11 Landscape and Visual

11.1 Introduction

Greenlink consists of an electricity interconnector consisting of two converter stations, one in County Wexford, Ireland, and one in Wales, connected by electricity cables running underground (onshore) and subsea (offshore).

Brady Shipman Martin has been commissioned by Arup to carry out a landscape and visual impact assessment of the proposed development onshore in Ireland.

In summary, the proposed development (encompassing the onshore elements in Ireland only) will comprise of the following permanent and temporary elements:

The proposed development (encompassing the onshore elements in Ireland only) will comprise:

- **Landfall Compound** – a temporary landfall compound at Baginbun, where the high voltage direct current (HVDC) cable will be installed underground, below the beach and cliff at Baginbun Beach, by horizontal directional drilling (HDD);
- **HVDC Cables** – two HVDC electricity cables with a nominal capacity of 500 megawatts (MW), installed underground from the landfall at Baginbun to the converter station, including jointing bays and ground level marker posts at intervals along the route;
- **Converter Station** – a converter station situated close to the existing Eirgrid 220kV Great Island substation in Wexford;
- **Tail Station-** A 220kV Loughtown substation located beside the converter station. The tail station connects the HVAC 220kV cable into the 220kV grid via the existing Eirgrid Great Island substation.
- **Converter Station Construction Compound:** temporary compound for the construction of the converter station and tail station at Great Island.
- **Cable Contractor Compounds** – three temporary cable contractor compounds will be required (i) at the landfall site close to Baginbun Beach (ii) at the proposed converter station and (iii) one along the onshore route in the townland of Lewistown;
- **HDD Compounds** – temporary HDD contractor compounds are required. One will be located close to the cable contractor compound at Baginbun Beach with another HDD compound located at either side of the Campile River Estuary crossing;
- **High Voltage Alternating Current (HVAC) Cables** – one 220 kV HVAC electricity cable circuit consisting of three cables, installed underground connecting the converter station via the Loughtown tail station to the existing EirGrid substation;

- **Fibre Optic Cables** – fibre optic cables for operation and control purposes, laid underground with the HVDC and HVAC cables;
- **Community Gain Roadside Car Parking near Baginbun Beach** – in consultation with Wexford County Council, circa 54 roadside car parking spaces will be constructed; and
- **Community Gain in Ramsgrange Village** – in consultation with Wexford County Council, extension to existing footpaths, four new street lights and a speed activated sign at Ramsgrange.

A detailed description of the proposed development, including design, operation and decommissioning of the proposed development are described in **Chapter 3** whilst **Chapter 4** provides an outline of the general activities associated with the construction of the proposed development.

The objective in this chapter is to appraise the existing landscape character and visual context of the site and its wider setting, to assess the likely landscape and visual effects arising from the proposed development which consists of two similar but alternative design proposals (named as 'Alternative 1' and 'Alternative 2' within the assessment), describe any potential design mitigation measures, and predict any residual effects of the proposed development. This chapter should be read with reference to the photomontages (Figures 11.0 to 11.10.3) which are included as **Appendix 11.1** of this report. The photomontages appraise the permanent structures only, as the temporary construction works and compounds will be fully re-instated on completion of the construction phase.

This assessment was prepared by David Bosonnet, a qualified and senior Landscape Architect at Brady Shipman Martin, landscape, planning, and visualisation professionals. He has over 24 years' experience as a landscape architect, working on over 115 landscape and visual assessments for a wide range of projects including energy, industrial, roads, residential, waste and quarries throughout Ireland. Refer to **Appendix 1.1** for further details of David's qualifications and experience.

11.1.1 Assessment Methodology

The assessment has regard to the relevant guidelines for landscape and visual assessment, including:

- *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, EPA (2017)
- *Guidelines for Landscape and Visual Impact Assessment*. The Landscape Institute/ Institute of Environmental Management and Assessment (2013) (3rd Edition)
- *Guidelines for treatment of tourism in an Environmental Impact Statement* (Fáilte Ireland, 2011)
- *Landscape Institute Technical Advice Note 06/19* (Landscape Institute, 2019)

- And from the experience of the author in carrying out landscape and visual assessments for over 24 years in Ireland.

The methodology used for the landscape and visual assessment entailed:

- A desktop study of the site in relation to its overall context locally, regionally and nationally.
- Visiting the site and its environs in September 2018 and September 2019 to assess the following:
    - Quality and type of views in the area.
    - The extent of the visual envelope, i.e. the potential area of visibility of the site in the surrounding landscape.
    - The character and quality of the surrounding landscape.

The overall design of the landscape and buildings were part of an iterative design process informed by the potential landscape and visual assessment conclusions, with embedded mitigation within the design of the converter station. This included site engineering/landform design, building mass and building colour and screen planting. The route of the underground cable generally follows the existing local road network, minimising tree and hedgerow and tree removal. The guiding principles for the proposed design and mitigation measures are the avoidance and minimisation of any landscape and visual impacts.

Zone of theoretical visual influence (ZTVI) mapping was prepared for the converter station based on the highest corners of the tallest building option in the proposed converter station (21m high, equivalent to 44m OS datum), and Ordnance Survey topographic information using ArcGIS Spatial Analyst v10.4, as illustrated in **Figure 11.4**. A ZTVI map illustrates a study area extending to c.7.5 kilometres around the site and highlights the areas where the proposed converter will theoretically be visible from. The ZTVI maps do not take into consideration vegetation cover, changing weather conditions or the mitigating effect of distance and therefore illustrate the worst-case scenario of visibility.

Pertinent landscape planning designations, including National and County Development Plan designations or listings were identified. These designated landscapes were assessed for direct and indirect landscape impacts. The relevant Landscape Planning designations within the study area as outlined in the Wexford, Waterford and Kilkenny County Development Plans have been illustrated in **Figure 11.3**.

The character and quality of the surrounding landscape were assessed in relation to residential areas and properties, industrial, tourism and agricultural development; special landscape features; cultural and historical elements; and landforms associated with the site.

Following a detailed review of the ZTVI mapping, consultation and agreement with the planning authority, ten viewshed reference points (VRP) in the surrounding landscape were identified (see **Figure 11.0 (Appendix 11.1)**). Photomontages, from these viewshed reference points were prepared for the proposed development, to assist in demonstrating the levels of visual impact (notes on the methodology of preparation and use of photomontages are provided in Appendix 11.1). The full list of viewshed reference points is listed in **Table 11.2**. They have been chosen to reflect a range of distances, directions, sensitivity, timing, and receptor types and are illustrated on **Figures 11.1.1** to **11.1.10 (Appendix 11.1)**. For each representative view, the existing visual environment and proposed development are illustrated. Note the photomontages illustrate two alternative building proposals (with cumulative effects from the potential development of a battery storage facility included) as the final building design will be subject to a design and build procurement contract. For the landscape and visual assessment, the worst case/more visually prominent alternative has been assessed for its effect on the landscape and visual environment.

In this assessment the term 'receptors' means viewers within the general environment including, for example, residential properties.

The extent to which additional illumination from internal site lighting will be visible in the night landscape is also taken into account.

The structure of this landscape and visual assessment includes the baseline description of the receiving environment, including the site and its landscape context and character. This is followed by a description of the main elements of the proposed development that could give rise to direct and indirect landscape and visual effects, the proposed mitigation of these landscape and visual effects, and any remaining residual effects. Finally, the cumulative landscape and visual effects arising from the proposed development in conjunction with other developments in the environs of the site is assessed.

11.1.2 Landscape and Visual Effects

Landscape and visual impact assessment has two separate but closely related aspects. The first is visual impact, i.e. the extent to which a new development can be seen in the landscape. The second is impact on landscape character, i.e. impact on responses that are felt towards the landscape, drawing on the appearance of the land, including shape, form and colour, and the interaction of these elements to create specific patterns and pictures that are distinctive to particular localities.

Visual Impact

Visual impacts are defined under visual intrusion and/or visual obstruction where visual intrusion involves impact on a view but avoiding blocking thereof; and visual obstruction involves impact on a view with some degree of blocking.

Landscape Character Impact

The impact on the character of the existing landscape setting is evaluated taking account of the various natural and man-made features, such as topography, landform, land-use, vegetation, built environment etc. together with the visibility of and the views to and from the landscape. The sensitivity and significance of the landscape in evaluating the impacts is also considered, as are the aspects relating to the landscape planning environment on a regional and local basis.

11.1.2.1Assessment Criteria

The terminology used to define effects is outlined in **Table 11.1.** These are determined by assessing the sensitivity of the landscape/visual receptor against, the magnitude/nature of the effect as per **Figure 11.1** below.

Table 11.1: Significance of Effects Terminology

Impact Level	Definition
Imperceptible	An effect capable of measurement but without noticeable consequences
Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with the existing and emerging trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very significant	An effect, which by its character, magnitude duration or intensity, significantly alters the majority of a sensitive aspect of the environment.
Profound	An effect that obliterates sensitive characteristics

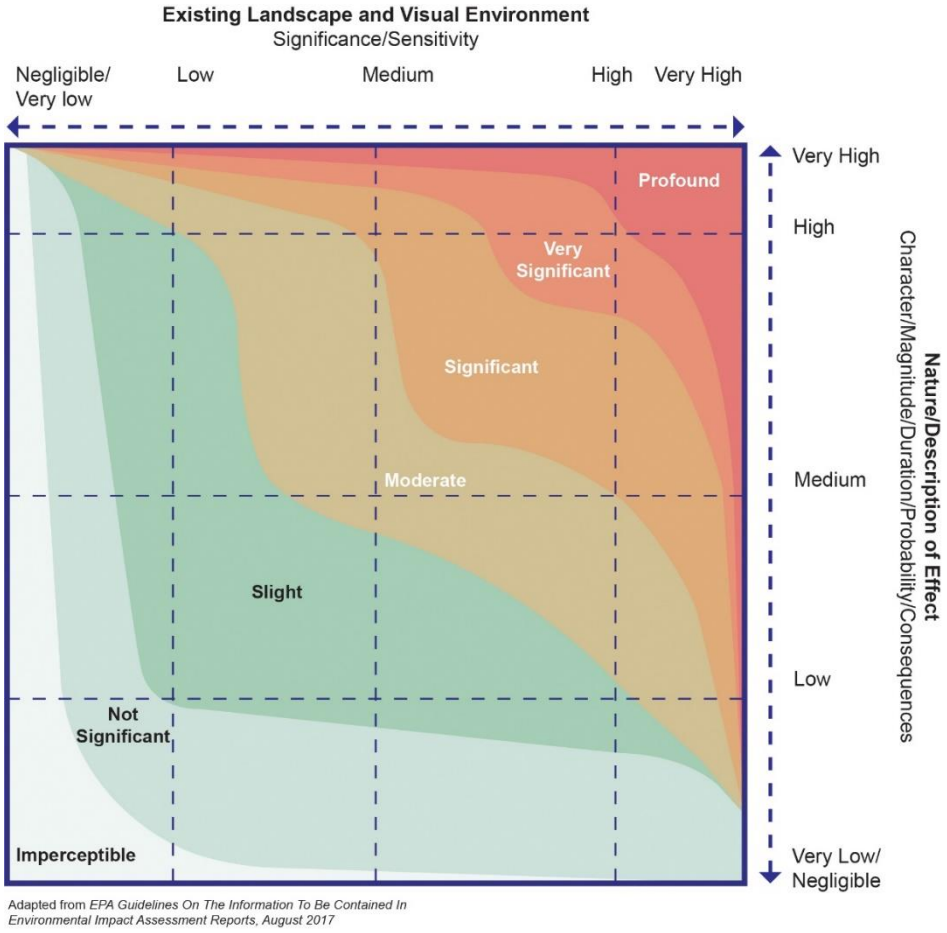


Figure 11.1 Assessment of significance of effects

As per the EPA Guidelines, visual effects or impacts can be considered negative/adverse, neutral, or positive in effect. Effects are considered where they may be direct, indirect, and/or cumulative as appropriate.

Effect duration is considered as being Momentary (effects lasting seconds to minutes), Brief (less than a day), Temporary (for up to one year), Short-term (from 1 to 7 years), Medium-term (7 to 15 years), Long-term (from 15 to 60 years) or Permanent (in excess of 60 years).

There were no limitations or constraints in carrying out the assessment.

11.1.1 Tourism and Recreation

Fáilte Ireland published Guidelines in 2011 on the treatment of tourism in an Environmental Impact Assessment, noting that there are two interactions between tourism and the environment, namely impacts caused by tourism projects and impacts affecting tourism (e.g. the quality of a destination or a tourism activity). The Guidelines note that the assessment of effects on tourism should be treated as a specialist sub-section of the topic 'Population and Human Health', with particular elements being considered, as appropriate within other sections, e.g. Landscape, Flora and Fauna and Cultural Heritage etc.

The effects of the proposed development on Tourism and Recreation is addressed in **Chapter 15** of this EIAR *Population and Human Health*.

Chapter 3 of the Fáilte Ireland Guidelines list the reasons why tourists visit and enjoy Ireland. Aspects of relevance to this 'Landscape' section of the EIAR would include any potential impact on 'beautiful scenery'; 'nature, wildlife and flora' (considered with Flora and Fauna); and 'good range of attractions' (considered with Flora and Fauna and Cultural Heritage).

For elements of relevance to this section of the EIAR, the Guidelines note that particular attention needs to be paid to effects on:

- views from existing tourism facilities, touring routes and walking trails;
- physical access to and visibility of habitats; and
- damage to sites and structures of cultural, historical, archaeological or architectural significance and to their contexts or settings.

11.2 Existing Environment

11.2.1 Site context

The site of the proposed converter station is located immediately northeast of the existing Great Island power station, Great Island, Kilmokea, County Wexford. Great Island lies at the confluence of the Suir and Barrow river estuaries, approximately six kilometres downstream of Waterford City and 12 kilometres downstream of New Ross. The county boundary of Kilkenny lies almost immediately west of Great Island power station within the Barrow River whilst further south, lies the county boundary of Waterford within the Suir River (see **Figure 11.2**.

The landing point for the proposed subsea cable to/from South Wales will be at Baginbun Beach on the east side of the Hook Peninsula, approximately 15.8km to the south east of Great Island, with the proposed underground cable following existing roads and agricultural land to the Great Island site.

The landscape can be broadly characterised as river valley, estuarial harbour, lowland, undulating hills and coastal landscape character types. To the south, the rivers flow to the sea and Waterford Harbour, with Hook Head some 17km to the south east. This is a diverse landscape comprising natural and built elements as well as historic and more contemporary landscape features and elements. It is both a living and working landscape and has evolved and responded to the needs of the community over time. Additions to the landscape range in nature to include settlements; agriculture; transportation (road, rail and water); port related activity and heavy industry at Belview and Waterford Ports; cluster of energy production and energy transmission infrastructure at Great Island power station. Many of the additions are large in scale, and some of them, historic and more recent, are more prominent than others.

There are a number of overhead powerlines to the north and east of the Great Island power station, which are a strong visual element in close proximity (see **Photos 11.1** and **11.2**, as well as existing views in **Appendix 11.1**) The following photographs illustrate the wider landscape context for the proposed development.

Photo 11.1 Waterford Harbour to Great Island from the southeast (Nook)

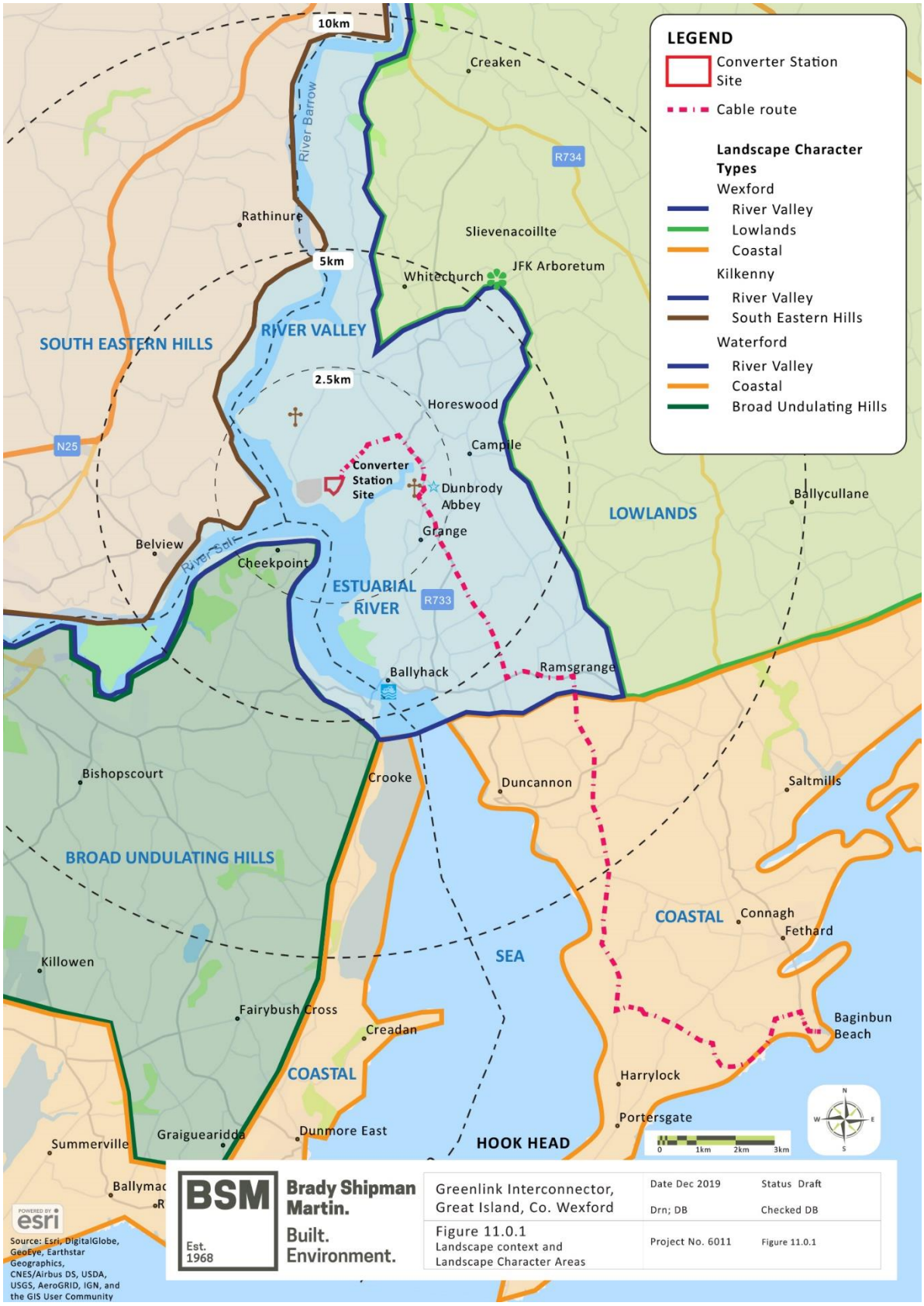


Figure 11.2 Site Landscape Character Context | not to scale

Photo 11.2 Site and Great Island from the north (Newtown)

The existing Great Island power station consists of a gas fired station (recently opened in 2015) and older oil powered station (opened in the late 1960s) and are significant visual features in the surrounding landscape. In particular, the two tall, unused concrete chimneys associated with the older oil powered station are significant focal points that can be seen over a wide area of the surrounding landscape. The power station has been developed over the decades and consists of several large-scale buildings and oil storage tanks in a terraced site. The gas fired power plant is located at the southern edge of the site, close to the water edge and has a smaller steel chimney. North of the power station is 220kV substation, which is not particularly visible within the wider landscape due to intervening vegetation and backdrop of higher topography. There are a number of overhead 110kV and 220kV electricity lines with pylons which run to the north, north east and east of the power station, which are prominent visual features in their immediate environs. There is a block of mature mixed forestry planting, c. 135 metres wide, separating the power station site from the proposed converter station site. The northern block of this forestry has been clear felled in recent years. Along the northern boundary of the site and south of the former rail line, there is a recently permitted, but currently undeveloped, electrical grid systems/energy storage development (Wexford Planning Reference Number 201808506). The future predicted effects of this development are noted in the Cumulative Impact Assessment in Section 11.3.4.

The topography around Great Island is defined by the river valley ridgelines to the west of the Barrow (in County Kilkenny) which rises steeply from the Barrow to a height of c. 100 to 120 metres OD (Malin). To the south of the Suir, the topography rises steeply from the estuary at Cheekpoint to a height of c. 120 metres OD (Malin). This ridgeline extends to the south to Passage East. Immediately east and north of Great Island, there is a flat, polder landscape approximately 1km wide under agriculture, which then rises into a more low, level undulating landscape.

To the south east, east and north, the topography in Co. Wexford is generally more low level (30 to 70 metres OD (Malin)) and is rolling in nature allowing longer range views over this landscape. The distinctive hilltop of Slievecoillte/Sliabh Coillte (c.320 metres OD) (lies approximately 7.5 kilometres to the northeast. The topography of Great Island rises to 30 to 40 metres OD.

The landcover of the surrounding landscape consists of a mosaic of fertile, regularly shaped fields, typically of medium to large size, under grassland and tillage, with farmsteads relatively well screened by hedgerows. There is a well-established network of broadleaf hedgerows and smaller managed hedgerows, small copses of mature, mixed deciduous/evergreen woodland. Larger blocks of woodland, forestry, and scrub are located on the steeper slopes of the river valleys around the Suir/Barrow estuary/Waterford Harbour. Waterford Harbour and the tidal sections of the Suir and Barrow are noted for their importance for cruise ship visits, water sports and tall ships race in Fáilte Ireland's *Determination of Waters of National Tourism Significance* (2009). The JFK Arboretum and visitor centre is approximately 4.5km to the north east of the site. The low-lying nature of the ground together with the enclosure provided by the arboretum's trees limits views of Great Island. There are a series of walking trails and panoramic scenic viewpoints from the adjoin Slievecoillte hill, which is part of the JFK Arboretum. The viewpoint summit is approximately 7.5 kilometres from the site, provides distant views of Great Island power station, and the proposed is also discernible, but is part of a larger panoramic view over Waterford Harbour and the Barrow Estuary.

The area around Great Island is a river valley landscape with a number of towns and villages in the surrounding wider landscape, including Campile (c. three kilometres to the east, see nearby **Photo 11.3**), Cheekpoint (c. 1.2 kilometres to the south, see **Photo 11.4**) and Passage East (c. five kilometres to the south). In addition to the villages and towns, there are numerous dispersed residential dwellings in the landscape.

Photo 11.3 - Great Island from north east

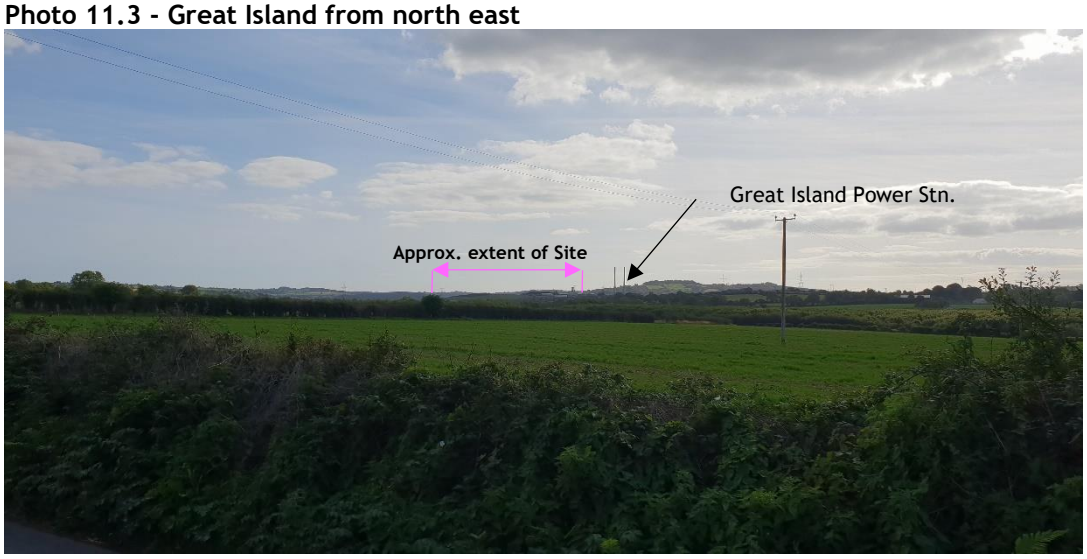
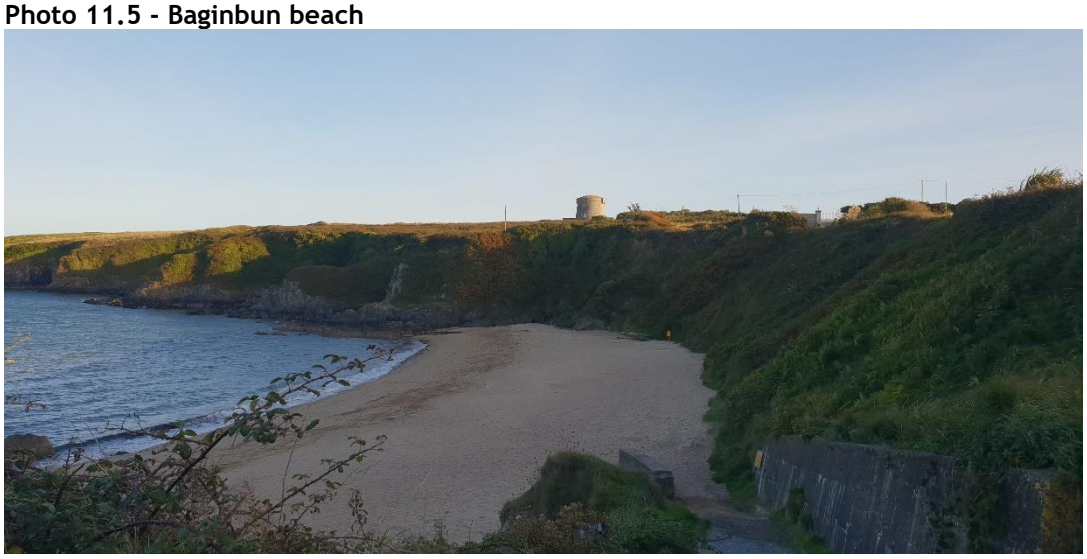


Photo 11.4 - Great Island from Cheekpoint to south

The sea cable landing at Baginbun Beach is on the eastern side of the Hook Head Peninsula. The proposed cable route from Baginbun Beach to the converter station site at Great Island is along and under existing local rural roads and agricultural lands in County Wexford, which are strongly influenced by the area's proximity to the sea. The coastal area is primarily agricultural, with a network of small rural roads connecting small villages and towns such as Fethard, Ramsgrange, Arthurstown, Duncannon and Campile. The landscape is characterised by rolling undulating farmland with occasional views to the sea and distant views to the Blackstairs Mountains to the north and Forth Mountain to the east. The coastal exposure limits the height of field hedgerows to between one and three metres. Baginbun beach is a relatively sheltered, enclosed, sandy cove with views along the Wexford coastline and Saltee Islands to the east. There is a distinctive Martello Tower at the southern end of the beach (see **Photo 11.5**).

The numerous beaches and open, coastal landscape of the Hook Head peninsula are important for residential amenity, visitors, and tourism to that area.

Photo 11.5 - Baginbun beach



There is a network of regional and third-class roads throughout the surrounding landscape. In County Wexford, these include the R733 from New Ross in the north to Campile, Arthurstown, and Ramsgrange. A network of smaller, local access roads bisect and traverse the landscape. There are intermittent views of the site and Great Island from the north, east, and south through/over intervening hedgerows and topography. Approximately eight kilometres to the north of Great Island, the N25 New Ross Bypass has been recently constructed with a large bridge crossing of the River Barrow. Due to intervening topography and distance, there are no views of the new bridge or road from Great Island. In County Waterford, there are views of the site from the parts of the R683 to the north of Passage East and from local access roads leading to Cheekpoint (see **Photo 11.6**).

Photo 11.6 - View of site from local road approaching Cheekpoint

In County Kilkenny, views from roads are substantially screened by intervening topography and vegetation, however there are views of Great Island from local roads (L7470) at Ringville to the north of the River Barrow (see **Photo 11.7**).

Photo 11.7 - View of site from local road at Ringville, County Kilkenny

Immediately north of the site lies the Rosslare to Waterford rail line, which has rail tracks but is not used for regular train services. The line consists of a mixture of cut and embankment, with a prominent steel truss bridge crossing of the River Barrow, before entering a tunnel and continuing west to Belview Port. An amenity greenway for cycling and walking is being planned along the route by Wexford, Waterford and Kilkenny County Councils.

There are a number of important archaeological and cultural features, the landscape setting of which is important in its own right as well as being important visitor destinations, within the surrounding landscape with views to Great Island and the site, including:

- Dunbrody Abbey, situated c.1.6 kilometres due east of the site, with views towards Great Island
- Kilmokea Church and graveyard, situated c.1.5 kilometres to the north of the site, with limited/no views of the site/Great Island due to screening provided by intervening vegetation.

The landing point for the subsea cable at Baginbun Beach has several archaeological features nearby including a Martello Tower and Promontory Fort.

Further details of these and other cultural heritage features of significance are outlined in **Chapter 10** of this EIAR *Archaeology, Architectural and Cultural Heritage*.

11.2.2 Site description

The proposed converter station site lies immediately east of Great Island power station and 220kV substation, and south of the disused Waterford-Rosslare rail line. The site covers an area of approximately 9.3 hectares and is currently used for grazing.

The site's topography is relatively steep, with levels rising from c. 3 to 5 metres OD (Malin Head Ordnance Datum) along the southern and eastern boundary to c. 33 metres OD in the central, western part of the site. Slopes are typically 1:7, with several steeper sections of 1:3 to the south and east. The slopes flatten towards the high point on the site. The site is free draining with drainage ditches along the southern and eastern boundary.

The site is primarily grassland with areas of gorse scrub to the south east of the site. The site is accessed via a track to the north of the power station/ substation and parallel to the disused rail line.

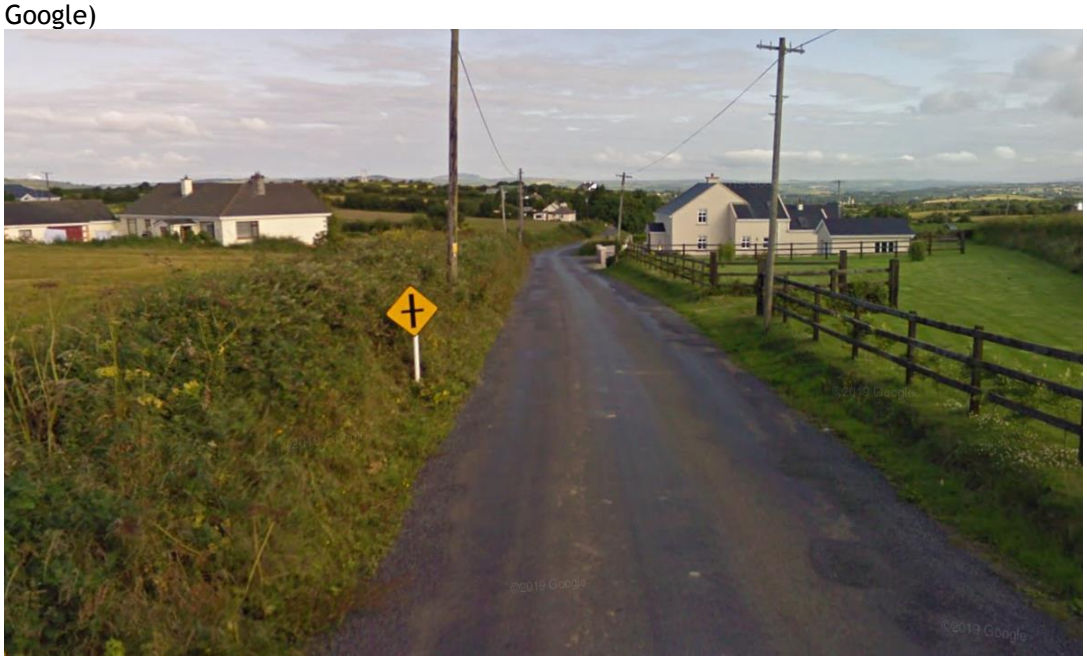
There are no structures on the converter station site at present. Along the northern boundary of the site and south of the former rail line, there is a recently permitted, but currently undeveloped, electrical grid systems/energy storage development (Wexford Planning Ref. No. 201808506). This will include a perimeter security fence, hedge planting, electrical compound, and series of battery storage structures 4 to 5 metres in height. The future predicted effects of this development are noted in the Cumulative Impact Assessment in **Section 11.3.4**.

The adjoining land uses include the Great Island power station and substation immediately west, the energy storage development to the north and pastoral agriculture to the east. Low agricultural hedges define the perimeter boundary to the east with a drainage ditch discharging into Waterford harbour.

The route of the underground cable from the subsea landing point at Baginbun Beach to the converter station site will follow the local road network primarily, and where it goes off-road it traverses agricultural land. The route is predominantly rural in character, with low hedges and occasional views to the sea with dispersed housing along the route (see **Photos 11.8** and **11.9**).

Photo 11.8 - View from local road L4045 at Dollar/Booley Bay, Co. Wexford (image source: Google)

Photo 11.9 - View from local road north of Ramsgrange, Co. Wexford (image source: Google)



The underground cable route will be located to the east of Dunbrody Abbey on the R733, and will cross under the Campile river estuary, which is visually sensitive, due to the historic and landscape setting of the Abbey, bridge, river, riparian tree enclosure, and water/mudflats (see **Photos 11.10** and **11.11**).

Photo 11.10 - View of Dunbrody Bridge with Dunbrody Abbey in distance

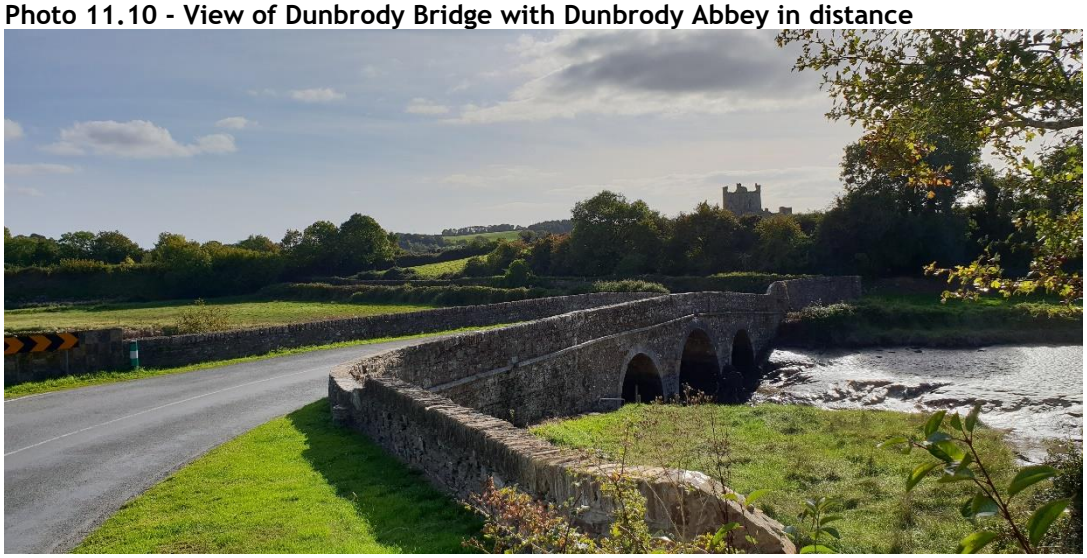
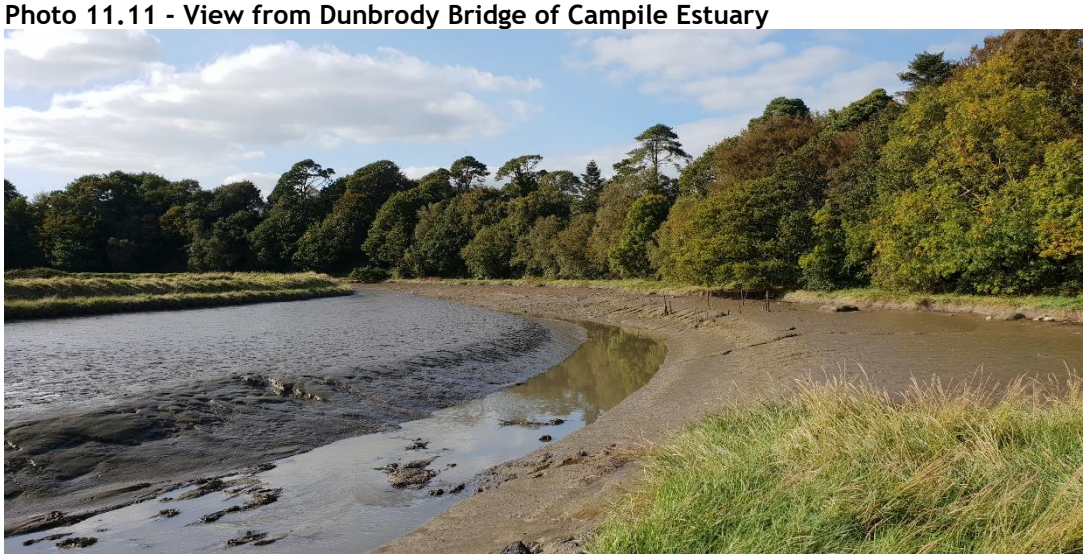


Photo 11.11 - View from Dunbrody Bridge of Campile Estuary



11.2.3 Landscape Character

The confluence of the Barrow and Suir Rivers marks the county boundary between Wexford, Kilkenny, and Waterford (see **Figure 11.1**). Wexford and Kilkenny have a statutory landscape character assessment. The converter and tail station site, subsea cable, and underground land cable all lie within County Wexford. There are a number of Landscape Character Areas within the *Wexford County Council (2012) Draft Wexford County Development Plan 2013-2019, Volume 3: Landscape Character Assessment* as below.

The converter station site at Great Island is within '***River Valleys***', which are described as:

'more scenic appearance due to the presence of the rivers and their associated riparian and woodland habitats. This unit is very sensitive to development.'

The landing point of the subsea cable at Baginbun Beach and underground cable from Baginbun to the converter site at Great Island, are located on Hook Head, which is located with a '***Coastal***' landscape character type, which notes that in these areas '*the nearby presence of the sea gives these areas a more scenic appearance which is very sensitive to development'*. It notes that *'The Hook peninsula has a variety of interesting and distinctive landscapes.'* Furthermore, it states that the: -

'Hook peninsula is characterised by rolling undulating farmland with occasional views to the water and distant views to the Blackstairs Mountains and Forth Mountain.

The peninsula's coastline is heavily indented by bays and coves and numerous sandy beaches. It is characterised by generally low and rocky cliffs, particularly midway between the north and south of the peninsula, for example, at Baginbun Head. The coastline has a cluster of sites of geological interest.

…The area has a distinctive settlement and field pattern, which development proposals should have regard to…

…There are sites of great historical interest throughout the whole of the peninsula, particularly associated with the Normans, the Hook lighthouse and with the historical use of Duncannon Port. The beaches, landscapes, villages and, in particular, the Hook lighthouse, are all popular with tourists and much of the development on the peninsula is consequently tourist-related.'

In Waterford, there is no statutory Landscape Character Areas available (Appendix A9 of the County Development Plan provides for Scenic Landscape Evaluation only). In the absence of an LCA for Waterford, broad landscape character areas were identified for this assessment by the author of the assessment and are listed below:

- **River Valley**, following the shoreline of the River Suir and including Cheekpoint Village which overlooks the River and Great Island. Great Island and the converter and substation site is not visible from Waterford City and Suburbs due to intervening topography and distance (6.5km). The River Suir forms a broad estuarial river valley downstream of Waterford City, and including Belview Port, Faithlegg, Cheekpoint, Passage East and including the Wexford county coastline in the eastern side of the harbour including Ballyhack, Nook, Campile and Great Island. The harbour comprises a balance of intensely rural character, seascape, and urban form. Much of the shoreline comprises landscape of fertile farmland which slopes to the estuary. Whilst predominantly rural in character, there is evidence of industrial development with the prevalence of infrastructure such as Great Island power station, roads, Barrow railway bridge, electricity power lines, port related activity and small clusters of urban form (Cheekpoint, Passage East, Campile/ Horeswood).

- **Broad Undulating Hills,** lies to the south of the River Suir with undulating hills and primarily agricultural landscape. The area is influenced by the proximity of Waterford City with areas of housing and ribbon development following local roads within the area. The area has a strong network of hedgerows and blocks of trees generally limiting views to Great Island. There are elevated views over Waterford Harbour and at Cheekpoint, Great Island is a prominent visual feature in the adjacent 'River Valleys' landscape character area in County Wexford, which has an influence on the character of 'Broad Undulating Hills'.

- **Coastal,** follows the coast south of Passage East to Woodstown and beyond where Waterford Harbour, the sea and Hook Head peninsula are the prominent visual elements of the area. The area is primarily agricultural in nature with ribbon and dispersed residential dwellings. Generally, there are no views of Great Island due to intervening topography.

In Kilkenny, immediately west of the River Barrow, the landscape character areas with potential to be affected by the development include:

- **"South Eastern Hills",** parts of which overlook the River Barrow and Great Island. The steep slopes to the River Barrow are heavily vegetated with

sparse residential dwellings. Heading north along the Barrow, the topography becomes more gradual with fertile agricultural use along the shore. At higher levels, there are more dispersed residential dwellings at Ringville with views over the Barrow estuary, Great Island and wider Wexford landscape.

- **"Suir Valley"** includes the river corridors of the Suir and Barrow rivers. The rivers are the dominant visual and landscape feature in this area, with varying steep and more gradually sloped topography. At the confluence of the two rivers at Great Island, the power station, rail bridge and overhead powerlines are dominant elements in the area.

11.2.4 Landscape Significance and Sensitivity

Waterford Harbour, the Suir/Barrow estuary and Hook Head are of local, regional, and national importance to the economic, residential, leisure, amenity, marine, and transport activities of Wexford, South Kilkenny, and Waterford (see **Figures 11.2** and **11.3**). This is reflected in the following: -

Wexford County Development Plan (2013-2019)

- Coastal Zone Policy Area applies to the Hook Peninsula and coastal area to Duncannon and Ballyhack. It is noted that *'These areas are highlighted as the most sensitive and scenic areas of the county that need to be protected from inappropriate development for the benefit of future generations but also because they are the reason that many people visit Wexford and so it is important to protect them for the tourist revenue they bring. They include areas such as the Hook Peninsula with its magnificent scenery.'*
- Landscapes with Greater Sensitivity, applies to the Hook Peninsula. These areas "*are highlighted as the most sensitive and scenic areas of the county that need to be protected from inappropriate development.*"

The subsea cable landing at Baginbun Beach and part of the route of the underground cable is located within these above designated areas.

The site of the converter station building at Great Island has no particular landscape designation.

Waterford County Development Plan (2011 – 2017, as extended)

- The Scenic Landscape Evaluation map (A9) as set out in the Waterford County Development Plan classifies the landscape and features of Waterford for protection from unsuitable development. The coastline, estuaries and banks of rivers are designated as 'Vulnerable', whilst Cheekpoint village is noted as being 'Robust'.
- The R683 road from Passage East and leading towards Cheekpoint is designated as a 'Scenic Route (15)' in Appendix A9.

Kilkenny County Development Plan (2014-2020)

The River Barrow flows along the eastern boundary of Kilkenny from north of Goresbridge to just north of Belview Port where it joins the River Suir to flow into Waterford Harbour.

The Barrow is noted for its use as a recreational importance, more particularly for the towpath and river stretches north of St. Mullins (20 kilometres to the north).

Figure 8.2, Landscape Character Assessment, illustrates the County's Landscape Character Areas, Protected Views, and areas designated as *'Highly Scenic/Visually Pleasing'*.

Objective 8G *'To protect and sustainably manage the landscape character of County Kilkenny, having regard to the findings of the landscape character assessment and the development management standards as set out in this chapter for the sustainable development of the county and appropriate conservation of its landscape character.'*

Objective 8H sets out *'To preserve and improve places or areas from which views or prospects of special amenity value exist, as identified in Appendix H and on Figure 8.2.'*

The riverbanks of the Barrow in County Kilkenny which have views to Great Island are located in the *'Highly Scenic/Visually Pleasing'* area (see **Figure 11.3**), whilst there are protected views at Belview/Snow Hill (V22, Appendix H), which include views over the confluence of the Rivers Suir and Barrow at Snow Hill on road nos. LS7483 from its junction with road no. LP3415 and view from road no. LT74831-15. Due to intervening topography and vegetation, views of Great Island and subject site are limited from these locations.

Amenity

There are a number of designated amenity routes and visitor destinations within the surrounding landscape, including (see **Figure 11.3**):

- Eurovelo Cycle Route No.1 – starts at Rosslare following the coast, passing through Fethard, past Baginbun Beach, down to Hook head and back to Duncannon to Ballyhack, crossing Waterford Harbour to Passage East heading south to the Waterford Coast. Sections of the route at Baginbun follow the underground cable route. Views of the Great Island site are limited by distance and intervening topography.
- 'Norman Way' Cycle Route – much of which follows the Eurovelo Route 1 above, but at Ballyhack continues north past Dunbrody Abbey and northwards towards New Ross with spurs to Kilmokea Church and JFK Arboretum.
- 'Ring of Hook' Coastal Drive is a visitor driving route of the Hook Head Peninsula visiting natural and built heritage features, including Baginbun Head, Templeton Church, Hook Head Lighthouse. Parts of the proposed underground cable route follows this road.
- Proposed Waterford to Rosslare Greenway – Wexford County Council in conjunction with Waterford and Kilkenny County Councils, are planning to develop a shared walking/cycling Greenway along the former Waterford to Rosslare rail line which is close to the northern boundary of the Converter building site. The rail line is currently not accessible to the public and has extensive mature vegetation along the route in a mixture of cut and fill embankment, with filtered views of the site likely from the east and north towards the proposed site.

- Kilmokea County Manor and Gardens, situated close to Kilmokea Church, c.1.5 kilometres to the north of the converter building and compound site, with limited views to the site due to intervening topography and vegetation.
- JKF Arboretum lies c. 4.5 kilometres to the north east of the site, but views are limited by vegetation. The scenic lookout point and walks at the top of nearby Slievecoillte hill provide panoramic 360 degree views across the landscape including Great Island, although with the intervening distance, the existing power station only forms a small part of the overall view (see **Figure 11.4.1**, **Appendix 11.1**).

Cultural Heritage

There are a number of important archaeological and cultural features within the surrounding landscape with views to Great Island and the converter station site, including:

- Dunbrody Abbey, situated c.1.6km due east of the site, with views towards Great Island (see **Figure 11.5.1**, **Appendix 11.1**).
- Kilmokea Church and graveyard, situated c.1.5km to the north of the site, with limited/no views of the site/Great Island due to screening provided by intervening vegetation.

On Hook Head, the landing point for the subsea cable at Baginbun Beach has a number of archaeological features nearby including a Martello Tower and Promontory Fort. The route of the underground cable will pass Templeton Church and Kilcloggan Castle. Further details of these and other cultural heritage features of significance are outlined in **Chapter 10** of this EIAR.

Figure 11.3 Visual Designations and Amenities | not to scale

11.2.5 Zone of Theoretical Visual Influence (ZTVI)

The zone of theoretical visual influence (ZTVI) of the northern part of the cable route and converter station site is indicated in **Figure 11.4** and illustrates the extent of potential visibility of the proposed development from the surrounding study area.

The river valley ridgelines to the west, southwest and southeast broadly define the extent of visibility of the site. The lower, gently undulating topography to the north and east of Great Island affords views towards to the site with Slievecoillte hill to the north. There are open views of the site across Waterford Harbour and confluence of the Barrow and Suir, from the coastlines and ridges of the harbour to the west.

Viewpoints across the ZTVI area have been selected as representative of the range of views and types of viewer likely to be affected by the project. These viewpoints have been identified to assist in the assessment of effects on visual amenity and visual receptors (i.e. viewers) from these specific locations, with accurate verifiable photomontages prepared to illustrate the existing and proposed development. As set out in 11.1.1, the photomontages illustrate two alternative building proposals as the final building design will be subject to a design and build procurement contract. For the landscape and visual assessment, the worst case/more visually prominent option has been assessed for its effect on the landscape and visual environment.

The connection cable will be underground following the existing road network from Baginbun Beach to the converter station site, with short term, localised construction effects at the landfall, HDD (horizontal directional drilling) compounds, contractor's compounds and along the cable route. The ZTV analysis focuses on the proposed converter station/substation site at Great Island.

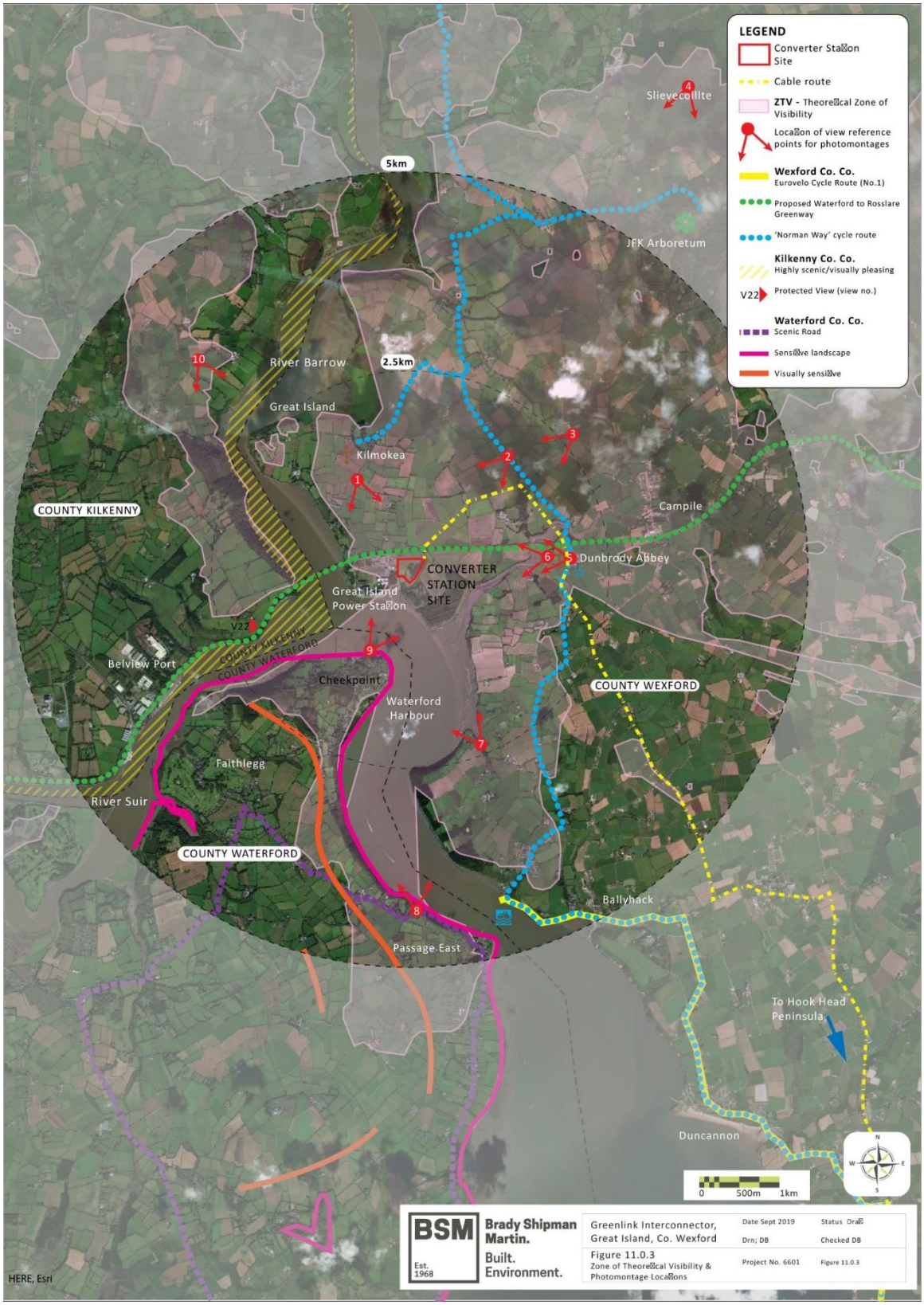


Figure 11.4 Zone of Theoretical Visibility and Photomontage Locations | not to scale

11.2.6 Views from Residential areas

There are views of the Converter station and tail station site from a number of adjoining residential properties and roads. For descriptive purposes the residential properties have been amalgamated into groups as follows (see **Figure 11.5**):

Great Island (Residential Group, RG01)

There are several dispersed single and two storey residential properties and farm holdings to the north of the former Waterford/Rosslare rail line and site within this rural and agricultural area. The nearest property to the site is c. 500m from the proposed site boundary. The area is primarily agricultural and rural in character with a network of hedgerows within an undulating topography. The existing Great Island power station, substation and overhead pylons are prominent in certain views through gaps in trees/hedgerows within the area. The subject site is also visible in a number of locations, most prominently in the selected viewpoint location for the accompanying photomontages (see **Figure 11.1.1**, **Appendix 11.1**).

Newtown/Kilmokea/Great Island (Residential Group, RG02)

To the north of Great Island, there are several dispersed residential properties and farm holdings through this area. There are a number of views towards the site and Great Island, with the power station chimneys and overhead pylons prominent in certain views. The subject site is generally screened from views by intervening topography and vegetation. This area also contains Kilmokea Church, Graveyard and nearby Gardens which are substantially surrounded by trees and vegetation limiting views to the site and Great Island, c.1.5 kilometres to the south.

Campile/Horeswood (Residential Group, RG03)

Approximately 1.8 to 2.5 kilometres to the east of Great Island, there are a number of settlements and dispersed residential areas within the areas of Horeswood, Campile and Dunbrody. There are occasional, sequential views through gaps in vegetation across the relatively flat topography towards the subject site and the Great Island power station. Views from within Campile village are generally screened by vegetation, with a number of more open views towards the site on slightly higher ground at Horeswood (see **Figures 11.2.1** and **11.3.1,** Appendix 11.1), which is further elaborated in Table 11.2. Close to Dunbrody Abbey, there are a number of residential dwellings with views towards the site (see **Figures 11.5.1** and **11.6.1,** Appendix 11.1).

Nook Bay (Residential Group, RG04)

Approximately 2.3 kilometres to the south of the site and Great Island, across Waterford Harbour, there are a number of residential and farm holdings overlooking the harbour and with views of the subject site and power station

which is a prominent visual focal point in certain views (see **Figure 11.7.1**, Appendix 11.1).

Passage East (Residential Group, RG05)

Passage East village lies on the western side of Waterford Harbour, c. 4.5 kilometres to the south of the site and Great Island. There is a regular and popular car ferry crossing to Ballyhack in Wexford. Views of the site and Great Island from dwellings in the village are limited due to the intervening topography and steep valley sides to the harbour. Further north of the village, at Parkswood along the R683 road, there are a number of properties with elevated views over Waterford Harbour.

Cheekpoint (Residential Group, RG06)

Cheekpoint is an attractive coastal village located in County Waterford on the southern side of the confluence of the Suir and Barrow rivers. Great Island power station lies c. 1.1km to the north across the river and with open views is a prominent visual focus and significant industrial element in the landscape. The subject site lies to the east of the power station and is visible from the area, with Slievecoillte hill in the backdrop of the views. Within the village, the topography rises steeply from the shoreline with many dwellings overlooking the harbour. The village has an amenity area fronting onto the water, with water leisure access via slips and existing pier walls (see **Figure 11.9.1**, Appendix 11.1).

Ringville (Residential Group, RG07)

Ringville is located c. 3.5 kilometres to the north of the site and Great Island in County Kilkenny on the western side of the River Barrow valley. This is primarily a rural, agricultural area with dispersed farmsteads, some of which overlook the river valley with views to Great Island power station and the site (see **Figure 11.10.1**, Appendix 11.1).

Properties along underground cable route from Baginbun to Converter Station Site and Compound

The proposed underground cable will land at Baginbun Beach and will generally follow the local road network for c. 23 kilometres to the converter station site at Great Island. From Baginbun Beach, the cable route will head west to the L4045 road, head north to the R733 through Ramsgrange, then follow the L4050 rejoining the R733 past Dunbrody, before crossing under the Campile river estuary, turning west through agricultural land and connecting to the site. Along the route, there are 231 properties (with Eircode address) within 100 metres of the cable route, which are likely to experience some level of temporary landscape and visual effects during the laying of the cable.

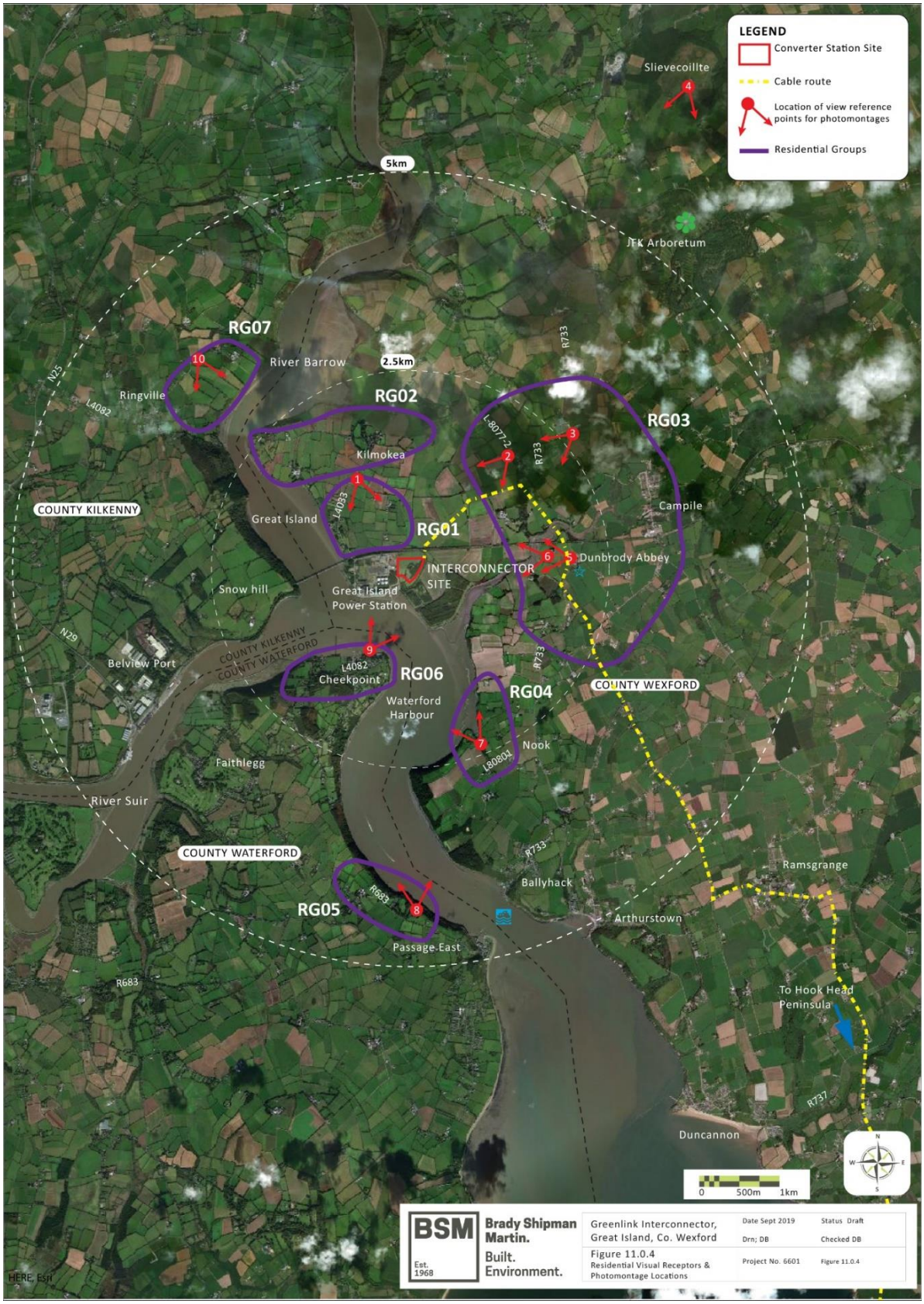


Figure 11.5 Residential Visual Receptors with views of Converter Station site and Photomontage Locations | not to scale

11.2.7 Roads

There are a number of regional and local roads in the surrounding landscape with views towards the site and Great Island power station, including:

- To the north, the L4033 local access road which provides access to Great Island power station, site, farmsteads and residential properties. The site is not particularly visible from this road with intervening topography and vegetation. The converging overhead powerlines and pylons and Great Island power station chimneys are prominent in sections of the road increasing as one travels closer to the site. There are occasional gaps in hedgerows on some of the local access roads with views of the site (see **Figure 11.1.1**, Appendix 11.1).
- To the northeast and east, there are occasional, sequential open views towards the site from the L8077 at Ballydock (see **Figure 11.2.1**) and R733 at Horeswood (see **Figure 11.3.1**). There are elevated distant views of the site from roads leading up to the viewpoint at Slievecoillte (part of JFK Arboretum) (see **Figure 11.4.1**). At Dunbrody Abbey on the R733, there are views towards the site (see **Figure 11.5.1**).
- To the southeast, there are occasional views of the site from local road L80801-1 at Nook, across Waterford harbour (see **Figure 11.7.1).**
- To the south in Co. Waterford, there are limited sequential views (c.4.2km) from the R683, which is a designated scenic road in the Waterford County Development Plan (WCDP) (see **Figure 11.8.1).** At Cheekpoint village, there are open views from the local access roads in the village (L4082) across the estuary towards Great Island power station and subject site (see **Figure 11.9.1**), which is noted as a '*sensitive landscape*' in the WCDP.
- To the northwest in Co. Kilkenny, there are a number of limited sequential views (c. 3.5 kilometres) from the local access roads at Ringville (see **Figure 11.10.1**), accessed from the N25 via the L4082.

11.3 Potential Impacts

A detailed description of the proposed development is available in **Chapter 3**, *Proposed Development* (Section 3.3 *Main elements of the proposed development*). The main elements of the proposed development that have the potential to give rise to Landscape and Visual impacts are outlined below:

- A converter station and tail station to the east of Great Island substation and power station located on the northern side of the site, with two alternative designs considered within the site boundary. Access to the station will be via an access road close to the existing entrance to Great Island Power Station. There will be a perimeter boundary security fence, internal roads, administration, converter station buildings, staff parking and electrical compound. To create a level platform for the buildings, there will be large scale earthworks with excess materials retained on site and used for screen mounding (5 to 10m in height) to the east and south of the converter station compound measuring approximately 185m long x 100m wide at a level of 23m

OD Malin. The compound will be secured with fencing. There will be associated landscaping consisting of structural screen native, mixed woodland planting, native hedgerows and low maintenance grass meadow seeding to disturbed areas. The alternative building developments will consist of:

- Alternative 1 – 123m long converter building, 21m high and 53m wide in dark grey/green cladding with 20m x 17.25m x 8m high spare parts building, along the northern side of the site compound with external electrical compound (transformers, 21.6m tall lighting masts etc.) on the southern side of the building and perimeter internal access road and lighting (6m LED road standards). To the west of the main compound, there will be a smaller tail station (on a plot of c.32 x 35m) secured with perimeter fencing, with high voltage underground connection to the existing Great Island substation. The tail station building will be approximately 11 metres high. The levelled platform for the tail station will be at the same elevation as the converter station platform. Due to its length in an east west direction, this alternative gives rise to greater visibility of building elevation on view locations and visual receptors to the north (Great Island/Newtown/Kilmokea), as compared to Alternative 2 below.
- Alternative 2 – 76m long valves/AC reactors hall building, 18m tall and 40.5m wide in dark grey/green cladding along the eastern boundary of the site compound, with control building 14.5m x 19m x 11m tall with external electrical compound (transformers, 21.6m tall lighting masts etc.) on the western side of the main building. Perimeter internal access roads and lighting (6m LED road standards). To the west of the main compound, there will be a smaller tail station (on a plot of c.32 x 35m) secured with perimeter fencing, with high voltage underground connection to the existing Great Island substation. The tail station building will be approximately 11 metres high. The levelled platform for the tail station will be at the same elevation as the converter station platform.

- Alterations to ground levels utilising soils and materials on the converter site, with creation of level 'platform' at site level 23m (above Ordnance Datum Malin) on the northern part of the site (with up to 9m cut in places). Cut material will be used for earth mounds to south and east and planted.
- The landfall of the offshore cable together with onshore cable route with cable laid below ground and using directional drilling to avoid impacts to Baginbun Beach, coastline and Campile River Estuary crossing. Excavations required during construction will be fully reinstated. Visitor/amenity parking facilities will be provided at Baginbun Beach.

The proposed development will also have a number of associated features which may also give rise to landscape and visual impacts, namely:

- Removal of existing scrub vegetation on the converter site and sections of hedgerow on tight radii of road junctions along the route of the underground cable from Baginbun Beach.
- Construction activity, contractor's compounds, and stockpiles.

- Site security fencing and boundary treatments.
- Staff car parking.
- Planting of additional trees and vegetation.
- Permanent marker posts.
- Link boxes.

The following elements of the proposed development will create temporary visual impacts, including from locations of heritage sensitivity:

- Construction activity, contractor's compound and car parking, temporary lighting, laying underground land cables, landing of undersea cables and construction storage areas.
- At the time of the landing of the sea cable at Baginbun Beach, there will be the presence of a large specialised cable laying ship and other craft which will be visible from properties surrounding Baginbun Beach.

11.3.1 Construction Impacts

11.3.1.1 Landscape Character

Effects of the proposed Converter Station

The large-scale nature of the converter station site buildings and structures, and associated significant excavation works, will have locally **moderate, negative** effects on the landscape character of the site during construction, particularly from the immediate area to the north at Great Island, and to a lesser extent to the east of the site to Dunbrody Abbey and R733 The converter station site and compound, whilst currently under agricultural use at present, is located immediately adjacent to large scale infrastructure in the form of Great Island power station and substation, high voltage power lines and former Waterford/Rosslare rail line. It is considered that the landscape is sufficiently robust to accommodate this development with an increased intensification of use of the site.

Effects of the landfall site

The location for the landfall site is within a Coastal Landscape Character Area which has a high sensitivity. The cables will be installed using horizontal directional drilling techniques thereby, avoiding any damage to the beach, coastline or area immediately adjacent to the beach, leaving these areas unaffected. Some localised effects on nearby residential properties, beach visitors and nearby cultural heritage features at Baginbun Beach will arise by the presence of the drilling rig and associated compound, and cable ship in the bay which are considered to be **locally moderate negative,** and **temporary.**

Effects of the cable route

For most of its route, the underground cabling will impact on the landscape in the temporary/short-term, during construction and for a brief period afterwards. The cable route working width will be visible through the landscape during construction and will primarily be under existing roads, with some sections under soft landscape areas (e.g. at tight corners) where field boundaries and other vegetation are removed, and topsoil stripped back within the fenced working corridor. Once construction is complete the cable route will be buried, and the land will be reinstated to the original land use and boundaries replaced. In addition, where the cable trench was located within the road, the asphalt will be reinstated. The visual receptors affected by the cable route are predominantly small settlements (Ramsgrange and Dunbrody), scattered farmsteads, residential properties, Templeton Church, and tourists visiting the area. Effects are considered to be **locally significant, negative,** and **temporary.**

11.3.1.2 Visual Receptors

The site earthworks and construction of the converter station and tail station buildings and compound will be visible from nearby roads and residential properties at RG01 Newtown/Great Island, RG03 Dunbrody/Campile, and RG06 Cheekpoint (See **Figure 11.5)**. The potential for visual impact will fluctuate throughout the period of construction, particularly during specific construction operations relating to the taller structures. As construction progresses on these elements there would be a gradual change in the visual 'environment' as the working height changes.

The intermittent but temporary introduction of prominent tall features such as cranes will have some short term, temporary visual effects on the visual amenity of both nearby and to a lesser degree longer distance sensitive receptors. In particular for short distance visual receptors, the taller cranes will be obvious, distinct and clearly visible (temporary) features within the landscape that may be readily noticed by the receptors.

Additional temporary visual effects would be caused as a result of construction vehicle movements to and from the construction site and for general construction operations. During the construction phase some temporary lighting will be required to ensure safe working particularly during the winter months. The visual effects are considered to be **moderate, negative** and **temporary** in nature.

During the construction period of the cable landing at Baginbun and HDD (horizontal directional drilling) crossing under the Campile River Estuary, temporary visual impacts would be evident because of construction operations, including cumulative effects associated with the use of cable ship, drilling rigs, excavators, other construction equipment such as task lighting. There will be no direct effect on the beach or coastline at Baginbun, or estuary at Campile.

Due to the sensitivity of the coastal and estuarial setting (residents and beach visitors), impacts will be locally **significant, negative** but **temporary** in nature.

For the majority of its route, including at the temporary contractor's compound at Lewistown, near Dollar Bay, the laying of underground cable will temporarily impact locally during construction and for a brief period afterwards, which are considered to be locally **significant, negative,** and **temporary** in nature for nearby adjoining residents. Users of the local roads will also be affected by the temporary works. The cable route working width which generally follows the existing road network will be visible during construction for excavations and cable joining. Once construction is complete the cable route will be buried, and the land reinstated to the original condition, with land use and boundaries replaced.

11.3.2 Operational Impacts

11.3.2.1 Landscape Character

The development of the converter station and tail substation compound will inevitably bring about a degree of change to the landscape character of the site, its immediate surroundings, on nearby residential properties and cultural het. The large-scale nature of the alternative converter site buildings and structures will intensify the developed nature of the Great Island site and immediate surrounding areas, particularly to the north. The converter station and tail station site and compound is currently under agricultural use on a sloping site and is located immediately adjacent to large scale infrastructure in the form of Great Island power station and substation, high voltage power lines, former Waterford/Rosslare rail line. Great Island forms part of a wider character of active harbour use with Belview Port upstream, and the presence of the Barrow Bridge and Power Station facing onto the harbour.

At a site level the change of use from agriculture to industrial use, regrading and planting will significantly change the character of the site. Outside the site, the area immediately north of the site in Newtown/Great Island will be noticeable leading to **moderate, negative** and **long-term** effects. In the wider landscape, due to the intervening distance, topography and vegetation limiting views of the proposed converter buildings and compound will only form a small part of the overall landscape, leading to **slight, negative/neutral** and **long-term** character effects. It is considered that the landscape is sufficiently robust to accommodate this development with an increased intensification of use of the site.

As the cables will be underground at the subsea landing site at Baginbun Beach, at the Campile Estuary crossing, and along the land connection route to the connector site, there will limited effects on the landscape character of these areas, with slight negative effects where marker posts and cable link kiosks will be visible along the cable route.

11.3.2.2 Visual Impact Assessment

As the cables will be underground at the subsea landing site at Baginbun Beach and along the land connection route to the connector site, there will be no long term visual effects along their route, apart from occasional marker posts which indicate the presence of the underground cable entering and exiting agricultural land and the occasional link box.

Due to the scale of the proposed converter building site and compound, it will be visible from a number of locations with varying sensitives to changes in the visual environment. The surrounding areas of the landscape where the converter site and compound will be visible include areas of settlement, routes used for walking, cycling, and driving, recreational areas.

The study area for the assessment of visual effects has been concentrated generally within a five-kilometre radius of the centre of the converter station site and compound, with one viewpoint outside this area at Slievecoillte (c. 7.5 kilometres to the northeast of the site).

Following further site survey, it is possible to analyse the potential for visual impact from the representative viewpoints, and the assessment is supplemented with photomontages from these representative viewpoints illustrating the existing view, proposed cumulative view with Alternative 1 and 2 schemes, together with the permitted energy storage facility.

Reference should be made to **Figure 11.0** for the location of the viewpoints, as well as the relevant photomontage impressions where these are referenced (**Figures 11.1** to **11.10**). For each viewpoint location, a view of the existing, proposed development with Alternative designs (1 and 2) and including cumulative development (energy storage project to the north). All new trees shown in photomontage views are shown at approximately 5 – 7 years growth at a height of 5-6m. The visual effects are outlined in **Table 11.2** below.

Table 11.2 - Schedule of visual effects on receptors

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
1	11.1.1, 11.1.2, 11.1.3	Newtown /Great Island	Nearby residents (RG01)	High	There are a number of one and two storey residential properties and farmsteads c.500-700m to the north of the site and existing power station. The topography is undulating with views to the existing power station, substation, overhead electricity cables, and pylons. There are views of the existing Great Island Power Station and substation, particularly in winter months when leaves are off vegetation/ The proposed converter station/substation site and adjoining energy storage project will be largely visible against the backdrop of the background topography, with portions of the higher parapets of the building breaking the skyline. Perimeter mounding and planting will assist in reducing visual effects.	Medium to low	**Moderate negative**
			Local road users	Medium	There are occasional sequential views of the site and existing power station through breaks in vegetation (e.g. at field gates) whilst travelling within the local road network. The proposed converter station/substation development and adjoining energy storage project will be visible against the backdrop of the background topography.	Medium to low	**Slight to Moderate negative**
2	11.2.1, 11.2.2, 11.2.3	Local road at Ballydock, L8077-2	Nearby residents (RG03)	High	There are a number of one and two storey residential properties and farmsteads c.1.8-2.5km to the northeast of the site and existing power station. There are views to the existing power station, substation, overhead electricity cables, and	Medium to low	**Slight to Moderate negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
					pylons, particularly in winter months, with a backdrop of the wooded slopes to Cheekpoint beyond. The proposed converter station/substation site and adjoining energy storage project will be visible against the backdrop of the background topography and woodland.		
			Local road users	Medium	There are occasional sequential views of the site and existing power station through breaks in vegetation (e.g. at field gates and over low hedgerows) whilst travelling within the local road network in this area. The proposed converter station/substation development will be visible against the backdrop of the background topography and woodland.	Low	**Slight negative**
3	11.3.1, 11.3.2, 11.3.3	Horeswood Church, Campile (R733 road)	Nearby residents (RG03)	High	At the junction of the R7533 and L4035 at Horeswood, north of village of Campile, there are a number of residential properties in the area with views towards the site and existing power station. The views are at a distance of c.2.3km, with the two existing chimneys visible. The lower buildings and substation are seen against the backdrop of the wooded slopes at Cheekpoint. The proposed converter station will be visible from this area but will be seen against the backdrop of the topography and vegetation.	Low	**Slight negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
			Road users	Medium	There are occasional sequential views of the site and existing power station through breaks in vegetation whilst travelling within the local road network in this area. The proposed converter station/substation site development will be visible against the backdrop of the background topography and woodland.	Low	**Slight negative**
4	11.4.1, 11.4.2, 11.4.3	Slieve Coillte viewpoint	Amenity walkers/ visitors	High	There are panoramic 360-degree views over the Wexford, Waterford, and Kilkenny landscape from this public amenity area at the top of Slievecoillte, some 6.9km to the north east of the site. The existing site and Great Island power station are visible from the area but only form a small part of the overall view and are seen against the backdrop of the wooded slopes of Cheekpoint. The proposed converter station/substation site project will be barely visible against the backdrop of the background topography and woodland.	Low	**Slight negative/ not significant**
5	11.5.1, 11.5.2, 11.5.3	Entrance to Dunbrody Abbey (R733)	Built heritage	Very High	Dunbrody Abbey lies c. 1.8km to the east of the site. The former abbey is set in an agricultural landscape, is a national monument, and is an important visitor attraction within the area. The two existing chimneys of the Great Island power station and the proposed development are visible in the distance and are seen against the backdrop of the elevated agricultural and wooded landscape in the Kilkenny South Eastern Hills LCA.	Low	**Slight negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
					The proposed converter station/substation development will be visible against the backdrop of the background topography and woodland. The proposed mounding and woodland screen planting and selected building colour will further assist in reducing the visibility of the development.		
			Nearby residents (RG03)	High	There are a number of one and two storey residential properties and farmsteads in the Dunbrody Abbey/Campile area c.1.8-3km to the east of the site and existing power station. The topography is undulating with views to the existing power station, substation, overhead electricity cables, and pylons. The proposed converter station/substation development will be visible against the backdrop of the background topography of the Kilkenny South Eastern Hills LCA. Perimeter mounding and planting will assist in reducing visual effects.	Low	**Slight negative**
			Road users	Medium	There are occasional sequential views of the site and existing power station through breaks in vegetation whilst travelling within the local road network in this area. The proposed converter station/substation development will be visible against the backdrop of the background topography and woodland.	Low	**Slight negative/ not significant**
6	11.6.1, 11.6.2,	North nave,	Built heritage	Very High	Dunbrody Abbey lies c. 1.8km to the east of the site. The former abbey is set in an agricultural landscape, is a national	Low	**Slight negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
	11.6.3	Dunbrody Abbey			monument, and is an important visitor attraction within the area. The two existing chimneys of the Great Island power station and the proposed development are visible in the distance and are seen against the backdrop of the elevated agricultural and wooded landscape in the Kilkenny South Eastern Hills LCA. The proposed converter station/substation development will be visible against the backdrop of the background topography and woodland. The proposed mounding and woodland screen planting and selected building colour will further assist in reducing the visibility of the development.		
7	11.7.1, 11.7.2, 11.7.3	Nook Bay, Co. Wexford	Nearby residents (RG04)	High	There are open views across Waterford Harbour towards the site and Great Island Power Station from the area around Nook Bay, c. 2.2km to the south east. The existing power station complex and two chimneys are prominent but are not overly dominant due to the intervening distance. The proposed converter station/substation development will be visible behind the site's topography and proposed woodland screen planting. The upper portions of the proposed converter station building will break the skyline. On the southern building elevation, a lighter grey cladding colour will be provided to help reduce visibility.	Low	**Slight negative**
			Road users	Medium	There is a small local road network in this area. The site is largely screened by topography but there are a number of	Low	**Slight negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
					locations close to the shoreline at Nook Harbour with open views to the site. The proposed converter station/substation development will be visible behind the site's topography and proposed woodland screen planting. The upper portions of the proposed converter station building will break the skyline. On the southern building elevation, a lighter grey cladding colour will be provided to help reduce visibility.		
8	11.8.1, 11.8.2, 11.8.3	R683, Parkswood Co. Waterford	Nearby residents (RG05)	High	In County Waterford, on the R683 road which links Passage East to Waterford, there are a number of dispersed residential properties and farmsteads with views over Waterford Harbour towards the site and existing power station, some 4.5km to the north. The proposed converter station/substation development will be largely screened by intervening topography and vegetation.	Very Low	**Not significant**
			Road users	Medium	The R683 is a designated scenic route in County Waterford. Part of the site and existing power station are visible from a limited number of sections of the road and only form part of the overall view over Waterford Harbour. The proposed converter station/substation development will be largely screened by intervening topography and vegetation.	Very Low	**Not significant**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
9	11.9.1, 11.9.2, 11.9.3	The Strand, Cheekpoint Village, Co. Waterford	Nearby residents (RG06)	High	Cheekpoint village in County Waterford lies c.1.1km due south of the site and Great Island power station. There are open, uninterrupted views of the existing power station which is a prominent visual feature. The southern side of the proposed site is also clearly visible. The proposed converter station/substation development will be partially visible behind the site's topography and proposed mounding and woodland screen planting. The upper portions of the proposed converter station building will break the skyline. On the southern building elevation, a lighter grey cladding colour will be provided to help reduce visibility.	Low	**Moderate negative**
			Amenity /visitors	Medium	At the shoreline in Cheekpoint, there is an attractive public amenity park area with picnic benches, seating etc. and access to the water which is used by recreational water craft. There are open, uninterrupted views of the existing power station which is a prominent visual feature. The southern side of the proposed site is also clearly visible. The proposed converter station/substation development will be partially visible behind the site's topography and proposed mounding and woodland screen planting. The upper portions of the proposed converter station building will break the skyline. On the southern building elevation, a lighter grey cladding colour will be provided to help reduce visibility.	Low	**Moderate/ slight negative**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
			Road users	Medium	From local access roads at the upper and lower side of Cheekpoint village there are open, uninterrupted views of the existing power station which is a prominent visual feature. The southern side of the proposed site is also clearly visible. The proposed converter station/substation development will be partially visible behind the site's topography and proposed mounding and woodland screen planting. The upper portions of the proposed converter station building will break the skyline. On the southern building elevation, a lighter grey cladding colour will be provided to help reduce visibility.	Low	**Slight negative**
10	11.10.1, 11.10.2, 11.10.3	Ballinlaw, Co. Kilkenny	Nearby residents (RG07)	High	There are a number of residential properties and farmsteads located in the County Kilkenny South Eastern Hills LCA, which have elevated views across the River Barrow Valley and towards the site and existing power station c.3.5km to the south west. The proposed converter station/substation development will be visible against the backdrop of the background topography and vegetation in County Wexford Coastal LCA. The proposed mounding and woodland screen planting and selected building colour will further assist in reducing the visibility of the development.	Low	**Slight/not significant**
			Road users	Medium	The proposed converter station/substation development will be largely screened by intervening topography and vegetation,	Very low	**Not significant**

Visual effects of converter building, compound and tail substation site							
View no.	Appendix 11.1 Figure nos.	Location	Receptor type	Sensitivity	Description	Magnitude of effect	Significance of effect
					with limited locations along the road network with views to the site and development.		

11.3.2.3 Impact from Lighting

There is potential for visual impact to arise due to the requirement to maintain adequate internal site lighting levels. To achieve these required levels, lighting will be provided by 6m pole light fittings. The pole fittings will be specified and selected to achieve compliance with dark-sky criteria (i.e. no upward lighting), with precise light control capability. The lamps will be low-impact LED with an anti-glare and cut-off facility. There will be no illuminated building-mounted signage, or flood-lighting of the building facades. Visual impact of the lighting will be **slight negative** for views and areas to the north and north east, where some of the internal site light standard will be visible from the residential properties to the north. As the perimeter screen planting screen planting establishes and matures, the limited effects of lighting will diminish.

Under normal operating conditions, external lighting would be switched off during the hours of darkness, to avoid creating any unnecessary glare in the night sky. The exception would be for emergency repairs to outdoor equipment, where high-level illumination would be switched on. The use of motion sensor technology is likely to be implemented to control lighting at access doors, security gates, etc.

11.3.3 Decommissioning

As mentioned in Chapter 3 Proposed Development, once the interconnector ceases operation the proposed development will be decommissioned. Equipment and all above ground civil works at the converter station will be removed and the site returned to its previous state. Underground cables will remain in-situ as there would be more of an environmental impact in their removal. Above ground structures will be removed, and their locations reinstated. The impact of decommissioning will be **not significant**.

11.3.4 Cumulative and Transboundary Effects

11.3.4.1 Cumulative Effects

With the presence of the existing power plant, substation, and grid connections at Great Island, the area is a strategic national and regional location for energy infrastructure and development, which forms part of the existing landscape river valley character. Great Island and Waterford Harbour area is currently and will continue to undergo a process of change in its landscape character in the short, medium and long term with the other proposed developments in the area including the permitted and as yet unbuilt energy storage facility (Wexford Planning Ref. No. 2018/0506) immediately north of the converter station site, and continued development of other industrial projects in the Waterford harbour area, including the planned uprating of 110kV lines between Kilkenny and Great Island (Wexford Planning Ref. No. 2018/1228).

The cumulative impact of these developments on the landscape character will be negative in the short to medium term particularly in the areas immediately to the north (Great Island, Newtown and Kilmokea), east (Dunbrody/Campile) and south (Cheekpoint), but will be largely neutral from the wider landscape in the long term, as proposed planting mitigation measures establish and mature. The proposed development, including the electrical grid connection, will be seen in many ways as an extension of the existing built development of Great Island of this landscape. There will be areas of the immediate landscape to the north of the site where the effects will be negative and long term where planting will not screen the proposed building development. Overall the greater surrounding area is deemed capable of absorbing the development without changing the character of the River Valley/Harbour Landscape.

11.3.4.2 Transboundary Effects

Considering the nature and location of the proposed development as described in **Chapter 3** and **Chapter 4** no transboundary landscape and visual effects are predicted.

11.4 Mitigation Measures

Throughout the design process, careful consideration was given to the design and siting of the proposals, the selection of materials and colours and to the possible provision of landscape mitigation to minimise or reduce potential landscape and visual effects.

From the outset embedded mitigation has assumed the under grounding of power cables, as opposed to an overhead solution, and horizontal directional drilling rather than open cut and cover at Baginbun beach landfall and Campile River Estuary crossing, would assist in minimising impacts and reducing effects to both the landscape features along the onshore cable route that contribute to landscape character and visual effects. A number of building options (position and configuration within the site, earthworks/finished floor levels, building height and colour, screen earth mounding and planting) were considered and evaluated during the design process, using visualisation software and photomontages from key viewpoints from the surrounding landscape (north from Great Island, east from Dunbrody Abbey and south from Cheekpoint).

11.4.1 Landscape Strategy

Consideration for the reduction of visual impact has determined a number of aspects of the proposed layout, building and landscape development. To give a logical and coherent approach to the development, these key objectives included:

- Integration of the development into the surrounding landscape, in particular to the buildings, roads, fences and services, minimising where possible landscape and visual impact.
- The proposed buildings will have a restricted range of materials and colours in order to create a degree of visual consistency. The colour scheme will be based upon the visibility of the structure when viewed against a mixed and coniferous woodland backdrop, using natural, colours in a matt finish. Elements viewed predominantly against rural backdrop will be dark grey (Anthracite Grey RAL 7016 and Merlin Grey RAL 180 50 05). Upper portions of the southern elevations which may be seen against the sky from views from the south will be in a lighter grey colour (Goosewing Grey RAL 080 70 05). Perimeter security fencing to be black (RAL 9005).
- Placement of external electrical equipment (transformers, compound etc.) behind buildings and topography where possible.
- Security fencing will be finished in dark/anthracite grey colour to help reduce visibility and will be planted to the outside with native hedgerow planting.
- Use of native, mixed woodland shelterbelt planting to define the boundaries, and the entrance road.
- Retention and incorporation of existing landscape features i.e. the trees and hedgerows on the boundaries and in the lands between the existing power station and the proposed site.

Along the route of the underground cable, existing hedgerows and vegetation will be maintained and protected where possible during construction. However, there will be a requirement for sections of existing vegetation to be removed to facilitate the cable laying, which will be replanted with native hawthorn hedgerow planting upon completion of the works. At the Campile River estuary crossing, the existing riparian/riverside trees will be protected during construction.

11.4.2 Landscape Proposals

Landscape planting is proposed to further reduce landscape and visual effects and enhance the overall development, where possible. Its principal objectives are to:

- Screen and/or 'filter' views from nearby residential properties and roads with the provision of perimeter screen native woodland and hedgerow planting.
- Assist a visual integration of the development into the surrounding landscape by screening the lower elements of the development such as roads, administration buildings, and ancillary features of the converter station, with the creation of perimeter woodland planting to the slopes of the site, which is visually consistent with the patterns of vegetation on the River Valley character area around Waterford Harbour and Estuary

- To provide an internal site landscape structure, enhance internal road corridors and further reduce the impact of the built environment from outside the site.
- Car parking throughout the scheme will be screened by tree, hedge, and shrub planting, while still allowing passive supervision of these areas.
- The planting scheme will be implemented with the appropriate tree and shrub species that will suit the site's location and character with an emphasis on indigenous species to the woodland shelter belts.
- All landscape areas shall be formed using adequate depths of subsoil and good quality topsoil. Sub-bases/subsoil shall be adequately decompacted prior to top soiling. Where areas are not free draining, land drains connected to appropriate drainage shall be used to alleviate possible ponding or waterlogging.

An outline landscape plan has been prepared for the Converter Station /substation site (see **Drawings SK080** and **SK081**), accompanying the planning application.

The long-term effect of this process will be to provide a planting screen for on-site activities such that the proposed development will not create a significant visual intrusion for sensitive receptors in the area.

11.4.3 Planting Specification

The planting will be in 7-8m wide woodland shelter belts around the perimeter of the site and an area of woodland to the north east corner of the site. In total there will be approximately 20,000m^2 of woodland planting and in the order of 16,500 trees. The proposed planting as per Drawings SK080 and SK081 will generally be established in line with normal landscape planting techniques, i.e. 'bare-root transplants', 'whips' and 'feathered trees' (90 to 120cm tall), which adapt readily to disturbed ground conditions and will attain heights of 5-6m over five to seven years, and 15-20m height at full maturity. These will be planted at an average of 1.2m centres. The percentages of evergreen trees to be mixed through the planting to minimise impact during winter months are shown in **Table 11.3.** Ecological expertise informed the selection of the proposed planting mix.

Table 11.3 Planting palettes

Scientific Name	Common Name	Percentage Mix
Quercus robor	Pedunculate Oak	20%
Pinus sylvestris	Scots Pine	20%
Salix spp	Willow	5%
Corylus avellana	Hazel	5%
Betula pendula	Birch	5%

Crataegus monogyna	Hawthorn	5%
Prunus spinosa	Blackthorn	5%
Prunus avium	Wild cherry	5%
Prunus padus	Bird cherry	5%
Sorbus aucuparia	Rowan	5%
Ilex aquifolium	Holly	5%
Malus sylvestris	Crab apple	5%

The planting mix will also include a selection of larger 2.5-5m advanced tree sizes to the planting area mix (c. 10% of overall mix) and will include Oak (4.0-4.5m tall) and Pine planting (2.5-3m tall).

A boundary native hawthorn hedge will be planted to the inside of the western boundary to the entrance road.

11.5 Residual Impacts

The proposed converter station/substation development are located adjacent to an existing large-scale power station and substation. The development of the site will change the use of the site from open, agricultural hillside permanently to an industrial infrastructure use with perimeter screen mounding and woodland planting.

The proposed building colour and materials, as well as the proposed landscape mounding and planting, will complement and successfully integrate the proposed development into the landscape and visual environment.

In general, on maturity of the landscape mitigation, there will be no significant visual impacts, and no significant impacts on landscape character during the operation of the proposed development. There will be moderate visual impact on views from the north, with slight impacts on views to the east and south. There will be an intensification of use of the site and there will be no significant cumulative impacts.

11.6 Impact Assessment Summary

Receptor	Potential Effects	Mitigation	Monitoring	Residual Effects
Vicinity of Converter Station Site (Viewpoints 1-10 in Table 11.2 above)	Construction: locally moderate negative temporary effects on the landscape character Operation: locally slight to moderate negative long-term visual effects, with slight negative/ neutral and long-term landscape character effects Visual impacts from light will be slight negative for views and areas to the north and north-east	Embedded mitigation measures which have been incorporated into the design process include: Selection of materials and colours Provision of landscape mitigation as follows: • Integration of the development into the surrounding landscape, in particular to the buildings, roads, fences and services, minimising where possible landscape and visual impact. • The proposed buildings will have a restricted range of materials and colours in order to create a degree of visual consistency. The colour scheme will be based upon the visibility of the structure when viewed against a mixed and coniferous woodland backdrop, using natural, colours in a matt finish. Elements viewed predominantly against rural backdrop will be dark grey (Anthracite Grey RAL 7016 and Merlin Grey RAL 180 50 05). Upper portions of the southern elevations which may be seen against the sky from views from the south will be in a lighter grey colour (Goosewing Grey RAL 080 70 05). Perimeter security fencing to be black (RAL 9005).	Implementation of Construction Environmental Management Plan	In general, on maturity of the landscape mitigation, there will be no significant visual impacts, and no significant impacts on landscape character during the operation of the proposed development. There will be moderate visual impact on views from the north, with slight impacts on views to the east and south. There will be an intensification of use of the site and there will be no significant cumulative impacts.

		• Placement of external electrical equipment (transformers, compound etc.) behind buildings and topography where possible. • Use of native, mixed woodland shelterbelt planting to define the boundaries, and the entrance road. • Retention and incorporation of existing landscape features i.e. the trees and hedgerows on the boundaries and in the lands between the existing power station and the proposed site. Along the route of the underground cable, existing hedgerows and vegetation will be maintained and protected where possible during construction. However, there will be a requirement for sections of existing vegetation to be removed to facilitate the cable laying, which will be replanted with native hawthorn hedgerow planting upon completion of the works. At the Campile River estuary crossing, the existing riparian/riverside trees will be protected during construction. Landscape planting is proposed to further ameliorate visual impact and enhance the overall development. Its principal objectives are to: • Screen and/or 'filter' views from nearby residential properties and roads. • Assist a visual integration of the development into the surrounding landscape by screening the lower		

		elements of the development such as roads, administration buildings, and ancillary features of the converter station. • To provide an internal site landscape structure, enhance internal road corridors and further reduce the impact of the built environment from outside the site. • Car parking throughout the scheme will be screened by tree, hedge, and shrub planting, while still allowing passive supervision of these areas. • The planting scheme will be implemented with the appropriate tree and shrub species that will suit the site's location and character with an emphasis on indigenous species to the woodland shelter belts. All landscape areas shall be formed using adequate depths of subsoil and good quality topsoil. Sub-bases/subsoil shall be adequately decompacted prior to topsoiling. Where areas are not free draining, land drains connected to appropriate drainage shall be used to alleviate possible ponding or waterlogging.		
Vicinity of Landfall Site	Construction: locally moderate negative temporary effects on the landscape character Construction: locally significant negative cumulative temporary	Construction activities will avoid the peak tourism season of July and August. There will be full re-instatement of the area post construction, with the removal of compound, topsoiling and landscaping. A new public car parking area will also be provided.	Implementation of Construction Environmental Management Plan	Construction: locally moderate negative temporary effects on the landscape character Construction: locally significant negative cumulative temporary effects on residents and beach visitors

	effects on residents and beach visitors Operation: no effects			Operation: no effects
Cabling Route	Construction: locally significant negative temporary effects on landscape character for nearby residents Operation: no effects	Undergrounding the entire length of the cables. Construction compounds at HDD landfall close to Baginbun Beach, Lewistown and the Campile estuary crossing.		Construction: locally significant negative temporary effects on landscape character for nearby residents Operation: no effects

11.7 Conclusion

As stated above, in general, on maturity of the landscape mitigation, there will be no significant visual impacts, and no significant impacts on landscape character during the operation of the proposed development. There will be no significant cumulative impacts.

11.8 References

Environmental Protection Agency (EPA) (2017) Draft *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (Draft August 2017).

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