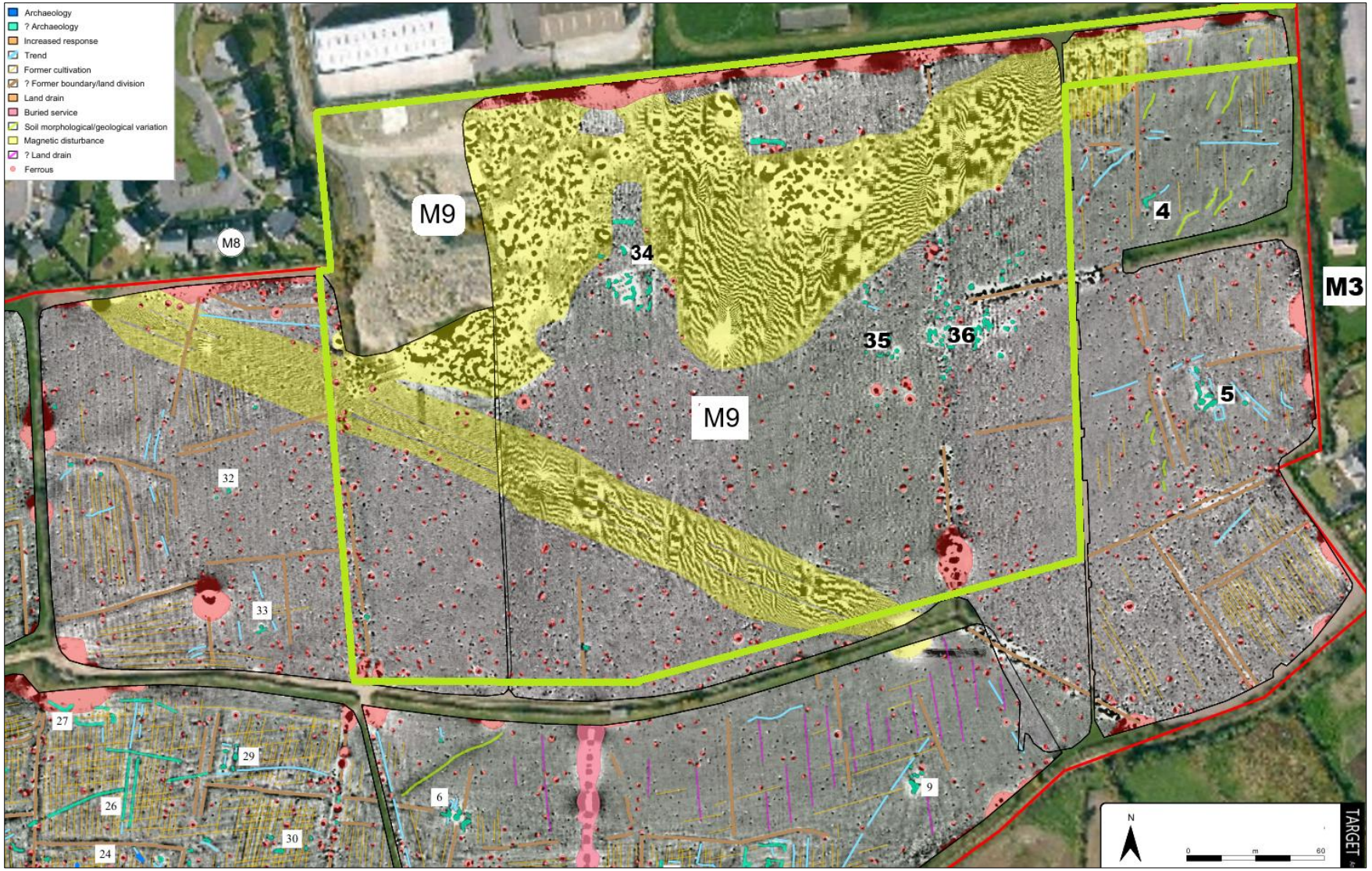

Figure 11.6. Excerpt of Interpretation areas showing location of geophysical anomalies 34, 35, 36 in M9 within the proposed development site (Source: Nicholls, 2020)

11.6 Archaeological Testing – Summary of Results

Two phases of archaeological testing were conducted on the site, in April 2022 and May 2025 as summarised below;

Phase 1: April 2022

The first phase of testing took place on the 4th and 5th of April 2022 under Licence 22E0218. It focused on the area within the 2022 development site boundary (outlined in blue on Fig. 11.7). As part of a new application to Cork County Council, the proposed development site has since been extended slightly to the south, incorporating an area that had not previously been subject to archaeological testing. The testing was carried out under dry, overcast weather conditions. Full results are provided in **Appendix 11.3**.

A prior geophysical survey identified three anomalies (Responses 34, 35, and 36) within the site. However, their origin was uncertain due to historic land use and interference from overhead power lines. It was suggested that these anomalies may have resulted from modern ferrous debris (Nicholls, 2020).

Thirteen test trenches (1–13) were mechanically excavated across the site, ranging in length from 38m to 293m, with particular focus on areas associated with the identified anomalies. Evidence of prior ground disturbance, also visible in aerial photography, LiDAR imagery, and the geophysical survey, was especially evident in Trench 7. Signs of historical land clearance and drainage activity were also noted in several trenches. However, no features or finds of archaeological significance were recorded during this phase of testing (Purcell, 2022).

In preparing this EIAR, consultation was undertaken with Ms. Annette Quinn, Cork County Council Archaeologist, to review the findings of both the 2020 geophysical survey (which covered the entire site) and the 2022 testing (which focused on the greater northern section of the development area).

Phase 2: May 2025

Following this consultation, a second phase of licensed archaeological testing was conducted to investigate a dark soil spread identified in aerial imagery from 2011–2013 (**Fig. 11.8**). This feature is located to the south of the area tested in 2022. Although the 2020 geophysical survey (Licence 20R0083; Nicholls, 2020) did not detect any anomalies in this area, targeted testing was requested by the Cork County Archaeologist to rule out the possibility that the soil spread represented a levelled fulacht fia.

This second phase of testing was carried out on the 14th of May 2025 under an extension to Licence 22E0218. Four test trenches (14–17) were excavated at the southern end of the proposed development site, targeting the dark soil spread observed in the aerial imagery. The stratigraphy was consistent across all four trenches. The ploughsoil, which measured between 0.28 m and 0.3 m in depth, was notably dark in colour and contrasted sharply with the underlying light grey loamy clay subsoil. The subsoil was moderately stony, with localised concentrations of stones likely corresponding to a former field boundary shown on historic OS maps (1842–1943; **Figs. 11.2–11.4**) and to a land drain removed during the 20th century. No features or finds of archaeological significance were identified during this phase (Purcell, 2025). Full results are provided in **Appendix 11.3.**

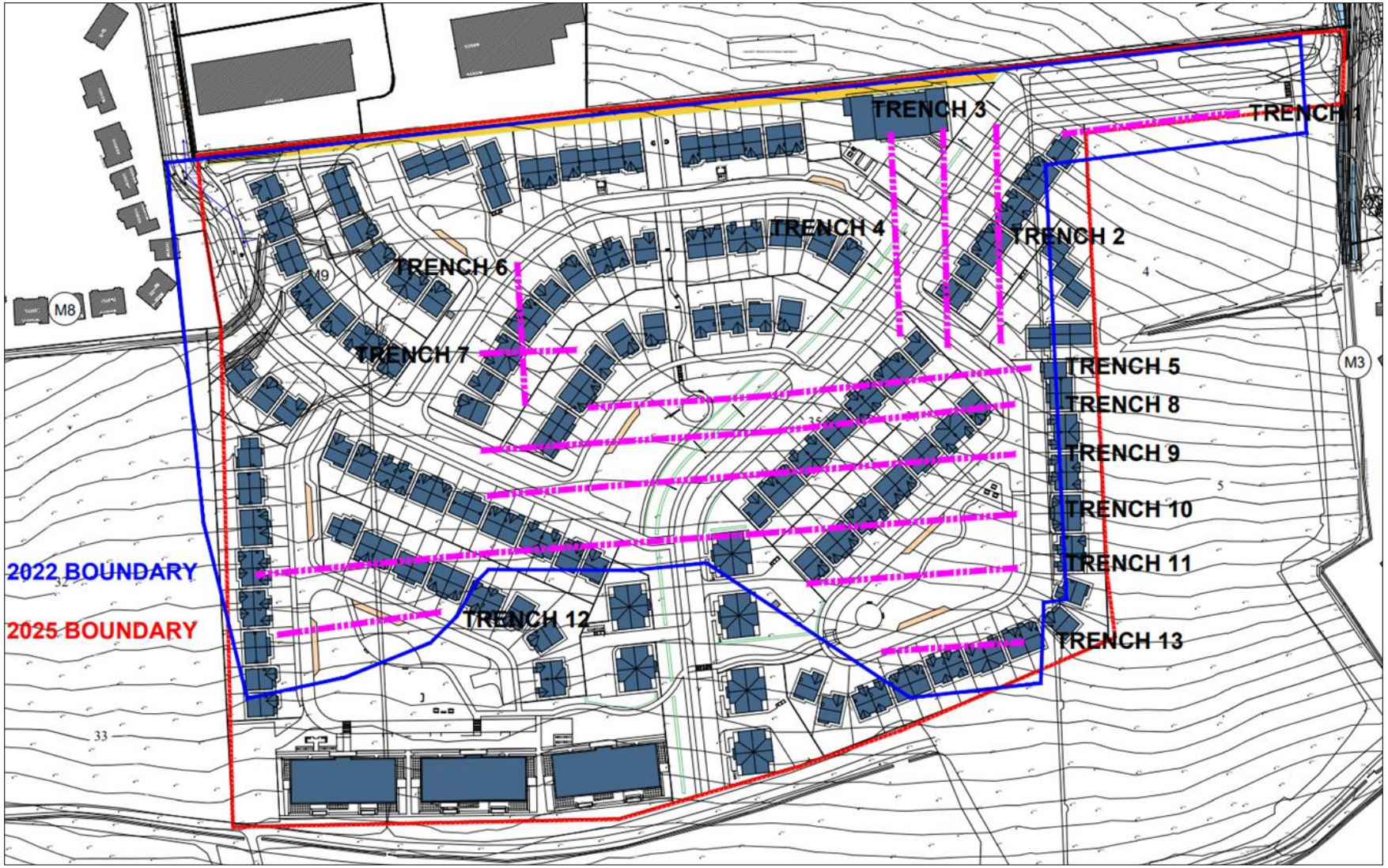

Figure 11.7. Proposed development site outlined in red with development layout shown. The 2022 development boundary is outlined in blue. Archaeological test trenches 1-13, excavated in 2022, are shown in pink (Source: Daly Barry Associates)

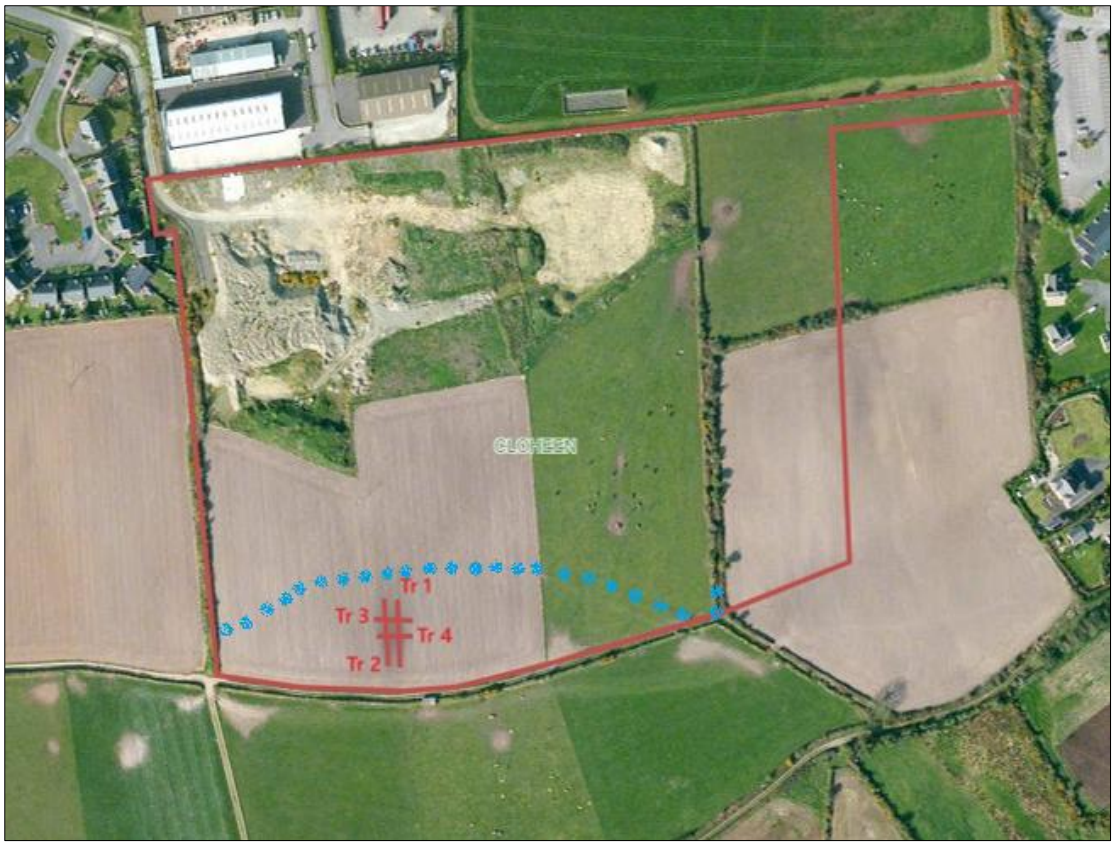

Figure 11.8. Aerial photograph (2011-2013) showing the proposed development site outlined, with the location of test trenches (14-17) excavated in 2025 (Source: Purcell, 2025).

The approximate location of the previous 2022 development boundary is indicated in blue. The area north of the blue dashed line was previously tested in 2022.

A darker soil spread is visible within the southern portion of the site.

11.7 Walkover Survey

The primary purpose of a walkover survey is to assess the physical environment of the proposed development site and to identify any previously unrecorded features of cultural heritage significance. This includes evaluating current land use, topography, and environmental conditions in order to develop a comprehensive understanding of the site's setting and potential archaeological sensitivity.

The proposed development site, as outlined in **Figure 11.9** with accompanying photographs provided in **Appendix 11.4**, was subject to field inspection on two occasions: 9th September 2020 and 20th April 2025. The site comprises a single, large open agricultural field, sloping down to the northeast. During the April 2025 inspection, the field was under a young crop of barley; therefore, the perimeter and tramlines were walked to allow visual inspection without disturbing the crop.

No finds or features of archaeological activity were observed during either inspection and no surface evidence of the darker soil spread visible on the 2011-2013 aerial imagery was apparent. The northern portion of the field appears in the aerial imagery (**Fig. 11.8**) to have been extensively disturbed and

stripped of topsoil. The northwestern section of the site contained mounded soil and rubble, now overgrown with rough vegetation, while the north eastern section of the previously disturbed ground has since been reinstated under crop.

The proposed development site is bordered to the north by metal fencing which is overgrown with briars and rough vegetation, to the south by a trackway, and to the east and west by agricultural land. A farm complex, including a dwelling house named *Cloheen Cottage*, is located to the southwest of the proposed development site. It is considered likely that intensive agricultural practices over the past several decades have resulted in a homogenised ground surface, potentially disturbing or erasing any shallow or low-visibility archaeological features. At the time of inspection, weather conditions were sunny and dry, with good visibility across the field. No archaeological finds or features were noted during the site walkover survey. A photographic record of the observed field conditions is presented in **Appendix 14.3; Volume 3**.

Figure 11.9. Proposed development site on aerial photograph, 2025 www.googlemaps.ie

11.8 Potential Effects

11.8.1 The 'Do-Nothing' Scenario

If development does not proceed, the existing landscape will remain unchanged, preserving its current condition.

11.8.2 Construction Phase

Archaeology – Registered archaeological sites

There are no registered archaeological monuments within the proposed development site. Therefore, there will be no significant direct or indirect effect on any registered archaeological site during the construction phase.

Archaeology – Potential previously unknown archaeological sites or features

Much of Ireland's archaeological heritage survives solely as subsurface remains, many of which remain unrecorded. Therefore extensive topsoil stripping and ground reduction as part of the construction please could result in a direct, negative effect on any potential subsurface archaeological sites.

However, a geophysical survey of the proposed development site did not identify any definitive archaeological sites. Three anomalies of uncertain origin (Responses 34, 35, and 36) were highlighted as being potentially archaeological in nature. These anomalies, along with the wider site, were investigated during licensed archaeological testing undertaken in 2022 under licence 22E0218. No archaeological features or finds were identified during this testing (Purcell, 2022).

Additional testing undertaken in 2025 to investigate a dark soil spread evident on aerial imagery found no archaeological features.

While the potential for unrecorded, small-scale archaeological features to survive beneath the surface cannot be entirely ruled out, the results of the geophysical survey, calibrated by targeted archaeological testing, indicate that the archaeological potential of the site is low. As such, the resulting potential effect is assessed as imperceptible to slight negative.

Architectural Heritage

There are no PS or structures listed in the NIAH within the proposed development site. There will be no significant direct or indirect effect on any registered architectural site or structure of architectural merit during the construction phase.

11.8.3 Operational Phase

No archaeological, architectural, or cultural heritage effects are expected during the operational phase of the proposed development.

11.8.4 Visual Impact Assessment

Archaeological Heritage

There are no known recorded archaeological monuments (RMP sites) located on the proposed development site. Within the 1km study area, a total of 29 recorded archaeological sites are noted in the SMR. The closest of these is a ringfort (CO135-051), located approximately 160m to the south. Additionally, three fulachtai fia (CO135-144001, CO135-144002 and CO135-144003) are situated between 170m and 200m to the southwest. These sites are entirely subsurface in nature and do not exhibit any above-ground

or visible expression within the landscape. Consequently, no direct or indirect visual impacts will arise in relation to these sites.

Of the remaining 25 sites in the surrounding landscape, 12 have little/no visible surface expression, including five fulachtai fia, two burnt mounds, two souterrains, one ring-ditch, one enclosure and a trackway. The remaining sites are upstanding monuments, but none are intervisible with the proposed development site. These sites are screened from view due to a combination of topography, dense vegetation and intervening residential development. Similarly, RMP sites located in the urban setting of Clonakilty are visually separated from the proposed development site by the existing built environment.

Architectural Heritage

Regarding architectural heritage, there are no PS listed in the CCDP or in the NIAH and no structures of architectural merit within the proposed development site. The nearest designated architectural heritage assets, including a cast-iron water pump (PS1675; NIAH20913508), the Sisters of Charity Convent and nursing home (PS1558; NIAH 20846156) and the famine fever hospital (PS1664; NIAH20846178), are located on the edge of Clonakilty town. These assets are fully screened from the site by existing buildings and vegetation. The same applies to other PS, NIAH structures, and ACAs in the town.

Given the subsurface nature of the nearby archaeological sites, the absence of visual connectivity, and the effective screening provided by surrounding development and vegetation, the potential visual impact of the proposed development on the surrounding archaeological and architectural landscape is assessed as not significant.

11.9 Mitigation Measures

Licenced archaeological monitoring during construction, will be carried out for the remainder of the previously untested area at the southern end of the proposed development site, as shown on **Figure 11.8**. Should archaeological features or deposits be revealed, both the National Monuments Service and the Planning Authority will be consulted. All newly identified archaeological sites will be preserved *in situ* or by record and sufficient time and resources will be allowed to resolve all archaeological matters. Preservation *in situ* will require the relocation of the element of the development beyond the area of archaeological sensitivity. Preservation by record will require the excavation of the archaeological material and such material will be fully resolved to professional standards of archaeological practice (Policy Guidelines on Archaeological Excavation – Department of Arts, Heritage, Gaeltacht, and the Islands). This work will be funded by the developer.

11.10 Cumulative Effects

There are no registered archaeological monuments or architectural structures within the proposed development site. While the potential for unrecorded, small-scale archaeological features to survive beneath the surface cannot be entirely ruled out, the results of the geophysical survey—calibrated by targeted archaeological testing—indicate that the archaeological potential of the site is low. Therefore, the potential effect of the proposed LRD is assessed as imperceptible to slight negative.

Within the surrounding area, three residential developments have been recently completed and one development has received planning permission. These are all located within approximately 500m of the proposed development site. One recorded archaeological monument, a fulacht fia (CO135-148), within one of these developments was preserved *in situ* within a designated buffer zone, ensuring its protection. No other recorded archaeological sites are present within the completed or permitted residential development areas.

When assessed cumulatively with nearby developments, the proposed LRD scheme contributes to the incremental urbanisation of the area. However, as these developments are located in areas with no additional known heritage constraints and have been carried out with appropriate mitigation measures to fully address potential heritage impacts, no significant cumulative effects on cultural heritage are anticipated. Accordingly, the cumulative impacts on cultural heritage is assessed as low to negligible.

11.11 Residual Effects

Following a comprehensive assessment, the residual effects of the proposed development on the cultural heritage environment are assessed as not significant.

There are no registered archaeological monuments or architectural structures within the proposed development site. A geophysical survey under licence 20R0083, followed by targeted archaeological testing undertaken in 2022 and 2025 under licences 22E0218 and 22E0218Ext, respectively, revealed no archaeological features or finds within the proposed development site. The results of these investigative works indicate that the overall archaeological potential of the site is low and the associated effects of the proposed development are therefore considered to be imperceptible to slight negative.

There will be no direct or indirect effects on any Protected Structures (PS), National Inventory of Architectural Heritage (NIAH), listed buildings, or Architectural Conservation Areas (ACA's).

Due to the subsurface character of nearby archaeological sites, the lack of visual connectivity and the presence of intervening development and vegetation, the potential visual impact of the proposed development on the surrounding registered archaeological and architectural sties is considered as not significant.

Licenced archaeological monitoring of the remainder of the previously untested area at the southern end of the proposed development site, as shown on **Figure 11.8** will be conducted during the construction phase. This will serve as an effective mitigation measure, ensuring that any unexpected archaeological material encountered is appropriately addressed.

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12.0 LANDSCAPE AND VISUAL

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12.1 Introduction

This section of the EIAR appraises the existing landscape of the site at Cloheen in Clonakilty, County Cork and the greater context within which it lies. It will then assess the likely landscape and visual impacts arising from the proposed development on these lands. The assessment will also take into account the cumulative impact from nearby recent development and unbuilt zoned lands. It will also describe the proposed landscape mitigation measures and the resulting residual landscape and visual impacts.

Forestbird Design, Landscape Architecture (Cloyne, Co. Cork) was commissioned to conduct a Landscape and Visual Impact Assessment (LVIA) of the site and environs. Project documents prepared by architectural, engineering and landscape (internal) consultants, as well as archaeology and ecology investigations were reviewed. Forestbird Design has visited the site and environs on six different occasions during all four seasons, from February 2023 – March 2025. The photomontage images were taken in March 2025.

12.2 Methodology

The landscape appraisal which has been undertaken is made with regard to the sensitivity of the landscape and its ability to undergo change. The methodology is based on national and local policy guidelines and best practice methodology as outlined in the references below:-

- Environmental Impact Assessment of Projects: Guidelines on the Preparation of the Environmental Impact Assessment Report (EIAR) (2017); European Commission (EC)
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013); EC
- Guidelines on Information to be Contained in Environmental Impact Assessment Reports (May 2022); Environmental Protection Agency (EPA) Ireland
- Guidelines on Landscape and Landscape Assessment (2000); Department of the Environment, Community and Local Government (DOE)
- Guidelines on Landscape and Visual Assessment (2002); Irish Landscape Institute (ILI)
- National Landscape Strategy 2015-2025; DOE
- 4th National Biodiversity Action Plan (2023-2030)
- Cork County Development Plan 2022-2028 (CCDP); Cork County Council
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), third edition (2013), Landscape Institute (UK)
- LCA and LVIA of Specified Infrastructure Projects – Overarching Technical Document (Dec 2020); Transport Infrastructure Ireland (TII)
- Visual Representation of Development Proposals, Landscape Institute (UK, 2019); Technical guidance notes for photomontages

In addition to the above documents, Ordnance Survey and National Monuments Service historical maps were used to help identify past land uses, landscape components and historic landscape evolution. In a modern context, aerial images from 1995 to the present also informed landscape changes.

A landscape and visual assessment consists of two distinct components. The first being *Visual Impact*, which is the extent that the new development and its' landscape alterations can be seen by a viewer. The

second being *Landscape Character* Impact, which examines innate responses to the changes created by the proposed development. This assesses both natural and cultural criteria and is an amalgamation of the impacts on landform, ecology, noise, traffic, viewsheds, historical and cultural elements.

It should be noted that the construct of the chapter follows EC and EPA guidance, which are generally aligned. In applying technical terminology specific to LVIA, the EPA guidelines are followed. However, the GLVIA is more informative and prescriptive, with additional analysis methodology allowing for improved assessment. In such instance, GLVIA guidance is incorporated (with reference).

Prior to assessment of impact, layers of baseline information are required. Two stages of review provide the necessary layers.

- Stage 1: Existing Landscape Description. The composition of the site (terrain, vegetation, structures and features) is developed, including the visual context surrounding the site. This is established by means of site visits and desktop reviews of statutory plans, topographical surveys, Ordnance Survey maps and historic documents. This information will provide a baseline level of sensitivity and actual level of visibility.
- Stage 2: Proposed Development Description. Site layout plans, proposed structures, roads and landscaping are reviewed. Heights, materials and anticipated site activity are taken into account. Development inevitably has a degree of impact on the existing landscape as a result of removals or landform alteration, which are also considered.

The assessment of *Visual Impact* is based on what is visible to the standard human eye. The result is perception and it is moulded by terrain, vegetation and physical structures. View Receptors (specific locations of views) can include public roads, any registered historical sites or structures, scenic routes, areas of conservation, public gathering areas, public transport nodes, areas of special interest as identified in official policy guidelines, as well as adjacent lands in so far as they are accessible. Investigations do not enter private garden areas, but can make allusions to same if required. This assessment results in a Zone of Theoretical Visibility (ZTV) (formerly Zone of Visual Influence or Visual Envelope). This identifies the context from where the site could potentially be physically visible from.

The assessment of *Landscape Character* involves the attempt to scientifically measure feelings and perceptions of the site and its environs. Because character is difficult to scientifically define, extensive cross referencing is required to achieve an impartial assessment. Historical and contemporary documents, other chapters of this EIAR, the current site status, relationship to adjacent uses, as well as unwritten community perception of the site all play a role in defining landscape character. The criteria for measuring impact is outlined in tables under Part 12.6 – Potential Impacts.

Once the parameters are understood, a number of view locations are visited and reviewed. This results in a select group of Key Visual Receptors, chosen for their sensitivity, degree of impact and/or unique attributes or relationship to the site. The Key Visual Receptors are represented as photomontages (existing and proposed images), whereby 7 no. receptors have been selected and described in Section 12.8. Written descriptions of the receptors, sensitivities, their relationship to the site and anticipated impact incurred from the development proposals are included. Additionally, 12 other Potential View Receptors Considered have been investigated and described as to why a photomontage was unnecessary.

12.3 Receiving Environment – Site Context

The proposed development site is located within the development boundary of Clonakilty town, but lies beyond the proper town centre, at the southwest end of town. It is accessed by means of two local roads, serving as tributaries to the N71.

The site sits on a north-facing hillside on rising ground at an intermediate position. The town centre is roughly at 5-10m above sea level, while the site ranges from 15 to 30m in elevation at an average gradient of 1:18. If the town centre were considered the 'basin', the site would form part of the 'banks' of the basin. This all lies within a greater landscape of undulating hills that reach 70-100m elevation.

Historic maps indicate that the site and environs were once broken down into smaller parcels. Figure 12.3.1 illustrates how this is the case in both 1845 and 1900, with gradual consolidation. Full consolidation of parcels is likely to have occurred in the early-mid 20th century as agriculture became more mechanised. The site is now 1 large field parcel.

Figure 12.3.1. Historic maps illustrating smaller land parcel sizes that carried into the 1900's. (left) 6-inch Ordnance Survey map from 1845 (17 parcels). (right) 25-inch Ordnance Survey map from 1900 (6 parcels).

The number of statutory designations and National Monuments in close range (less than 200m) is below average when compared to other lands on the urban fringe for this region. But in a 1km context, the number of designations would be considered average. The nearest feature is 180m to the south. Listed in order of distance from the site boundary, the relevant statutory features include (refer Figure 12.3.2):

- 3 no. Fulacht fía, National Monuments (NM) (no. CO135-144001, 144002, 144003), 180m-205m south of site (refer Chp 11 for full description of monument)
- Ringfort, NM (no. CO135-051), 205m south of site (refer Chp 11 for full description of monument)
- Historic Water Pump, Protected Structure no. 1675, 285m east of site; Regional rating, cast iron pump from 1870's at original location, as community heritage; CDP Objective HE16-14 "*Ensure that development… is not detrimental to the special character and integrity of the protected structure and its setting.*"
- Historic Convent, Protected Structure no. 1558, 450m northeast of site; Regional rating, 1950's convalescent home; CDP Objective HE16-14 "*Ensure that development… is not detrimental to the special character and integrity of the protected structure and its setting.*"
- Designated Scenic Route no. 74, 650m east of site; Coastal road to Inchydoney, Landscape Value – Very High, Features are coastal only, Key Characteristics of Land Use – urban area, residential and

tourism; CDP Objective GI14-14 "*…demonstrate that there will be no adverse degradation of views towards and from…*".

- Clonakilty Architectural Conservation Area (ACA), 710m northeast of site; CDP Objective HE16-18 "*(c) Ensure new development within or adjacent to an ACA respects the established character of an area and contributes positively…*".

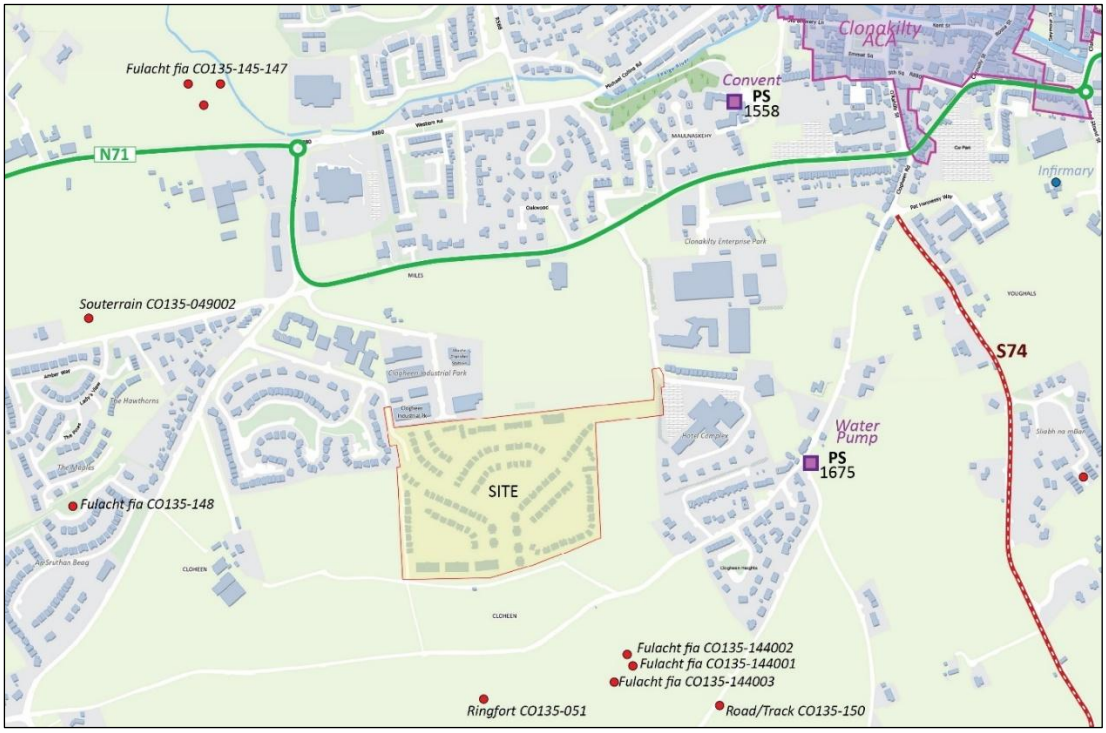

Figure 12.3.2. Map of relevant statutory features (refer also Appendix 12A for A3 size map).

The site is located within the *High Value Landscape* zone (HVL), as is all of Clonakilty. CDP part 14.8.9 states that "Within the HVL considerable care will be needed to successfully locate large scale developments without them becoming unduly obtrusive."

The site falls within the CDP *Landscape Character Area* titled "Type 3: Indented Estuarine Coast". This site is beyond the immediate coast. But, it does make inland references and can be characterised as gently undulating topography incised by shallow river estuaries with large field parcels articulated by low-rise broadleaf hedgerows. This area carries a Landscape Value of "Very High", a Landscape Sensitivity of "Very High", with a Landscape Importance of "National".

There is little modern cultural association with the site apart from its presence as an agricultural parcel at the fringe of town. However, it is experienced at a distance from 3 primary locations. From the N71, the site reads as a gap in development. From the Clonakilty Park Hotel it reads as agricultural land allowing open views of distant housing and an industrial estate. From the Bog Road it reads as an open agricultural parcel, as part of the open space.

The town centre is within walking/cycling distance of the site (900m to Emmet Square), with a signalised N71 crossing already in place at Park Road. The Clonakilty regional playground is 600m northeast of the

site with a 1000 sq.m. playground and equal size picnic parkland. Large grocery shopping is 700m north of the site.

Nearby commercial, tourism and industrial buildings include Department of Agriculture offices, Clonakilty Park Hotel, Leisure Centre and Adventure Centre off of Park Road. Northwest of the site is a joinery and Irish Wheelchair Association offices, with the civic amenity site further away.

Adjacent land use south of the site is under agricultural cultivation and has been ploughed annually for more than a decade (currently barley and sugar beets). This is in the ownership of the applicant. Within the agricultural land runs the Bog Road (95m from the site boundary).

West of the site is a combination of more agricultural land (owned by applicant) and the edge of the Lady's Cross housing estate (primarily detached houses).

North of the site, 1/3 of adjacent land use is an industrial warehousing site. Warehouses are 2m below the site and offset 16m from the boundary. The remaining 2/3 of land is occupied by the showgrounds. It is laid to grass and generally closed to the public, but hosts periodic public events. It is zoned Open Space/ Public Park (GA-05).

Directly east of the site is agricultural land that once formed part of the larger landholding. It is now under hotel ownership, but is still temporarily worked as farmland. It is zoned for residential use. Beyond this parcel is the Clonakilty Park Hotel and Leisure Centre. The hotel building is 120m from the site boundary.

12.4 Receiving Environment – Internal Site

The site is located on rising terrain currently under agricultural use. It rises to the south at approximately a 1:18 gradient, gaining 15m in elevation. 95% of the site is cultivated land, with some permanent vegetation to the north and east. The internal site is described below, followed by the boundaries.

The bulk of the site is classified as *Arable Land* BC1 (*Guide to Habitats*, Fossitt). It is tilled for growing grain and root vegetables, with crop rotation having been carried out for more than a decade. There are no trees on the main portion of the site and no permanent vegetation. Refer image in Figure 12.4.1.

Figure 12.4.1. View from the south end of the site looking north. This is BC1 habitat. The industrial estate and showgrounds are visible to the background of the tilled field. The red line estimates the development boundary through open agricultural lands. There are no trees within this portion of the site.

A watercourse passes through the northeast corner of the site, a description of which can be found in Chapter 10. The vegetation layer along the watercourse is herbaceous, with some Willow, Bramble and thorn species. On the eastern embankment of the watercourse is a cluster of 4-10m ornamental trees, forming part of the hotel landscape. It is a highly modified non-native tree cluster classified as *Mixed Broadleaved Woodland* WD1. Refer Figure 12.4.2.

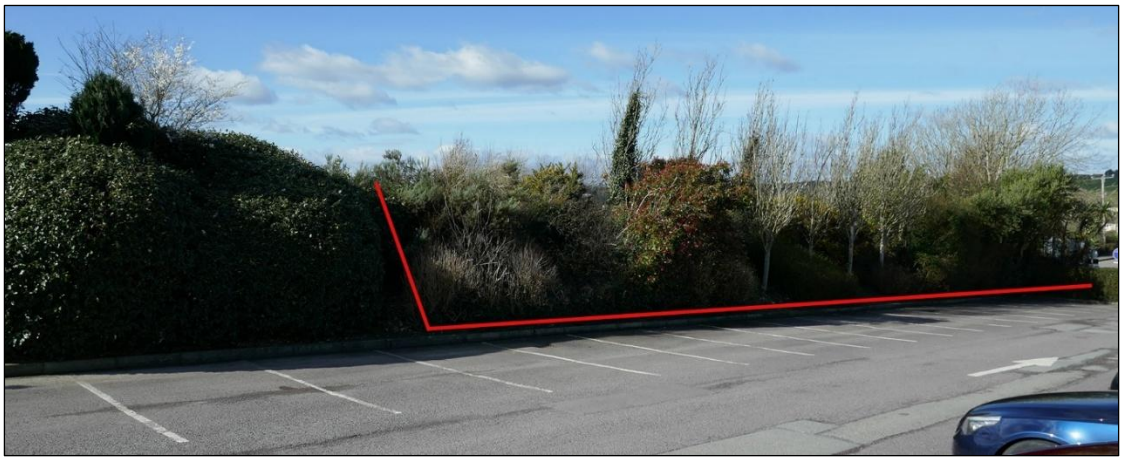

Figure 12.4.2. View from the hotel car park identifying ornamental tree cluster falling within the redline boundary. Note, the evergreen screen to the left is outside the site boundary, therefore anticipating retention.

South Boundary – There is no discernible boundary here. The development line follows the CDP zoning map and passes through operational agricultural land. (refer Figure 12.4.1 above)

West Boundary – 3/4 of this boundary is also open agricultural land, similar to the southern boundary. The remaining 1/4 bounds the Lady's Cross housing estate. A 2.0m concrete block wall delineates this portion of the boundary.

North Boundary – A Palisade fence spans the entire length of the boundary, securing it. A band of native vegetation sits within the fenceline and has been regularly trimmed so that it takes on scrub hedgerow

characteristics, rather than trees. It consists of Bramble, Gorse, Hawthorn and Blackthorn and is classified as Hedgerow WL1, but is only 1.0-2.4m tall. Refer Figure 12.4.3.

Figure 12.4.3. View of the north boundary as seen from the head of the watercourse (looking northwest). The red arrows identify the hedgerow and its inherent variation. The yellow arrow is the IWA warehouse north of the site.

East Boundary – The east boundary has no distinct delineation as it formed part of the larger landholding. It is still managed as farmland and has a similar appearance to other boundaries in the middle of the field. The difference between this boundary and the south/west boundaries is that the adjacent landowner is not the applicant.

12.5 Characteristics of the Proposed Development

HB Cloheen Developments Ltd. is seeking planning permission to construct 246 residential dwellings and a creche under the Large-scale Residential Development (LRD) moniker. It will consist of 2-storey houses, 3-storey apartments, and a single storey creche. There are two points of access to local roads, eventually connecting to the N71. Biodiversity links and large open spaces are prominent landscape features. For the overall project description refer Chapter 4. Interventions and proposals that may have potential impact specific to landscape character and visibility are described below.

12.5.1 Modifications to Existing Conditions

Due to the fact that there is a very limited amount of vegetation on site, the degree of removals is quite small considering the size of the application. The land use is fully modified, but removals are essentially limited to the northeast corner of the site to facilitate the access road.

- Topsoil (upper 350mm) from the agricultural field will be removed, salvaged and stored on ownership lands for re-use within the scheme. Subsoil will be used when necessary, otherwise it will be

transported off-site. The entire agricultural land use will be replaced by housing, roads, amenity, etc. The north boundary hedgerow will be trimmed to 1.2m height, but will be retained in-situ.

- Ornamental tree and shrub planting at the northeast corner of the site (between the watercourse and hotel car park) will be removed and existing mound reshaped. 2 no. car park bays will be removed. Figure 12.5.1 outlines the extent of removals at the northeast corner.

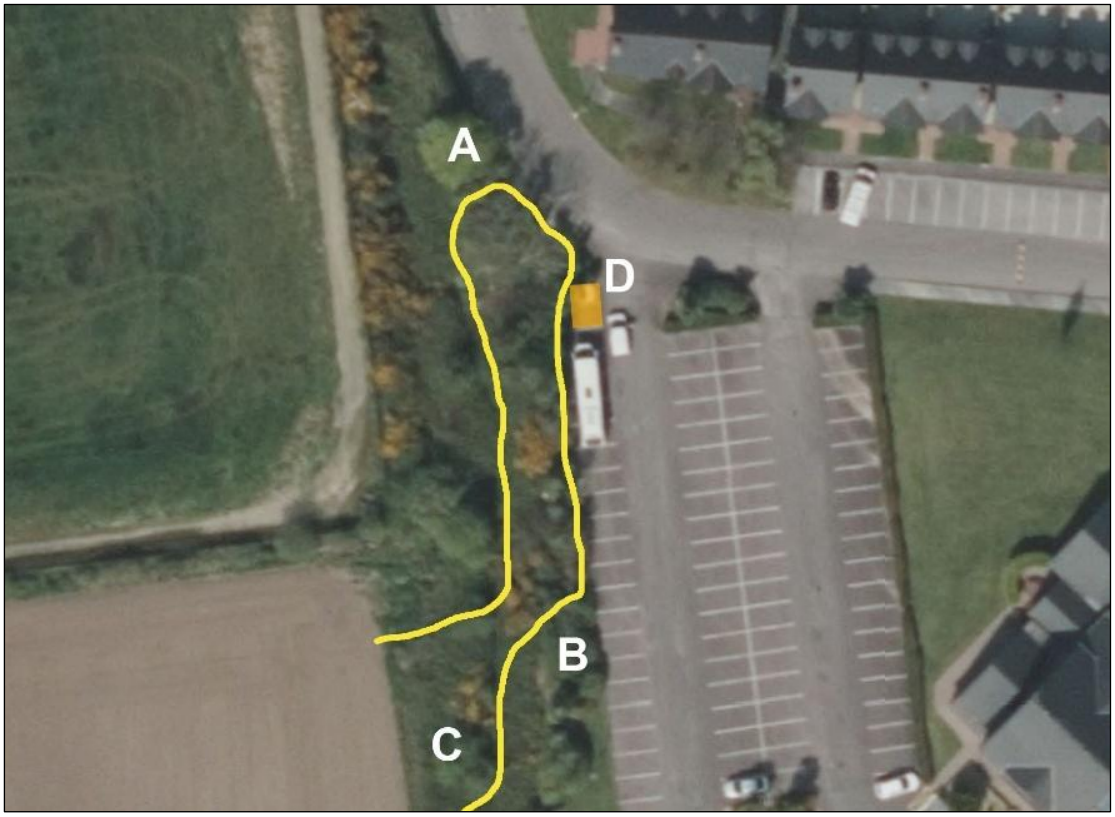

Figure 12.5.1. Aerial photograph identifying extent of removals (yellow line) of the ornamental tree cluster between the hotel car park and watercourse to facilitate the east entry road. Note A – Existing Sycamore retained, clear stem to 3m height; Note B – Existing evergreen screen retained; Note C – Willow cluster within stream channel to be removed; Note D – 2 no. car park bays to be removed.

12.5.2 Proposed Development

The proposed residential scheme aims to provide a neighbourhood that is designed around large, equally distributed open spaces. Biodiversity plays a key role in the framework, while balancing a large quantum of traditional, level amenity greens. More than 1,000 trees are proposed to be installed on site. The proposed landscape works are illustrated at a high level in Appendix 12A and outlined below:

- The landscape amenity is distributed in a "t" formation. A central parkland and 2 wings of the "t" each form Primary Amenity zones and measure 1,250 sq.m., 2,080 sq.m., and 2,300 sq.m. respectively (3, 4 and 5). A series of Secondary Amenity corridors (1 and 2) connect the primary amenity spaces

to northern residential areas and provides a designed future link to zoned open space lands north of the site. Refer Figure 12.5.2 for a diagrammatic layout of the main amenity spaces.

Figure 12.5.2. Diagram of proposed amenity arrangement. No. 3, 4 and 5 are Primary amenity, while no. 1 and 2 are Secondary.

- 3 primary habitat corridors are created that span the entire site; 1 no. north/south (A) and 2 no. east/west (B1 and B2). Refer Figure 12.5.3 below.

Figure 12.5.3. Diagram of proposed primary habitat / biodiversity corridors. The east/west links (B1 and B2) are comprised of multi-layered native tree buffers, which also serve as visual filters. The north/south link (A) acts as a SuDS corridor, providing a variety of habitats, from damp meadows to native woodlands.

- A central SuDS swale and biodiversity corridor links the north and south ends of the site. At 2,400 sq.m. this would be one of the largest SuDS features incorporated into a housing scheme in the Clonakilty area. It provides 4 different habitats and is safely designed with 1:4 side slopes. Woody vegetation is kept away from roadside users for optimum line of sight, secondary supervision of the swale and ease of management. A cross section through this corridor is shown in Figure 12.5.4.

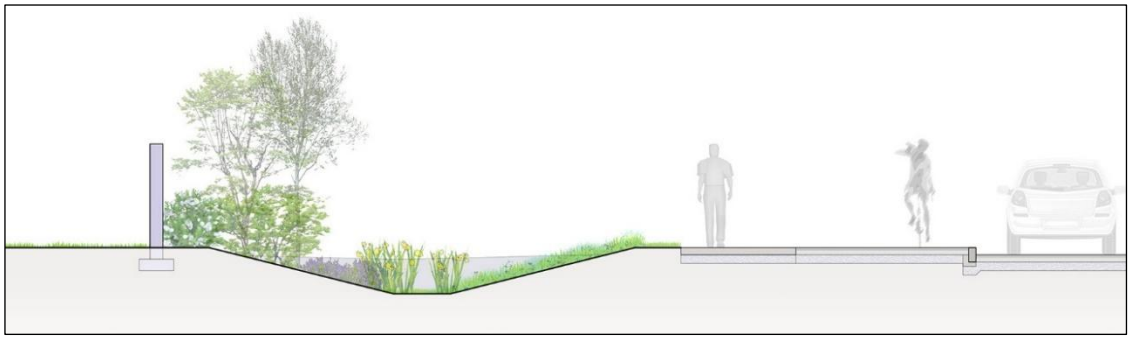

Figure 12.5.4. Section through the SuDS biodiversity swale, with associated footpath and cycle lane. Habitats include filter grasslands (nearest the road), damp meadows at the basin, fruiting and flowering shrub layer and a double row of native trees.

- There are 2 no. east/west biodiversity corridors that act as visual filters. Along the northern boundary, the existing thorn/scrub hedge is supplemented with additional rows of native trees. Along the

southern and western boundaries, the proposed block walls are fronted by a multi-layer band of trees and shrubs. These layers support a wide variety of fauna and ensure a visual filter from the ground level up. Refer Figure 12.5.5 below.

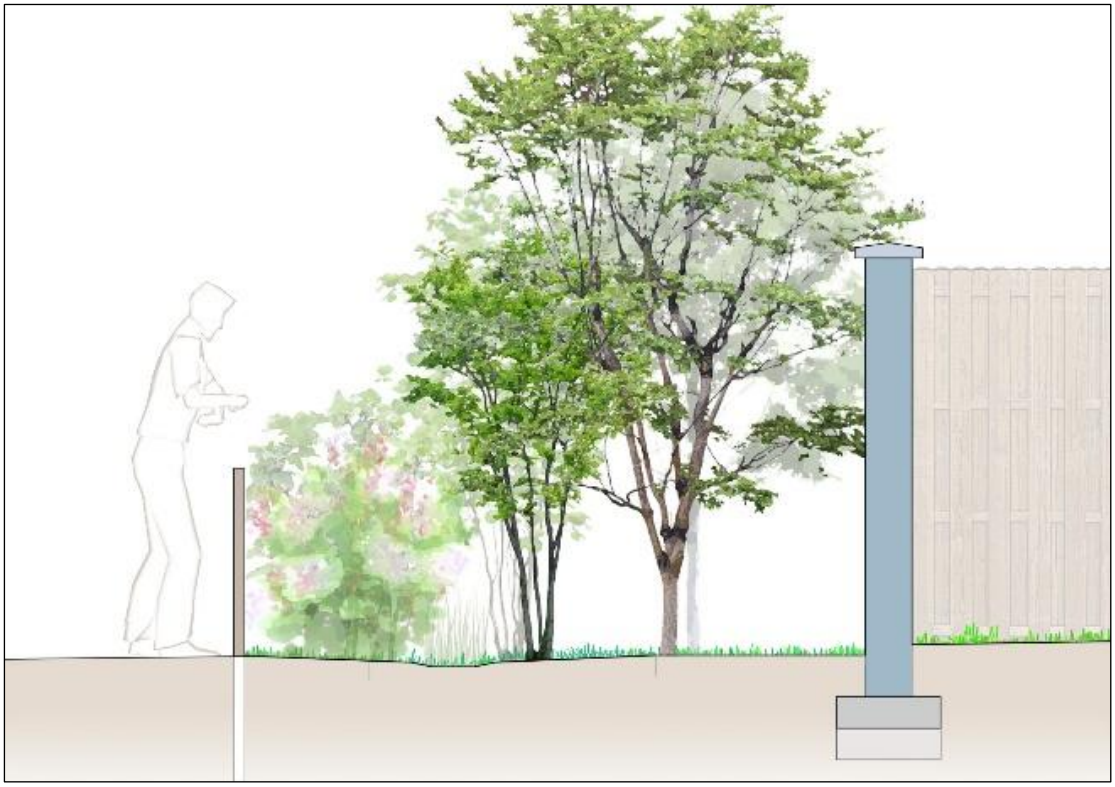

Figure 12.5.5. Section through the south/west boundary native planting buffer. It has a triple layer of planting (trees, large shrubs, small shrubs) for a diverse selection of native species to optimise habitat performance. It is a strong pollinator corridor and visual screen. The north and south boundaries have similar layering.

- Primary Amenity space no 3 (Figure 12.5.2 above) is 1250 sq.m. and a central feature of the site. It contains a community gazebo as a key node, 2 no. benches and an amenity walk along the SuDS corridor.
- Primary Amenity space no 4 is 2080 sq.m. and a family-oriented zone. It contains a community picnic area with 3 no. picnic tables and a pollinator node with 2 no. benches and a public orchard. It is fully surrounded by a Home Zone.
- Primary Amenity space no 5 is 2300 sq.m. and is an active amenity zone. It contains a 190 sq.m. children's playground, a 400 sq.m. sports pitch with goal and a 150 sq.m. nature playground and picnic area. It is fully surrounded by a Home Zone.
- Secondary Amenity spaces no. 1 and 2 are a combined 875 sq.m. and contain 3 no. benches, 2 no. picnic tables and a public orchard.
- There are 3 no. tertiary amenity spaces, all measuring more than 350 sq.m., that serve as informal grass play areas to select clusters of residents.
- Overall, there are 19 no. seat benches and 9 no. picnic tables for public use.
- There are 440 lin.m. of designated amenity paths, in addition to standard footpaths. Central cycle lanes are provided along 2 axes, for a combined 715m length.
- There are 3 distinct Home Zone areas, laid out following DMURS guidelines.

- Modifications are proposed to the Clonakilty Hotel car park entrance, to facilitate the site access road. This results in the loss of 2 parking bays. But, it improves hotel legibility and pedestrian safety. A number of ornamental plants are replaced by native species.
- There are 1260 sq.m. of green Sedum roof at the southern end of the site (15-bed apartment buildings and bike shelter).

Tree planting serves to enhance the urban realm and provide commuting links to the various habitats. The aim is to improve visual screening while enhancing biodiversity. 96% of the planting will be native (primarily deciduous), with 4% acclimatised non-natives for use in the urbanised areas (i.e. street tree planting with limited planting bed zones). Using our native species in these situations would result in poorly performing trees that will have an increased tendency for limb loss and windthrow. These would result in an greater potential for public hazard and increased maintenance. Select Acer and Ulmus cultivars have high wind-resistance and are easy to manage, while having good benefits for carbon sequestration, heat temperance, modest biodiversity benefit, as well as aesthetics for resident well-being. With the embargo on the movement and planting of Ash trees due to *Ash Dieback* disease (Hymenoscyphus fraxineus), none are specified. Lime trees (Tilia) are good large-canopy substitutes for the Ash, in that they host a number of insects and have high pollinator value. Table 12.5.1 outlines the proposed tree species.

Amenity Tree Planting Species	
Acer campestre (*Field Maple*) 0.5%	Prunus avium (*Wild Cherry*) 18%
Acer platanoides (*Norway Maples*) 0.5%	Quercus species (*Oak*) 30%
Betula species (*Birch*) 18%	Sorbus aucuparia (Rowan) 12%
Malus domestica (Apple) 1%	Taxus baccata (Yew) 1%
Malus sylvestris (*Crabapple*) 14%	Tilia cordata (Lime) 2%
Pinus sylvestris (*Scots Pine*) 2%	Ulmus hollandica 'Dodoens' (Elm) 1%

Table 12.5.1. Semi-mature tree planting species to the open spaces and suburban environment.

Tree Planting – Urban Woodland and Biodiversity Links	Shrub / Small Tree Planting – Biodiversity Links
Alnus glutinosa (*Alder*) 20%	Crataegus monogyna (*Hawthorn*) 15%
Betula pubescens (*Downy Birch*) 20%	Euonymus europaeus (*Spindle*) 12%
Corylus avellana (*Hazel*) 12%	Ilex aquifolium (*Holly*) 13%
Malus sylvestris (*Crabapple*) 10%	Crataegus monogyna (*Hawthorn*) 15%
Pinus sylvestris (*Scots Pine*) 2%	Prunus spinosa (*Blackthorn*) 15%
Populus tremula (*Quaking Poplar*) 5%	Salix aurita/caprea (*Willow*) 5%
Prunus avium (Wild Cherry) 16%	Sambucus nigra (*Elder*) 10%
Quercus species (*Oak*) 15%	Viburnum opulus (Guelder Rose) 15%

Table 12.5.2. Transplants (100% native) to the east/west boundaries and central SuDS corridor.

12.6 Potential Impacts

The methodology used to assess the impacts of the development on the landscape is based on the terminology given in the guidelines by the Environmental Protection Agency, as outlined below.

Potential impacts are concerned with the *likely* and *probable* impacts of the proposed development. The impacts include those which are *planned* to take place and those which can be *reasonably foreseen* to be inevitable consequences of the construction and operation of the development.

In determining potential impact, an understanding of the sensitivity of the site is necessary. A value is applied to the landscape resource and is based on the following Table 12.6.1. This is referred to as *Landscape Sensitivity*. Within this assessment, statutory conditions of the site are also considered.

Sensitivity Level	Criteria
High	Exhibits a strong positive character with valued elements and is highly sensitive to change.
Medium	Exhibits positive individual elements or positive general character, but is compromised by past or current use and is somewhat sensitive to change.
Low	Exhibits a character that is neutral or even negative, with few or no valued elements and is amenable to change.

Table 12.6.1. Landscape Sensitivity Values

A key measurement in assessing visual impact is the magnitude to which the change is perceived. The same element can impact visual receptors in very different ways as a result of proximity, receptor orientation and landscape context. Table 12.6.2 outlines the criteria for assessing this impact.

Impact Level	Criteria
Imperceptible	An impact capable of measurement, but without noticeable consequences. No discernible deterioration or improvement in the existing view.
Slight	An impact which causes noticeable changes in the environment without affecting its sensitivities. The impact has been minimised by its scale or intervening topography and vegetation.
Moderate	An impact that alters the character of the environment as a result of changes to an appreciable segment of the view or intrusion in the foreground.
Significant	An impact by which its character, magnitude, duration or intensity alters a sensitive aspect of the environment. Where a view is obstructed or so dominated by a proposed scheme that it becomes the focus of attention.
Profound	An impact on a view that removes all sensitive characteristics or completely obstructs or alters the view.

Table 12.6.2. Landscape Significance Criteria

These ratings are further assessed by the Type of Impact, which may be viewed as Neutral, Positive or Negative and as outlined in Table 12.6.3. As a baseline (Part 12.4), the existing landscape has a neutral character, but one that is on a gently rising hillside, increasing potential visibility.

Type of Impact	Criteria
Neutral	Represents a change that does not affect the quality of the environment.
Positive	Represents a change that improves the quality of the environment.
Negative	Represents a change that diminishes the quality of the environment.

Table 4.6.3. Criteria for Assessing the Type of Landscape Impact

Impact level also takes into consideration the duration of the impact and is considered to be one of the following outlined in Table 12.6.4.

Impact Duration	Timeframe
Temporary	lasting less than 1 year
Short Term	lasting between 1 and 7 years
Medium Term	lasting between 7 and 15 years
Long Term	lasting between 15 and 60 years
Permanent	in excess of 60 years

Table 12.6.4. Criteria for Assessing the Duration of Landscape Impact

Impacts are also assessed at different stages of the project. The construction stage works quite often have a negative visual impact to varying degrees, but these impacts are often temporary. Of greater concern are the impacts evident at operational stage.

Part of the methodology in assessing the potential visual impact of a proposed development is identification of the Zone of Theoretical Visibility (ZTV). The baseline ZTV is a map identifying where the site is potentially visible from and is based solely on landform relative to site elevations, orientation and the proposed development. The ZTV is then refined by field investigations that take into consideration existing vegetation, minor landform changes and structures. Site visibility typically diminishes as distance from the site increases. ZTV viewing height is 1.7m. In this suburban setting, the presence of direct

illumination is considered in the ZTV, but not the potential for indirect glow. Refer Figure 12.6.1 for extent of the ZTV.

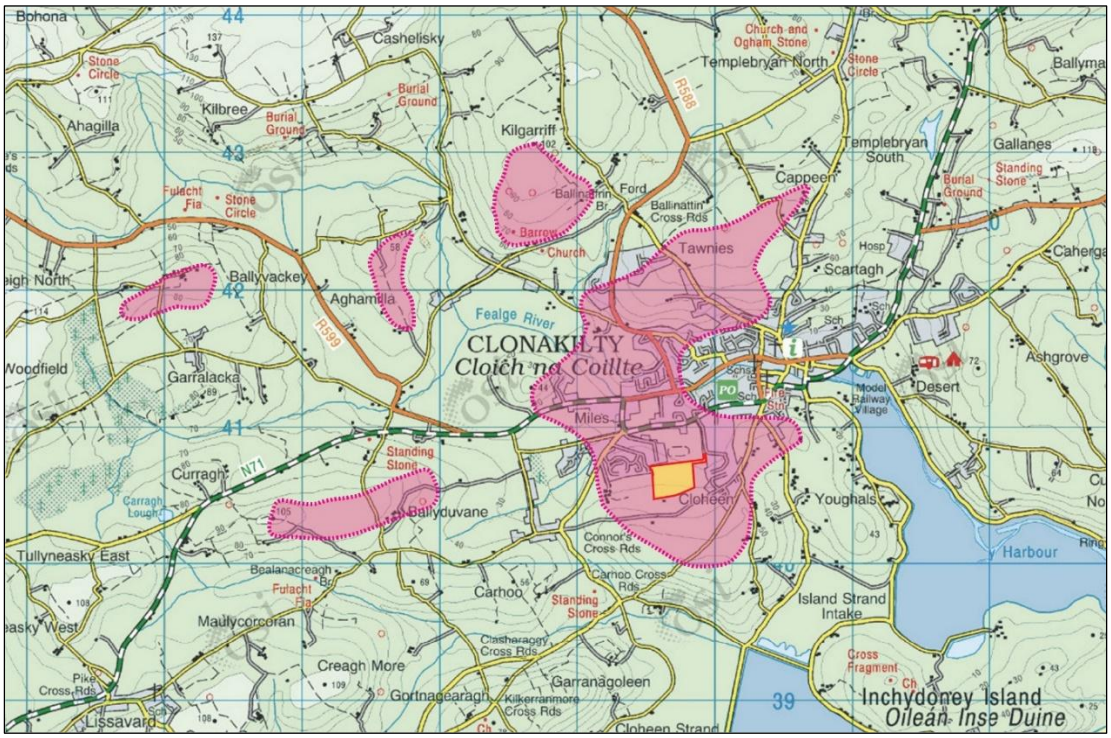

Figure 12.6.1. Zone of Theoretical Visibility Map – The diagram above illustrates zones with potential site visibility based primarily on landform, with modification due to intervening vegetation and structures. Views from the south and the east are very limited, while longer range views from the west and north can be obtained from hilltops. The map is 8km wide (1km grids).

12.7 Predicted Impacts

It is a feature of this site that there is a lack of visibility from high-sensitivity receptors. It also benefits from what happens directly adjacent to the site. To the east, there is a large offset to the hotel with a parcel of land as a buffer. To the Bog Road in the south, there is a large agricultural buffer. Along much of the west there is also a large agricultural buffer, but with some direct adjacency to the Lady's Cross housing estate. To the north, the Showgrounds serve as a natural green buffer, while the warehouses have a healthy offset. Consequently, close range views are very limited.

However, given that it is a greenfield site, it can be inferred from the information set out above that the site has a *Medium* level of Landscape Sensitivity (Table 12.6.1). It has no strong or irreplaceable features. It thus has the ability to absorb a certain degree of change. The degree of change is then dictated by the sensitivity of the receptor from which it is viewed.

When selecting receptors, views from historic structures, public roads, schools, churches, private residences, statutory areas, archaeological features and areas of local or cultural significance were reviewed and assessed based on the level of impact presented by the proposed development. The desktop study indicates that the site generally rises at 1:18 on a north-facing hillside, with little to no vegetation cover. This would initially suggest a certain degree of elevated long-range visibility from the

north, as well as medium-range visibility within the Clonakilty basin from northwest to northeast, so long as views are not obscured. However, undulations in the surrounding terrain, existing mature vegetation and the built-up nature of Clonakilty result is a narrow range of visibility. When reviewed in combination with the limited number of sensitive receptors, the impacted views are few. As a result, 7 no. View Receptors have been selected to represent publicly accessible locations that might have the greatest potential for visibility. Each receptor has a full text description and photomontages associated with it. Their locations are highlighted on the *View Receptor Map,* which also highlights the nearby statutory features and framework. Refer Figure 12.7.1.

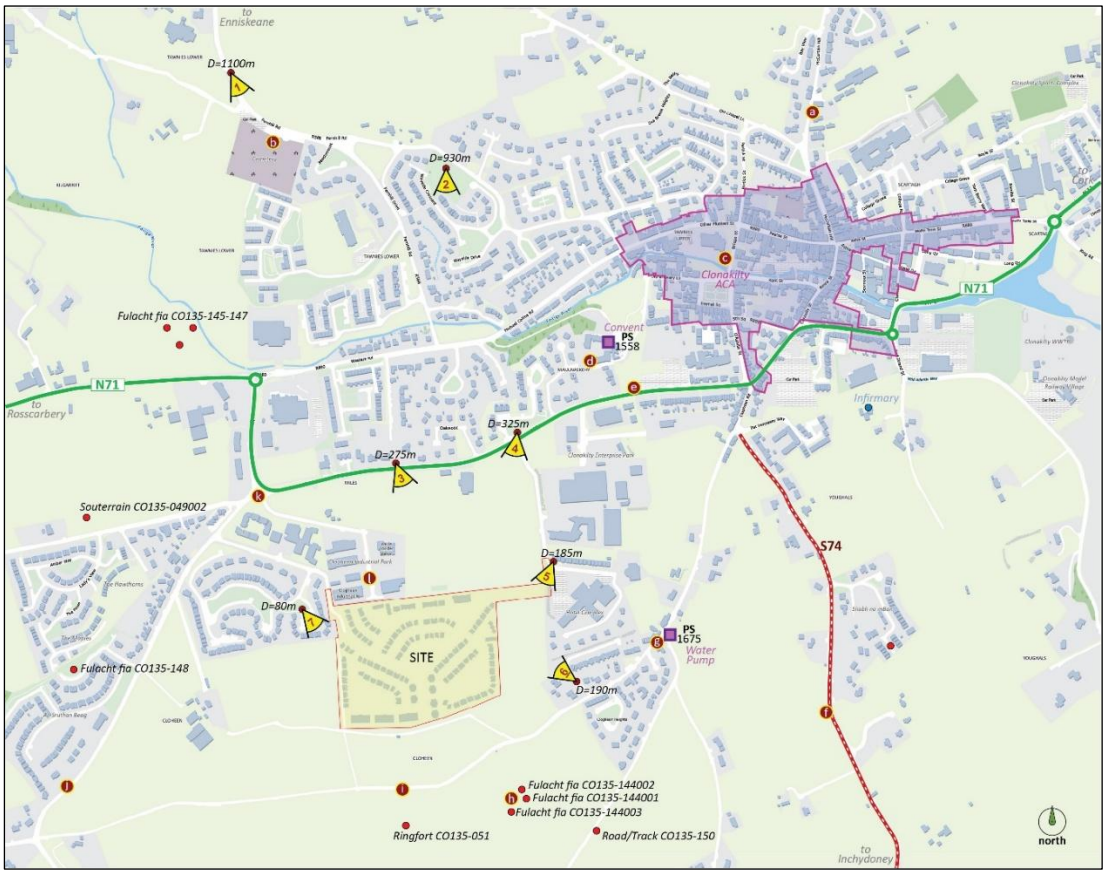

Figure 12.7.1. View Receptor Map (width of map = 2.3 km)

The following Visual Impact Summary Table (Table 12.7.1) lists each receptor and identifies the duration, type and degree of impact. Each view receptor is represented by existing and proposed images.

All 7 views have been photographed with 'late winter' foliage, with images shot 12th March 2025. Deciduous tree foliage has not emerged yet and still has winter characteristics for optimal visibility.

All view receptors include an 'Existing' image. This is the actual, unedited photograph representing the existing conditions on the day of photography. All montages use this as the baseline image. All view

receptors also include a 'Proposed' image, illustrating the proposed development when completed. In these images, planting is shown at 5 years after installation.

Because the existing photos are taken in late winter/early spring, the proposed planting also reflects this lack of foliage. In photomontages where the proposed development is not clearly discernible, an additional image is included where a red line represents the outline of the extent of proposed buildings.

This provides a sense of the degree of screening. The compendium of photomontages is presented in Appendix 12A in A3 size and titled *Booklet of Photomontages*.

SUMMARY OF KEY VISUAL RECEPTORS

Receptor No.	Title of Receptor	Distance from Site	Receptor Sensitivity	Degree of Visible Change
1	R588 Southbound at St. Mary's Cemetery	1100m	High	Slight, Neutral
2	Public Park at Tawnies Grove	930m	Medium	Moderate, Positive
3	N71 at the Showgrounds (CK-GA-05 Town Park)	275m	High	Slight, Negative
4	N71 at Park Road (Site Access)	325m	High	Slight, Positive
5	Park Road at Clonakilty Park Hotel	185m	Medium	Significant, Neutral
6	Clogheen Grove Road Residential Area	190m	Medium	Slight, Neutral
7	Lady's Cross Residential Area	80m	Medium	Slight, Neutral

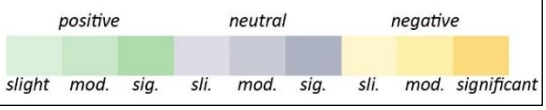

Table 12.7.1. Visual Impact Summary Table

With regards *Impact Duration*, impact was considered permanent if a receptor had a distinct alteration to the horizon line or if views of a structure would continue to remain visible. During assessment, the landscape was also considered in the context of permanency.

For example, retained mature trees were considered permanent, with management and evolution. New woodland tree planting at the northern end of the site was assessed as a young band of trees, but consideration was also given to it eventually becoming a permanent screening feature due to species and density.

Street tree planting was considered to have filtering contribution, but as a single tree layer was not a permanent screening element.

In this appraisal, *Type of Impact* was considered positive only if the proposals contribute to the character of the locality *and* would not be detrimental to the rural association. A negative *Type of Impact* might

occur if for example, the proposals diminished the experience of the users, distracted road users, diluted the character or functioning of Clonakilty town or had detrimental impact on any significant trees.

View Receptor Descriptions

View 1

VIEW 1 (View from R588 from Enniskeane, looking south) – Distance to site = 1100m

VIEW 1 – *Reason for Receptor Selection*: As a busy regional road, the R588 serves as one of the main entry points to Clonakilty from the north. At this location, the road is descending into town on a long, straight stretch that is aligned with the site. Viewing duration is 5-7 seconds. An important feature of this receptor is that it captures St. Mary's Cemetery in the foreground. A series of potential viewpoints were investigated. Starting higher up on the road across from the Fernhill House Hotel entrance, the corridor of trees narrowed the viewing window and obscured the site. We investigated views from the cemetery, where the lower elevation revealed a smaller percentage of the site. The proposed view captures both the sense of arrival, quality site exposure and estimated impact on the hotel and cemetery. The aim of the receptor is to get an understanding of how much of the background hillside is altered and potential impact on the R588 view.

VIEW 1 – *Existing Site Character from this Receptor*: This point on the R588 serves as a transition from the rural to the suburban and eventually to town centre. It has a positive view framework with the foreground woodlands, the cemetery and the grassy hillside as a backdrop. The site forms part of the lower end of this hillside.

VIEW 1 – *Analysis of Proposed Development*: The houses at the western end of the site are most visible, as well as one of the 15-bed apartments. The remaining development is centred within the viewing window, but is filtered by middleground vegetation. It is partially visible in winter through the trees, but will be obscured during summer. The houses remove a portion of open agricultural land, but they do not extend up the hill very high. The bulk of the background hillside will remain as a series of pastures. The proposed

development does not distort the dividing line between rural and suburban and is in fact much lower and less impactful than existing houses to the left.

VIEW 1 – *Predicted Impact (level of impact, type of impact)*: **Slight, Neutral**

VIEW 2

VIEW 2 (View from the Public Park at Tawnies Grove, looking south) – Distance to site = 930m

VIEW 2 – *Reason for Receptor Selection*: This is an elevated, well-used public park that provides clear views over much of the town. With minimal intervening houses or vegetation, this is the clearest long-range view of the site, available from a public receptor. The rural background hillside is an important feature of this view. The aim of the receptor is to get an understanding of how much of the hillside is altered and what this does to the user experience of the park.

VIEW 2 – *Existing Site Character from this Receptor*: The site appears as open agricultural land at the foot of the hill and is not obscured by vegetation. It appears as a rural pocket framed by higher density development. To the left, you see residences rising to the top of the hill. If you take in the wider context and pan right, the urban form intensifies with the presence of the 4-storey school. So, the Showgrounds and the undeveloped site are anomalies in the visual context.

VIEW 2 – *Analysis of Proposed Development*: The full extent of the proposed development is visible. The number of houses makes it quite a visible change. However, it is well defined with regards roof design and appears to follow the contour lines. Development does not 'bleed' up the hill like the existing houses to the left (Cloheen Heights). Prior to creating photomontages, we had slight concerns about the potential impact of the 15-bed apartments at the top of the site. LVIA provided recommendations to the architects and this was carried out with success (refer mitigation measures in part 12.8). The apartments do not appear out of place or excessively tall, aligning well with adjacent rooflines. As an urban extension, this scheme appears to be the correct solution. The rural land parcels at higher elevations are visually retained, allowing a significant portion of the hill to remain visible. As tree planting along the northern boundary matures, this will serve to filter the site and increase emphasis on the Showground open space. The gap between the hotel and the site is also clearly evident and gives a good sense of the large offset between

the two land uses. The proposed scheme provides a quality layout that accommodates development, while retaining and emphasising the important green framework of the town.

VIEW 2 – *Predicted Impact (level of impact, type of impact)*: **Moderate, Positive**

VIEW 3

VIEW 3 (View from the N71 at the Showgrounds, looking southeast) – Distance to site = 275m

VIEW 3 – *Reason for Receptor Selection*: The N71 is a highly travelled artery with lots of viewers. The Showgrounds (zoned open space) provides an unobscured view towards the site. The aim of the receptor is to get an understanding of whether the scheme adds or detracts from the character of the town, how it might impact the future parkland (Showgrounds) experience and what is the impact on N71 road users.

VIEW 3 – *Existing Site Character from this Receptor*: The site appears as open agricultural land at a lower elevation, but it does not have a rural quality.

This lack of rural character is diluted by the presence of housing rising up to the top of the hill and by the warehouses, which have a strong visual influence.

The boundary to the Showgrounds also has a poor aesthetic. It is one of the few spots along the N71 in the town centre, where you get a good sense of the green background hillside.

VIEW 3 – *Analysis of Proposed Development*: The eastern half of the proposed development is visible, up to the amenity corridor providing a future connection to the Showgrounds (open space).

The creche, detached and semi-detached houses look compatible and there is an amenable rhythm to the rooflines. The terrace of houses along the northern boundary appears blocky and out of place. Visually, this would benefit from being broken down into semi-D or detached houses.

The primary result of the scheme is that it that the background ridgeline of the hill is now mostly obscured. Existing background trees still rise above the houses, which is welcome. This type of setting where

structures are prominent and hillsides are obscured is not out of character with other development along the N71, but it is nonetheless a visual loss.

VIEW 3 – *Predicted Impact (level of impact, type of impact)*: **Slight, Negative**

VIEW 4

VIEW 4 (View from the N71 at Park Road, looking southwest) – Distance to site = 325m

VIEW 4 – *Reason for Receptor Selection*: As one of two entrances to the site, this junction receives some upgrades and has a relatively open view of the site.

VIEW 4 – *Existing Site Character from this Receptor*: The Park Road has a well maintained landscape, indicative of the presence of the hotel and the Department of Agriculture / Sea Fisheries offices.

The road junction is very wide, giving the sense of a car dominated environment and making pedestrian crossing challenging. The site itself appears as open agricultural land. There is a good view of the background hill and associated field parcels.

VIEW 4 – *Analysis of Proposed Development*: The entry houses to the development are quite visible, but at this angle much of the scheme blends together, giving the sense of higher density but a smaller development.

LVIA provided recommendations to the architects with regards the treatment of House no. 1 and this was carried out with success (refer mitigation measures in part 12.8). The bend in the site road and alignment of houses results in a good rhythm. Of concern was whether or not the apartments would visually rise above adjacent rooflines. They do not.

The double roofline of the hotel is visible in the lefthand side of the image. The most impactful piece of ground in this image is the undeveloped parcel between the hotel and the site. This allows a visual green corridor with continued views of the background ridgeline. To the foreground, the junction width gets

reduced and a new pedestrian crossing introduced. This gives better definition to the N71 and improved pedestrian safety, with slight improvements to the character and aesthetic.

VIEW 4 – *Predicted Impact (level of impact, type of impact)*: **Slight, Positive**

VIEW 5

VIEW 5 (View from Park Road at the Site and Hotel Entrances, looking southwest) – Distance to main site = 185m

VIEW 5 – *Reason for Receptor Selection*: As one of two entrances to the site, this is a new junction and makes some alterations to the hotel car park. This angle was chosen to catch the edge of the hotel, the proposed roundabout and as much of the housing as possible. The aim is to assess the impact on hotel character and how the bridge might appear.

VIEW 5 – *Existing Site Character from this Receptor*: The existing landscape is well-maintained and feels associated with the Clonakilty Park Hotel. Much of the site is screened by the existing foreground landscape and feels detached from this receptor. It is clearly a secondary, background rural landscape.

VIEW 5 – *Analysis of Proposed Development*: The most notable change is obviously the introduction of a new road. It replaces and reduces the amount of fringe planting.

Most of that planting was ornamental with a low biodiversity value. New planting is either native or of high pollinator value. However, the actual quantum is less.

The new road includes estate signage. The hotel has a larger island for presentation and for car park screening, but no longer have the large gravel embankment as part of the arrival. The bridge makes an attractive feature and allows some visual interaction with the watercourse, which is currently unavailable.

The east end of the proposed housing scheme is visible, with the single storey step-down houses mitigating visual impact. The field of view has narrow, but the scheme still appears to have a large offset

to the hotel. As north boundary vegetation matures, the houses will become less visible, reconstructing the character of a green buffer.

VIEW 5 – *Predicted Impact (level of impact, type of impact)*: **Significant, Neutral**

VIEW 6

VIEW 6 (View from Clogheen Grove Road, looking northwest) – Distance to site = 190m

VIEW 6 – *Reason for Receptor Selection*: We wanted to represent a view from the cluster of residences east providing a good view of the site without compromising neighbour privacy.

VIEW 6 – *Existing Site Character from this Receptor*: Despite being at the edge of town, this neighbourhood has suburban qualities. Looking towards the site, one gets a sense of openness but with a backdrop of warehouses, fences and the Creamery. But, one also gets a quality views of green hills in the distance.

VIEW 6 – *Analysis of Proposed Development*: The entry houses at the east end of the development and step-down houses are visible, particularly the rooflines.

The offset distance of houses appears comfortable so as not to be overbearing.

The houses obscure the warehouse zone and part of the Creamery, but not all of it.

The background hillsides are still prominent features to which the proposed scheme does not obscure or detract from. Four private residential rear gardens currently face the farmland and will inevitably feel the impact of having agricultural land evolve into a housing estate.

However, the offset is large, with a field parcel in between being retained. The background hillside is still visible and current industrial views will now be obscured.

VIEW 6 – *Predicted Impact (level of impact, type of impact)*: **Slight, Neutral**

VIEW 7

VIEW 7 (View from Lady's Cross Housing Estate, looking southeast) – Distance to site = 80m

VIEW 7 – *Reason for Receptor Selection*: This is the only housing estate sharing a boundary with the site, albeit only 60 lin.m. As the amenity green is the public domain of the estate, we aimed to find a location from the green where there were visual gaps. It is important to understand if there is any overbearance.

VIEW 7 – *Existing Site Character from this Receptor*: The site itself is several metres lower than the Lady's Cross estate, so it is visually not discernible from the amenity green, apart from an existing spoil mound. The rising hillside south of the site is visible. The amenity green is encircled by houses, with visual gaps no more than a few metres.

VIEW 7 – *Analysis of Proposed Development*: Very little of the proposed houses is visible. This photomontage relies heavily on the red outline to assess the extent of housing. Due to the variance in elevation, but also distance, the proposed scheme appears to be lower than Lady's Cross. This is assisted by the fact that the scheme is designed so that there are no proposed houses bounding the Lady's Cross houses, only a planting buffer and a road. Consequently impact will be modest. With that, it is important to incorporate urban tree planting along the roads and to the fronts of houses to soften views towards the site. Positively, the scheme will remove the existing spoil on site and filter views of the warehouses.

VIEW 7 – *Predicted Impact (level of impact, type of impact)*: **Slight, Neutral**

The LVIA also reviewed 4 no. *Computer Generated Images* (CGI's). These are modelled visualisations based on the Architectural proposals.

They are accurate in terms of layout, size and scale, but are not geo-referenced images. They are not representative of an existing sensitive view receptor. Their benefit resides in the fact that they are close-up views and give a good sense of the character of the architecture and associated paving. Landscape is

indicative. The CGI's are often used internally and are generally representative of the experience within a completed development. Refer Figure 12.7b below.

Figure 12.7b. Computer Generated Images representing architectural finishes. (upper left) Step-down units; (upper right) 4-bed apartment; (lower left) Semi-detached houses; (lower right) 15-bed apartment.

Alternative Views Considered

Additional landscape character areas and designations were considered and reviewed with the result that there was either a **Slight** or an **Imperceptible** impact to these areas, but not greater than those identified through the photomontage process.

The other locations included nearby archaeological features, the designated Scenic Route, Protected Structures, local roads and other residential estates. The alternative views considered are also identified on the *View Receptor Map* (Figure 12.7a) and summarised below.

- Alternative View A – Garda Station at McCurtain Hill – An NIAH building (20846051), it sits at a highly elevated position with views over the town centre. The angle to the site makes it imperceptible.
- Alternative View B – St. Mary's Cemetery – Cemeteries benefit from special settings and this one is highly used. Due to its lower elevation, views towards the site from within the cemetery are obscured by intervening vegetation.
- Alternative View C – Clonakilty Architectural Conservation Area – The town centre was walked to assess potential visibility. The ACA primarily sits within the river basin (low elevation) making the site imperceptible. The ACA has some elevation gain at Patrick's Street and McCurtain Hill, but not enough to overcome the distance and angle.
- Alternative View D – Bushmount Convent / Convalescence Home (Protected Structure no. 1558) – At less than 500m to the site, it is considered a very close view given the sensitivity of the setting. The

facility and grounds are at a low elevation and surrounded by mature trees. The site is imperceptible from multiple angles.

- Alternative View E – Clonakilty Regional Park – A well-used playground and picnic area with long dwelling times. The Park Road junction is visible, but the housing site is obscured.
- Alternative View F – Designated Scenic Route no. 74 - This is the start/terminus for the coastal road to Inchydoney and Ardfield. The site is not visible from any point on the route and would thus have no influence into the townscape character upon arrival.
- Alternative View G – Historic Water Pump at Clogheen Road Junction (Protected Structure no. 1675) – A former communal centrepiece, this junction has a view towards the site. Intervening terrain and houses mean the site is not visible – only structures in excess of 5-6 storeys might be visible.
- Alternative View H – Cluster of Fulacht fía South of Site – These features lie on the south side of the hill, meaning the crest of the hill obscures the site. The site is low enough on the hill that the 3-storey units are unlikely to be visible from the archaeological features.
- Alternative View I – The Bog Road South of the Site – Coming as close as 85m to the site, this track is indicated on the 1845 Ordnance Survey map. It is a pedestrian / farm use only track. The proposed development would be visible, but with the elevation change it would not impact views of the distant hills (similar to View Receptor no. 6).
- Alternative View J – An Sruthán Beag Residential Estate off the L4007 – This is a newly constructed development by the applicant with views across the fields. The rise in terrain towards the site means development would only be slight or imperceptible.
- Alternative View K – N71 Junction at The Miles – A busy junction, any impact on this portion of road would need to be considered. With intervening vegetation and structures, the site is imperceptible.
- Alternative View L – Clogheen Industrial Park North of Site – This access road is directly aligned with the site and would have visibility. However, this is a low sensitivity receptor and the scheme is making a concerted attempt to screen the warehouses from within the scheme, so actual visibility is likely to be mitigated. View Receptor no. 3 provides a similar viewing angle and expected degree of visibility.

12.8 Proposed Mitigation Measures

During the design and construction stages of the project, consideration should be given on how to avoid any adverse impacts on views from the visual receptors and impact on greater landscape character. As with any development, some degree of impact is inevitable and, wherever possible, measures should be

identified to mitigate the adverse nature of these impacts. In this instance where development is replacing a greenfield site, mitigation measures are proposed to minimise any adverse impacts due to this transition.

Mitigation Measures at Design Stage

- Fully contiguous native planting corridors should be provided from north to south and from east to west on this site. These should tie together and be linked to the watercourse habitat.
- To minimise visual impact, roofing material to any structures should be non-reflective with a dark colour tone.
- The gable end of House no.1 (entering the estate) is a visible feature and should not be a blank gable. Windows or a feature finish are recommended.
- The 3-storey 15-unit apartment blocks at the top of the site are the only structures with flat roofs. To ensure visual compatibility, the upper stories of these blocks require a specialist treatment to blend in with the surrounding roofscape character.
- Planting within 10m of the watercourse shall be carried out with native species only.

Mitigation Measures at Construction Stage

- The central SuDS / Biodiversity basin should be constructed during the first phase of construction and planted minimum 6 months prior to its use as stormwater attenuation, to ensure soil settlement and vegetation are establishment.
- The top 350mm of existing soil shall be salvaged, stored on adjacent lands and used within the scheme for landscape completion.
- Salvaged topsoil should not be stored more than 8 months if kept in piles more than 1m high. Rotate stockpiling to fit this time period, to ensure healthy aerated soil for use in the completed development.

12.9 Investigative Scenarios and Impact

Do Nothing Scenario

The site, which is currently under agricultural use as arable crops, would likely remain under agriculture and resemble its' current condition under the *Do Nothing Scenario*. The ornamental trees and shrubs at the northeast entrance are mature enough that they will likely prevent new native species from taking hold and flourishing. This will limit the potential for quality biodiversity enhancement. There is no natural regeneration of native tree species evident on site, apart from Willow in the watercourse. Without intervention, the likely candidates for regeneration are Gorse and Bramble.

Temporary Impact

As witnessed on housing sites across the country, construction of the development would add temporary machinery to the landscape, temporary car parking on existing soils, and depots for soil and material. With ornamental trees and shrubs removed near the hotel car park, the construction scene could be very visible. This will likely require a temporary security fencing or hoarding to screen the construction site. This is a *Negative* visual and landscape character impact, but it is a *Temporary* one. Implementation of short-term

mitigation measures should be focused on the interfaces with the hotel car park. This will help mitigate negative impact on the local community.

Irreversible Impact

The most significant *Irreversible* landscape impact is the loss of agricultural land. As moderate quality agricultural lands that are increasingly being surrounded by development, loss of land here is perceived as better than loss of other peripheral agricultural land. Secondary *Irreversible* landscape impacts consist of the increase in impermeable surfaces and modification of natural drainage patterns. These are viewed as having a *Slight, Positive* impact, as the development compensates for and improves upon them. In terms of landscape character, the increase of development along the town periphery becomes permanent. Because residents could still walk to or cycle to town, this is a notable evolution and viewed as a benefit, resulting in a *Moderate, Positive* impact.

Cumulative Impact

Cloheen has witnessed a number of residential new builds in recent years with 228 homes completed across 3 different estates (planning application no. 18/605, 18/703 and a Part 8 development). Another 93 units have been granted permission (ABP-318260-23). These have resulted in an expansion of the urban fringe to the southwest in what is now becoming a viable neighbourhood. All of these developments are further away from the town centre than the proposed LRD application. They are also all situated at lower elevations.

Prior to the recent developments, expansion happened higher on the hillside at Cloheen Heights (southeast of the site). This has been visually detrimental to the setting of the town centre. The proposed scheme begins to rebalance both of these developments by consolidating peripheral expansion. It sits low on the hillside, but is able to make a visual connection to Cloheen Heights.

This connection then extends to Lady's Cross, illustrating good town planning by closing the gap in the development corridor and introducing new residents closer to the N71 amenity (regional park, leisure centre, adventure centre, cinema) and the historic town centre.

Cumulatively, adding over 500 homes in the span of a decade has certain challenges. But, from a visual and landscape character perspective, development at this location has a very positive impact. It can improve the suburban cohesion, while allowing the green hillsides to continue to serve as a natural framework for the town.

Residual Impacts

It could be anticipated that this development may expedite evolution of the open space zoning north of the site.

The planting of native woodland corridors combined with meadows and improved stormwater management will provide long-term improvement to local habitat beyond the site boundary and result in

a greater diversity of flora and fauna. This is assessed even in the context of development, as the long-term use of lands for arable crops imposes its own habitat limitations and environmental impacts.

The loss of agricultural land within the town development boundary may receive mixed public commentary. Some may perceive it as a logical land use evolution and some may see it as a degradation of local character.

By providing an extremely robust SuDS solution within the estate, the system can be monitored for effectiveness and potentially referenced as a best-practice built example for nature-based stormwater solutions in West Cork.

12.10 LVIA Conclusion

The site has a moderate degree of visibility, but a low degree of sensitivity. It is imperceptible from the most sensitive statutory designations and from the historic town centre. To perceive impact, one must typically view it from the north or be within close range. Even then, the site has a degree of physical separation, so impact is muted. When visible, impact is typically *slight*, with greater impact nearest the hotel.

The proposals will have a degree of positive impact on the urban fabric of Clonakilty, particularly along the N71, by visually solidifying the built link between the town and existing development in Cloheen. It dilutes the presence of the warehouses to the north and makes a logical visual transition from east to west. The scheme should improve pedestrian and cycling footfall within the town centre, by means of increased population and improved links. The proposals will be visible from the N71, but will blend in well and have enough of an offset that it is unlikely to impact standard road users. New amenity will be available to local residents, including play areas and improved biodiversity. The scheme is quite robust on *positive* landscape amenity.

The change in land use will inevitably result in a *perceived adverse* impact, particularly for the small number of neighbours. However, this impact has been designed out as a result of offsets and introduction of peripheral planting buffers. The proposal to plant 720 no. native transplants and 360 no. semi-mature trees will transform this nearly treeless site into an active environment for small birds and insects that currently doesn't exist on site and will inevitably spill over to adjacent land uses.

Adherence to the landscape mitigation measures will aid in creating a successful development. The architectural quality and modest height and density are welcome at this fringe development site and are not components that will result in adverse impact. When complete, the overall Visual impact will be *Slight, Neutral*, while Landscape Character impact will be *Slight, Positive*. Fully implemented, there will be no moderate, significant or profound adverse impacts.

12.11 References

This chapter has been prepared in accordance with EPA guidelines, informed by the following relevant documents:

Environmental Impact Assessment of Projects: Guidelines on the Preparation of the Environmental Impact Assessment Report (EIAR) (2017); European Commission (EC)
Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013); EC
Guidelines on Information to be Contained in Environmental Impact Assessment Reports (May 2022); Environmental Protection Agency (EPA) Ireland
Guidelines on Landscape and Landscape Assessment (2000); Department of the Environment, Community and Local Government (DOE)
Guidelines on Landscape and Visual Assessment (2002); Irish Landscape Institute (ILI)
National Landscape Strategy 2015-2025; DOE
4th National Biodiversity Action Plan (2023-2030)
Cork County Development Plan 2022-2028 (CCDP); Cork County Council
Guidelines for Landscape and Visual Impact Assessment (GLVIA), third edition (2013), Landscape Institute (UK)
LCA and LVIA of Specified Infrastructure Projects – Overarching Technical Document (Dec 2020); Transport Infrastructure Ireland (TII)
Visual Representation of Development Proposals, Landscape Institute (UK, 2019); Technical guidance notes for photomontages
British Standards Guideline BS 5837:2021 – *Trees in Relation to Construction*
A Guide to Habitats in Ireland, J. Fossitt (2000); The Heritage Council
Heritage Houses of County Cork (2014); Heritage Unit, Cork County Council

13.0 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

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13.1 Introduction

This chapter of the EIAR comprises an assessment of the likely significant effects of the proposed development with respect to land, soils, geology, and hydrogeology. The proposed development is located at Cloheen, Clonakilty, County Cork.

The proposed development will consist of a large-scale 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.

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 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. Please refer to Chapter 4 of the Environmental Impact Assessment Report for the full Development Description.

This chapter of the Environmental Impact Assessment Report (EIAR) was prepared by David Casey, BSc MSc MCIWEM, and Justin Nangle BSc (Hons) of JBA Consulting Engineers and Scientists Ltd. David has over 10 years' experience as an environmental consultant and has worked on numerous projects involving preparation of Water and Hydrology chapters for Environmental Impact Assessments. Justin has over 2 years' experience as an environmental consultant and has worked on several projects involving preparation of Soils, Geology, Hydrology, and Hydrogeology chapters for Environmental Impact Assessments.

13.2 Legislation, Policy and Guidance

13.2.1 Detailed Methodology

The methodology used in this assessment follows current Irish guidance as outlined in:

- Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

- Department of Housing, Planning and Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- National Roads Authority (NRA) (2008) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Institute of Geologists of Ireland (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- The Commission Communication of 22 September 2006 entitled 'Thematic Strategy for Soil Protection' and the Roadmap to a Resource-Efficient Europe.

In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

In accordance with guidance outlined in the EPA EIA Guidelines (2022) and the IGI Guidance (2013), the following terms are used in the assessment of effects:

- Quality of an effect is described as either Positive, Neutral or Negative.
- Significance of an effect is described as either Imperceptible, Slight, Moderate, Significant, Very Significant or Profound.
- Duration of an effect is described as either Momentary, Brief, Temporary, Short-term, Medium-term, Long-term, Permanent, or Reversible.

In accordance with the IGI guidance (2013), the study area has been set as a 2km radius from the site boundary. This is the recommended minimum distance in the Institute of Geologists of Ireland (IGI) guidelines, and takes into account the lack of karstic or other sensitive subsurface features at the site, and the scale and nature of the development.

Site Visit

JBA undertook a site visit on the 7th of March 2025. The purpose of the site visit was to walkover the site and note any possible sources of contamination or features relevant to land and soils. On the site visit it was noted that the majority of the site is in use for agriculture, with a small section at the northwest corner containing spoil heaps of gravel and general construction waste.

The spoil heaps and disturbed ground are confined to the northwestern corner of the site, near the entrance from the northwest. These appear to be a mix of construction waste and soil, and have been vegetated with grass in places. No contamination sources were noted, and there were no signs of dumping on site. Some parts of the ground here remain unvegetated, likely due to disturbance from farm vehicles entering and exiting the site. Figures 13.1 to 13.3 show the site as it appeared on the site visit.

Figure 13.12: General site view

Figure 13.13: View of the northwestern corner of the site

Figure 13.14: Spoil heaps in the northwestern corner of the site

Sources of Information

This assessment was considered in the context of the available baseline information, potential effects, consultations with statutory bodies and other parties, and other available relevant information. In collating this information, the following sources of information and references were consulted:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)
- EPAMaps.ie
- GSI Map Viewer
- OSI.ie – 6" & 25" maps
- Aerial Mapping
- Cork County Development Plan 2022-2028
- General Soil Map of Ireland 2nd edition (www.epa.ie).

Governing Legislation

The EU has set out requirements for Environmental Impact Assessments under the EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU). The principal piece of legislation under which an EIA may be undertaken for developments in Ireland is The Planning and Development Act, 2000 (as amended). Further regulations are explained in the Planning and Development Regulations 2001 (as amended) and European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (as amended).

The legislation relevant to this chapter is listed below. This legislation was consulted during the preparation of this assessment, and the limits contained within them will be used for the purposes of monitoring during construction of the proposed development.

- Water Framework Directive (2000/60/EC);

- Groundwater Directive (2006/118/EC);
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010);
- European Union Environmental Objectives (Groundwater) (Amendment) Regulations, 2016 (S.I. No. 366 of 2016);
- Waste Management Act 1996, as amended;
- Habitats Directive (92/43/EEC)

13.3 Receiving Environment

13.3.1 Site Location and Setting

The subject site is located in the Cloheen area c. 500m southwest of Clonakilty town centre, Co. Cork and c. 43km south-west of Cork City Centre. The site is bounded by agricultural lands to the north, south, and the majority of the west, with residential areas to the east and north-west. The Park Road (N71) is c. 259m north of the site with Cloheen Cottages located c. 375m to the west and Cloheen Road c. 349m to the east.

The site is served by 1 no. vehicular entrance from the northwest. This is from Bóthar Na Páirce and Lady's Cross. Cloheen Cottages runs north until the junction with The Miles and Park Road from there into Clonakilty town centre. Other uses in the vicinity of the site include; Cloheen Industrial Park adjacent to the north-western boundary, Enterprise Park approx. 158m to the north-west, Clonakilty Park Hotel adjacent to the eastern boundary and other land uses associated with Clonakilty.

13.3.2 Bedrock Geology

The 1:100,000 GSI bedrock geology map, available on the GSI map viewer (GSI, 2021) was consulted to understand the underlying bedrock geology in the area. The site area is primarily underlain by Cross-bedded sandstone and minor mudstone sandstone (Toe Head Formation Formation), with the northern portion underlain by flaser-bedded sandstone and minor mudstone (Old Head Sandstone Formation).

13.3.3 Soils – Irish Soil Information System (SIS) and Quaternary Sediments

The national Irish SIS maps show that the site is underlain primarily by Clashmore (1100n), and to the south Ross carbery (900e) both described as coarse loamy drift with siliceous stones with Made ground located approx. 275m to the north and 176m to the north-east, associated with the built-up areas of Clonakilty.

The quaternary sediments underlying the site are predominantly Sandstone and shales till (Devonian/Carboniferous), the southern portion is underlain by Sandstone till (Devonian). Beyond the site there is Bedrock at the surface scattered around the surrounding area with the closest 368m to the west. Estuarine sediments (silts/clays) are located 830m south of the site at Muchruss Sound at the Ring Head area.

13.3.4 Karst

The GSI map viewer (GSI, 2021) provides valuable information on the location of Karst features in the study area. Review of the web-portal revealed there are no karst features within the 2km study area or the surrounding areas, the closest being over 30km away to the northeast towards Cork City.

13.3.5 Geo-Hazards

According to the GSI map viewer (GSI, 2021), there are no geo-hazards (Landslides) at the site or surrounding area.

13.3.6 EPA Licensed Facilities and Waste Facilities

Clonakilty and Environs Wastewater Treatment Plant (WWTP) is located approx. 1.3km east of the proposed site, at Clonakilty Harbour. Based on Uisce Éireann's (UE) 2023 Annual Environmental Report, the WWTP has a capacity of Population Equivalent (PE) 20,500, while the current PE of its area is 13,364.

There are no waste EPA licenced activities in the vicinity of the proposed development (e.g., waste facilities, Industrial Emissions Licensing (IEL), or Integrated Pollution Control (IPC) sites). The closest EPA licenced Facility is Benduff Landfill Site, Rosscarbery approx. 16.3km to the west.

13.3.7 Quarries and Mines

The Extractive Industry Register (www.epa.ie) and the GSI mineral database (www.gsi.ie) were consulted to identify any historic/existing mineral sites within the study area. Review of the stated databases confirmed that no mines are located at the site. The nearest mineral locality is a MESL slate bed noted on a historic OSI 6" map approx. 4km east.

13.3.8 Geological Heritage

No Geological Heritage Sites are in the vicinity of the proposed development.

13.3.9 Designated Ecological Sites

Several sites designated under the EU Habitats and Birds Directives, known collectively as Natura 2000 sites, as well as those under the Wildlife Act, are close to the proposed development. These sites have been assessed in the Biodiversity Chapter 10 of this EIAR, and the AA Screening for the proposed development.

Clonakilty Bay Special Protection Area (SPA) is approx. 1.5km downstream of the proposed development. The SPA is of high ornithological importance and contains a fine range of habitats from saline lagoons, to brackish grasslands, open freshwater marsh and wet grassland.

Clonakilty Bay Special Area of Conservation (SAC) is about 1.5 km downstream, and is designated for mudflat and sandflats, and diverse dune.

13.3.10 Regional Hydrogeology

Groundwater

The proposed development is located within the Skibbereen-Clonakilty (**E_SW_G_085**) groundwater body. The waterbody was classified as Good status for the most recent Water Framework Directive reporting period (2016-2021) and is Not at Risk.

There are no groundwater monitoring sites in the vicinity for Group Water Schemes, Public Water Supplies, Regional Water Supply Schemes, or Source Protection Zones, nor are there any Group Water Scheme abstraction sites.

Groundwater vulnerability is a measure of the likelihood of contamination of groundwater as a result of human activities. It is a function of the characteristics of the underlying geology and soils at a particular site, and how easily potential contaminants could move through this underlying material to the groundwater layer. Groundwater vulnerability at the site is mostly high with a small portion of the far north-eastern section moderate. Groundwater vulnerability at the site is shown in Figure 13.4.

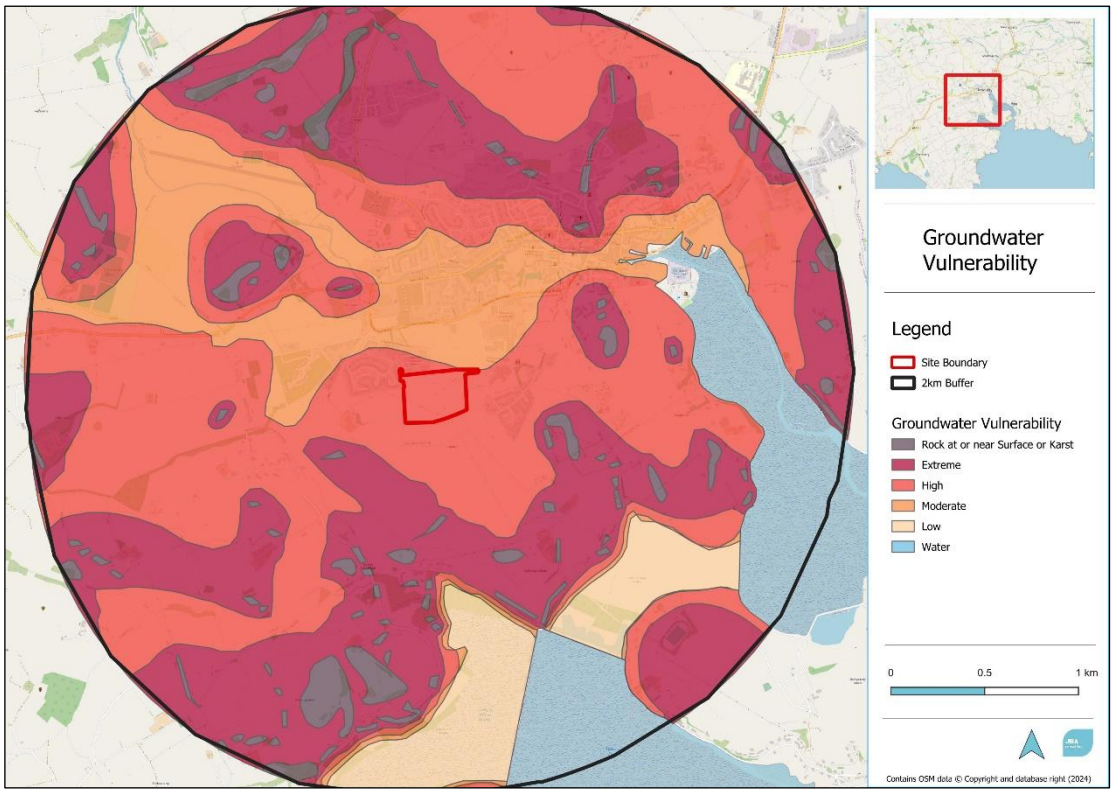

Figure 13.15. Groundwater vulnerability within 2km of the site

Aquifer

According to the GSI map viewer, the bedrock aquifer underlying the site is of local importance, being moderately productive only in local zones. South of the site is an aquifer that is classified as poor – bedrock which is generally unproductive except for local zones.

Groundwater Extractions

The EPA groundwater abstractions register was consulted. This shows all registered groundwater abstractions which are above 25m^3 per day, with grid locations rounded to the nearest kilometre (for privacy reasons). There is one registered groundwater abstraction within the 2km study area (plus 1km to account for grid location rounding). This is at the Clonakilty WWTP northeast of the site and is associated with wastewater treatment. The WWTP is approx. 1.2km northeast of the site.

No GSI groundwater wells or springs are within the site boundary. Several are located in Clonakilty, generally to the north and northeast of the site. These are for agricultural and domestic, or unknown uses.

13.3.11 Site Environment

Most of the site is in use as agriculture for tillage farming. A small portion of the northwest corner of the site was previously in use as a compound, with several mounds of made ground material which has since been partially vegetated (Figure 13.5). Gravel and other general construction waste is visible in these mounds. Further images are above (Figures 13.1-13.3)

Figure 13.16. Earth mounds in the northwest corner of the site

13.4 Characteristics of the Proposed Development

The development will consist of a residential development comprising 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.

- 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 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.

13.4.1 Surface Water

The proposed surface water management system for the proposed development has been designed in accordance with the principles of Sustainable Drainage Systems (SuDS) and the Cork County Development Plan. A Stormwater Management Plan has been developed for the proposed development by the project engineers (outlined in the Infrastructure Report by DOSA) to control the outflows from the new development. The site is split into two separate surface water catchments, with one outflow to the west and one to the east. Surface water will be controlled by SuDS features, a vortex flow control device, and associated attenuation tanks. The attenuation outflows will be fitted with flow control devices which will limit discharge to the pre-development greenfield runoff rate.

The SuDS strategy includes a combination of measures such as swales, tree pits, filter drains, and attenuation. In addition to the natural filtering which will be provided by these measures, each surface water catchment on site will be fitted with a hydrocarbon interceptor to remove contaminants and silt from the surface water before discharging from the site. Surface water will discharge from the site to the existing stream to the east, and to the existing surface water network at Lady's Cross residential estate to the west.

13.4.2 Foul Water

A dedicated foul system has been provided as part of the proposed development. The design of this system is in accordance with the relevant guidelines and is shown on the drawings and report prepared by DOSA Consulting Engineers. The foul system and surface water system are separate.

A pre-connection enquiry was submitted to Irish Water, who confirmed that subject to a valid connection agreement being put in place, the proposed connection can be facilitated.

13.5 Predicted Effects of the Proposed Development

13.5.1 Construction Phase

Construction activities pose a risk to land and soils, particularly to hydrogeological receptors such as groundwater bodies and aquifers. The sections below outline the potential effects during construction on land and soils without any mitigation. Mitigation measures are discussed in Section 14.6.

Excavation

Changes to the soil and geological environment as a result of the scheme will arise predominantly through excavation and subsequent infilling. The total volume of material to be excavated will be confirmed following detailed design.

Topsoil will be reused where possible for landscaping and exact volumes to be retained will be provided by the appointed contractor. Any surplus soil will be characterised and removed offsite in accordance with all relevant waste management legislation. Temporary storage of soil will be carefully managed in such a way as to prevent any potential adverse impact on the receiving environment and the material will be stored away from any surface water drains. Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust.

The contractor can also apply to the EPA for an Article 27 derogation for the material to allow it to be used elsewhere on another site as a byproduct, further reducing the effects of its removal. As a worst-case scenario, and if low levels of contamination were detected in the soil, the contactor could send the material to an EPA-licensed soil recovery facility provided the levels of contaminants are below the soil trigger values for the recovery facility.

The effects of the proposed development on soils due to excavation will be **slight, negative, long-term**.

Accidental Spills and Leaks

During construction of the development, there is a risk of localised accidental pollution incidences from the following sources:

- Spillages or leakage of temporary oils and fuels stored on site;
- Spillages or leakage of oils and fuels from construction machinery or site vehicles;
- Spillage of oil or fuel from refuelling machinery on site; and
- Run-off from concrete and cement during the construction of the bridge and surface water outfall.

Accidental spillages would result in localised contamination of surface and groundwater underlying the site should contaminants migrate through the subsoils and impact underlying groundwater.

Any soil stripping and foundation construction will further reduce the thickness of subsoils and the natural protection they provide to the underlying aquifer. Concrete is highly alkaline and any spillages which migrate through subsoil can be detrimental to groundwater quality.

The potential impacts could derive from accidental spillage of fuels, oils, paints and solvents, which could impact groundwater quality or soil quality if allowed to infiltrate to ground. The potential impact from accidental spills and leaks during construction, with no mitigation in place, would be **moderate, negative, and temporary**.

Import of Soil

The importation of infill material can introduce contamination to the site if sourced from inadequate facilities, i.e., soil that is contaminated with hazardous materials or invasive plant species or their seeds could be imported, thereby spreading those materials or invasive species to the proposed development site. Without mitigation, the effects of importing contaminated soil would be **long-term, slight, adverse and not significant.**

13.5.2 Operational Phase

Removal of soils and construction of the buildings extended areas could reduce the groundwater recharge slightly. However, the proposed development retains a significant amount of green space through which water can percolate to ground. As such the reduction of the groundwater recharge will not be significant.

Limited land take will occur as a result of the proposed development. The land to be built on is currently in use for agriculture but is zoned for residential use in the County Development Plan. While there will be land take for the proposed development, there is sufficient agricultural land in the surrounding areas, and the site is zoned appropriately. There will therefore be a long-term, not significant negative effect on land take.

The potential effect on land and soils during operation is **long term, imperceptible effect, with a neutral effect on quality** i.e., an effect capable of measurement but without noticeable consequences.

13.5.3 'Do Nothing' Scenario

In the event of the proposed development not being constructed, there would be no resulting impacts on land and soils at the site, and the site would continue in use for agriculture. The existing land use and subsoil environment at the site would remain in place. The Do-Nothing effect would be **long-term, not significant, neutral** with regard to land and soils.

13.6 Mitigation Measures

13.6.1 Construction Phase

A Construction Environmental Management Plan (CEMP) has been written by DOSA Consulting Engineers for the proposed development. The CEMP will assist the contractor in preventing, minimising, or managing environmental effects during the construction phase of the development. The CEMP was designed in accordance with standard best practice guidance outlined in the following:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532);

- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016); and
- Environmental Good Practice on Site (3rd edition) (C692).

The CEMP also includes site-specific measures to mitigate potential effects on land and soils, including groundwater. These are outlined below.

Chemical Pollution

Mitigation measures for the protection of groundwater and soils from chemical pollution involve environmental operating plans, chemical storage, and Emergency Response Procedures.

At construction stage, the following mitigation measures are proposed:

- Appropriate bunding, storage and signage arrangements for all deleterious substances (e.g., fuels, oils, and chemicals) will be used.
- Fuels, lubricants, and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice (Enterprise Ireland BPGCS005).
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the Site for disposal or recycling.
- Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled.
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the Site and properly disposed of.
- Refuelling will be carried out from tanks or delivery vehicles on a designated impermeable surface and will not be left unattended.
- Plant will not be left running when not in use (i.e., no idling) and plant with dust arrestment equipment will be used where practical.
- The fuel storage area will be properly secured to prevent unauthorised access or vandalism and all triggers will be locked when not in use. Spill kits and drip trays will be used during refuelling to collect any potential spills or overfills. No vehicles or containers will be left unattended during refuelling.
- Mobile fuel bowsers may be used for refuelling heavy equipment. Bowsers used will be double skinned and spill kit/drip tray equipment will be used during refuelling which will take place away from any nearby drains or watercourses and from any surface water drainage gulleys.

Silt and suspended solids

Mitigation measures for the protection of groundwater quality from silt and suspended solids on site involve silt control, particularly at any drains or open excavations.

At construction stage, the following mitigation measures will be implemented:

- The contractor will construct a site compound at a location remote from any drains. Positioned at a location that is a minimum of 75m set back from the nearest point of the existing drainage channels along the eastern boundary of the project site.

- All soil stockpiles will be covered (vegetated or with tarpaulins/similar material) to minimise the risk of rain runoff/wind erosion. Vegetation will be established as soon as possible on all exposed soils.
- A variety of silt control methods, e.g., Check dams and / or straw bales, silt fencing and silt bags, silt traps, dewatering, silt sumps, shall be put in place downstream of exposed soils or soil stockpiles to contain surface water runoff from the site, in accordance with Section 6 of the CEMP.

Import and Export of Soil

Fill material will be tested and imported from a licensed facility to ensure no external contamination is introduced to the soil and geological environment.

The contractor will be required to carry out a waste characterisation of the material that will be taken off site for disposal. A waste acceptance criteria (WAC) analysis and asbestos levels shall be determined on any material that will be taken off site for disposal. The acceptance of material at a licenced soil recovery facility will be subject to the approval of the facility operator.

13.6.2 Operational Phase

No significant effects are anticipated during the operational phase. Therefore, no mitigation measures have been proposed.

13.7 Predicted Effect of the Proposed Development Post-Mitigation

13.7.1 Construction Phase

Following implementation of the proposed mitigation measures, the residual effects of the proposed development on land, soils, and hydrogeology will be minimised.

Following the implementation of the mitigation measures, the effects during the construction phase will be **short-term, slight, negative**, reducing to **imperceptible** over time.

13.7.2 Operational Phase

The design of the scheme has been such that there are no predicted effects on the water and hydrogeological environment during the operational phase of the development.

Overall, the long-term effects of the proposed development will be **neutral and imperceptible.**

13.8 Monitoring

13.8.1 Construction Phase

During construction, Level platforms will be excavated for each residential building. Disturbed subsoil layers will be stabilised as soon as practicable (e.g., backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping).

Stockpiles of subsoil material shall be located separately from topsoil stockpiles. These stockpiles will be monitored throughout the construction phase. Monitoring of ground conditions and stability of excavations will be monitored on an on-going basis. Once the earthworks and landscaping are completed, the risk of sediment loading of water courses is significantly reduced

The main areas of potential impact with respect to earthworks are as follows: -

- Excessive Dust deposition
- Increased sediment loading in the surface water runoff from the site and entering the adjoining stream.
- Potential spillage of oil and diesel used on site for plant and equipment

13.8.2 Operational Phase

No operational phase monitoring is required for land and soils.

13.9 Interactions and Cumulative Effects

13.9.1 Interactions

The EIAR must also consider in-combination effects, or the interactions between the different factors discussed.

Surface water effects are directly linked with hydrogeology or groundwater effects, with surface water pathways leading to groundwater and vice versa. Surface water runoff can also have an effect on soil quality in the area, with chemicals or suspended solids having an effect on soil fertility and contamination. These effects are further discussed in the Hydrology Chapter 15 of this EIAR. Without mitigation measures, the interaction of these two elements could lead to a short-term significant negative effect. With the proposed mitigation measures outlined in this chapter and in Chapter 15 of the EIAR, the potential interaction between these is reduced to a short-term, imperceptible, neutral effect.

The removal of material from the site will require vehicles using the road network in the area. Chapter 7 of the EIAR concludes that no significant effects are anticipated from traffic and transport during the demolition and construction phases. The CEMP also contains mitigation measures for the movement of vehicles, which when implemented will ensure that effects are further reduced. The interaction of these with land and soils will be temporary, imperceptible, neutral.

Interactions with biodiversity can occur through the spread of hazardous materials or contaminated land during construction. The spread of materials found in the soils (trace amounts of asbestos, lead, or hydrocarbons) could lead to habitat degradation, either on site or downstream through groundwater pathways. With the implementation of mitigation measures outlined in this chapter and Chapter 10 of the EIAR, and in the CEMP, interactions between biodiversity and land and soils will be short-term, imperceptible, neutral.

The material assets on site (surface and stormwater drainage) are assessed in Chapter 16. These have been designed in accordance with SUDS and the Greater Dublin Strategic Drainage Study. The potential for

effects on groundwater from these assets has been assessed in this chapter. Any interaction between material assets and land and soils will be long-term, imperceptible, neutral.

13.9.2 Potential Cumulative Effects

Cumulative effects are the result of several minor effects combining to create a more significant effect. The assessment of cumulative effects considers existing stresses on land, soils, and groundwater as well as developments close to this development that are in planning or are underway (which are outlined in Chapter 19).

Application Reference 18/703, situated west of the proposed development, is accompanied by a CEMP, NIS and associated design drawings. The construction phase of Application Reference 18/703 has been completed at the time of writing, so no cumulative effect during construction is likely. Once operational, the proposed development and Application Reference 18/703 are not likely to result in cumulative effects with regard to Land, Soils, Geology and Hydrogeology due to the designs of both and the nature and locations of both projects.

Application Reference 18/605, situated west of the proposed development, is accompanied by an NIS and associated design drawings. The construction phase of Application Reference 18/605 has been completed at the time of writing, so no cumulative effect during construction is likely. Once operational, the proposed development and Application Reference 18/605 are not likely to result in cumulative effects with regard to Land, Soils, Geology and Hydrogeology due to the designs of both and the nature and locations of both projects.

Application Reference 23/20, situated west of the proposed development, is accompanied by an NIS, CEMP, and associated design drawings. During construction, the proposed mitigation measures contained in the CEMPs for both projects will ensure that no cumulative effects on Water occur. Once operational, the proposed development and Application Reference 23/20 are not likely to result in cumulative effects with regard to Land, Soils, Geology and Hydrogeology due to the designs of both and the nature and locations of both projects.

A Part 8 Development by Cork County Council is situated at Pairc Thiar north of the proposed development. The Part 8 Development is complete at time of writing, so no cumulative effects during construction are likely to occur. Once operational, the proposed development and the existing Pairc Thiar development are not expected to result in cumulative effects on Land, Soils, Geology and Hydrogeology due to the inclusion of SUDS measures and the design of the proposed development.

No cumulative effects with regard to Land, Soils, Geology and Hydrogeology are expected as a result of the proposed development.

13.10 References

Cork County Development Plan 2022-2028

DoEHLG & OPW, Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)

EPA, 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2015)

EPA, 'EPA River Quality Surveys: Biological' available at: https://epawebapp.epa.ie/qvalue/webusers/

EPA, 'Guidelines on the Information to be Contained in Environmental Assessment Reports' (2022)

GSI, 'Geological Survey Ireland Spatial Resources' map viewer, available at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228 (2023)

IGI, 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements', (2013)

14.0 WATER

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14.1 Introduction

This chapter of the EIAR comprises an assessment of the likely significant effects of the proposed development with respect to the surface water environment. The proposed development is located at Cloheen, Clonakilty, Co. Cork.

The proposed development will consist of a large-scale 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.

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 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.

Please refer to Chapter 4 of the Environmental Impact Assessment Report for the full Development Description.

This chapter of the Environmental Impact Assessment Report (EIAR) was prepared by David Casey, BSc MSc MCIWEM, and Conor O'Neill, BA (Mod) MSc Adv Dip, of JBA Consulting Engineers and Scientists Ltd. David has over 10 years' experience as an environmental consultant and has worked on numerous projects involving preparation of Water and Hydrology chapters for Environmental Impact Assessments. Conor has over 5 years' experience as an environmental consultant and has worked on numerous projects involving preparation of Water and Hydrology chapters for Environmental Impact Assessments.

14.2 Legislation, Policy and Guidance

14.2.1 Detailed Methodology

The methodology used in this assessment follows current Irish guidance as outlined in:

- OPW / DoECLG planning guidance, "The Planning System and Flood Risk Management (2011).

- Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- Department of Housing, Planning and Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- National Roads Authority (NRA) (2008). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Institute of Geologists of Ireland (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU) as amended by 2014/52/EU). European Union 2017.

In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

In accordance with guidance outlined in the EPA EIA Guidelines (2022), the following terms are used in the assessment of effects:

- Quality of an effect is described as either Positive, Neutral or Negative.
- Significance of an effect is described as either Imperceptible, Slight, Moderate, Significant, Very Significant or Profound.
- Duration of an effect is described as either Momentary, Brief, Temporary, Short-term, Medium-term, Long-term, Permanent, or Reversible.

Sources of Information

This assessment was considered in the context of the available baseline information, potential effects, consultations with statutory bodies and other parties, and other available relevant information. In collating this information, the following sources of information and references were consulted:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)
- EPAMaps.ie
- OSI.ie – 6" & 25" maps
- Aerial Mapping
- Cork County Development Plan 2022-2028
- General Soil Map of Ireland 2nd edition (www.epa.ie).

Governing Legislation

The EU has set out requirements for Environmental Impact Assessments under the EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU). The principal piece of legislation under which an EIA may be undertaken for developments in Ireland is The Planning and Development Act, 2000 (as amended). Further regulations are explained in the Planning and Development Regulations 2001 (as amended) and European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (as amended).

The legislation relevant to surface water is listed below. This legislation was consulted during the preparation of this assessment, and the limits contained within them will be used for the purposes of monitoring during construction of the proposed development.

- Water Framework Directive (2000/60/EC);
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009);
- European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019);
- European Communities (Quality of Salmonid Waters) Regulations (S.I. No. 293 of 1988);
- Habitats Directive (92/43/EEC);
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010)
- European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. No. 366 of 2016);
- Local Government (Water Pollution) Act 1977
- Local Government (Water Pollution) (Amendment) Act 1990.

14.3 Receiving Environment

14.3.1 Site Location and Setting

The subject site is located approximately 500 metres southwest of the centre of Clonakilty, Co. Cork, and approximately 43 km southwest of Cork City.

The site is currently a green field, bordered by agricultural fields to the east, south and west. To the northwest, it is adjacent to commercial and residential developments. Green open space borders the site to the north.

The site is served by one vehicular entrance at its northwestern corner, from the adjacent existing residential development. This access provides a direct link to the N71 road.

14.3.2 Hydrological Environment

The site is situated within the Bandon-Ilen WFD catchment and the Clonakilty Stream sub-catchment. The sub-catchments are further divided into river sub-basins. River sub-basins act as the management and reporting units for the Water Framework Directive. The proposed development is located within the Clonakilty Stream_010 sub-basin. The significant pressures acting on the Clonakilty Stream_010 sub-basin are urban runoff, anthropogenic activities, and agriculture. Surface water within this sub-basin flows generally eastward into Clonakilty Harbour.

14.3.3 Watercourses

There are two surface waterbodies in the direct vicinity of the proposed development which are mapped by the EPA (Figure 14.1). Local topography, with a high point to the south of the site, means that surface

water flows generally north into the Clonakilty Stream. As a result, the site is not hydrologically connected to the Carhoo Stream and it will therefore not be assessed further in this chapter.

In addition to the Clonakilty Stream, an unnamed stream runs from south to north just to the east of the site boundary. This is shown in Figure 14.17. This stream enters a culvert further downstream and eventually flows into the Clonakilty Stream.

Note that the Clonakilty Stream is also called the Fealge River on EPA maps.

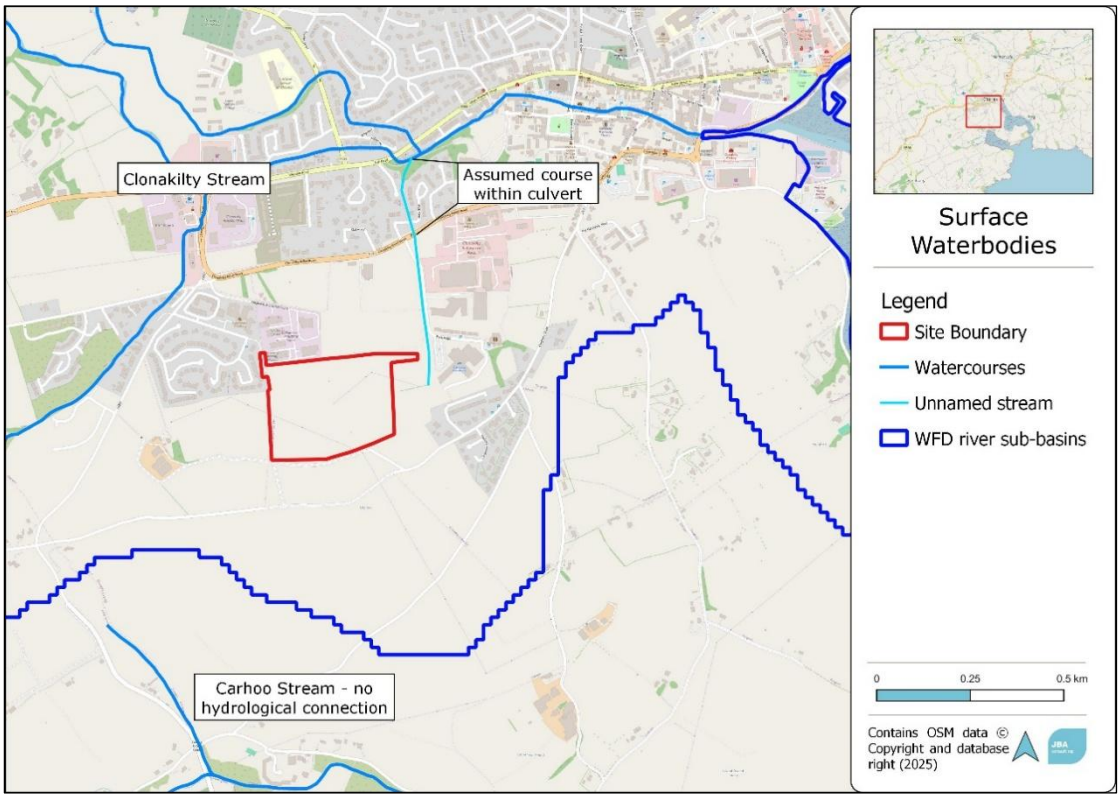

Figure 14.17. Watercourses in the vicinity of the proposed development

The unnamed and unmarked stream close to the eastern boundary of the site flows in a generally south to north direction. It is assumed that it follows the local road north from Clonakilty Park Hotel to where it meets the N71, and from here enters a culvert and continues north, where it eventually enters into the Clonakilty Stream. This stream is shown in Figure 14.18.

Figure 14.18. Stream east of the site

The Clonakilty Stream is approximately 314 metres northwest of the proposed development site, moving west to east. It originates around 6.7 kilometres upstream, with a straight-line distance of just over 5.6 kilometres northwest of the site. The stream primarily flows through agricultural land and open green fields before passing through Clonakilty and crossing the N21, eventually discharging into Clonakilty Harbour.

These watercourses are part of the same WFD waterbody (CLONAKILTY STREAM_010), and are all at Moderate Status and At Risk.

14.3.4 EPA Q Rating

The EPA's biological river water quality classification is based on macroinvertebrate biological sampling at water monitoring stations. The values and their interpretation are shown in Table 14.1.

Q rating	WFD Status	Pollution
Q5 or Q4-5	High	Unpolluted
Q4	Good	Unpolluted
Q3-4	Moderate	Slightly polluted
Q3 or Q2-3	Poor	Moderately polluted
Q2, Q1-2 or Q1	Bad	Seriously polluted

Table 14.1. EPA's biological river water quality classification.

There are two EPA water monitoring stations in the vicinity of the proposed development. These are detailed in Table 14.2 below. It should be noted that the first station (RS20C050100) is over 2.5km upstream of the proposed development, and was last measured in 2003.

The recorded Q values range from a status of 3-4 (slightly polluted) to 4 (unpolluted).

Station code	Location	Year measured	Q rating	Status
RS20C050100	CLONAKILTY STREAM - Br ESE of Garralacka	2003	4	Good
RS20C050300	Second Br d/s Br ESE of Garralacka in Clonak	2020	3-4	Moderate

Table 14.2. EPA water monitoring stations in the vicinity of the proposed development which have Q ratings for 2003-2021.

14.3.5 Meteorological Data

Rainfall data, extracted from the Met Éireann 1991-2020 Annual Average Rainfall Grid, has been consulted. The 30-year annual average rainfall is a 1 x 1km grid, collated from 14 stations around the country. The nearest station to the site is at Cork Airport.

The annual average over that period in the vicinity of the scheme is between 1380-1401mm.

14.3.6 Flood Risk

Historic and predicted flood risk mapping published by the OPW on the Flood Hazard Mapping Website has been reviewed for this assessment. Historic flood data indicates that there are no previous flood events within the proposed site area. There have been eight previous flood events in the vicinity, and one recurring flood event, however these are north of the site within Clonakilty town and are associated with the Clonakilty Stream. None of these events impacted the site, due to its distance from the stream and the generally sloping topography.

The topography of the site and its raised position in relation to the stream to the north mean that there is no significant risk of flooding to the site.

14.3.7 Discharges, IPPC/IE licenced companies and WWTP

Clonakilty and Environs Wastewater Treatment Plant (WWTP) is located approximately 1.1 km northeast of the proposed site, near Clonakilty Bay. According to the Uisce Éireann (Irish Water) dataset, the WWTP has a capacity of Population Equivalent (PE) 20,500 and employs tertiary treatment with nitrogen and phosphorus (N&P) removal using the 3NP process. The current PE of the WWTP agglomeration is 13,364, well under the design PE.

There are no EPA licenced waste activities in the vicinity of the proposed development (e.g., waste facilities, Industrial Emissions Licensing (IEL), or Integrated Pollution Control (IPC) sites).

14.3.8 Designated Ecological Sites

Several sites designated under the EU Habitats and Birds Directives, known collectively as Natura 2000 sites, as well as those under the Wildlife Act, are close to the proposed development. These sites have been assessed in the Biodiversity Chapter 10 of this EIAR, and the Natura Impact Statement (NIS) for the proposed development.

Clonakilty Bay Special Protection Area (SPA) is approx. 1.5km downstream of the proposed development. The SPA is of high ornithological importance and contains a fine range of habitats from saline lagoons, to brackish grasslands, open freshwater marsh and wet grassland.

Clonakilty Bay Special Area of Conservation (SAC) is about 1.5 km downstream, and is designated for mudflat and sandflats, and diverse dune.

14.4 Characteristics of the Proposed Development

The development will consist of a residential development comprising 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.

- 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 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.

14.4.1 Surface Water

The proposed surface water management system for the proposed development has been designed in accordance with the principles of Sustainable Drainage Systems (SuDS). A Stormwater Management Plan has been developed for the proposed development by the project engineers to control the outflows from

the new development. The site is split into two separate surface water catchments, with one outflow to the west and one to the east. Surface water will be controlled by SuDS features, a vortex flow control device, and associated attenuation tanks. The attenuation outflows will be fitted with flow control devices which will limit discharge to the pre-development greenfield runoff rate.

The SuDS strategy includes a combination of measures such as swales, tree pits, filter drains, and attenuation. In addition to the natural filtering which will be provided by these measures, each surface water catchment on site will be fitted with a hydrocarbon interceptor to remove contaminants and silt from the surface water before discharging from the site. Surface water will discharge from the site to the existing stream to the east, and to the existing surface water network at Lady's Cross residential estate to the west.

14.4.2 Foul Water

A dedicated foul system has been provided as part of the proposed development. The design of this system is in accordance with the relevant guidelines and is shown on the drawings and report prepared by DOSA Consulting Engineers. The foul system and surface water system are separate.

A pre-connection enquiry was submitted to Irish Water, who confirmed that subject to a valid connection agreement being put in place, the proposed connection can be facilitated.

14.5 Predicted Effects of the Proposed Development

14.5.1 Construction Phase

Construction activities pose a risk to watercourses and hydrology, particularly from contaminated surface water runoff entering nearby watercourses, or changes to watercourse morphology and flow patterns. The sections below outline the potential effects during construction on water and hydrology without any mitigation. Mitigation measures are discussed in Section 14.6.

The key civil engineering works which will have potential effects on the surface water environment during construction are summarised below:

- Setup and operation of the site compound and construction access roads.
- Excavation and movement of soil on site, as detailed in the CEMP.
- Construction of the houses and creche.
- Construction of the access roads and footpaths.
- Works to the stream at the eastern side of the site, including construction of the surface water outfall and partial diversion using rock armour to accommodate a bridge over the watercourse.
- Other construction activities will include site storage of cement and concrete materials, oils, and fuels.

The key works which may have potential effects (described above) in relation to surface water have been assessed based on the following headings:

Fine Sediment Pollution

During construction, the water environment is at risk from fine sediment pollution from the following sources:

- Excavation of, or import of, fill material on site that is stored near or adjacent to the river network;
- Ground that is exposed following vegetation clearance adjacent, or near to, the river network;
- Interaction between machinery and the riparian environment, such as for construction of the surface water outfall and stream diversion works.

There are several potential pathways for fine sediment to be mobilised from these sources to receptors. Surface water runoff during a precipitation event could wash fine sediment from stores or exposed ground into the river network, either directly via surface runoff pathways or indirectly via the stormwater drainage network. During construction, machinery operating within the riparian environment may knock exposed sediment directly into the river channel or move material to a position where, should a precipitation event occur, it would be more vulnerable to mobilisation by surface water runoff (either as sheet flow or slumping of sediment piles into the channel). Instream works offer a direct pathway from source to receptor by mobilising fine sediment within the water column or within the riverbed and bank environment.

Fine sediment pollution refers to both the fine sediment itself and urban pollutants that can be adsorbed onto the fine particles and transported along with them. Once fine sediment enters the water, it can disperse through the water column as suspended sediment. Suspended sediment affects physico-chemical water quality parameters by increasing turbidity and reducing dissolved oxygen. Changes in these conditions, along with toxicity effects associated with adsorbed urban pollutants, can pose a risk to the life of aquatic species. Settlement of fine sediment over instream geomorphic features such as coarse sediment deposits (e.g., riffles and bars) can smother these important physical habitat environments, rendering them unsuitable for aquatic species.

A fine sediment pollution event would be expected to immediately impact the local environment, and to subsequently affect downstream environments as the fine sediment is flushed through the system during flushing flow conditions (e.g., winter high flow events). While these sediments are expected to already be entering the river network to some degree, a fine sediment pollution event would represent an intensification of that pollution pressure. Taken together, the magnitude of potential impacts on water without mitigation measures in place is high, leading to a **moderate, short term, adverse impact** on the surface water environment due to fine sediment pollution.

Accidental Spills and Leaks

During construction, there is a risk of localised accidental pollution incidences from the following sources:

- Spillages or leakage of temporary oils and fuels stored on site;
- Spillages or leakage of oils and fuels from construction machinery or site vehicles;
- Spillage of oil or fuel from refuelling machinery on site; and
- Run-off from concrete and cement during construction.

There are several potential pathways for these pollutants from their sources to receptors. A direct hydrological link to surface water exists should an accidental spill or leak occur directly into the watercourse during construction, or on land and be allowed to flow overland to the watercourse. A spill

or leak could also discharge to the existing surface water drainage network and subsequently discharge to the river network. During construction, compaction of the soil or subsoil could occur due to the use of heavy machinery in green areas. This could reduce infiltration rates and increase surface water runoff, further acting as a pathway for potential pollutants.

There is also potential for contaminants to migrate through the subsoils to the underlying groundwater. Soil stripping and foundation construction have the potential to further reduce the thickness of subsoils and the natural protection they provide to the underlying aquifer.

The potential pollutants described above could negatively impact surface water or groundwater quality if allowed to reach them. Concrete (specifically, the cement component) is highly alkaline, and any potential spillages can be detrimental to surface and groundwater quality. Changes in pH of the waterbody resulting from spills of concrete material would have a consequent effect on aquatic species. Spillage of oil or other similar contaminants which are likely to be in use during construction would similarly negatively impact the water environment.

An accidental spill or leak is likely to be an isolated event if it occurs, in a specific geographical area. The entire water environment as described above is therefore not likely to be affected, with effects likely on one area and the immediate area downstream, or likely to be contained to the local groundwater environment. During construction, an unmitigated spill or leak would likely be temporary. The effect on water quality of such an unmitigated leak would be reversible. According to the significance of effects matrix (EPA, 2022) the magnitude of potential impacts on water will be medium, leading to a **moderate, temporary, adverse impact** on surface and groundwater due to accidental spills and leaks.

Instream Works

As part of the surface water drainage, an outfall will be constructed directly to the stream. The stream will also be realigned slightly to accommodate a new bridge as part of the development. This will involve 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. This is shown in Figure 14.19, which is an extract from drawing 5958-0013 by DOSA. For a short section the stream runs in two channels; the right channel will be diverted using rock armour into the left.

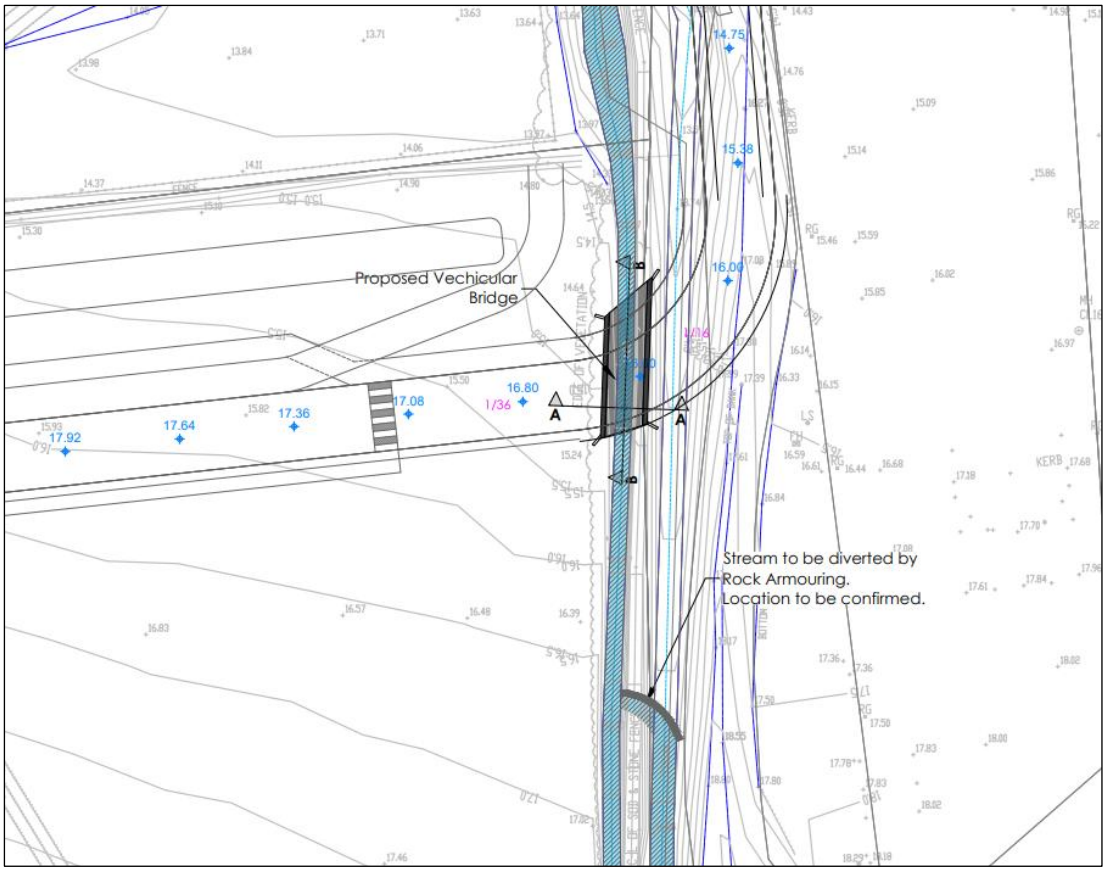

Figure 14.19. Extract from drawing no. 5958-0013 by DOSA, showing partial diversion of the eastern stream

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.

14.5.2 Operational Phase

The proposed operational stage drainage has been designed by DOSA Consulting Engineers and is described in full in the Infrastructure Report. A Stormwater Management Plan will be implemented for surface water discharge into sewers and nearby watercourses. Surface water runoff from the site to the nearby watercourses is not expected to increase during the operational stage, as the discharge rate from the site will be limited to the existing greenfield rate by flow control devices.

The design includes Sustainable Drainage Systems (SuDS) and tank systems. The use of these methods will ensure that runoff from the proposed development replicates the characteristics of the pre-development greenfield site, and the levels of hydrocarbons, suspended solids and metals discharging from the site are negligible.

Proposed SuDS measures include the following:

- Rooftop rainwater harvesting, for use as irrigation and toilet flushing, will be incorporated into the drainage design for the proposed creche.

- Swales will be used to increase attenuation storage and provide passive filtration of pollutants in surface water. These areas are shown on the Drainage Masterplan Drawing accompanying the planning application.
- Hydrocarbon/Petrol interceptors are included in the proposed drainage network. These will prevent contamination of nearby watercourses.
- Green roofs and tree pits to provide further attenuation and filtration.

The proposed discharge from site is limited to the greenfield run-off rate, i.e., it replicates the existing conditions with regard to flow rates. In the operational stage, it is proposed that following interception and attenuation, stormwater will discharge to the stream to the east, and to the existing surface water network at Lady's Cross.

Given the drainage design, use of SuDS measures and on-site treatment methods, and expected discharge rates from the site, the potential effect on surface water during operation is considered to be a **long term, imperceptible effect, with a neutral effect on quality** i.e., an impact capable of measurement but without noticeable consequences.

Hydromorphological Effects

The proposed partial diversion of the eastern stream using rock armour will have an effect as the right-hand channel will be diverted into the left. The left-hand channel flow will increase, however this is over a short distance as immediately downstream from the site the two channels converge already. Therefore, the hydrological and hydromorphological effect of this diversion is not expected to be significant. The proposed new clear span bridge has been sized accordingly.

Given the small size of the stream catchment upstream of the diversion and the short length of proposed diversion, the effect is considered to be **long-term, slight, negative.**

14.5.3 'Do Nothing' Scenario

In the event of the proposed development not being constructed, there would be no resulting impacts on hydrology at the site, and the site would continue in use for agriculture. The existing drainage regime at the site would remain in place. The Do-Nothing effect would be **long-term, not significant, neutral** with regard to water and hydrology.

14.6 Mitigation Measures

In the impact assessment discussed above, a range of potential effects on water were identified. Mitigation measures in the construction and operational phase of the proposed scheme will be implemented to reduce these adverse effects. Most measures are required during the construction phase as it will pose the greatest level of risks due to the construction activity on site and use of construction materials and the soil on site. In the sections below the mitigation measures for the do-nothing scenario, construction phase and operation phase are discussed.

14.6.1 Construction Phase

Mitigation measures during the construction phase are discussed below. These mitigation measures have been developed with the source-pathway-receptor links above in mind and are designed to break this link either by removing the source or disrupting the pathway for pollution.

Best Practice Construction Methods

A Construction Environmental Management Plan (CEMP) has been prepared for the proposed development by DOSA and will be put in place by the appointed contractor. The CEMP was prepared in accordance with the following:

- National and International Legislation;
- Environment Liability Regulations; and
- Best Management Guidelines.

The CEMP will be used by the contractor to prevent and minimise environmental effects during construction. It includes the below to mitigate impacts on water:

Fine Sediment Pollution

Mitigation for the protection of surface and groundwater quality from runoff carrying fine sediments and urban pollutants involves silt control measures. These include proper planning of works, site compound construction, storage management and excavation plans, as follows:

- The CEMP will include the mitigation measures outlined in this EIAR to address sediment control during construction and the potential risk of sediments and various pollutants release into local watercourses. This includes silt fencing, runoff control and measures to prevent contaminant entering the stormwater by proper storage of hazardous materials and waste management practice;
- Adherence to best practice guidance for pollution prevention and sediment management measures (e.g., use of drip trays, spill kits, and silt fences etc.) will be applied.
- The contractor will construct a site compound at a location remote from any drains, in a minimum distance of 75m;
- Storage locations and topsoil piles will be placed in appropriate places, distant to existing drains/sewerage with a minimum distance of 75m;
- All soil stockpiles will be covered (i.e., with a tarpaulin or vegetated) to minimise the risk of rain/wind erosion. Vegetation will be established as soon as possible on all exposed soils;
- In the event of an extended dry period, stockpiles will be dampened using water to minimise the risk of airborne particles entering watercourses;
- Excavations will remain open for as little time as possible before the placement of fill to minimise the potential of water ingress into excavations;
- Management/Response plans will be implemented to identify mobilisation of soil particles/pollution and initiate the interception and treatment of pollution/silt run-off;
- Silt fencing or other appropriate measures will be put in place downstream of exposed soils or soil stockpiles.
- Silt fences will be installed along the eastern stream.

Accidental Spills and Leaks

To avoid and manage accidental spills and leaks a series of measures listed below will be implemented. The main contractor and sub-contractors will be responsible for ensuring their implementation:

- Refuelling of site plant will take place at the site compound at a concrete refuelling pad adjacent to the fuel storage tank. There will be no refuelling of mobile plant within 50m of any sensitive receptors, i.e., watercourses;
- No vehicles will be left unattended when refuelling and a spill kit including an oil containment boom and absorbent pads will be on site at all times;
- Any fuel needed to be stored on the site will be stored appropriately and at a location that is set back from the river. All other construction materials will be stored in this compound. The compound will also house the site offices and portable toilets. This compound will either be located on ground that is not prone to flooding or will be surrounded by a protective earth bund to prevent inundation;
- All vehicles will be regularly maintained and checked for fuel and oil leaks;
- All liquids, solids and powder containers will be clearly labelled and stored appropriately in sealable containers. Storage of fuels and oils will be in the main contractor's compound only;
- Spill protection equipment such as spill kits, absorbent mats, oil booms, and sand will be available for use in the event of an accidental spill. These will be disposed of correctly if used and replaced with new ones immediately. Disposal records for used absorbent materials will be retained by the Site Manager;
- The contractor will implement measures for the regular inspection of bunds and emptying of rainwater (when uncontaminated). Bunding must have a minimum capacity of 110% of total capacity. Bunding will be impermeable to the substance that is being stored in the tank;
- The use of settlement ponds with outflow control measures will be used for the interception of surface water or groundwater pumped from an active working area;
- If a spillage of a hazardous material to groundwater occurs, the groundwater will be contained and pumped to a tank or holding vessel prior to shipment off site for disposal. The contractor will maintain disposal records. The contractor will identify the cause of the spillage and mitigation measures and controls will be put in place to prevent a repeat. The CEMP for the site will be updated and contractors and sub-contractors will be made aware of the amendments;
- The Contractor will clean equipment prior to delivery to the site. The Contractor will avoid using any equipment which leaks fuel, hydraulic oil, or lubricant. The Contractor will maintain equipment to ensure efficiency and to minimise emissions;
- No excavation will take place below the water-table on the site;
- Management/Response plans will be implemented to identify mobilisation of soil particles/pollution and initiate the interception and treatment of pollution/silt runoff; and
- Precast concrete elements will be used where possible, to reduce the need for wet concreting.

Instream Works

To reduce the potential impacts from instream works the following mitigation measures are proposed:

- All instream works will be supervised by an Ecological Clerk of Works (ECoW), and safe concreting measures during construction will be implemented;

- All measures that alter the channel bed via installation of concrete foundations or aprons must reinstate the natural bed material to the existing grade line of the river following construction.
- To mitigate impacts to any fauna or flora as a result of instream works, including fish passage, refer to Chapter 10 Biodiversity.

14.6.1 Operational Phase

The inclusion of the proposed SuDS features, as per the Engineering Design Report prepared by DOSA Consulting Engineers, will help to mitigate against additional surface water runoff and pollution.

During the operational phase, regular visual inspection of the silt traps and hydrocarbon interceptors should be carried out to ensure they are operating correctly. No additional mitigation measures are required.

14.7 Predicted Effect of the Proposed Development Post-Mitigation

14.7.1 Construction Phase

With the implementation of the mitigation measures outlined above, the proposed development will have no negative effects on surface waterbodies during construction. The status of surface waterbodies in the area will not be deteriorated, nor will the proposed development jeopardise the attainment of good surface water status.

Following the implementation of the mitigation measures, the effects during the construction phase will be **short-term, neutral, and imperceptible.**

14.7.2 Operational Phase

The design of the scheme has been such that there are no predicted effects on the water and hydrogeological environment during the operational phase of the development. The proposed discharge rate does not exceed the existing greenfield runoff rate, while the proposed drainage design includes measures for the attenuation of surface water. Once operational, the proposed development will not lead to a deterioration of water status of either the surface waterbodies, nor will it jeopardise the attainment of good water status for either of these waterbodies.

Overall, the operational effects of the proposed development will be **long-term, neutral and imperceptible.**

14.8 Monitoring

14.8.1 Construction Phase

During construction, visual and chemical monitoring of treated surface water will take place to ensure that water draining from the site is not affected by the proposed development. This will take place during the regular site audits during the construction process.

Surface water collected in sumps will be monitored prior to discharge. Samples will be taken and the pH, conductivity, chemical oxygen demand, total petroleum hydrocarbons, and suspended solids levels will be recorded. The monitoring results will be compared to the allowable limits given in the Surface Water Regulations. If the results show an exceedance in the allowable levels, then the appointed contractor will review the mitigation measures and remedy them to lower the levels of the pollutant. A record of these upgrades/changes to the mitigation measures will be recorded.

The contractor is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials.

If the mitigation measures in place during construction are observed to be insufficient or inefficient (i.e., elevated suspended solids, pH, conductivity, chemical oxygen demand, or total petroleum hydrocarbons are detected during monitoring prior to discharge), the discharge will be halted, and the mitigation measures will be revised and reimplemented. Further sampling will verify the success of the revised/updated surface water management. The affected water will be conveyed to the revised/updated treatment train and put through a hydrocarbon interceptor and settlement tanks to ensure compliance with the required levels in the treated water.

14.8.2 Operational Phase

Once operational, silt traps and hydrocarbon interceptors will be visually inspected on a regular or annual basis. Any spillages onsite will be acted upon immediately. No other monitoring measures are required during the operational phase.

14.9 Interactions and Cumulative Effects

14.9.1 Interactions

The EIAR must also consider in-combination effects, or the interactions between the different factors discussed.

Effects on water quality or hydrology can have further effects on biodiversity and ecology, through the mobilisation of silts, dusts, suspended solids, oils, or chemicals. On entering watercourses, these can negatively affect fish and aquatic ecology, as well as have an effect on Natura 2000 sites further downstream.

These effects are further discussed in the Biodiversity Chapter 10 of this EIAR, and the AA Screening/NIS. Following implementation of mitigation measures outlined in this chapter, including the use of silt fences and settlement trains during construction, in Chapter 10, and in the AA/NIS, effects on habitats, flora, and fauna from water and hydrology will be short-term, imperceptible, neutral.

Surface water effects are directly linked with hydrogeology or groundwater effects, with surface water pathways leading to groundwater and vice versa. Surface water runoff can also have an effect on soil quality in the area, with chemicals or suspended solids influencing soil fertility, aeration and contamination.

These effects are further discussed in the Land and Soils chapter of this EIAR. Without mitigation measures, the interaction of these two elements could lead to a short-term significant negative effect. With the proposed mitigation measures outlined in this chapter and in the Land and Soils chapter of the EIAR, the potential interaction between these is reduced to a short-term, imperceptible, neutral effect.

The material assets on site (surface and stormwater drainage) are assessed in Chapter 16. These have been designed in accordance with SUDS and the objectives of the Cork County Development Plan. The potential for effects on water and hydrology from these assets has been assessed in this chapter. Due to the design of surface and stormwater drainage being in accordance with SuDS and the Cork County Development Plan, any interaction between material assets and water will be long-term, imperceptible, neutral.

14.9.2 Potential Cumulative Effects

Cumulative effects are the result of several minor effects combining to create a more significant effect. The assessment of cumulative effects considers existing stresses on the water environment (i.e., surface water runoff, urban wastewater drainage, from existing developments in the surrounding area) as well as developments close to this development that are in planning or are underway (which are outlined in Chapter 19). The applications which are listed in Chapter 19 have been examined as part of this chapter in order to assess the likelihood of cumulative effects.

Application Reference 18/703, situated west of the proposed development, is accompanied by a Flood Risk Assessment, CEMP, NIS and associated drainage design. The construction phase of Application Reference 18/703 has been completed at the time of writing, so no cumulative effect during construction is likely. Once operational, the proposed development and Application Reference 18/703 are not likely to result in cumulative effects with regard to Water due to the designs of both, with drainage design for both taking account of existing greenfield runoff rates and incorporating SUDS measures.

Application Reference 18/605, situated west of the proposed development, is accompanied by an NIS and associated drainage design. The construction phase of Application Reference 18/605 has been completed at the time of writing, so no cumulative effect during construction is likely. Once operational, the proposed development and Application Reference 18/605 are not likely to result in cumulative effects with regard to Water due to the designs of both, with drainage design for both taking account of existing greenfield runoff rates and incorporating SUDS measures.

Application Reference 23/20, situated west of the proposed development, is accompanied by an NIS, CEMP, and associated drainage design. During construction, the proposed mitigation measures contained in the CEMPs for both projects will ensure that no cumulative effects on Water occur. Once operational, the proposed development and Application Reference 23/20 are not likely to result in cumulative effects with regard to Water due to the designs of both, with drainage design for both taking account of existing greenfield runoff rates and incorporating SUDS measures.

A Part 8 Development by Cork County Council is situated at Pairc Thiar north of the proposed development. The Part 8 Development is complete at time of writing, so no cumulative effects during construction are likely to occur. Once operational, the proposed development and the existing Pairc Thiar

development are not expected to result in cumulative effects on Water due to the inclusion of SUDS measures and the design of the proposed development.

No cumulative effects with regard to Water are expected as a result of the proposed development.

14.10 References

Cork County Development Plan 2022-2028

DoEHLG & OPW, Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)

EPA, 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2015)

EPA, 'EPA River Quality Surveys: Biological' available at: https://epawebapp.epa.ie/qvalue/webusers/

EPA, 'Guidelines on the Information to be Contained in Environmental Assessment Reports' (2022)

15.0 RESOURCE & WASTE MANAGEMENT

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15.1 Introduction

This chapter of the Environmental Impact Assessment Report has been prepared by Denis O'Sullivan & Associates Consulting Engineers Ltd. (DOSA). The chapter describes the likely impact of the waste generated by proposed development in both construction and operational stages, and additionally identifies mitigation measures to minimise any impacts.

A site-specific Outline Construction and Environmental Management Plan (CEMP) has been prepared by DOSA to deal with waste generation during the demolition and construction phases of the project and is included in the Planning Application.

The consideration of waste during the operational stage is based on the Operational Waste Management Plan prepared by DOSA and is included in the Planning Application.

15.2 Methodology

This impact assessment has been undertaken in accordance with all relevant guidance documents, noted in the references, and considers the relevant legislative context and all the phases of the proposed development, noted as Construction, and Operational Phases.

The assessment of the potential impacts of the waste generated from the development was carried out through a desktop study according to the methodology set out below:

- Review of relevant legislation and waste framework directives
- Description of typical waste materials to be generated from Construction and Operational Phases
- Estimation of the waste generated for the proposed development from Construction and Operational Phases
- Assessment of the mitigation measures for managing the waste in accordance with the waste hierarchy

15.3 Legislative Context

Waste management in Ireland is subject to EU, National and Regional waste legislation which defines how waste materials must be managed, transported and treated.

The European Union Waste Framework Directive (2018) is the primary guidance on waste management in Ireland, and its policy is based on the concept of a "waste hierarchy" that sets out the preference order to manage waste, as shown in figure 15.1

Figure 0.1 Waste Hierarchy (Source: EU Waste Framework Directive)

15.3.1 Waste Management Policy and Legislative Context

Ireland's waste management framework is underpinned by a series of national policy documents and legislative instruments, developed in line with European Union (EU) requirements. These policies aim to improve waste prevention, reuse, recycling, and recovery, while reducing dependence on landfill.

15.3.2 National Waste Policy Evolution

In 1998, the Irish Government published Changing Our Ways, which set national objectives for integrated waste management. Key targets included achieving a minimum 35% recycling rate for municipal waste, encompassing household, commercial, and non-process industrial streams. The policy emphasised reducing landfill reliance and promoting alternative waste treatment methods.

This was followed by Delivering Change – Preventing and Recycling Waste in 2002, which introduced programmes to expand recycling and promote waste minimisation at source.

Also in 2002, Making Ireland's Development Sustainable – Review, Assessment and Future Action reinforced the need to decouple waste generation from economic growth. It highlighted reuse and prevention as priorities.

In 2004, Taking Stock and Moving Forward reviewed progress made under Changing Our Ways (1998–2003), noting an increase in waste sent to landfill and identifying the extension of dry recyclable collections as a key challenge.

A significant policy shift occurred with the publication of A Waste Action Plan for a Circular Economy (WAPCE) in 2020. Developed in response to the European Green Deal, WAPCE replaced the 2012 policy A Resource Opportunity and set the strategic direction for waste management in Ireland to 2025. The plan includes over 200 measures across areas such as municipal waste, plastics, packaging, construction and

demolition, textiles, and citizen engagement. The policy prioritises circular economy principles, promoting closed-loop production and consumption systems.

In 2021, the Government introduced Living More, Using Less – Circular Economy Strategy 2022–2023, the first national circular economy strategy. It provides a framework for sectoral transition and will be reviewed every 18–24 months.

The Circular Economy and Miscellaneous Provisions Act 2022, enacted in July 2022, legally defines the circular economy in Irish law. It introduces:

- Incentives for reusable/recyclable packaging over single-use;
- Mandatory segregation and incentivised charging for commercial waste;
- Streamlined procedures for End-of-Waste and By-Product status;
- Enhanced enforcement against fly-tipping and littering;
- Measures to support secondary raw materials availability.

15.3.3 Legislative Framework

The principal legislation governing waste management in Ireland includes:

- Waste Management Act 1996 (as amended);
- Environmental Protection Agency Act 1992 (as amended);
- Litter Pollution Act 1997 (as amended);
- Planning and Development Act 2000;
- Circular Economy and Miscellaneous Provisions Act 2022.

These Acts enable transposition of EU Directives into Irish law. A key guiding principle is the "Duty of Care", placing responsibility on waste producers from the point of generation to final, lawful disposal. In practice, permitted/licensed waste contractors are employed to manage waste off-site.

15.3.4 Permitting and Compliance Requirements

All waste contractors must hold a valid collection permit issued by the National Waste Collection Permit Office (NWCPO). Facilities receiving waste must hold an appropriate authorisation, including:

- A Certificate of Registration (COR) or waste facility permit granted by the relevant local authority under the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended); or
- A waste or Industrial Emissions Directive (IED) licence issued by the Environmental Protection Agency (EPA).

These authorisations stipulate the waste types and volumes permitted for acceptance, storage, processing, recycling, or disposal at each site.

15.3.5 Construction and Demolition Waste Management

Waste management during the demolition and construction phases of the proposed development will comply with the Best Practice Guidelines for the Preparation of Resource Management Plans for

Construction & Demolition Projects (EPA, 2021). These guidelines promote resource efficiency and ensure appropriate handling and recovery of construction waste streams.

All on-site and off-site waste management activities must be carried out in accordance with applicable legal obligations, using only authorised contractors and licensed facilities, and in a manner that prevents adverse environmental impacts.

15.3.6 Terminology and EU Alignment

The terminology used in this EIA chapter is consistent with definitions in Article 3 of the EU Waste Framework Directive, ensuring alignment with European waste legislation and national policy.

15.3.7 National Waste Management Context

The Environmental Protection Agency (EPA) has been publishing annual National Waste Statistics Reports since 1998, providing comprehensive data on household and commercial (municipal) waste generation, recycling, recovery, and disposal in Ireland. The latest available data pertains to the year 2022.

Key Municipal Waste Statistics for 2022

- Total Municipal Waste Generated: Ireland generated approximately 3.19 million tonnes of municipal waste in 2022, a slight increase of 0.6% from 2021.
- Per Capita Generation: The per capita municipal waste generation was 615 kg, down from 625 kg in 2021, indicating a modest improvement in waste generation efficiency.
- Waste Composition: Household Waste: Approximately 1.76 million tonnes, accounting for 55% of the total municipal waste. Commercial Waste: Approximately 1.43 million tonnes, making up the remaining 45%.
- Waste Treatment Methods: Recycling: Around 1.3 million tonnes of municipal waste were recycled, maintaining a recycling rate of 41%, unchanged from previous years. Composting/Anaerobic Digestion: Over 480,000 tonnes were treated through composting or anaerobic digestion. Incineration with Energy Recovery: Approximately 1.36 million tonnes (43% of managed municipal waste) were incinerated with energy recovery. Landfilling: About 459,000 tonnes (15% of managed municipal waste) were landfilled, showing a slight decrease from 16% in 2021.
- Waste Export: An estimated 1.24 million tonnes (39% of managed municipal waste) were exported for treatment abroad, primarily for recycling and energy recovery.

15.3.8 Challenges and Targets

Despite efforts, Ireland's recycling rate has remained stagnant at 41% over the past decade, falling short of the EU's 2025 target of 55% for preparing municipal waste for reuse and recycling.

15.3.9 Regional Waste Management Framework

The proposed development is situated within the jurisdiction of Cork County Council (CCC). The Southern Region Waste Management Plan 2015–2021, which governed this area, outlined strategic targets, including:

- A 1% annual reduction in per capita household waste generation.
- Achieving a 50% recycling rate for managed municipal waste by 2020.
- Eliminating the direct disposal of unprocessed residual municipal waste to landfill from 2016 onwards.

These regional plans are currently under review and are expected to be superseded by the forthcoming National Waste Management Plan for a Circular Economy.

15.3.10 Local Authority Policies and Objectives

Cork County Council's Development Plan emphasizes sustainable waste management practices, aligning with both regional and national objectives:

Objective 9.12 - Waste Management:

- Support the sustainable management of waste in line with the objectives of the Southern Region Waste Management Plan and the forthcoming National Waste Management Plan for a Circular Economy.
- Facilitate the transition to a circular economy by promoting resource recovery and minimizing waste generation.

Objective 11.3 - Housing Quality and Standards:

- Ensure that housing designs incorporate adequate and accessible storage for the separate collection of dry recyclables, food waste, and residual waste.

Section 11.270 - Operational Waste Strategy:

- Mandate adequate bin storage for waste segregation and recycling in residential developments.
- Require that communal refuse storage be accessible to both residents and external collectors, secured against illegal dumping, well-screened from public view, and adequately ventilated.

The proposed residential development is situated within the jurisdiction of Cork County Council, and is therefore governed by the County Cork Waste Management Bye-Laws 2019, which came into effect on 1 June 2019. These Bye-Laws establish enforceable responsibilities for the segregation, storage, and presentation of household waste, and are intended to support national and EU waste reduction and resource recovery objectives.

Relevant Obligations for Residential Waste Management

Key requirements of the Bye-Laws relevant to the development include:

- Segregation of Waste: Residents are required to separate waste into distinct streams — typically recyclables, organics (food and garden waste), and residual waste. Each waste stream must be placed in designated containers provided by authorised waste contractors.
- On-Site Waste Storage: Waste containers must be stored within the curtilage of the dwelling or residential complex, in purpose-built storage areas that are screened, ventilated, and easily accessible to residents and collection operatives. Storage of bins on roads, footpaths, or any other public areas is prohibited unless specifically authorised in writing by Cork County Council.
- Presentation for Collection:

- Waste may not be presented for collection before 6:00 p.m. on the evening preceding the designated collection day.
- Bins and any uncollected waste must be retrieved no later than 9:00 p.m. on the day of collection to maintain amenity and minimise obstruction.

- Use of Permitted Waste Collectors: Residents and management must utilise the services of contractors who hold a valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO).
- Retention of Records: Households and/or the residential management company must retain documentation (e.g., collection receipts or service agreements) for a minimum of one year to verify proper waste disposal.

15.3.11 Development-Specific Measures to Ensure Compliance

To ensure adherence to the Cork County Council Waste Management Bye-Laws, the following provisions will be implemented as part of the residential scheme:

- Centralised Waste Storage Facilities for Apartments: The development will include dedicated communal waste storage areas sized according to projected occupancy and waste generation. These facilities will support the source-segregation of recyclables, organic waste, and general waste and will comply with fire safety, hygiene, and accessibility requirements.
- Designated Collection Points: Waste collection will be managed from clearly designated collection points within the site, minimising any temporary on-street presentation of bins.
- Resident Information and Signage: Residents will be provided with guidance on waste segregation, storage protocols, and collection schedules, supported by clear, multi-language signage within bin storage areas.
- Property Management Oversight: A property management company will oversee the day-to-day waste operations, ensure the timely removal of bins, and maintain records of waste collections and contractor compliance.

15.3.12 Conclusion

The waste management strategy for the proposed residential development is fully aligned with the requirements of the County Cork Waste Management Bye-Laws 2019, the Waste Management Act 1996 (as amended), and the broader national and EU waste policy framework. These measures will facilitate responsible household waste handling, ensure legal compliance, and support Cork County Council's waste minimisation and recycling objectives.

15.4 Baseline Environment

The current baseline represents the do-nothing scenario. This chapter will consider the effects that construction and operational practices will have on the surrounding environment.

15.5 Existing Site & Surroundings

The subject site (currently greenfield) is located south-west of Clonakilty town centre, beside the Clonakilty Park Hotel. The site is bound by existing agricultural land to the south, and west and by a commercial park

and showground to the north. Lady's Cross residential estate abuts the land in the northwest corner and provides an alternative means of access. The site which is currently undeveloped is used as agricultural land. The site is directly bound on the east by the Clonakilty Park Hotel. A snapshot of the site location is shown in Figure 15-2.

Figure 0.2 Site Location

15.6 Potential Impacts of the Proposed Project

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

15.6.1 'Do Nothing' Effects

The 'Do Nothing' scenario refers to what would occur should the proposed development not be progressed. In this scenario, the impacts described in this chapter would not emerge meaning that the

'Do Nothing' scenario is considered to have a neutral effect. The 'Do Nothing' scenario is therefore not addressed any further in this chapter.

15.6.2 Construction Phase

The bulk excavation works on site is estimated to be approximately 68,000 m^3 of soil to be excavated. From this total volume, about 26,000 m^3 is expected to be top soil, which will be suitable for re-using on site for landscaping. A further 21,000m^3 will be reused onsite as structural/non-structural fill. The remaining volume is proposed to be removed from the site and disposed to an appropriately licenced facility or, wherever suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011 (S.I. No 126 of 2011). The material to be kept on site will be safely stored to be re-used on later stages. The storage of stock-piled materials will be subject to strict controls to prevent the generation of dust, contaminated run-off, or the degradation of the stockpiled material.

Any contamination source will be removed from the ground as a result of the bulk excavation process and sent to an appropriate licenced facility. Approximately one thirds of the excavated soil is proposed to be re-used on site, pending confirmation of its suitability, for raising ground levels.

15.6.3 Operational Phase

The Operational Stage Waste Management Plan indicates that the typical non-hazardous and hazardous wastes that will be generated at the development will include the following:

- Dry Mixed Recyclables (DMR) - includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste - food waste and green waste generated from internal plants/flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants/flowers and external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Lightbulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by residents or commercial tenants);
- Furniture (and from time to time other bulky wastes);

The estimated quantum/volume of waste that will be generated from the residential units has been determined based on the number of bedrooms, while waste generation estimates for the, creche is based on the maximum occupancy.

Waste Type	Waste Volume (litres per week)						
	4 Bed Hse	3 Bed Hse	2 Bed Hse	1 Bed Hse	2 Bed Apt	1 Bed Apt	Creche
Organic	47	36	26	15	26	15	488
MDR	155	120	85	50	85	50	1625
Non-Rec	109	84	60	35	60	35	1138
Glass	16	12	9	5	9	5	163
Total	326	252	180	105	180	105	3413
Development Total		56,000					

Table 0.1. Waste Types Volumes

The generation of waste during the operational stage is unavoidable. The potential impacts on the environment from waste during the operational phase would be due to a lack of or improper waste management within the development. If waste is not managed or stored appropriately, it is likely to give rise to litter and/or pollution issues and could result in significant quantities of waste being sent unnecessarily to landfill.

The implications of such, is that vermin may be attracted to the immediate area as a result. In addition, if unauthorised waste contractors were used, waste materials could be incorrectly managed and disposed of illegally and result in negative environmental impacts or pollution.

Thus, all waste generated must be managed in accordance with the relevant local, regional and national waste guidance and legislation and taken to suitably registered and licenced waste facilities for processing, segregation, reuse, recycling, recovery or disposal, as deemed appropriate.

15.7 Mitigation Measures

15.7.1 Construction Phase

It is estimated that a total fill volume of 68,000 m^3 of soil will be excavated for the overall site. From this total volume, about 26,000 m^3 is expected to be top soil, which will be suitable for re-using on site for landscaping. A further 21,000m3 will be reused onsite as structural/non-structural fill. The remaining volume is proposed to be removed from the site and disposed to an appropriately licenced facility or, wherever suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011 (S.I. No 126 of 2011).

It is proposed that all excavated material that is not suitable for re-use on site will be removed from the site and transported to an appropriately licenced facility. Appropriate environmental measures will need to be employed to ensure that the excavated and other construction materials do not become a source of pollution. For instance, all hazardous materials should be stored within secondary containment designed to retain at least 110% of the storage contents, temporary bunds for oil/diesel storage tanks

shall be used on the site, and safe material handling of all potentially hazardous materials shall be emphasized to all construction personnel.

Dust emissions on site are to be managed through the implementation of a dust minimisation plan which is to be submitted for approval. Due to the nature of the activities undertaken on a large construction site, there is potential for noise generation. Noise levels as set out by Cork County Council will be adhered to. More details in the Construction & Environmental Management Plan (CEMP).

15.7.2 Operational Phase

Operational stage mitigation measures have been designed into the proposed development, as described below.

- Waste Storage Areas have been allocated in the design of all apartment buildings and have been strategically located in close proximity to the main entrances to minimise the distances the residents have to travel to access them.
- Each dwelling shall incorporate a designated waste storage area within the curtilage of the site, providing sufficient space for the segregation and storage of wheelie bins for residual, recyclable, organic waste, and glass in accordance with best practice guidelines and local authority requirements.

Residents and staff at the creche will be required to segregate waste into the following main waste streams:

- Mixed dry recyclables,
- Non-recyclables;
- Organic waste,
- Glass;

Residents will be required to deposit their segregated waste into the appropriate bins.

The communal waste storage areas will be designed and fitted-out to meet the requirements of relevant design standards, including:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours;
- Provide suitable lighting;
- Be easily accessible;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate signage placed above and on bins indicating correct use;

The implementation of an Operational Waste Management Plan (OWMP) will ensure a high level of recycling, reuse and recovery of waste from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution.

The waste strategy presented in this OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated communal areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

15.8 Residual Impacts

The implementation of the mitigation measures proposed during construction, and operational stages will ensure that a high rate of reuse, recovery and recycling is achieved. No residual effects are therefore anticipated from either the construction phase or operational phase.

15.9 Monitoring

The implementation of effective monitoring measures will be essential to ensure compliance with statutory obligations and the objectives of sustainable resource and waste management throughout the lifecycle of the development. During the construction phase, a Site Waste Management Plan (SWMP) will be developed and implemented, with regular monitoring of waste types, quantities generated, and destinations (reuse, recycling, recovery, or disposal). Contractors will be required to maintain waste records, including waste transfer documentation, in accordance with the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Facility Permit and Registration Regulations 2007 (as amended). These records will be subject to review and audit to verify compliance.

In the operational phase, ongoing monitoring of household waste generation and segregation practices will be undertaken by the facilities management company or relevant body corporate, where applicable. This includes periodic checks to ensure that residents are using designated bin storage areas appropriately and that waste is being presented for collection in accordance with Cork County Council bye-laws and the requirements of licensed waste collectors. Where necessary, awareness measures and information campaigns may be implemented to promote proper segregation and reduce contamination in recycling and organic waste streams.

All monitoring activities will support the broader goals of the National Waste Management Plan for a Circular Economy, ensuring that the development continues to contribute positively to national recycling and recovery targets, while minimising adverse environmental impacts related to waste generation and management.

15.10 Interactions

The proposed residential development will interact with material and waste resources throughout both the construction and operational phases. During the construction phase, significant quantities of raw materials such as concrete, aggregates, timber, and metals will be required, while construction and demolition (C&D) waste—such as packaging, surplus materials, and excavation spoil—will be generated. The management of these resources will adhere to the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects (EPA, 2021), with a strong emphasis on reuse, recycling, and minimisation of landfill disposal.

In the operational phase, ongoing waste generation will primarily arise from domestic activities, including residual, recyclable, and organic waste streams. Each dwelling will incorporate a designated bin storage area within the curtilage of its site to facilitate source segregation and ease of access for collection, in compliance with Cork County Council's waste management policies and relevant waste bye-laws. Waste contractors appointed for collection must be appropriately authorised and hold a valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All collected waste will be directed to appropriately licensed facilities, holding either a Certificate of Registration (COR), waste permit, or EPA licence, in accordance with the Waste Management Act 1996 (as amended) and supporting legislation.

These interactions will be managed to ensure efficient resource use and compliance with national and regional waste targets, including those set out in the Southern Region Waste Management Plan and the forthcoming National Waste Management Plan for a Circular Economy, thereby contributing to Ireland's broader transition to a circular economy.

15.11 Cumulative Impacts

The cumulative impact of the proposed residential development in relation to resource use and waste generation has been assessed in the context of other existing, permitted, and proposed developments in the surrounding area. When considered alongside nearby developments, the collective demand for construction materials and the generation of construction and demolition (C&D) waste may place additional pressure on local waste management infrastructure and licensed waste facilities. However, adherence to national and regional guidelines, including the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021) and the Southern Region Waste Management Plan, will ensure that waste is appropriately segregated, minimised, and directed to authorised recovery and recycling facilities, thereby mitigating cumulative pressures on landfill capacity.

In the operational phase, the cumulative increase in municipal waste generation from new residential units in the area will result in higher volumes requiring ongoing collection and treatment. Nonetheless, the proposed development includes adequate on-site waste storage provisions and will utilise permitted waste collection services that operate in accordance with the National Waste Collection Permit Office (NWCPO) and local bye-laws. These measures, combined with the national transition towards a circular economy under the National Waste Management Plan for a Circular Economy (NWMPCE), will ensure that the cumulative effects on waste infrastructure are managed sustainably and in line with policy objectives.

Overall, no significant adverse cumulative impacts are anticipated, provided that proposed mitigation and monitoring measures are implemented and that all developments continue to comply with statutory waste and environmental obligations.

Application Reference	Location	Description	Possible Cumulative Impact
23/20, ABP-318260-23	The Miles Estate, the Miles Road, Clonakilty	Permission granted for the construction of 93no. dwellings and a single storey cheche.	No works have commenced as yet
18/605	The Miles Estate, the Miles Road, Clonakilty	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.
18/703	An Sruthean Beag, Cloheen, Clonakilty	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 0.2 Cumulative Impacts

15.12 References

This chapter has been prepared in accordance with the overarching EIAR guidance and in accordance with, but not limited to, the following relevant guidelines:

Changing Our Ways (1998)
Delivering Change – Preventing and Recycling Waste (2002)
Making Ireland's Development Sustainable – Review, Assessment and Future Action (2002)
Taking Stock and Moving Forward (2004)
Waste Action Plan for a Circular Economy (WAPCE) (2020)
Whole of Government Circular Economy Strategy 2022–2023: 'Living More, Using Less' (2021)
Legislative Instruments
Waste Management Act 1996 (as amended)
Environmental Protection Agency Act 1992 (as amended)
Litter Pollution Act 1997 (as amended)
Planning and Development Act 2000
Circular Economy and Miscellaneous Provisions Act 2022

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16.0 RESOURCE & WASTE MANAGEMENT

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Table 16.1	Permitted Developments In The Surrounding Area

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16.1 Introduction

This chapter of the Environmental Impact Assessment Report has been prepared By Denis O'Sullivan & Associates Consulting Engineers Ltd. (DOSA). The effects of the proposed development on the existing utility network are considered in this chapter, which includes effects on the following infrastructure:

- Surface Water Drainage;
- Foul Water Infrastructure;
- Water Supply Infrastructure;
- Electricity Infrastructure;
- Telecommunications;
- Gas.

16.2 Methodology

This impact assessment describes the existing underground services and utilities within the proposed development and the wider area. It also assesses the potential for likely significant effects of the proposed development on the connected networks and identifies mitigation measures where necessary.

The assessment of the potential impacts of the proposed development on the surrounding services was carried out according to the methodology set out below:

- Identification of the existing services around the site based on record maps, provided by Irish Water and Cork County Council, survey works and site visits;
- Identification of existing utilities in the area from information from Electricity Supply Networks (ESB Networks) and Telecommunications providers (Eir, Virgin Media etc);
- Identification of services to be removed and/or diverted to allow for the proposed construction works;
- Estimated surface water runoff from the development site, before and after the works, as well as the additional foul discharge related to the operational phase of the proposed development;
- Estimated water supply related to the operational phase;
- Description of the proposed services plan;
- The existing utilities in the vicinity of the site have been reviewed to identify how the proposed development can be served and any potential impacts of using these utilities;
- Assessment of the impacts of the proposed development, both during construction and operational phases, proposing remedial or reductive measures.

The assessment included the following activities:

- Site inspection/Walkover
- Review of existing topographical survey data
- Review of existing services drawings (Irish Water, Cork County Council, ESB etc)
- Review of information available on the Environmental Protection Agency (EPA) online mapping service
- Review of information available on the Geological Survey of Ireland (GSI) online mapping service
- Review of Office of Public Works (OPW) National Flood Hazard Mapping and CFRAM Studies (Catchment Flood Risk Assessment and Management Studies)

16.3 Existing Environment

16.3.1 Existing Site

The subject site (currently greenfield) is located south-west of Clonakilty town centre, beside the Clonakilty Park Hotel. The site is bound by existing agricultural land to the south, and west and by a commercial park and showground to the north. Lady's Cross residential estate abut the land in the northwest corner and provides an alternative means of access. The site is directly bound on the east by the Clonakilty Park Hotel. A snapshot of the site location is shown in Figure 16.1 below.

Figure 16.1 Site Location Map

The site which is currently undeveloped is used as agricultural land. The existing ground levels across the overall site are typically graded from south to north, with typical high points in the order of 33m OD along the southern boundary and a low point of 20m OD at the norther boundary. This gives a typical gradient of approximately 1:20 across the site.

There is an unnamed stream to the east of the site adjoining the Clonakilty Park Hotel which flows north and joins the Fealge River at the rear of the Park View residential estate.

16.3.2 Existing Surface Water Network

There are two stormwater catchment within the subject land, which outfalls towards the north east and north-west. An existing unnamed watercourse is located to the east of the site which can serve the lands. This watercourse travels under the N71 Park Road and through Park View residential estate before it discharges to the Fealge River downstream of the bridge between the Western Road and Michael Collins Road. The existing storm network in the adjoining Lady's Cross residential estate will serve the remainder of the catchment.

16.3.3 Existing Foul Sewer Network

There are no records or evidence indication the presence of any foul water drainage infrastructure within the site.

For the western section of the site, there is an existing 225mm foul sewer located within the Lady's Cross Estate road. This sewer runs westward towards the L4007 Cloheen Road and then continues northwards to the N71

For the eastern section of the site, there the foul sewer travels through the Clonakilty Enterprise Park and out to the N71. The road and sewer are not yet in public ownership, so permission will need to be obtained and capacity will need to be confirmed in the network as part of the arterial route application with Uisce Éireann.

Figure 16.2 Existing Wastewater Network

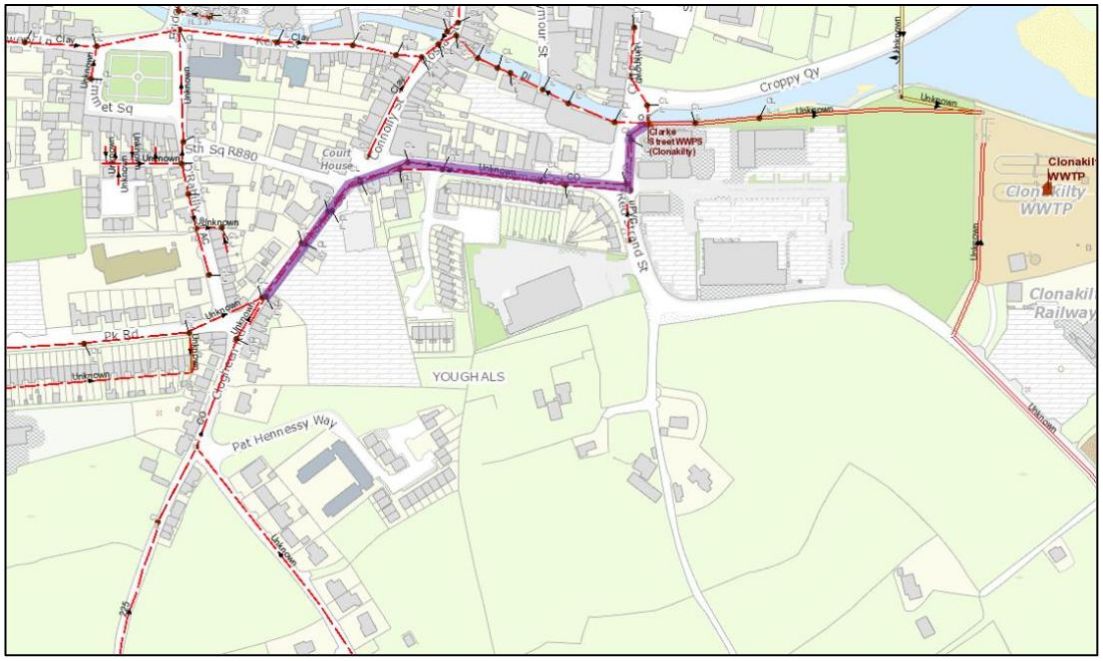

Figure 16.3 Existing Wastewater Network

16.3.4 Existing Water Supply Network

The existing watermain to the west, located in the Lady's Cross Estate, is identified as a 100mm HDPE pipe, which connects to a 250mm uPVC main along the L4007 Cloheen Road. On the eastern side, the existing watermain comprises a 100mm uPVC pipe that traverses the Clonakilty Enterprise Park and connects to a 300mm ductile iron main on the N71.

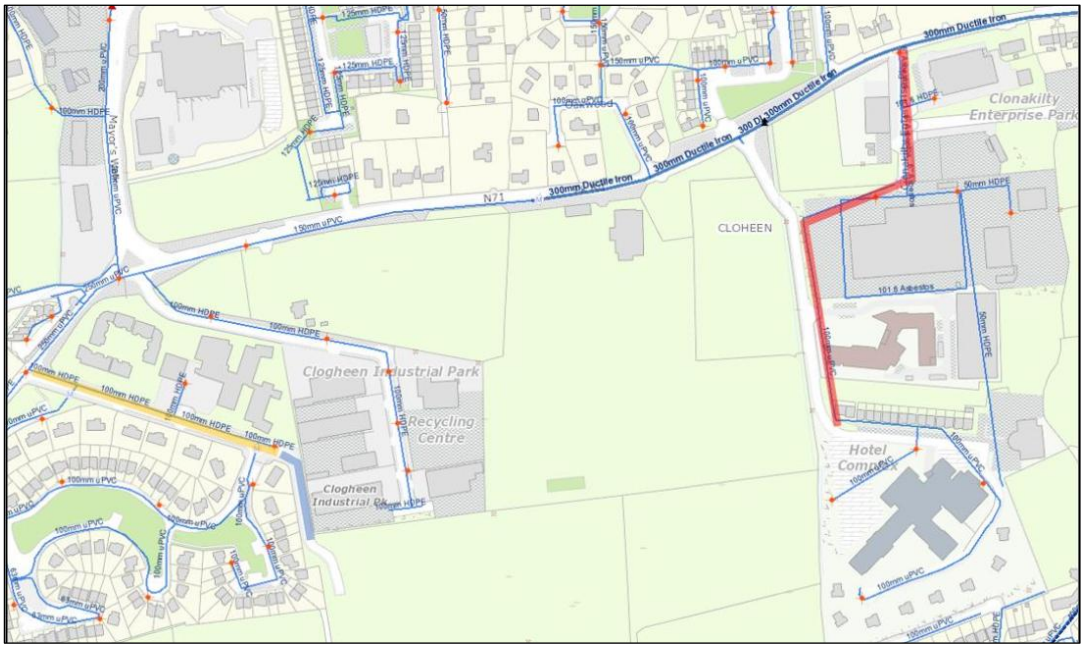

Figure 16.4 Water Supply Network

16.3.5 Electricity

ESB Networks currently operates established medium voltage (MV) and low voltage (LV) distribution infrastructure surrounding the site on the northern, eastern, and western boundaries. This infrastructure forms part of the regional electrical distribution network and provides power to adjacent residential, commercial, and agricultural areas. In addition to perimeter infrastructure, a network of MV overhead lines traverses the site itself.

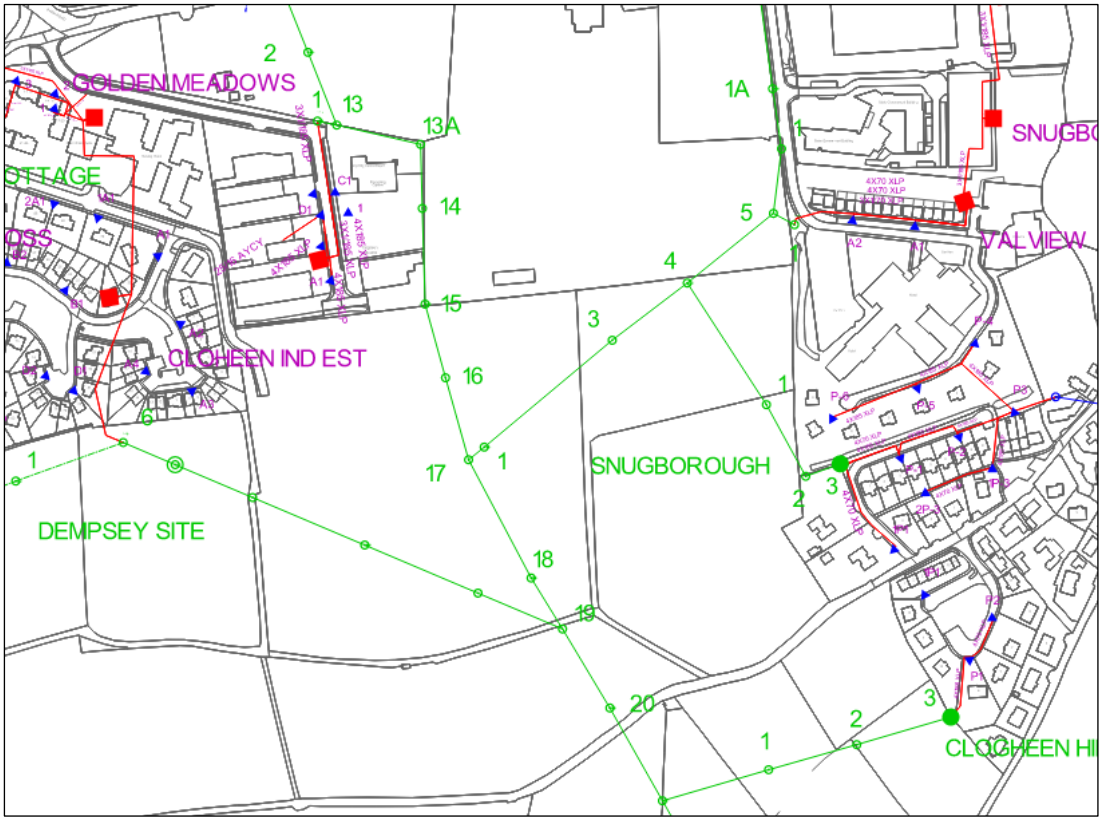

Figure 16.5 Existing ESB Network

16.3.6 Telecommunications

The proposed development is presently well serviced with underground telecoms to the north-east and north-west of the site. Figure 16.3.6 below outlines the information received from EIR indicating their existing infrastructure map.

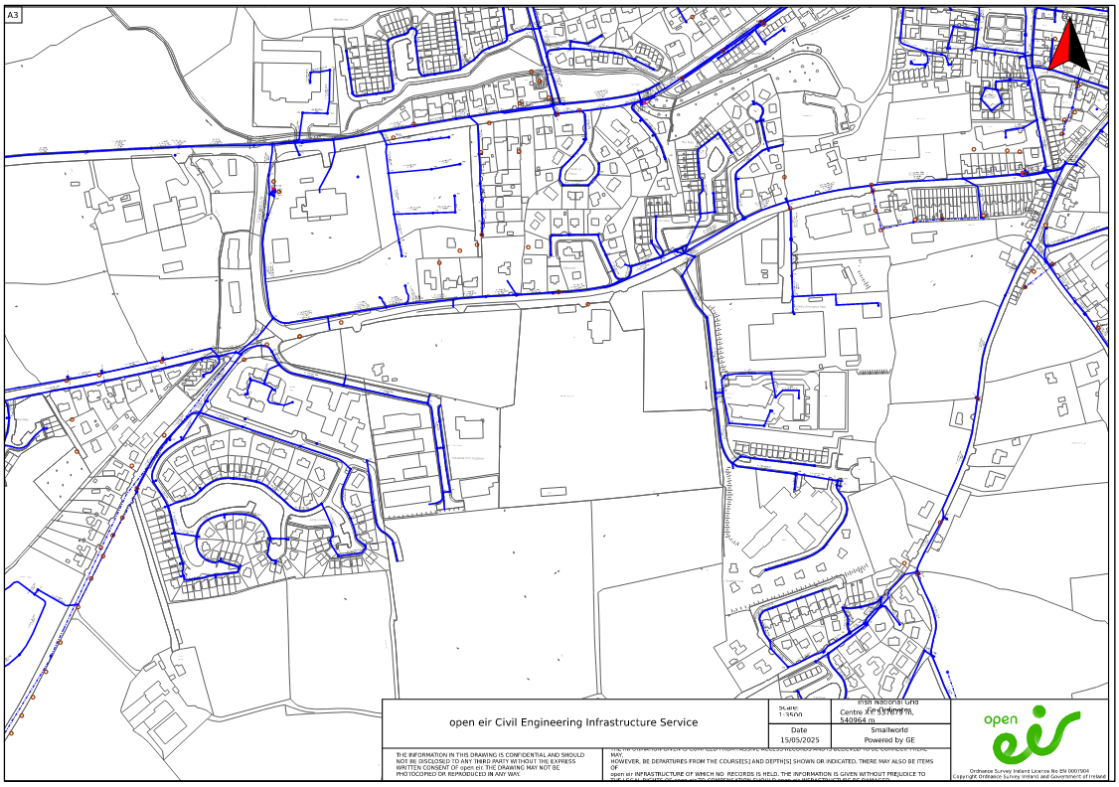

Figure 16.6 Existing Telecommunication Network

16.3.7 Gas

Gas Networks Ireland (GNI) do not currently have infrastructure in the area.

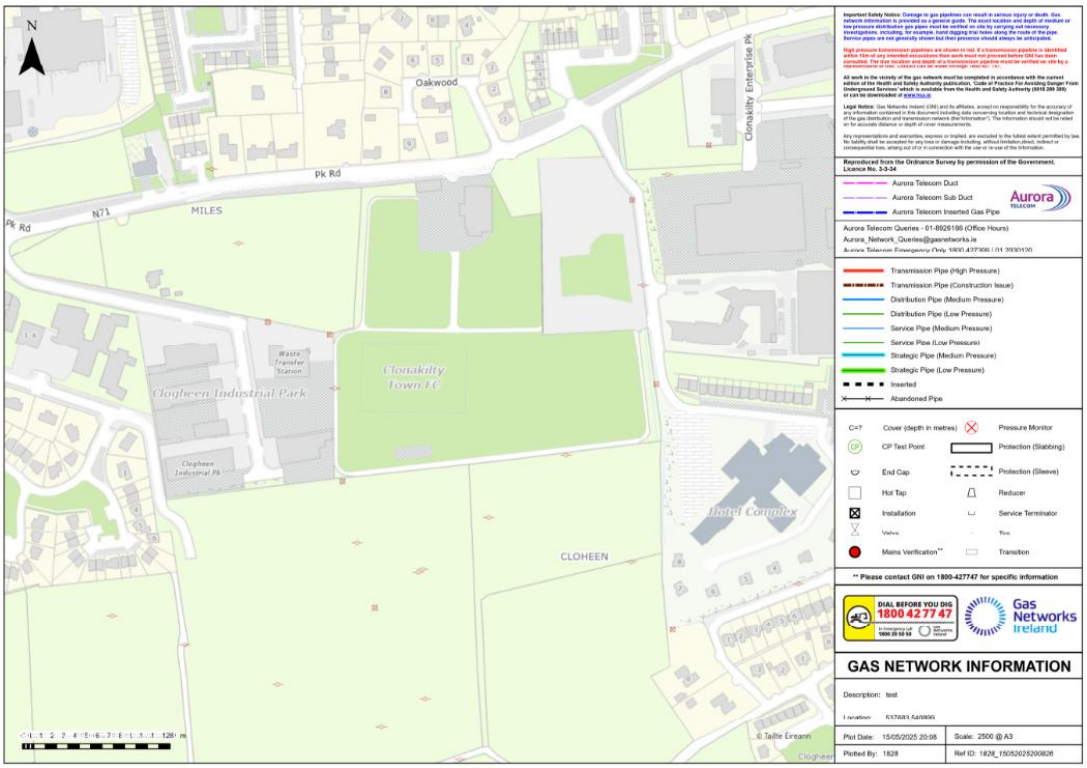

Figure 16.7 Existing Gas Network