Greater Dublin Drainage Project

Irish Water

Environmental Impact Assessment Report: Volume 3 Part A of 6

Chapter 12 Landscape and Visual

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Contents

12. Landscape and Visual

This Chapter assesses the landscape effects and visual effects of the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project), separately and in accordance with the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Management and Assessment 2013). Landscape effects relate to changes to physical landscape features and fabric and how these may affect landscape character. Visual effects relate to changes to views experienced by people and groups of people. Landscape effects and visual effects were assessed for each aspect of the Proposed Project (proposed Abbotstown pumping station, orbital sewer route, Wastewater Treatment Plant, outfall pipeline route (land based section and marine section) at both the Construction Phase and the Operational Phase.

The receiving landscape is a richly diverse mix of industrial, residential, rural and major transport and electrical infrastructure. This typical peri-urban land use mix contributes to a general robustness for this landscape setting. However, there are some more sensitive landscapes associated with historic demesnes and the coastal environs of Portmarnock.

Given that the proposed pipeline routes of the Proposed Project will be buried underground (or run along the seabed) and the landscape above reinstated, Operational Phase landscape and visual impacts will be negligible. The localised, temporary and transient nature of pipeline related construction works also ensures that significant impacts will not occur at the Construction Phase.

The proposed Abbotstown pumping station will be a modest scale facility that will be well enclosed and substantially housed in a vernacular building that will not contrast with its surrounding landscape setting.

The proposed Wastewater Treatment Plant has the most potential to generate significant impacts due to the scale and nature of the facility in an urban/rural interface setting. However, significant impacts are not considered to occur as it is buffered from surrounding roads and residences by considerable distances and will not be readily visible from the surrounding area even without the consideration of the suite of mitigation measures proposed. Some of the proposed mitigation measures are 'embedded' in the overall siting and design of the Proposed Project and consist of a perimeter earth berm, the dispersed arrangement of buildings within the site, and a recessive and disseminated colour scheme for buildings. When these inherent mitigation measures are coupled with the proposed internal planting within the proposed Wastewater Treatment Plant site and external planting to the perimeter berm, residual impacts will be further reduced.

12.1 Introduction

This Chapter describes the landscape context of the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project) and assesses the likely landscape and visual effects of the Proposed Project on the receiving environment. Although closely linked, landscape and visual effects are assessed separately, as the effects on the physical landscape and landscape character resulting from the Proposed Project form the baseline of the assessment of visual impacts for visual receptors.

Landscape Impact Assessment (LIA) relates to changes in the physical landscape, brought about by the Proposed Project, which may alter its character and how this is experienced. This requires a detailed analysis of

the individual elements and characteristics of a landscape that go together to make up the overall landscape character of that area. By understanding the aspects that contribute to landscape character, it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape in question to accommodate the type and scale of change associated with the Proposed Project, without causing unacceptable adverse changes to its character.

Visual Impact Assessment (VIA) relates to changes in the composition of views as a result of changes to the landscape, how these are perceived and the effects on visual amenity. Such impacts are population based, rather than resource based as in the case of landscape impacts. Visual impacts are measured on the basis of:

- Visual Obstruction (blocking of a view, be it full, partial or intermittent); or
- Visual Intrusion (interruption of a view without blocking).

The preparation of this Landscape and Visual Chapter for the Environmental Impact Assessment Report (EIAR) follows an extensive scoping exercise and four Alternative Sites Assessment (ASA) stages, where the potential landscape and visual effects have been considered iteratively with other relevant Environmental Impact Assessment (EIA) topics as part of the collaborative ASA process. Chapter 5 Consideration of Alternatives in Volume 3 Part A of this EIAR covers the ASA process in detail.

The Proposed Project will form a significant component of a wider strategy to meet future wastewater treatment requirements within the Greater Dublin Area as identified in a number of national, regional and local planning policy documents. The plant, equipment, buildings and systems associated with the Proposed Project will be designed, equipped, operated and maintained in such a manner to ensure a high level of energy performance and energy efficiency.

The table below includes a summary of the Proposed Project elements. A full description of the Proposed Project is detailed within Volume 2 Part A, Chapter 4 Description of the Proposed Project of this EIAR.

Proposed Project Element	Outline Description of Proposed Project Element
Proposed Wastewater Treatment Plant (WwTP)	• WwTP to be located on a 29.8 hectare (ha) site in the townland of Clonshagh (Clonshaugh) in Fingal. • 500,000 population equivalent wastewater treatment capacity. • Maximum building height of 18m. • Sludge Hub Centre (SHC) to be co-located on the same site as the WwTP with a sludge handling and treatment capacity of 18,500 tonnes of dry solids per annum. • SHC will provide sustainable treatment of municipal wastewater sludge and domestic septic tank sludges generated in Fingal to produce a biosolid end-product. • Biogas produced during the sludge treatment process will be utilised as an energy source. • Access road from the R139 Road, approximately 400m to the southern boundary of the site. • Egress road, approximately 230m from the western boundary of the site, to Clonshaugh Road. • A proposed temporary construction compound to be located within the site boundary.
Proposed Abbotstown pumping station	• Abbotstown pumping station to be located on a 0.4ha site in the grounds of the National Sports Campus at Abbotstown. • Abbotstown pumping station will consist of a single 2-storey building with a ground level floor area of 305m^2 and maximum height of 10m and a below ground basement 17m in depth with floor area of 524m^2 incorporating the wet/dry wells. • The plan area of the above ground structure will be 305m^2 and this will have a maximum height of 10m. • A proposed temporary construction compound to be located adjacent to the Abbotstown pumping station site.
Proposed orbital sewer route	• The orbital sewer route will intercept an existing sewer at Blanchardstown and will divert it from this point to the WwTP at Clonshagh. • Constructed within the boundary of a temporary construction corridor. • 13.7km in length; 5.2km of a 1.4m diameter rising main and 8.5km of a 1.8m diameter gravity sewer. • Manholes/service shafts/vents along the route. • Odour Control Unit at the rising main/gravity sewer interface. • Proposed temporary construction compounds at Abbotstown, Cappoge, east of Silloge, Dardistown and west of Collinstown Cross to be located within the proposed construction corridor.
Proposed North Fringe Sewer (NFS) diversion sewer	• The NFS will be intercepted in the vicinity of the junction of the access road to the WwTP with the R139 Road in lands within the administrative area of Dublin City Council. • NFS diversion sewer will divert flows in the NFS upstream of the point of interception to the WwTP. • 600m in length and 1.5m in diameter. • Operate as a gravity sewer between the point of interception and the WwTP site.
Proposed outfall pipeline route (land based section)	• Outfall pipeline route (land based section) will commence from the northern boundary of the WwTP and will run to the R106 Coast Road. • 5.4km in length and 1.8m in diameter. • Pressurised gravity sewer. • Manholes/service shafts/vents along the route. • Proposed temporary construction compounds (east of R107 Malahide Road and east of Saintdoolaghs) located within the proposed construction corridor.
Proposed outfall pipeline route (marine section)	• Outfall pipeline route (marine section) will commence at the R106 Coast Road and will terminate at a discharge location approximately 1km north-east of Ireland's Eye. • 5.9km in length and 2m in diameter. • Pressurised gravity tunnel/subsea (dredged) pipeline. • Multiport marine diffuser to be located on the final section. • Proposed temporary construction compounds (west and east of Baldoyle Bay) to be located within the proposed construction corridor.
Proposed Regional Biosolids Storage Facility	• Located on an 11ha site at Newtown, Dublin 11. • Maximum building height of 15m. • Further details and full impact assessment are provided in Volume 4 Part A of this EIAR.

The total Construction Phase will be approximately 48 months, including a 12 month commissioning period to the final Operational Phase. The Proposed Project will serve the projected wastewater treatment requirements of existing and future drainage catchments in the north and north-west of the Dublin agglomeration, up to the Proposed Project's 2050 design horizon.

Please note that the Landscape and Visual Impact Assessment of the proposed RBSF aspect of the Proposed Project is addressed in Chapter 14 Landscape in Volume 4 Part A of this EIAR.

12.2 Methodology

The methodology employed for the ASA stages, as well as that used for this EIAR assessment of the Proposed Project, is outlined below.

12.2.1 Relevant Guidance Documents

This Landscape and Visual Impact Assessment is based on:

- *Guidelines on the Information to be Contained in Environmental Impact Statements* (Environmental Protection Agency (EPA), 2002) (and revised and draft guidelines 2015/2017);
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003) (and revised advice notes 2015); and
- Landscape Institute and the Institute of Environmental Management and Assessment (IEMA) publication entitled *Guidelines for Landscape and Visual Impact Assessment*, Third Edition (Landscape Institute and IEMA 2013).

12.2.2 Desk Study and Consultation

Preliminary identification, description and evaluation of the existing landscape and visual context of the wider study area involved a desk-based review and interrogation of a range of information sources, but principally Fingal County Council's (FCC's) *Fingal Development Plan 2017-2023* (FCC 2017). Specifically, the Fingal Landscape Character Assessment, designated scenic routes and views as well as Green Infrastructure policies were reviewed. This informed the selection of an appropriate study area, within which, to examine the landscape and visual effects of the Proposed Project. It also identified sensitive and representative receptor locations within the study area.

The desk study also included a literature review and internet searches relating to tourism and recreational features and amenities within the study area. Fáilte Ireland also provided information from their database in relation to tourist accommodation providers in the area. Such features are potentially sensitive visual receptor locations.

Aside from consultation with Fáilte Ireland regarding tourism assets in the study area, the majority of consultation has been undertaken with FCC Planners, particularly in relation to the design and mitigation strategy for the proposed WwTP element and the proposed Abbotstown pumping station. This involved a series of around five workshops and presentations throughout the course of the pre-planning phase.

12.2.3 Study Area

The ASA stages of the Proposed Project required an extensive study area that encompassed all nine of the emerging preferred sites for the proposed WwTP and the associated pipeline routes that were initially considered. This study area included much of Fingal and the northern extents of Dublin City and was large enough to ensure that relevant receptors were not overlooked.

A refined study area of 3km radius from the proposed WwTP site boundary was used (refer to Figure 12.1 Landscape and Visual Impact Assessment Study Area). It is considered that the extent of the study area strikes a

balance between encompassing all potentially affected receptors and the requirement to produce a focused assessment. The 3km extent of the study area was determined through desk study and fieldwork.

The landscape and visual impacts from the proposed orbital sewer route and outfall pipeline route (land based section) and associated proposed temporary construction compounds (refer to Figure 12.1 Landscape and Visual Impact Assessment Study Area) will only occur during the Construction Phase, and these impacts will be temporary and localised. Therefore, a 500m study area either side of these proposed pipeline routes and around the 10 proposed temporary construction compound sites is considered to be appropriate.

The proposed Abbotstown pumping station will be a modest scale feature that will be housed in a vernacular structure (similar to a small single-storey dwelling). The proposed Abbotstown pumping station site is also heavily enclosed by mature vegetation. For these reasons, a 500m radius study area is considered appropriate for this element of the Proposed Project.

12.2.4 Field Studies

During the ASA stages of the Proposed Project, fieldwork was undertaken in respect of all potential sites in the context of identifying relevant landscape character types and relevant visual receptors with contextual photography also being captured. For the emerging preferred three sites (ASA Phase 4), Route Screening Analysis (RSA) was undertaken, as well as photography from selected viewpoints, for the production of simple 'mass-model' photomontages. Photomontages were used to compare visibility from the road network (within 2km of each site) and the likely visibility from surrounding receptor locations.

The subsequent EIAR fieldwork for the Proposed Project was undertaken at various times. The fieldwork involved the further investigation of potential visibility of all Proposed Project elements and, consequently, the refinement and verification of the selected viewpoint locations from the desk-based study. Fieldwork also included the capture of high-resolution photography for the preparation of the photomontages that form the basis of the VIA. Initial baseline photography was also recaptured where necessary to take account of changes to the visual setting at selected viewpoints over the course of the development of the Proposed Project. Photomontages accurately represent the way in which a future development will appear within a particular view by superimposing a photo-realistic model of it into an existing photograph that represents the view in question. Field notes were also recorded in relation to land use, significant landscape features and overall landscape character. This process was used to inform the baseline Landscape Character Assessment. The project-specific Landscape Character Assessment is not intended to override the Fingal Landscape Character Assessment. Instead, it has allowed for a comparison with the broader scale document to identify points of commonality and also where the county based assessment may not have identified salient landscape features or finer scale aspects of landscape character that are pertinent to the Proposed Project. This is particularly relevant to complex hinterland areas, as county-based landscape character assessments tend to focus on the core aspects of countryside (non-urban) character.

12.2.5 Assessment Criteria

a) Landscape Impact Assessment

In carrying out this assessment of the potential impacts on the landscape resulting from the Proposed Project, the following criteria have been considered:

- Landscape sensitivity;

- Magnitude of likely impacts; and
- Significance of landscape effects.

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new features without significant detrimental effects to its essential characteristics. Landscape sensitivity is classified using the criteria outlined in Table 12.1.

Table 12.1: Landscape Sensitivity Categories

Landscape Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change from development. Examples include high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level, where the principal management objectives are likely to be conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration to realise a higher landscape value.

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the Proposed Project. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the proposed WwTP site boundary that may have an effect on the landscape character of the area.

Table 12.2: Magnitude of Landscape Impacts

Magnitude of Landscape Impact	Description
Very High	Irreversible, permanent/long-term change that would be large in extent and scale with the loss of critically important landscape elements and features that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality
High	Irreversible, permanent/long-term change that would be more limited in extent and scale with the loss of important landscape elements and features that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality

Magnitude of Landscape Impact	Description
Medium	Changes that are modest in extent and scale and/or of medium-term duration (or less) and readily reversible, involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in landscape character and quality
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements. Such impacts may also be short-term or temporary in duration and readily reversible
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable. Such impacts may also be short-term or temporary in duration and readily reversible

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the matrix outlined in Table 12.3.

Table 12.3: Landscape/Visual Significance of Effect Matrix

	Sensitivity of Receptor				
Magnitude	***Very High***	***High***	***Medium***	***Low***	***Negligible***
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

b) Visual Impact Assessment

The significance of the likely visual effects of the Proposed Project will be assessed as a function of receptor sensitivity and the magnitude of visual impacts.

i.. Visual Sensitivity

Unlike landscape sensitivity, which deals with the landscape as a resource in its own right, visual sensitivity has a human basis. Visual sensitivity is a two-sided analysis of receptor susceptibility (people or groups of people) versus the value of the view at a particular location.

ii. Susceptibility of Receptors

In accordance with the *Guidelines for Landscape and Visual Assessment*, Third Edition (Landscape Institute and IEMA 2013), visual receptors most susceptible to changes in views and visual amenity are:

- Residents at home;
- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
- Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting enjoyed by residents in the area; and
- Travellers on road, rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened.

Visual receptors that are less susceptible to changes in views and visual amenity include:

- People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape; and
- People at their place of work whose attention may be focused on their work or activity, not their surroundings and where the setting is not important to the quality of working life.

iii. Value of Views

To assess the amenity value of views, a range of criteria that typically are related to high amenity value including, but not limited to, scenic designations are used. These are set out below:

- **Recognised scenic value of the view** (as outlined in County Development Plan designations, guidebooks, touring maps, postcards, etc.). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population;
- **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations, which will normally form part of a county's Landscape Character Assessment and be incorporated in the County Development Plan. Viewers within such areas are likely to be highly attuned to the landscape around them;
- **Intensity of use, popularity**. Whilst not reflective of the amenity value of a view, this criterion relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;
- **Provision of elevated panoramic views**. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;
- **Sense of remoteness and/or tranquillity**. Remote and tranquil viewing locations are more likely to heighten the amenity value of a view and have a lower intensity of development in comparison to dynamic viewing locations such as a busy street scene, for example;
- **Degree of perceived naturalness**. Where a view is valued for the sense of naturalness of the surrounding landscape, it is likely to be highly sensitive to visual intrusion by obvious human interventions;
- **Presence of striking or noteworthy features**. A view might be strongly valued because it contains a distinctive and memorable landscape feature, such as a promontory headland, lough or castle;

- **Historical, cultural or spiritual value**. Such attributes may be evident or sensed at certain viewing locations that attract visitors for the purposes of contemplation or reflection, heightening the sense of their surroundings;
- **Rarity or uniqueness of the view**. This might include the noteworthy representativeness of a certain landscape type and considers whether other similar views might be afforded in the local or the national context;
- **Integrity of the landscape character in view**. This criterion considers the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;
- **Sense of place**. This criterion considers whether there is a special sense of wholeness and harmony at the viewing location; and
- **Sense of awe.** This criterion considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations where highly susceptible receptors or receptor groups are present and which are deemed to satisfy many of the view value criteria above are likely to be judged to have a high visual sensitivity and vice versa.

iv. Visual Impact Magnitude

The magnitude of visual impacts is determined on the basis of two factors: the visual presence of the Proposed Project and its effect on visual amenity.

Visual presence is an almost quantitative judgement relating to how noticeable or visually dominant the Proposed Project is within a particular view. This is based on a number of aspects beyond simply scale in relation to distance. Some of these aspects include the extent of the overall view and the proportion of it likely to be occupied by the Proposed Project as well as visual complexity and the degree of existing contextual movement (e.g. a busy street scene). The backdrop against which the Proposed Project is presented and its relationship with other focal points or prominent features within the view has also been considered. Visual presence is essentially a measure of the relative visual dominance of the Proposed Project within the available vista and is often expressed as such, i.e. minimal, sub-dominant, co-dominant, dominant or highly dominant. At the ‘minimal’ end of the spectrum the proposed feature is barely discernible and at the ‘highly dominant’ end it will be, by far, the most visually prominent feature of the view.

The visual amenity aspect of assessing impact magnitude is qualitative and considers such factors as the spatial arrangement of the Proposed Project within the site and in relation to surrounding terrain and land cover. It also examines whether the Proposed Project contributes positively to the existing qualities of the vista or results in distracting visual effects and disharmony.

It should be noted that, as a result of this two-sided analysis, a high order visual presence can be moderated by a low level of effect on visual amenity and vice versa. The magnitude of visual impacts is classified in Table 12.4.

Table 12.4: Magnitude of Visual Impacts

Magnitude of Visual Impact	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. A high degree of visual disorder or disharmony is also generated, strongly reducing the visual amenity of the scene. A permanent/long-term effect that is not readily reversible.
High	The proposal intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual disorder or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene. A permanent/long-term effect that is not readily reversible.
Medium	The proposal represents a moderate intrusion into the available vista, is a readily noticeable element and/or it may generate a degree of visual disorder or disharmony, thereby reducing the visual amenity of the scene. Alternatively, it may represent a balance of higher and lower order estimates in relation to visual presence and visual amenity or an effect of medium-term duration (or less) that is readily reversible.
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene or is a short-term/temporary effect that is readily reversible.
Negligible	The proposal would be barely discernible within the available vista and/or it would not detract from, and may even enhance, the visual amenity of the scene and/or is temporary in duration.

v. Visual Impact Significance

As stated above, the significance of visual effects is a function of visual receptor sensitivity and the magnitude of visual impacts. This relationship is expressed in the same significance matrix as provided in respect of landscape effects (refer to Table 12.3 above).

12.3 Baseline Environment

12.3.1 Landscape Baseline

The landscape baseline represents the existing landscape context and is the scenario against which any changes to the landscape brought about by the Proposed Project have been assessed. The landscape baseline includes a consideration of both landscape character and landscape value. These aspects are also informed by the relevant landscape policy context and any landscape character assessments previously undertaken for strategic landscape planning purposes.

12.3.2 Landscape Character

A description of the landscape context of the proposed site and wider study area is provided below under the headings of ‘Landform and Drainage’, ‘Land Cover’, ‘Human Influences’ and ‘Aesthetic and Perceptual Aspects’. These aspects are then summarised in terms of landscape character. Although this description forms part of the landscape baseline, many of the landscape elements identified also relate to visual receptors, e.g. places and

transport routes from which viewers can potentially see the Proposed Project. The visual resource will be described in greater detail in Section 12.3.512.3.6 below.

a) Landform and Drainage

Proposed Wastewater Treatment Pant

The landform of the proposed WwTP site and its surrounds is generally flat to mildly undulating with a gentle slope to the south-east. The northern boundary of the site lies to the south of the Cuckoo Stream, which is a branch of the Mayne River. Therefore, the boundary of the proposed WwTP site reflects the zigzagging course of the stream as it meanders through the surrounding field pattern in an easterly direction. A second branch of the Mayne River occurs approximately 400m to the south of the proposed WwTP site. This also runs in an easterly direction before converging with the northern tributary near Wellfield Bridge some 2km to the east-south-east of the proposed WwTP site. The Mayne River travels a further 2km to Baldoyle Estuary. The only variation to the flat to gently sloping topography within the vicinity of the proposed WwTP site is a small hill at Feltrim 3km to the north, which has been substantially quarried.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

Continuing eastwards along the proposed outfall pipeline route (land based section), the flat terrain joins a complex coastline of sandy spits and estuaries where the proposed outfall pipeline route (marine section) occurs. From north to south, the notable features of this broader section of coastline consists of the Malahide Estuary, Velvet Strand, Baldoyle Estuary, Howth Head and Bull Island, though the proposed outfall pipeline route (land based section) and associated study area only encounters Baldoyle Estuary and Velvet Strand before the proposed outfall pipeline route (marine section) continues across the seabed.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

West of the proposed WwTP along the proposed orbital sewer route, the landform remains flat to gently undulating and several streams are encountered before arriving at the proposed Abbotstown pumping station site.

b) Land Cover

Proposed Wastewater Treatment Plant

The proposed WwTP site is currently contained in large tillage fields. The field pattern is dictated by meandering watercourses and drainage ditches along northern and southern boundaries, but is divided in a more geometric fashion along the shorter eastern and western boundaries. Beyond the site boundary to the north are similarly large tillage fields with some evidence of market gardening immediately to the west. Smaller pastoral fields emerge to the south between the site and the R139 Road (formerly N32 National Road) and east towards the R107 Malahide Road. The fields within and around the site are divided by mixed-species, broadleaf hedgerows. These tend to be low and somewhat patchy between the larger tillage fields. They are taller and more consistent around the smaller pastoral fields and include some mature tree lines and linear patches of riparian woodland, particularly to the east of the site.

The proposed WwTP site is encircled by four roads and the busiest of these is the R139 Road, which is approximately 500m to the south at its closest point and will provide access to the site. The Clonshaugh Road is a country lane and is some 300m to the west at its nearest point and which is also where the proposed site egress

will be obtained. The north-south running R107 Malahide Road is also a busy link between the northern suburbs of Dublin and the coastal settlement of Malahide. This is just over 1km to the east of the site at its nearest point. Finally, Baskin Lane links in an east-west direction between the R107 Malahide Road and Clonshaugh Road and is approximately 900m north of the proposed WwTP site at its nearest point. Whilst these circulating roads do not contribute significantly to the land cover in the vicinity of the proposed WwTP site, they dictate some land use patterns and serve as a good reference to describe the location of other land uses.

Other non-rural land uses that contribute noticeably to the land cover within the network of roads described above include sports fields (Craobh Chiaráin Gaelic Athletic Association (GAA) Club) adjacent to the north of the R139 Road and at Balgriffin (Cumann Peil Innisfail GAA Club). Just to the north of the latter is one part of Balgriffin Cemetery, the other larger section of this cemetery being just to the east of the R107 Malahide Road. A cluster of industrial and commercial development (Northern Cross) occupies the north-western corner of the R139 Road and R107 Malahide Road intersection. This area also contains the sizeable Belcamp College site (disused). At the intersection of the R139 Road and Clonshaugh Road is Clayton Hotel Dublin Airport and its associated circulation and car parking areas. Adjacent to this in the direction of the proposed WwTP site is a recently constructed Topaz service station.

Beyond the encircling road network of the proposed WwTP site are a range of typical peri-urban land uses. To the west of the site (800m) is the M1 Motorway, which links Dublin and Belfast. This multiple-lane motorway, with planted median, hard shoulders and planted embankments, represents a significant piece of transport infrastructure and indeed land cover within the vicinity of the proposed site. This is particularly the case where it links with the M50 Motorway 1km to the west-south-west of the site, forming an elevated 'spaghetti junction'. Immediately beyond the M50 Motorway to the north-west of the proposed WwTP site is Dublin Airport. The proposed WwTP is on the predominant flight approach to the airport. The airport and its associated infrastructure of runways and terminal buildings cover a substantial area. Between the M50 Motorway and the airport are several expansive long-stay car parks and industrial and freight distribution sites, most of which are operationally dependent on proximity to the airport. Some small pastoral fields, the ALSAA sports pitches and Dardistown Cemetery are also in this area, with the proposed orbital sewer route passing between the latter.

The land cover to the north of Baskin Lane is predominantly rural, but is contained in a network of small geometric fields defined by well-established broadleaf hedgerows. Providing some land cover variation is the residential enclave of Ballymacartle and The Baskins, which is accessed off the northern side of Baskin Lane. As mentioned earlier, an extensive quarrying operation exists at Feltrim to the north.

On the eastern side of the R107 Malahide Road there are a range of urban/rural interface developments such as garden centres and filling stations as well as some residential development. Beyond the road edge the land cover returns to a predominantly rural one, except in the vicinity of Northern Cross where extensive residential development occurs at Balgriffin Park and Belmayne.

To the south of the proposed WwTP site and the R139 Road, the land cover is almost exclusively residential housing within the suburbs of Darndale and Clarehall. The grounds of Belcamp House and the adjacent Belcamp Park are distinct green areas within the landscape to the south of the Clayton Hotel Dublin Airport roundabout. Further to the south-west beyond these green spaces is the extensive Clonshaugh Business and Technology Park.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The proposed outfall pipeline route (land based section) continues from the edge of the proposed WwTP study area towards the coast through a hinterland landscape of farmed fields that divide the north Dublin suburb of Clongriffin from the small rural/residential enclave of Old Portmarnock. The proposed outfall pipeline route (land based section) then crosses the Dublin-Belfast railway line before it encounters the estuarine inlet of Baldoyle Estuary, which is separated from open sea by the coastal spit that hosts the Portmarnock Golf Club, the Portmarnock Hotel and Golf Links and Velvet Strand.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The proposed orbital sewer route continues westward towards the proposed Abbotstown pumping station element from the western perimeter of the proposed WwTP study area, passing through a wide variety of typical peri-urban land use areas. It runs adjacent to the M50 Motorway for a short section before crossing Silloge Park Golf Club, then through farmed fields that skirt industrial estates before crossing the M1 Motorway near a major electrical substation. The proposed orbital sewer route continues adjacent to the M50 Motorway through farmed fields to the south of a substantial quarry before encountering the open parkland landscape of the Connolly Hospital and St. Francis' Hospice grounds and those of the NSC where the proposed Abbotstown pumping station will be located.

c) Human Influences

Proposed Wastewater Treatment Plant

Like much of Ireland, the area of the Proposed Project was probably once covered in Oak forest, which was eventually cleared for farming. Whilst the proposed WwTP site and its immediate rural surrounds have remained as farmland for centuries, the landscape of the wider area to the south, west and east has undergone considerable change in the last 50 years.

In respect of the proposed WwTP study area, the R107 Malahide Road is the long established link between Dublin City and the settlement of Malahide. Whilst historically it has not been a focus for intensive ribbon development, a string of stately houses were constructed over recent centuries that access directly onto it (via long driveways) from the west. These stately houses include Woodlands House, Belcamp Hutchinson, Spring Hill, Emsworth and Abbeyville House. Together with Belcamp School, these stately houses and their demesnes form something of a heritage belt between the proposed WwTP site and the R107 Malahide Road. With an increasing population in settlements and new housing estates to the north of Dublin, the R107 Malahide Road has also become increasingly congested in recent years.

The residential suburb of Darndale was constructed by Dublin Corporation in the mid-1970s for social housing purposes and extended the built edge of Dublin City northwards from the suburb of Coolock. In the last decade, the area to the east of Darndale at Clarehall has become intensively developed for commercial and residential purposes. The node for this development is the junction of the R107 Malahide Road and the R139 Road known as Northern Cross. Two landmark developments at this location are the Hilton Hotel and a large Tesco supermarket.

The theme of development to the west of the proposed WwTP site is transport infrastructure. This has developed at an exponential rate in recent decades with the expansion of Dublin Airport and the development of the M1

Motorway and M50 Motorway. Strategically, these pieces of transport infrastructure have driven the expansion of retail warehousing, freight distribution, airport accommodation, long-term car parking and other associated forms of development that are reliant on close links to major transport infrastructure.

It is likely that there will be continued pressure for these northward expansion trends to continue, and the form of this expansion will be dictated by the *Fingal Development Plan 2017-2023* (FCC 2017) zoning policies. Two important zoning objectives in the near vicinity of the proposed WwTP site are for a new Malahide Relief Road, a new East-West Distributor Road and a business and technology park. These would be located immediately to the south and east of the proposed WwTP site.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

Development in the coastal landscape containing the proposed outfall pipeline route (land based section) has been more constrained with a lesser degree of major industrial activity. However, there is some recent and substantial residential development a short distance inland of Baldoyle Estuary, at Clongriffin, where multi-storey apartment blocks centre on Clongriffin DART station.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The landscape immediately north of the M50 Motorway, which contains the proposed orbital sewer route study area, is generally a mixed accumulation of peri-urban industrial development, transport infrastructure and residential development within a diminishing matrix of farmland. A more legible and controlled land use pattern occurs around the western end of the proposed orbital sewer route and proposed Abbotstown pumping station study area in the vicinity of the NSC, Connolly Hospital and St. Francis' Hospice.

d) Aesthetic and Perceptual Aspects

Proposed Wastewater Treatment Plant

The proposed WwTP site and its immediate surrounds have something of a pleasant 'pastoral' aesthetic. This is not a reference to the specific land use, but to a recognised Arcadian ideal celebrated in historic paintings and literature. In this instance, it is represented by gently rolling fields and hedgerows. A truer form of the pastoral aesthetic can be found in the demesne landscapes of the stately houses that lie to the east of the site along the R107 Malahide Road. These houses were constructed during a period where elements of the pastoral aesthetic were deliberately incorporated into the design of landscape gardens, often being the distant focus of axial views.

Whilst there is a sense of openness in the central proposed WwTP study area (in the immediate vicinity of the site), there is also a degree of distant containment by mature tree lines and hedgerows. These serve to visually and perceptually separate the central proposed WwTP study area from the encroaching edge of urban development immediately beyond. Consequently, there is some sense of tranquillity and remoteness in the central proposed WwTP study area; however, this is largely relative to the hustle and bustle of the urban areas that enclose it in all directions except to the north. There is little or no sense of the naturalistic within the central proposed WwTP study area. Instead, there is an impression that this is a productive rural landscape with a relatively high degree of integrity.

Within the wider proposed WwTP study area to the west, south and east, the landscape is perceived to be a transitional one in both a physical and temporal sense. This is manifest in a range of land uses, built

developments and seemingly redundant sites, which are typical of peri-urban landscapes undergoing rapid transition. There is a comparatively low degree of landscape integrity in these areas.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The strongest sense of the naturalistic occurs at the coastal (eastern) end of the proposed outfall pipeline route (land based section) where it meets Baldoyle Estuary, the sandy spit that hosts Portmarnock Hotel and Golf Links, Portmarnock Golf Club and Velvet Strand before entering the Irish Sea. This intricate section of coastline comprises rich tones and textures of built and naturalistic forms and, therefore, has many picturesque qualities.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The transitional landscape character described for the wider proposed WwTP study area continues west along the route of the proposed orbital sewer route and, to a slightly lesser extent, along the proposed outfall pipeline route (land based section) to the east. Again, there is a comparatively low degree of landscape integrity in these northern fringe areas, particularly to the north of the M50 Motorway.

A semi-rural parkland aesthetic and relatively strong sense of enclosure occurs at the western end of the proposed orbital sewer route and proposed Abbotstown pumping station, which lies within the NSC grounds and in close proximity to the grounds of Connolly Hospital and St. Francis' Hospice. This is a setting that is defined by mature treelines and woodland containing areas of open grassland.

e) Overall Landscape Character

Proposed Wastewater Treatment Plant

In summary, the landscape character of the proposed WwTP study area is extremely varied. Whilst the central and northern aspects retain a productive rural character, the western, southern and eastern parts are strongly influenced by urban expansion and major transport related infrastructure. At present, there is some sense of separation between these distinct zones of character reinforced by the M1 Motorway to the west and the R139 Road to the south. Mature tree lines and hedgerows also provide visual and perceptual containment of the rural area, particularly to the east where a band of stately houses and their attendant grounds provide a buffer to recent intensive development at Northern Cross and on the western side of the R107 Malahide Road. This string of demesne landscapes provides a long established heritage character to the eastern study area, but within the overarching rural context. Given the setback of most of these houses from the R107 Malahide Road and enclosure by mature trees, this heritage character may not be distinctly evident to the casual observer.

Perceptually, the proposed WwTP site and its immediately surrounding rural context are something of a pastoral island between fingers of expanding urban development. The reality of this progression is evident in the analysis of evolving land use patterns and the policy objectives of the *Fingal Development Plan 2017-2023* (FCC 2017) for future growth in this area.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The landscape character of the western end of the proposed outfall pipeline route (land based section) is similar in nature to that described for the proposed WwTP study area. By contrast, the coastal (eastern) end of the proposed outfall pipeline route (land based section) study area has landscape character that is defined by naturalistic and dynamic (tidal) features and low intensity of rural/residential and recreational related development.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

Other than the western end of the proposed orbital sewer route and proposed Abbotstown pumping station, which has something of mature parkland landscape character, the majority of the proposed orbital sewer route passes through an eclectic mix of rural, residential, industrial, recreational and transport infrastructure land uses and urban forms with a low degree of integrity.

12.3.3 Landscape Value

In accordance with the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and IEMA 2013), landscape value is estimated on the basis of:

- Landscape quality (condition);
- Scenic quality;
- Rarity and representativeness;
- Conservations interests;
- Recreational value;
- Perceptual aspects; and
- Associations.

These criteria are considered below principally in relation to the proposed WwTP study area, which will host the main permanently visible, operational element of the Proposed Project.

a) Landscape Quality (Condition)

Proposed Wastewater Treatment Plant

Landscape quality relates to the physical state of the landscape and its individual elements. The landscape of the proposed WwTP study area varies in terms of condition and quality. The central and northern aspects of this study area have a good degree of integrity and the productive value is apparent in the maintenance of fields and hedgerows. In the urban fringe areas there is less evidence of maintenance and management, with many neglected sites and areas that are not being put to productive use. This is typical at most urban fringes where derelict sites are awaiting redevelopment, land parcels are changing in use or where staged development has halted, for example.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The eastern (coastal) extents of the proposed outfall pipeline route (land based section) also have a sense of being well preserved and maintained for both conservation and recreational purposes. Further inland, towards the proposed WwTP, landscape quality is more akin to that described above in respect of the proposed WwTP study area.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The western end of the proposed orbital sewer route and proposed Abbotstown pumping station are contained within an established parkland landscape associated with the NSC and the grounds of Connolly Hospital and St.

Francis' Hospice. This is a well-managed landscape of strong integrity. Further east, the utilitarian mix of peri-urban land uses results in a lower degree of landscape quality.

b) Scenic Quality

Proposed Wastewater Treatment Plant

Although the central proposed WwTP study area has a pleasant pastoral aesthetic, it is not highly valued in terms of scenic quality. This is reflected in the fact that there are no designated views in the vicinity. Views may be relatively open at some locations, but given the low elevation they tend not to be extensive. There is little or no sense of the naturalistic and few distinctive or remarkable landscape features. Overall, this is not an area that people are likely to seek out for scenic views.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The eastern (coastal) extents of the proposed outfall pipeline route (land based section) passes through a landscape/seascape with a strong degree of scenic quality, where people are attracted to take in the estuary and sea views and where houses are commonly oriented to take advantage of the same. This is recognised in the *Fingal Development Plan 2017-2023* (FCC 2017) by scenic route designations along the roads that run along both sides of Baldoyle Estuary.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

There is little or no scenic quality associated with the majority of the proposed orbital sewer route until its western end around the proposed Abbotstown pumping station where it encounters a mature parkland setting. This has some degree of scenic quality as respite from the surrounding urban and infrastructural setting, but not to the extent that there are any scenic designations within the vicinity.

c) Rarity and Representativeness

Proposed Wastewater Treatment Plant

The landscape of the central proposed WwTP study area is not a distinctive or rare example of a rural landscape type. However, given its location at the fringe of Dublin City it has a perceived vulnerability as a bastion landscape that can be synonymous with rarity. Thus, it is not rare in itself, but it is somewhat rare in terms of its location. The band of demesne landscapes to the east represents a relatively rare and representative form of heritage landscape.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The landscape/seascape of the coastal extents of the proposed outfall pipeline route (land based section and marine section) is a more iconic and recognisable setting at a regional or national level. This results from a combination of distinctive coastal features along with the relatively high intensity of coastal settlement.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The majority of the orbital sewer route has little sense of rarity or representativeness other than being the peri-urban fringe of Ireland's largest city. However, the enclave of parkland landscape around the proposed

Abbotstown pumping station has some rarity, mainly relating to the preserved landscape character within the surrounding context of a rapidly evolving urban fringe landscape.

d) Conservation Interests

Proposed Wastewater Treatment Plant/Orbital Sewer Route/Abbotstown Pumping Station

There are no ecological designations such as Special Areas of Conservation and Natural Heritage Areas within the proposed WwTP or orbital sewer route/Abbotstown pumping station study areas. There are several streams with narrow riparian margins that are of some habitat value, but overall, the proposed WwTP study area is not designated for conservation interests.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

There are various coastal conservation interests associated with the proposed outfall pipeline route (land based section and marine section) focused around the Baldoyle Bay Special Area of Conservation.

e) Recreation Value

Proposed Wastewater Treatment Plant

The central proposed WwTP study area is currently contained in privately owned farms and does not have public access in the form of walkways or cycleways. There are some sports fields in the general vicinity, but in general this landscape currently has little recreational value. However, it is noted that an Open Space and Recreational Amenity zoning policy has been applied to lands immediately to the south-east of the proposed WwTP in the *Fingal Development Plan 2017-2023* (FCC 2017).

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

There is a strong degree of recreational value associated with the coastal aspects of the proposed outfall pipeline route (marine section) around Baldoyle Estuary and including the Portmarnock Golf Club and Portmarnock Hotel and Golf Links.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

The National Aquatic Centre and NSC are located at the western end of the proposed orbital sewer route and the proposed Abbotstown pumping station. Silloge Park Golf Club and the ALSAA sports pitches are also encompassed within the study area of the proposed orbital sewer route.

f) Perceptual Aspects

Proposed Wastewater Treatment Plant

There is a minor degree of remoteness and tranquillity in the central and northern aspects of the proposed WwTP study area, but these are largely relative to the intensity of built development and busy nature of the surrounding environs to the east, south and west. There is also a balance of openness and containment for the central rural portion of the study area. The sense of openness is generated by the relatively flat terrain, large field sizes and low hedgerows in the immediate proximity of the site. The subtle containment is provided by taller tree lines and hedgerows at the periphery of this area.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

At the seaward (eastern) end of the proposed outfall pipeline route (land based section and marine section), there is some sense of the naturalistic. This coastal landscape/seascape is reasonably well developed, but generally in the form of low intensity land uses such as the Portmarnock Golf Club and Portmarnock Hotel and Golf Links.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

There is a sense of well-established tranquillity associated with the Connolly Hospital and St. Francis' Hospice grounds and the western portion of the NSC, at the western end of the proposed orbital sewer route and Abbotstown pumping station.

g) Associations

The farmed landscape of Fingal has been referred to as the 'bread basket of Dublin' given its fertility and proximity to the capital city. The proposed WwTP site and its immediate rural surrounds are a small but representative part of that association to which some value can be attached. The Abbeyville Estate to the north-east of the proposed WwTP site (approximately 1.5km) was once owned by the late Taoiseach, Charles Haughey. This tends to raise the historical value of this particular estate in the public psyche.

12.3.4 Landscape Policy Context

a) Landscape Character Assessment

Chapter 5 of the *Fingal Development Plan 2017-2023* (FCC 2017) incorporates a Landscape Character Assessment for Fingal, which identifies a range of six landscape character types. Each landscape type is assigned a 'value' through the consideration of such elements as aesthetics, ecology, historical, cultural, religious or mythological. Value categories range from low to exceptional. Following the assessment of value, the sensitivity of each character type is defined. This is considered to be its overall ability to sustain its character in the face of change. Sensitivity is evaluated using criteria ranging from high to low.

The proposed WwTP site is contained within the 'Low Lying Agricultural' LCA, which is the most extensive LCA within the county. In terms of value, the Fingal Development Plan states:

> '*This is an area characterised by a mix of pasture and arable farming on low lying land with few protected views or prospects. The Low Lying Character Type has an open character combined with large field patterns, few tree belts and low roadside hedges. The main settlements located within the area include Oldtown, Ballyboghill and Lusk and parts of Malahide and Donabate. Dublin Airport is located in this area.*
>
> *This low lying area is dominated by agriculture and a number of settlements. The area is categorised as having a* ***modest value****. It contains pockets of important value areas requiring particular attention such as important archaeological monuments and demesnes and also the Feltrim Hill and Santry Demesne proposed Natural Heritage Areas.*'

The *Fingal Development Plan 2017-2023* (FCC 2017) assigns a general level of sensitivity to each of the landscape types in respect of development. 'Low Lying Agriculture' areas are identified as being of low sensitivity. Notwithstanding, the *Fingal Development Plan 2017-2023* (FCC 2017) Green Infrastructure maps also identify specific High Sensitivity Landscapes (HSLs), which are not precluded from LCAs with a general low or modest

sensitivity classification. The proposed WwTP site is not contained within an HSL, but there is an HSL associated with Abbeyville Demesne and some of the other demesne landscapes centred on the R107 Malahide Road. This HSL designation is approximately 1.2km from the east and north-east of the proposed WwTP site at its nearest point.

The proposed orbital sewer route and outfall pipeline route (land based section) run predominantly through the 'Low Lying Agriculture' landscape character type. However, at its western end (including the proposed Abbotstown pumping station) it passes briefly through the 'River Valley and Canal' landscape type, and at its eastern end it also passes through the 'Estuary' and 'Coastal' landscape types. As can be seen in the table presented in Diagram 12.1 below, each of these landscape types is attributed 'high' landscape sensitivity and 'exceptional' or 'high' landscape value. This is also reflected in the HSL zoning shown for these areas in the Green Infrastructure 1 map.

Table LC01: Landscape Character Assessment Summary – Character, Value and Sensitivity

Landscape Character Types	Landscape Value	Landscape Sensitivity
Rolling Hills Type	Modest	Medium
High Lying Type	High	High
Low Lying Type	Modest	Low
Estuary Type	Exceptional	High
Coastal Type	Exceptional	High
River Valley and Canal Type	High	High

Diagram 12.1: Excerpt from Fingal Development Plan 2017-2023 – LCA Value and Sensitivity

b) Landscape Policies

For medium and low sensitivity landscapes, the following principles for development should be adhered to (Fingal Development Plan 2017-2023, Chapter 9, p. 329 (FCC 2017)):

- *The skyline should be protected;*
- *Existing tree belts should be retained and managed and older stands of trees restocked;*
- *Roadside hedging should be retained and managed. Proposals necessitating the removal of extensive field and roadside hedgerows or trees should not be permitted. Strong planting schemes using native species, to integrate development into these open landscapes, will be required;*
- *Outside urban areas, the major river corridors should be protected and improved by leaving a minimum 30 metre wide margin, on each side of these rivers, undeveloped and encouraging planting where appropriate, to enhance the landscape and habitat value of these corridors (see Objective BD24, Chapter 5 Natural Heritage – section on Ecological Corridors and Stepping Stones);*
- *Sites with natural boundaries should be chosen, rather than open parts of larger fields; and*
- *Clustering with existing farmhouse and/or farm buildings is generally preferable to standalone locations.*

For HSLs, the following statement and principles for development should be adhered to (*Fingal Development Plan 2017-2023*, Chapter 9, p. 331 (FCC 2017)):

- *Skylines, horizon and ridgelines should be protected from development;*
- *Sites with natural boundaries should be chosen, rather than elevated or open parts of fields. The form of new developments should be kept simple and they should be sited within existing shelter planting or within the contours of the land to minimise visual impact;*
- *Clustering with existing farmhouse and/or farm buildings is generally preferable to standalone locations.*
- *Field and roadside hedgerows should be retained. Proposals necessitating the removal of extensive field and roadside hedgerows should not be permitted;*
- *The retention and active management of trees and woodland blocks should be promoted;*
- *The use of trees and woodlands to contain new development should be encouraged. Strong planting schemes using native species, to integrate development into these sensitive landscapes, will be required. New planting needs to be carefully located and selected;*
- *The management of the river margins should be promoted and development along the riverside which will intrude on the character of the river valleys should be restricted;*
- *Establish riparian corridors free from new development along all significant watercourses in the County. Ensure a 10 to 15 metre wide riparian buffer strip measured from top of bank either side of all watercourses, except in respect of the Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Corduff, Matt and Delvin where a 30m wide riparian buffer strip from top of bank to either side of all watercourses outside urban centres is required;*
- *Estuary margins and any hedgerows along the margins must not be disturbed;*
- *The special character of the coast should be protected by preventing inappropriate development on the seaward side of coastal roads; and*
- *The character of the coastal visual compartments should be retained by preventing intrusive developments on headlands, promontories and coastal lands within the compartments. The coastal skyline should be protected from intrusive development.*

The following specific landscape character objectives are also included within the *Fingal Development Plan 2017-2023* (FCC 2017):

i. Objective NH33

Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application.

ii. Objective NH34

Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.

iii. Objective NH35

Resist development such as houses, forestry, masts, extractive operations, landfills, caravan parks and large agricultural/horticulture units which would interfere with the character of highly sensitive areas or with a view or prospect of special amenity value, which it is necessary to preserve.

iv. Objective NH36

Ensure that new development does not impinge in any significant way on the character, integrity and distinctiveness of highly sensitive areas and does not detract from the scenic value of the area. New development in highly sensitive areas shall not be permitted if it:

- *Causes unacceptable visual harm;*
- *Introduces incongruous landscape elements; and*
- *Causes the disturbance or loss of (i) landscape elements that contribute to local distinctiveness, (ii) historic elements that contribute significantly to landscape character and quality such as field or road patterns, (iii) vegetation which is a characteristic of that landscape type and (iv) the visual condition of landscape elements.*

v. Objective NH37

Ensure that new development meets high standards of siting and design.

vi. Objective NH38

Protect skylines and ridgelines from development.

vii. Objective NH39

Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas.

viii. Objective NH40

Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development.

c) Green Infrastructure

The *Fingal Development Plan 2017-2023* (FCC 2017) also includes Green Infrastructure objectives, which are represented across three map sheets. The first of these maps (Green Infrastructure 1) is of most relevance to landscape character as it includes designations in relation to highly sensitive landscapes, open space and preserved views. It also includes a number of other heritage related designations that can influence landscape character. The Proposed Project needs to be considered, not only in terms of the constraints represented by the Green Infrastructure objectives, but also the opportunities it may potentially afford to consolidate and achieve the identified objectives.

Whilst the proposed WwTP site is not contained within an HSL zone, as discussed above, there is such a zoning approximately 1.2km to the north-east associated with a series of stately houses and demesnes adjacent to the west of the R107 Malahide Road. The western end of the proposed outfall pipeline route (land based section) will pass through this HSL zoning, whilst the eastern end of the proposed outfall pipeline route (land based section and marine section) are contained within and the 'Estuary' and 'Coastal' landscape types (HSL zone). Furthermore, the western end of the proposed orbital sewer route and Abbotstown pumping station are contained within the 'River Valley and Canal' landscape type (HSL zone).

The proposed WwTP site is not shown to be contained within an 'Open Space' zone. However, a small section of open space zone lies adjacent to the south-east of the site, and there is a potential opportunity to link to this and expand the network of open spaces. The proposed pipeline routes will pass through an 'Open Space' zone at its western end associated with the parkland landscape of Connolly Hospital. It then passes through another at Silloge Golf Club and also one adjacent to the west of Baldoyle Estuary. There are 36 objectives relating to Green Infrastructure under the five themes of Biodiversity; Parks, Open Space and Recreation; Sustainable Water Management; Archaeological and Architectural Heritage; and Landscape. Whilst many of the objectives relating to the first four of these themes have some relevance to landscape and visual matters and have been considered in the overall design of the Proposed Project, only the objective relating to the 'Landscape' theme is specifically included below:

i. Objective GI36

Ensure green infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place.

12.3.5 Visual Baseline

Establishing the visual baseline requires an analysis of which parts of the study area are likely to afford views of the Proposed Project. This was done at a broad and theoretical level for the proposed WwTP study area using Zone of Theoretical Visibility (ZTV) mapping. Further refinement of the visual context of the site was provided using RSA, as discussed earlier in the Chapter. Having gained some understanding of visibility within the study area, it is then necessary to apply it to visual receptors. Visual receptors are people or groups of people at particular locations or engaged in particular activities that may have a view of the Proposed Project. The assessors then select Viewshed Reference Points (VRPs) to represent relevant visual receptors, and these are used as the basis for the VIA. All of these elements of the visual baseline are set out in sequence below. Given the temporary nature of construction related visual impacts associated with the proposed orbital sewer route and the outfall pipeline route (land based section and marine section), the main focus of the visual baseline with respect to VRP selection is the proposed WwTP study area and the proposed Abbotstown pumping station.

a) Zone of Theoretical Visibility (Digital Terrain Model Based)

The ZTV map is a computer-generated map. It uses the highest points of the proposed buildings in conjunction with a Digital Terrain Model of the study area to determine from where in the surrounding landscape there is a potential view of the Proposed Project. It is a theoretical worst-case scenario because it only takes account of 'bare-ground' terrain screening and not terrestrial screening such as vegetation and buildings. In this instance, the ZTV map indicates that at least some part of the proposed WwTP will be visible from the vast majority of the study area (see Figure 12.2 Zone of Theoretical Visibility for Proposed Wastewater Treatment Plant). This is a typical ZTV pattern within a flat to gently undulating terrain context such as this. Due to the degree of screening provided by hedgerows, tree lines and buildings around this proposed WwTP site, the ZTV map is considered to be of limited value in this instance.

b) Route Screening Analysis

RSA was undertaken in the final ASA stage in order to compare the likely visual exposure of the proposed WwTP from the existing road network surrounding the three emerging preferred sites. The proposed WwTP site at Clonshagh was found to be the most screened of these three sites. Approximately 35.5km of road (excluding enclosed internal estate roads and driveways) was tested within a 2km radius of the proposed WwTP site boundary. Four categories of visibility were employed including:

- **Theoretical visibility** (taken from ZTV map);
- **Full visibility** (open clear views towards the proposal site);
- **Intermittent visibility** (partial fleeting or ambiguous visibility); and
- **No visibility.**

Table 12.5 sets out the results of the RSA in relation to the proposed WwTP site at Clonshagh.

Table 12.5: Route Screening Analysis Visibility Statistics

Visibility Category	Percentage of All Tested Routes
Theoretical visibility	96.7%
Full visibility	6.6%
Intermittent visibility	7.5%
No visibility	82.6%

As can be seen in Table 12.5, the proposed WwTP site (early stage mass-model) is substantially screened from the surrounding road network. This indicates good overall screening from all types of visual receptor. The early stage mass-model used for the RSA differed slightly from the current specimen design in terms of building height, location and massing, with the specimen design having progressed since the selection of the preferred option for the proposed WwTP site. However, it is considered that the proposed WwTP site at Clonshagh would still have been assessed to be the most screened location, irrespective of the current design proposals for the proposed WwTP site. This is on the basis that it was inherently the most screened site relative to surrounding receptors, and the nature of screening (height and destiny of vegetation) was similar for all three of the emerging preferred sites.

The early stage RSA accounted for views from existing roads to get a general understanding of comparative site screening for the three emerging preferred sites.

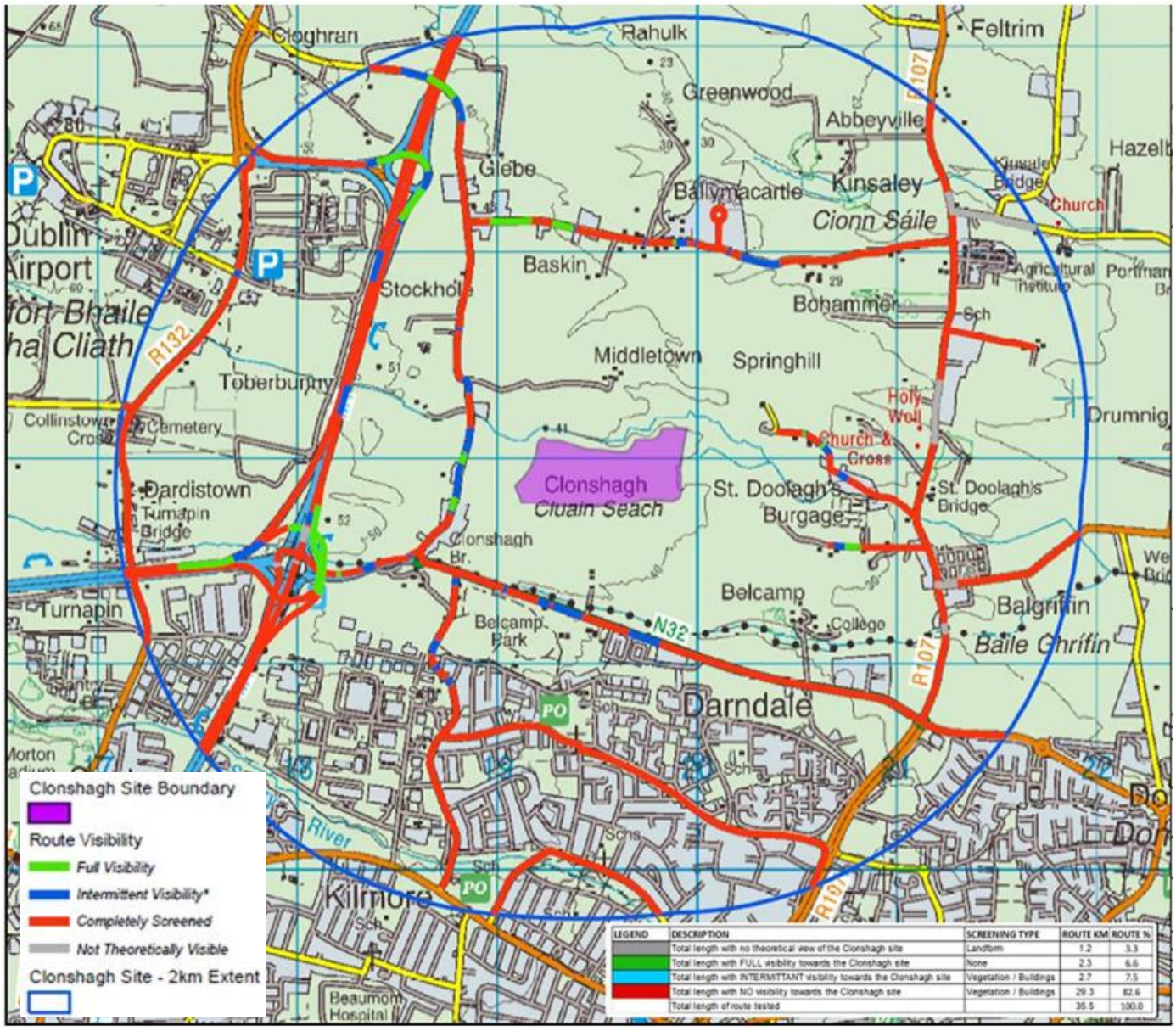

Diagram 12.2: RSA for Roads within 2km of the Proposed Wastewater Treatment Plant Site

c) Urban and Residential Areas

Proposed Wastewater Treatment Plant

The main urban and residential areas of Darndale and Clarehall lie to the south of the R139 Road some 700m to the south of the proposed WwTP site at the nearest point. There is also a Traveller's halting site, which lies between Darndale and the proposed WwTP site. This is accessed directly off the R139 Road and is approximately 600m to the south of the proposed WwTP site. A heavily planted embankment runs along the northern side of the R139 Road and this provides substantial screening between the proposed WwTP site and the

residential areas to the south. As can be seen on Diagram 12.2, there are some brief interruptions to this screening, which afford intermittent visibility towards the Proposed Project.

There is a small residential enclave at Ballymacartle to the north of Baskin Lane. This is approximately 1km to the north, and due to hedgerow screening, potential views of the proposed WwTP site are very limited from here.

There is a scattering of rural dwellings and farmsteads within and adjacent to the four roads that encircle the proposed WwTP site, with the nearest of these at Middletown some 400m to the north of the proposed WwTP site and on Clonshaugh Road approximately 300m to the west. A number of dwellings line cul-de-sac laneways that branch westwards towards the proposed WwTP site from the R107 Malahide Road.

Proposed Abbotstown Pumping Station

In respect of visibility of the proposed Abbotstown pumping station, the only relevant residential receptors are the residents of St. Francis' Hospice just to the north-west of the proposed Abbotstown pumping station site.

Proposed Orbital Sewer Route and Outfall Pipeline Route (Land Based Section/Marine Section)

In terms of residential receptors that are likely to experience temporary visual impacts from the construction of the underground pipeline sections, the northern fringes of residential housing estates within the suburbs of Belmayne, Clongriffin and Baldoyle may be afforded northerly views of proposed outfall pipeline route (land based section) construction works. The southern fringe dwellings of Old Portmarnock may also have views of the pipeline works in the opposite direction (south). There are much fewer residential receptors likely to be affected by temporary visual impacts from the proposed orbital sewer route works, as this route is separated by the M50 Motorway from Dublin's northern residential suburbs. Only small rural/residential enclaves such as Dubber Cottages (off the R122 Road) and Cappoge Cottages (off Cappagh Road) are potentially affected by this aspect of the works in this predominantly industrial/rural/infrastructure area.

d) Transport Routes

Proposed Wastewater Treatment Plant

The principal transport route in respect of the proposed WwTP site is the M1 Motorway, which dissects the western half of the study area in a north-south direction. It is approximately 1km to the west of the proposed WwTP site at its nearest point. The M1 Motorway is in a section of cut between the Dublin Port Tunnel and Dublin Airport and is flanked by substantial planted embankments that do not afford clear views of the landscape beyond the immediate road corridor. However, two major, elevated junctions with the M1 Motorway afford brief but relatively open views towards the proposed WwTP site. These include the Airport interchange some 1.5km to the north-west and the M50 Motorway Junction 1.1km to the west/south-west of the proposed WwTP site.

The R139 Road runs in an east-west direction to the south of the proposed WwTP site and at its nearest point it is approximately 450m away. As discussed above, this road is flanked to the north by a planted embankment, which will substantially limit views towards the proposed WwTP site.

The R107 Malahide Road runs in a north-south direction through the eastern half of the proposed WwTP study area. No visibility of the proposed WwTP from this road is indicated on Diagram 12.2.

The Clonshaugh Road is the nearest local road to the west of the proposed WwTP site. Whilst much of this route is screened from the proposed WwTP by roadside vegetation and hedgerows, the nearest section has a

combination of clear and intermittent visibility at a distance of approximately 300m. Baskin Lane is also a local road that completes the enclosure of the proposed WwTP site. It runs in an east-west direction and is approximately 900m to the north of the proposed WwTP site at its nearest point. The highest point on this road is near its junction with Clonshaugh Road and the sections with full visibility of the proposed WwTP in this area reflect this relative elevation. Most of Baskin Lane to the east of this point will have no visibility of the proposed WwTP (refer to Diagram 12.2).

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

Heading east from the proposed WwTP study area, the proposed outfall pipeline route (land based section) will cross the R124 Road near Old Portmarnock. The proposed outfall pipeline route (marine section) will then cross the R106 Coast Road that runs along the western side of Baldoyle Estuary. These intersection points with major routes are the locations from which receptors are most likely to be afforded close and clear views of the construction works associated with laying the outfall pipeline sections.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

On its easterly course from the proposed Abbotstown pumping station, the proposed orbital sewer route runs generally parallel to the M50 Motorway and immediately adjacent to the north of it for approximately 1km at Kildonan. It then crosses the N2 National Road and shortly thereafter the R122 Road. It also crosses the R108 Road and R132 Swords Road before crossing the M1 Motorway a short distance to the west of the proposed WwTP site. Again, these intersection points with major routes represent the locations from which receptors are most likely to be afforded views of pipeline construction works.

e) Amenity and Heritage Features

There can be a crossover in terms of the relevance of heritage features to the Landscape and Visual assessment and the Cultural Heritage assessment outlined in Chapter 16 Archaeological, Architectural and Cultural Heritage in Volume 3 Part A of this EIAR. The *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and IEMA 2013) warns of '*a danger of both double handling and inappropriate judgements by non-experts. It is particularly important that responsibilities are clear in considering the setting and views for historic buildings, conservation areas and other heritage assets*'. Heritage features such as stately houses and their attendant demesnes contribute to the landscape character of an area and this is directly relevant to the LIA. The historic setting of such features is also directly relevant to Chapter 16 Archaeological, Architectural and Cultural Heritage. However, as visual receptors for the VIA (being viewpoints that represent views afforded to people and groups of people), a stately house may be no more relevant than any other private residence within the study area, save for where the heritage feature is also open to the public for accommodation or garden tours. Heritage features which have been considered as part of this assessment include:

- Belcamp Hutchinson, a Georgian stately house identified on the discover Ireland website as an historic house offering accommodation;
- St. Doulagh's Church, which is located on the western side of the R107 Malahide Road, some 1.2km due east of the proposed WwTP site. It dates from the 12th century and is understood to be the oldest stone-roofed church still in use in Ireland. As well as parishioners, this feature is likely to attract visitors and tourists interested in its history; and

- Belcamp Park, which lies adjacent to the south of the R139 Road and to the east of Belcamp House. It is 25ha in size and contains mature trees and pathways as well as facilities for pitch and putt, tennis and basketball. It links with Darndale Park, which stretches eastwards along the southern side of the R139 Road.

f) Tourist and Recreational Facilities

Proposed Wastewater Treatment Plant

The main tourist facility within the proposed WwTP study area is Dublin Airport. Whilst associated infrastructure for the airport such as car parking and accommodation facilities begin just over 1km to the north-west, the terminal buildings are approximately 2.5km away from the proposed WwTP. Also of consideration is that one of the main flight paths into Dublin Airport is directly over the proposed WwTP site having just crossed the Irish coastline 5km to the east. Dublin Airport Terminal 2 has a glazed pedestrian overpass between the terminal and vehicle transitions, which affords elevated views to the south-east in the direction of the proposed WwTP site. Upon exiting Dublin Airport, the vast majority of tourists will enter onto the M1 Motorway in order to head south into the city or north towards Belfast. As discussed above, the proposed WwTP site may be visible from the elevated airport interchange with the M1 Motorway.

The Clayton Hotel Dublin Airport is located approximately 700m to the south-west of the proposed WwTP site at the junction of the R139 Road and the Clonshaugh Road. This multi-story hotel affords elevated views across much of the surrounding landscape including the proposed site context of the proposed WwTP.

The Hilton Hotel at Northern Cross is approximately 1.6km to the south-east, but the surrounding office park and a bank of mature broadleaf trees substantially screen views towards the proposed WwTP from even the uppermost floors of this hotel (views from an upper level bedroom were investigated during fieldwork).

A review of the Fáilte Ireland inventory of tourist facilities within the study area identified the Butlers Chocolate Experience. This is essentially a tour of the Butlers Chocolate Facility in Clonshaugh Business Park, approximately 2km to the south-west of the proposed WwTP site. The ASA map confirms fieldwork findings that views of the proposed WwTP site are not likely to be afforded from this area. Furthermore, this is not a tourist experience that is sensitive to views of the surrounding landscape.

The Fáilte Ireland inventory also highlighted the ‘Pebble Mill’ and ‘San Juan’ bed and breakfast operations at Kinsealy, where Baskin Lane meets the R107 Malahide Road. These are approximately 1.5km to the north-east of the proposed WwTP site. It is noted that the Kinsealy Riding Centre is also located in this general area.

Belcamp Hutchinson (discussed above) is also highlighted on this inventory in the historic houses and castles category. It is approximately 1km to the east-south-east of the proposed WwTP site, but is entirely enclosed by mature woodland trees.

There are sports grounds in the near vicinity of the proposed WwTP site, including Craobh Chiarain Hurling and Football Club adjacent to the north of the R139 Road and Cumann Peil Innisfail adjacent to Balgriffin Cemetery. These sports grounds all have potential visibility of the proposed WwTP.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

Beyond the proposed WwTP study area to the east, the proposed outfall pipeline route (land based section) passes immediately south of Trinity Gaels Gaelic GAA Club at Old Portmarnock and then to the north of Father Collin’s Park in Clongriffin. It then crosses Baldoyle Estuary and the spit of land containing Portmarnock Hotel and Golf Links, Portmarnock Golf Club and finally Velvet Strand before entering the sea. There is potential visibility of

the construction works associated with the proposed outfall pipeline route (marine section) from all of these recreational receptors.

Proposed Orbital Sewer Route/Abbotstown Pumping Station

In respect of visibility of the proposed Abbotstown pumping station, the main recreational receptors are runners using the cross-country running course of the NSC, which passes adjacent to the proposed Abbotstown pumping station site. Heading east along the proposed orbital sewer route is the Silloge Park Golf Club, and it also runs between the ALSAA Sports Grounds and Dardistown Cemetery.

g) Views of Recognised Scenic Value

Proposed Wastewater Treatment Plant/Orbital Sewer Route/Abbotstown Pumping Station

Views of recognised scenic value are most often identified as designated scenic views or routes in the relevant County Development Plan, but they may also be indicated on maps or in guidebooks. In this instance, 'Preserved Views' are indicated on the Green Infrastructure 1 map contained in the *Fingal Development Plan 2017-2023* (FCC 2017). This map indicates that there are no preserved views (routes) in the vicinity of the proposed WwTP site that could be affected by this aspect of the Proposed Project, nor are there any preserved views relevant to the proposed orbital sewer route or Abbotstown pumping station.

Proposed Outfall Pipeline Route (Land Based Section/Marine Section)

The most relevant preserved view circulates Baldoyle Estuary and has the potential to be affected by the proposed outfall pipeline route (marine section), which will pass under Baldoyle Estuary but requires construction infrastructure at either end of this sub-surface section of the proposed outfall pipeline route (marine section).

The Fingal Development Plan objective concerned with preserved views is Objective NH40 from the Green Infrastructure Chapter and is included in Section 12.3.4(b) above.

12.3.6 Viewshed Reference Points

VRPs are the locations selected to represent relevant visual receptors and from which the VIA is undertaken using photomontages. It is not warranted to include each and every location that provides a view of the Proposed Project, as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the Proposed Project. Instead, a representative selection of receptor locations are identified, which include receptor locations that would provide views of the proposed WwTP and Abbotstown pumping station (VP14) from different distances, different angles and different contexts based on the visual baseline described above.

Fourteen VRPs were selected for this assessment, and these are set out Table 12.6 below and shown on the Viewpoint Selection Map at Figure 12.3 Viewpoint Locations Map.

Table 12.6: Viewshed Reference Point Locations

VRP No.	Location	Direction of View
VP1	Clonshaugh Road (adjacent to proposed site access)	E
VP2	Top storey of Clayton Hotel Dublin Airport	NE
VP3	Local road at Springhill	W
VP4	Private dwelling at Middletown	S
VP5	Springhill House	WSW
VP6	Baskin Lane near intersection with Clonshaugh Road	SSE
VP7	M1 Motorway airport interchange	SE
VP8	Glazed skyway between sections of Dublin Airport Terminal 2	SE
VP9	Baskin Lane at Ballymacartle	SSW
VP10	St. Doulagh's Church on the R107 Malahide Road	W
VP11	Sports Ground adjacent to R139 Road (Craobh Chiarain Hurling and Football Club)	N
VP12	Sports ground adjacent to Balgriffin Cemetery (Cumann Peil Innisfail)	W
VP13	Belcamp Park	N
VP14	St. Francis' Hospice (proposed Abbotstown pumping station view)	S

12.4 Impact of the Proposed Project – Construction Phase

12.4.1 Landscape Sensitivity

The first aspect of determining the significance of landscape impacts is establishing the sensitivity of the receiving landscape. In accordance with the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and IEMA 2013) (p71), sensitivity is a function of the susceptibility of the landscape to the type of change proposed and the value placed on that landscape. On the basis of the information contained within Section 12.3.2, it is considered that the landscape of the Proposed Project study area can be divided into four separate zones for the purposes of considering landscape sensitivity. These closely relate to the Fingal County Landscape Character Assessment and Green Infrastructure zonings and include, from west to east:

- Tolka Valley HSL;
- Low Lying Agriculture/Urban Fringe;
- Malahide Road Demesnes HSL; and
- Baldoyle Estuary/Coast HSL.

a) Tolka Valley High Sensitivity Landscape

This area is defined by the HSL zoning indicated on the Green Infrastructure 1 map, which coincides with the 'River Valley and Canals' landscape character type. It should be noted that the HSL zoning might not solely relate to landscape character, as there are four other themes associated with Green Infrastructure. However, the area in

question around Connolly Hospital, St. Francis' Hospice and the western portion of the NSC is considered to have some sense of tranquillity and heritage that stands in contrast to the dense urban and infrastructural development that surrounds it. This HSL relates to the western end of the proposed orbital sewer route and Abbotstown pumping station.

b) Low Lying Agriculture/Urban Fringe

This landscape unit represents the vast majority of the landscape contained within the study area of the proposed WwTP site, orbital sewer route and outfall pipeline route (land based section) of the Proposed Project. Even though it is fully contained within the extensive 'Low Lying Agriculture' landscape character type from the County Landscape Character Assessment, this does not fully reflect the peri-urban character of this particular area, which contains a wide variety of industrial, infrastructural, amenity and residential development within its southern fringe. This landscape is generally considered to be robust in terms of potential development types and scales.

c) Malahide Road Demesnes High Sensitivity Landscape

This is a relatively discrete enclave of connected demesne landscapes that line the western side of the R107 Malahide Road to the north of Clarehall. These designed heritage landscapes tend to be heavily enclosed by mature trees, and whilst this landscape unit transitions relatively seamlessly into the rural landscape to the west, it has an abrupt boundary to the east corresponding with the busy R107 Malahide Road. This is reflected in the HSL zoning pattern of the Green Infrastructure 1 map. Susceptibility and value relate to the sense of tranquillity and heritage within generally contrasting surroundings. This HSL will be primarily impacted by the proposed WwTP site and the western end of the proposed outfall pipeline route (land based section).

d) Baldoyle Estuary Coast High Sensitivity Landscape

Although these areas could be considered separately, they have many common characteristics. They are also contiguous with each other as well as being contained in a common HSL zone on the Green Infrastructure 1 map. Landscape susceptibility and value are both associated with habitat value and an overall sense of the naturalistic, surrounded by an otherwise densely populated urban area. This also results in a sense of relative tranquillity in these areas. These coastal areas are also very popular with passive and active recreationalists, which contributes to their overall landscape value. This HSL relates to the proposed outfall pipeline route (marine section).

Table 12.7: Landscape Receptor Sensitivity

Landscape/Seascape Receptor	Nature of Construction Stage Landscape/Seascape Change	Susceptibility to Change	Landscape Value of Receptor	Overall Sensitivity
Tolka Valley HSL	Physical impacts from trenching, vegetation loss and construction of proposed Abbotstown pumping station. Character effects from construction activities and compounds.	Medium	Medium	**Medium**

Landscape/Seascape Receptor	Nature of Construction Stage Landscape/Seascape Change	Susceptibility to Change	Landscape Value of Receptor	Overall Sensitivity
Low Lying Agriculture / Urban Fringe	Physical impacts from trenching, vegetation loss, and construction of the proposed WwTP. Character effects from construction activities and compounds.	Low	Low	**Low**
Malahide Road Demesnes HSL	Physical impacts from trenching, and vegetation loss. Character effects from construction activities.	High/medium	High/medium	**High/medium**
Baldoyle Estuary / Coast HSL	Character effects from construction activities and compounds.	High/medium	High/medium	**High/medium**

12.4.2 Nature of Construction Phase Landscape Impacts

a) Proposed Wastewater Treatment Plant Site

Physical landscape impacts will occur at the proposed WwTP site throughout the envisaged 48-month construction period (including 12 months for commissioning for the Proposed Project. This will occur from disturbance to the landform and land cover of the proposed WwTP site and its associated proposed access and egress roads. In accordance with the construction methodology, works will begin with the erection of site perimeter fencing (temporary construction fencing) and the stripping of topsoil. There will be excavation of subsoil as required for the foundations of buildings and the laying of pipework throughout the proposed WwTP site. This is a relatively flat site, and there is not envisaged to be a need to significantly modify or redistribute subsoil material around the site to facilitate access road gradients or the ground level of buildings. Instead, the natural, gradual slope of the proposed WwTP site from west to east will be used to facilitate the flow of effluent across the various treatment zones. The proposed WwTP site has been designed for a balance of excavated material, so that topsoil and excavated material stripped from within the proposed WwTP site will be redistributed as screen berms around the perimeter that will be augmented with screen planting. Thus, it is unlikely that any significant volumes of earth material will need to be exported from, or imported to, the proposed WwTP site.

The existing land cover to be disturbed as part of the construction operations for the proposed WwTP is predominantly modified farmland. There are also three north-south running hedgerows within the proposed WwTP site that will be removed to facilitate construction. The two westernmost of these hedgerows consist of low-clipped, mixed broadleaf species, whilst slightly more mature trees are contained in the easternmost hedgerow. It is also envisaged that the hedgerow running along the southern boundary of the proposed WwTP site will be removed to facilitate the formal design (campus-style development) of this boundary, which will front a future East-West Distributor Road around the northern extents of the lands zoned for a future IDA Business Park.

In addition to the permanent, physical disturbance of the landform and land cover of the proposed WwTP site during construction, there will also be temporary effects on the landscape character of the site and its immediate surrounds. This will occur due to the intensity of construction activities, which will involve the frequent movement of heavy vehicles to and from the site and also within the proposed WwTP site. There will be up to 250–300 construction workers and associated site offices and vehicle parking as well as proposed temporary compounds for the storage of excavated earth and building materials. Tall cranes and partially completed structures will also

be characteristic elements of the Construction Phase and these will be visible from a broader area than surface level construction activities. These are all typical Construction Phase activities for a facility of this scale, but they represent a substantial increase in the baseline levels of activity experienced in and immediately around this rural proposed WwTP site.

b) Proposed Orbital Sewer Route, Outfall Pipeline Route (Land Based Section) and Proposed Abbotstown Pumping Station

Construction works along the proposed orbital sewer route and outfall pipeline route (land based section) as well as at the proposed Abbotstown pumping station will result in both the temporary and permanent modification of land cover (albeit, of a more limited scale and shorter duration).

The construction method employed for the proposed pipeline routes will be trenches of varying depths in which the pipe will be laid on and surrounded with granular material. The trench will then be backfilled with excavated material. The working construction corridor will be reinstated with the stockpiled topsoil. Therefore, the main Construction Phase impact on the physical landscape will be the loss of short sections of existing hedgerows that are crossed by the proposed pipeline routes.

The proposed construction corridor (40m wide) will be temporarily acquired for the construction of the proposed pipeline routes; however, the hedgerow sections will not be stripped from the full width of the proposed construction corridor. Only what is required to facilitate the pipeline trench and haul road on either side of the trench (approximately 20m) will be removed. The estimated duration of construction for the proposed pipeline routes is approximately 24 months (including six months for fencing of the proposed construction corridor, topsoil stripping and monitoring before construction of the proposed pipeline routes commences). Some vegetation loss will occur to approximately 35 separate sections of hedgerow. These vary in nature between tree-lined hedgerows and low-clipped or scrubby hedgerows. A strip of bare ground corresponding to the proposed construction corridor width will remain until reinstated grass or the prevailing ground cover has become established. There will not be any substantial loss of mature vegetation at the proposed Abbotstown pumping station site.

It is noted that the proposed construction corridor will be reduced to a proposed 20m wayleave following the Construction Phase to facilitate maintenance of the proposed pipeline routes in perpetuity (Operational Phase).

There will be 18 locations where trenchless (microtunnelling) construction methods will be employed so as not to disturb surface features. Ten of these are at road crossings (Cappagh Road, R135 Finglas Road, M2 Motorway, R122 Road, R108 Road, R132 Swords Road, M1 Motorway, Clonshaugh Road, R107 Malahide Road and the R124 Road) and the others consist of the Dublin-Belfast Railway, Connolly Hospital, six watercourses and Silloge Golf Club.

The land cover disturbed by the proposed pipeline routes is predominantly that of modified farmland as well as several brownfield sites. One exception is where the proposed orbital sewer route runs immediately to the north of Dardistown Cemetery along the southern boundary of the ALSAA sports pitches. The temporary land disturbance will affect the use of three football pitches and a softball/baseball diamond. Although the sports pitches can be fully reinstated back to their current use, the duration of the impact will cover the Construction Phase as well as a period to re-establish grass. A similar impact will occur at the western end of the proposed orbital sewer route near the proposed Abbotstown pumping station, where a cross-country running track within the NSC grounds will be temporarily disturbed by trenching works. In this instance, the track is constructed of soft surfaces (gravel

paths and grass) and can be readily reinstated with only minor and temporary disruption of activity and can otherwise be diverted during the Construction Phase.

There is potential for Construction Phase works to temporarily impact on landscape character. This will result from the movement of heavy machinery, excavation and stockpiling of material as well as the temporary storage of construction materials and pipeline sections. These effects are likely to be most noticeable in tranquil landscape areas such as the HSL areas identified in the Fingal Development Plan, which are incorporated as discrete landscape units for the purposes of this assessment.

c) Proposed Outfall Pipeline Route (Marine Section)

The proposed outfall pipeline route (marine section) commences just to the west of Baldoyle Estuary and will follow a sub-surface tunnel bore to a point approximately 600m offshore from the coastline at Baldoyle Bay, thereafter running in a dredged trench across the sea floor to its termination point approximately 1km north-east of Ireland's Eye.

As this section is sub-surface, there will be no physical effects on the coastal landscape/seascape setting either during or following construction. Instead, Construction Phase impacts will be limited to proposed temporary construction compound no. 9 and no. 10 to the landward side. Temporary (up to approximately 12 months) landscape impacts resulting from the movement of heavy machinery and the storage of construction materials can be expected at these locations, which will affect the landscape character of this coastal setting.

The proposed outfall pipeline route (marine section) can be extruded and towed to site in long lengths of up to 550m. These will be stored temporarily within the coastal marine environment prior to their placement within the proposed seafloor trench. This will result in temporary seascape character effects at the selected storage location, which is likely to be in the vicinity of Dublin Port. The construction of the subsea pipeline section will result in physical effects on the seafloor. This will not materially affect seascape character; though more turbid water may temporarily occur in the immediate vicinity of the construction zone.

Conversely, the subsea construction method will require the use of a 'Backhoe Dredger' or a 'Trailer Suction Hopper Dredger', both of which are large vessels. These vessels will also require several support craft including those required to lay the proposed outfall pipeline route (marine section). Therefore, there will be temporary seascape character impacts resulting from the collection of vessels and materials required for the subsea section of the proposed outfall pipeline route (marine section), albeit commencing 500m offshore.

Table 12.8: Magnitude of Construction Phase Landscape Impacts

Proposed Project Aspect	Size/Scale of Construction Phase Landscape Impacts	*Duration of Construction Phase Landscape Impacts	Reversibility of Construction Phase Landscape Impacts	Magnitude of Construction Phase Landscape Impacts
Proposed WwTP	Large scale	Short-term	Not readily Reversible	**High**
Proposed pipeline routes/Abbotstown pumping station	Small scale	Temporary	Reversible (through reinstatement)	**Low**
Proposed outfall pipeline route (marine section) outfall location	Small scale	Temporary	Reversible (through reinstatement)	**Low**

*In accordance with timescales provided in the EPA's (2003) Advice Notes on Current Practice.

12.4.3 Significance of Construction Phase Landscape Effects

The significance of Construction Phase landscape impacts can be derived by combining the sensitivity of landscape receptors with the magnitude of landscape effects identified in Table 12.7 and Table 12.8 above, in accordance with Table 12.3. The significance of Construction Phase landscape effects are set out in Table 12.9.

Table 12.9: Significance of Construction Phase Landscape Effects

Landscape/Seascape Receptor	Overall Sensitivity	Relevant Proposed Project aspects	Magnitude of Construction Phase Landscape Impacts	Significance of Construction Phase Landscape Impacts
Tolka Valley HSL	Medium	Proposed orbital sewer route/Abbotstown pumping station	Low	**Slight**
Low Lying Agriculture / Urban Fringe	Low	Proposed WwTP	High	**Moderate-slight**
		Proposed pipeline routes	Low	**Negligible**
Malahide Road Demesnes HSL	High/medium	Proposed outfall pipeline route (land based section)	Low	**Slight**
Baldoyle Estuary / Coast HSL	High/medium	Proposed outfall pipeline route (marine section)	Low	**Slight**

12.4.4 Nature of Construction Phase Visual Impacts

It is not considered beneficial to assess Construction Phase visual impacts from specific receptor locations using photomontages, which is instead reserved for the Operational Phase of the Proposed Project in relation to both pre-mitigation and residual (post-mitigation establishment) impact scenarios. This approach is partly on the basis that Construction Phase visual effects are constantly changing in nature, intensity and location. Furthermore, many potential construction related visual effects, such as dust, lighting and heavy vehicle movements, are also not easily depicted or readily experienced through the use of static photomontages. A more generalised approach

to assessing Construction Phase visual impacts is also warranted on the basis that such effects are only short-term or temporary in nature.

a) Proposed Wastewater Treatment Plant Site

Construction Phase visual impacts will occur in relation to the proposed WwTP throughout the 48-month construction period (including a 12 month commissioning period). These will increase in intensity and extent as the taller structures and lifting machinery (cranes) emerge above the intervening hedgerow vegetation that surrounds most of the proposed WwTP site.

Construction Phase visual impacts will result from heavy machinery working within the site and travelling to and from the proposed WwTP site. Vehicle movements and temporary parking areas associated with the private vehicles of up to 100–150 construction workers will also contribute to vehicle related visual impacts. Visual impacts will also arise from the temporary storage of excavated earth and building materials as well as the provision of temporary site offices and facilities for the construction workers. During dry periods there may be some visual effects caused by dust rising from the proposed WwTP site, though provision will be made to mitigate such effects especially for vehicles leaving the proposed WwTP site. During winter months there will also be the need for temporary site lighting/security lighting.

Tall cranes and partially completed structures will also be visible during the construction phase and will contribute to visual clutter on the skyline from many vantage points within the wider area.

Visual receptors most likely to be affected by the proposed WwTP Construction Phase are the local residents of dwellings that line the surrounding local road network, particularly those immediately to the west (Clonshaugh Road) where the closest and most open views of the site exist and where the proposed egress road from the site will be situated. Visitors accommodated in north-easterly facing upper level rooms of the Clayton Hotel Dublin Airport will also have elevated, oblique views over the proposed WwTP site during construction, albeit at greater distances than the closest local residents and within a broader and more diverse visual context. Whilst local residents and tourists are among the most susceptible types of receptor according to the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and IEMA 2013), the value of views in this low-lying peri-urban landscape provides some balance to the overall sensitivity of these receptors – 'Medium-low' (see Table 12.9. The greatest level of Construction Phase visual impacts for these receptors is likely to be when the tallest proposed WwTP structures have emerged (but have not yet been clad), tower cranes are still present and construction vehicles and associated traffic is moving within and to and from the site. Albeit, visual effects from ground based activity will be reduced by the early stage presence of the proposed perimeter berms. Even though construction related visual effects from the proposed WwTP will only be short-term in duration, they are considered to be of a high magnitude for these closest receptors with clear views towards the site.

b) Proposed Orbital Sewer Route, Outfall Pipeline Route (Land Based Section) and Abbotstown Pumping Station

Construction Phase visual impacts relating to the proposed orbital sewer route and outfall pipeline route (land based section) will be transient in nature. There will be relatively intense construction activity around the section of pipeline being laid involving heavy lifting machinery and excavators as well as the temporary storage of excavated material and construction materials. However, given the expected rate of construction progress, most visual receptors are not likely to experience such visual effects for longer than several weeks.

The exceptions to the above timeframes will be the proposed Abbotstown pumping station (within NSC grounds), where construction activities are likely to last in the order of 12 to 18 months. The proposed Abbotstown pumping station site is also likely to be used as a proposed temporary construction compound to facilitate the laying of pipeline sections. Other sites that are likely to be used as proposed temporary construction compounds for the proposed orbital sewer route construction are the various trenchless crossing locations described earlier. Due to the concentrated and more prolonged construction activity, as well as their dual function as construction compounds, the proposed Abbotstown pumping station and trenchless crossing locations will be perceived as nodes of construction activity. Consequently, Construction Phase visual impacts will be greater at these locations than along the standard sections of the proposed orbital sewer route and outfall pipeline route (land based section).

Sensitive receptor groups most likely to be affected by Construction Phase visual impacts from the proposed orbital sewer route and outfall pipeline route (land based section) are local residents generally within 200m of the proposed pipeline routes. Recreationalists at Silloge Golf Club and visitors to Connolly Hospital and St. Francis' Hospice and Dardistown Cemetery will also be affected, along with recreationalists within the coastal environs of Baldoyle Estuary and Baldoyle Bay.

c) Proposed Outfall Pipeline Route (Marine Section)

The main sources of visual impact during the Construction Phase of the proposed outfall pipeline route (marine section) will be proposed temporary construction compound no. 9 to the west of the R106 Coast Road at Baldoyle Estuary and proposed temporary construction compound no. 10 on the eastern side of Baldoyle Estuary. The undersea pipe laying dredge and its entourage of support vessels will also be visible to shore based viewers and other maritime vessels as they make their way out from the coast in the process of laying the pipeline. There will also be temporary visual impacts arising from the storage of long sections of undersea pipeline prior to placement.

The construction activity associated with the proposed temporary construction compounds on either side of Baldoyle Estuary will be more noticeable in this comparatively more tranquil and naturalistic coastal environment than the similar proposed temporary construction compounds proposed along the peri-urban northern fringe of Dublin, where such activity is commonplace. The main activity of the pipe laying dredge will begin approximately 600m offshore and move rapidly to a distance of 4.5km offshore over a period of four to five months. Therefore, any visual effects from the concentration of pipe laying vessels will be transient and short lived for most land based receptors.

Sensitive visual receptors in respect of the Construction Phase of the proposed outfall pipeline route (marine section) of the Proposed Project include local residents and recreationalists within the coastal environs of Baldoyle Estuary and Baldoyle Bay, which includes Portmarnock Golf Club and Portmarnock Hotel and Golf Links.

12.4.5 Significance of Construction Phase Visual Effects

The highest levels of visual impact magnitude would occur in the immediate vicinity of the proposed WwTP construction site, where clear visibility is afforded (e.g. from Clonshaugh Road and the upper storeys of Clayton Hotel Dublin Airport) due to the scale and intensity of the works. These Construction Phase visual effects are considered to be of a high magnitude. However, the significance of such impacts is moderated somewhat by a general visual setting that already contains a diverse mix of peri-urban land uses, and within which, substantial

construction projects are not an unfamiliar or unexpected feature and where visual receptor sensitivity is considered to be Medium-low. Taking account of the high magnitude of effect coupled with the short-term duration of many aspects of the construction related visual effects (except emerging taller buildings), the significance of impact in the immediate vicinity of the proposed WwTP is deemed to be Substantial-moderate. Lower levels of impact significance will occur within the wider proposed WwTP study area and where intervening screening already occurs, as much of the construction related site activity occurs at ground level.

Construction Phase effects for the proposed pipeline routes will be smaller in scale and of a transient nature, leading to brief, localised effects. Even though these works will, in some cases, occur within more sensitive visual settings, such as the Baldoyle coastal environs, the balance between the magnitude of impacts (Low) and the sensitivity of receptors (highest level: High-medium) is not considered to result in more than a 'Slight' significance of effect.

Notwithstanding the reasons outlined above, the principal consideration in respect of Construction Phase visual impacts is that they are short-term or temporary in terms of duration (see EPA Guidelines' (EPA 2017) duration definitions) and, in the case of the proposed pipeline routes, they are also transient. Consequently, it is not considered that any significant visual impacts will arise for the Construction Phase of the Proposed Project. It is not considered necessary to employ any visual mitigation measures that are specific to the Construction Phase. However, it should be noted that partially forming the proposed screening embankments around the proposed WwTP site at the outset of the Construction Phase will benefit local receptors throughout this stage by screening much of the surface level site activity and reducing light-spill.

12.5 Impact of the Proposed Project – Operational Phase

Note: For the purposes of this aspect of the LIA, the same landscape sensitivity judgements previously established in respect of the Construction Phase assessment (Table 12.7) will be applied.

It is also noted that a number of basic design principles for the Proposed Project have been incorporated into the project specimen design. These principles related to the arrangement of buildings, structures, colour schemes and the perimeter berm. These principles are considered elements of the Proposed Project and assessed on this basis within this Operational Phase impact assessment. For information, the schematic of the landscape and visual mitigation concept is provided in Figure 12.4 Landscape and Visual Mitigation Concept, and the Landscape Masterplan is provided in Figure 12.5 Proposed Wastewater Treatment Plant Landscape Mitigation Plan.

12.5.1 Nature of Operational Phase Landscape Effects

a) Proposed Wastewater Treatment Plant Site

The main landscape effects remaining to be considered at the Operational Phase relate to permanent changes in landscape character. The proposed WwTP will represent a large infrastructural development covering a 29.8ha site and comprising a range of tall buildings at the western (inlet works) and eastern (sludge treatment works) ends of the site, with a tank farm between. A significant proportion of the remaining proposed WwTP site will comprise surface level circulation roads and hard standings.

The proposed WwTP site will have a utilitarian, industrial appearance, which will stand in contrast to the farmed fields that currently surround it. However, this campus-style development will amalgamate more readily, in terms

of landscape character, with the High Technology lands zoned for future development (IDA Business Park), immediately adjacent to the southern boundary.

b) Proposed Orbital Sewer Route, Outfall Pipeline Route (Land Based Section) and Abbotstown Pumping Station

Following construction and the reestablishment of prevailing ground cover, hedgerows and field boundaries above the trenched sections of the proposed orbital sewer route and outfall pipeline route (land based section), there will be virtually no physical evidence of the proposed pipeline routes with the exception of some manhole covers and an OCU located at Dubber.

For this reason, the effects on landscape character will be minimal. Sensitive landscape areas, stream crossings and road crossing where microtunnelling, rather than open cut trenching techniques, has been employed will also remain unaffected by the underlying pipelines.

The proposed Abbotstown pumping station will appear as a modest scale structure (similar to a dwelling house or garden pavilion) surrounded by hard standing for Operational Phase car parking and maintenance procedures. The perimeter of the proposed Abbotstown pumping station will also require security fencing. The scale and nature of the Operational Phase appearance of the proposed Abbotstown pumping station somewhat belies the more extensive sub-surface plant contained beneath the site. Nonetheless, the surface level features will be modest and incongruous in the selected landscape setting, resulting in very limited and localised effects on landscape character.

c) Proposed Outfall Pipeline Route (Marine Section)

The proposed outfall pipeline route (marine section) will utilise sub-surface tunnelling and subsea trenching techniques, and the associated temporary construction compounds will be removed and reinstated. Consequently, there will be no noticeable Operational Phase effects on landscape or seascape character.

The magnitude of predicted Operational Phase landscape impacts is summarised in Table 12.10 below.

Table 12.10: Magnitude of Operational Phase Landscape Impacts

Proposed Project Aspect	Size/Scale of Operational Phase Landscape Effects	*Duration of Operational Phase Landscape Effects	Reversibility of Operational Phase Landscape Effects	Magnitude of Operational Phase Landscape Effects
Proposed WwTP	Large scale	Permanent	Not readily reversible	**High**
Proposed pipeline routes/Abbotstown pumping station	Negligible	Permanent	Not readily reversible	**Negligible**
Proposed outfall pipeline route (marine section)	Negligible	Permanent	Not readily reversible	**Negligible**

*In accordance with timescales provided in the EPA's (2003) Advice Notes on Current Practice.

12.5.2 Significance of Operational Phase Landscape Impacts

The significance of Operational Phase landscape impacts is derived by combining the sensitivity of landscape receptors with the magnitude of landscape effects from Table 12.7 and Table 12.10, in accordance with the 'Significance Matrix' outlined in Table 12.3. These judgements are outlined in summary in Table 12.11 below.

Table 12.11: Significance of Operational Phase Landscape Impacts

Landscape/Seascape Receptor	Overall Sensitivity	Relevant Proposed Project Aspects	Magnitude of Operational Phase Landscape Impacts	Significance of Operational Phase Landscape Impacts
Tolka Valley HSL	Medium	Proposed orbital sewer route/Abbotstown pumping station	Low-negligible	**Slight-imperceptible**
Low Lying Agriculture / Urban Fringe	Low	Proposed WwTP	High	**Moderate-slight**
		Proposed pipeline routes	Negligible	**Imperceptible**
Malahide Road Demesnes HSL	High/medium	Proposed outfall pipeline route (land based section)	Negligible	**Imperceptible**
Baldoyle Estuary / Coast HSL	High/medium	Proposed outfall pipeline route (marine section)	Negligible	**Imperceptible**

12.5.3 Nature of Operational Phase Visual Impacts (Pre-Mitigation Establishment)

The assessment of Operational Phase visual impacts involved the preparation of 14 photomontages that are concentrated around the main visible aspects of the Proposed Project, being the proposed WwTP and also accounting for the proposed Abbotstown pumping station. These represent a range of receptor types, viewing angles and viewing distances within the 3km radius study area applied for the proposed WwTP and the 500m study area for the proposed Abbotstown pumping station. The photomontages also include a time sequence for the establishment of mitigation screen planting as well as summer and winter views to take account of seasonal variation in the representative views.

As outlined in Section 12.4.4, given the temporary nature of construction related visual impacts associated with the proposed orbital sewer route and the proposed outfall pipeline route (land based section and marine section), and the fact that there will be virtually no visible evidence of the proposed pipeline routes during the Operational Phase, there are no representative views of this aspect of the Proposed Project. Therefore, the proposed pipeline routes are not considered further in this section of the assessment.

The photomontage set (contained in Volume 6 of this EIAR includes existing views from each of the selected viewpoints in order to represent the baseline scenario. This is followed by a post-construction scenario, which depicts all of the built elements of the proposed WwTP and Abbotstown pumping station, including those relating to 'embedded mitigation' (such as the perimeter berm, dispersed layout of buildings and the colour scheme employed for the proposed WwTP), but not including screen planting, which will be relatively ineffectual until after the first growing season. The final set of photomontage views anticipate approximately seven years of establishment for the mitigation screen planting. This is considered to represent the screening at close to its full

effectiveness, though not full maturity. Both winter and summer views are included for in this final set. See Volume 6 of this EIAR for photomontages.

The full assessment of all representative views (proposed WwTP and Abbotstown pumping station) at each stage of mitigation establishment is contained in Appendix A12.1 in Volume 3 Part B of this EIAR. As such, this chapter has focused on a summary of the key outcomes of the assessment with a clear distinction between pre-mitigation and residual effects.

Prior to the establishment of mitigation screen planting, the proposed WwTP and Abbotstown pumping station locations are considered to give rise to the levels of impact outlined in Table 12.12 at the selected representative viewpoints.

Table 12.12: Significance of Operational Phase Visual Impacts (Pre-Mitigation)

Viewpoint		Visual Receptor Sensitivity	Magnitude of Operational Phase Visual Impact	Significance of Operational Phase Visual Impact (Pre-Mitigation)
VP1	Clonshaugh Road (adjacent to proposed site access)	Medium-low	High	**Substantial-moderate**
VP2	Top storey of Clayton Hotel Dublin Airport	Medium-low	High medium	**Moderate**
VP3	Local road at Springhill	Medium low	Low negligible	**Slight-imperceptible**
VP4	Private dwelling at Middletown	Medium low	High	**Substantial-moderate**
VP5	Springhill House	Medium	Medium low	**Moderate-slight**
VP6	Baskin Lane near intersection with Clonshaugh Road	Medium-low	Negligible	**Imperceptible**
VP7	M1 Motorway airport interchange	Low	Negligible	**Imperceptible**
VP8	Glazed skyway between sections of Dublin Airport Terminal 2	Low	Low	**Slight-imperceptible**
VP9	Baskin Lane at Ballymacartle	Medium-low	Negligible	**Imperceptible**
VP10	St. Doulagh's Church on the R107 Malahide Road	Medium	Negligible	**Imperceptible**
VP11	Sports Ground adjacent to R139 Road (Craobh Chiarain Hurling and Football Club)	Low	Negligible	**Imperceptible**
VP12	Sports ground adjacent to Balgriffin Cemetery (Cumann Peil Innisfail)	Low	Low negligible	**Slight-imperceptible**

Viewpoint		Visual Receptor Sensitivity	Magnitude of Operational Phase Visual Impact	Significance of Operational Phase Visual Impact (Pre-Mitigation)
VP13	Belcamp Park	Medium Low	Negligible	**Imperceptible**
VP14	St. Francis' Hospice (proposed Abbotstown pumping station view)	Medium	Low negligible	**Slight-imperceptible**

a) Visual Receptor Sensitivity

Table 12.12 shows that the sensitivity of visual receptors generally ranges from Medium to Low. The three locations assessed as having 'Medium' sensitivity represent views from within the HSL zone that encompasses the sequence of demesne landscapes to the west of the R107 Malahide Road and the Tolka Valley HSL relevant to St. Francis' Hospice.

Whilst this zoning is only one aspect of the sensitivity judgement, the views from these locations (VP5, VP10, VP14) have a pleasant degree of enclosure and a parkland character influenced by small pastoral fields and mature treelines. They represent typical views experienced by local residents, and for VP5 and VP10, they are also influenced by heritage features (Springhill House and St. Doulagh's Church), which adds to the sense of heritage and sense of place. The afforded views are not considered particularly remarkable, extensive or representative of locations that attract significant numbers of visitors.

Typical rural views that are likely to be experienced from the residential dwellings that line the surrounding local roads tend to attract Medium-low sensitivity classifications. This is due to the acknowledged susceptibility of residential receptors to changes in their everyday views and visual amenity, balanced against the fairly typical and contained rural vistas on offer.

Low sensitivity was attributed at the two sports ground viewpoint locations on the basis that the views across the sports facilities are relatively unremarkable, and the enjoyment of the sporting activities in question (GAA field sports) is not strongly reliant on the visual amenity of the surrounding landscape (as would be the case for hill walking or fishing, for example).

b) Operational Phase Visual Impact Magnitude

Prior to the establishment of mitigation screen planting, the magnitude of visual impacts relating to the proposed WwTP range widely between 'High' and 'Negligible'. These judgements are strongly related to viewing distance and the degree of intervening hedgerow screening. The closest and most exposed viewpoint locations, which occur a short distance to the west and north of the site (VP1 and VP4), are attributed 'High' visual impact magnitude judgements. This is based on the prominent scale of the nearest tall structures of the proposed WwTP, the inlet works structures. Whilst no aspect of the Proposed Project is spatially overbearing in relation to these receptors, the proposed WwTP will become the defining element of vistas that are currently almost wholly rural in nature. The Proposed Project will also increase the sense of containment for these relatively open views.

A High-medium magnitude of visual impact is attributed to the view from the upper level stairwell of Clayton Hotel Dublin Airport. Due to its elevation above the site in combination with its relatively close proximity, this is the only location with a clear view across the entire Proposed Project site. Whilst this is not without a high degree of visual

legibility (comprehension of the scale, extent and nature of what is being viewed), the proposed WwTP will occupy the only rural aspect from this hotel. Fairly intensive forms of urban development surround it throughout all of the remaining quarters.

Other than the view from Springhill House (VP5), which is attributed a Medium-low magnitude of visual impact, the remaining judgements, including VP14 at the proposed Abbotstown pumping station, are all low or negligible. In most cases, only the upper portions and rooflines of the tallest structures of the proposed WwTP will be even partially visible from these surrounding locations due to screening afforded by intervening hedgerow vegetation. This screening tends to be most comprehensive where it is in the form of thick, mature treelines or where it lies in close proximity to the viewpoint and is bolstered by subsequent layers of hedgerow that become stacked in perspective to form a dense band of vegetation.

For the proposed Abbotstown pumping station (VP14), there will be some relatively clear views of the building and compound, particularly from upper storey windows at the south-western corner of St. Francis' Hospice, but owing to the modest scale of the proposed Abbotstown pumping station and the complementary design of the building, it will not appear incongruous or significantly detract from visual amenity.

c) Significance of Operational Phase Visual Impacts (Pre-Mitigation Establishment)

The highest levels of visual impact significance occur in respect of VP1 and VP4, which represent nearby residential receptors to the west and north of the proposed WwTP site respectively. In both cases, the Substantial-moderate significance is attributed to Medium-low sensitivity judgements combined with High visual impact magnitude judgements. The next highest level of significance is Moderate, and this is attributed to the upper level view from Clayton Hotel Dublin Airport (VP2) on the basis of a Medium-low sensitivity combined with a High-medium magnitude of visual impact. At the vast majority of the other viewpoint locations, significance is considered to be Slight or Imperceptible.

A significance of Slight-imperceptible is considered for VP14 at the proposed Abbotstown pumping station on the basis of a Medium level of receptor sensitivity and a Low-negligible visual impact magnitude.

12.6 'Do Nothing' Impact

In a 'do nothing' scenario, the proposed WwTP site is likely to remain as farmland for the short-term. However, given its urban fringe location, the pressure from encroaching urban development and the *Fingal Development Plan 2017-2023* (FCC 2017) zoning objectives, it will remain strategically desirable for urban, industrial and infrastructural development types. For any major projects that employ 'sieve mapping' techniques during the site selection stages, the proposed WwTP site at Clonshagh is likely to continually arise as a strong option due to its urban fringe location near major transport networks with a comparatively low level of residential receptors.

In terms of strategic future development, the current *Fingal Development Plan 2017-2023* (FCC 2017) includes zoning objectives for a new orbital relief road (the East-West Distributor Road) that will run adjacent to the south of the proposed WwTP site. The IDA lands on the southern side of that road are zoned for business park development, and residential development is zoned a short distance to the south-east. For these reasons, the rural character of the site and its immediate surrounds are very likely to transition into that of a peri-urban landscape within the next five to 10 years, regardless of whether the Proposed Project should proceed.

With respect to the proposed Abbotstown pumping station, the site is likely to remain undeveloped as part of the parkland setting of the south-western corner of the Irish Sports Campus.

12.7 Mitigation Measures

As noted in Section 12.5, the landscape and visual mitigation strategy was considered as part of the basic design principles for the Proposed Project. The arrangement of buildings, structures, colour schemes and the perimeter berm were considered as elements of the Proposed Project (embedded mitigation) and assessed within the Operational Phase impact assessment. Only the maturation of vegetative screen planting (over a period of seven years) differentiates the assessment of residual visual impacts as compared to pre-mitigation impacts.

The mitigation strategy outlined in this section will be incorporated by the appointed contractor(s) into the final design proposals and layout for the Proposed Project. The strategy will be incorporated into a Landscape Masterplan Statement, which will be developed as part of the overall Construction Environmental Management Plan by the appointed contractor(s) and will be approved by Irish Water.

For the pipeline aspects of the Proposed Project, the main landscape mitigation measure will be the reinstatement, insofar as possible, of ground cover, trees or hedgerows disturbed during the Construction Phase. Depending on the season in which construction works take place, it may be possible to store and replace sections of dormant hedgerows once work on a particular section of the proposed pipeline routes is complete. In other instances, new planting will be undertaken and this will utilise advanced nursery stock so as to reduce the timeframe over which any temporary landscape and visual impacts from vegetation loss are experienced.

The primary focus of the mitigation strategy is the proposed WwTP site, as it represents the most visible permanent aspect of the Proposed Project and has the potential to give rise to the most landscape and visual impacts (see Section 12.5 above). The mitigation strategy for the proposed WwTP site is multifaceted and seeks to blend and buffer the Proposed Project within its surroundings rather than simply present a visual screen or barrier around the site. Mitigation proposals relate to:

- Site layout;
- The colour treatment and external finishes of buildings;
- Perimeter screening using a combination of earth berms and tree planting around the site; and
- Internal planting.

a) Site Layout

There were two basic options relating to clustering of structures considered for the proposed WwTP site. These included concentrating structures as close as possible to the centre of the proposed WwTP site and providing a substantial buffer zone of screen planting and berms around them. Alternatively, the structures could be dispersed around the proposed WwTP site in order to reduce the perceived intensity of the Proposed Project. Following detailed consideration, a hybrid solution was devised which maintained buffer zones between the built edge of the Proposed Project and the boundaries (north-east and west), which will accommodate planted berms for visual screening.

The tall buildings have been arranged to present a consolidated, utilitarian, but well-spaced, building line to the southern boundary (next to the East-West Distributor Road and lands zoned for a future IDA Business Park).

The arrangement of built elements within the Proposed Project was also ‘loosened’ to allow for internal green spaces and tree lines to visually divide the various precincts and soften the intensive industrial character of the

site. Internal green spaces have been identified and will be managed as green spaces and planted areas until future needs require otherwise.

b) Colour Treatment and External Finishes of Buildings

The colour scheme for buildings on the proposed WwTP site has focused on reducing the perceived bulk and massing of the largest structures and blend them with the background context to reduce visual prominence.

The final building heights will be a maximum of 18m. The building colour scheme that shall be applied to the proposed WwTP site is described below:

- A dark plinth around the base of all buildings and tanks (approximately 3m) to tie in with the hedgerow pattern and diminish the perceived vertical height of buildings;
- A medium tone band around the central portion of buildings (up to about 8m) to tie in with the surrounding mature tree lines and field patterns and also to provide a transition between the dark and light tones;
- A light tone top to the tallest buildings (9m+) to reduce the degree of contrast against the sky when seen from surrounding receptor locations – thereby diminishing overall visual presence and perceived vertical massing; and
- 'Horizontal Disruption' of long facades (20m+) by extending the dark tone plinth to the top of those buildings for half of the length of the facades that run perpendicular to site boundaries. Again, this is intended to diminish the perceived lateral bulk of buildings in a subtle way using solid and shade.

c) Perimeter Screening

In relation to visual screening, for those boundaries of the proposed WwTP site adjoining the rural context to the east, north and west, a series of flowing organic embankments planted with dense bands (approximately 15m to -20m wide) of hedgerow tree species will provide visual screening of the Proposed Project. The embankments will rise to a maximum height of 4m with gentle outward facing slopes in order to blend with the flat to mildly undulating terrain that surrounds the proposed WwTP site. This will be achieved using a buffer zone width of approximately 60m. Between the mounds, specimen trees will be provided, rising from a more open wildflower meadows context. The dense but linear bands of hedgerow vegetation topping the mounds will reference the hedgerows and tree-lined field boundaries of the agricultural fields in the vicinity. The meadow and specimen trees between the dense sections of hedgerow planting will reference the parkland aesthetic of the nearby demesne landscapes to the east.

In deliberate contrast to the organic and semi-rural boundary treatments of all other site boundaries, the southern boundary will be presented as a bold architectural landscape treatment in order to tie in with the future development of the lands to the south (future IDA Business Park). The buildings along this boundary of the proposed WwTP site will be aligned to provide a consolidated facade to front the future East-West Distributor Road between the proposed WwTP site and the IDA Business Park lands. The buildings will be set back to a sufficient degree in order to reduce their perceived height and bulk within the future street scene. This area will incorporate geometric blocks of dense ornamental shrubs and a 'bosque' or grid of tall narrow specimen trees such as poplars. A plinth wall and system railing will be provided and will be an attractive, subtle and secure physical boundary.

Semi-mature tree planting (minimum 14cm to 16cm girth) will be used for all planting along the southern boundary and internal treelines to aid early establishment. Mixed age classes ranging from semi-mature (minimum 14cm to

16cm girth) down to feathered whips (approximately 1.25m tall) will be utilised for perimeter berms in order to establish a dense screen over a longer period of time. It is envisaged that it will take up to seven years for all planting to reach a maturity that will afford the intended screening effectiveness.

d) Internal Planting

Additional treelines and grids will be provided within the southern half of the proposed WwTP site running both perpendicular and parallel to the southern boundary, surrounding car parks and screening tanks. Treelines will also be provided to link between the southern and northern boundaries and to act as both a division of precincts within the proposed site and as a reference to hedgerows and treelines that currently exist within, or connect to, the boundaries of the proposed site.

A high degree of visual permeability will be provided into this side of the site rather than presenting a barrier. These landscape treatments will all combine to give the impression of a campus-style development in order to blend with the future business park neighbours (IDA lands) to the south.

The schematic of the landscape and visual mitigation concept is provided in Figure 12.4 Landscape and Visual Mitigation Concept, and the Landscape Masterplan is provided in Figure 12.5 Proposed Wastewater Treatment Plant Landscape Mitigation Plan.

e) Proposed Abbotstown Pumping Station Mitigation

The proposed Abbotstown pumping station will be designed and constructed to tie in with the architectural vernacular of the surrounding area. This consists of a traditional-style structure that references the nearby St. Francis' Hospice building. Subtle screen planting will be provided around the perimeter of the proposed Abbotstown pumping station site and will also be employed to soften the appearance of security fencing. This will 'bed' the proposed site into the surrounding landscape structure. See Figure 12.6 Proposed Abbotstown Pumping Station for the Landscape Mitigation Plan for the proposed Abbotstown pumping station site.

12.8 Residual Impacts

The residual impacts of the proposed WwTP site aspect of the Proposed Project and the proposed Abbotstown pumping station was examined hereunder on the basis of seven years of mitigation screen planting establishment. This is not a particularly critical period of time over which to consider the ameliorating effects of the planted mitigation, as its effectiveness will increase incrementally from year one until full maturity at 15+ years. However, seven years does represent a period of time in which even immature whip planting should have established into substantial trees.

The assessment of residual visual impacts at each of the selected viewpoints is included in Appendix A12.1 in Volume 3 Part B of this EIAR and summarised in the table below using a comparison with the pre-mitigation impact.

Table 12.13: Significance of Residual Visual Effects (Following Seven Years of Mitigation Screen Planting Establishment)

Viewpoint		Magnitude of Operational Phase Visual Impact (Pre-Mitigation)	Significance of Operational Phase Visual Impact (Pre-Mitigation)	Magnitude of Residual Visual Impact	Significance of Residual Visual Impact
VP1	Clonshaugh Road (adjacent to proposed site access)	High	Substantial-moderate	High-medium	**Moderate**
VP2	Top storey of Clayton Hotel Dublin Airport	High medium	Moderate	Medium	**Moderate-slight**
VP3	Local road at Springhill	Low negligible	Slight-imperceptible	Negligible	**Imperceptible**
VP4	Private dwelling at Middletown	High	Substantial-moderate	Medium	**Moderate-slight**
VP5	Springhill House	Medium-low	Moderate-slight	Low	**Slight**
VP6	Baskin Lane near intersection with Clonshaugh Road	Negligible	Imperceptible	Negligible	**Imperceptible**
VP7	M1 Motorway airport interchange	Negligible	Imperceptible	Negligible	**Imperceptible**
VP8	Glazed skyway between sections of Dublin Airport Terminal 2	Low	Slight-imperceptible	Low	**Slight-imperceptible**
VP9	Baskin Lane at Ballymacartle	Negligible	Imperceptible	Negligible	**Imperceptible**
VP10	St. Doulagh's Church on the R107 Malahide Road	Negligible	Imperceptible	Negligible	**Imperceptible**
VP11	Sports Ground adjacent to N32 (Craobh Chiarain Hurling and Football Club)	Low	Slight-imperceptible	Low-negligible	**Imperceptible**
VP12	Sports ground adjacent to Balgriffin Cemetery (Cumann Peil Innisfail)	Negligible	Imperceptible	Negligible	**Imperceptible**
VP13	Belcamp Park	Negligible	Imperceptible	Negligible	**Imperceptible**
VP14	St. Francis' Hospice (proposed Abbotstown pumping station view)	Low negligible	**Slight-imperceptible**	**Negligible**	**Imperceptible**

As can be seen from the summary table above, at the vast majority of viewpoints the magnitude of visual impact, and consequently the significance of visual impact, reduces by at least one category following the establishment of mitigation screen planting. This is typically because existing hedgerow screening will appear bolstered and increased in height, affording a lesser view of the proposed structures. The proposed planting also helps to blend the Proposed Project into its surrounding context of hedgerows and treelines. Though there are several instances where the proposed screen planting contributes to the sense of enclosure or the foreshortening of a view (e.g.

VP1 and VP4), it is still considered preferable to the view of the unscreened proposed WwTP site and impact significance is reduced.

Only at VP8 is the mitigation screen planting not considered likely to reduce the visual impact by a full assessment category. This is on the basis that there is already a substantial vegetation band screening the lower elements of the Proposed Project, and the proposed screen planting is not likely to screen the upper sections and roofline of the Proposed Project from this elevated vantage point.

The proposed mitigation screen planting is most effective in instances where the proposed WwTP site would be most prominently visible, i.e. close receptors with a low degree of existing hedgerow screening (VP1 and VP4). In these instances, the effective screening height of the planting is greater than its actual height (4m berm + approx. 6m to 8m growth) due to the effects of perspective (perceived scale in relation to distance). This is because the screen planting within the landscape buffer zone around the perimeter of the Proposed Project is proportionally much closer to the viewer than the nearest potentially visible structure. Whilst these effects of perspective are less noticeable at the elevated VP2 (Clayton Hotel Dublin Airport), this viewpoint also benefits considerably from the internal treelines, which divide the site into precincts, screens internal structures and softens the appearance of the Proposed Project overall.

The effectiveness of the mitigation screen planting is highlighted by the results of the residual impact assessment at the three most affected viewpoints for the pre-mitigation assessment. These were VP1 at Clonshaugh Road, VP2 at the Clayton Hotel Dublin Airport and VP4 at Middletown where the pre-mitigation significance judgements were Substantial-moderate, Moderate and Substantial-moderate respectively. These reduce to Moderate, Moderate-slight and Moderate-slight following the establishment of mitigation screen planting.

The proposed mitigation planting within and around the proposed Abbotstown pumping station site will both screen and soften the view of the proposed building and compound, allowing it to blend more readily with the surrounding grassland/woodland setting. The majority of mitigation benefit relates to the external compound, which hints more at the utility infrastructure nature of the development than the sensitively designed building. The planting will also serve to soften the hard lines of the perimeter security fencing which also give away the utilitarian nature of the development.

On the basis of the assessment contained herein, and in accordance with the significance matrix provided earlier at Table 12.3, it is not considered that the Proposed Project will give rise to any significant residual landscape and visual effects.

12.9 Difficulties Encountered in Compiling Required Information

No particular difficulties were experienced in compiling the data required for the landscape and visual assessment.

12.10 References

Environmental Protection Agency (2002). Guidelines on the Information to be Contained in Environmental Impact Statements.

Environmental Protection Agency (2015). Revised Guidelines on the Information to be Contained in Environmental Impact Statements.

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