Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m) <20	<50	<100	<350
High	-	>100	High	Medium	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
Medium	<24 ug/m^3	>10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
Low	-	1 - 10	Low	Low	Low	Low
The proposed development would be classified as an area of medium sensitivity, with 1-10 sensitive receptors at a distance of <20 metres from the construction boundary.						
Classification: Medium sensitivity						

Table 8.28 Construction: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m) <20	<50	<100	<350
High	-	>100	High	Medium	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
Medium	<24 ug/m^3	>10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
Low	-	1 - 10	Low	Low	Low	Low
The proposed development would be classified as an area of medium sensitivity, with 1-10 sensitive receptors at a distance of <20 metres from the earthworks proposed on site.						
Classification: Medium sensitivity						

Table 8.29 Earthworks: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m) <20	<50	<100	<350
High	-	>100	High	Medium	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
Medium	<24 ug/m^3	>10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
Low	-	1 - 10	Low	Low	Low	Low
The proposed development would be classified as an area of medium sensitivity, with >10 sensitive receptors at a distance of <20 metres from trackout on site.						
Classification: High sensitivity						

Table 8.30 Trackout: Sensitivity of the Area to Human Health Impacts

Ecological Receptor Sensitivity	Distance from Source (m) <20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low
There is an unnamed stream to the eastern boundary of the site. The proposed development is not close to any SAC or SPA (>1km) Note 1		
Classification: Medium sensitivity		

Table 8.31 Sensitivity of the Area to Ecological Impacts for all Works Note 1: An NIS has also been submitted as part of this planning application

Receptor Sensitivity	Sensitivity of the Surrounding Area Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium
Human Health	Medium	Medium	High
Ecological	Medium	Medium	Medium

Table 8.32 Summary Table Defining the Sensitivity of the Area

In order to define the risk of impacts, the sensitivity of the area is combined with the dust emissions magnitude. This will define the risk of impact with no mitigation applied.

Sensitivity of Area	Dust Emission Magnitude Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Overall Classification: Medium to High			

Table 8.33 Risk of Impacts

The site is classed as medium to high-risk during construction activities and medium risk for dust emissions during the other phases of development. The sensitivity of the area for human health and ecological effects are medium to high overall. The combined classification for risk of impacts is medium to high. The classification indicates the level of control and mitigation required during the different phases of development, in particular, during earthworks and construction phases. Trackout operations will require strict best practice measures and monitoring to ensure the potential for impact is negligible.

The site will operate in accordance with a detailed Construction & Environmental Management Plan (CEMP) which includes dust control measures and monitoring procedures. This plan will be discussed further in Chapter 5 construction strategy and in the CEMP which will be submitted separately. The mitigation measures will ensure that the development complies with the relevant EU ambient air quality standards which are based on the protection of human health. Therefore, the impact of construction of the proposed development could be negative, short-term with perceptible effects in the absence of mitigation.

Climate

As stated in IAQM Guidance on the assessment of dust from demolition and construction, exhaust emissions from on-site plant (NRMM) and site traffic are unlikely to make a significant impact on local air quality and do not need to be quantitatively assessed.

The impacts to climate from the construction phase of the development will be short-term, unlikely and not significant.

8.3.2 Operational Phase

Air Quality and Human Health

The operational phase of the proposed development will result in a slight impact on local air quality primarily as a result of the requirements of new buildings to be heated and with the increased traffic movements associated with the development.

The design and construction of all buildings in accordance with National Building Regulations (The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel and Energy – Dwellings) shall ensure that modern building materials are used and that the build is thermally efficient.

Traffic movements associated with the development have been evaluated and assessed as part of the Traffic Impact Assessment. Over the three phases of the development from 2027, 2037 through to 2042, there are two junctions that will see greater than 1,000 increase in AADT – Hotel Access and The Miles.

Modelling Assessment

Transport Infrastructure Ireland Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes detail a methodology for determining air quality impact significance criteria for road schemes and has been adopted for this assessment, as is best practice. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, in order to determine the degree of impact.

Modelling Assessment Results – Do Nothing Scenario

Nitrogen Dioxide

The results of the "do nothing" assessment for Nitrogen Dioxide (NO_2) in the opening year are shown in Table 8-31. The predicted concentrations are well below the annual limit value of 40 µg/m^3.

The TII REM tool predicts annual average NO_2 concentrations only and cannot predict hourly mean NO_2 concentrations. However, the NRA / TII guidelines state that the hourly mean standard is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. The hourly mean NO_2 concentrations for the "do nothing" scenario are therefore expected to be well below the hourly limit value of 200 µg/m^3.

	Cork EPA Stations ($\mu g.m^3$)	CAFE Directive AQS – Annual Mean ($\mu g.m^3$)
Nitrogen Dioxide	21.9	40

Table 8.34 Nitrogen Dioxide Ambient Air Quality October 2024 – March 2025

PM_{10}

The results of the "do nothing" modelling assessment for PM_{10} in the opening year are shown in Table 8-32. Annual average PM_{10} concentrations are well below the hourly average of 40$\mu g/m^3$ at the closet EPA ambient monitoring stations.

	Cork EPA Stations ($\mu g.m^3$)	CAFE Directive AQS – Annual Mean ($\mu g.m^3$)
PM_{10}	15.8	40

Table 8.35 PM_{10} Ambient Air Quality October 2024 – March 2025

$PM_{2.5}$

The results of the "do nothing" modelling assessment for $PM_{2.5}$ in the opening year are shown in Table 8-33. Annual average $PM_{2.5}$ concentrations are well below the hourly average of 20$\mu g/m^3$ at the closet EPA ambient monitoring stations.

	Cork EPA Stations ($\mu g.m^3$)	CAFE Directive AQS – Annual Mean ($\mu g.m^3$)
$PM_{2.5}$	9.4	20

Table 8.36 $PM_{2.5}$ Ambient Air Quality October 2024 – March 2025

Modelling Assessment Results – Do Something Scenario

Nitrogen Dioxide

Traffic modelling data is predicted at peak times in order to estimate possible worst case scenario increases. The TII REM tool predicts annual average NO_2 emissions only and cannot predict hourly mean NO_2 concentrations. Applying the 2027 and 2037 percentage increase in annual emissions to the average pollutant concentration at each location that will experience an increase of more than 1,000 AADT would predict that the ambient NO_2 concentrations with the development in place ("do something") will all be well below the 1-hour limit of 200 $\mu g/m^3$ during peak traffic periods.

PM_{10}

Traffic modelling data is predicted at peak times in order to estimate possible worst case scenario increases. The TII REM tool predicts annual average PM_{10} emissions only and cannot predict hourly mean PM_{10} concentrations. Applying the 2027 and 2037 percentage increase in annual emissions to the average pollutant concentration at each location that will experience an increase of more than 1,000 AADT would predict that the the ambient PM_{10} concentrations with the development in place ("do something") will all be well below the 1-hour limit of 40 $\mu g/m^3$ during peak traffic periods.

$PM_{2.5}$

Traffic modelling data is predicted at peak times in order to estimate possible worst case scenario increases. The TII REM tool predicts annual average $PM_{2.5}$ emissions only and cannot predict hourly mean $PM_{2.5}$ concentrations. Applying the 2027 and 2037 percentage increase in annual emissions to the average pollutant concentration at each location that will experience an increase of more than 1,000 AADT would predict that the ambient $PM_{2.5}$ concentrations with the development in place ("do something") will all be well below the annual mean limit of 20 µg/m^3 during peak traffic periods.

The impact of the proposed development on ambient air quality and human health during the operational stage is considered long-term, localised, negative and imperceptible, therefore no mitigation is required.

Ecological Impacts

There are no sensitive ecological receptors in close proximity to the development site. The site was deemed low risk for impact. The probability of effects are long-term, localised, negative and imperceptible therefore no mitigation is required. This will be further discussed in the Ecological Impact Assessment (EcIA) submitted as part of this planning application.

Climate Impact

Construction of the proposed development will lead to changes in the existing local terrain, which may slightly alter wind flow patterns and localised temperatures. However, these changes are unlikely to impact on local meteorological conditions. Thus, due to the size and the nature of the proposed development the impact on microclimate during construction and operation will be negligible.

With regard to macroclimate, the dominant source of CO_2 emissions resulting from the proposed development during operation will be from road traffic. During the construction phase, there will be additional CO_2 emissions resulting from the construction activities and the embodied CO_2 in the construction materials.

The results of the "do nothing" assessment for Nitrogen Dioxide (NO_2) in the opening year are shown in Table 8-31. The predicted concentrations are well below the annual limit value of 40 µg/m^3.

The TII REM tool predicts annual average NO_2 concentrations only and cannot predict hourly mean NO_2 concentrations. However, the NRA / TII guidelines state that the hourly mean standard is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. The hourly mean NO_2 concentrations for the "do nothing" scenario are therefore expected to be well below the hourly limit value of 200 µg/m^3.

Modelling of operational phase CO_2 emissions as a result of the traffic associated with the proposed development was carried out to determine the impact to climate. It was found that emissions of CO_2 will increase by an imperceptible amount as a result of the proposed development and are significantly below the EU 2030 GHG target. The operational phase impact to climate is long-term, negative and imperceptible. In addition, the proposed development has been designed to reduce the impact to climate where possible during operation.

8.4 Mitigation Measures

8.4.1 Construction Phase

In order to ensure that dust nuisance does not occur, a series of preventative measures and a dust management plan will be formulated for the construction phase of the project. This are outlined further in the Construction & Environmental Management Plan.

Air Quality

The site will be managed in accordance with the CRWMP to minimise the potential effects on air quality from construction. Monitoring will be undertaken throughout the construction period to enable proactive management of dust and PM_{10} levels, employing Best Practicable Means.

Measures will be put in place to minimise the impact of dust generated from the works with reference to best practice guidance such as the Control of Dust from Construction and Demolition Activities document. These measures will include:

- During periods of dry weather, the site access routes will be kept damp to minimise dust generation from construction traffic.
- Street sweepers will be employed to ensure the adjacent R474 is maintained free of dust.
- Establishing a 10 km/hr speed limit for vehicles on site.
- Minimisation of extent of working areas at any one time.
- Netting and/or hard surface hoarding around the perimeter of the site will minimise dust migration from the site at low levels.
- Stockpiling of imported materials will be limited to the volumes required to practically meet the construction schedule.
- Excavated materials will be removed from site as soon as possible to minimise potential for stockpiles to create windblown dust; and
- Daily inspections by the main contractor will be carried out to identify potential sources of dust generation along with implementation measures to remove causes where found.
- All machinery will be suitably maintained to ensure that emissions of engine- generated pollutants shall be kept to a minimum in accordance with Measures Against the Emission of Gaseous and Particulate Pollutants from Internal Combustion Engines to be Installed in Non-Road Mobile Machinery (2002/88/EC) and Emissions of Pollutants from Diesel Engines (2005/21/EC)
- Vehicles will not be left unnecessarily idling on the site and trucks removing demolition waste from the site will turn off engines during loading.
- Pre-start checks on all machinery will be conducted on a daily basis prior to commencement of activities.
- Low emission fuels will be used insofar as possible;
- Mains power will be used for small plant and equipment, where possible, in preference to generators

Effective material storage and handling

- Handling and storage areas will be sited as far away as is reasonably and practically possible from public/residential areas.
- Handling and storage areas will be actively managed and fine, dry material will be stored inside enclosed shield/coverings or within a central storage area.
- Any storage areas that are not enclosed will be covered/sheeted.
- Prolonged storage of debris on site will be avoided.
- Vehicles carrying dusty materials into or out of the site shall be sheeted down to prevent any escape of materials

Construction Plant

- Site plant and equipment will be kept in good repair and maintained in accordance with the manufacturer's specifications. Allowing for economic constraints, the plant will be selected on the basis of which has the least potential for dust and other emissions;
- Plant will not be left running when not in use (i.e. no idling);
- Plant with dust arrestment equipment will be used where practical;
- Where practical, cleaner fuels will be employed for construction plant; and
- Enclosures will be erected around major construction plant items as appropriate and where practical.

Vehicle Movements

- Wheel washing facilities close to the site entrance to prevent mud from construction operations being transported on to adjacent public roads;
- Any spillages from vehicles leaving the site will be promptly removed;
- Damping down of site haul roads by water bowser during prolonged dry periods;
- Regular cleaning of hard-surfaced site entrance roads;
- Ensuring that dusty materials are transported appropriately (e.g. sheeting of vehicles carrying spoil and other dusty materials);
- Confinement of vehicles to designated haul routes within the site;
- Restricting vehicle speeds on haul roads and other unsurfaced areas on the site;
- All vehicles will be maintained to minimise exhaust emissions;
- Hoarding and gates to prevent dust breakout; and
- Appropriate dust site monitoring will be included within the site management practices to inform site management of the success of dust control measures used.

Dust

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Site operations will be planned to take into account local topography, prevailing wind patterns and local sensitive receptors e.g., schools, residences and ecological designated sites;
- Burning of materials on site will be prohibited;

- Loading and unloading will only be permitted in designated hard standing areas;
- Provision of water sprays and wind/dust fences where possible, particularly in dust sensitive locations;
- Stockpiles of soil, arising or other granular material will be sheeted, covered and/or treated to prevent dust raising that may cause risk to health or nuisance to the public;
- Hoarding will be erected around construction activities to minimise dust blow from site;
- An appointed person will oversee/control activities and handle complaints;

8.4.2 Operational Phase

Given the proposed use for this development, there are no direct sources of dust or other emissions that could give rise to nuisance or contravene any air quality standards.

Modelling of link roads from the traffic impact assessment considered the increase in traffic as a result of the development in opening and design years, the proximity of sensitive receptors and the baseline air quality. The project will have negligible impact on dust and NO_2 emissions once the project is completed.

8.4.3 Residual Impacts

Measures will be put in place as part of the Construction & Environmental Management Plan to minimise the impact of dust generated from the works with reference to best practice guidance such as the Control of Dust from Construction and Demolition Activities document. This will minimise any impact on the local community. Normal routine operational impacts from this installation will not be significant and in line with EU Air quality standards. A summary of the residual impacts from the operational and construction phase of the development is detailed in Table 8.34 below. While the operational phase may result in impacts that are characterised as long-term, localised and negative, it is important to emphasise that these effects are deemed imperceptible. Through appropriate design measures and adherence to regulatory standards, these impacts can be effectively managed and mitigated.

	Construction Phase	Operational Phase
Air Quality	Short-term, neutral, unlikely & not significant.	Long-term, localised, negative and imperceptible.
Sensitive Receptors	Short-term, neutral, unlikely & not significant.	Long-term, localised, negative and imperceptible.
Ecological Receptors	Short-term, neutral, unlikely & not significant.	Long-term, localised, negative and imperceptible.
Climate	Short-term, neutral, unlikely & not significant.	Long-term, localised, negative and imperceptible.

Table 8.37 Summary of Residual Effects

8.5 Cumulative impacts

There are four other developments within proximity to the proposed development site, see Table 8.35 below.

Location	Description	Status
The Miles Estate, the Miles Road, Clonakilty	Application Register Reference 23/20 and ABP-318260-23: Permission Granted for the construction of 93no. dwellings and a single storey creche.	No works have commenced as yet
The Miles Estate, the Miles Road, Clonakilty	Application Register Reference 18/605: Permission granted for the construction of 77 no. dwelling houses, childcare facility and all ancillary site development works. This permission was extended under Application Register Reference 23/452.	Construction completed.
An Sruthean Beag, Cloheen, Clonakilty	Application Register Reference: 18/703: Permission granted for the construction of 99no. dwellinghouses and a crèche, including all associated site works.	Construction completed.
Pairc Thiar	Part 8 Development by Cork County Council for the construction of 52no. dwellings.	Construction completed.

Table 8.385: Developments within proximity to the proposed development site

The construction phase for three of the four applications are completed. Even if the construction phases of the final project coincide for a period of time with that of the proposed development, given their temporary nature, the likelihood of any significant cumulative effect on air quality is low and short term.

No cumulative effects on air quality or climate are predicted to arise from the proposed development during the operational phase.

8.6 Interactions

The generation of traffic during the construction and operation stages of the development leads to increased vehicle emissions and thereby interacts with air quality and climate.

The effects on air quality standards of the project during construction and operational phases and the resultant interaction with human health and ecology have been shown to be negligible.

8.7 Difficulties in compiling information

There were no difficulties encountered in compiling this section of the EIAR.

8.8 References

The general assessment of the potential impact of the proposed development on air quality and climate has been conducted in accordance with the following guidance and legislation:

EPA "Guidelines on the Information to be contained in Environmental Impact Assessment Reports-May 2022";
Environment, Community and Local Government, "Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment", August 2018;
Desktop survey of the National and EU legislation;
European Council (2014) (23 and 24 October 2014) Conclusions on 2030 Climate and Energy Policy Framework, SN 79/14 Framework
IPCC (2006) IPCC Guidelines for National GHG Inventories;
2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
IAQM Guidance on Construction Impacts, 2014;
IAQM Guidance on the assessment of dust from demolition and construction, Version 2.2 January 2024;
Greater London Authority, The Control of Convention on Climate Change (FCCC) (1997) Kyoto Protocol to The United Nations Framework Convention on Climate Change;
2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. May 2019;
Dust and Emissions During Construction and Demolition, Supplementary Planning Guidance July 2014;
IAQM Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, Version 1.1, October 2018;
Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2024/2881);
The Climate Action and Low Carbon Development (Amendment) Act 2021;
Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
TII Road Emissions Model (REM): Model Development Report, May 2024;
TII Air Quality Assessment of Proposed National Roads, December 2022;
TII Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document, December 2022;
Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document, November 2024;
Department of Environment, Heritage and Local Government (DoEHLG) (2004), Quarries and Ancillary Services, Guidelines for Planning Authorities.
EPA ''Air Quality in Ireland Report 2023";
National Ambient Air Quality Monitoring Programme 2017 – 2022;
Metrological Conditions obtained from Met Éireann;
Annual Review 2025 - Our Changing Climate in 2024 (published March 2025)
Ireland's Provisional Greenhouse Gas Emissions 1990-2023 (published July 2024);
Cork County Development Plan 2022 – 2028.
Cork County Council Climate Action Plan 2024 - 2029.

9.0 NOISE AND VIBRATION

Contents **Page**

Figures, Plates and Tables

9.1 Introduction

Coakley O'Neill Town Planning Ltd (on behalf of HB Cloheen Development Ltd) is applying for planning permission in respect of a large scale residential development proposed to be located in Cloheen near Clonakilty, Co. Cork.

The proposed development is to consist of the following:

- 246no. residential dwellings as follows: 177no. houses consisting of 3no. 5-bed dwellings, 41no. 4-bed dwellings, 90no 3-bed dwellings, 31no. 2-bed dwellings and 12no. 1-bed sheltered housing units; 6no. 2-storey 4-unit apartment blocks consisting of 24no. 2-bed units and 3no. 3-storey 15-unit apartment blocks consisting of 36no. 2-bed units and 9no. 1-bed units
- A crèche (473.77sqm) with capacity to accommodate 65no. children
- Provision for car parking, including EV charging points and bicycle parking
- Provision of private, communal, and public open spaces; internal roads and pathways with potential for future links to adjacent lands; pedestrian and cyclist routes; hard and soft landscaping and boundary treatments; bin storage; plant; signage; a new access onto the local hotel road to the east, incorporating bridging of the existing stream with associated works to same, and a new access connecting to the L-9931-0 local road to the west; modifications to car parking and the provision of a roundabout at the Clonakilty Park Hotel; public lighting; new substation; road improvement works and pedestrian facilities at the N71 and Clonakilty Park Hotel junction; all associated site development works; and all drainage and foul sewer infrastructure and network works including connections to the existing networks on the N71 national road and the L-4007-52 local road, and nature-based SuDS measures

This chapter summarises the noise and vibration impact of the proposed development.

9.2 Assessment Strategy Overview

In order to assess the potential for noise impacts from the proposed development, the following prediction methodology was adopted in this instance:

- Noise measurements were conducted in order to quantify the ambient noise level environment in the vicinity of the nearest noise sensitive receptors (refer to Section 9.4).
- The measured ambient noise levels were used to establish maximum construction noise emission criteria limits (refer to Section 9.5.1) along with establishing operational noise emission criteria limits from best practice published guidance (refer to Section 9.5.2).
- Construction noise emission levels were calculated in accordance with *BS 8233* at each of the nearest noise sensitive receptors based on sound power / pressure levels for expected equipment / processes and estimated utilisation periods along with standard appropriate corrections for attenuation with distance, screening from buildings / perimeter site hoarding and the presence of nearby reflecting surfaces (refer to Section 9.6.1).
- Operational noise emission levels were calculated at each of the nearest noise sensitive receptors (in accordance with *BS 8233*) based on all identified operational noise source levels along with standard appropriate corrections for attenuation with distance, screening from buildings and the presence of nearby reflecting surfaces (refer to Section 9.6.2).

- The cumulative results of these operational calculations were then used to assess the potential for a noise impact based on a comparison with the criteria limits at the nearest noise sensitive receptors (refer to Section 9.6.2).
- A screening assessment (including additional noise monitoring) was carried out to confirm that there will not be any inward noise impacts (refer to Section 9.9).

9.3 Proposed Development Location & Layout

As stated in the Introduction section, the proposed development is a large scale residential development proposed to be located on an existing greenfield land area to the southwest of Clonakilty town centre in Co. Cork. The proposed development site is bordered to the north by the Clonakilty Agricultural Showgrounds and sports fields and to the south and southwest are more greenfield lands. Residential dwellings border the eastern and the northern portion of the western boundaries. The Clonakilty Park Hotel also borders the site on the northern portion of the eastern boundary. There are also some light industrial / commercial buildings located near the northwestern corner boundary, but they would not be considered noise sensitive.

Each of the nearest noise sensitive receptors are listed along with their nearest approximate distances away from the nearest development buildings as follows:

- Residential Buildings to Northwest 25m
- Residential Dwellings to East 120m
- Clonakilty Park Hotel 147m

See Figure 9.1 below.

Figure 9.1 Proposed Development Location & Nearest Noise Sensitive Receptors

A general layout of the proposed development is provided in Figure 9.2 on the following page.

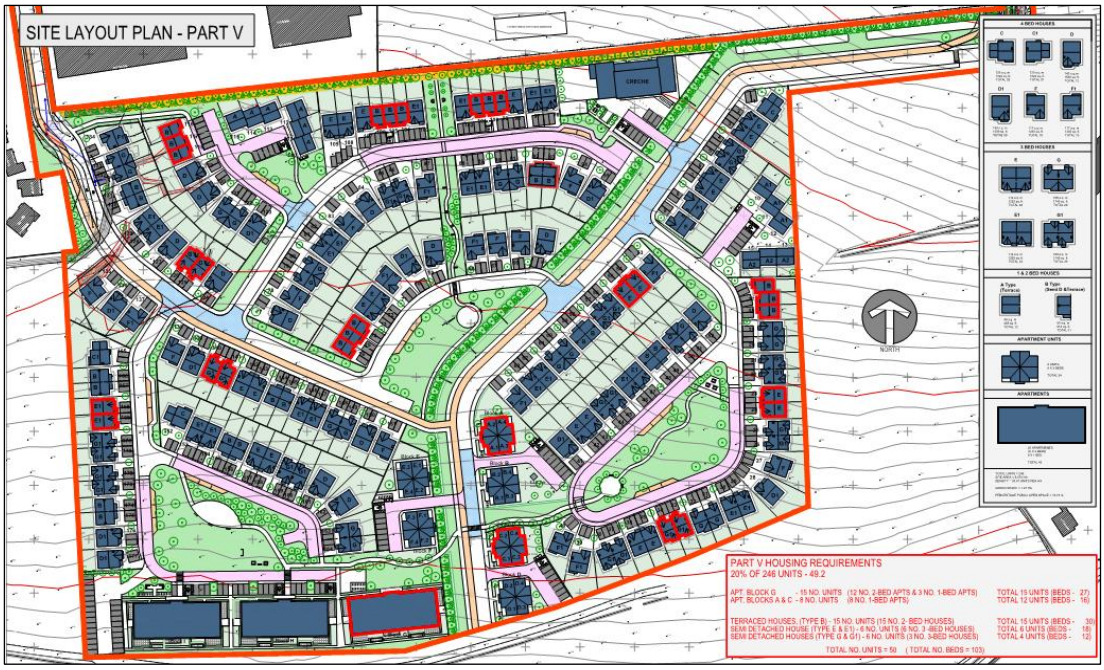

Figure 9.2 Proposed Development Layout

9.4 Receiving Environment

An environmental noise monitoring survey was conducted in order to quantify the ambient external noise environment in the vicinity of the proposed development site. The survey was conducted in general accordance with *ISO 1996: 2017: Acoustics - Description, measurement and assessment of environmental noise*.

Specific details are set out in the following sections.

9.4.1 Measurement Locations

Although the proposed development site is fairly large, its noise sensitive receptors are limited in concentration to the eastern boundary and a small area near the northwest corner. The nearest noise sensitive receptors are the dwellings located in these areas and the hotel located to the east.

Given this situation, two measurement locations were deemed to be appropriate in order to obtain a range of the ambient noise levels in the vicinity of the noise sensitive receptors in this instance. They are summarised as follows and shown in Figure 9.3 on the following page:

NML 1: in the vicinity of the hotel and the dwellings to the east.

NML 2: in the vicinity of the residential dwellings located near the northwest corner of the proposed development.

Figure 9.3 Site Layout Showing Approximate Position of Measurement Locations

9.4.2 Survey Periods

Noise monitoring was conducted over the course of two survey periods as follows:

- Daytime: 14:10 to 16:50hrs on 11 February 2025
- Night Time: 23:00 to 01:45 on 11/ 12 February 2025

The meteorological conditions that were observed over the course of the survey period are detailed in Table 9.1.

Survey Period	Wind		Temperature °C	Cloud Cover %	Precipitation?
	Speed	Direction			
Daytime	2 - 3 m/s	E	6°C	100%	Light rain.
Night Time	2 - 3 m/s	ESE	7°C	100%	Light rain.

Table 9.1 Meteorological Conditions During the Noise Survey

9.4.3 Personnel & Instrumentation

Brian S. Johnson (CLV) conducted the noise level measurements during all survey periods. He is an internationally experienced acoustic consultant who has been working in the fields of architectural / building acoustics and noise control since 1994. He has been based in America, Europe, Asia and Australia and is a member of the Institute of Acoustics (IOA). Brian also has extensive knowledge in the field of environmental acoustics and holds a Certificate of Competence in Environmental Noise Measurements from the IOA.

The measurements were conducted using an NTI Audio Type XL2 Sound Level Meter (Serial #A2A-11070-EO). It was fitted with a 90mm windshield the measurement apparatus and was check calibrated both before and after the survey using a Casella CAL 200 Acoustic Calibrator (Serial #18882). The microphone was positioned approximately 1.4m above the ground at all measurement locations.

The calibration certificates for the sound level meter and calibrator are provided in Appendix 1.

9.4.4 Procedure

Measurements were conducted at both locations on a cyclical basis. Sample periods for the noise measurements were 15 minutes during both the daytime and night-time periods. The results were saved to the instrument memory for later analysis. All primary noise sources contributing to noise build-up were also noted.

9.4.5 Measurement Parameters

The statistical noise monitoring results are presented in terms of the following five parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. It is typically used as a descriptor for the ambient noise level.

L_{Amax} is the instantaneous maximum sound level measured during the sample period.

L_{Amin} is the instantaneous minimum sound level measured during the sample period.

L_{A10} is the sound level that is exceeded for 10% of the sample period.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

Noise characteristics in this report are also considered in respect of the following two aspects:

Tonal Noise: Sounds which cover a range of only a few Hz which contain a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.

Impulsive Noise: A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background (pressurised air release, gunshot etc.).

9.4.6 Measurement Results

NML 1

The survey results for Location 1 are summarised in Table 9.2 on the following page.

Time		Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				
		L_{Aeq}	L_{Amax}	L_{Amin}	L_{A10}	L_{A90}
Daytime	14:10 - 14:25 hrs	**50**	76	44	50	45
	15:15 - 15:30 hrs	**48**	61	44	50	45
	16:15 - 16:30 hrs	**50**	70	44	52	46
Night-time	23:00 - 23:15 hrs	**43**	52	40	44	41
	00:10 - 00:25 hrs	**42**	52	40	43	41
	01:10 - 01:25 hrs	**42**	64	40	44	40

Table 9.2 Summary of Measured Noise Levels at NML 1

During daytime monitoring periods, the dominant sources of noise observed in the area were distant traffic noise and periodic car parking noise at the hotel. There were also contributions from periodic pedestrian events. Daytime noise levels were in the range of 48 to 50dB L_{Aeq} and 45 to 46dB L_{A90}.

The night-time noise measurements at this location were again dominated by distant traffic noise and very intermittent car parking noise at the hotel. Background noise levels were controlled by building services noise from the hotel. Noise levels were in the range of 42 to 43dB L_{Aeq} and 40 to 41dB L_{A90}.

No significant source of vibration was noted during the survey periods.

NML 2

The survey results for Location 2 are summarised in Table 9.3 below.

Time		Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				
		L_{Aeq}	L_{Amax}	L_{Amin}	L_{A10}	L_{A90}
Daytime	14:35 - 14:50 hrs	**47**	72	43	48	45
	15:40 - 15:55 hrs	**46**	55	42	48	44
	16:35 - 16:50 hrs	**47**	69	43	48	44
Night-time	23:25 - 23:40 hrs	**40**	46	31	41	34
	00:30 - 00:45 hrs	**41**	46	30	41	35
	01:30 - 01:45 hrs	**41**	50	31	42	35

Table 9.3 Summary of Measured Noise Levels at NML 2

The daytime noise levels at this location local were dominated by distant traffic noise with contributions from children playing in the vicinity. One local drive-by event occurred in the first measurement period. Noise levels were in the range of 46 to 47dB L_{Aeq} and 44 to 45dB L_{A90}.

The night-time noise measurements at this location were dominated by distant traffic noise with occasional contributions from low levels of wind generated noise. Noise levels were in the range 40 to 41dB L_{Aeq} and 34 to 35dB L_{A90}.

No significant source of vibration was noted during the survey periods.

All noise prediction calculations were conducted in general accordance with *ISO 1996: 2017: Acoustics - Description, measurement and assessment of environmental noise*

9.5 Noise & Vibration Assessment Criteria

9.5.1 Construction Phase

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard *BS 5228 - 1: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise*.

The approach adopted in this instance calls for the designation of a noise sensitive location into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded, indicates a significant noise impact is associated with the construction activities.

Table 9.4 below sets out the values which, when exceeded, indicate a significant effect at the facades of residential receptors as recommended by *BS 5228 - 1*. Please note that these are cumulative levels, i.e. the sum of both ambient and construction noise levels.

Assessment Category & Threshold Value Period (L_{Aeq})	Threshold Value, Decibels (dB)		
	Category A [A]	Category B [B]	Category C [C]
Night-Time (23:00 to 07:00hrs)	45	50	55
Evenings & Weekends [D]	55	60	65
Daytime (07:00 - 19:00) & Saturdays (07:00 - 13:00)	65	70	75

Table 9.4 Example Threshold of Significant Effect at Dwellings

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

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

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

D) 19:00 - 23:00 weekdays, 13:00 - 23:00 Saturdays and 07:00 - 23:00 Sundays.

For the appropriate period (e.g. daytime), the ambient noise level is determined and rounded to the nearest 5dB. In this instance, the measured daytime ambient noise levels in the vicinity of the proposed development were measured in the range of 46 - 50dB $L_{Aeq,16hr}$ during daytime periods. The residential dwellings in the vicinity will therefore be considered as Category A receptors.

Note that although the established noise emission criteria detailed above are for residential dwellings, they would also be applicable to the hotel in this instance.

The maximum criteria limits summarised in Table 9.5 below will therefore be applied at the facades of all the nearest noise sensitive receptors in respect of construction noise emissions from the proposed development.

Noise Sensitive Receptor	Threshold Value, Decibels (dB $L_{Aeq,T}$)		
	Daytime Periods (07:00 - 19:00) & Saturdays (07:00 - 13:00)	Evening Periods 19:00 - 23:00 Weekdays 13:00 - 23:00 Saturdays & 07:00 - 23:00 Sundays	Night Periods (23:00 to 07:00hrs)
Residential Buildings	65	55	45
Clonakilty Park Hotel			

Table 9.5 Established Threshold / Maximum Construction Noise Criteria Limits

If the total noise level (i.e. construction noise plus existing ambient noise level) exceeds the appropriate category value (e.g. 65dB $L_{Aeq,T}$ during daytime periods), then a relative noise impact is deemed to have occurred.

Note also that the levels listed in Table 9.5 are $L_{Aeq,T}$ noise levels (defined in Section 9.4.5) are typically averaged over hourly periods.

9.5.2 Operational Phase

Due consideration must be given to the nature of the primary noise sources when setting noise emissions criteria. In this instance, there are four primary sources of noise associated with the development once

operational. Criteria for noise from each of these sources, will be considered in terms of the $L_{Aeq,T}$ parameter (the equivalent continuous sound level).

There is no Irish Standard containing guidance that is applicable to residential development in this instance. In the absence of such standards, best practice dictates that the potential noise impact of the proposed development is assessed against appropriate British and / or International Standards.

In this instance, appropriate guidance is contained within *BS 8233 (2014): Guidance on Sound Insulation and Noise Reduction for Buildings*. This British Standard sets out recommended noise limits for indoor ambient noise levels in residential buildings as detailed in Table 9.6 below.

Activity	Room Type	Design Criterion $L_{Aeq,T}$ (dB)	
		Daytime (07:00 - 23:00hrs)	Night Time (23:00 - 07:00hrs)
Resting / Sleeping Conditions	Living Rooms	35dB $L_{Aeq,16hr}$	-
	Bedrooms	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,8hr}$

Table 9.6 Recommended Indoor Ambient Noise Levels for Residential Buildings from *BS 8233 (2014)*

For the purposes of this assessment, it is necessary to derive external limits based on the internal criteria listed in the table above. This is done by factoring in a degree of noise reduction afforded by an open window, which is defined in the standard as being 15dB.

Applying the 15dB factor to the values from the *BS 8233* table, the following criteria would apply at the façades of all the nearby residential buildings:

- **Daytime (07:00 to 23:00 hours)** **50dB $L_{Aeq,16hr}$**
- **Night-time (23:00 to 07:00 hours)** **45dB $L_{Aeq,8hr}$**

Given its similar function as living / sleeping accommodation, these criteria have also been applied to the Clonakilty Park Hotel as well in this instance.

In summary, the established noise emission criteria at the various noise sensitive receptors in the vicinity of the proposed development is detailed in Table 9.7 below.

Location	Design Criteria $L_{Aeq,T}$ (dB)	
	Daytime	Night Time
Residential Dwellings **Clonakilty Park Hotel**	50dB $L_{Aeq,16hr}$	45dB $L_{Aeq,8hr}$

Table 9.7 Summary of Established Noise Emission Criteria, dB $L_{Aeq,T}$

In order to assist with the interpretation of the noise associated with changes in noise level, Table 9.8 (on the following page) offers guidance as to the likely impact associated with any particular relative change.

Change in Sound Level (dB L_{Aeq})	Subjective Perception	Impact
< 3	Inaudible	Imperceptible
3 - 5	Perceptible	Slight
6 - 10	Up to a doubling of loudness	Moderate
11 - 15	Over a doubling of loudness	Significant
> 15		Profound

Table 9.8 Likely Impact Associated with Change in Noise Level

9.5.3 Vibration Criteria

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standard *BS 7385-2 (1993): Evaluation and measurement vibration in buildings Part 2: Guide to damage levels from ground borne vibration*;
- British Standard *BS 5228-2 (2009): Code of practice for noise and vibration control on construction and open sites Part 2: Vibration*;

BS 7385 states there should typically be no cosmetic damage if transient vibration does not exceed 15mm/s at low frequencies rising to 20mm/s at 15Hz and 50mm/s at 40Hz and above. These guidelines relate to relatively modern buildings and should be reduced by 50% or less for more critical buildings or structures that are considered to be compromised.

BS 5228 recommends that for soundly constructed residential property, light commercial buildings and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak particle velocity of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and increasing to 50mm/s at 40Hz and above for intermittent vibration.

For reinforced or framed structures or industrial and heavy commercial buildings and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak particle velocity of 50mm/s at 40Hz and above again for intermittent vibration.

In the case of continuous vibration, it states that these figures may need to be reduced by up to 50%. Below these vibration magnitudes minor damage is unlikely, although where there is existing damage, these limits may be reduced by up to 50%.

9.6 Predicted Noise & Vibration Impact

9.6.1 Construction Phase

During the construction phase, a variety of plant items will be in use such as lifting equipment, dumper trucks and general construction plant items. Each of these items will generate significant levels of noise and will need to have noise emissions predictions carried out in respect of same.

The nearest noise sensitive receptors to the proposed development were identified and detailed in Section 9.2 as follows:

Residential Dwellings to Northwest	25m
Residential Dwellings to East	120m
Clonakilty Park Hotel	147m

Note that these distances represent the closest distance of the nearest proposed development building to each noise sensitive receptor. It must be stated that, for most of the time, plant and equipment will be at a greater distance than these and, consequently, will have a lesser impact. In order to account for this, calculations to the furthest distance of the proposed development façade were also calculated. This allows for both an estimate of the average range as well as the "worst-case" scenario in respect of construction noise emissions.

The following assumptions have been made in the preparation of these construction noise prediction calculations:

- utilisation of all equipment of 66% of the 12-hour working day (i.e. 8 hours)
- the site will be surrounded by a 2.4m high solid hoarding for areas adjoining the residential development to the northwest

Table 9.9, on the following page, indicates typical noise levels that would be expected from the proposed construction site during the various phases of the construction project and their predicted level at each of the nearest noise sensitive receptors.

Phase	Plant Item (BS 5228 Ref)	At 10m (dB) [3]	Predicted Noise Level (dB L_{Aeq})		
			Residential Dwellings to the East	Residential Dwellings to the Northwest	Clonakilty Park Hotel
Excavation / Site Preparation	Tracked Excavator (C2.22)	72	41 - 66	43 - 52	41 - 50
	Dumper (C3.100)	74			
	Wheeled Loaded Lorry (D3.1)	75			
Foundation Laying	Compressor (C6.19)	72	40 - 64	41 - 50	39 - 49
	Poker Vibrator (C6.40)	73			
	Cement Mixers (C6.6)	71			
General Construction	Compressor (C7.70)	70	46 - 67	47 - 53	45 - 55
	Diesel Hoist (C7.97)	73			
	Pneumatic Circular Saw (C.79)	75			
	Generator (C7.51)	72			
	Dumper (C3.100)	74			
Roadworks	Surfacing	73	23 - 38	25 - 38	24 - 54

Table 9.9 Predicted Noise Emission Levels at Nearest Noise Sensitive Receptors During Construction

The only noise impact from the construction phase of any significance is expected to occur at the three or four residential dwellings directly overlooking the site at the northwest corner. Noise emissions at the facades of these residential buildings are predicted to be as high as 65 - 67 dB $L_{Aeq,T}$ during some construction phases when construction activities are occurring at the nearest development dwellings.

Noise emission levels of this order would only be ≤ 2dB(A) above the 65dB L_{Aeq} criteria but could still impart a slight noise impact on the dwellings located in the vicinity. However, it should also be considered that noise levels of this order will only occur during periods when construction activities are occurring at the nearest proposed development dwellings. Once the buildings in these areas are constructed,

[3] Sound data from BS5228-1:2009+A1:2014 *Code of practice for noise and vibration on construction and open sites*.

construction noise emission levels will decrease significantly due to shielding from the constructed buildings and significantly increased distances away from these receptors.

Construction noise emission levels predicted at the residential dwellings to the east and the Clonakilty Park Hotel are all predicted to be ≤ 55dB L_{Aeq} and would therefore be below the 65dB L_{Aeq} criterion. No significant noise impacts are expected to occur at these receptors at all.

Although supplemental source / path noise control mitigation measures can be provided and are discussed in Section 9.7.1, noise impacts construction activities carried out in close vicinity to noise sensitive receptors will always be expected to cause noise impacts. The necessity for these activities to be managed / coordinated with local residents (in conjunction with the other best practice noise reduction measures detailed in Section 9.7.1) therefore becomes critical for minimising these impacts.

In respect of vibration, the potential for impact at neighbouring sensitive locations during construction will be limited to excavation works and lorry movements on uneven road surfaces. However, lorry movements will be mostly on existing roads which are free of significantly sized speed bumps and other similar impediments so any potential vibration impact will therefore be minimised.

9.6.2 Operational Phase

There are four principal sources of noise that are expected to arise during the operational phase of the proposed development in this instance. These are as follows:

- Building Services Plant
- Creche External Play Area
- Vehicular Traffic on New Development Roads
- Additional Vehicular Traffic on Public Roads

Each one of these potential sources of noise is considered in turn in the following sections.

Building Services Plant

As part of the design of the proposed development, there will be a limited number of electrical / mechanical plant operating to service it; most of it will be capable of generating noise to some degree.

Although the MEP design isn't sufficiently developed at this stage, it is understood that the noise producing element of the development building services strategy for all the proposed development buildings will consist of air to water heat pumps which will locate internally within each apartment / dwelling. This will ensure that radiated noise emissions from these units are sufficiently low so as to be negligible / inaudible along the external building facades.

The only connection these units will have to the environment will be extract ducts for each unit which will terminate along the building facades. Given that these units have not been selected yet, it has been

assumed for the purposes of this assessment that the sound pressure level at a distance of 1m from these openings will be of the order of 45dB(A) (or have mitigation measures incorporated to achieve same).

In the absence of a M/E design, it has also been assumed that a similar approach will be taken for the creche in this instance.

Taking into consideration this noise levels for each of these units along with appropriate corrections for distance, screening and the presence of nearby reflecting surfaces and assuming that 75% of plant in the vicinity is operating simultaneously, the resultant noise levels at the nearest noise sensitive receptors have been calculated and are predicted to be as follows:

Noise Sensitive Receptor	**Noise Level**
Residential Dwellings to East	27 dB $L_{Aeq,T}$
Residential Dwelling to Northwest	32 dB $L_{Aeq,T}$
Clonakilty Park Hotel	28 dB $L_{Aeq,T}$

All of the predicted levels above are below both the daytime and night time criteria at all nearby noise sensitive receptors.

In respect of tonal noise emission elements, it is not possible to carry out a tonal analysis of building services plant during the planning stage since actual unit selections are not made until the detailed design stage of a project. Whilst it is not expected that low level building services plant of this nature will contain tonal elements that would be significant enough to manifest above the background noise levels in the vicinity, it is nonetheless recommended that a noise assessment be carried out by a qualified acoustic consultant during the design stage to confirm.

No impulsive elements are expected from building services plant.

The mitigation measures that are therefore be required in this instance in respect of building services plant are the following:

- Heat pump / ventilation duct systems are designed such that radiated sound pressure levels at a distance of 1m from their external facade openings will be of the order of 45dB(A) (or have mitigation measures incorporated to achieve same).

- A noise assessment should be carried out by a suitably qualified acoustic consultant during the design stage to confirm compliance of the design with the established criteria limits and that there are no tonal *or impulsive elements present.*

Creche External Play Area

The proposed development creche will be located along the northern boundary near the northeast corner of the property boundary. It will have an external play area on its western side with a 2m high solid fence surrounding it. Refer to Figure 9.4 on the following page.

Figure 9.4 Proposed Development Creche External Play Area Location

The creche play area will likely have periods of relatively significant noise emissions due to children playing / laughing. Noise levels measured in similar external creche play areas in Cork varied significantly but could be as much as 84 - 88dB L_{Aeq} during periods of significant children playing activities.

Assuming a worst case source noise level of 88dB L_{Aeq} with standard barrier and distance corrections applied, the resultant noise levels at the nearest noise sensitive receptors were calculated and are predicted to be as follows:

Noise Sensitive Receptor	Noise Level
Residential Dwellings to East	26 dB $L_{Aeq,T}$
Residential Dwelling to Northwest	20 dB $L_{Aeq,T}$
Clonakilty Park Hotel	26 dB $L_{Aeq,T}$

All these predicted levels are within the daytime criteria at all nearby noise sensitive receptors. The creche will not be in operation during night time hours but it is worth noting that these levels would be within the established night time criteria too.

No significant tonal elements are expected from creche external play area noise emissions and any impulsive noise due to shouting or yelling is expected to be sufficiently below the ambient noise level at all nearby noise sensitive receptors so as to not impart any noise impact.

No further mitigation measures would therefore be required in respect of external noise emissions from the proposed development creche.

Vehicular Traffic on New Internal Roads

The proposed development includes two new primary access roads that enter the site from both the northwest and northeast corners and feed into smaller roads within the development. The noise impact of these roads on the nearest noise sensitive receptors is addressed in the following paragraphs. The noise level associated with an event of short duration, such as a vehicle drive-by, may be expressed in terms of its Sound Exposure Level (SEL). The SEL can be used to calculate the contribution of an event or series of events to the overall noise level in a given period. The appropriate formula is given as follows:

$$L_{Aeq,T} = SEL + 10 \log_{10}(N) - 10 \log_{10}(T) \quad dB$$

where: $L_{Aeq,T}$ is the equivalent continuous sound level over the time period T(s);
SEL is the "A-weighted" Sound Exposure Level of the event under consideration (dB);
N is the number of events over the course of time period T.

The mean value of a Sound Exposure Level for a car movement, at low to moderate speeds, is of the order of 65dB(A) at a distance of 5m from the edge of the road. This figure is based on a series of measurements conducted under controlled conditions.

Specific daytime / night time period traffic figures are not available in this instance. However, in order to assess a worst case situation, we have assumed two traffic movements for every dwelling during the daytime period and one movement for every dwelling during the night time period (i.e. 492 traffic movements during the daytime period and 246 traffic movements during the night time period). Reference to the Traffic & Transport Assessment Report provided by Hegsons Design Consultancy Ltd confirms that approximately 63% of the vehicular flows will exit the development at the northwest corner and approximately 37% will exit at the northeast corner.

Using the method outlined above with the estimated traffic flows, the peak-hour noise levels have been predicted at the noise sensitive receptors accordingly. The results are summarised below. Note that the levels are the same over both periods even though there is half the amount of traffic occurring over the night time (as it is assessed over an 8-hour night time period as opposed to a 16-hour daytime period).

	Noise Level	
Noise Sensitive Receptor	**Daytime Period**	**Night Time Period**
Residential Dwellings to East	24 dB $L_{Aeq,T}$	24 dB $L_{Aeq,T}$
Residential Dwelling to Northwest	39 dB $L_{Aeq,T}$	39 dB $L_{Aeq,T}$
Clonakilty Park Hotel	29 dB $L_{Aeq,T}$	29 dB $L_{Aeq,T}$

The predicted noise levels at the nearest residential receptors are in the range of 24 - 39 dB L_{Aeq} which is lower than the established criteria of 50dB $L_{Aeq,16hr}$ and 45dB $L_{Aeq,8hr}$ for both daytime and night time periods respectively.

No additional mitigation measures are therefore required in respect of vehicular traffic on the new internal roads.

Additional Vehicular Traffic on Public Roads

The proposed development will introduce some levels of additional traffic onto public roads in the locality of the site. The traffic flow information was provided by Hegsons Design Consultancy Ltd in their Traffic & Transport Assessment Report for the opening year 2027 and the design years 2037 and 2042.

The results of our analysis at the main junctions for the predicted peak hour traffic volumes based on this information are presented in Tables 9.10 - 9.12 below.

Time Period	PM Peak Flows		Change in Noise Level (dB)
	Without Development	With Development	
AM Peak Hour	1456	1482	**+ 0.1**
PM Peak Hour	1717	1744	**+ 0.1**

Table 9.10 Change in Traffic Noise Level for the Opening Year 2027

Time Period	PM Peak Flows		Change in Noise Level (dB)
	Without Development	With Development	
AM Peak Hour	1581	1647	**+ 0.2**
PM Peak Hour	1884	1954	**+ 0.2**

Table 9.11 Change in Traffic Noise Level for the Design Year 2037

Time Period	PM Peak Flows		Change in Noise Level (dB)
	Without Development	With Development	
AM Peak Hour	1668	1744	**+ 0.2**
PM Peak Hour	1975	2045	**+ 0.2**

Table 9.12 Change in Traffic Noise Level for the Design Year 2042

The differences between predicted traffic flows with and without the site are such that the resulting increase in noise levels will be < 0.2dB on the surrounding road networks. Reference to Table 8 confirms that the impact of this relative increase would be considered imperceptible and therefore negligible.

No mitigation measures are therefore required in respect of additional vehicular traffic on public roads.

Cumulative Operational Noise Levels

The total level of combined noise emissions from the proposed development noise sources can be determined by summing together all their individual contributions. The total levels of each are summarised and totalled in Tables 9.13 & 19.4 on the following page.

Noise Source	Daytime Period Noise Level Emissions (dB $L_{Aeq,T}$)		
	Residential Dwellings to the East	Residential Dwellings to the Northwest	Clonakilty Park Hotel
Building Services Plant	27	32	28
Creche Outdoor Play Area	26	20	26
Vehicular Traffic on New Internal Roads	24	39	29
Additional Vehicular Traffic		Negligible	
Cumulative Noise Level	**31**	**40**	**33**

Table 9.13 Proposed Development Cumulative Noise Levels Summary (Daytime Period)

Noise Source	Night Time Period Noise Level Emissions (dB $L_{Aeq,T}$)		
	Residential Dwellings to the East	Residential Dwellings to the Northwest	Clonakilty Park Hotel
Building Services Plant	27	32	28
Creche Outdoor Play Area		N/A	
Vehicular Traffic on New Internal Roads	24	39	29
Additional Vehicular Traffic		Negligible	
Cumulative Noise Level	**29**	**40**	**32**

Table 9.14 Proposed Development Cumulative Noise Levels Summary (Night Time Period)

These cumulative noise levels are compared with the established project noise emission criteria in Table 9.15 below.

Location	Predicted Noise Level	Noise Emission Criteria	Compliant?
Residential Dwellings to the East	29 - 31 dB $L_{Aeq,T}$	**50dB $L_{Aeq,16hr}$ / 45dB $L_{Aeq,8hr}$**	✓
Residential Dwellings to the Northwest	40 dB $L_{Aeq,T}$		✓
Clonakilty Park Hotel	32 - 33 dB $L_{Aeq,T}$		✓

Table 9.15 Proposed Development Cumulative Noise Emission Level Comparison with Criteria

As can be seen in Table 9.15, the expected levels of noise emissions from the proposed development are within the established criteria at all adjacent noise sensitive receptors during all time periods.

The predicted cumulative noise levels for the proposed development have also been compared with the measured ambient noise levels measured in their vicinity in Tables 9.16 & 9.17 below.

Location	Period	Predicted Noise Level	Measured Ambient Noise Level Range	Noise Level Above or Below Ambient?
Residential Dwellings to the East	Daytime	31 dB $L_{Aeq,16hr}$	48 - 50 dB L_{Aeq}	Below
Residential Dwellings to the West		40 dB $L_{Aeq,16hr}$	46 - 47 dB L_{Aeq}	Below
Clonakilty Park Hotel		33 dB $L_{Aeq,16hr}$	48 - 50 dB L_{Aeq}	Below

Table 9.16 Noise Emission Level Comparison with Daytime Period Ambient Noise Levels

Location	Period	Predicted Noise Level	Measured Ambient Noise Level Range	Noise Level Above or Below Ambient?
Residential Dwellings to the East	Night Time	29 dB $L_{Aeq,8hr}$	42 - 43 dB L_{Aeq}	Below
Residential Dwellings to the West		40 dB $L_{Aeq,8hr}$	40 - 41 dB L_{Aeq}	Below
Clonakilty Park Hotel		32 dB $L_{Aeq,8hr}$	42 - 43 dB L_{Aeq}	Below

Table 9.17 Noise Emission Level Comparison with Night Time Period Ambient Noise Levels

As can be seen in the preceding tables, the predicted levels of noise emissions from the proposed development are consistent with or below the existing ambient noise levels at the nearest noise sensitive

receptors in the vicinity and would therefore be expected to be nominally inaudible for the vast majority of the time.

It should also be highlighted that the noise level conditions that were assessed would be considered worst case.

There are therefore no significant operational noise impacts that are expected from the proposed development on any of the identified adjacent noise sensitive receptors.

9.7 Avoidance, Remedial and Reductive Measures

The following measures are recommended to minimise the potential for disturbance due to noise emissions from the proposed development. Proper application of these measures should reduce noise emissions less than those predicted in this chapter.

9.7.1 Construction Phase

With regard to construction activities, reference will be made to *BS 5228: Noise control on construction and open site*s. This document provides detailed guidance on the control of noise from demolition and construction activities.

In particular, it is proposed that various practices be adopted during general construction activities including:

- Establishing channels of communication between the contractor / developer, Local Authority and residents.
- Appointment of a site representative responsible for matters relating to noise.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These should include:

- Provision of 2.4m high perimeter hoarding at the site boundary with the residential development to the northwest.
- Selection of plant with low inherent potential for generation of noise.
- Erection of barriers as necessary around items such as generators or high duty compressors.
- Placement of noisy plant as far away from sensitive properties as permitted by site constraints.
- Avoiding unnecessary revving of engines and switch off idling engines / equipment when not in use.
- Restricting construction activities to daytime periods only.

It is also recommended that when construction activities are carried out in the vicinity of the residential dwellings near the northwest corner, that they be managed / coordinated with local residents of these dwellings in order to minimise potential noise impact as far as practicable.

9.7.2 Operational Phase

Building Services Plant

The predicted noise levels from proposed development building services plant are within the adopted criteria for both the daytime and night-time periods. The only mitigation considerations that would be deemed as being required in this instance are as follows:

- Heat pump / ventilation duct systems are designed such that radiated sound pressure levels at a distance of 1m from their external facade openings will be of the order of 45dB(A) (or have mitigation measures incorporated to achieve same).
- A noise assessment should be carried out by a suitably qualified acoustic consultant during the design stage to confirm compliance of the design with the established criteria limits and that there are no tonal or impulsive elements present.

Creche External Play Area

The noise impact assessment has demonstrated that ameliorative measures are not required in respect of the creche external play area with a 2m high solid perimeter fence provided around it.

Vehicular Traffic on New Internal Roads

The noise impact assessment has demonstrated that ameliorative measures are not required in respect of vehicular traffic on the new proposed development internal roads.

Additional Vehicular Traffic on Public Roads

The noise impact assessment has demonstrated that ameliorative measures are not required in respect of additional vehicular traffic on public roads.

Vibration

There will be no significant levels of vibration associated with the proposed development.

9.8 Residual Noise and Vibration Impact

This section summarises the likely residual noise and vibration impact associated with the proposed development, taking into account the ameliorative measures described in Section 9.7.

9.8.1 Construction Phase

During the construction phase of the project, there is not expected to be any significant noise impact on most of the noise sensitive receptors in the vicinity. The only noise impact from the construction phase of any significance is expected to occur at the three or four residential dwellings directly overlooking the site at the northwest corner. Noise emission levels of this order are predicted to be ≤ 2dB(A) above the 65dB L_{Aeq} daytime criterion and therefore could impart a slight noise impact on these receptors when construction activities are being carried out on the development dwellings situated adjacent to them.

As stated in Section 6.1, construction activities are typically expected to impact significant impacts on noise sensitive receptors when carried out in close proximities with receptors that are immediately adjacent to the proposed development. In this instance, it is worth noting that these slight noise impacts

will only occur when construction works are being carried out on the dwellings located in close proximity to these receptors. Once the development dwellings in these areas are constructed, construction noise emission levels will decrease significantly due to shielding from the other constructed buildings and significantly increased distances away from these receptors. However, it is still recommended that when construction activities are carried out in their vicinity that they be managed / coordinated with local residents of these dwellings in order to minimise potential noise impact as far as practicable.

Limiting the hours of noisy operations and implementation of appropriate noise control measures detailed in this report will also serve to minimise noise impact as far as practicable in this instance.

9.8.2 Operational Phase

Building Services Plant

The predicted noise levels associated with building services are within the 45 / 50dB $L_{Aeq,T}$ night time / daytime criteria at all nearby residential receptors to the proposed development.

Creche External Play Area

The predicted noise levels associated with the proposed development creche external play area are within the 45dB $L_{Aeq,T}$ daytime criteria at all nearby residential receptors to the proposed development.

Vehicular Traffic on New Internal Roads

The predicted noise levels associated with vehicular traffic on new internal roads within the development are within the 45 / 50dB $L_{Aeq,T}$ night time / daytime criteria at all nearby residential receptors to the proposed development.

Additional Vehicular Traffic on Public Roads

The predicted noise levels associated with additional vehicular traffic on public roads are negligible.

9.8.3 Vibration

The predicted vibration emission associated with both the construction and operational phases of the proposed development are expected to be negligible.

9.9 Inward Noise Impact

The following section presents a detailed screening assessment that assesses the potential for inward noise impact for the development.

9.9.1 Site Context & Identified Noise Sources

The proposed residential development is proposed to be located on existing greenfield lands to the southwest of Clonakilty town centre at a distance of approximately 260m from the N71 national road. This is the only major or minor road located in the vicinity apart from the entry road for the hotel and an unpaved boreen that runs along the southern portion of the development with little to no traffic movements on it; the noise emissions from both would be considered negligible in this instance.

The proposed development site is bordered to the north by sports fields and to the south and southwest are more greenfield lands. Residential dwellings border the eastern and the northern portion of the western boundaries. The Clonakilty Park Hotel is also located to the east of the proposed development but is approximately 140m away from the nearest development dwelling. The only noise producing sources in this instance are the light industrial / commercial buildings located near the northwestern corner boundary.

9.9.2 N71 National Road

As stated in the previous section, the proposed development is located a distance of approximately 260m from the N71 national road. Refer to Figure 3 on the following page. The road is partially shielded from the proposed development by both the Clonakilty Agricultural Showgrounds and the light industrial / commercial buildings located along the northern border.

Refer to Figure 9.5 below.

Figure 9.5 Proposed Development Proximity to Major Roads in the Vicinity

In order to obtain an estimation of the noise emissions from the N71 at the proposed development location, the strategic noise mapping carried out by Transport Infrastructure Ireland was consulted[2]. N71 noise emissions for the subject area for both the L_{den} and L_{night} quantities are shown in Figure 9.6 below.

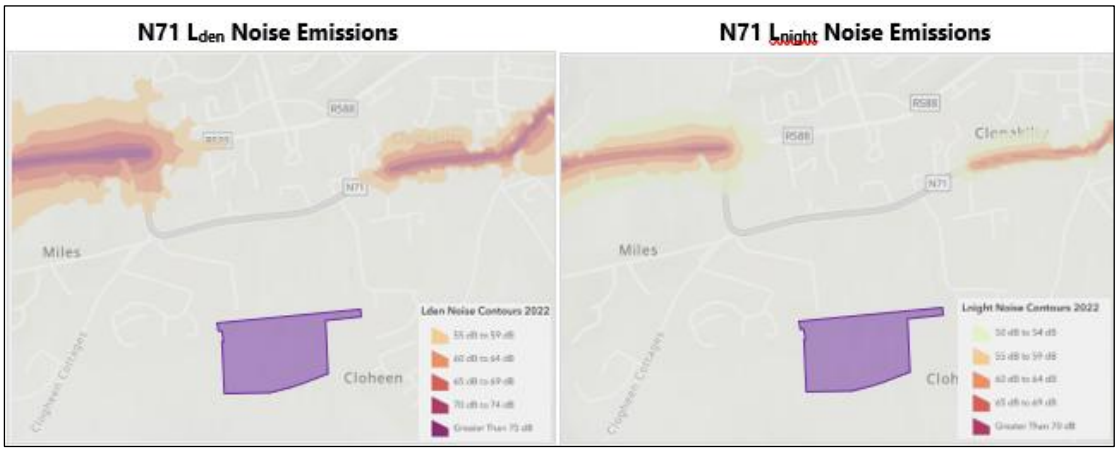

Figure 9.6 N71 Noise Level Emission Contours (as per Transport Infrastructure Ireland[4])

Although noise emission levels are unfortunately missing from the section of N71 immediately to the north of the site, it is clear from a review of the noise contour mapping that noise emissions from the road drop below threshold values at a distance of approximately 70m from the road. However, in order to estimate the specific noise emissions levels of the N71 road at the nearest development dwellings, projection calculation estimations based on the noise contour mapping results that applied corrections for the additional distance along with estimated reductions provided by shielding from the various buildings were carried out. The results of these projections are detailed in Table 9.18 below.

Noise Source	Noise Emission Projection at Proposed Development	
	dB L_{den}	dB $L_{Aeq,8hr}$ (L_{night})
N71	36 - 44	31 - 39

Table 9.18 Projected Noise Emissions from National Roads at Proposed Development

As demonstrated in Table 1 above, the projected noise emission levels from the N71 are estimated to be in the range of 36 - 44 dB L_{den} and 31 - 39 dB L_{night}.

9.9.3 Light Industrial / Commercial Buildings

The light industrial / commercial buildings are located adjacent to the northwest boundary of the proposed development. Refer to Figure 9.7 below.

[4] https://experience.arcgis.com/experience/372c33090f2740a5909ca068bf83cd42

Figure 9.7 Proposed Development Proximity to Major Roads in the Vicinity

A review of the available websites for the various businesses in these buildings indicates that there are no apparent night time operation (with opening hours ranging between 08:00 / 09:00 - 16:30 / 18:00 hours). However, given the need to verify this as well as to assess the potential for their noise emissions, a noise monitoring survey was carried out over a continuous typical 48-hour weekday period.

Specific details of this survey are set out in the following sections.

Noise Monitoring Location

The noise monitoring position was located near the closest proposed development dwelling façade to the light industrial / commercial units. Refer to Figure 9.7 which shows the specific location.

Survey Periods

Noise monitoring was conducted continuously between 16:00hrs on 21 May 2025 and 16:00hrs on 23 May 2025.

The meteorological conditions that were observed at Cork Airport over the course of the survey period are detailed in Figure 9.8 below.

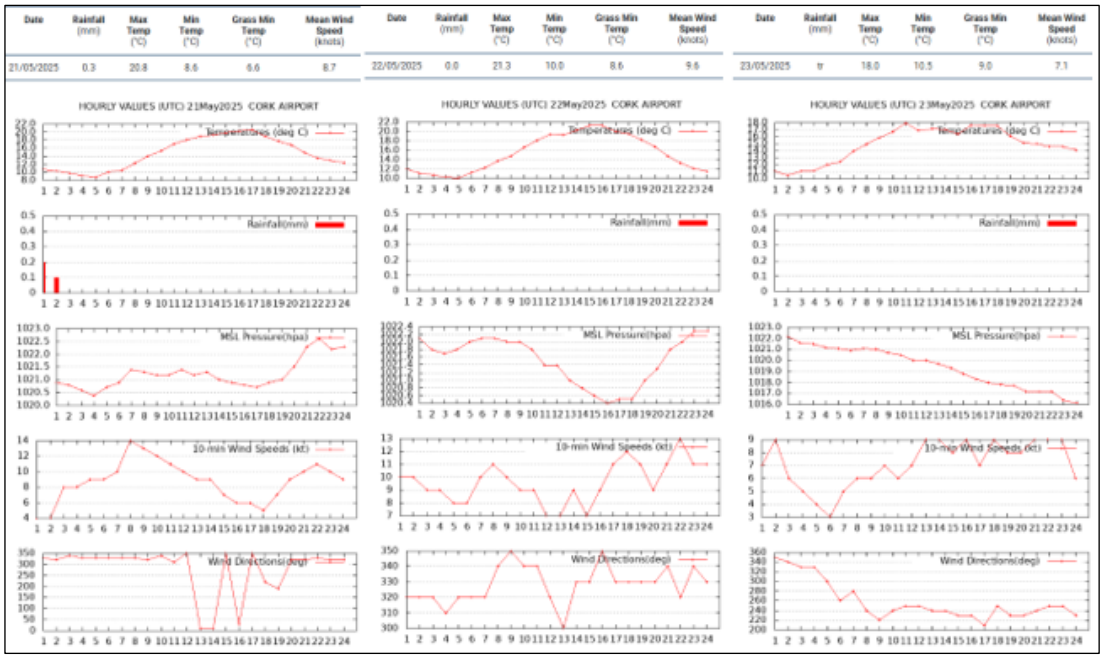

Figure 9.8 Meteorological Conditions Observed at Cork Airport During the Noise Survey

Personnel & Instrumentation

Brian S. Johnson (CLV) carried out the noise level monitoring during all survey periods. His credentials are presented in Section 9.4.3.

The measurements were conducted using an NTI Audio Type XL2 Sound Level Meter (Serial #A2A-11070-EO). It was fitted with a 90mm windshield the measurement apparatus and was check calibrated both before and after the survey using a Casella CAL 200 Acoustic Calibrator (Serial #18882). The microphone was positioned approximately 1.4m above the ground at all measurement locations.

The calibration certificates for the sound level meter and calibrator are provided in Appendix 1.

Procedure

Measurements were conducted on a continuous basis. Sample periods for the noise measurements were 15 minutes. The results were saved to the instrument memory for later analysis. Audio recordings were also made so that it could be used to identify sources of any potential periods of excessive noise.

Measurement Parameters

The statistical noise monitoring results are presented in terms of the following five parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. It is typically used as a descriptor for the ambient noise level.

L_{Amax} is the instantaneous maximum sound level measured during the sample period.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

Noise characteristics in this report are also considered in respect of the following two aspects:

Tonal Noise: Sounds which cover a range of only a few Hz which contain a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.

Impulsive Noise: A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background (pressurised air release, gunshot etc.).

Measurement Results

A summary of the noise monitoring results is presented in Table 9.19 below.

Assessment Quantity	Daytime Period		Night Time Period	
	Range	Average	Range	Average
Average	32 - 46 dB $L_{Aeq,1hr}$	41 dB $L_{Aeq,16hr}$	28 - 44 dB $L_{Aeq,1hr}$	38 dB $L_{Aeq,8hr}$
Maximum	46 - 70dB L_{Amax}	n/a	38 - 66dB L_{Amax}	n/a

Table 9.19 Summary of Daytime & Night Time Noise Level Monitoring Results

The average noise level results obtained during day and night time periods were very similar. This is typical of rural ambient noise environments that are located far away from significant noise sources and are mainly controlled by distant traffic noise, birdsong and insect noise. There were no significant noise contributions from the industrial units identified in the measurement results or audio recordings.

The maximum noise level results vary significantly as is typically the case in all external ambient noise environments. In this instance, all L_{Amax} noise events during night time periods above > 55dB L_{Amax} were reviewed and all were due to birdsong occurring in close proximity. All L_{Amax} noise events during day time periods above > 65dB L_{Amax} were reviewed and most were due to birdsong although there was one horn honking event and a couple of audible truck movements.

9.9.4 Cumulative Results

The cumulative inward noise impact results for the proposed development dwellings situated along the northern boundary which would be considered worst case from an inward noise impact standpoint (given their proximity to both the light / industrial units and the N71 national road) can be estimated from considering the highest results of the noise monitoring (which contain contributions from both the light

industrial / commercial buildings and all external roads in the vicinity) and the N71 national road predictions. These estimated cumulative noise levels are presented in Table 9.20 below.

Noise Source	Daytime	Night Time
Cumulative	36 - 44 dB $L_{Aeq,16hr}$	31 - 39 dB $L_{Aeq,8hr}$

Table 9.20 Estimated Cumulative Noise Level Results

9.9.5 Site Inward Noise Impact Risk Assessment

In order to provide an indication of the likely risk of adverse effects from external noise, a comparison is carried out between the projected daytime and night time period noise levels against noise risk assessment indicators detailed in *ProPG 2017* in accordance with Stage 1 of standard Acoustic Design Statement procedure. Note that daytime period noise levels cannot be accurately determined from the L_{den} but the daytime period noise level is typically less than or equal to the L_{den} quantity, so it has therefore been considered as the daytime period noise level in this instance as a worst case approach. The results of this comparison are detailed in Figure 9.9 on the following page.

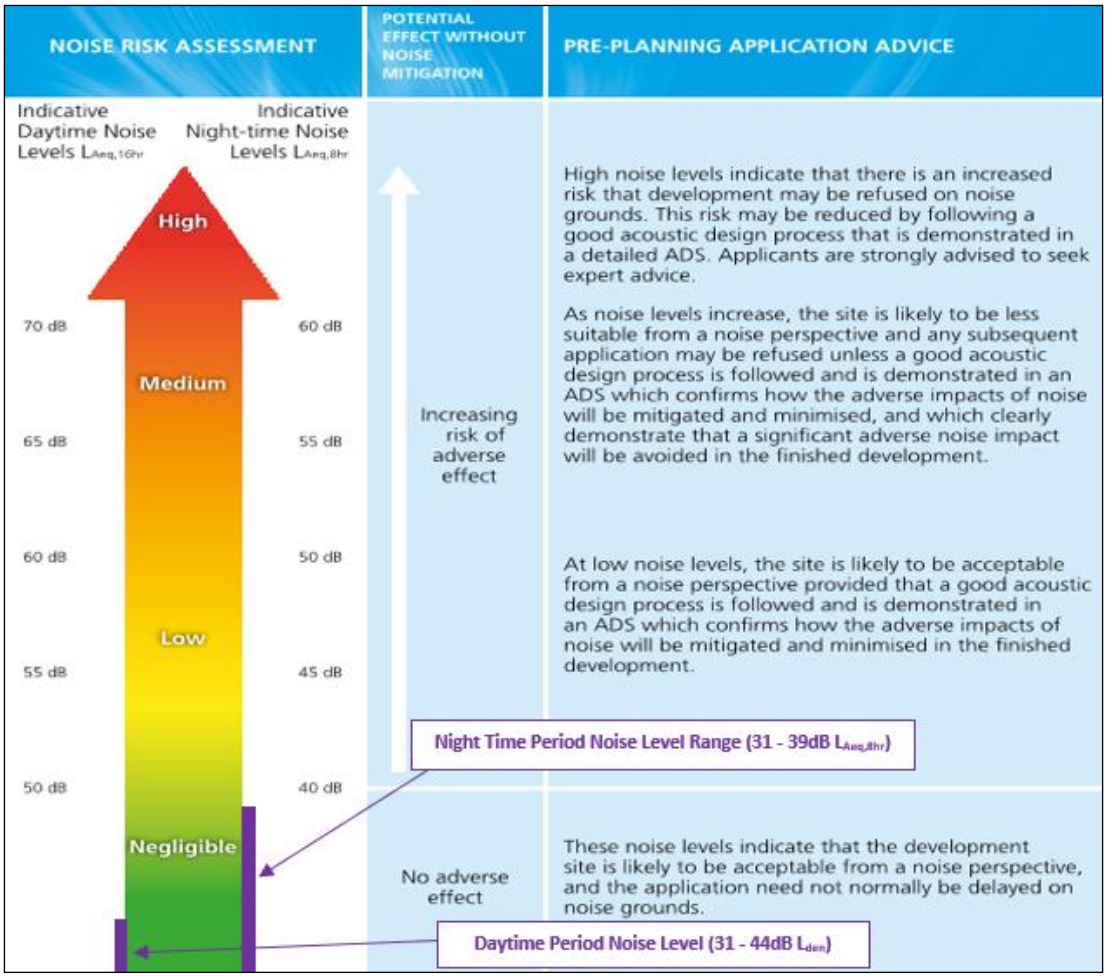

Figure 9.9 *ProPG 2017* - Noise Risk Assessment for Proposed Development

Overall, the noise level ranges of 31 - 44dB L_{den} that were considered for daytime periods and 31 - 39dB $L_{Aeq,8hr}$ for night time periods would be within the 'Negligible' magnitude range.

Ambient noise levels in the ''Negligible' range indicate that the application for the site need not normally be delayed on noise grounds.

Note also that these levels are also below the thresholds for residential criteria detailed in all Environmental Protection Agency and *BS 8233* guidance.

It is clear from these results that the ambient noise level environment at the proposed development site is quiet and well below the thresholds for further assessment from a noise impact standpoint.

9.9.6 Conclusion

Based on the results of the screening assessment detailed in this section, the ambient noise environment at the proposed development due to its proximity to the N71 national road and the light industrial commercial units have been demonstrated as being below threshold criteria detailed in *ProPG 2017*, *Environmental Protection Agency* and *BS 8233* guidance documents. The proposed development would therefore be considered acceptable from an inward noise impact standpoint

9.10 Difficulties Encountered

There were no difficulties of any significance encountered in the preparation of this chapter.

9.11 References

The following guidance documents were referenced in the preparation of this chapter:

EPA 2016. "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)."
Highways England Company Limited, Transport Scotland, The Welsh Government and The Department for Regional Development Northern Ireland. 2020. DMRB Design Manual for Roads and Bridges (DMRB).
British Standard BS 8233:2014: Guidance on sound insulation and noise reduction for buildings."
British Standard BS 5228 - 1: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise.
British Standard BS 7385-2 (1993): Evaluation and measurement vibration in buildings Part 2: Guide to damage levels from ground borne vibration;
British Standard BS 5228-2 (2009): Code of practice for noise and vibration control on construction and open sites Part 2: Vibration;
ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures. Geneva: ISO.
ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels.
ISO 9613-2:2017: Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation.

NRA Guidelines for the Treatment of Noise and Vibration in National Road Schemes. (Dublin: National Roads Authority)
World Health Organization. 2009. Night Noise Guidelines for Europe.
Transport Infrastructure Ireland website.

10.0 BIODIVERSITY

Contents

Figures, Plates and Tables

This page intentionally left blank.

10.1 Introduction

Doherty Environmental Consultants (DEC) Ltd. has been commissioned by Daly Barry Architects on behalf of HB Cloheen Developments to complete a biodiversity assessment for the proposed Large-Scale Residential Development (LRD) at Cloheen, Clonakilty, Co. Cork.

This chapter of the Environmental Impact Assessment Report (EIAR) assesses the effects of the Development on biodiversity. Furthermore, where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the potential effects during the following phases of the Proposed Development:

- Construction of the Proposed Development
- Operation of the Proposed Development

The Proposed Development refers to all elements of the application for the construction and operation of the proposed residential development (**Chapter 2: Development Description**).

A Construction Environmental Management Plan (CEMP) has been prepared for the project and accompanies this EIAR. The CEMP will be further developed post consent/pre-construction once a contractor has been appointed and will cover the construction of the Proposed Development. It will include all relevant construction phase mitigation recommended within the EIAR.

The potential for the Proposed Development to have adverse effects on the integrity of any designated European Sites has been assessed within a Natura Impact Statement (NIS).

10.1.1 Scope

Doherty Environmental Consultants (DEC) Ltd. was commissioned by Daly Barry Architects on behalf of HB Cloheen Developments to undertake an ecological impact assessment of the Proposed Development to inform the Biodiversity Chapter of an Environmental Impact Assessment Report (EIAR). The scope of this work is set out in further detail in Section 6.3. This Chapter has been prepared by Mr. Pat Doherty, BSC, MSc, MCIEEM of DEC Ltd.

10.1.2 Statement of Authority

This Biodiversity Chapter has been prepared by Mr. Pat Doherty BSc., MSc, MCIEEM, of DEC Ltd. Mr. Doherty is a consultant ecologist with over 20 years' experience in completing ecological impact assessments and environmental impact assessments. Pat has been involved in the completion of assessment reports for proposed developments and land use activities under the EIA Directive and Article 6 of the Habitats Directive since 2003 and 2006 respectively. He has extensive experience completing such reporting for projects located in a variety of environments and has a thorough understanding to the biodiversity issues that may arise from proposed land use activities. Pat has completed multiple examinations of both plans and projects in Ireland. He has been responsible for the completion of ecological assessments for multiple wind farm applications as well as other large scale infrastructure projects.

Pat has completed focused certified professional development training in Appropriate Assessment as well as in a range of ecological survey techniques and assessment processes. Training has been completed for National Vegetation Classification (NVC) and Irish Vegetation Classification (IVC) surveying, bryophyte survey for habitat assessment and identification, professional bat survey and assessment training, mammal surveying and specific training for bird and bat survey techniques. Ongoing training has been completed by approved training providers such as CIEEM, British Trust for Ornithology, the Botanic Gardens and the Field Studies Council.

10.1.3 European & International Legislation

10.1.3.1 Council s Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora ("the Habitats Directive"

The Habitats Directive provides the basis of protection for Natura 2000 sites, namely Special Protection Areas ("SPAs") and Special Areas of Conservation ("SACs"). Article 6 of the EU Habitats Directive requires that any proposal that is likely to have a significant effect on any Natura 2000 site in view of its conservation objectives , individually or in combination with other projects must be subject to an Appropriate Assessment. An Appropriate Assessment is required in order to ascertain the potential impact of a proposal on the reasons for which the site is designated, and thereby ascertain the potential for adverse effect on the integrity of the site. An NIS has been prepared. This concludes that the Proposed Development will not, adversely affect the integrity of any European Site (Natura 2000 site), .

The Habitats Directive also provides for the protection of species listed under Annex IV of the Directive wherever they occur. These species include otter and all bat species.

10.1.3.2 The Habitats Directive is transposed into Irish law inter alia by Part XAB of the Planning and Development Act 2000 as amended. EU Birds Directive

Directive 2009/147/EC on the conservation of wild birds (codified version) ("the Birds Directive") establishes a system of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive comprises 175 bird species that are rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes clearly that wherever those species occur, they must be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in the area of distribution. Similar actions must be taken by Member States regarding migratory species, even if they are not listed in Annex I.

10.1.3.3 Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries.

10.1.3.4 EU Water Framework Directive 2000/60/EC

The Water Framework Directive (WFD), which was passed by the European Union (EU) in 2000, and came into legal effect in December 2015, is wide-reaching legislation which replaces a number of the other water quality directives (for example, those on Water Abstraction) while implementation of others (for example, The Integrated Pollution Prevention and Control and Habitats Directives) will form part of the 'basic measures' for the Water Framework Directive. The fundamental objective of the Water Framework Directive aims at maintaining “high status” of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least “Good” in relation to all waters by 2027 (WFD).

10.1.3.5 UN Convention on Biological Diversity (CBD)

The CBD entered into force on 29 December 1993. It has 3 main objectives: 1. The conservation of biological diversity. 2. The sustainable use of the components of biological diversity. 3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources. National Legislation

Parties to the CBD are required to submit a National Biodiversity Action Plan and report annually on the status of biodiversity and measures to address and reverse loss of biodiversity. Ireland’s National Biodiversity Strategy and Action Plan (2017-2021) was submitted December 2017.

10.1.3.6 The Wildlife Act (1976) as amended and associated Regulations

The Wildlife Act 1976 gives protection to a wide variety of birds, animals and plants in Ireland. It is unlawful to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from National Parks and Wildlife Service (NPWS). The Act (as amended in 2000) protects all birds, their nests and eggs. Wilful destruction of an active nest from the building stage until the chicks have fledged is an offence. The Act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The amendment in 2000 broadens the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

10.1.3.7 EC (Birds and Natural Habitats) Regulations 2011

The Habitats Directive is transposed into Irish law inter alia through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the Habitats Directive provides protection to a number of named species wherever they occur. These species are protected inter alia under Regulations 27, 29 and 51 of the Habitats Regulations 2011.

10.1.3.8 Planning and Development Act 2000, as amended

For the purposes of an application for planning permission the protection of biodiversity is provided for in the 2000 Act, as amended, and the Planning and Development Regulations 2001, as amended, which transpose provisions of the Habitats and Birds Directives.

10.1.3.9 Flora (Protection) Order (FPO), 2022

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora (Protection) Order, 2022, which supersedes orders made in 1980, 1987, 1999 and 2015.

It is illegal to cut, uproot or damage the listed species in any way, or to offer them for sale. This prohibition extends to the taking or sale of seed. In addition, it is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation.

10.1.3.10 The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009) and as amended

The regulations establish legally binding quality objectives for all surface waters and environmental quality standards for pollutants for purposes of implementing provisions of E.U. legislation on protection of surface waters. These regulations clarify the role of public authorities in the protection of surface waters and also concern the protection of designated habitats.

10.3.11 European Union Environmental Objectives (Freshwater Pearl Mussel) (Amendment) Regulations 2009 to 2018

The purpose of these Regulations is to support the achievement of favourable conservation status for freshwater pearl mussels. To that end, they:
(a) Set environmental quality objectives for the habitats of the freshwater pearl mussel populations named in the First Schedule to these Regulations that are within the boundaries of a site notified in a candidate list of European sites, or designated as a Special Area of Conservation, under the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94/1997).
(b) Require the production of sub-basin management plans with programmes of measures to achieve these objectives.
(c) Set out the duties of public authorities in respect of the sub-basin management plans and programmes of measures.

10.1.4 Policy

10.1.4.1 National Biodiversity Action Plan

Ireland's 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature.

The 4th NBAP strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. The aim is to ensure that every citizen, community, business, local authority, semi-state and state agency has an awareness of biodiversity and its importance, and of the implications

of its loss, while also understanding how they can act to address the biodiversity emergency as part of a renewed national effort to "act for nature".

This National Biodiversity Action Plan 2023-2030 builds upon the achievements of the previous Plan. It will continue to implement actions within the framework of five strategic objectives, while addressing new and emerging issues:

- Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity
- Objective 2 - Meet Urgent Conservation and Restoration Needs
- Objective 3 - Secure Nature's Contribution to People
- Objective 4 - Enhance the Evidence Base for Action on Biodiversity
- Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives

Of the above objectives, Objective 3 has particular relevance for planning and development. Outcome 3c sets out a number of actions and targets that aim to facilitate and secure biodiversity's contribution to people. Outcome 3C1 sets out an action for all Public Authorities and private sector bodies to move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.

10.1.5 Local Policy

The Cork County Development Plan 2022 – 2028 came into effect on the 6th June 2022. Chapter 15: Biodiversity and Environment, of the County Development Plan sets out Policies and Objectives for Biodiversity. The overarching policy set out in the County Development Plan (County Development Plan) is outlined in Objective BE 15-1: Support and comply with national biodiversity protection policies

Objective BE 15-2 seeks to protect natural heritage sites which are designated or proposed for designation under European/National legislation and International Agreements. This objective also seeks to protect statutorily protected flora as well as areas of local biodiversity value, ecological corridors and habitats that are features of the County's ecological network. This network includes rivers, lakes, streams and ponds, peatland and other wetland habitats, woodlands, hedgerows, tree lines, veteran trees, natural and semi-natural grasslands as well as coastal and marine habitats. It particularly includes habitats of special conservation significance in Cork as listed in Volume 2 of the Plan.

Objective BE 15-6 sets out the provision for the protection and enhancement of biodiversity in the development management process.

10.1.6 Guidance

10.1.6.1 Appropriate Assessment of Plans and Projects in Ireland – Guidance for Local Authorities (2010)

The 'Appropriate Assessment of Plans and Projects in Ireland – Guidance for Local Authorities' ("the Appropriate Assessment Guidance")[5] provides methodological and legislative guidance on Appropriate

[5] Department of Environment, Heritage and Local Government (2010) Appropriate Assessment of Plans and Projects in Ireland – Guidance for Local Authorities – Available at: https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf (Accessed March 2025).

Assessment for any developments that may impact on Natura 2000 sites in Ireland. These guidelines are highly relevant in assessing the potential impact on Natura 2000 sites.

10.1.6.3 CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal

The 'CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine'[6] (the CIEEM Guidelines"), published by the Chartered Institute of Ecology and Environmental Management ("CIEEM"), are the acknowledged reference on ecological impact assessment and reflect the current thinking on good practice in ecological impact assessment across the UK and Ireland. They are consistent with the British Standard on Biodiversity, which provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring. These CIEEM Guidelines have the endorsement of the Institute of Environmental Management and Assessment ("IEMA"), the Chartered Institute of Water and Environmental Management (CIWEM), Northern Ireland Department of the Environment (DoeNI), Scottish Natural Heritage (SNH), The Wildlife Trusts and other leading environmental organisations.

10.1.6.4 Guidelines on the information to be contained in Environmental Impact Assessment Reports

The Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports', which were published in 2022, were prepared in accordance with the 1992 Environmental Protection Agency Act (Section 72), which requires the EPA to prepare guidelines on information to be contained in environment impact assessment reports.

The Guidelines have been drafted with the primary objective of improving the quality of EIARs with a view to facilitating compliance with the EIA Directive (Directive 2014/52/EU). By doing so they contribute to a high level of protection for the environment through better informed decision-making processes. They are written with a focus on the obligations of developers who are preparing EIARs.

The Guidelines are also intended to provide all parties in the EIA process, including competent authorities (CAs), with an authoritative reference to be regarded when considering an EIAR.

10.2 Overview of the Development

The proposed development will consist of a largescale residential development (LRD), comprising of 246no. residential dwellings as follows: 177no. houses consisting of 3no. 5-bed dwellings, 41no. 4-bed dwellings, 90no 3-bed dwellings, 31no. 2-bed dwellings and 12no. 1-bed sheltered housing units; 6no. 2-storey 4-unit apartment blocks consisting of 24no. 2-bed units and 3no. 3-storey 15-unit apartment blocks consisting of 36no. 2-bed units and 9no. 1-bed units.

[6] CIEEM (2018 v 1.1) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester. Version 1.1. Updated September 2019 – Available online at: https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf (Accessed March 2025).

The proposed development also includes a crèche (473.77sqm) with capacity to accommodate 65no. children.

The proposed development will include provision for car parking, including EV charging points and bicycle parking. The proposed development will also include the provision of private, communal, and public open spaces; internal roads and pathways with potential for future links to adjacent lands; pedestrian and cyclist routes; hard and soft landscaping and boundary treatments; waste storage; plant; signage; a new access onto the local hotel road to the east, incorporating clear span bridging of the existing stream with associated works to same, and a new access connecting to the L-9931-0 local road to the west; modifications to car parking at the Clonakilty Park Hotel and the provision of a roundabout; public lighting; new substation; road improvement works and pedestrian facilities at the N71 and Clonakilty Park Hotel junction; all associated site development works; and all drainage and foul sewer infrastructure and network works including connections to the existing networks on the N71 national road and the L-4007-52 local road, and nature-based SuDS measures.

10.3 Assessment Methodology and Significance Criteria

Biodiversity surveys of the Site were undertaken following specific guidelines for habitats and species as outlined in the following sections, and with reference to the legislation and policy outlined in **Section 10.1.4 to 10.1.6** above**.**

The importance of the habitats and species present is evaluated using the guidance document Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024 v.1.3). This document outlines an accepted approach for the evaluation of potential impacts from such developments.

10.3.1 Desktop Survey

A range of scientific site investigations have been completed for the project and these are relied upon in this Natura Impact Statement. The investigations include ecological field surveys, hydrological field surveys and geotechnical field surveys.

Desk-based investigations were completed to identify pathways connecting the proposed project to European Sites. Datasets used to assist with the desk-based investigations include:

- NPWS European Sites and site-specific conservation objectives datasets;
- EPA Rivers and Lakes dataset;
- EPA surface water catchment and sub-catchment datasets;
- NPWS Article 17 Habitats and Species Reports datasets;
- OSI Geohive and OSI Historic townlands online mapping portal;
- National Biodiversity Data Centre (NBDC) online mapping portal; and
- NPWS Protected Species Dataset for the proposed development site and surrounding area.

10.3.2 Existing Biodiversity Records

The NBDC was consulted in order to establish historic records of important and protected species, or the likelihood of their occurrence (through range information).

Important and protected species includes those identified in the Wildlife Act (as amended), listed under the FPO, and in the EU Habitats and Birds Directive.

NBDC collects and manages biodiversity data for the island of Ireland and incorporates data from a number of different sources. The NBDC records were reviewed to inform this assessment. An area of search was used to collate all records held for the Site within the 1km^2 W3740 in which the project site is located. This 1km^2 buffer area will provide adequate coverage for all terrestrial non-volant mammal species, invertebrate species and flora species that may be sensitive to the Proposed Development. For instance, terrestrial mammals species are sensitive to Proposed Development activities to a distance of c. 150m from the source of the activity (NRA, 2007). The area of search is shown on **Figure 10.3**.

10.3.3 Site Investigations

Multidisciplinary ecological surveys of the project site were undertaken by DEC Ltd during 2020, 2021, 2023 and 2024. Surveys were completed on a monthly basis between October and December 2020. The dates of surveys were 27th October, 21 November and 21 December 2020. Another round of surveys was completed on the 16th February 2021.

During 2023 surveys were completed on the 23rd February 2023 and again on 12th October and 19th November 2023. During 2024 surveys were completed on the 20th February, 23rd February, 12th March, 11th June and 27th August 2024.

The methodology used during this survey was based on the Heritage Councils *Best Practice Guidance for Habitat Survey and Mapping* (2011). The classification of habitats recorded during the field survey is based on the Heritage Council's *A Guide to Habitats in Ireland*.

The *Guide to Habitats in Ireland* classifies habitats according to a hierarchical framework with Level 1 habitats representing broad habitat groups, Level 2 representing habitat sub-groups and Level 3 representing individual habitat types. The Phase I Field Survey focused on identifying habitats to Level 3 of the *Guide to Habitats in Ireland*.

The annotation of vegetation occurring within sites was undertaken using the DAFOR scale. This scale refers to plant species in terms of dominance, abundance, frequency, occasional and rare (DAFOR). Plant nomenclature in this report follows Webb (1996) for vascular plants and Smith (2004) for mosses.

A survey for field signs indicating the presence of otters or other protected non-volant mammal species such as Irish stoat and badgers was undertaken during the field surveys. This survey was undertaken during the daytime and particular attention was given to habitat features normally associated with otters. Any mammal field signs typical of otter activity were recorded during the surveys. These field signs, as described in Neal & Cheeseman (7) and Bang & Dahlstrom (8), include:

(7) Neal, E., & Cheeseman, C., (1996). 'Badgers'. Poyser Natural History, London.

(8) Bang, P., & Dahlstrom, P., 'Animal Tracks and Signs'. Oxford University Press, Oxford.

- mammal breeding and resting places, such as setts, holts, couches, lairs;
- pathways;
- prints;
- spraints and faecal deposits;
- latrines (and dung pits used as territorial markers);
- prey remains and feeding signs (snuffle holes);
- hair; and
- scratch marks.

All bird species seen using the site (as opposed to simply flying over it) were recorded.

An appraisal of habitats occurring within the project site for their potential to support bat species was completed during the field surveys in July 2021.

An assessment of tree bounding and within the project site for their potential to function as roost sites for bats was completed. The tree roost assessment method follows that outlined by Collins et al. (2023). The inspections were based on a ground level tree assessment. Each tree was inspected for the presence of preferred roost features (PRFs). The inspections of the trees were undertaken using an LED head torch and Swarovski binoculars.

Trees that do not support PRFs are not considered to have potential to function as bat roosts. Trees supporting PRFs are classified as either PRF-I and PRF-M trees as per Collins et al. (2023). PRF-I trees are described by Collins et al. as trees with PRFs only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitat. PRF-M trees are described as trees with PRFs suitable for multiple bats and may therefore be used by a maternity colony.

For PRF-I trees Collins et al. recommend that no further surveys are required. For PRF-M trees they recommend that at least two no. presence/absence surveys for bats are completed between May to September.

Dedicated bat activity surveys were completed on site. This involved continuous static detector bat activity survey at the project site on the night of the 10th/11th June 2024 along the northern hedgerow boundary and along the eastern boundary at the point where the project site crosses the eastern boundary drainage channels. Static detector surveys were again completed between the 27th August and 2nd September inclusive. Two Song Meter SM4 Full Spectrum bat detectors were deployed on site to monitor bat activity continuously during the monitoring completed between these dates. The static bat detector was positioned towards the centre of the project site. **Figure 10.3** shows the location of the static bat detector (as well as the location taken up during the roost emergence surveys). The static detector was mounted at a height of 3m above the ground and was set to recorded bat activity continuously throughout each night of the monitoring period, with recording commencing at 30 minutes prior to sunset and 30 minutes after sunrise.

In addition to the static detector survey, manual bat detector surveys were completed on the 10th June and the 2nd September 2024. The manual bat detector survey was completed using a handheld Echometer

Touch Pro bat detector. The manual survey comprised walking three loops of the same looped transect around the project site.

Bat calls recorded by the SM4 Bat detectors during the automatic bat monitoring sessions were analysed using Kaleidoscope Pro (v. 5.6.8) software. Kaleidoscope automatic bat identification software was used to assign bat calls to species level. Bat calls assigned to Myotis species were grouped together under the Myotis genus.

10.3.4 Evaluation of biodiversity Receptors

The nature conservation value of habitats and ecological sites occurring within the Site are based upon an established geographic hierarchy of importance as outlined by the National Roads Authority (NRA, 2009). The outline of this geographic hierarchy is provided below and this has been used to determine ecological value in line with the ecological valuation examples provided by the NRA (see NRA, 2009). The geographic evaluation hierarchy is as follows:

- International Sites (Rating A)
- National Importance (Rating B)
- County Importance (Rating C)
- Local Importance (higher value) (Rating D)
- Local Importance (lower value) (Rating E)

The Ecological Receptors of the Development are those features which are within the ZoI and are evaluated as being of Local Importance or greater.

10.3.5 Identification and Characterisation of Effects

When describing the magnitude or scale of ecological impacts reference should be made to the following characteristics:

- Positive or negative
- Extent: the size of the affected area/habitat and/or the proportion of a population affected by the effect
- Duration: the period of time over which the impact will occur. The EPA's guidelines on information to be included in Environmental Impact Assessment Reports (EPA, 2022) sets out the following terms for defining the duration of an impact: Momentary Effects - effects lasting from seconds to minutes; Brief Effects - effects lasting less than a day; Temporary Effects - effects lasting less than a year; Short-term Effects - effects lasting one to seven years; Medium-term Effects - effects lasting seven to fifteen years; Long-term Effects - effects lasting fifteen to sixty years; Permanent Effects - effects lasting over sixty years.
- Frequency & Timing: how often the effect will occur; particularly in the context of relevant life-stages or seasons; and,
- Reversibility: will the effect be permanent or temporary. Will an impact reverse, either spontaneously or as a result of a specific action.

Importance	Criteria
International Importance (Rating A)	• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Proposed Special Protection Area (pSPA). • Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or, o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance (Rating B)	• Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: • Species protected under the Wildlife Acts; and/or, • Species listed on the relevant Red Data list. • Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
County Importance (Rating C)	• Area of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan.

Importance	Criteria

	• Resident or regularly occurring populations (assessed to be important at the County level) of the following:
	  • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  • Species protected under the Wildlife Acts; and/or
	  • Species listed on the relevant Red Data list.
	• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
	• County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.
	• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
	• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (Higher Value) (Rating D)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (Lower Value) (Rating E)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites or features containing non-native species that is of some importance in maintaining habitat links.

Table 7.12.40: Geographic frame of reference used to determine value of ecological resources[9]

[9] Adapted from CIEEM 2024 v 1.3 - Available online at: https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf and NRA 2009 - Available at: https://www.tii.ie/media/kzldoawo/guidelines-for-assessment-of-ecological-impacts-of-national-road-schemes.pdf Accessed March 2025].

The assessment describes those characteristics relevant to understanding the ecological effect and determining the significance, and as such it does not need to incorporate all stated characteristics (CIEEM, 2024 v.1.3).

10.3.5.1 Significant Effects on Important Ecological Features

For the purpose of Ecological Impact Assessment, a 'significant effect', is an effect to an ecological feature from an impact, that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as important. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). As such, effects can be considered significant in a wide range of geographic scales from international to local. Consequently, 'significant effects' should be qualified with reference to the appropriate geographic scale (CIEEM, 2024 v.1.3).

In order to predict likely ecological impacts and effects, the assessor must take account of the relevant aspects of the ecosystem structure and function, which include (CIEEM, 2024 v.1.3):

- The resources available (e.g. territory, prey availability, habitat connectivity etc.);
- Environmental processes (e.g. eutrophication, drought, flooding etc.);
- Ecological processes and relationships (e.g. population / vegetation dynamics, food webs etc.);
- Human influences (e.g. fertilisation, turbary, grazing, burning etc.);
- Historical context (natural range, trends etc.);
- Ecosystem properties (e.g. the carrying capacity, fragility etc.); as well as; and
- Other environmental influences such as air quality, hydrology, water quality, nutrient inputs and salinity etc.

The determination of significance is made in line with the terminology set out in the EPA's guidelines on information to be included in Environmental Impact Assessment Reports. These criteria are as follows:

- No change – no discernible change in the ecology of the affected features.
- Imperceptible effect - An effect capable of measurement but without noticeable consequences.
- Not Significant - An effect which causes noticeable changes in the character of the
- environment but without significant consequences.
- Slight effect - An effect which causes noticeable changes in the character of the
- environment without affecting its sensitivities.
- Moderate effect - An effect that alters the character of the environment that is consistent
- with existing and emerging trends.
- Significant effect - An effect which, by its character, its magnitude, duration or intensity alters
- a sensitive aspect of the environment.
- Very Significant - An effect which, by its character, magnitude, duration or intensity
- significantly alters most of a sensitive aspect of the environment.
- Profound effect - An effect which obliterates sensitive characteristics.

10.3.5.2 Integrity

The integrity of an ecological receptor refers to the coherence of the ecological structure and function that enables the ecological receptor to be sustained (NRA, 2009). The term 'integrity' is most often used

when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can often be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites' habitats and/or species; affect the nature, extent, structure and functioning of component habitats; and/or, affect the population size and viability of component species.

10.3.6 Conservation Status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status.

As per the definitions provided in the EU Habitats Directive, the conservation status of a habitat is favourable when:

- Its natural range and areas it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable as defined below under species.

The conservation status of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

According to the TII/CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a habitat which is considered to be internationally important. However, an impact may occur at a lower geographic scale on this internationally important habitat. Under such a scenario, such an impact on an internationally important habitat is considered to be significant only at the lower scale e.g. local, county, rather than international scale.

10.3.6.1 Assessment of Residual Effects

After characterising the potential impacts of the Development, and assessing the potential effects of these impacts on the 'Important ecological features', mitigation measures are proposed to avoid and /

or mitigate the identified ecological effects. Once measures to avoid and mitigate ecological effects have been finalised, assessment of the residual impacts and effects should be undertaken to determine the significance of their effects on the 'Important ecological features'.

10.3.6.2 Assessment of Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2024 v.1.3). Different types of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as;

- Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM, 2024 v.1.3); and,
- Associated/connected – a development activity 'enables' another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess the potential impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM, 2024 v.1.3).

10.4 Description of the Receiving environment

10.4.1 Review of Historical Maps

A review of historical mapping (6-inch colour map 1829 to 1842; 6 inch Cassini, 1830's) and the 25 inch map, 1888 to 1913) for the site indicates that the site was enclosed and subdivided into agricultural fields with hedgerow field boundaries. The fields within the project site have been amalgamated into larger fields and the majority of the internal hedgerows have been removed.

Cloheen Cottage to the west of the site, where a farm yard is now present and Clonakilty Town Park in an area currently comprised of amenity grassland to the north of the project site is indicated on the cassini maps.

The EPA national streams and rivers dataset maps the presence of a stream along the eastern boundary of the project site. This mapped stream rises a short distance to the north of the eastern boundary. The first edition historical 6-inch maps from 1845 do not indicate the presence of any drainage features at this location. The later 25-inch map, published in 1901 shows the presence of a drainage feature along the boundary of fields to the east of the site. The last edition 6-inch map, published in 1943, also shows the presence of a drainage feature along field boundaries with its path altered from feature shown on the 25-inch map. **Figure 10.1** shows these drainage features as well as the current EPA mapped stream alignment at the east of the project site. Both the drainage features shown on 1901 and 1943 maps follow field boundaries. The first edition 6-inch map from 1845 typically mapped the presence of existing streams. For instance this map shows the presence of the Tawnies Stream to the west and the minor first order Cloheen Stream, that rises along the western boundary of the Cloheen townland. However, this map does not show the presence of any drainage features along the eastern boundary of the project site. In view of the absence of any mapped drainage features at the east of the project site on the first edition 6-inch map, the mapped presence of a drainage features following field boundaries in the late

1901 and 1943 mapping and the altered route of the drainage features between the latter two map publications, it is considered that the drainage features along the eastern boundary of the site is representative of an historic and artificially created field drainage ditch.

10.4.2 Geology Overview

The bedrock underlying the site is dominated by sandstone with Flaser-bedded sandstone & minor mudstone of the Old Head Sandstone Formation occurring to the north, Cross-bedded sandstone & minor mudstone of the Toe Head Formation occurring to the centre of the site and Purple mudstone and siltstone of the Castlehaven Formation occurring to the south.

The subsoils are dominated by till derived from Devonian sandstone, while the soils are dominated by acid brown earth. The Geological Survey of Ireland (GSI) map viewer does not indicate the presence of any wells within the Cloheen site. Wells are shown as present to the north of the site in the town of Clonakilty.

Groundwater vulnerability underlying the subject lands is predominantly classified at high to extreme vulnerability.

10.4.3 Hydrology

The site is located within the Feagle River/Clonakilty Bay sub-catchment of the Roury Coastal catchment.

The Feagle River rises to the northwest of the project site and flows broadly east to the sea at Clonakilty Bay. The Tawnies Lower Stream rises to the west of the site. This is a minor stream that flows northeast before draining into the Feagle River. The Cloheen Stream drains adjacent to the southwest of the site and flows south to the Carhoo Stream, which drains in to Clonakilty Bay.

An EPA mapped, minor first-order un-named stream flows south to north, passing along the short section of the site boundary adjoining the Clonakilty Hotel to the east (see **Figure 10.1** above). This historic drainage ditch is now representative of a double channel drainage feature with a median vegetated bank occurring between the two drains.

The location of the surface watercourse surrounding the site are shown on **Figure 10.2** below. All surface watercourses draining the site drain to Clonakilty Bay, which is designated as an SAC and SPA (Clonakilty Bay European Sites) (see Section 10.4.4 below).

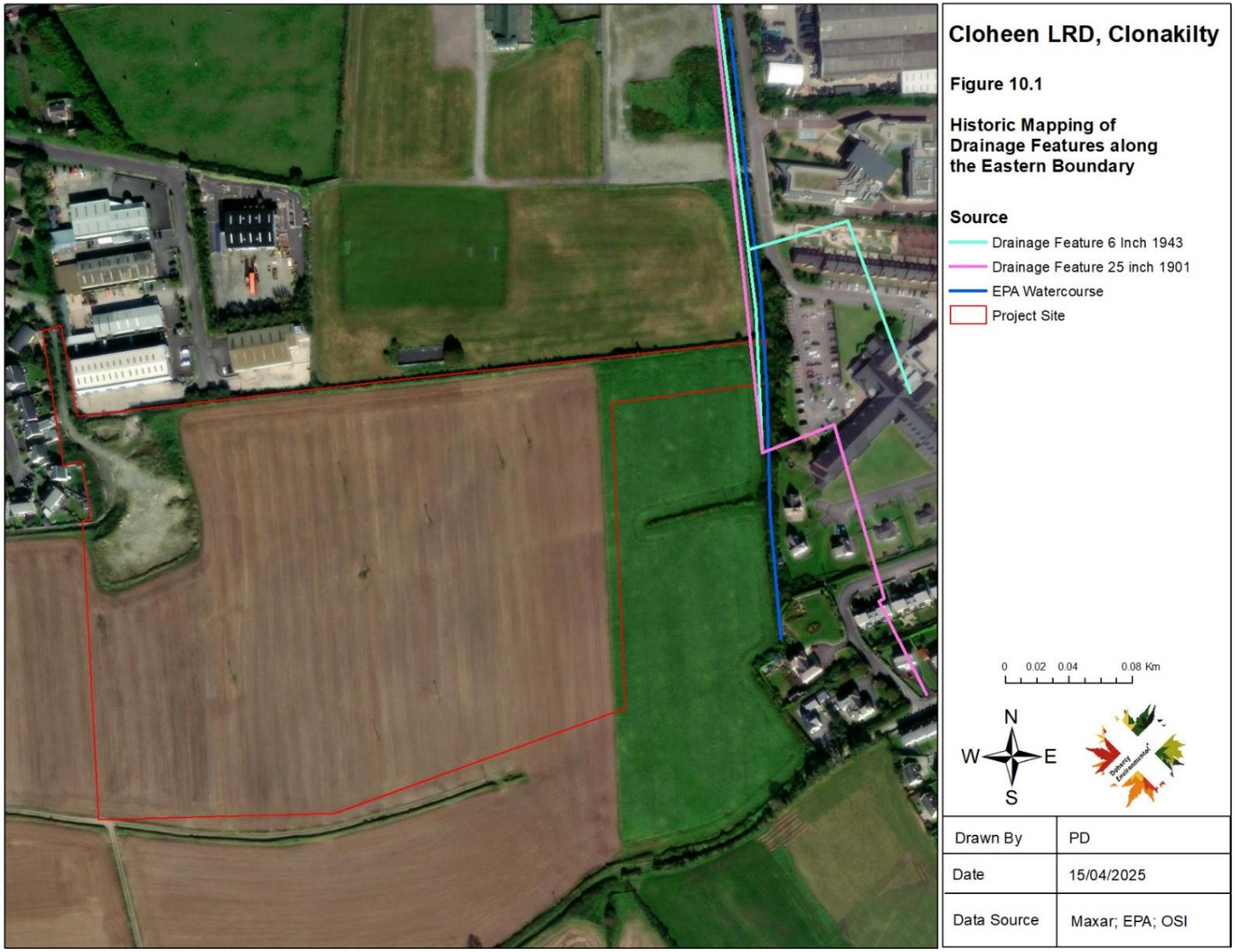

Figure 10.1 Historic Mapping of Drainage Features along Easter Boundary

10.4.4 Designated Conservation Areas

The Clonakilty Bay European Sites occur approximately 1km to the east of the site. **Figure 10.2** shows the location of the SAC and SPA with respect to the site.

Clonakilty Bay SAC is designated for its role in supporting a range of coastal and marine habitats such as dunes and tidal mudflats and sandflats.

Clonakilty Bay SPA is designated for its role in supporting a range of overwintering wetland bird species and associated coastal and marine wetland habitats.

The Clonakilty Bay European Sites are also listed as proposed Natural heritage Areas (pNHA). Aside from these pNHAs there are no other pNHAs occurring in the immediate vicinity of the site. There are no NHAs occurring in the wider area surrounding the Cloheen site.

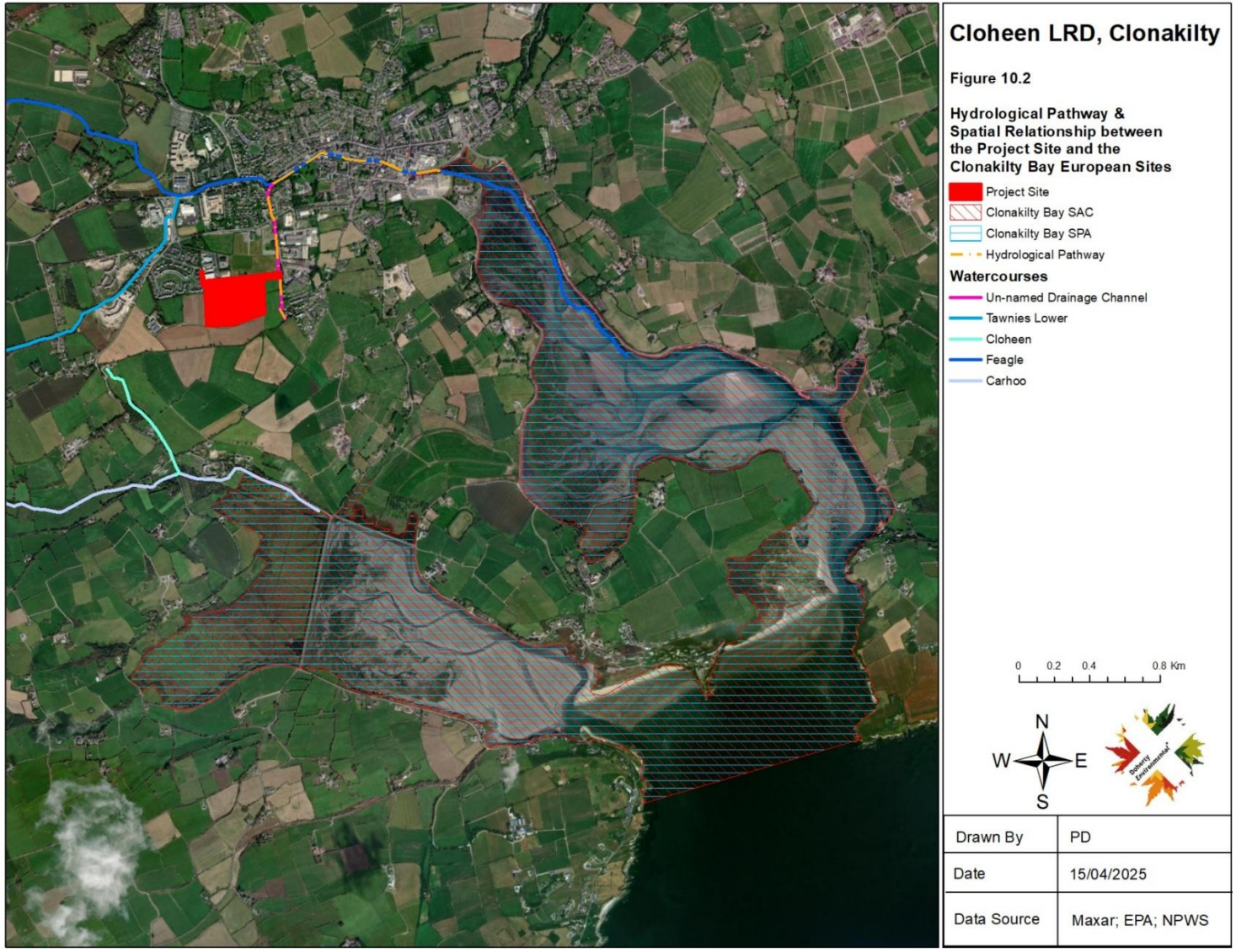

Figure 10.2 Hydrological Pathway & Spatial Relationship between the Project Site and the Clonakilty bay European Area

10.4.5 Protected Species Records

A search of the National Biodiversity Data Centre (NBDC) for records of rare and/or threatened species previously identified within the 1km square W3740, within which the project is located (see **Figure 10.3**) was completed in October 2024.

Figure 10.3: Polygon Area (shown in red) searched for records of Rare, Threatened and/or Protected Species

No records for rare, threatened or protected species are held for the area of search as shown on **Figure 10.3**.

10.4.6 Survey results

10.4.6.1 Habitats

The following Sub-Sections describe the habitats occurring within and immediately adjacent to the project site. Each habitat described below has been identified to Level 3 of Fossitt's *Guide to Habitats in Ireland*. The alpha-numeric code for each habitat is also provided alongside the habitat name (e.g.

hedgerow WL1). The locations and extent of each habitat described below are illustrated in **Figure 10.4**: Habitat Map.

The habitats occurring at the project site are dominated by arable land (BC1). This habitat type is subject to arable crop management with crop rotation being undertaken and periods of denuded surface occurring between crops. Natural vegetation cover is generally absent from this habitat.

A hedgerow (WL1) occurs along the northern boundary of the site. This hedgerow is subject to management and is cut annually to form a box cut hedgerow of approximately 2.5m in height. The hedgerow and a thin stip of herb cover along the edge of the arable land consist of Crataegus mongyna, Prunus spinosa, Rubus fruticosus agg., Lolium perenne, Arrhenatherum elatius, Urtica dioica, Cirsium arvense, Fumaria officinalis, Galium aparine and dense cover of Hedera helix.

The eastern boundary hedgerow (WL1) along the drainage channels consist of Crataegus mongyna, Prunus spinosa, Salix cinerea, Salix aurita, dense cover of Convovulus arvensis, Stachys arvensis, Rumex obtusifolius, Fumaria officinalis and Brassica rapa. Some Iris pseudocorus and Phragmites australis occurs along the boundary adjacent to the boundary drainage channel.

The drainage channels along the eastern boundary are representative of spate channels and are subject to significant fluctuations in flow. Both channels were dry upstream of the proposed development crossing point during surveys in June 2024,with low flows occurring downstream of the crossing point. The channels are embanked and subject to very high levels of shading from dense fringing vegetation in the form of Urtica dioica, Pteridium aquilinum, Convovulus arvensis, Galium aparine, Salix species and Crataegus mongyna. The channel beds generally consist of stones and cobbles. The width of both channels are similar, being c. 0.5m in width. Given the ephemeral nature of both channels at and upstream of the project site's eastern boundary and the embanked channels with choked vegetation and high degree of shading throughout both channels are considered to be of negligible fisheries value.

Nature Conservation Value

The project site is dominated by artificial habitat in the form of arable land that is subject to high levels of current human activity. This habitat along with the spoil and bare ground habitat are of low nature conservation value (Rating E). The northern boundary hedgerow is well managed and provides some limited connectivity to the wider landscape at its eastern end where it joins with the drainage corridor along the eastern boundary. To the west the hedgerow connects into existing urban land cover where the presence of semi-natural linear corridors are absent. Given the managed nature of the hedgerow and the limited connectivity the northern boundary is evaluated to be of low nature conservation value (Rating E). The eastern boundary hedgerow and drainage corridor represents the principle semi-natural habitat occurring in the area. It is evaluated to be of high local nature conservation value (Rating D).

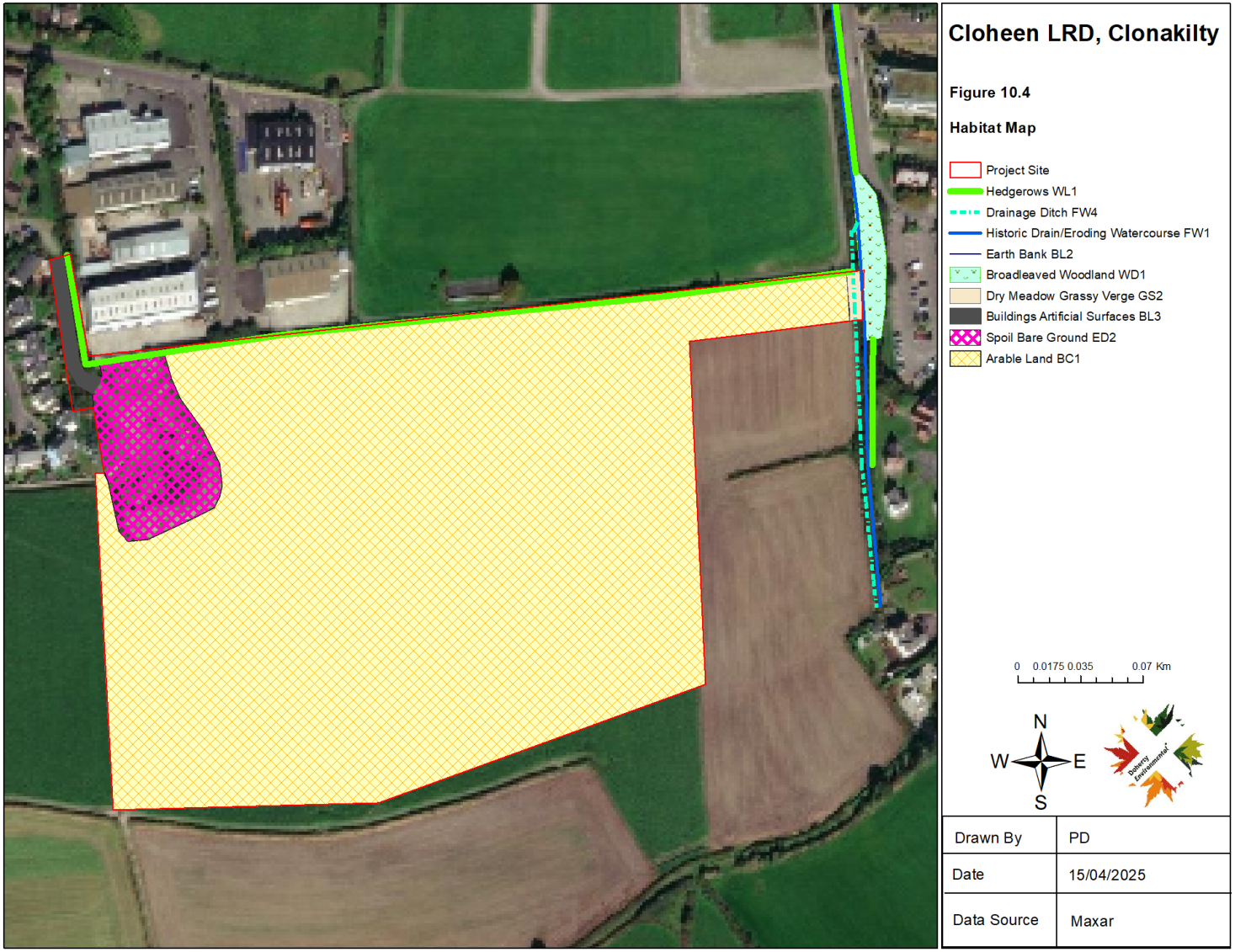

Figure 10.4. Habitat Map

Invasive Species

No non-native invasive species of high invasiveness, such as *Fallopia japonica, Gunnera tinctoria* or *Impatiens glandulifera* were identified on site during site field surveys. *Buddleja davidii* was recorded along the eastern boundary of the project site. *Buddleja davidii* is listed as a moderate impact invasive species by the NBDC.

Fauna

An overview of the fauna supported by the site is outlined in the following sections. The nature conservation value of the site in supporting populations of fauna is also outlined in the following sub-section.

Non-Volant Mammals

No definitive evidence of protected mammals such as otter or badger was noted within or immediately bounding the project site. The woodland habitats to the north and east of the project site are likely to support smaller mammals.

Volant Mammals – Bat

There are no structures present within the project site and as such there is no potential for bats to roost within the project site. There are no mature trees occurring within the project site. All vegetation occurring within the site is immature and devoid of any preferred tree roost features. No trees within/bounding the project site have been classified as PRF-I or PRF-M trees. Given the absence of structures and suitable trees within the project site there is no potential for bat roosts to occur.

Three species of bats were recorded by the static monitors during the June 2024 survey. A total of 459 bat passes were recorded along the northern hedgerow boundary, 416 of which were from Soprano pipistrelle, 36 from Common pipistrelle and 7 from Leisler's bat. The results of the monitoring at this location indicate that high levels of Soprano pipistrelle, moderate levels of Common pipistrelle and low levels of Leisler's bat occurred along this boundary of the site.

In contrast activity was much lower at the static detector location in the northeast corner of the site along the eastern boundary. At this location only 2 passes by Soprano pipistrelle were registered.

During the manual survey 4 no. Soprano pipistrelle passes were recorded with 3 being located along the northern boundary. Leisler's bat pass was recorded along the drainage corridor to the south of the eastern boundary. 3 no. Common pipistrelle passes were recorded along the southern boundary of the site over open ground. **Figure 10.5** shows the results of the June manual transect survey.

The three species of bats recorded during surveys are all widespread and abundant in Ireland and are generally encountered during bat activity surveys (NPWS, 2019).

Birds

A range of bird species were seen and heard on site during the site field surveys completed during April and June 2024. Species recorded include robin, blackbird, great tit, coal tit, blue tit, chaffinch, song thrush, dunnock, rook, starling, house sparrow, pheasant, swallow and wood pigeon.

Robin, blackbird, greenfinch, great tit, blue tit, chaffinch, dunnock, rook, starling, and wood pigeon were recorded along the northern and eastern boundaries.

Swallows, which is a species of medium conservation concern, were observed foraging throughout the site but were not identified as breeding on site given the absence of suitable nesting habitat for this species on the site.

No species of high conservation concern such as yellowhammer etc. were observed or heard on site during the breeding season field surveys.

The British Trust for Ornithology (BTO) provides guidance for establishing the breeding status of bird species. The classification of breeding status ranges from non-breeding, possible breeding, probable breeding to confirmed breeding. The presence of the songbird species listed above within suitable woodland breeding habitat to the north and east of the project site during the August survey is indicative of probable earlier breeding activity during the 2022 breeding season. The majority of the species observed are of low conservation concern (green-listed species), with starling, greenfinch and swallow being of medium conservation concern (amber-listed listed).

Figure 10.5. June Manual Bat Survey

10.5 Impact Assessment

10.5.1 Construction Phase

10.5.1.1. Designated Conservation Areas

Direct Impacts

There will be no direct impacts to designated conservation areas occurring in the surrounding area. The nearest conservation areas to the project site are the Clonakilty Bay European Sites and pNHA, located approximately 1km from the project site.

These European Site and pNHA are buffered from the project site by existing urban land and buildings and as such activities associated with the project will not have the potential to result in direct impacts to these designated conservation areas.

Indirect Impacts

A hydrological pathway connects the project site to these European Sites by virtue of the drainage corridor along the eastern boundary, which drains to the River Feagle, which in turn drains to these European Sites. The potential for this hydrological pathway to function as an impact pathway has been examined as part of a Natura Impact Statement (NIS) and it has been concluded that, with the implementation of the surface water design measures such as the installation of a Class 1 silt and hydrocarbon interceptor, the discharge of surface water runoff from the project site will not have the potential to undermine water quality within the River Feagle Estuary and Inner Clonakilty Bay or adversely affect the conservation status of qualifying feature of interest of the SAC, SPA and pNHA occurring to the north of the project site.

10.5.1.2 Habitat Loss & Degradation

The footprint of the proposed development will be predominantly restricted to arable land and spoil and bare ground habitats. This will result in the conversion of these habitats to areas of hardstanding. These habitats are of low ecological value (Rating E). The loss of these areas of disturbed ground to the footprint of the project will represent an impact of permanent and imperceptible significance.

The entrance to the proposed development site will result in the severance of the landscaped treeline corridor along the existing western boundary of the Clonakilty Hotel. Given the landscaped nature of this treeline the severance will constitute an impact of low significance representing a slight effect.

Access to the project site from the east will require the provision of an access road along the existing entrance to the Clonakilty Park Hotel and crossing over the drainage channels along the eastern boundary of the site. It is proposed to use a clear span bridge structure to cross the drainage channels. The abutments of the clear span bridge will be set back c. 2.3m from the drainage channel banksides.

Due to the existing alignment of the road corridor leading towards the crossing point, the new section of access road connecting to the crossing point on the east of the drainage channels will be located within c. 5m from the drainage channel bankside. It is noted that the Cork County Development Plan Objective WM11-11a seeks to ensure adequate protection measures along watercourses, keeping them free from

development by ensuring development is kept 10m or other appropriate distance from stream and river banks.

In respect of the WM11-11a objective it is noted that drainage channels occurring adjacent to the proposed access route are ephemeral in nature being subject to drying out during periods of dry weather conditions, are of negligible fisheries value and are considered to be of artificial (albeit historical) origin. It is further noted that the existing access road to the north of the proposed development site entrance is currently within 5m of the drainage channel and the proposed access road will represent a continuation of this alignment along the channel for an additional c. 50m. This is not considered to represent a significant alteration to the baseline conditions along this drainage channel and as such the buffering of the proposed access road from the nearest drainage channel bank by c. 5m is considered to represent an appropriate set back distance from this channel, in the context of the existing road infrastructure, the artificial origin of the channels and the negligible fisheries value of the channel.

It is also noted that WM11-11a of the County Development Plan also states that development altering the hydromorphology of a watercourse will not normally be permitted, where it may result in the deterioration in the status of a water body through for example, impacts on water quality, quantity or flow rate, riparian habitat or protected species, whilst Objectives WN11-11b states that there will be a presumption against the use of culverts.

The proposed clear span crossing has been selected as the bridge crossing design option. In the absence of an appropriate approach to the bridge installation works the potential will exist for the project to result in the contamination of the drainage channel waters and for this water to be discharged downstream, with potential to contribute to negative impacts to water quality along the Feagle River and the Clonakilty Bay European Sites (as examined in the accompanying Natura Impact Statement). Mitigation measures are set out in Section 10.6 below that aim to avoid such impacts to water quality.

In addition to the potential risk to water quality posed during the installation of the clear span bridge, instream works will also be required as part of a surface water outfall to the channel and during the realignment of a section of the stream upstream of the bridge. The realignment will involve the partial diversion of the stream in its upper course with rock armour, to convey the stream through one channel which will pass beneath a new clear span bridge. For a short section the stream runs in two channels; the right channel will be diverted using rock armour into the left. Instream works such as these are likely to have temporary effects during construction, with an increase in fine sediment production likely. The proposed construction activities have the potential to temporarily alter water quality and the hydrological regime in the study area. This would be a moderate short-term negative effect.

In terms of maintaining the existing hydrological regime along the drainage channels, this will be achieved through the selected clear span bridge design and the setting back of abutments 1m from the drainage channels. The implementation of these design measures will not result in the types of negative impacts to the drainage channel features as set out in Objectives WM11-11a and b.

10.5.1.3 Disturbance to/Loss of Habitat for Terrestrial Mammals

No breeding sites or resting places of protected terrestrial non-volant mammals such as badgers or otters were noted within or immediately adjacent to the project site and the construction phase of the project will not have the potential to result in significant disturbance to non-volant terrestrial mammals.

Any inappropriate siting of lighting during construction, may have the potential to indirectly impact on bat species that utilise the project site for foraging and/or commuting. Given the built-up nature of the wider surrounding environment and the presence of artificial lighting to the north, east and west, the local bat population would be expected to be habituated to artificial light spill, especially as the most common species recorded within the subject lands i.e. soprano pipistrelle, common pipistrelle and Leisler's bat, are some of the least sensitive species to artificial light spill.

10.5.1.4 Impacts to Birds

The clearance of the site and any recolonising vegetation within the project site during the breeding bird season will have the potential to result in the destruction of nest and/or fatality to chicks.

Given the disturbed nature of the site, the local bird population supported by the project site is likely to be well habituated to human activity and the construction works associated with the project are not predicted to have the potential to result in significant disturbance to birds.

10.5.1.5 Spread of Non-Native Invasive Species

During site surveys the only non-native species recorded on site was *Buddleja davidii*. The construction phase of the project has the potential to result in the spread of these species in the wider vicinity of the project site. In addition, the potential exists for site operatives and machinery to result in the inadvertent spread of non-native plant species on site, should clothing, plant and machinery be contaminated with these species prior to entry on site.

10.5.2 Operation phase

10.5.2.1 Designated Conservation Areas

In the absence of the provision of inappropriate surface water management for the operation phase the potential will exist for the conveyance of contaminated surface water from the project site (in the event of a pollution event on site) to the drainage channels along the site's eastern boundary and downstream to the River Feagle and the Clonakilty Bay European Sites. The potential for such effects to these European Sites and the overlapping pNHA have been examined as part of the Natura Impact Statement prepared for the project and provided under separate cover with the planning application documentation.

10.5.2.2 Habitat Loss

The operation phase of the development will not result in any further habitat loss within the project site.

10.5.2.3 Impacts Terrestrial Fauna

The operation phase of the project is not predicted to have the potential to result disturbance to protected terrestrial non-volant mammals or bird species. This is due to the absence of any evidence of protected terrestrial non-volant mammals within the project site during field surveys and the low value habitats within the project site for bird species.

Pipistrelle species, in the form of Soprano pipistrelle and to a lesser extent Common pipistrelle were the dominant species recorded during bat monitoring at the project site. Leisler's bat activity was also recorded at low levels. These species are less sensitive to artificial light at night. No activity was recorded for brown long-eared bat and Myotis species. These latter species are more sensitive to artificial light at night. Public lighting will be provided as part of the operation phase of the project and in the event that inappropriate lighting is provided and results in excessive lighting along the edge of and over linear woodland corridors to the north and east, there will be potential for disturbance to suitable bat foraging habitat.

Mitigation measures are set out in Section 10.6 below that aim to avoid illumination of linear woodland corridors along the east and north of the project site.

10.6 Mitigation Measures

The mitigation measures outlined in the following sections aim to ensure that a best practice approach to minimising ecological disturbance during the construction phase is implemented and that the design of the project's operational phase avoids significant effects the surrounding ecology.

10.6.1 Ecological Clerk of Works

An Ecological Clerk of Works (ECoW) as well as a Project Landscape Architect will be appointed prior to the commencement of construction. The ECoW will be an ecologist with experience of baseline ecological surveys, pre-construction surveys and construction phase supervision. The ECoW will be responsible for completing pre-construction surveys and supervising construction works where necessary and advising on the implementation of woodland enhancement measures.

10.6.2 Measures to Minimise Impacts of Construction Works

The construction phase of the project will adhere to best practice guidance, particularly the CIRIA guidance document C532 Control of water pollution from construction sites.

During site operations key requirements for control of pollution risk will include measures that will be put in place for the safe storage of potentially polluting materials and the collection, filtration and treatment of surface water runoff prior to discharge from the site. These measures will include features outlined in the following bullet points:

- Silts & Fines – a silt fence will be installed along the eastern boundary of the site adjacent to the drainage channel crossing. The silt fence will be returned west along the northern boundary of the site and will be returned west along the south side of the proposed entrance route to the site. Silt

fencing will also be provided on the east side of the drainage channels. The silt fence will be installed as per the silt fence specifications detailed in Section 18.6.12 of the CIRIA guidance document "Control of Water Pollution from Linear Construction Projects, Technical Guidance (C648)". The geotextile/fabric membrane will be buried in a trench (measuring 100mm X 100mm) to ensure that water does not flow under the silt fence barrier. The purpose of this membrane will be to prevent any sediment discharge from draining north towards the drainage ditch.

- Silt & Fines: Maintenance – maintenance of the silt fence will be undertaken throughout the duration of site operations which will be for a period of up to 8 years. Site management will be required to monitor the integrity of the silt fence on a routine basis and where required will make all necessary repairs and replacements to the silt fence such that its integrity and effectiveness to entrain silt and fines is sustained throughout the duration of the project.
- Where excavations become inundated with rainwater, this water will be pumped to a settlement pond treatment train on site via a lay flat. The pumped water will be allowed to settle in the settlement pond treatment train, which will comprise a series of 3 no. interlinked settlement pond cells. Clean settled water from the final settlement pond will be allowed to discharge from the pond via a buffered outfall over vegetation ground cover. All settlement ponds and associated clean settled water outfalls will be situated a minimum distance of 75m from the drainage channels along the eastern boundary of the project.
- The settlement pond will be bounded to the north and east by an earthen berm that will provide an additional barrier to the surface water runoff in the direction of the drainage channel along the eastern boundary.
- Temporary construction compound – the temporary construction compound will be moved as each phase of the proposed development is complete. However in order to eliminate the potential for activities within the temporary construction compound to result in a pollution risk to the un-named stream along the eastern boundary of the site, the minimum distance required to be implemented between the temporary construction compound and the drainage channels along the eastern boundary of the project site will be 75m.
- Storage – potentially polluting construction materials, such as fuels, oils, cementitous materials and chemicals will be stored on impervious bases and within a secured bund of 110% of the storage capacity, within a designated lay down in this area of the site compound. The storage of such materials on an impervious base will eliminate the potential for their discharge to ground and groundwaters during the construction phase.
- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated.
- Refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any surface drain at the southern end of the site compound as detailed under the first bullet point above.
- All fuel oil fill areas will have an appropriate spill apron and spill kits will be provided on site.
- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution.

10.6.3 Measures to Protect water quality during Installation of the Clear Span Bridge

The project requires a new bridge crossing of the existing drainage channels along the eastern boundary. The installation of the clear span bridge will not require in-stream works. The bridge

construction will first require the installation of the bridge foundations, followed by the abutments and then the placement of the bridge deck. The following mitigation measures will be implemented during works associated with the installation of the clear span bridge:

- Inland Fisheries Ireland/OPW will be consulted on the proposed bridge design for agreement. Bridge construction will follow current guidelines on work in the riparian zone, including IFI (2016) and NRA (2005).
- A Method Statement of the bridge construction works has been prepared (See Appendix 10.1) and has been issued to IFI. All bridge works will be implemented in accordance with the Method Statement. Prior to the commencement of works, the Method Statement will be reviewed and in the event of any amendments the Method Statement will be issued to the IFI for comment and approval in advance of the commencement of works.
- The bridge abutment is set back 2.3m from the stream bank therefore direct interference with the stream is avoided.
- In advance of bridge construction works a protective silt fence will be installed in the c. 2m buffer zone along the bankside between the abutment and the channel. The purpose of the silt fence will be to entrain any suspended solids that may become mobilised in surface water runoff from the footprint of bridge works flowing towards the channel bankside. The silt fence will be installed in accordance with CIRIA specifications. The silt fence will be maintained for the duration of the construction phase.
- The material excavated from trial pits will be replaced back into the excavation in reverse sequence. Trial-pits will be restored immediately after completion once all the necessary data and samples are collected. The surface vegetative layer will be placed right-way-up to restore the trial pit to original ground condition. Silt fencing/sandbags/ strawbales will be erected between the stream and excavation as required.
- It is noted that the construction of the bridge will require Section 50 consent from the OPW (a process to ensure that the structure doesn't interfere with river hydraulics).
- Plant and machinery can access both banks of the stream. Crossing of the stream with plant and machinery is therefore avoided.
- Silt fencing will be erected downgradient of all construction work.
- If temporary access roads are needed for the construction of the bridge silt fencing will be erected along the alignment of the road at the downgradient side. The access road will be constructed with permeable material, so runoff is minimised.
- Concrete pours will occur in contained areas using shuttering. Rinsing down of concrete trucks will be done at a dedicated location on site–adjacent to the construction site compound, or at a suitable alternative location, a minimum distance of 75m from any watercourse. Signage will be erected at each concrete pour location directing drivers to the rinse down area. This rinse down area will be removed at the end of the construction phase.

10.6.3.1 Treatment of Land Between Abutment & Bankside

The level of the bridge deck over the c. 2.3m of land buffering the bridge abutment from the channel bankside will be c. 1m. Given the relatively low clearance height it is expected that all existing surface vegetation within this buffer area will not be sustained and the ground will become denuded. In order to prevent the occurrence of denuded cover adjacent to the bankside and to prevent wash out etc. in the future during potential flood events it is proposed to installed boulder rock armour within the buffer area

under the deck between the abutment and the bankside. The rock armour will be put in place following the construction of the abutment and prior to the installation of the bridge deck.

10.6.3.2 Method for Protection of Drainage Channel & Water Quality during Bridge Installation Works

A Method Statement for the works associated with the bridge installation has been prepared as part of the planning application documentation. The Method Statement is provided as Appendix 10.1. All measures set out in the Method Statement for the approach to the works will be implemented in full.

10.6.4 Measures to Minimise Disturbance during Instream Works

The instream works associated with the installation of the surface water outfall and the realignment of the drainage channels upstream of the proposed bridge crossing will be completed in accordance with the Inland Fisheries Ireland guidance document *Guidelines on the Protection of Fisheries during Construction Works in and adjacent to Waters*.

All instream works associated with the project, including the installation of rock armour upstream of the bridge crossing will be limited to the time of year spanning July to September inclusive.

All instream works to be completed during this period will be carried out in the dry using overpumping or fluming.

No concreting of the stream bed or bankside will be undertaken. A pre-cast headwall will be used for the proposed surface water outfall to the drainage channel at the eastern boundary of the site. All works associated with the surface water outfall headwall will be completed in a contained dry working area. which will be established by sandbagging and lining an enclosed working area at the headwall location. Immediately following sealing the headwall working area any standing water trapped within the working area will be inspected by the project ecologist for the presence of fish. In the event that fish are present in the waters trapped within the sealed working area, the project ecologist will hand net all fish and translocate them to the adjacent drainage channel. Once the trapped water is confirmed to be free of fish, the water will be pumped from the sealed working area and discharged via a lay flat over vegetated ground to the west of the drainage channel.

Pumps will be provided during instream works to maintain a dry working area for the works associated with the surface water outfall and realignment. Any water pooling in the dry and sealed working areas will be pumped via a lay flat to adjacent vegetated ground cover. Water discharging from the lay flat will be allowed to drain to ground.

10.6.5 Management of Wastewater

All wastewater generated during the operation phase will be directed to the Irish Water sewer network prior to being pumped to the municipal WWTP. A pre-connection enquiry has been made with Irish Water.

10.6.6 Mitigating Impacts to habitats

The project will result in the loss of arable land and spoil and bare ground habitats on site as well as severing the existing landscaped corridor along the eastern boundary of the Clonakilty Park Hotel.

A landscape masterplan has been prepared for the project and this provides for the retention and enhancement of the existing hedgerow along the northern boundary of the project site. It also provides for the provision of a pocket of woodland planting at the north east corner of the site that ties in with the proposed bridge crossing. Native species, comprising oak, alder birch, hawthorn, Scot's Pine and cherry will be used as part of the tree planting mix to enhance the northern boundary and to provide the pocket woodland at the northeast corner of the site.

New additional hedgerow planting is also to be provided along the southern boundary and western boundary of the proposed development (see Landscape Drawing No. L105). The new hedgerow planting will amount to a total length of c. 460 linear metres of new hedgerow along the southern and eastern boundary. A total of c. 510 trees and 410 shrubs will be planted along the boundaries. The planting for the hedgerow will be comprised of 3 no. layers of native species as follows:

- Layer 1 = 40 no. Quercus robur, 40 no. Alnus glutinosa, 20 no. Pinus sylvestris, 60 no. Betula pubescens
- Layer 2 = 50 no. Crataegus monogyna, 60 no. Prunus avium, 50 no. Corylus avellana, 100 no. Ilex aquifolium, 40 no. Malus sylvestris
- Layer 3 = 50 Prunus spinosa, 50 no. Sambucus nigra, 80 no. Euonymus europaea, 80 no. Rosa canina, 200 no. Viburnum opulus

Underground attenuation tanks will be positioned at the northeast of the site. These will be covered by grassland habitat which will be treated as a dry meadow, pollinator rich grassland habitat. The grassland over the attenuation tanks will be subject to a mowing regime that promotes the establishment of species rich meadow grassland. Such a mowing regime will consist of an early cut in March and a late cut in late September/October with all cutting to be lifted and removed from the grassland. An example of the provision of a species rich sward over attenuation tanks is shown on the project Landscape Masterplan. This area of grassland will tie in with the northern hedgerow and treeline corridor as well as the eastern corridor.

Within the site SuDS swales will be provided and these will be treated as a landscape biodiversity corridor. Example images of the SuDS swale biodiversity corridor are shown on the project Landscape Masterplan. The swale corridors will be approximately 9m in width and will be fringed by wildflowers and native trees and shrubs. The SuDS swale biodiversity corridor will run through the length of the proposed development site, connecting the southern boundary of the site to the northern boundary, representing the provision of an additional green infrastructure corridor in the area.
A green-roof will be installed on the apartment blocks. This provision of this SuDS feature will also increase the footprint of green infrastructure within the site and provide habitat for invertebrate and contribute to the foraging resource for other species such as birds.

10.6.7 Mitigating Impacts to Bats

In order to minimise the impact of the operation phase to bats, the public lighting for the project will be designed to avoid light spill on to existing woodland habitats that will surround the project to the east and north. Light columns will be positioned and designed to ensure that the minimum 2 lux[10] contour is located outside the footprint of the woodland to the east and north of the project site. This will ensure that the lighting provided by the project will not result in a change in night time lighting in woodland habitats bounding the project site.

The proposed public lighting design has been informed by best practice guidelines with respect to bats as published by the Institute of Lighting Professionals (ILP) Bats and Artificial Light at Night Guidance Note 08/23. Examples of the sensitive approach to the public lighting design include the positioning of luminaires away from the northern hedgerow boundary, such that the distance between the hedgerow and the luminaires is maximised. The final lighting design will follow this design rationale and be informed by the Guidance Note 08/23 of ILP regarding Bats and Artificial Lighting. LED type Lanterns will be used throughout the development. LED fittings do not emit any ultraviolet or infra-red radiation which is desirable for bat habitats as they do not attract insects in the same manner that traditional SON/SOX fittings do. Light levels will be minimised as much as possible for this type of development and overspill to adjacent woodland habitats will be avoided.

10.6.8 Measures to minimise disturbance to breeding birds

Wherever possible, vegetation clearance associated with the construction phase shall be completed outside the breeding bird season, which is from 1st March to 31st August inclusive. Where vegetation clearance is required to be completed during the breeding bird season, the vegetation will be inspected by the project ECoW within 48 hours prior to the proposed clearance. In the event that bird nests are identified in vegetation during the pre-clearance survey the ECoW will recommend a suitable buffer distance surrounding the nest where vegetation clearance will not be undertaken until the nest has become inactive. The ECoW will monitor the nest to confirm its inactive status prior to the clearance of the vegetation supporting the nest.

10.6.9 Measures to Reduce the Spread of Invasive Species

10.6.9.1 Pre-Construction Survey

A pre-construction survey will be completed within the project site to determine the presence, distribution and extent of any specimens/stands of non-native invasive plant species on site. Particular attention will be given to mapping the locations of Buddleja davidii occurring within the site project site.

[10] Full moonlight often produces lux levels in the region of 0.5 – 2 lux ILP, 2023) as such a minimum 2 lux is set given these natural background levels as well as the absence of light sensitive bat species at the project site

10.6.9.2 Measures To Prevent the Movement Of Invasive Species On Site During The Construction Phase

All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) must be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the introduction and spread of high impact invasive plant species such as Japanese knotweed, Rhododendron and Himalayan Balsam (all of which currently do not occur at the project site).

All works during the construction phase will be carried out in accordance with the following guidelines:

- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020);
- NRA (2008). Guidelines for the Management of Waste from National Road Construction Project. National Roads Authority;
- Biosecurity protocols available for aquatic and riparian species available on the Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland (CAISIE) www.caisie.ie, and
- All maintenance operators will carry out their works under the guidance of the Inland fisheries Ireland Biosecurity Protocol for Field Survey Work. (2011) to ensure no negative impacts are caused to other watercourses. http://www.fisheriesireland.ie/fisheries-research-1/73- biosecurity-protocol-for-field-survey-work-1.

10.6.9.3 Measures To Prevent the Spread of Buddleja Davidii During Vegetation Removal

All Buddleja davidii will be removed from site prior to the commencement of the construction phase. The felling of these species will be completed during the winter season when viable seed is not present on the plants. The felling operations will also coincide with the non-breeding bird season and will therefore not have the potential to result in disturbance to active nests and chicks. The root stock of Buddleja davidii will be removed from the ground during the felling operations. Felled trees shall be stockpiled locally in the vicinity of felling to minimise movement throughout the site. All *B. davidii* material will be stockpiled separate to other vegetation cleared on site and shall be removed from site for disposal.

10.6.10 Evaluation of Mitigation Measures

The mitigation measures outlined above for the construction and operation phase of the project are taken from established best practice guidelines that have been successfully implemented for a wide range of project-level infrastructural developments. These measures have undergone extensive and rigorous monitoring for their effectiveness at development sites where they have previously been applied to ensure adverse environmental impacts are avoided.

The results of this monitoring and the recommendation of these measures as standard best practice guidelines is based upon their high degree of success in ensuring negative environmental impacts are avoided.

The best practice guidance that has informed the mitigation measures proposed in this assessment and that will be adhered to throughout the construction and operation of the proposed development include:

- The Good Practice Guidance notes proposed by EA/SEPA/EHS:
- PPG1: General Guide to the Prevention of Water Pollution
- PPG4: The disposal of sewage where no Main Drainage is Available

- PPG5: Works In, Near or Liable to Affect Watercourses
- PPG10: Working at Construction and Demolition Sites.
- PPG21: Pollution Incident Response Planning
- PPG26: Dealing with Spillages on Highways
- CIRIA Environmental Good Practice on Site.
- CIRIA Control of Water Pollution from Construction Sites. Technical Guidance C648.
- CIRIA SuDS Manual Technical Guidance C697.
- Development on Unstable Land. Department of Environment (DOE), UK.
- Bat Conservation Ireland: Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers
- Bat Conservation Trust: Bats and Lighting in the UK – Bats and the Built Environment

10.7 Potential Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments are discussed below. For details on the developments considered refer to Chapter 2, Appendix 2.1 of this EIAR. There are developments of relevance which have recently received planning permission within the area surrounding the subject lands.

Existing developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational developments has been assessed in the preceding sections of this chapter.

The precise timeline for the construction of permitted developments is not known and as such, for the purposes of this EIAR, the precautionary principle has been applied by assessing in this EIAR the potential for cumulative construction impacts occurring in tandem with the proposed development.

This EIAR also considers the likelihood for cumulative impacts associated with the operational phase of the proposed development and the operational phase of these permitted developments. The likely operational impacts to the environment arising from these developments have been identified by a review of the planning documents associated with each of the permitted developments.

Any future application on these lands will be subject to planning approval and environmental assessment as required. Any new development proposed on the lands after the submission of the proposed development would be accompanied by an EIA, or EIA Screening as required and take into consideration the development of this site.

There are a number of elements with similar potential effects during construction and operation, these are dealt with thematically below.

10.7.1 Construction Phase

In relation to the potential cumulative impact on biodiversity during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Vegetation clearance works and potential for disturbance to fauna; and
- Surface water run-off generated during the construction phase draining to the unnamed drainage channel at the eastern boundary of the site

The works contractors for all planned or permitted developments will be obliged to ensure that measures are in place to protect fauna during vegetation clearance and water quality in compliance with legislative requirements for vegetation clearance (i.e. Wildlife Act as amendment) and receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

A review of the permitted development set out in Chapter 2 of this EIAR has been undertaken and there are no proposed developments capable of combining with the proposed development and resulting in significant cumulative effects. The implementation of mitigation and monitoring measures detailed in Section 10.6 as well as the compliance of permitted developments with their respective planning conditions, will ensure there will be minimal cumulative potential for disturbance to biodiversity receptors or change in surface water during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** and ***short-term***.

10.7.2 Operational Phase

In relation to the potential cumulative impact on biodiversity during the operational phases, the operational activities which would have potential cumulative impacts relate to discharges to the receiving freshwater environment.

Increase in wastewater loading and water supply requirement is an impact of all developments. However, as previously stated, there is no existing foul water infrastructure in the vicinity of the site and the proposed 1 no. toilet within the scheme will be treated via an on-site sewage treatment plant (Klargester BioDisc® Large Sewage Treatment Plant or similar). No industrial-specific wastewater flow will be generated from the development and as such there is no potential for cumulative impact.

Development will result in an increase in hardstanding which will result in localised changes to groundwater recharge and run-off pathways. Each permitted development is required by the Local Authority to provide suitable attenuation on-site and ensure that there is no increase in off-site flooding as a result of the development in question.

All developments are required to operate in compliance with relevant legislation (Water Framework Directive, Surface water Regulations).

The implementation of mitigation and monitoring measures detailed in Section 10.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change in surface water during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** and ***long-term***.

10.8 Residual Impacts

The project site will not result in any residual impacts to designated conservation areas.

There will be no residual loss of habitat of conservation value as a result of the project.

The application of mitigation measures will ensure that the construction phase will result in imperceptible residual effects to fauna supported by the project site.

10.9 References

Fossitt J. A. (2000). A Guide to Habitats in Ireland. Heritage Council.

IEEM (2006). Guidelines for Ecological Impacts Assessment. IEEM.

Institute of Lighting Professionals (ILP) (2023). Bats and artificial lighting at night.

JNCC (1993). Handbook for Phase I habitat survey. JNCC.

Neal E. & Cheeseman C. (1996). Badgers. Poyser Natural History. London.

NRA (2006a). Guidelines for assessment of ecological impacts of National Road Schemes. National Road Authority.

11.0 ARCHAEOLOGY AND CULTURAL HERITAGE

Contents

Figures, Plates and Tables

This page intentionally left blank.

11.1 Introduction

This chapter presents an assessment of the likely significant effects the proposed development, as described in Chapter 4, on the receiving cultural heritage environment, including archaeological, architectural and cultural heritage features.

Cultural heritage is a broad term encompassing archaeological, architectural, and other culturally significant sites, structures, and features within the landscape. For the purposes of this assessment, cultural heritage is considered under three headings: Archaeology, Architecture, and Cultural Heritage

11.1.1 Archaeological Heritage

Archaeological heritage can be described as the study of past human societies through their material remains and artefactual assemblages. The Valetta Treaty (or the European Convention on the Protection of the Archaeological Heritage, 1992) defines archaeological heritage as '*all remains and objects and any other traces of humankind from past times*' this includes '*structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water*'.

There are no known registered archaeological sites within the proposed development area. Within the broader landscape (1km Study Area) there are twenty-nine recorded archaeological sites. The closest of these is a ringfort (CO135-051), located 160m to the south and three fulachta fia (CO135-144001, 144002 and 144003), between 170m and 200m to the southwest (**Fig. 11.1**). These registered archaeological sites provide evidence for human activity and occupation in the surrounding landscape dating from the Bronze Age.

11.1.2 Cultural Heritage

Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions, and values. Environmental Protection Agency (EPA) Guidelines (2003), define cultural heritage as including archaeological heritage, architecture, history, landscape and garden design, folklore and tradition, geological features, language and dialect, religion, settlements, inland waterways (rivers), and place names. The more recent EPA Guidelines (2022) includes archaeology, architectural heritage and folklore and history under the broad category of cultural heritage. In this assessment cultural heritage encompasses the history of the town of Clonakilty and is reflected in the placenames and historical context of the proposed development site and study area.

11.1.3 Architectural Heritage

Architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 as structures and buildings together with their settings and attendant grounds, fixtures and fittings, groups of such structures and buildings, and sites, which are of architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

There are no registered architectural structures within the proposed development site. The closest protected structure, as identified in the Cork County Development Plan 2022–2028, is a cast-iron water pump (RPS No. 1675), located approximately 270m to the east of the site. This structure is also recorded in the National Inventory of Architectural Heritage (NIAH Ref. 20913508) (see **Fig. 11.5**). Approximately 700m to the northeast, the town of Clonakilty contains numerous Protected Structures (PS) listed in the Development Plan, as well as additional entries in the NIAH. Large portions of the town are also designated as Architectural Conservation Areas (ACAs), reflecting its rich architectural heritage.

11.1.4 Proposed Development

A detailed description of the proposed development is provided in Chapter 4: Proposed Development of this EIAR. In summary, the applicant is seeking planning permission for a Large-Scale Residential Development (LRD) consisting of 245 residential units, a creche, and all associated ancillary development works. The site is located in the townland of Cloheen, approximately 900 metres southwest of Clonakilty town centre, County Cork.

11.2 Expertise and Qualifications

This chapter of the EIAR has been prepared by Musetta O'Leary and Avril Purcell of Lane Purcell Archaeology.

Musetta O'Leary has 20 years of experience in all aspects of archaeological consultancy and primarily manages the archaeological and cultural heritage components of projects at the pre-planning stage. She has co-ordinated and authored the Cultural Heritage sections of numerous projects across a broad range of sectors, including residential, road construction, industrial, energy and quarry developments. Musetta has presented expert witness evidence at An Bord Pleanála oral hearings.

Avril Purcell is the director of LPA and a licensed archaeologist with 30 years of experience in research, consultancy, surveying and excavation. She has contributed to a wide range of EIAR projects across the country, often from the initial constraint study stage through pre-development investigations, resolution and construction-phase monitoring. Avril has presented expert witness evidence at An Bord Pleanála oral hearings.

11.3 Methodology

The methodology adopted for the preparation of this chapter comprised the following key components;

- A review of the relevant Legislation and Guidelines;
- A desktop Study. This includes a review of historical and modern cartographic sources. Relevant mapping is presented in this chapter, with additional cartographic material provided in **Appendix 11.1, Volume 3;**
- Geophysical Survey: This survey was undertaken by Target Archaeological Geophysics in May and September 2020. A summary of the results is presented in Section 11.5, while the full report, incorporating the findings from both survey phases, is included in **Appendix 11.2, Volume 3;**
- Licenced archaeological testing. This was carried out on the 4th and 5th of April 2022 and on the 14th of May 2025, by Avril Purcell. The testing layout was agreed in advance with the Cork County

Archaeologist. A summary of the results of both testing phases is provided in Section 11.6, while the full report, incorporating the findings from both testing phases, is included in **Appendix 11.3; Volume 3;**

- A walkover survey. This was conducted in 2020 and 2025. The results are detailed in Section 11.7, with accompanying photographs included in **Appendix 11.4; Volume 3;**
- The Potential Effects of the proposed development on archaeological, architectural and cultural heritage are evaluated in Section 11.8. Impacts are assessed in accordance with *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022);*
- Proposed mitigation measures to avoid, reduce or offset identified impacts on cultural heritage are outlined in Section 11.9.
- Cumulative Effects are discussed in Section 11.10.
- Residual Effects are outlined in Section 11.11.
- A comprehensive list of references is provided in Section 11.12.

11.3.1 Relevant Legislation & Guidance

This section outlines the key national legislation, policy guidance, and local planning frameworks relevant to the protection and management of cultural heritage in Ireland. These documents form the legal and policy basis for the assessing, protecting and mitigating potential impacts on cultural heritage arising from development proposals.

National Legislation for Cultural Heritage Protection

In Ireland, the primary means of protecting Cultural Heritage are the National Monument (Amendments) Acts 1930 to 2014, The Heritage Act 1995, the relevant provisions of the National Cultural Institutions Act 1997, The Architectural Heritage (National Inventory) and Historic Monument (Misc. Provisions) Act 1999 and the Local Government (Planning and Development) Act 2000.

Historical and Archaeological Heritage and Miscellaneous Provisions Act 2023

The Historic and Archaeological Heritage and Miscellaneous Provisions Act (the Act) was passed by both Houses of the Oireachtas and signed into law by the President on 13 October 2023. As described on the National Monuments Service website (www.archaeology.ie), the Act aims to significantly strengthen the protection of Ireland's historic and archaeological heritage, including artefacts of cultural interest and importance. It will repeal and replace the existing National Monuments Acts 1930–2014, introducing a range of updated provisions. When fully commenced, the Act will:

- Provide immediate legal protection to newly discovered archaeological sites, aligning with the current system for archaeological objects and historic wrecks, which are automatically protected without requiring formal designation or registration;
- Introduce a statutory reporting scheme for the discovery of monuments;
- Establish a new Register of Monuments, consolidating and replacing the multiple overlapping designation and registration systems currently in place;
- Ensure that, with limited exceptions, archaeological objects with no known owner will automatically become the property of the State;
- Implement a streamlined, integrated licensing system, allowing applicants to submit a single licence application for multiple archaeological activities;

- Introduce a statutory appeals process for reviewing licensing decisions;
- Enable a civil enforcement mechanism to be used either as an alternative to, or in support of, criminal proceedings.

Guidelines Informing this Chapter

This chapter has been prepared with reference to the following key policy documents and guidelines related to archaeological and architectural heritage:

- *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, 2022 (Environmental Protection Agency);
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements,* 2003(Environmental Protection Agency);
- *Framework & Principles for the Protection of the Archaeological Heritage,* 1999 (Department of Arts, Heritage, Gaeltacht & the Islands).
- *Policy & Guidelines on Archaeological Excavation,* 1999 (Department of Arts, Heritage, Gaeltacht & the Islands).
- *Architectural Heritage Protection, Guidelines for Planning Authorities*, 2004 (Department of the Environment, Heritage, and Local Government).

Local Heritage Policy: Cork County Development Plan 2022-2028 (CCDP)

The CCDP outlines Cork County Council's objectives/policies regarding the preservation of the archaeological, architectural, and cultural heritage of the county. The Plan *'recognises the importance of identifying, valuing and safeguarding our archaeological, architectural and cultural heritage for future generations through appropriate protection, management and enhancement measures or via the sensitive development of this resource*' (CCDP, Vol. 1, Chapter 16, 353).

Protected Structures and Conservation Areas

Volume 2 of the CCDP provides detailed listings of Protected Structures (PS) and Architectural Conservation Areas (ACA) across County Cork. The protection and management of heritage assets are set out through twenty-six specific objectives (HE 16-1 to HE 16-26), addressing various aspects of the county's heritage. The closest Protected Structures to the proposed development site are listed in **Table 11.3.**

Relevant CCDP Objectives for the Proposed Development

The following CCDP objectives are particularly relevant to the proposed development:

- Objective 16-13: Previously unidentified archaeological sites that are uncovered during construction works must be investigated and recorded. 'The Council will require preservation *in situ* to protect archaeological monuments discovered. Preservation by record will only be considered in exceptional circumstances.
- Objective 16-23: The CCDP seeks to; 'Protect and promote the cultural heritage of County Cork as an important economic asset and for its intrinsic value to identity of place and the wellbeing of people within the County.'
- Objective 16-24: The CCDP seeks to; 'Promote and preserve local place names, local heritage, and the Irish language by ensuring the use of local place names or geographical or cultural names which reflect the history and landscape of their setting in the naming of new residential and other

developments. Such an approach will be a requirement of planning permissions for new developments.

11.3.2 Desktop Study

The desktop study aims to provide a thorough understanding of the archaeological, architectural, and cultural heritage environment of the proposed development site and Study Area by utilising the following sources;

Record of Monuments and Places (RMP)

This record was established under Section 12 (1) of the National Monuments (Amendment) Act 1994. It lists all monuments and places believed to be of archaeological importance in the County. The numbering system consists of two parts: the first part is the county code (CO for Cork) followed by the Ordnance Survey map number (six inches to the mile scale); the second part is the number of a circle surrounding the site on the RMP map, e.g. (CO135-051) refers to circle 051 on OS sheet 135 for County Cork. The area within the circle is referred to as the *Zone of Archaeological Potential (ZAP)* or zone of notification for that site. Its diameter can vary depending on the size and shape of the site, but it averages out at approximately 180m. The RMP for County Cork was published in 1998. All RMP sites within 1km of the proposed development site are listed in **Table 11.1.**

Sites and Monuments Record (SMR) Database of the Archaeological Survey of Ireland (ASI)

The purpose of the ASI is to compile a base-line inventory - the SMR of the known archaeological monuments in the State. It contains details of all monuments and places or sites known to the ASI which pre-date AD 1700, and a selection of monuments which post-date 1700. The large record archive and databases resulting from the survey are continually updated. Archaeological sites which are added to the database are proposed to be included in the next published edition of the RMP and will then be afforded its protection. This database, complete with maps, is available for consultation via the National monuments Service (NMS) website at www.archaeology.ie. All SMR sites within 1km of the proposed development site are listed in **Table 11.1.**

Archaeological Inventory

The inventories for each county are follow-ons by the ASI to the RMPs. They give a written description of each archaeological site in the county. The archaeological inventory for West Cork, Volume 1 (Power, Byrne, Egan, Lane & Sleeman, 1992) was published in 1992 and a follow up volume, Volume 5 (Ronan, Egan & Byrne, 2009), was published in 2009.

Files of National Monuments Service

These files were consulted to retrieve information on lists of RMP sites that have been afforded added protection such as;

- National Monuments in ownership or guardianship of the state – none in the Study Area
- National Monuments in ownership or guardianship of the local authority – none in the Study Area
- Monuments subject to Preservation Orders and Temporary Preservation Orders – none in the Study Area
- Monuments listed in the Register of Historic Monuments – none in the Study Area

Database of Irish Excavation Reports www.excavations.ie

This website provides a database of summary accounts of archaeological excavations and investigations in Ireland undertaken between 1970 and 2025. The database was queried for any investigations undertaken in any of the townlands within proximity of the proposed development site and these are listed in **Table 11.2.**

National Inventory of Architectural Heritage (NIAH)

The NIAH was set up under the Convention for the Protection of the Architectural Heritage of Europe or the Granada Convention of 1985. It was established on a statutory basis under Section 2 of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. The work of the NIAH involves identifying and recording the architectural heritage of Ireland, from 1700 to the present day, in a systematic and consistent manner. It is divided into two parts; The Building Survey and Historic Garden Survey (www.buildingsofireland.ie). The main function of both is to identify and evaluate the State's architectural heritage in a uniform and consistent manner, to aid its protection and conservation. The NIAH carried out a survey of the buildings of County Cork between 2006 and 2011. Under Section 53 of the Planning and Development Act 2000, all structures considered of regional, national, or international Importance in the survey are recommended for inclusion in the Record of Protected Structures (RPS) by the Minister for Arts Heritage and the Gaeltacht. If this is not adopted by the local authority, the reasons must be communicated to the Department. The Building and Historic Garden Survey for County Cork is available online. The NIAH for County Cork includes approximately 6,500 items of architectural importance in the County. The closest NIAH-listed structures to the proposed development site are listed in **Table 11.3.**

Aerial Photographs

The Ordnance Survey of Ireland (OSI) and Google maps have posted several online aerial photographs dating from 1995 (OSI; 1995, 1996-2000, 2001-2005, 2006-2012, 2011-2013 and 2013-2018). These were examined to identify any previously unrecorded features of archaeological/cultural heritage significance that may only be visible from the air.

A review of aerial imagery from 2011–2013 identified a darker soil spread located to the south of the previously tested area. Although the geophysical survey conducted under Licence 20R0083 (Nicholls, 2020) did not reveal any anomalies or features in this location, the Cork County Archaeologist requested archaeological testing to rule out the possibility that the dark soil spread represents a levelled fulacht fia. This testing was carried out on the 14th of May, 2025 (see Section 11.7 for further details).

LiDAR

LiDAR (Light Detection and Ranging) is a surveying technique that captures high-resolution landscape data, providing detailed topographical information. This technology enhances the understanding of historical landscapes and their past uses. LiDAR data for the northern section of the proposed development site reveal significant ground disturbance in the northwestern area. These findings were corroborated by a geophysical survey conducted in September 2020 (Nicholls, 2020) and further confirmed through archaeological testing in April 2022 (Purcell, 2022).

Cartographic Sources

The following maps were consulted:

Ordnance Survey (OS) six-inch maps: Three editions were reviewed—the first edition (1841–42), the second edition (1902), and the third edition (1943) (see **Figures 11.2–11.4**).

OS 25-inch map: This map, from which the second-edition six-inch map was derived, was also examined.

A broader extract from the OS first-edition map, illustrating the landscape surrounding the proposed development site during the mid-19th century, is included in **Appendix 11.1**, **Volume 3**, along with other historic mapping.

11.3.3 Previous Assessments/Site Surveys/Investigations

Archaeological Masterplan of Lands at Cloheen (Purcell, 2020)

The proposed development site forms part of a larger landholding that was subject to an archaeological assessment in 2020, undertaken as part of a masterplan study encompassing ten agricultural fields located to the southwest of Clonakilty. This assessment included:

- A desktop study was undertaken to evaluate the archaeological potential of the landholding within its known archaeological and historical context;
- A field survey, consisting of a walkover and visual inspection;
- A geophysical survey, carried out by Target Archaeological Geophysics (Nicholls, 2020).

The field inspection, did not identify any features of archaeological potential. Decades of regular ploughing have homogenized and flattened the upper strata of topsoil, likely erasing subtle traces of low-level archaeological features. The fields were described as generally large, with many former field boundaries removed to facilitate arable cultivation.

The geophysical survey was conducted in two phases by Target Archaeological Geophysics to accommodate crop cycles, in May and September 2020 (Nicholls, 2020). The purpose was to detect potential sub-surface archaeological features or deposits no longer visible at ground level. A high-resolution magnetometry survey identified a total of 40 anomalies, the majority of which are considered to be of limited archaeological or cultural heritage significance. However, the survey confirmed the presence of a registered levelled ringfort (CO135-051) in Field 5 and detected two possible enclosures in Fields 7 and 10. All three features lie outside the boundary of the proposed development site. The survey findings are discussed in greater detail in Section 11.6, with the full geophysical report provided in **Appendix 11.2, Volume 3**.

Archaeological Testing

Licensed archaeological testing was undertaken in April 2022, following the 2020 geophysical survey.

Thirteen test trenches were excavated in the northern greater portion of the development site, with no features of archaeological significance identified. As part of the current EIAR process and in consultation with the Cork County Archaeologist, a second phase of testing was conducted in May 2025. This phase specifically targeted a darker soil spread visible in 2011–2013 aerial imagery in the southern section of the site, to determine whether it represented a levelled fulacht fia. Both phases of testing were carried out in consultation with the Cork County Council Archaeologist. A summary of the results of both testing phases

is provided in Section 11.6, while the full report, incorporating the findings from both testing phases, is included in **Appendix 11.3; Volume 3;**

Walkover Survey

The primary purpose of a walkover survey is to assess the physical environment in which the proposed development will take place to identify any potential archaeological sites or Areas of Archaeological Potential (AAP) and any features of cultural heritage interest. The proposed development site was inspected as part of the Masterplan Assessment (Purcell, 2020) on the 9th of September 2020 and on the 21st of April 2025. The results of the walkover survey are discussed in Section 11.8 with photos provided in **Appendix 11.3; Volume 3**.

Consultation

Consultation with the current Cork County Council Archaeologist, Ms. Annette Quinn, was undertaken during preparation of this EIAR. These discussions addressed the findings of the 2020 geophysical survey, which covered the entire proposed development site, as well as subsequent archaeological testing carried out in 2022.

As part of this EIAR, submitted in support of a renewed planning application to Cork County Council, the proposed development site was extended slightly to the south to incorporate an area not previously subject to archaeological testing (**Fig. 11.8**).

Based on the outcomes of earlier investigations, the County Archaeologist requested licensed archaeological testing of a darker area of soil visible in aerial imagery from 2011–2013. This area, located to the south of the previously tested zone, had not produced any anomalies or features during the earlier geophysical survey (Licence 20R0083, Nicholls, 2020). However, testing was required to rule out the possibility that the soil spread represented a levelled fulacht fia.

Archaeological testing of this area was carried out on the14th of May 2025. The results confirmed that no archaeological site was present.

11.4 Baseline Environment

11.4.1 Archaeology

The proposed development site is located in the townland of Cloheen, in the parish of Kilgarriff and the barony of East Carbery, to the south of Clonakilty town in West County Cork (ITM coordinates 537679, 540668). It forms part of a larger landholding that was the subject of a masterplan study in 2020 (Purcell, 2021). That study included a desktop assessment of the site's archaeological potential, a field survey involving walkover and visual inspection and a geophysical survey undertaken by Target Archaeological Geophysics. The current proposed development occupies the northeastern portion of the masterplan study area and comprises a planned residential development.

There are no known registered archaeological sites within the proposed development area. The nearest recorded site is a ringfort (CO135-051), located approximately 160m to the south, along with three fulachta fia (CO135-144001, CO135-144002, and CO135-144003) between 170m and 200m to the southwest (Fig.

11.1). In total, there are twenty-nine recorded archaeological sites located within a 1km radius of the proposed development (the Study Area), providing evidence of human activity and settlement dating back to the Bronze Age (**Table 11.1; Fig. 11.1**).

RMP/SMR PS, NIAH	Site Type	Townland	Distance from development site
CO135-019001-	Graveyard	Tawnies Upper	970m to NE
CO135-019002-	Church	Tawnies Upper	970m to NE
CO135-028	Country house	Cloheen	885m to S
CO135-048	Standing stone	Carhoo	850m to S
CO135-049003-	Souterrain	Miles	765m to NW
CO135-049001-	Enclosure	Miles	765m to NW
CO135-049002-	Souterrain	Miles	560m to W
CO135-050001-	Holy well	Miles	920m to NW
CO135-050002-	Mill	Miles	900m to NW
CO135-051	Ringfort	Cloheen	160m to S
CO135-052003-	Prison	Youghals	730m to NE
CO135-052001-	Historic town	Scartagh, Tawnies Upper & Youghals	800m to NE
CO135-052002-	Brewery	Youghals	705m to N
CO135-128	Standing stone	Lackenagobidane	770m to S
CO135-130	Church	Tawnies Upper	970m to NE
CO135-131	Standing stone	Tawnies Upper	860m to N
CO135-133	Market house	Tawnies Upper	940m to NE
CO135-136	Mass rock	Tawnies Lower	920m to N
CO135-140	Burnt mound	Cloheen	825m to SE
CO135-141	Burnt mound	Cloheen	835m to SE
CO135-144002-	Fulacht fia	Cloheen	180m to S
CO135-144001-	Fulacht fia	Cloheen	170m to S
CO135-144003-	Fulacht fia	Cloheen	200m to S
CO135-145	Fulacht fia	Miles	685m to NW
CO135-146	Fulacht fia	Miles	715m to NW
CO135-147	Fulacht fia	Miles	685m to NW
CO135-148	Fulacht fia	Cloheen	555m to W
CO135-149	Ring ditch	Youghals	810m to E
CO135-150	Road-trackway	Cloheen	330m to SE

Table 11.41. Registered archaeological sites (RMP/SMR) within the Study Area

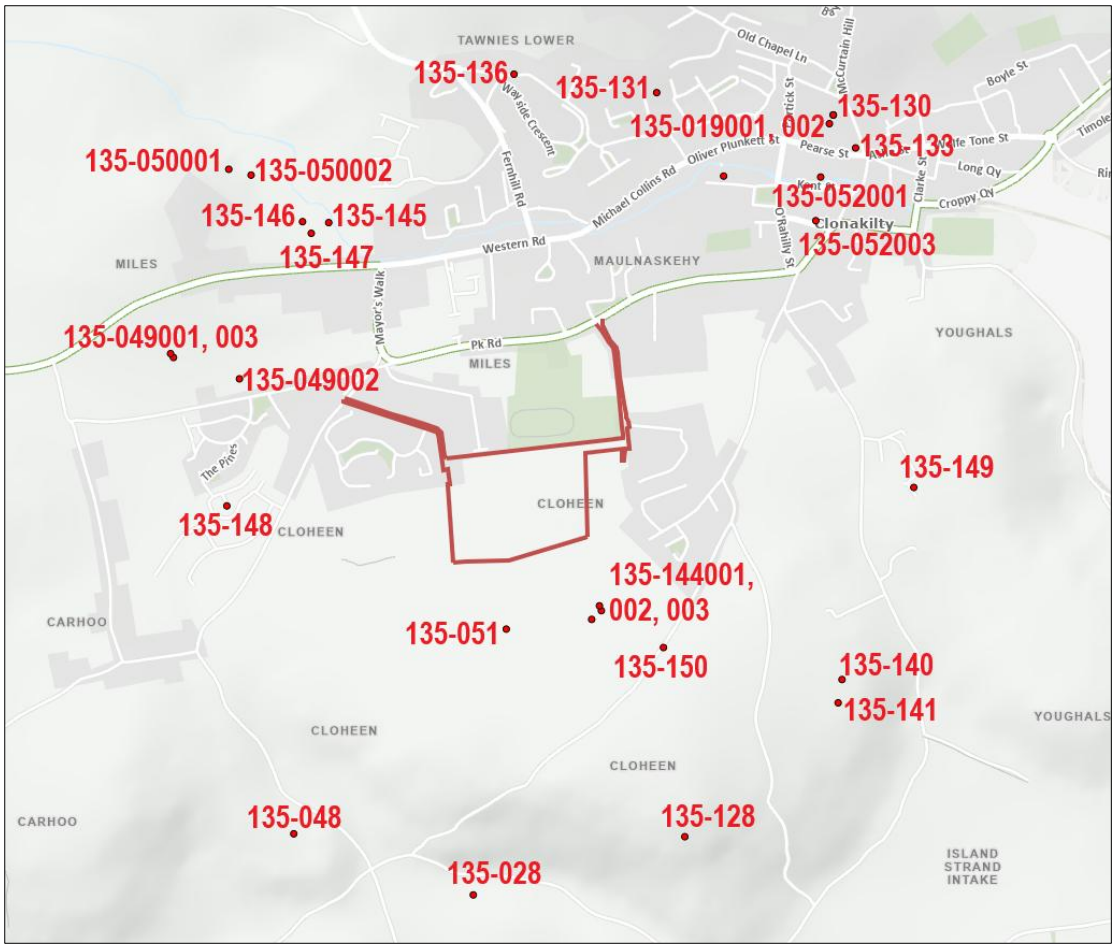

Fig. 11.1. Proposed development site (outlined in red) showing registered archaeological monuments within a 1km radius (www.archaeology.ie)

The following account of the archaeological and cultural heritage of the Study Area is chronological. The archaeological timescale can be divided into three major periods, each with a few sub-sections:

The prehistoric period: Mesolithic - (*circa* 8000 to 4000 BC); Neolithic - (*circa* 4000 to 2400 BC); Chalcolithic c. 2450-2200; Bronze Age (*circa* 2200 to 700 BC) – Iron Age (*circa* 700 BC to AD 400).

The medieval period: Early medieval 5th – 12th century; high medieval 12th century – *circa* 1400; late medieval *circa* 1400 – 16th century.

Post medieval period: 17th century onwards: Information on all recorded archaeological sites within the Study Area is sourced from the Archaeological Survey of Ireland (ASI) database. This database draws on the Archaeological Inventories of County Cork, Volume 1: West Cork (Power et al. 1992) and Volume 5 (Ronan et al. 2009), with several entries updated based on more recent investigations.

Mesolithic, Neolithic and Chalcolithic

The earliest evidence for human colonisation and settlement in Cork dates to around 8000 BC, during the Mesolithic period. The people of this era were hunter-gatherers who relied entirely on natural resources for survival, obtaining food through hunting, foraging for edible plants, and gathering shellfish. A significant shift occurred during the Neolithic period, when early settlers transitioned from a hunter-

gatherer lifestyle to one based on farming. This transformation led to more permanent settlements and the development of a more complex and structured social hierarchy. The Neolithic is also notable for the construction of megalithic tombs, which reflect growing social complexity and the increasing importance of communal and ritual activities. The Chalcolithic period, or 'Copper and Stone Age,' represents a transitional phase between the Neolithic and the Bronze Age. This era is marked by the gradual introduction of copper metallurgy, laying the foundation for the more advanced bronze technology that followed. Archaeological evidence from this period often includes a distinctive form of pottery known as Beaker Ware, which reflects widespread cultural change and interaction (Hanley, 2013). There are no known archaeological sites within the Study Area that date to the Mesolithic, Neolithic, or Chalcolithic periods.

Bronze Age and Iron Age

The Irish Bronze Age is characterised by the widespread adoption of bronze technology, the emergence of distinctive pottery styles, shifts in burial practices, and a general increase in population. Burial traditions during this period were typically much simpler than the elaborate megalithic tombs of the Neolithic, although earlier monuments were often reused for later interments. Most Bronze Age burials, whether cremated or inhumed, were placed in stone-lined cists or simple earth-cut pits, frequently accompanied by grave goods. Some graves were marked with a cairn or a mound of stones, while others were covered by a mound of earth, commonly referred to as a barrow.

The earliest known monument within the wider area is a ring-ditch (CO135-149) located approximately 810m to the east in Youghals, which has been dated to the Neolithic period. According to the ASI database, this feature was first identified during a geophysical survey in 2018 as a penannular-shaped enclosure measuring 6.4m north–south. Subsequent archaeological testing confirmed the presence of an earth-cut, U-shaped ditch, from which a single sherd of Neolithic pottery was recovered. No further details are available regarding this monument. While ring-ditches are relatively rare in West Cork, they form part of the wider ring-barrow tradition of funerary monuments that span from the Neolithic into the Iron Age (Power et al. 1992; Ronan 2009). They are typically defined by a broad circular ditch enclosing a small area.

A substantial number of archaeological monuments within the Study Area date to the Bronze Age and later prehistoric periods. These include several fulachtaí fia (CO135-144001, CO135-144002, CO135-144003, CO135-145, CO135-046, CO135-047, and CO135-048), as well as burnt mounds (CO135-140 and CO135-041), and three standing stones (CO135-048, CO135-128, and CO135-131).

Fulachtaí fia are generally interpreted as ancient cooking sites, although they may have served multiple purposes requiring large quantities of hot or boiling water. Typically, they survive as spreads or mounds of heat-shattered and burnt stone. These stones usually fill or cover troughs or pits cut into the ground. The trough, often lined with timber, wattle, or stone, would have been excavated below the water table to allow it to hold water and was typically sited near a spring or stream. A fire was lit beside the trough to heat stones, which were then placed into the water to bring it to the boil. The temperature was maintained by continuously adding hot stones. Experimental archaeology has shown that water can be brought to the boil in approximately twenty minutes using this method, and that joints of meat wrapped in straw can be cooked over several hours. After each use, burnt and shattered stones were removed from the trough, eventually forming a crescent-shaped mound around it. Fulachtaí fia are generally dated to the mid-to-late Bronze Age (c.1500–500 BC), although a small number of excavated examples have been attributed

to the Iron Age. While primarily interpreted as cooking sites, they may also have been used for bathing, textile processing, tanning, brewing, fat extraction, soap-making, or a combination of these activities (Ó Drisceoil 1988; Monk 2007; Quinn & Moore 2007).

Standing stones were erected from the Bronze Age through to more recent centuries; however, those of prehistoric origin typically display a southwest–northeast orientation, an alignment not evident in the three stones located in the vicinity. The stone at Lackenagobidane (CO135-128) bears an inscription reading 'RIP' and features a number of perforations (Power et al. 1992). Locally, it is known as *Clogh-Cinn*, meaning 'the stone of the headland'. Prehistoric standing stones were often placed in prominent locations and may have marked ancient routeways or tribal boundaries, though others may have served a ritual or funerary function. Later examples could have been erected as scratching posts for livestock.

Medieval Period

A number of early medieval monuments are also found in the area, including a ringfort (CO135-051), two souterrains (CO135-049003- and CO135-049002-), and a possible enclosure (CO135-049001-). The ringfort lies within the Masterplan area, but outside of and to the south of the proposed development site. Depicted as an oval enclosure on the first edition of the OS 6-inch map of 1842, it is not shown on later OS maps, suggesting it was levelled during the second half of the 19th century. Ringforts, also known by the Irish terms *rath*, *lios*, *cathair*, or *caiseal/cashel* are defended farmsteads dating to the early medieval (Early Christian) period (5th–12th centuries AD). Their main phase of use spans from the early 7th to the late 9th century. Typically circular or oval in plan, ringforts are defined by an earthen bank with an external fosse (ditch). Larger examples with double (bi-vallate) or triple (tri-vallate) defences are generally considered higher status and may be associated with specialised craftworking. Excavations frequently reveal sub-surface remains of circular dwelling houses and associated outbuildings. Some ringforts also include souterrains, underground chambers connected by narrow creepways, which may have served both defensive and storage functions. Two souterrains are recorded in the surrounding area.

There is a holy well (CO135-050001-) located to the north in Miles townland. Like many such wells in Ireland, it may have pre-Christian origins, although most were later incorporated into early Christian practices. Some holy wells remain active today and are visited at specific times of the year in a form of pilgrimage referred to as a "round" or "pattern" (Logan 1992). However, there is no known tradition of holy use associated with this particular well (Power et al. 1992). Adjacent to the well, is a mill (CO135-050002-). On the 1841 OS 6-inch map a structure is labelled 'Old Mill'. It is neither named nor depicted on subsequent map editions, indicating that it may have fallen out of use or have been demolished in the intervening period.

Post Medieval Period

Although there is evidence for earlier activity in the wider area, the town of Clonakilty (CO135-052001) primarily developed during the post-medieval period. While the towns architectural heritage is discussed in Section 11. 5.3 below, some of its buildings have been listed in the RMP. These include the Church of Ireland (CO135-019002), which was constructed on the site of an earlier ecclesiastical site (CO135-130), the Market House (CO135-133), the Brewery (CO135-052002), and the prison (CO135-052001). These structures form an integral part of the historic fabric of the town. Further detail on the development of the town and its built heritage is provided in Section 11.5.3 (Architectural Heritage).

Mass rocks (*Irish: Carraig an Aifrinn*) are a significant feature of Ireland's post-medieval religious landscape, particularly associated with the 17th and 18th centuries, and are closely linked to the Penal Laws—a series of anti-Catholic statutes enacted in the late 17th century. These secluded outdoor altars were used by Catholic communities to celebrate Mass in secret during periods of religious persecution. A mass rock (CO135-136) is recorded in Tawnies Upper, approximately 920m north of the proposed development site. It is incorporated into a boundary fence on the northern side of the adjacent road and consists of a flat-topped sandstone block (measuring 0.74m in length, 0.29m in width, and 0.5m in height). The upper surface features a number of rough linear marks, several on the eastern end and one on the western end. The stone was uncovered during the cleaning back of the boundary and was reported to the National Museum of Ireland (NMI) in 1965. According to local tradition, a cross was visible on the stone when it was first found, although this has since faded. The nearby road is referred to as a famine road, and local accounts further support the presence of a mass rock in the townland, as recorded in the ASI Database.

A country house (CO135-028) in Cloheen to the south is shown as 'in ruins' on the 1842 OS map. On later maps, a replacement house appears to have been constructed on the same site.

Archaeological investigations

Archaeological investigations on the proposed development site included a geophysical survey carried out in May and September 2020, during which three anomalies (Responses 34, 35, and 36) were identified (Nicholls, 2020). Subsequent archaeological testing targeting these anomalies, and extending across the majority of the proposed development site, did not reveal any features or finds of archaeological significance (Purcell, 2022).

Outside the proposed development site, but within the broader masterplan area, the geophysical survey identified a recorded, levelled ringfort/rath (CO135-051) in Field M5, located approximately 160m south of the proposed development site. The description of the anomaly identified as Response 10 in Field M5 (Nicholls, 2020) is as follows:

'Sub-circular pattern of weakly magnetic ditch-type responses highlighting enclosure remains associated with ringfort–rath site CO135-051. Combined responses 10 suggest CO135-051 may have been 50–60m in diameter. Interpretation of weakly magnetic small-scale positives/potential pit remains in proximity to CO135-051 is cautious, given the natural variation and modern disturbance also evident in the results'.

A second circular enclosure was identified in Field M7, approximately 220m northwest of the proposed development site. The description of the anomaly identified as Response 24 in Field M7 (Nicholls, 2020) is as follows:

'Circular enclosure c.32m in diameter with internal ditch and pit remains'.

Both of these features are located outside the proposed development site boundary and will not be impacted by the proposed works.

Archaeological Investigations that have taken place within the Study Area and surrounding region are summarised in Table 11.2 below (www.excavations.ie).

Excavation Ref.	Townland/ Location	Details
2008:195	Clonakilty	In advance of the construction of a tidal barrage in Clonakilty Harbour a cultural heritage assessment recommended pre-construction metal detection, probing, and monitoring. A metal-detection and probe survey of the foreshore near the proposed car park on the harbour's east side revealed no archaeological finds or features. Further testing was planned ahead of subsequent development works (Lane, 2008).
2011:092	Youghals	Twelve Archaeological test trenches were opened on the footprint of a proposed Lidl retail store in Youghals, Clonakilty. The testing followed a 2011 geophysical survey , which identified linear anomalies and trends not indicative of archaeological features. The site contained cultivation furrows, former field boundaries, and a possible standing stone later confirmed to be modern. No features or finds of archaeological significance recorded (Lynch, 2011).
2011:660	Clonakilty	Monitoring during Clonakilty Flood Relief Scheme advance works at the Church of the Immaculate Conception uncovered a 4.3m-long section of a double-faced random rubble masonry wall, likely part of the 19th-century Temperance Hall depicted on historical OS maps. The wall, constructed of sandstone and shale with lime mortar, was recorded and removed. No associated artefacts or datable material were recovered (O'Donoghue, 2011).
2013:567	Kent Street, Quay Wall, Clonakilty	Survey and archaeological monitoring were conducted during urgent remedial works on the Kent Street Quay Wall in Clonakilty, Co. Cork, ahead of the Clonakilty Flood Relief Scheme. No archaeological sites, features, or objects of significance (O'Donoghue, 2008).
2014:491	Youghals	Pre-development testing and monitoring were conducted at Youghals, Clonakilty in early 2014, within the area of constraint for the historic town (CO135-052). Ten trenches were excavated. Linear features and an upright stone investigated on site were determined to be non-archaeological. Modern and some post-medieval pottery fragments were found in the topsoil, but no features or finds of archaeological significance were identified (Delany, 2014).
2019:348	Tawnies Upper	Three trenches were excavated on the site in advance of the construction of an extension to the rear of the house. No features or finds of archaeological significance were revealed (Purcell, 2019).
2021:439	River Feagle	Between May 2018 and July 2021, archaeological monitoring was carried out across multiple townlands in Clonakilty as part of the River Fealge Drainage Scheme, on behalf of Ward & Burke Construction Ltd. under licence 17R0205. The monitoring identified several features of archaeological interest, including: A continuation of the quay wall near Deasy's shipyard (but no remains of the shipyard itself) Cobbled surfaces and wall remains associated with the historic fish market on Kent Street An earth-cut mill race in Tawnies Lower Four heavily disturbed burnt mounds, one containing a rectangular stone-lined trough Radiocarbon dating of the burnt mound activity indicated Early-to-Middle Bronze Age use, spanning from 1744–1503 cal BC. No additional artefacts or cultural materials were recovered (Sutton, 2021).
2022:697	Cloheen	Thirteen trenches were excavated across the site of a proposed residential development. No features or finds of archaeological significance were identified (Purcell, 2022).

Table 7.121.2. Archaeological investigations undertaken within the Study Area

11.4.2 Cultural heritage of the Study Area

The proposed development site is located in the townland of Cloheen, in the parish of Kilgarriff and the barony of East Carbery. In Ireland, the county is the principal administrative unit, with County Cork being the largest. The smallest administrative division is the townland, a unique system of landholding in Western Europe, notable for its scale and antiquity, with over 62,000 townlands recorded across the country (O'Connor 2001). The boundaries of many townlands, as recorded by the OS in the 19th century, are believed to reflect earlier land divisions that may date to the early historic period. In some cases, these boundaries may physically overlie archaeological evidence associated with ancient territorial organisation.

Townlands are frequently of pre-Anglo-Norman origin, and Irish historical sources consistently employ townland names to describe events and locations with considerable geographical accuracy throughout the medieval and post-medieval periods. While townlands predate both parish and county divisions, their original Irish names were preserved through systematic recording and anglicisation during the production of the OS six-inch maps in the 19th century. This process played a critical role in standardising and preserving townland names and boundaries as we know them today.

A townland name in its original Irish form often referred to a distinctive feature of the local landscape. For example, **Cloon** (in Irish 'Cluain' meaning meadow), **Carrig** (meaning rocky) and **Knock** (in Irish 'Cnoc' meaning hill). Townlands within the Study Area reflect this tradition. Scartagh, in Irish *Scairteach*, meaning abounding in brakes or thickets; Youghals, in Irish *Eochaill*, meaning yew wood; Lackenagobidane (*Leaca na nGobadán)* meaning Hill of the Cormorants. Other townlands in the Study Area are simply descriptive of the landscape or their situation such as; Carhoo - An Cheathrú meaning the quarterland and Tawnies Upper and Tawnies Lower - An *Tamhnaigh Uachtarach* and An *Tamhnaigh Íochtaraigh* meaning the upper and lower arable place/field, respectively. Miles - *An Mhaoil*, simply refers to, Miles (www.loganim.ie).

The name *Cloheen*, in Irish *An Cloichín*, meaning 'the small stone' or 'small stone fortress', first appears in historical records in 1811. It is recorded as *Clogheen* on Neville Bath's survey map of County Cork, commissioned by the Grand Jury of Cork. The modern spelling *Cloheen* is first documented in the Ordnance Survey Parish Namebooks of 1841–42 (www.logainm.ie). The evolution of the name reflects the anglicisation process typical of the period, during which Irish place names were adapted into English spellings based on phonetic interpretations.

Clonakilty Town

The historic town of Clonakilty (RMP CO135-052001-) is located approximately 800m northeast of the proposed development site. The name Clonakilty derives from the Irish *Cloch na Coillte*, meaning 'stone of the woods' (www.loganim.ie). The town was founded by the Earl of Cork and was incorporated by 1605. It subsequently received a royal charter from James I in 1613 (Lewis, 1837).

Unlike the nearby and contemporaneous town of Bandon, there is no evidence that Clonakilty was ever enclosed by defensive walls, despite its chartered status. No upstanding remains from the 17th century are known to survive (Ronan et al., 2009). Charles Smith, writing in the mid-18th century, noted that the town 'flourished greatly before the wars of 1641, but being then entirely burnt down it has since but slowly recovered' (Smith, 1750).

The Irish Rebellion of 1641 and subsequent military actions in 1642 had a significant impact on the town. According to *Lewis's Topographical Dictionary of Ireland* (1837), when war broke out in 1641, English settlers fled to Bandon, taking with them Clonakilty's charter and borough records. In 1642, Lord Forbes arrived from Kinsale with English troops and companies from Bandon. He left behind two Scottish companies and one Bandon company to secure Clonakilty while he advanced westward. Shortly after his departure, the town came under attack. The Scottish troops refused to retreat and were killed, while the Bandon company held out in an '*old Danish fort on the Ross Road*' until reinforcements arrived. The Irish forces were then driven onto Inchydoney Island, where over 600 reportedly drowned with the incoming tide. The surviving troops returned to Clonakilty and rescued townspeople who had been imprisoned in the market house (Lewis, 1837).

Lewis (1837) also provides insight into the town's origins, stating: '*This town, anciently called Tuogh Mc Cilti, appears to have had a corporation at an early period… it, however, owes its importance to the family of Boyle. Sir Richard Boyle, first Earl of Cork, obtained for the inhabitants, in 1613, a charter of incorporation from James I*'.

Despite the turmoil of the 17th century, Clonakilty gradually developed into an important regional market and service centre in West Cork. Its association with the Boyle family, particularly the 1st Earl of Cork, contributed to the town's early planned layout and civic institutions (Lewis, 1837; Ronan et al., 2009). Its location near a sheltered bay and fertile hinterland enabled Clonakilty to become a hub for the trade of grain, butter, and livestock throughout the 18th and 19th centuries (O'Mahony, 1993).

The Great Famine (1845–1852) had a devastating effect on Clonakilty and its surrounding areas, causing a significant population decline due to starvation, disease, and emigration. Although relief efforts, such as public works schemes, soup kitchens, and a workhouse, were introduced, the long-term socio-economic impacts were severe (Kinealy, 1994). In an excerpt from the *Illustrated London News* on 13 February 1847, artist James Mahony depicted a heart-wrenching scene of a woman in Clonakilty holding her deceased baby, begging for money to bury the child (Campbell, 2012). Mahony's account of the town during this period described how '*the horrors of poverty became visible, in the vast number of famished poor, who flocked around the coach to beg for alms*' (*ibid.*). His sketch vividly captured the widespread suffering and despair that plagued the town, highlighting the dire poverty faced by its inhabitants.

In the late 19th and early 20th centuries, Clonakilty emerged as a politically engaged community. It is notably the birthplace of Michael Collins (1890–1922), a leading figure in the Irish War of Independence. His legacy is commemorated through the Michael Collins House Museum and a statue in the town centre (Coogan, 2015).

During the War of Independence (1919–1921) and the Civil War (1922–1923), Clonakilty and its hinterland were the scene of ambushes, reprisals, and military engagements. The area was known for strong republican sympathies, and the legacy of these events continues to shape local memory (Townshend, 2013).

Following Irish independence, Clonakilty resumed its role as a local administrative and market centre. Mid-to-late 20th-century improvements, including enhanced road infrastructure and public services, helped stabilise the population and support small-scale industry (O'Mahony, 1993).

In recent decades, Clonakilty has gained national recognition for its environmental initiatives and vibrant cultural life. It won the title of Ireland's Tidiest Town in 2017 (TidyTowns.ie) and has become known for its live music scene, artisanal food production, and community events.

Cartographic Information

The 1841-42 OS 6-inch map (**Fig. 11.2**) shows the area of the proposed development site as comprising fifteen fields of various sizes in a rural setting. The area is bordered by agricultural fields on all sides with an access track marking the boundary to the west. Towards the centre there are two unnamed rectangular buildings, accessed by a small lane extending north from an east-west road to the south. Ther are no other structures or features shown.. Cloheen Cottage is depicted and named outside the area a short distance to the southwest.

The 1902 OS 25-inch map (**Fig. 11.3**) shows significant changes to the land, with the removal of field boundaries opening up the area of the proposed development site which now consists of six fields. The buildings towards the centre of the site have been removed. There are no changes on the 1943 OS 6-inch map (**Fig. 11.4**). Outside the area of the proposed development site to the north, an area of ground is labelled 'Clonakilty Town Park'.

Figure 11.2. Proposed development site outlined on OS six-inch map of 1842 www.archaeology.ie

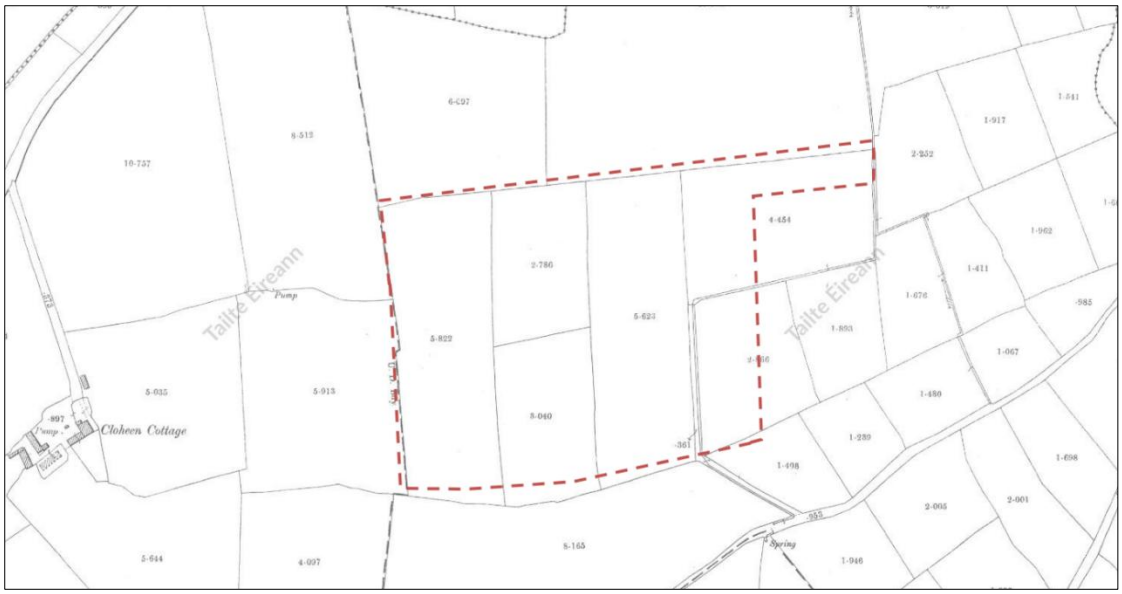

Figure 11.3. Proposed development site outlined on OS 25-inch map of 1902 www.archaeology.ie

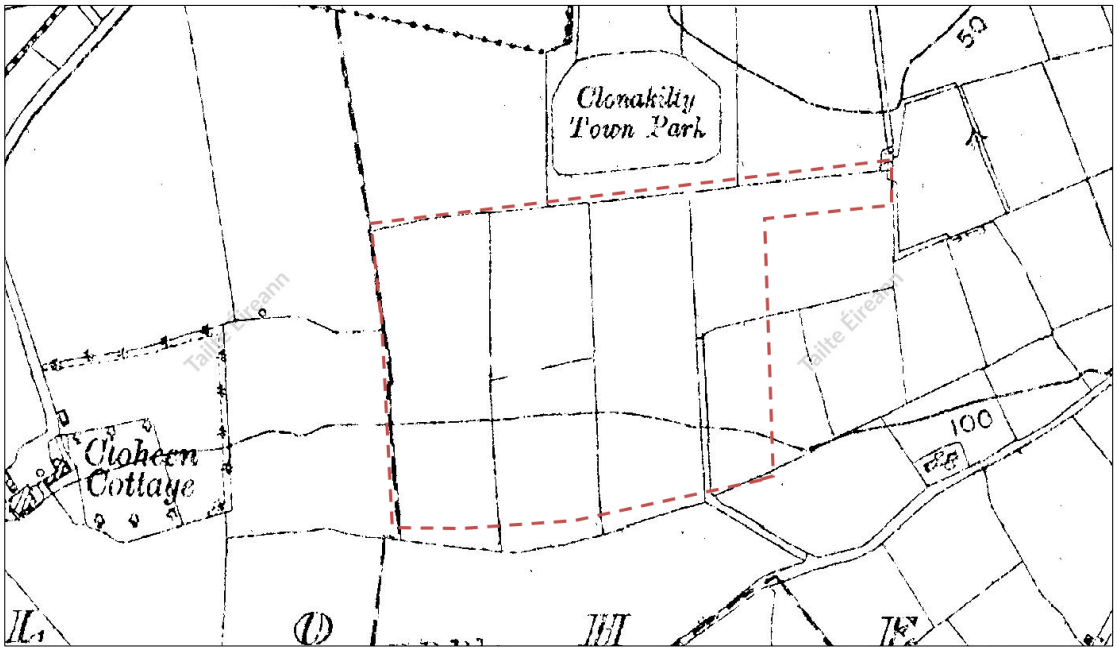

Figure 11.4. Proposed development site outlined on OS six-inch map of 1943 www.archaeology.ie

11.4.3 Architectural Heritage

There are no structures of features of architectural heritage on the proposed development site. The nearest PS is a cast-iron roadside water pump (PS1675; NIAH20913508) located approximately 270m to the east in Cloheen. Approximately 500m to the northeast is the Sisters of Charity Convent and Nursing Home (PS1558; NIAH 20846156) in the townland of Maulnaskehy. Other Ps and NIAH-listed buildings on the outskirts of Clonakilty town include the famine fever hospital (PS1664; NIAH20846178) and Beechgrove House (PS1659NIAH Reg. No. 20846174), both located in Tawnies Lower, approximately 700m to the north of the site (**Table 11.3; Figure 11.5**).

The Sisters of Charity Convent and Nursing home was purpose-built and set within its own private grounds. According to the NIAH, it is a well-maintained example of mid-twentieth century architecture. Its distinctive canted front, corner-sited entrance, and unusual roofline make it a striking and notable structure of its period. Artistic and architectural interest is further enhanced by features such as an ornate decorative mosaic panel and stained glass windows. The building was designed by Cork-based architect James Rupert Boyd Barrett (1904–1976), adding further significance to its architectural heritage (NIAH).

The former fever hospital was built in1850 by the Board of Works during the Great Famine. This substantial three-bay, three-storey building has since served a variety of functions, including use as a temporary barracks, a medical dispensary, and later, a school. It retains much of its historic character, evident in the survival of features such as sash windows and finely crafted limestone sills. The building has played a significant role in the local community over time and continues to make an important architectural contribution to the surrounding landscape (NIAH).

The remaining PSs and NIAH-listed buildings within the Study Area are concentrated in the centre of Clonakilty, which is designated as an Architectural Conservation Area (ACA). This area encompasses a rich collection of 18th and 19th century civic, ecclesiastical, and domestic architecture that together contribute to the historic streetscape and the overall character of the town. Among the most prominent examples is the Church of the Immaculate Conception (PS1621; NIAH 20846160), a striking Gothic Revival structure built in 1880 and distinguished by its soaring spire, lancet windows, and finely detailed stonework. Another key civic building is the Clonakilty Courthouse (PS1531; NIAH20846128), an elegant early 19th-century classical-style structure that continues to serve as a focal point in the town. The Old Mill complex (PS1559; NIAH20846132), dating to the early 19th century, reflects Clonakilty's industrial heritage and retains many of its original mill buildings and associated features.

In addition to these landmark structures, the ACA contains numerous terraced townhouses and traditional shopfronts, listed as both PS and in the NIAH, that line the main streets, particularly Ashe Street, Pearse Street, and Connolly Street. These buildings, with their uniform building lines, traditional materials, and preserved architectural detailing, collectively define the historic urban core of Clonakilty.

Importantly, these designated structures and the wider ACA are located well beyond the proposed development site, which lies to the south of the town. The intervening built environment, combined with mature vegetation and natural variations in topography, provides substantial visual and physical separation. Consequently, there will be no direct or indirect impacts on these protected structures or on the character and integrity of the ACA arising from the proposed development.

PS/NIAH	Structure Type	Townland	Distance
PS1675	Water pump (c. 1870)	Cloheen	275m to E
NIAH 20913508			
PS1558	Sisters of Charity Convent and	Maulnaskehy	500m to NE
NIAH 20846156	nursing home (1950)		
PS1664	St. Mary's Technical School (former	Youghals	775m to NE
NIAH 20846178	fever hospital c. 1850)		
PS1659	Beechgrove house (1887)	Tawnies Lower	700m to N
NIAH 20846174			

Table 11.3: Closest PS and NIAH-listed structures to the proposed development site

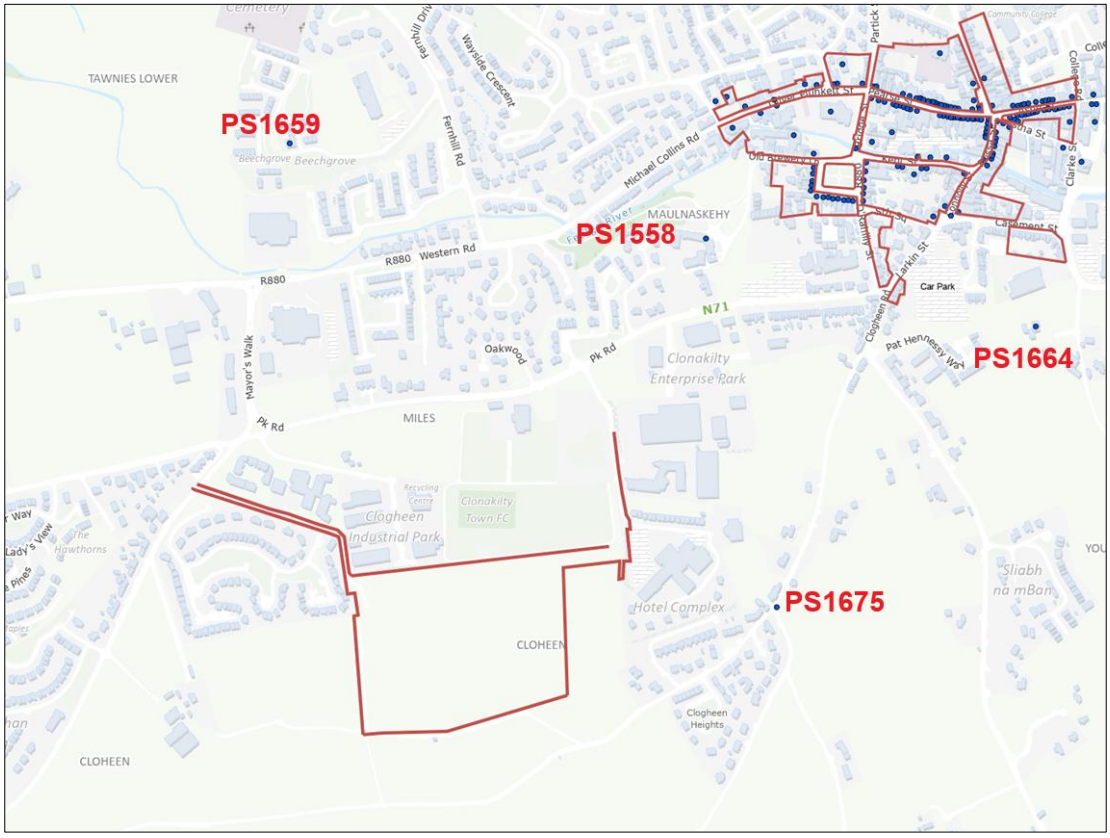

Figure 11.5. Proposed development site (outlined in red) showing nearest PS and NIAH-listed and ACAs within Clonakilty town, which contain numerous PS and NIAH-listed sites www.archaeology.ie

11.5 Geophysical Survey - Summary of Results

A geophysical survey was conducted across the Masterplan Area, which comprised ten agricultural fields, including the proposed development site (Field 9 and the northern portion of Field 3). The survey was carried out in two phases, in May and September 2020, under licence 20R0083 (Nicholls 2020). The full report, incorporating the findings from both survey phases, is included in **Appendix 11.2, Volume 3;**

The survey employed a high-resolution magnetic gradiometer, the most widely used geophysical technique for detecting buried archaeological remains. This method detects magnetic variations in the subsoil, identifying anomalies that differ in magnetic signature or orientation from the surrounding soils.

Such anomalies may result from geological processes, modern agricultural activity, or archaeological features. Interpretation of these anomalies depends on various factors, including the strength and form of the magnetic signal, prevailing ground conditions, and the experience of the surveyor.

Field 3 was surveyed during May 2020, while it was under an immature beet crop. Field 9 was surveyed in September 2020, following the harvest of a tillage crop. The northern portion of Field 9 was excluded from the survey due to prior groundworks, rendering the area unsuitable. Modern disturbance was detected in several areas across the survey zone.

Survey Results – Within the Proposed Development Site

Field M3: Responses 4 and 5 were recorded in this field; however, neither fall within the proposed development site.

Field M9 (**Fig. 11.6**): Responses 34, 35, and 36 were identified and described as follows :

'*Clusters of small-scale positives of uncertain origin. An archaeological interpretation for these anomalies is highly tentative given previous landscaping in this location, and interference from high voltage overhead power cables. The possibility that the majority of 34–36 derive from modern ferrous debris should not be dismissed*'.

Survey Results – Outside the Proposed Development Site

A ringfort/rath site (CO135-051) was recorded in Field M5, 160m to the south of the proposed development site, estimated to have originally measured 50 - 60 metres in diameter.

A second circular enclosure, approximately 32 metres in diameter, was identified in Field M7, approximately 220 metres northwest of the proposed development site. Several outlying linear ditch- and pit-type anomalies were also recorded nearby.

Additional features interpreted as vernacular or suspected vernacular sites were identified in Fields M4, M5, M6, and M7. Many of these correspond to former buildings or field boundaries shown on historic maps. None of these features are located within the proposed development site.