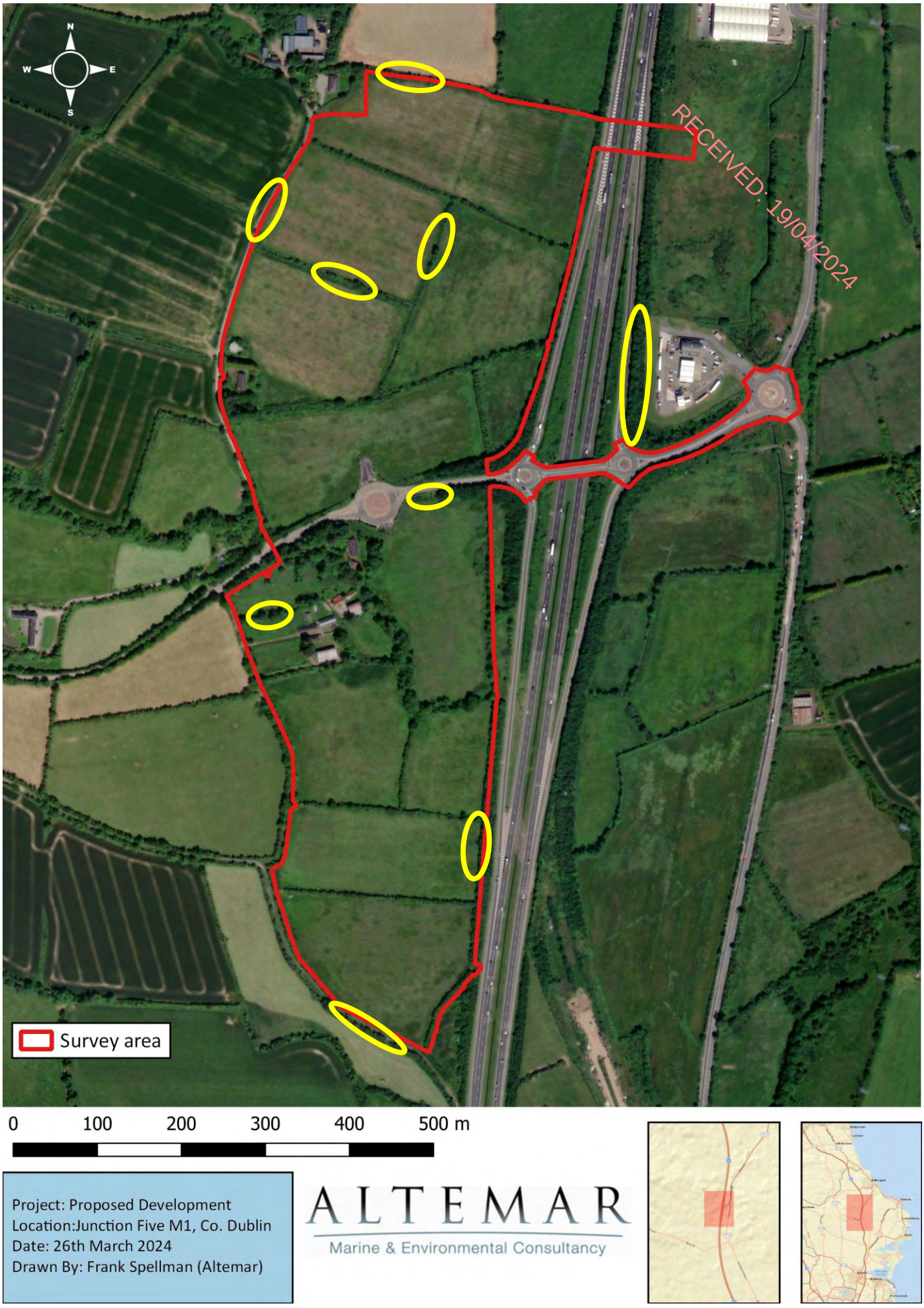

Figure 6: *Breeding hotspot areas for all species (in yellow).*

Breeding bird assessment findings

Review of local bird records

The review of existing bird records (sourced from NBDC Database) within a 4 km^2 grid (Reference grids O1859, O1858, O1857 & O1758) encompassing the study area reveals that two known bird species have previously been observed and recorded locally, of which one is currently red listed BoCCI (*Table 2*).

***Table 2:** Status of bird species within 4 km^2 (grids O1859, O1858, O1857 & O1758)*

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
Common Buzzard (*Buteo buteo*)	1	08/01/2011	Birds of Ireland	Green
Common Kestrel (*Falco tinnunculus*)	1	12/10/2017	Birds of Ireland	Red

Mitigation

The proposed site outline within the survey area is of low importance to the local breeding bird population. However, the impact of the development during construction phase will be a loss of existing habitats and species. The following mitigation measures relevant to birds, as well as those outlined within the accompanying NIS and EIAR, shall be implemented to minimise any potential negative impact on biodiversity:

- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- All mitigation measures outlined in the EIAR Chapters, Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) (if applicable) that pertain to the construction stage of the proposed development will be implemented by the Contractor.
- The effectiveness of the proposed mitigation will be monitored throughout the construction period.
- The construction corridor will be marked out prior to the commencement of construction.
- All construction work will be confined strictly to the construction corridor. Any construction works required outside the construction corridor will require prior approval from the ER.
- Lighting during construction should not spill outside the proposed development.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). Should this not be possible a pre-clearance inspection will be carried out by an ecologist and clearance will not take place if nests are present.

Conclusion

A breeding bird survey was carried out at this site on 15th March 2023. The bird survey complies with bird survey guidance documentation including BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) and following CIEEM guidelines. Weather conditions were favourable.

A total of 18 species were recorded displaying breeding behaviour within the survey area.

12 green-listed bird species of conservation concern were recorded breeding within the survey area.

Five amber-listed bird species of conservation concern were recorded breeding within the survey area.

One red listed bird species of conservation concern was recorded breeding within the survey area.

The hotspots of breeding activity observed within the survey area are demonstrated in *Figure 6.*

Mitigation measures are proposed.

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