

# **Greater Dublin Drainage**

## **Alternative Sites Assessment - Phase Two Sites Assessment and Route Selection Report**

**Landscape**

**May 2011**



## Executive Summary

The Landscape and visual section of the Alternative Sites Assessment (ASA) for the Greater Dublin Drainage project compares the predicted landscape and visual impacts in relation to each of the nine land parcels selected for the Wastewater Treatment Plant (WWTP). It also assesses potential impacts with respect to the eight possible sections of the Orbital Drainage System and the two alternative marine outfall study areas. The assessment is based on desktop studies and 'windshield' site surveys and it is presented in the form of impact matrices.

The basis for the assessment is the 'Guidelines for Landscape and Visual Impact Assessment: Second Edition' Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2002'. Also considered are the guidelines laid out by the Environmental Protection Agency (EPA) in the publications "Guidelines on the Information to be contained in Environmental Impact Statements (2002) and the accompanying "Advice Notes on Current Practice in the Preparation of Environmental Impact Statements" (September 2003)

In terms of landform and drainage, the southern part of the study area is relatively flat to mildly undulating, whilst locally prominent hills rise at the northern periphery in a band that runs from the inland extents of the study area to the coast. There are numerous small streams and drainage channels, but only four principal rivers contained within the study area and these are the Liffey, Tolka, Broadmeadow and Ward Rivers.

Although a large proportion of the study area is made up of urban settlement and associated industrial and commercial development, the predominant land uses are those of pastoral farming and tillage. This includes a number of intensive market gardens located within the well drained coastal plains in the northern part of the study area. Punctuating the rural landscape is the significantly sized Dublin Airport site and there are also numerous golf courses located within the Study area.

Landscape and visual receptors, which are physical landscape features or viewer groups that might experience an effect, are identified in the assessment under the headings of; centres of population; transport routes and public amenities and; facilities. By far the largest settlement contained within the study area and occupying its entire southern extents are the northern and western suburbs of Dublin City. The next largest settlement within the study area is Swords. There are also numerous coastal settlements of significant size. The principal traffic corridor within the study area and which dissects it in half, north to south, is the M1 motorway. This road links between Dublin and Belfast and also provides the northernmost connection onto the M50 Motorway, which is the other major road within the study area. The Dublin – Belfast railway line also runs in a north – south direction between the coastline and the M1 motorway passing across the Malahide and Rogerstown estuaries.

The coastline within the study area has a high concentration of amenity and recreational features including coastal walks, beaches, bathing locations and golf courses. Other important amenity features include the Royal and the Grand Canals as well as Phoenix Park, which is contained within the urban area of Dublin City.

All aspects of the proposed development will result in construction phase landscape and visual impacts, however, in the case of the subsurface Orbital Drainage System and the marine outfall aspects, this will be the likely extent of any such impacts. These impacts will result from the likes of;

- Excavation and construction machinery on site
- Temporary fencing at the perimeter of the site
- Health and safety signage and fencing within and around the site
- Stockpiles of excavated material
- Stockpiles of construction materials

The WWTP is likely to be the only aspect of the Greater Dublin Drainage project that will result in both, temporary construction, and, permanent operational, landscape and visual impacts. These impacts will result from the likes of;

- Site entrance
- Administration buildings
- Treatment works
- Anaerobic Digesters
- Permanent site fencing and boundary treatments
- Access and circulation roads including site traffic

Given the rural or semi-rural context of all of the alternative sites for the WWTP, this aspect of the project is likely to result in a permanent impact on the landscape structure across the site. This includes, for example, the loss of field patterns, hedgerows and drainage ditches with a resultant impact on the landscape character of the surrounding area. Permanent visual impacts in relation to surrounding receptors such as dwellings and roads will also occur where views of the scheme are afforded. The magnitude of any impacts is largely a factor of the composition and integrity of the existing landscape context as well as the sensitivity of receptors in the vicinity.

Evaluation of each aspect of the Greater Dublin Drainage project is based on the probability and magnitude of predicted landscape and visual impacts with regard to a variety of sensitive receptors and landscape features, which are used as assessment criteria. These assessment criteria along with a four point scale of predicted impact levels form an impact assessment matrix for each of the three aspects of the GDD project.

## 7 Landscape

### 7.1 Introduction

This section of the Alternative Sites Assessment (ASA) for the Greater Dublin Drainage project compares the predicted landscape and visual impacts in relation to each of the nine land parcels selected for the Wastewater Treatment Plant (WWTP). It also assesses potential impacts with respect to the seven possible sections of the Orbital Drainage System and the two alternative marine outfall study areas. The assessment is based on a desktop studies and 'windshield' site surveys.

The basis for this assessment is the 'Guidelines for Landscape and Visual Impact Assessment: Second Edition' Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2002'. Also considered are the guidelines laid out by the Environmental Protection Agency (EPA) in the publications "Guidelines on the Information to be contained in Environmental Impact Statements (2002) and the accompanying "Advice Notes on Current Practice in the Preparation of Environmental Impact Statements" (September 2003). These Guidelines note in the 'Landscape in the Existing Environment' Chapter that landscape impact is a combination of two separate, but closely related, aspects: 'The first aspect to be considered is visual impacts focusing on the extent to which developments can be seen, the second aspect is impacts on the character of the landscape, examining responses which are felt towards the combined effects of the new development'.

The EPA Guidelines recommend the following to be included in any assessment.

- **Context:** Areas from which the existing site can be seen are generally noted with particular attention given to views from roads, residences and designated tourism routes and viewpoints. Areas from beyond the site boundary from which the site can be seen should be noted. If the site and its environs have areas of distinctive and different character, those are mapped and described.
- **Character:** A description of the landscape character differentiates between subjective assessments and objective description. A description of the character of the site as perceived both within the site and in the wider landscape is important, as is a description of the intensity and character of land use.
- **Significance:** This entails the level of visual intrusion upon designated views, designated landscape and designated landscape amenity areas.
- **Vulnerability:** The extent to which the existing landscape or views are capable of being changed in such a way as not to alter the perceived character.

Also key to this assessment, particularly given that the orbital drainage system and marine outfall aspects will be laid underground, is the duration of any landscape and visual impacts. The EPA guidelines define the duration of impacts as follows:

<b>Temporary:</b>	One year or less
<b>Short-term:</b>	One to seven years
<b>Medium-term:</b>	Seven to twenty years
<b>Long-term:</b>	Twenty to fifty years
<b>Permanent:</b>	Over fifty years

## 7.2 Methodology

### 7.2.1 Desktop Study

The desktop study was the first aspect of the ASA to be undertaken by the landscape and visual assessors. One of the key aspects of the desktop study was a review of the Fingal County Development Plan (2011 - 2017) principally in relation to the location of designated areas of Highly Sensitive Landscape, scenic views and scenic routes.

The County Development Plan incorporates the Landscape Character Assessment (LCA) 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. A value can range from low to exceptional. The Landscape Character Types are:

- Rolling Hills
- High Lying
- Low Lying
- Estuary
- Coastal
- River Valleys and Canal

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 categorised using a scale of high to low.

It should be noted that although the sensitivity assignments relating to landscape character type form the basis of the 'Highly Sensitive Landscapes' zoning they do not fully correspond. It would appear that the Highly Sensitive Landscape zoning is based on a finer grain of evaluation.

The Development Plan also contains location specific information regarding sensitive landscape features such as demesne landscapes, treelines, woodlands and hedgerows as well as sensitive visual receptors such as coastal walks and bathing locations.

The relevance of the Development Plans from the surrounding counties of Kildare and Meath were also considered. However, it was concluded that any landscape and visual impacts would not extend to these jurisdictions as the nearest section of proposed pipeline route is over 3km east of the County Meath border. The nearest land parcel is approximately 5km from the same section of the County Meath border.

The desktop study also utilised aerial photography and 1:50,000 scale Ordnance Survey mapping.

The output from the desktop study phase was a preliminary assessment of likely landscape and visual impacts. This was generated using an impact matrix format of land parcels, Orbital drainage System Sections and Outfall Study Areas versus a range of potential landscape and visual constraints.

### 7.2.2 Site Visits

Following the desktop study phase, windshield site surveys were undertaken to confirm or refute the initial impact predictions. These surveys took account of such factors as the relative elevation of the land parcel and surrounding receptors as well as the level of terrain and/or vegetation screening.

The site visits afforded the landscape and visual assessors an opportunity to become familiar with the landscape character of the study area generally and more specifically, the areas subject of potential development in relation to the GDD project.

The site visits also verified the rationale as to why certain areas had likely been designated as Highly Sensitive Landscapes in the Fingal Development Plan and what key components of that particular landscape contribute to make it sensitive. Likewise the principle direction of views from designated scenic routes could also be confirmed with a higher degree of certainty than from the Development Plan maps.

## 7.3 Existing Environment

The landscape contained within this vast study area is extremely diverse being a combination of natural and cultural features including; dense urban settlement, urban fringe, farmland, canals, rivers, estuaries and coastline. It also contains major elements of transport infrastructure as well as heritage, amenity and recreational features. A description of the landscape encompassing the context of the proposed GDD project is provided below under the headings of landform and drainage, vegetation and land use, centres of population and houses, transport routes and public amenities and facilities. The constraints used for this assessment are largely determined by their relevance and association with the landscape features described below. Following the broad description of the landscape contained within the study area, a finer scale description is provided of the landscape contained within and immediately surrounding each land parcel, each section of the orbital drainage system and each marine outfall location.

### 7.3.1 Landform and drainage

The southern part of the study area is relatively flat to mildly undulating, whilst locally prominent hills rise at the northern periphery in a band that runs from the inland extents of the study area to the coast. There are numerous small streams and drainage channels, but only four principal rivers contained within the study area and these are the Liffey, Tolka, Broadmeadow and Ward Rivers. The River Liffey passes through the centre of Dublin City from the west and cuts across the southern portion of the study area. The Tolka River also passes through Dublin City from the northwest reaching the coast at the Tolka Estuary just to the north of the mouth of the Liffey. The Broadmeadow and Ward Rivers both converge on the Malahide Estuary from the northwest and west respectively. Rogerstown Estuary occurs approximately 3km to the north of the Malahide Estuary and the Portmarnock – Baldoyle Estuary is located a similar distance to the south. Narrow sand spits form significant stretches of the study area shoreline at the mouths of each of these estuaries. Short beaches also occur in the northern portion of the study area where they are associated with coves below low seacliffs.

### 7.3.2 Vegetation and Landuse

Although a large proportion of the study area is made up of urban settlement and associated industrial and commercial land uses, the predominant land uses are those

of pastoral farming and cropping. This includes a number of intensive market gardens located within the well drained coastal plains in the northern part of the study area. Fields in closer proximity to the coast tend to be larger in size than those further inland. The latter tend to be strongly defined by mature broadleaf hedgerows and tree lines whilst clipped hedges, low hedgerows or drainages channels tend to define the former with a lesser degree of enclosure.

Punctuating the rural landscape is the significantly sized Dublin Airport site. There are also numerous golf courses, particularly in coastal areas where advantage is taken of the undulating dune landscape to create 'links' style golf courses. Other notable land uses include several quarries, both working and disused, as well as demesne landscapes.

### 7.3.3 Centres of Population and Houses

By far the largest settlement contained within the study area and occupying its entire southern extents are the northern and western suburbs of Dublin City. The next largest settlement is that of Swords, which lies in the heart of the study area approximately 4km to the north of the perimeter of Dublin. There are also numerous coastal settlements of significant size, which include (from north to south) Skerries, Rush, Lusk (2km inland), Portrane, Donabate, Malahide and Portmarnock.

Other than for those listed above, most other settlements tend to be located at cross roads and are fairly modest in size. Nonetheless, the rural area is relatively heavily populated by farmsteads and clustered dwellings.

### 7.3.4 Transport Routes

The principal traffic corridor within the study area and which dissects it in half, north to south, is the M1 motorway. This links between Dublin and Belfast and also provides the northernmost connection onto the M50 Motorway, which is the other major road within the study area. The M50 is the ring road around the city of Dublin and largely defines the city limits in a northward direction. The M2, M3 and M4 motorways also converge on Dublin City from the northwest and west passing through the south western portion of the study area en route.

Numerous regional roads also crisscross the study area including the old N1 road to the north of the city, which has been renamed as the R132.

The Dublin – Belfast railway line runs in a north – south direction between the coastline and the M1 motorway passing across the Malahide and Rogerstown estuaries.

### 7.3.5 Public Amenities and Facilities

One of the key facilities within the study area is Dublin International Airport which is the principal gateway for visitors to the Republic of Ireland. This is located in the centre of the study area adjacent to the M1 motorway. There are several airport hotels located in close proximity.

The coastline within the study area has a high concentration of amenity and recreational features including coastal walks, beaches, bathing locations and golf courses. Perhaps the most notable golf course is the Portmarnock Links course, which is internationally renowned and has hosted several high profile events. Also located at regular intervals along the coast are distinctive 'Martello Towers'. These are historical, coastal defensive structures, which are a distinctive feature of this coastline.



Although they would once have been considered a key part of Dublin's transport infrastructure the Grand and Royal Canals and their associated tow paths are now a recreational and amenity feature. Both of these canals enter the city from a westerly direction, but with the Royal Canal to the north of the River Liffey and the Grand Canal to the south.

There are a number of public parks contained within the study area and the most notable of these is the 707ha Phoenix Park contained within the urban area of Dublin City.

### **7.3.6 Landscape Description of Land Parcels**

#### **(a) Annsbrook**

The Annsbrook land parcel is located on the lower southern slopes of Nags Head with the terrain falling gently to the southeast at this point. Two small watercourses define the boundaries of the land parcel to the north and south east respectively. The land cover within and immediately surrounding the land parcel is that of pasture and tillage. The fields are relatively small and geometric in shape and are defined by mixed species, broadleaf hedgerows. The nearest settlement is Ballyboghil just over 2km to the west, however, the land parcel is surrounded by numerous rural dwellings lining local roads to the north, east and west as well as the R129 regional road to the south. The M1 motorway passes in a north – south direction less than 1km to the east of the Annsbrook land parcel.

In terms of designations, this land parcel is located within the 'Low Lying' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. The land parcel lies approximately 1km to the south and 1.3km to the east of an area zoned as 'Highly Sensitive Landscape'. Designated scenic routes are located 1.3km to the southwest and 2.5km to the north.

#### **(b) Baldurgan**

The Baldurgan land parcel, like the Annsbrook land parcel, is also located on the lower southern slopes of Nags Head with the terrain falling gently to the southeast. A tributary of the Ballyboghil River defines the northern edge of the land parcel and Turvey Stream defines it to the south. The land cover within and immediately surrounding the land parcel is tillage and this is contained within large geometric fields. The fields are largely divided by drainage ditches rather than mature hedgerows providing an open character to this landscape. The settlement of Ballyboghil is located just over 1km to the northwest of the land parcel. The R129 and R108 regional roads lie to the north and west of the land parcel respectively, whilst local roads pass to the south and east.

In terms of designations, this land parcel is located within the 'Low Lying' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning is located 1.5km to the north and designated scenic routes are identified 0.5km and 5km to the north as well as 0.5km to the southeast of the land parcel.

**(c) Clonshagh**

The Clonshagh land parcel is located on relatively flat ground just beyond the northern fringe of Dublin City, which is contained in this instance by the N32 national road that runs east - west some 300m to the south. A small watercourse bounds the northern edge of the land parcel and the predominant land use is that of tillage. The fields are large and they are modestly defined by low hedgerows and drainage ditches. Hedgerows tend to be more mature beyond the boundaries of this land parcel. The M1 motorway passes approximately 1km to the west of the land parcel with Dublin Airport just beyond this to the northwest. The R107 regional road lies to the east of the land parcel. Notably, Bewleys Airport Hotel is located approximately 500m to the southwest of this land parcel, whilst the Hilton Airport Hotel is just over a kilometre to the southeast.

This land parcel is located within the 'Low Lying' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning occurs 1km to the northeast of the land parcel.

**(d) Cloghran**

The Cloghran land parcel is located on flat ground immediately to the east of the M1 Motorway. The land parcel is bordered by a small watercourse to the north. A pastoral land use prevails within and immediately around the land parcel with a relatively intricate field pattern of mature broadleaf hedgerows. Two M1 flyovers occur to the north and southwest of the site respectively. Dublin Airport lies just over a kilometre to the south west of the land parcel on the opposite side of the M1. The settlement of Swords occurs to the northwest of the site and a recent housing estate at its outskirts lies less than a kilometre to the north of the land parcel on the same side of the M1.

In relation to landscape and visual designations, this land parcel is located within the 'Low Lying' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning occurs 0.8km to the east of the land parcel and the nearest designated scenic route lies 3km to the northeast.

**(e) Cookstown**

The Cookstown land parcel lies immediately to the south of the Baldurgan land parcel described above. The Turvey Stream, which defines the southern boundary of the Baldurgan land parcel defines the northern boundary of the Cookstown land parcel. The land use is predominantly tillage in large, barely defined fields with some pasture to the western periphery. This results in an open rural landscape character. The R108 regional road runs in a north – south direction to the west of the site and is within 500m at its closest point. The small settlement of Ballyboghil is situated approximately 1.5km to the northwest, but with housing that stretches along the R108 to within a kilometre of the land parcel.

This land parcel lies on the boundary between the 'Low Lying' and 'Rolling Hills' landscape character types identified in the Fingal County Development Plan. These landscape types are both recognised as having a 'Modest' value, however, the 'Low Lying' landscape type is deemed to have a 'Low' level of sensitivity, whilst the 'Rolling Hills' landscape type is assigned a 'Medium' level of sensitivity. An area of 'Highly

Sensitive Landscape' zoning occurs 1.6km to the north of the land parcel. Designated scenic routes occur 0.3km to the east and 1km to the north as well as 5km to the north.

**(f) Newtowncorduff**

The Newtowncorduff land parcel is located immediately to the east of the M1 motorway and at approximately the same level. The land parcel lies some 300m to the west and slightly below the level of the old N1 route north, which is now the N32. The land parcel is on relatively flat ground with two small watercourses defining its south eastern and south western boundaries. The land cover is a mixture of tillage and pasture within quite a dense geometric field pattern defined by mature broadleaf hedgerows. The significantly sized settlement of Lusk occurs approximately 1.5km to the east and motorway services have just been constructed a similar distance to the north. Whilst the landscape character within the land parcel is a rural one there is a range of commercial and transport related developments in the near vicinity.

In terms of designations, this land parcel is located within the 'Low Lying' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning occurs 0.7km to the northwest of the land parcel. Designated scenic routes occur 0.5km to the north and 0.7km to the northwest as well as 3km to the northwest.

**(g) Rathartan**

The Rathartan land parcel is located on ground that slopes gently to the southeast with small watercourses running along its south western and eastern boundaries. The land cover is that of tillage on large open fields. Large scale market gardening occurs on land to the northeast. This land parcel and the area around it has an open rural landscape character. The Dublin – Belfast rail line runs close by the western boundary of the land parcel, whilst the R128 regional road runs approximately 500m to the south. The significantly sized coastal settlement of Rush occurs approximately 500m to the east of this land parcel.

This land parcel is located within the 'Coastal' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as being of 'Exceptional' value and a 'High' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning and a designated scenic route both occur 0.5km to the south of the land parcel.

**(h) Saucerstown**

The Saucerstown land parcel is located in the base of the shallow Broadmeadow River Valley adjacent to the south of the River itself. The land therefore falls gently to the north on this side of the valley. The land parcel contains a combination of tillage and pasture within an organic field pattern defined by drainage ditches and scrubby hedgerows. The substantial settlement of Swords is located approximately 1km to the east and the Swords Golf Course is approximately 300m to the northwest on the opposite side of the Broadmeadow River. The R108 and the R125 are less than 1km to the west and south of the land parcel respectively. This land parcel has a relatively confined rural landscape character but with a variety of other peri-urban land uses in the near vicinity.

In respect of designations, this land parcel is located within the 'Rolling Hills' landscape character type identified in the Fingal County Development Plan. This landscape type is recognised as having a 'Modest' value and a 'Medium' level of sensitivity. An area of 'Highly Sensitive Landscape' zoning occurs 2.5km to the east of the land parcel. Designated scenic routes occur 0.5km to the south and 0.8km to the west.

**(i) Tyrrelstown Little**

The Tyrrelstown Little land parcel lies a short distance to the north of the Rathartan land parcel described above. It is on slightly steeper ground that falls to the southeast and contains large geometric fields in both tillage and pasture. Hedgerows tend to be low and this land parcel has an open character as a result. The Dublin – Belfast rail line runs approximately 200m to the east of this site and the R127 regional road runs parallel just over 1km to the west of the site. Baldongan Church is an important heritage feature that lies approximately 700m to the north of the land parcel on higher ground.

This land parcel is located at the confluence of the 'Low lying', 'High Lying' and the 'Coastal' landscape character types identified in the Fingal County Development Plan. The 'Low Lying' landscape type is recognised as having a 'Modest' value and a 'Low' level of sensitivity. The 'High Lying' character type is defined as being of 'High' value and the 'Coastal' character type as being of 'Exceptional' value. Both are considered to be of 'High' sensitivity. An area of 'Highly Sensitive Landscape' zoning occurs directly adjacent to the north of the land parcel. Designated scenic routes are located 0.5km to the north, 1.5km northeast and 1.5km northwest of the land parcel.

**7.3.7 Landscape Description of Orbital Drainage Route sections**

**(a) Section A**

This section of the orbital drainage system (ODS) runs along the northern edge of the M50 motorway between the M3 motorway and the R122 regional road. It also encompasses a section of the M2 motorway near its eastern end. Beginning at its western end this ODS section passes through a heavily wooded area associated with the Tolka River corridor. It then runs predominantly through agricultural land, but passing closely to the south of Rosemount Business Park and a quarry at Cappagh. This ODS section is common to all land parcels.

In terms of landscape designations, the western half of this section is contained within an area zoned as highly sensitive landscape. There are no scenic routes in the vicinity.

**(b) Section B**

This ODS section continues eastward from Section A along the northern side of the M50 motorway passing across the major junction of the M50 and M1 motorways. This section also passes through predominantly agricultural land, but also through the Silloge Park golf course, large long term car parks associated with the airport and an industrial area flanking the Swords Road. It also passes just to the south of the airfield at Dublin Airport and encompasses Bewley's Airport Hotel and a cemetery at Dardistown. This section serves the Clonshagh land parcel.

In terms of landscape designations it touches an area of highly sensitive landscape zoning at its eastern end, but there are no scenic routes in the vicinity.

**(c) Section C**

Section C begins just to the west of the Ward River and crosses this watercourse and the R108 regional road as it runs between the settlement of Swords to the north and Dublin Airport to the south. It then crosses the R132 regional road and the M1 before connecting to the eastern end of ODS section B. Along this route it encompasses Forrest Little golf course and the corner of Abbeyville Estate. Otherwise it encounters mainly agricultural land uses. This section serves the Cloghran land parcel.

In relation to designations, this corridor section touches an area of 'highly sensitive landscape' zoning at its eastern end and crosses the Ward River corridor which has a 'high amenity' zoning. A designated scenic route occurs 1km to the north of the north western end of this ODS section.

**(d) Section D**

Section D begins just to the west of the R108 and encompasses a stretch of the Broadmeadow River corridor as it meets the Swords Estuary immediately to the north of Swords. At this point it also crosses the M1 motorway and then runs in a south easterly direction between Swords and Malahide crossing the R106 and the R107 regional roads before linking to the confluence of ODS sections B, C and G just to the east of the settlement of Kinsaley. This section also passes through the Swords and Roganstown golf courses near its western end and across the corner of Abbeyville Estate near its eastern end. This ODS section serves the Saucerstown land parcel.

In terms of Development Plan designations, this route section crosses a highly sensitive landscape zoning at the Swords Estuary and another in the vicinity of Abbeyville Estate. There is also a high amenity landscape zoning at the confluence of the Broadmeadow River and Swords Estuary. It also crosses a scenic route at its western and another at the Sword Estuary.

**(e) Section E**

Section E links north-eastward from the point that Section D first encounters the Broadmeadow River. It crosses the M1 motorway at the intersection with the R129 regional road and continues just to the south of Lusk and then to the north of Rush where it terminates at the northern marine outfall study area. It will also pass across the Dublin-Belfast railway line. This ODS route passes almost entirely through agricultural land and is intended to serve the Rathartan land parcel.

In terms of landscape designations in the Development Plan, this route section passes across an area of highly sensitive landscape zoning and a scenic route to the southeast of Lusk.

**(f) Section F**

Section F is the longest of the potential ODS route sections running from the eastern end of Section A in a north easterly arc to a termination point 2km to the north of the

coastal settlement of Swords. Although it passes almost entirely through a rural landscape it will encounter the M1 and M2 motorways as well as seven regional roads and the Dublin-Belfast railway line. It will also cross the Ward and Broadmeadow Rivers and passes just to the north of Lusk. Section F will also encompass St Margret's and Roganstown golf courses and pass close to Corrstown golf club. This section serves the land parcels of Cookstown, Baldurgan, Newtowncorduff and Tyrrelstown Little.

This route section touches an area of highly sensitive landscape zoning at its eastern end and passes adjacent to a scenic route just to the northwest of Lusk.

**(g) Section G**

Section G is the shortest ODS section. It gathers together Sections B, C and D at the settlement of Kinsaley on the R107 regional road and links them to the southern marine outfall study area at the Baldoyle Estuary. It runs through a rural landscape between the north Dublin suburb of Baldoyle and the coastal settlement of Portmarnock and will cross the Dublin-Belfast railway line. This route section would serve the land parcels of Saucerstown, Cloghran and Clonshagh.

In terms of landscape designations in the Development Plan this section would pass through an area of highly sensitive landscape zoning as it approaches the Baldoyle Estuary. There is also a scenic route identified on the opposite side of the estuary approximately 500m to the east of the termination point of this section.

**7.3.8 Landscape Description of Marine Outfall Study Areas**

**(a) Northern Outfall**

The northern outfall study area encompasses a section of coastline between the coastal settlements of Skerries to the north and Portraine to the south. In a seaward direction it is defined by Lambay Island. Within this zone is a mixed coastline of beaches and low seacliffs, the settlements of Rush and Loughshinny as well as two Martello towers and several other heritage features. This northern outfall option would potentially serve the WWTP land parcels of Annsbrook, Saucerstown Cookstown, Baldurgan, Newtowncorduff, Rathartan and Tyrrelstown Little.

Several coastal walks are indicated on the Fingal County Development Plan maps and this entire coastal area is incorporated in a highly sensitive landscape zoning. The R128 regional road that runs adjacent to the coast is a designated scenic route. Other shorter sections of scenic route are identified on local roads 500m to the north of Loughshinny, at Rush and at Portraine.

**(b) Southern Outfall**

The southern marine outfall study area is considerably smaller than its northern counterpart (described above). It takes in a section of coastline that incorporates the Baldoyle Estuary between the north Dublin suburb of Baldoyle and the coastal settlement of Portmarnock. It also encompasses the lengthy sand-spit that contains Portmarnock Golf Course and Velvet Strand. In a seaward direction the study area stretches 3km beyond just under a kilometre to the north of Ireland's Eye. This

southern outfall option would potentially serve the WWTP land parcels of Saucerstown, Cloghran and Clonshagh.

In terms of designations in the County Development Plan, this study area is fully contained within an area zoned as highly sensitive landscape. A scenic route runs along the eastern side of Baldoyle Estuary and a coastal walk is indicated on the Development Plan maps.

## 7.4 Predicted Impacts

This section highlights any landscape and visual impacts that are likely to occur as a result of the proposed development. These impacts might occur in relation to the construction phase or the ongoing operational phase of the development.

### 7.4.1 Construction Phase

All aspects of the proposed development will result in construction phase landscape and visual impacts, however, in the case of the subsurface Orbital Drainage System and the marine outfall aspects, this will be the likely extent of any impacts. The Wastewater Treatment Plant, by contrast, will also result in permanent operational phase impacts. The predicted nature and duration of impacts are discussed below in relation to each aspect of the project.

#### *Orbital Drainage System*

For the ODS, temporary negative visual impacts are likely to occur as a result of construction traffic, excavation machinery, health and safety signage and fencing, stockpiles of excavated material and stockpiles of construction materials (pipeline sections and backfill material). The ODS will run along some sections of road and will also pass through farmland and other undeveloped sites. For any particular section of the ODS route a variety of receptors are likely to be affected including, for example, settlements, roads and rural dwellings. Given that the rate of laying the underground pipeline is relatively rapid, the impacts described are only likely to be in the higher order of magnitude with respect to any particular receptor for a period of days or weeks before the works have moved on.

In terms of landscape impacts the ODS route will inevitably encounter tree lines and hedgerows, short sections of which will need to be removed and then replaced or replanted depending on the nature of the vegetation affected. Where well established vegetation must be replaced the negative landscape and visual impact may extend from temporary (less than one year) to the short term (one to seven years). Other than along road sections of the ODS, a line of bare earth will also remain following construction, indicating the path of the pipeline. This will only be a temporary landscape and visual impact until such time as the prevailing land cover becomes re-established. It is understood that where the ODS encounters any significant rivers or streams, directional drilling will be employed below the bed of the watercourse, thereby nullifying any potential landscape and visual impacts at such locations.

#### *Marine Outfall*

The marine outfall aspect of the project is likely to generate similar type of temporary landscape, seascape, and visual impacts to the ODS as it is essentially an extension of the land based subterranean pipeline. Given the interface of land and sea, however, a more complex construction scenario is envisaged. In addition to the construction

elements described above for the ODS, some form of water based rig will be required for laying of the pipeline below the seabed in the vicinity of the shoreline. The other key consideration is the generally higher level of sensitivity of receptors in coastal areas, which includes for example, beaches, coastal walks and bathing locations. It should be noted that if a pumping station is required at the marine outfall location it will likely result in a permanent visual impact unless it is also contained below ground.

#### *Wastewater Treatment Plant*

The WWTP is likely to be the only aspect of the Greater Dublin Drainage project that will result in both, temporary construction, and, permanent operational, landscape and visual impacts. The visible elements of the WWTP at construction phase are likely to consist of;

- Construction traffic to and from the site
- Excavation and construction machinery on site
- Temporary fencing at the perimeter of the site
- Health and safety signage and fencing within and around the site
- Stockpiles of excavated material
- Stockpiles of construction materials
- Temporary site offices

### **7.4.2 Operational Phase**

Permanent, operational phase, landscape and visual impacts will result from a combination of the following visible elements of the WWTP.

- Site entrance and access road
- Administration buildings (modest scale to accommodate staff offices, reception, canteen etc.)
- Treatment works
- Permanent site fencing and boundary treatments
- 3 - 4 Anaerobic Digesters (up to 15m above ground level)
- Access and circulation roads including site traffic
- Lighting

Given the rural or semi-rural context of all of the alternative sites for the WWTP, this aspect of the project is likely to result in a permanent impact on the landscape structure across the site. This includes, for example, the loss of field patterns, hedgerows and drainage ditches with a resultant impact on the landscape character of the surrounding area. Permanent visual impacts in relation to surrounding receptors such as dwellings and roads will also occur where views of the scheme are afforded. The magnitude of any impacts is largely a factor of the composition and integrity of the existing landscape context as well as the sensitivity of receptors in the vicinity and the potential for mitigation.

### **7.5 Evaluation**

Evaluation of each aspect of the Greater Dublin Drainage project is based on the probability and magnitude of predicted landscape and visual impacts with regard to a variety of sensitive receptors and landscape features, which are used as assessment criteria. The assessment criteria vary slightly between each aspect of the proposal and these are discussed in detail in sections 7.5.1, 7.5.2 and 7.5.3 below. The results are



presented in the form of impact matrices using a basic four point scale to represent the level of a potential impact;

<b>Level of impact</b>	<b>Description</b>
<b><i>Imperceptible</i></b>	Little or no potential to alter key elements/ features/ characteristics of the baseline landscape or view and/or the introduction of elements that are not uncharacteristic with the surrounding landscape – approximating to the ‘No Change’ situation
<b><i>Slight</i></b>	Minor potential for the loss or alteration to key elements/ features/ characteristics of the baseline landscape or view and/or introduction of elements that may not be uncharacteristic when set within the receiving landscape
<b><i>Moderate</i></b>	Partial potential for the loss or alteration to key elements/ features/ characteristics of the baseline landscape or view and/or introduction of elements that may be prominent but may not be substantially uncharacteristic when set within the receiving landscape
<b><i>Significant</i></b>	Major potential to alter key elements/ features/ characteristics of the baseline landscape or view and/or introduction of elements considered to be totally uncharacteristic when set within the receiving landscape

Differentiation between the probability and magnitude of an impact is not provided at this stage, but is reflected in the overall judgement and in the descriptions provided within the matrices. For example, an impact that has a low probability of occurring and would be of a low magnitude in any event will obviously be accorded a slight or imperceptible judgement overall, with the same occurring at the Higher end of the scale. A moderate judgement, on the other hand, may be the combination of a moderate probability and magnitude or, judgements at the opposite end of the scale (Low probability / High magnitude or High probability / Low magnitude).

In all instances a worst case scenario is assumed in terms of potential impacts, for example, screening vegetation devoid of leaves during the winter and clear views being available beyond rear property boundaries. The predicted impact levels hereunder are also pre-mitigation. Therefore, no level of landscape screening at the site boundary or ameliorative site configuration is assumed.

## 7.5.1 Evaluation of Land Parcels

### *Landscape Designations*

The first two assessment criteria (1.1 and 1.2 in the matrix below) relate to landscape designations in the Fingal County Development Plan (2011 - 2017). The first is whether the WWTP has the potential to impact on ‘designated scenic routes’. All scenic routes

that might be afforded views of one or more of the nine land parcels were investigated during fieldwork. Potential views discussed within the matrix below may be afforded on the basis of close proximity or clear elevated views from further afield.

Areas of Highly Sensitive Landscape (HSL) are also identified on the Fingal County Development Plan maps. Potential landscape and visual impacts in relation to these areas were generally based on proximity and the degree of intervisibility that is likely to occur between the land parcels and the HSL. Also considered is the degree of similarity between the landscape character of the land parcel and the relevant HSL as the land parcel might be contained within an important transition zone that buffers the HSL from areas of lower sensitivity or contributes to its distinctiveness. In many cases scenic routes also occur within designated HSL areas.

#### *Heritage Tourist and Amenity Features*

The next assessment criterion (1.3) is the potential for the WWTP sites to impact on views from heritage, tourist or amenity features. In essence this category is a catchall for any locations that attract visitors who will engage with the landscape or, for which, the surrounding landscape context contributes to the character of the feature. Such features might include golf courses, public parks, walkways, archaeological sites and demesne landscapes, particularly where these are open to the public. At a local scale it can also include hotels, guesthouses and B&Bs. Data relating to the location of tourist facilities within the study area was obtained from Fáilte Ireland to assist with this aspect of the assessment.

#### *Landscape Character*

Assessment criterion 1.4, impacts on landscape character, considers the existing landscape setting of each of the land parcels as well as the immediate surrounds. Key aspects are the nature and scale of surrounding development and whether this contributes to character of the area as a whole. The integrity of the existing landscape is also considered, particularly in terms of its intactness from a visual perspective.

#### *Landscape Screening Potential*

The next assessment criterion (1.5) looks, in a broad and preliminary manner, at how effective any proposed landscape screening is likely to be at each of the land parcels. Landscape screening is the primary form of mitigation available to scheme designers once impact avoidance and remedial measures have been considered. The main consideration here is that of relative elevation and topography of the land parcel in comparison to locations from which it can be seen. For example, where elevated views are afforded over the land parcel on a facing slope it would be much more difficult to provide effective screening at the land parcel boundary than where the site and receptor are at the same grade. Also considered is the openness of the land parcel and whether screen planting would be well integrated within the existing network of hedgerows and tree lines.

#### *Views from Settlements*

The next assessment criterion (1.6) is 'potential impacts on views from settlements'. For the purposes of this exercise settlements are considered to range in size from the City of Dublin, or at least the potentially affected northern outskirts, down to cross roads villages that might contain a church or post office and are more than just a cluster of houses.

Housing clusters or small estates are assessed along with any other rural dwellings under criterion 1.7, 'potential to impact on views from dwellings and local roads'. It is from these receptors that the closest and clearest views of all of the land parcels are likely to be afforded. Local roads and dwellings are combined because they both represent views from the local community. Even if views might be screened from a particular dwelling the occupants may have frequent potential views of the proposed development in their comings and goings.

#### *Views from Major Transport Corridors*

The next three criteria (1.8 and 1.9 and 1.10) relate to views from major transport routes. The first is views from the M1 motorway and this is accorded its own category due to the large volume of traffic it conveys in comparison to the remainder of the national primary, national secondary and regional roads also considered below. The receptor sensitivity of the M1 motorway relates primarily to the volume of potential viewers rather than views afforded over highly sensitive landscapes. Nonetheless, it also conveys tourists to and from Dublin Airport and serves as a gateway for visitors departing the airport.

The potential for any of the WWTP sites to impact on views from the Dublin / Belfast rail line is also considered under criteria 1.9. This rail line conveys a fairly modest amount of passengers in comparison to the number of motorists on the M1 motorway, which runs parallel a couple of kilometres inland. However, train passengers are more likely to be in a receptive frame of mind than motorists with regard to their appreciation of the landscape around them. Furthermore, the infrastructures for the rail line has far less of an influence on the surrounding landscape character than that of the motorway.

Criteria 1.10 relates to the potential for the WWTP land parcels to impact on views from the national primary, national secondary and regional road network. Whilst these roads convey a lesser volume of traffic than the M1, they tend to place motorists within the landscape context to a greater degree than motorways, which carve through or over the landscape. Thus, motorists on these lower order roads are likely to be more engaged with, and receptive to, the landscape around them.

#### *Views from Dublin Airport*

Potential for the WWTP sites to impact on views from Dublin Airport and its approaches is considered under criteria 1.11. Dublin Airport is an important receptor because it is the principle tourist gateway into the Republic of Ireland. Views of the surrounding landscape on approach to landing, arriving at the terminals and embarking from the airport facility represent a first impression of Ireland for many visitors. The volume of air passengers also contributes to its sensitivity as a visual receptor with an estimated 18.4million passengers passing through it in 2010 (source: Wikipedia). Infrastructure associated with the airport such as access roads and several airport hotels within the surrounding area are also considered, sometimes under alternative assessment criteria.

#### *Landscape Components*

The next two assessment criteria relate more to landscape impacts than visual impacts although the two forms of impact are inextricably linked. Criterion 1.12 relates to impacts on the existing landscape structure in the form of the removal of existing tree lines and hedgerows that define field patterns. This is relevant, to some extent, for all nine of the land parcels as they all encompass rural field patterns. Tree lines and hedgerows are an integral part of the rural landscape in this area and contribute

strongly to the character and sense of place for many localities, particularly those that are identified as Highly Sensitive Landscapes in the Development Plan.

The potential for impacts on designed landscapes such as demesnes are considered at criterion 1.13. Whether largely intact tourist attractions or barely recognisable remnants, demesne landscapes are important receptors due to their relatively frequent occurrence throughout the study area. These designed landscapes often contain mature broadleaf tree lines and woodlands and were frequently designed to afford axial views of the surrounding landscape.

Somewhat related is criterion 1.14, impacts on Woodlands. There are very few broadleaf woodlands within the intensively managed study area and those that do exist tend to be related to watercourses (riparian woodlands) or are remnants from demesne landscapes. The general scarcity of woodlands makes them a more sensitive landscape feature in this area, where they are likely to contribute to a distinctive sense of place wherever they do occur.

Table 7.1

Phase 2 Alternative Sites Assessment - Environmental Criteria Evaluation Matrix  
Stage 1 of Criteria Evaluation - Land Parcels

1.0	Landscape & Visual	Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.1	<b>Potential to impact on views from scenic routes (designation in Fingal CDP)</b>	Moderate - scenic views located 1km NE 1.3km SW have no visibility but those 2.5km north within HSL zone have elevated clear view over land parcel	Significant - one 0.5km N and one 0.5km SE with clear views from the latter - also distant elevated views from scenic routes >5km N	Imperceptible - nearest scenic route 4km E and associated with coast	Significant - one 0.3km E and clear views over land parcel afforded from here - also one 1km N and distant elevated views from scenic routes >5km N	Imperceptible - nearest scenic route 3km NE and associated with coast	Significant - one 0.5km N and one 0.7km NW - clear views available from the nearest of these also longer distance (3km) elevated views from scenic routes to NW	Moderate - one located 0.5km S and although likely to be associated with coastal views it does afford an elevated but brief glimpse of the land parcel in the opposite direction	Significant - One 0.5km S with occasional elevated views over land parcel and another 0.8km W with no clear views	Significant - One 0.5km N with clear views over land parcel and two 1.5km NW with fleeting views over site
1.2	<b>Potential to impact on areas of 'Highly Sensitive Landscape' (designation in Fingal CDP)</b>	Moderate - HSL located 1km N elevated above with some intervisibility	Moderate - HSL located 1.5km N with some intervisibility from higher ground	Moderate - one 1km NE with limited intervisibility	Slight - HSL located 1.6km N with limited intervisibility	Moderate - one 0.8km E - tall tree lines defining fields – limited intervisibility	Slight - elevated HSL zone located 0.7km NW but separated by M1 motorway	Slight - extensive coastal one located only 0.5km S but within a different landscape and viewing context	Imperceptible - one 2.5km E associated with the coastal landscape	Significant - an extensive one on higher ground immediately adjacent to N of land parcel with strong intervisibility
1.3	<b>Potential to impact on views from heritage/tourist/amenity features</b>	Moderate – the north eastern extent of the Sli na Sceancha hedgerow walking trail is 0.25km to the west of the land parcel	Slight - no such features identified in the immediate vicinity of land parcel	Moderate - Potential oblique views from upper storeys of Bewleys Airport Hotel (1km W) as well as partly screened views from the Hilton Airport Hotel (1km SE) - also GAA grounds to S and Abbeyville House and estate to the E	Moderate - Skidoo house surrounded to the north and east by the land parcel at the minimum setback (0.3km)	Slight - no such features identified in the immediate vicinity of land parcel	Moderate - Pub located on nearest scenic route designation 0.5km NE overlooking the land parcel - new M1 services 1km N - B&B at Dunganstown 1km SE	Moderate - Baldongan Castle on hill 2.5km N with extensive scenic views in the direction of the land parcel	Significant - Swords Golf Course adjacent to NW and Broadmeadow River and Linear Park runs just to E of site - two accommodation providers 0.6km N with potential views across Broadmeadow River	Significant - Baldongan Castle on hill 1km N with extensive scenic views in the direction of the land parcel
1.4	<b>Potential to impact on the character of the landscape</b>	Moderate - rural landscape character of strong integrity within 1km of land parcel boundary but motorway 0.8km E	Significant - open rural landscape character for the land parcel and its surrounds	Moderate - Site has a rural landscape character of reasonable integrity but the surrounds are a peri-urban landscape of mixed land uses relating to the urban fringe location	Significant - open rural landscape character of high integrity within and around the site	Moderate - The land parcel itself is contained within a dense network of pastoral fields and hedgerows with rural HSL to the E however major transport infrastructure occurs immediately W and a quarry and golf driving range is located directly E	Moderate - although the land parcel itself is contained within a dense network of pastoral fields and hedgerows major transport infrastructure occurs immediately W and E	Moderate - open rural landscape character of relatively high integrity but located near an urban fringe (Rush) - rail line to W does not strongly influence landscape character	Moderate - rural landscape and river in immediate context of land parcel but two regional roads a golf course a school / community centre and a significant settlement within 1km	Significant - open rural landscape character for the land parcel and its surrounds - rail line passes close to eastern boundary but does not strongly influence character

Stage 1 of Criteria Evaluation - Land Parcels (continued)

Assessment Criteria	Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.5 <b>Potential that landscape screening will be ineffective or contribute to landscape and visual impacts</b>	Slight - This land parcel can be well screened but particular attention needs to be paid to elevated scenic route and HSL designations to the north	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated scenic route and HSL designations to the N	Moderate - This land parcel can be well screened but particular attention needs to be paid to elevated views from airport hotels	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated scenic route and HSL designations to the north	Slight - This land parcel can generally be well screened but it will be difficult to screen views from elevated M1 overpasses N and S	Moderate - This land parcel can generally be well screened but particular attention needs to be paid to elevated views from elevated overpass and scenic views to NW	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated views from castle and scenic route to S	Slight - This land parcel can generally be well screened but particular attention needs to be paid to elevated views from scenic route to S and views across river to the N	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated views from castle and scenic route to N
1.6 <b>Potential to impact on views from settlements</b>	Imperceptible - Crossroads settlement (Ballyboghill) 2.5km W appears to have no view of site	Moderate - Crossroads settlement (Ballyboghill) 1.5km NW and associated dwellings stretch southwards along R108 closer to the land parcel	Slight - Densely populated Nth Dublin suburb of Darndale <1km S, other estates 1km N and E - clear views are not afforded toward the land parcel from any of these	Moderate - Crossroads settlement (Ballyboghill) 1.6km NW and associated dwellings stretch southwards along R108 closer to the land parcel	Moderate - small estate settlement of Ballymacartle 0.5km SE also clear views available from an estate adjacent to the east of the M1/Swords junction	Slight - settlement of Lusk 1.5km E but no views available - small settlement of Dunganstown 1km SE may be afforded restricted views	Significant - sizeable coastal settlement of Rush 0.5km E	Significant - settlement of Swords 1km SE - extensive new housing development at outskirts	Slight - settlement of Lusk 1.5km SW and Rush 2km SE but views not readily available from either
1.7 <b>Potential to impact on views from dwellings / local roads</b>	Moderate - Numerous dwellings lining local roads < 0.5km E and W and regional road 0.6km S Dwelling count 300m-500m = 44	Moderate - A number of dwellings lining regional road (R108) 0.5km W plus a cluster of houses 0.3km S relatively open views afforded Dwelling count 300m-500m = 21	Moderate - some rural dwellings lining local roads to the north and east (houses otherwise mainly clustered in estates) Dwelling count 300m-500m = 83	Moderate - Numerous dwellings lining regional road (R108) 0.3km W plus a cluster of houses 0.3km SW Dwelling count 300m-500m = 53	Significant - several house clusters 0.5km S at Glebe and <0.5km to the E at Greenwood Ballymacartle 0.5km SE estate adjacent to the east of the M1/Swords junction Dwelling count 300m-500m = 116	Moderate - several dwellings lining local road 0.5km N and old N1 0.5km E Dwelling count 300m-500m = 33	Significant - several dense clusters of houses at Kingtown 0.5km W, Haytown 0.5km N and Whitestown 0.5km S Dwelling count 300m-500m = 131	Significant - a number of houses on local road 0.5km N have clear views across river and houses lining regional road 0.5km S have elevated views over land parcel Dwelling count 300m-500m = 66	Moderate - land parcel surrounded by local roads at distances of 0.3 to 0.7 km but other than for several clusters there is not a high stocking of dwellings Dwelling count 300m-500m = 50
1.8 <b>Potential to impact on views from M1 motorway</b>	Slight - M1 passes 0.8km E with possible glimpse of land parcel at apex of bend -view afforded from local road overpass 1km NE	Imperceptible - M1 passes 2.2km E and views of the scheme would not be afforded	Slight - M1 passes 1km W - clear views only afforded from highest point of M1/M50 interchange	Imperceptible - M1 passes 3km E and views of the scheme would not be afforded	Moderate - M1 in minor section of cut with some screen planting - clear elevated view afforded from overpasses N and S	Significant - site is located directly adjacent to E of M1 motorway and filtered views of land parcel through roadside screening will be afforded	Imperceptible - M1 5km W	Imperceptible - M1 2.5km E	Imperceptible - M1 4.5km W

Stage 1 of Criteria Evaluation - Land Parcels (continued)

Assessment Criteria		Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.9	<b>Potential to impact on views from Dublin - Belfast rail line</b>	Imperceptible - rail line 5km E	Imperceptible - rail line 6km E	Imperceptible - rail line 3km E	Imperceptible - rail line 6km E	Imperceptible - rail line 3km E	Imperceptible - rail line 3km E	Significant - rail line lies directly adjacent to W	Imperceptible - rail line 6km E	Significant - rail line 0.3km E
1.10	<b>Potential to impact on views from other major roads (national or regional roads)</b>	Moderate - regional road (R129) 0.6km S glimpses may be afforded and has limited but elevated view from R129 overpass of M1 2km SE	Significant - Regional roads R108 and R129 bound the land parcel to the W and N respectively at < 0.5km - clear views afforded from some sections	Slight / Significant - heavily used N32 national secondary road 0.3km to S and R107 regional road 1km E - neither has clear views towards site due to roadside screening - Note future malahide Rd realignment adjacent to site	Significant - R108 regional road 0.3km W and clear views afforded from some sections	Imperceptible - R107 regional road 2km E but no views available	Significant - slightly elevated R132 regional road (old N1) 0.5km E affords occasional clear views over land parcel	Significant - R128 regional road 0.5km S with clear views from some sections	Moderate - R108 0.8km W and R125 0.5km S fleeting views available from both	Moderate - R127 regional road on elevated ground 1.3km W and R128 regional road 1.5km S - clear views towards land parcel not readily available from either
1.11	<b>Potential to impact on arrival views from Dublin Airport including aerial approach and vehicular egress</b>	Imperceptible - airport 10km S	Imperceptible - airport 8.5km S	Significant - airport 2km NW - clear views not afforded towards the land parcel at ground level but it would be a prominent feature of the low level landing approach from the E	Imperceptible - airport 7.5km S	Significant - airport 1.5km SW - clear views afforded towards the land parcel from elevated M1/airport access road interchange and it would be a prominent feature of the low level landing approach from the E	Imperceptible - airport 10km S	Imperceptible - airport >10km SW	Slight - airport 5km S but views likely to be available on low level landing approach from the E	Imperceptible - airport >10km SW
1.12	<b>Potential to disrupt landscape structure (hedgerows / field pattern etc.)</b>	Significant – well defined geometric hedgerow/field pattern contained within land parcel boundary	Slight - large relatively undefined fields contained within land parcel boundary	Slight - large somewhat irregular shaped fields with low hedgerows between	Slight - Large relatively undefined fields with low hedgerows within the western side of the land parcel	Moderate - intensive and strongly defined hedgerow/field pattern contained within land parcel boundary but surrounding lands more dispersed in structure	Significant - intensive and strongly defined hedgerow/field pattern contained within land parcel boundary but surrounding lands more dispersed in structure	Moderate - predominantly large fields defined by low hedgerows within land parcel boundary	Moderate - several low meandering hedgerows contained within the land parcel	Moderate - combination of large cropping fields in N half of land parcel and smaller geometric pastoral fields in S half - low hedgerows
1.13	<b>Potential to impact on historic designed landscapes</b>	Moderate - Woodpark demesne adjacent to the E	Imperceptible - No demesne landscapes within or near this site	Moderate - appears to be a number of current or former demesne landscapes including Abbeyville estate in close proximity to the site	Moderate - Skidoo house surrounded to the north and east by the site at the minimum setback (0.3km)	Slight - Abbeyville Estate 1km E	Imperceptible - No demesne landscapes within or near this site	Slight - Haystown Demesne 0.3km NE	Moderate - Saucerstown Demesne 0.2km W	Imperceptible - No demesne landscapes within or near this site
1.14	<b>Potential to impact on woodlands and significant tree groups</b>	Imperceptible - there are no woodlands contained within the land parcel boundary	Slight - small patch of riparian woodland adjacent to northern land parcel boundary	Slight - small patch of woodland adjacent to eastern land parcel boundary	Imperceptible - there are no woodlands contained within the land parcel boundary	Imperceptible - there are no woodlands contained within the land parcel boundary	Slight - small patch of riparian woodland adjacent to southern land parcel boundary	Imperceptible - there are no woodland contained within the land parcel boundary	Slight - small patch of woodland at NW boundary	Imperceptible - there are no woodland contained within the land parcel boundary

## 7.5.2 Summary of Land Parcel Options

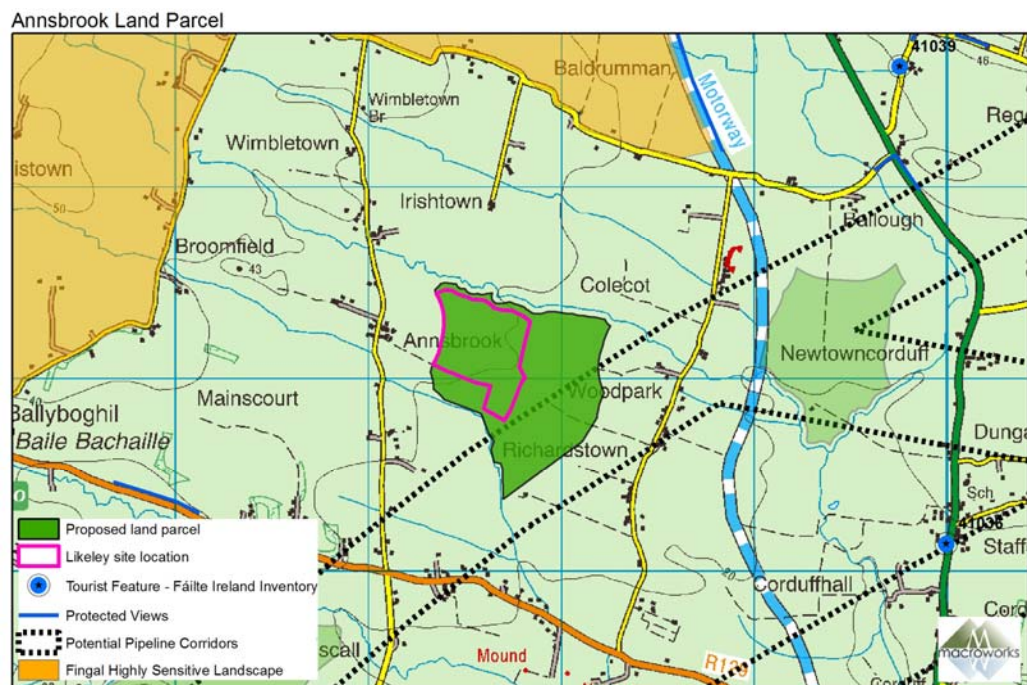
The following summary of land parcel options looks at the key constraints and benefits for each. It will also discuss emerging site options within each land parcel and whether the likely refinement will alleviate potential landscape and visual impacts or exacerbate them.

### (a) Annsbrook

The key benefits of this Land parcel are its reasonable distance from the nearest designated scenic routes and the generally low level of visibility from surrounding roads due to screening vegetation. This integrity and maturity of hedgerow vegetation should also allow for mitigation screen planting around the proposal to be effective and well integrated into the existing landscape pattern. Its principal constraint is the potential for elevated views from designated scenic routes and the HSL several kilometres to the north. The Sli na Sceancha walking route, which is a hedgerow nature trail also passes a short distance (0.25km) to the west. There are also a significant number of dwellings lining the R129 regional road and the local roads that surround the land parcel

#### **Site Refinement**

There is not a high scope for site refinement within this relatively small land parcel, however, the likely site is slightly off centre to the southwest. This would have the benefit of marginally reducing potential landscape and visual impacts on Woodpark Demesne and the local road to the east. The site access is likely to be from the R129 regional road to the south and is not predicted to generate any critical effects.



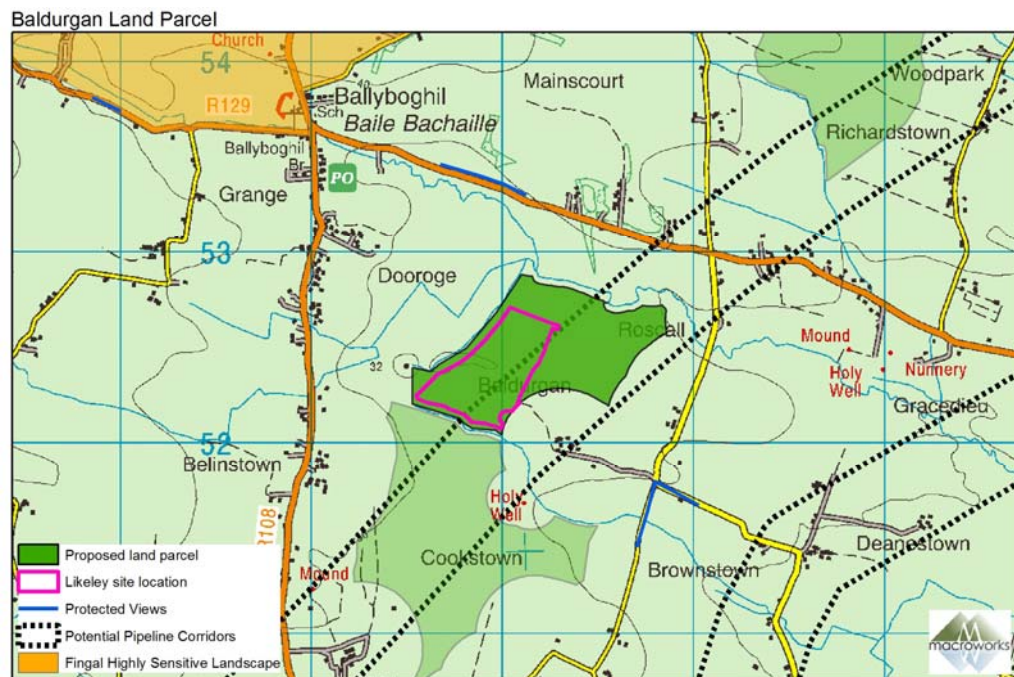


(b) **Baldurgan**

The key benefit of this land parcel is its considerable size, which allows for site refinement that might buffer it from several potentially sensitive landscape and visual receptors in the vicinity. These include designated scenic routes a short distance to the north and southeast with clear views towards the land parcel. Longer distance elevated scenic routes also exist to the north within an HSL. There is a strong potential to adversely affect the open character and integrity of this rural landscape particularly as screen planting is likely to contribute to the overall impact as much as mitigate it.

**Site Refinement**

The likely site location within this sizeable land parcel is within the south-western half. This will reduce potential visual impacts from surrounding roads and residences generally and, in particular, from the designated scenic routes identified above. However, the benefit of this is likely to be nullified by the proposed access road which links directly to the northern scenic route on the R129 regional road. Likely impacts on landscape character would also be difficult to alleviate through site refinement.

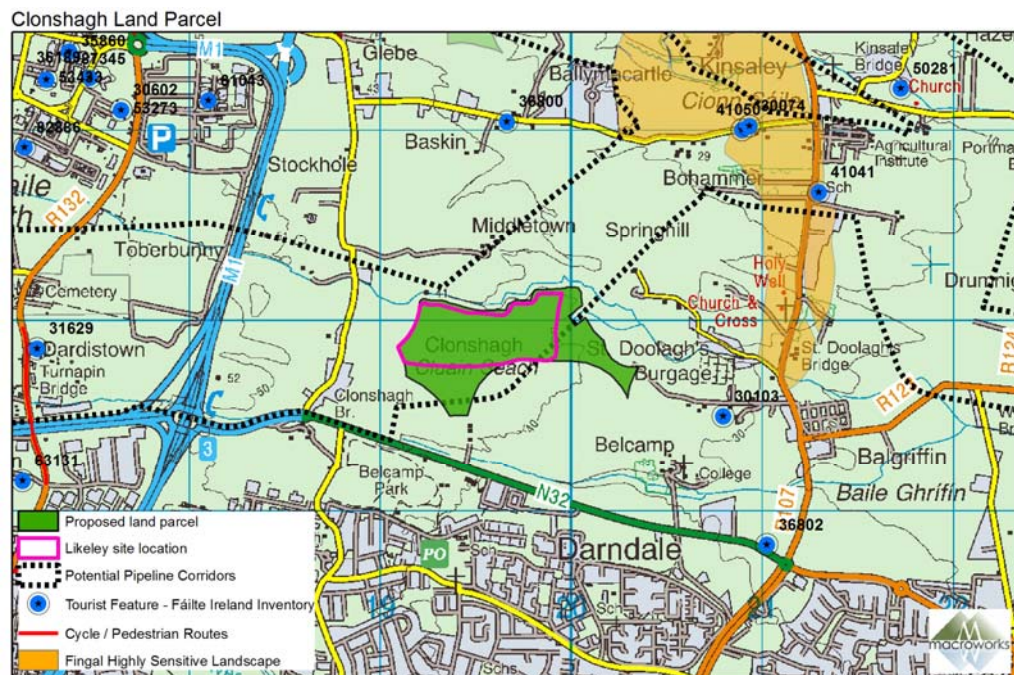


(c) **Clonshagh**

The advantages of this land parcel are the low integrity of the surrounding urban fringe landscape and the relatively low degree of visibility from surrounding roads and residences. This could change, however, if the planned Malahide Road realignment takes place as this would run through the southern extents of the land parcel. Its sensitivities include being in close proximity to several demesne landscapes, potential elevated views from the Bewley's and Hilton airports hotels and its location on the flight path for aircraft about to land or having just taken off from Dublin Airport.

**Site Refinement**

There is limited scope to place the site within this relatively small and awkwardly shaped land parcel particularly when accounting for the Malahide Road realignment. It is likely to push into the northern and western portions of the land parcel with an access from the local road to the west. This would prevent any direct impacts on demesne landscapes and reduce the potential for visual impacts from rural residences to the east and the Hilton Hotel to the southeast.

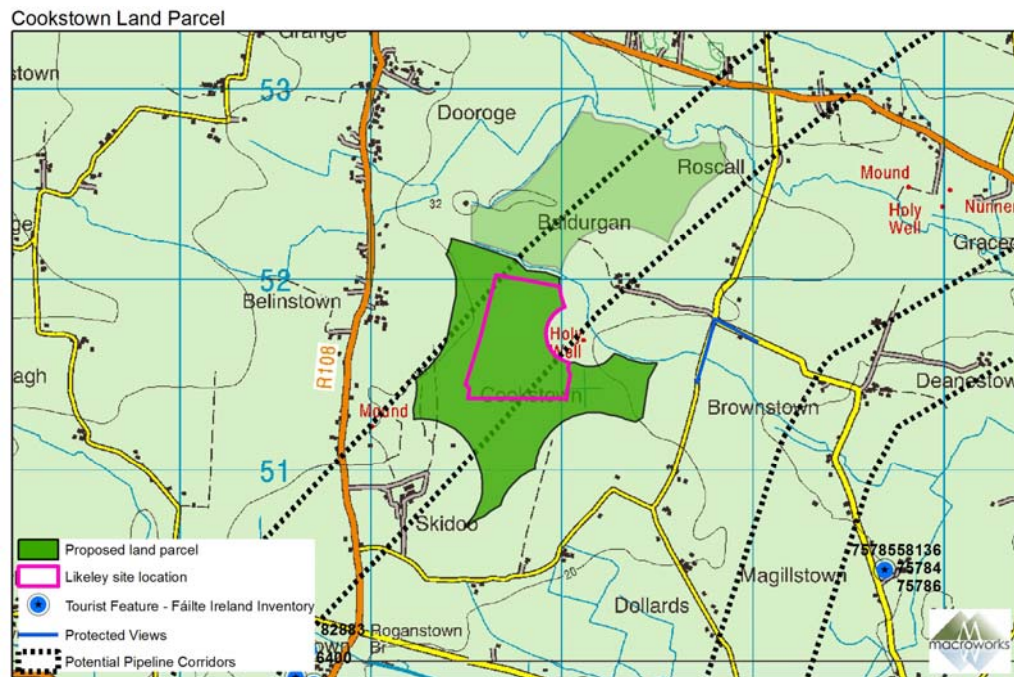


(d) **Cookstown**

As with the adjacent Baldurgan land parcel, one of the key benefits of the Cookstown land parcel is its considerable size, which would help to buffer the eventual site location from sensitive receptors. The disadvantages of this land parcel include a scenic route designation a short distance (0.3km) to the east, which is afforded clear and open views across the subject lands. The R108 regional road also runs parallel to the western side of the site and is lined with a number of rural dwellings along this section. Skiddoo House, which is on the National Inventory of Architectural Heritage also lies adjacent to this land parcel at its south-western corner. There is a strong potential to adversely affect the open character and integrity of this rural landscape and effective screen planting of the proposal is likely to conflict with the surrounding landscape structure.

**Site Refinement**

The likely site location is within the north central portion of this land parcel. This would reduce the visual impact on the designated scenic route, the R108 regional road and its associated dwellings as well as Skiddoo House. Likely impacts on landscape character cannot be ameliorated as easily through considered site placement.

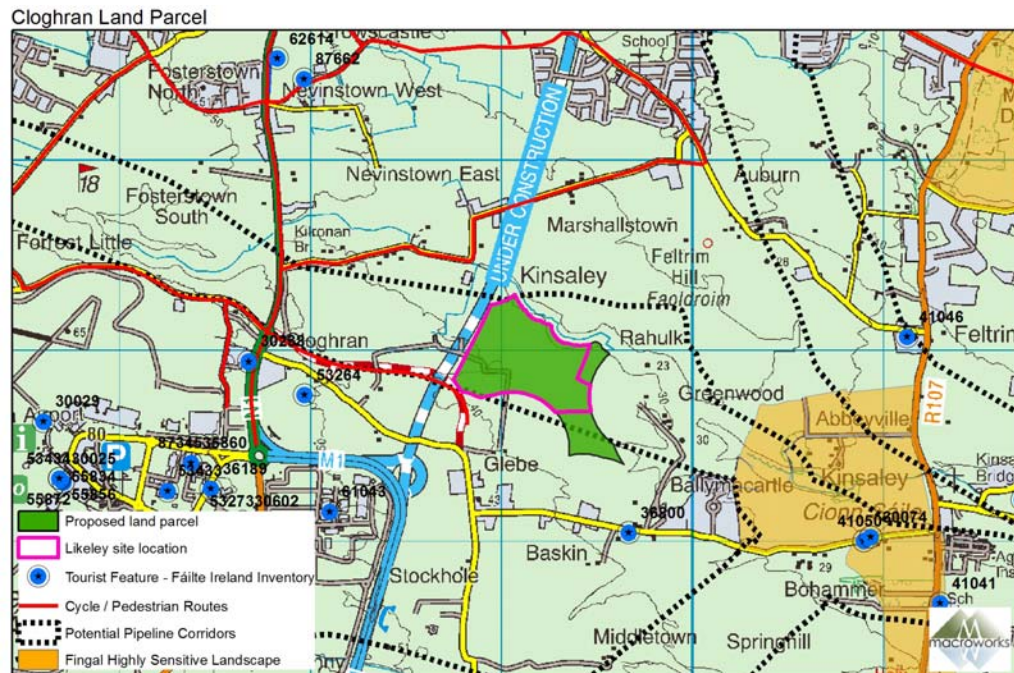


(e) **Cloghran**

The Cloghran land parcel lies immediately adjacent to the east of the M1 motorway. This receptor is sensitive more so due to the volume of traffic it conveys than any heightened awareness of the surrounding landscape that motorists might have. Notwithstanding, some of the traffic associated with the M1 and its elevated airport interchange will afford tourists perhaps their first clear glimpse of the Irish landscape. The advantages of this land parcel include the absence of any designated scenic routes in the vicinity and the fact that the landscape character is influenced by a variety of surrounding land uses, most notably the strongly utilitarian transport corridor of the M1. There are few residential dwellings surrounding this land parcel except for the housing estate of Ballymacartle, which lies a short distance away to the southeast.

**Site Refinement**

The Cloghran land parcel is comparatively small and awkwardly shaped giving little scope to reduce potential impacts through careful site placement. Indeed the likely site placement simply avoids a narrow leg to the southeast as well as a small section of the northeast corner. By excluding the leg to the southeast, potential impacts on the nearby housing estate of Ballymacartle are lessened somewhat.

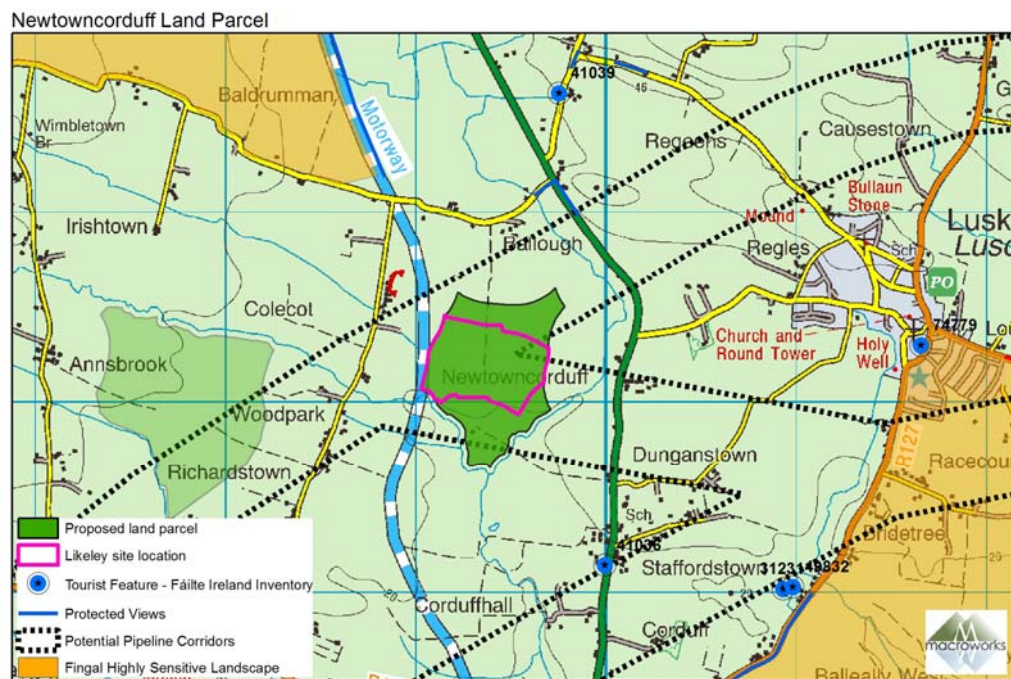


(f) **Newtowncorduff**

As with the Cloghran land parcel, the Newtowncorduff land parcel lies directly adjacent to the east of the M1 motorway, but with perhaps clearer views into the subject lands as the road runs more or less at grade along this section. The proximity to this motorway and the old N1 alignment, which lies a short distance to the east, makes for a high quantum of passing traffic. However, this also provides for a mixed and robust surrounding landscape character of relatively low integrity. Somewhat surprisingly, within the land parcel boundary a fairly typical rural landscape of pastoral fields and hedgerows has been retained despite surrounding development pressures. One of the key constraints of this land parcel is a designated scenic route several hundred metres to the north which is afforded clear and open views over the subject lands. An HSL zoning and associated network of designated scenic routes is associated with a hill several kilometres to the northwest. Elevated vistas from within this area would take in the Newtowncorduff land parcel, but in the context of the intervening motorway.

**Site Refinement**

There is not a great deal of scope to refine the site location within this modest sized land parcel and it is likely to occupy the central portion leaving buffer areas to the north and south. This would have little effect on reducing potential landscape and visual impacts.

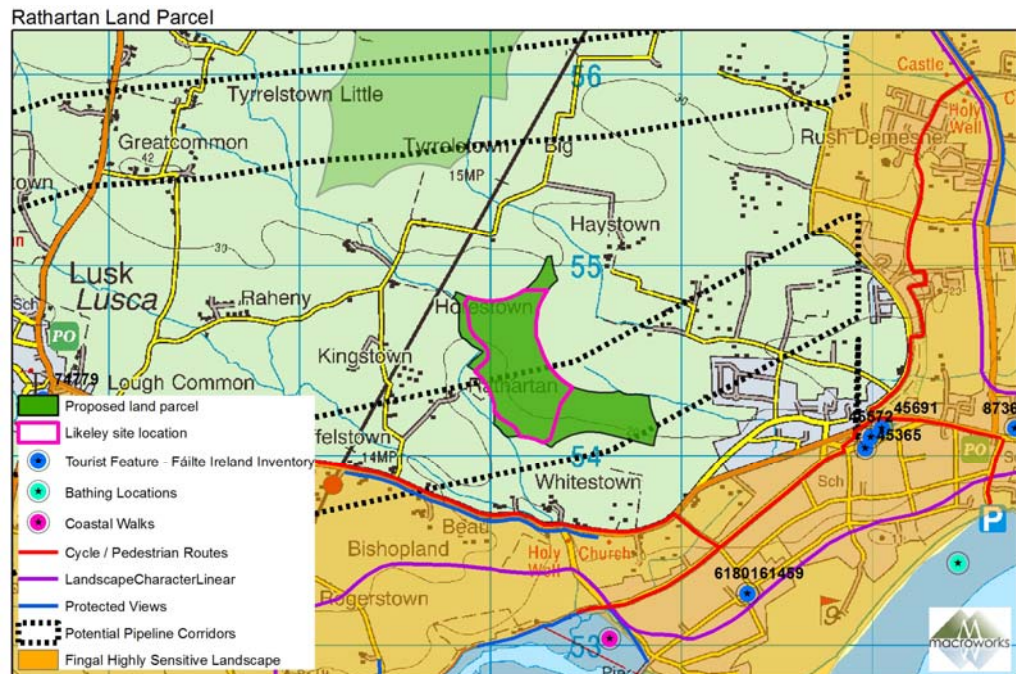


(g) **Rathartan**

The Rathartan land parcel is subject of a number of constraints although none are particularly critical in their own right. These constraints include, its relatively close proximity to the significant sized coastal settlement of Rush and the potential for close views from the Dublin/Belfast railway line, which lies just to the west. A scenic route is designated along a section of the R128 to the south, however this appears to relate to coastal views over a HSL in the opposite direction to the land parcel. The surrounding landscape has an open rural character of high integrity. It is also quite distinctive as it is used for intensive market gardening. Open elevated views over the landscape in this general area are reflected in the HSL zoning and associated scenic route designations on higher ground several kilometres to the north. The subject lands are contained within the broad vistas afforded from this area, most notably from Baldongan Castle, which is a National Monument.

**Site Refinement**

There is reasonable scope to avoid sensitive receptors through site refinement within this land parcel. The most likely scenario is that the site would occupy the north western end of the bow shaped land parcel. This would have the effect of reducing potential impacts on the settlement of Rush and, to a slightly lesser extent, the market garden areas at its outskirts. It would have little effect on reducing visual impacts from any of the other visual receptors described above and the potential to adversely affect the open rural landscape character would also remain.



(h) **Saucerstown**

The key constraints relating to the Saucerstown land parcel include its relatively close proximity to the western fringe of Swords, which is a significantly sized satellite settlement of Dublin. Scenic route designations are applied to sections of the regional roads that run a short distance to the north and west of the land parcel although clear views do not appear to be available from the latter. Swords Golf Club lies adjacent to the northwest of the land parcel and two Bed and Breakfast operations were identified on a lane a short distance to the north. The character of this rural landscape on the banks of the Broadmeadow River has a reasonably high degree of integrity. By contrast to this list of constraints, there are few obvious comparative advantages for developing this land parcel.

**Site Refinement**

There is little scope for refining the site location within this small land parcel and it is likely to hug the southern portion, thereby, maximising the buffer to the River on the northern side. This would move the site marginally away from the Bed and Breakfast operators, but given the sloped topography, it would be no less visible. The proposed access route would also connect directly to the section of designated scenic route to the south.



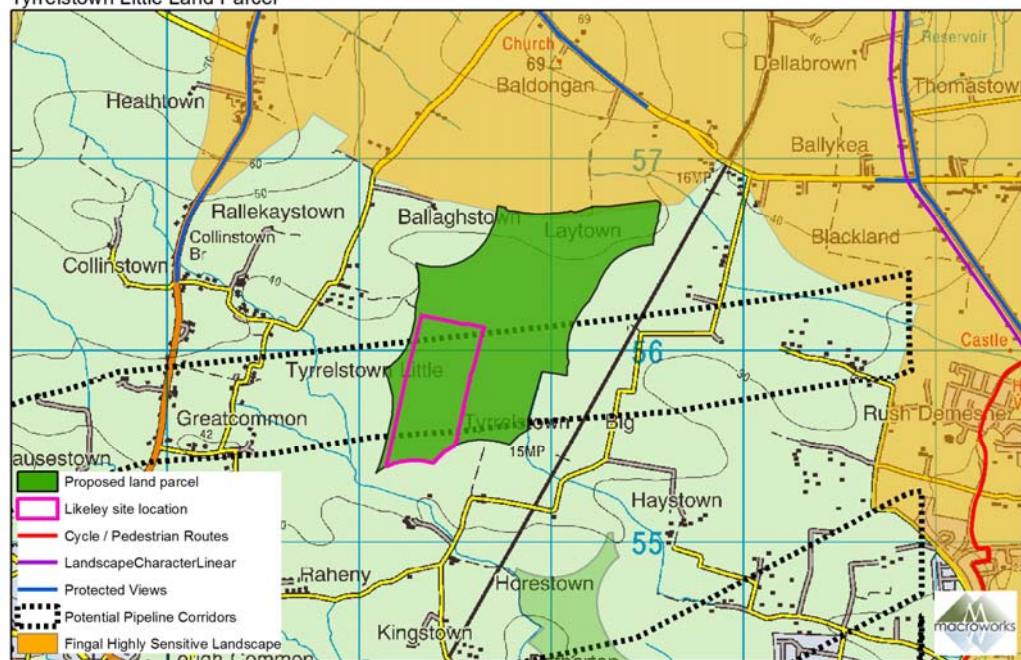
**(i) Tyrrelstown Little**

The main benefit of the Tyrrelstown Little land parcel is its large size and, therefore, the ability to locate a site within it that is buffered from sensitive landscape and visual receptors. One of the key disadvantages of this land parcel is the surrounding rural landscape character, which is of high integrity and very open. A HSL zoning is applied to the higher slopes immediately adjacent to the north of the land parcel. Within the HSL are several designated scenic routes, one of which is afforded clear views over the land parcel. The national monument of Baldongan Castle is accessed from this section of scenic route and the pedestrian approach to this heritage feature takes in a vast panorama over the surrounding landscape. In this open landscape context any proposed landscape screening would contribute to visual impacts even if it reduced the view of the proposed development itself. The Dublin Belfast railway line also passes in close proximity to the east of this land parcel.

**Site Refinement**

The most likely site location within this land parcel is within the south western corner. This would maximise the separation from the HSL zoning, the designated scenic route to the north, Baldongan Church and the railway line, although clear views would still be afforded from these sensitive receptors. The proposed access road is likely to connect from the R127 to the west and would be over 1km in length. Comparatively, this is much longer than most of the likely site access roads relating to other land parcels.

Tyrrelstown Little Land Parcel



For comparison purposes a subsequent impact matrix has been generated in relation to the likely site refinement discussed above. This indicates where the initial level of impact estimated in relation to the land parcels (Table 7.1) might be increased or decreased as a result of the smaller site area and access route being defined. This site level assessment is provided in table 7.2 below.



Table 7.2

Phase 2 Alternative Sites Assessment - Environmental Criteria Evaluation Matrix  
Stage 1 of Criteria Evaluation (WWTP sites)

1.0	Landscape & Visual	Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.1	<b>Potential to impact on views from scenic routes (designation in Fingal CDP)</b>	Moderate - scenic views located 1.2km NE and 1.3km SW have no visibility but those 2.7km north within HSL zone have elevated clear view towards site	Significant - one 0.5km N with clear views and one 0.5km SE also with clear views - also distant elevated views from scenic routes >5km N	Imperceptible - nearest scenic route 4km E and associated with coast	Significant - one 0.5km E with relatively clear views towards the site afforded from here - also distant elevated views from scenic routes >5km N	Imperceptible - nearest scenic route 3km NE and associated with coast	Significant - one 0.5km N and one 0.7km NW - clear views available from the nearest of these also longer distance (3km) elevated views from scenic routes to NW	Moderate - one located 0.5km S and although likely to be associated with coastal views it does afford an elevated but brief glimpse of the site in the opposite direction	Significant - One 0.5km S with occasional open and elevated views over site and another 0.8km W with no clear views	Significant - One 1.6km N with clear views over site - two 2km NW and one 1.7km S with fleeting views over site
1.2	<b>Potential to impact on areas of 'Highly Sensitive Landscape' (designation in Fingal CDP)</b>	Moderate - HSL located 1.2km N elevated above with some intervisibility	Moderate - HSL located 1.5km N with some intervisibility from higher ground within the HSL	Slight - one 1.3km NE with limited intervisibility	Slight - HSL located 1.6km N with limited intervisibility	Slight - one 1km E with limited intervisibility	Slight - elevated HSL zone located 0.7km NW but separated by M1 motorway	Slight - extensive coastal one located only 0.5km S but within a different landscape and viewing context	Imperceptible - one 2.5km E associated with the coastal landscape	Significant - an extensive one on higher ground 0.5km N of site with strong intervisibility and similar character
1.3	<b>Potential to impact on views from heritage/tourist/amenity features</b>	Slight - no such features identified in the immediate vicinity of site	Slight - no such features identified in the immediate vicinity of site	Moderate - Potential oblique views from upper storeys of Bewleys Airport Hotel (0.5km W) as well as partly screened views from the Hilton Airport Hotel (1.3km SE) - also GAA grounds to S	Slight - no such features identified in the immediate vicinity of site	Slight - no such features identified in the immediate vicinity of site	Moderate - Pub located on nearest scenic route designation 0.5km NE overlooking the site - new M1 services 1km N - B&B at Dunganstown 1km SE	Moderate - Baldongan Church on hill 2.5km N with extensive scenic views in the direction of the site	Significant - Swords Golf Course adjacent to NW and Broadmeadow River and Linear Park runs just to E of site - two accommodation providers 0.6km N with potential views across Broadmeadow River	Significant - Baldongan Castle on hill 1.7km N with extensive scenic views in the direction of the site
1.4	<b>Potential to impact on the character of the landscape</b>	Moderate - rural landscape character of strong integrity within and around the site but motorway 1km E	Significant - open rural landscape character of high integrity within and around the site	Moderate - Site has a rural landscape character of reasonable integrity but the surrounds are a peri-urban landscape of mixed land uses relating to the urban fringe location	Significant - open rural landscape character of high integrity within and around the site	Moderate - The site itself is contained within a dense network of pastoral fields and hedgerows with rural HSL to the E however major transport infrastructure occurs immediately W and a quarry and golf driving range is located directly E	Moderate - although the site itself is contained within a dense network of pastoral fields and hedgerows major transport infrastructure occurs immediately W and E	Moderate - open rural landscape character of relatively high integrity but located near an urban fringe (Rush) - rail line to W does not strongly influence landscape character	Moderate - rural landscape and river in immediate context of site but two regional roads a golf course a school / community centre and a significant settlement make up the varied land use within 1km	Significant - open rural landscape character of high integrity for the site and its surrounds - rail line passes close to eastern boundary but does not strongly influence character

Stage 1 of Criteria Evaluation - WWTP site (continued)

Assessment Criteria	Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.5 <b>Potential that landscape screening will be ineffective or contribute to landscape and visual impacts</b>	Slight - This site can be well screened and integrated - particular attention needs to be paid to elevated scenic route and HSL designations to the north	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated scenic route and HSL designations to the N	Slight - This site can be well screened and integrated but particular attention needs to be paid to elevated views from Bewleys Airport hotel	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated scenic route and HSL designations to the north	Slight - This site can generally be well screened and integrated but it will be difficult to screen views from elevated M1 overpasses N and S	Slight - This site can generally be well screened and integrated - particular attention needs to be paid to views from elevated overpass and scenic views to NW	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated views from castle and scenic route to N and scenic route to S	Slight - This site can generally be well screened and integrated but particular attention needs to be paid to elevated views from scenic route to S and views across river to the N	Moderate - potential for effective screening to foreshorten views, conflict with open landscape character and prevailing hedgerow characteristics - particular attention needs to be paid to elevated views from castle and scenic route to N
1.6 <b>Potential to impact on views from settlements</b>	Imperceptible - Crossroads settlement (Ballyboghill) 2.5km W has no view of site	Moderate - Crossroads settlement (Ballyboghill) 1.5km NW and associated dwellings stretch southwards along R108 closer to the site (1km)	Slight - Densely populated Nth Dublin suburb of Darndale <1km S, other estates 1km N and E - No clear views afforded toward the site from any of these	Moderate - Crossroads settlement (Ballyboghill) 1.7km NW and associated dwellings stretch southwards along R108 closer to the site (1km)	Moderate - small estate settlement of Ballymacartle 1km SE also clear views available from an estate adjacent to the east of the M1/Swords junction	Slight - settlement of Lusk 1.5km E but no views available - small settlement of Dunganstown 1km SE may be afforded restricted views	Significant - sizeable coastal settlement of Rush 0.8km E	Significant - settlement of Swords 1km SE - extensive new housing development school and community centre at outskirts	Slight - settlement of Lusk 1.5km SW and Rush 2km SE but views not readily available from either
1.7 <b>Potential to impact on views from dwellings / local roads</b>	Moderate – A number of dwellings lining local roads < 0.5km E and W and regional road 0.6km S Dwelling count 300m-500m = 18	Slight - Numerous dwellings lining regional road (R108) 0.5km W plus a farmstead 0.3km SE but the site refinement creates a generous buffer Dwelling count 300m-500m = 2	Moderate - some rural dwellings lining local roads to the north and east (houses otherwise mainly clustered in estates) Dwelling count 300m-500m = 22	Slight - Numerous dwellings lining regional road (R108) 0.3km W but the site refinement creates a generous buffer Dwelling count 300m-500m = 5	Moderate - several house clusters 0.5km S at Glebe and <0.5km to the E at Greenwood Dwelling count 300m-500m = 19	Moderate - several dwellings lining local road 0.5km N and old N1 0.5km E Dwelling count 300m-500m = 25	Moderate - several dense clusters of houses at Kingtown 0.5km W, Haytown 0.5km N and Whitestown 0.5km S Dwelling count 300m-500m = 20	Significant - a number of houses on local road 0.5km N have clear views across river and houses lining regional road 0.5km S have elevated views over site Dwelling count 300m-500m = 58	Slight - site surrounded by local roads at distances of 0.3 to 0.7 km but other than for several clusters there is not a high stocking of dwellings Dwelling count 300m-500m = 6
1.8 <b>Potential to impact on views from M1 motorway</b>	Slight - M1 passes 0.8km E with possible glimpse of site at apex of bend -view afforded from local road overpass 1km NE	Imperceptible - M1 passes 2.5km E and views of the scheme would not be afforded	Slight - M1 passes 1km W - clear views only afforded from highest point of M1/M50 interchange	Imperceptible - M1 passes 3km E and views of the scheme would not be afforded	Moderate - M1 in minor section of cut with some screen planting - clear elevated view afforded from overpasses N and S	Significant - site is located directly adjacent to E of M1 motorway and filtered views of site through roadside screening will be afforded	Imperceptible - M1 5km W	Imperceptible - M1 2.5km E	Imperceptible - M1 4.5km W

Stage 1 of Criteria Evaluation - WWTP site (continued)

Assessment Criteria		Annsbrook	Baldurgan	Clonshagh	Cookstown	Cloghran	Newtowncorduff	Rathartan	Saucerstown	Tyrrelstown Little
1.9	<b>Potential to impact on views from Dublin - Belfast rail line</b>	Imperceptible - rail line 5km E	Imperceptible - rail line 6km E	Imperceptible - rail line 3.5km E	Imperceptible - rail line 6km E	Imperceptible - rail line 3km E	Imperceptible - rail line 3km E	Significant - rail line lies directly adjacent to W	Imperceptible - rail line 6km E	Significant - rail line 0.6km E
1.10	<b>Potential to impact on views from other major roads (national or regional roads)</b>	Moderate - regional road (R129) 0.6km S glimpses may be afforded and has limited but elevated view from R129 overpass of M1 2km SE	Significant - Regional roads R108 and R129 bound the site to the W and N respectively at < 0.5km - clear views afforded from some sections and site access from R129	Slight / Significant - heavily used N32 national secondary road 0.3km to S and R107 regional road 1km E - neither has clear views towards site due to roadside screening - Note future malahide Rd realignment adjacent to site	Significant - R108 regional road 0.3km W and clear views afforded from some sections	Imperceptible - R107 regional road 2km E but no views available	Significant - slightly elevated R132 regional road (old N1) 0.5km E affords occasional clear views over site	Significant - R128 regional road 0.5km S with clear views from some sections	Moderate - R108 0.8km W and R125 0.5km S fleeting views available from both	Moderate - R127 regional road on elevated ground 1.3km W and R128 regional road 1.7km S - clear views towards site not readily available from either
1.11	<b>Potential to impact on arrival views from Dublin Airport including aerial approach and vehicular egress</b>	Imperceptible - airport 10km S	Imperceptible - airport 8.5km S	Significant - airport 2km NW - clear views not afforded towards the site at ground level but it would be a prominent feature of the low level landing approach from the E	Imperceptible - airport 7.5km S	Significant - airport 1.5km SW - clear views afforded towards the site from elevated M1/airport access road interchange and it would be a prominent feature of the low level landing approach from the E	Imperceptible - airport 10km S	Imperceptible - airport >10km SW	Slight - airport 5km S but views likely to be available on Slight low landing approach from the E	Imperceptible - airport >10km SW
1.12	<b>Potential to disrupt landscape structure (hedgerows / field pattern etc.)</b>	Significant - well defined geometric hedgerow/field pattern contained within site boundary	Slight - large relatively undefined fields contained within site boundary	Slight - large somewhat irregular shaped fields with low hedgerows between	Slight - Large relatively undefined fields with low hedgerows around site	Moderate - intensive and strongly defined hedgerow/field pattern contained within site boundary but surrounding lands more dispersed in structure	Significant - intensive and strongly defined hedgerow/field pattern contained within site boundary but surrounding lands more dispersed in structure	Moderate - predominantly large fields defined by low hedgerows within site boundary	Moderate - several low meandering hedgerows contained within the site	Moderate - combination of large cropping fields in N half of site and smaller geometric pastoral fields in S half - low hedgerows
1.13	<b>Potential to impact on historic designed landscapes</b>	Moderate - Woodpark demesne 0.15km NE	Imperceptible - No demesne landscapes within or near this site	Moderate - appears to be a number of current or former demesne landscapes including Abbeyville estate in close proximity to the site	Moderate - Skidoo house surrounded to the north and east by the site at the minimum setback (0.3km)	Slight - Abbeyville Estate 1km E	Imperceptible - No demesne landscapes within or near this site	Slight - Haystown Demesne 0.3km NE	Moderate - Saucerstown Demesne 0.2km W	Imperceptible - No demesne landscapes within or near this site
1.14	<b>Potential to impact on woodlands and significant tree groups</b>	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary	Imperceptible - there are no woodlands contained within the site boundary

### 7.5.3 Evaluation of Route Options

The evaluation of potential landscape and visual impacts for the route options of the Orbital Drainage System utilises much the same methodology and assessment criteria as for the land parcels above. Indeed, the first 12 assessment criteria are identical, except for 1.5 which also relates to views from the M50 motorway and not just the M1 motorway.

Assessment criteria 1.12 and 1.13 from the land parcel assessment were not considered relevant to the ODS pipeline sections as permanent impacts on landscape character will not occur and mitigation will simply be the re-establishment of lost vegetation or landscape features. Instead, two more relevant criteria are introduced. The first of these is the potential to impact on rivers and streams. It is understood from project engineers that at river/stream crossings pipes will generally be tunnelled below the bed of the watercourse. Only on some of the smaller streams, is it possible that the pipeline may be laid by open cut below the bed of the watercourse. The pipeline will only represent a temporary visual impact in the vicinity of stream crossings regardless of which of these construction methods is used.

The final criteria for assessing the ODS sections (1.13) is the potential to impact on Demesne landscapes. As stated under 7.5.1 above, demesne landscapes contain some of the only broadleaf woodlands and remnants that can be found in this area. Attendant grounds to stately homes were often formally laid out with strong visual connections to the house itself or the landscape beyond. Trees and other landscape features are also likely to be long established at such locations. For these reasons demesne landscapes can be sensitive to change, particularly where mature trees might need to be removed.

Table 7.3

Phase 2 Alternative Sites Assessment - Environmental Criteria Evaluation Matrix  
Stage 1 of Criteria Evaluation (Pipeline Routes)

1.0	Landscape & Visual	Route Section A	Route Section B	Route Section C	Route Section D	Route Section E	Route Section F	Route Section G
1.1	<b>Potential to impact on views from scenic routes (designation in Fingal CDP)</b>	No scenic routes in the vicinity	No scenic routes in the vicinity	Nearest scenic route >1km away from NW end of this Pipeline corridor section on opposite side of a ridge.	Passes over two scenic routes and in close proximity to two others	Crosses a scenic route just to the SE of Lusk	Passes close to only one small section of scenic route west of Lusk	Scenic route along eastern edge of this section at edge of Baldoyle Estuary
1.2	<b>Potential to impact on areas of 'Highly Sensitive Landscape' (designation in Fingal CDP)</b>	At least half of this section of pipeline corridor runs through area of HLS	Small pocket of HLS at eastern tip of this pipeline section	Small pocket of HLS at eastern tip of this pipeline section. Also passes through a 'High Amenity' zoning objective area associated with the Ward River corridor	Passes through two HSL areas and also passes through a 'High Amenity' zoning objective area associated with the Swords Estuary / Broadmeadow River	Crosses a HSL area just to the SE of Lusk	Touches a HLS area at eastern tip of this pipeline section	Eastern end of this pipeline section is contained within an HSL which also has a 'High Amenity' zoning objective area associated with the Baldoyle Estuary
1.3	<b>Potential to impact on views from settlements</b>	Blanchardstown on opposite side of N3 road and Corduff >0.5km NW	Dublin outskirts contained on opposite side of M50 and no significant settlements in the vicinity of this pipeline corridor section	No significant settlements within the vicinity of this pipeline corridor section	Passes between the significant and closely associated settlements of Malahide and Swords	Passes just to the SE of Lusk and NW of Rush	Largely avoids settlements - 1km north of Lusk at nearest point	Passes between estates associated with Portmarnock and Baldoyle
1.4	<b>Potential to impact on views from dwellings / local roads</b>	A small number of dwellings lining local roads in the vicinity	A small number of dwellings lining local roads in the vicinity	A very small number of dwellings lining local roads in the vicinity	Passes across several local roads lined by rural dwellings but most affected dwellings associated with larger settlements	Crosses numerous local roads and several significant clusters of rural dwellings	Crosses numerous local roads and several significant clusters of rural dwellings	Few single dwellings and local roads in the vicinity
1.5	<b>Potential to impact on views from motorways</b>	Runs adjacent to M50	Runs adjacent to M50 and crosses M1	Crosses M1 just north of airport interchange	Clear elevated views from M1 as it passes over Broadmeadow River/Malahide Estuary	Crosses the M1 near R129 overpass - M1 at grade for much of this section	Crosses the M1 2km east of Lusk - M1 at grade for much of this section	No M1/M50 interchange 3km W
1.6	<b>Potential to impact on views from other major roads (national or regional roads)</b>	Runs between the N3 and N2 national roads	Crosses the R122, R108 R132 and R107 regional roads	Crosses R108 and R132 regional roads	Passes across the R107, R106, R132 and R108 regional roads	Crosses the R129, R132, R126 and R127 regional roads	Crosses junction of R121 and R122, R125, R108, R129, R132, and R127	Links between R107 and R106 and crosses the R124, R123
1.7	<b>Potential to impact on views from Dublin - Belfast rail line</b>	>10km separation distance	1.5km separation distance	2km separation distance	Elevated section of rail line 0.5km from eastern end of the corridor	Crosses rail line at Rush and Lusk station	Crosses rail line between Rush and Skerries	Crosses rail line 1km west of Baldoyle Estuary
1.8	<b>Potential to impact on arrival views from Dublin Airport including aerial approach and vehicular egress</b>	Nearest aspect of Dublin Airport >1km away	Passes adjacent to the southern boundary of the airfield	Passes adjacent to the northern boundary of the airfield	Airport 3km west	Airport 5km south of nearest point	Airport 2km West of nearest point	Airport 4km west

Assessment Criteria		Route Section A	Route Section B	Route Section C	Route Section D	Route Section E	Route Section F	Route Section G
1.9	<b>Potential to impact on views from heritage/tourist features</b>	Does not appear to be any such sites in the vicinity	Passes through Silloge Park Golf Course and adjacent to Bewleys Airport Hotel. Cemetery also located at Dardistown	Passes through Golf Course at Forest Little	Passes through Swords and Roganstown Golf courses at western end and along the Broadmeadows Linear Park	Does not appear to be any such sites in the vicinity	Passes Dunsogly Church and castle ruins and crosses St Margaret's Golf Course, Roganstown Golf course and close to Corrstown Golf Club	Passes 0.5km north of Father Collins Park at Donaghmede
1.10	<b>Potential to disrupt landscape structure (treelines / hedgerows / field pattern etc.)</b>	Landscape is relatively unstructured and irregular along this pipeline corridor section but with some hedgerow field patterns	Landscape is relatively unstructured and irregular along this pipeline corridor section but with some hedgerow field patterns	Passes through numerous treelines and hedgerows	Landscape is relatively unstructured and irregular along this pipeline corridor section but with some hedgerow field patterns	This corridor section passes almost entirely through fields and hedgerows	This corridor section passes almost entirely through fields and hedgerows	Landscape is relatively unstructured and open along this pipeline corridor section but with some hedgerow field patterns
1.11	<b>Potential to impact on woodlands and significant tree groups</b>	Heavily wooded Tolka River corridor crossed at SW end of pipeline section. DP objective to protect and preserve trees, woodlands and hedgerows in this area	There do not appear to be any patches of woodland along this pipeline corridor section	There appears to be a small patch of woodland at eastern end of this pipeline section (Abbeyville Estate) and it would also pass through riparian woodland along Ward River	Some narrow sections of riparian woodland also DP objective to protect and preserve trees, woodlands and hedgerows in Swords estuary area	Some small patches of woodland within corridor but could be avoided	Some small patches of woodland within corridor but could be avoided	There do not appear to be any patches of woodland along this pipeline corridor section
1.12	<b>Potential to impact on rivers and streams</b>	Tolka River corridor crossed at SW end of pipeline section	There do not appear to be any notable rivers or streams along this pipeline corridor section	Crosses Ward River and wooded corridor which has a 'High Amenity' zoning objective in CDP	Crosses the Broadmeadow River in at least 2 places	There do not appear to be any notable rivers or streams along this pipeline corridor section	Crosses the Ward River and the Broadmeadow River	Crosses the Mayne River
1.13	<b>Potential to impact on historic designed landscapes</b>	There does not appear to be any demesne landscapes in the vicinity of this pipeline corridor section	There does not appear to be any demesne landscapes in the vicinity of this pipeline corridor section	Passes across corner of Abbeyville estate at eastern end of corridor	Passes across corner of Abbeyville estate at eastern end of corridor	There does not appear to be any demesne landscapes in the vicinity of this pipeline corridor section	There does not appear to be any demesne landscapes in the vicinity of this pipeline corridor section	There does not appear to be any demesne landscapes in the vicinity of this pipeline corridor section

#### 7.5.4 Evaluation of Marine Outfall Location

Assessment of the two marine outfall study areas incorporates many of the same assessment criteria as used in the assessment of the other scheme aspects above. However, in addition to the potential for impacts on landscape designations from the Fingal County Development Plan, coastal walks and bathing locations, as indicated on the CDP maps, are also considered (1.3 and 1.4). The remaining assessment criteria are common to all three matrices, however, potential impacts on Dublin Airport and motorways are not relevant to these coastal locations.

**Table 7. 4**

*Phase 2 Alternative Sites Assessment - Environmental Criteria Evaluation Matrix*

**Stage 1 of Criteria Evaluation (Marine Outfall)**

	<b>Landscape &amp; Visual</b>	<b>Northern Outfall Study Area</b>	<b>Southern Outfall Study Area</b>
1.1	<b>Potential to impact on views from scenic routes (designation in Fingal CDP)</b>	Numerous scenic routes designated within this outfall study area that relate to views of the coast	- One significant length scenic route dissects this outfall study area
1.2	<b>Potential to impact on 'Highly Sensitive Landscape' (designation in Fingal CDP)</b>	Entire coastal area of County Fingal subject to High Sensitivity zoning and High Amenity zoning objectives	Entire coastal area of County Fingal subject to High Sensitivity zoning
1.3	<b>Potential to impact on coastal walks (indicated in Fingal CDP)</b>	Four coastal walks indicated in this outfall study area presumably covering much of the subject coastline	One coastal walk indicated along this section of coastline
1.4	<b>Potential to impact on bathing locations (indicated in Fingal CDP)</b>	Two bathing locations identified within this outfall study area but only one in the vicinity of a likely outfall location	One bathing location identified that would apply to the whole of Velvet Strand which is crossed by the southern outfall
1.5	<b>Potential to impact on views from settlements</b>	Likely outfall locations directly adjacent to the north of Rush	Portmarnock just to the north of this outfall study area
1.6	<b>Potential to impact on views from dwellings / local roads</b>	Numerous houses lining local roads in the vicinity of these outfall locations	Few houses located in the vicinity of the outfall location -
1.7	<b>Potential to impact on views from major roads (national or regional roads)</b>	R128 regional road runs parallel to coast between Rush and Skerries but set back by several hundred metres at nearest point to coast	R106 regional road runs along coastline across the proposed outfall location
1.8	<b>Potential to impact on arrival views from Dublin Airport including aerial approach and vehicular egress</b>	Main low level approach to east-west runway >5km to the south	Main low level approach to east-west runway directly above this study area
1.9	<b>Potential to impact on views from Dublin - Belfast rail line</b>	Rail line > 2km inland from nearest proposed outfall location	Rail line approximately 1km inland from proposed outfall location
1.10	<b>Potential to impact on views from heritage/tourist features</b>	2 piers, 2 Martello towers and numerous other features of heritage and/or tourist interest within the outfall study area	Internationally renowned Portmarnock Golf Links adjacent to outfall location
1.11	<b>Potential to Impact on Coastal Landscape Character</b>	A range of beaches, low seacliffs, a harbour, two Martello towers and an urban seafront contained within this Study Area	Passes through both an enclosed estuarine environment, a dune landscape (golf course) and a beach



## 7.6 Mitigation Measures

Mitigation for the temporary landscape and visual impacts associated with the construction phase of the Orbital Drainage System and marine outfall aspects of the project relate primarily to avoiding sensitive receptors, particularly those that might be difficult to re-establish. These might include, for example, mature tree lines or a section of rocky coastline. Relatively broad pipeline corridors and marine outfall study areas have been provided allowing particularly sensitive point type receptors to be skirted around. Linear receptors such as roads, rivers or hedgerows should be crossed at a perpendicular angle to reduce the length of the impact zone. As stated earlier, any significant river crossings will utilise sub-surface tunnelling techniques, thereby limiting any landscape and visual impacts to the watercourse approaches.

Where sections of tree line or hedgerows need to be removed to facilitate the pipeline, plant material will be stored and re-established over the pipeline with suitable root barriers incorporated. Where it is not feasible to reuse the plant material or it fails to successfully re-establish, replacement plant material of the same species will be utilised. The size and age class of the replacement planting should reflect that which is lost.

Notwithstanding the above, the focus of mitigation for the Greater Dublin Drainage project will be on reducing the permanent landscape and visual impacts associated with the selected WWTP site. Again, the first mitigation measure will be to avoid particularly sensitive receptors through this site selection process. Once a site has been selected there is still an opportunity to avoid sensitive receptors with a more micro scale of avoidance. This might include configuring the site layout so that the most visible aspects of the WWTP as far as possible from the nearest sensitive receptors, or they are located in the least visible areas of the site where existing screening can be availed of.

New screen planting reflecting the species composition of any hedgerows or tree lines in the vicinity will almost certainly be used to screen the site elements and activities from view. This planting would be applied around the perimeter of the site and along any proposed access roads. In addition to boundary planting, earth embankments might also be incorporated around the site perimeter. It is important that any such embankments are subtly designed in order not to appear as engineered structures that might contrast against the surrounding landscape context and actually serve to draw attention to the WWTP site. In comparison to screen planting, embankments have the advantage of being solid and unaffected by seasonal change. Whilst tall embankments (>1.5m) can become visually obtrusive structures in their own right, lower embankments might serve to screen most site activities and vehicle movements without being overly prominent.