16 Material Assets

16.1 Introduction

This chapter describes the material assets in the form of utilities that could potentially be affected by the proposed development and the potential effects on land use at, and adjacent to the works areas. Material assets are defined as:

"*Resources that are valued and that are intrinsic to specific places*"

Whilst the current draft EPA Guidelines (EPA, 2017) state that material assets: *"can now be taken to mean built services and infrastructure",* the purpose of this assessment is therefore to consider the likely significant effects of the proposed development on the existing utility network, including:

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

Potential land-use issues include severance, loss of rights of way or amenities, conflicts, or other changes likely to ultimately alter the character and use of the surroundings. The EPA Guidelines state the following issues should be noted in particular in the consideration of land use:

- hotels and holiday accommodation;
- tourism and recreational facilities and amenities;
- economic activities such as visitor attractions based on cultural/historic or natural assets; and
- other premises which although located elsewhere, may be the subject of secondary effects such as alteration of traffic flows or increased urban development should also be considered.

Material assets of natural origin are addressed separately in other chapters of this EIAR, namely, **Chapter 10** *Archaeology, Architecture and Cultural Heritage,* **Chapter 12** *Land, Soils, Geology and Hydrogeology,* **Chapter 13** *Water and Hydrology* and **Chapter 14** *Resources and Waste*.

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

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.

This chapter has been prepared by Simon Grennan and Dan Garvey of Arup. A description of the authors' qualifications and experience is presented in **Appendix 1.1**.

16.2 Assessment Methodology

16.2.1 General

This chapter has been prepared having regard to the overarching EIA guidance (EPA, 2017) as described in **Chapter 1**.

The significance of effects has been determined based on the severity of potential disturbance to existing material assets.

16.2.2 Study Area

The study area comprises the main areas of the proposed development – i.e. converter station and tail station, landfall site and the onshore cable route and the land immediately surrounding the route.

A description of the existing environment of the study area is given in the assessment chapters of the EIAR, **Chapters 6 to 17**.

16.2.3 Significance Criteria - Utilities

The significance criteria used to categorise significant effects on utilities is set out in **Table 16.1** and has been developed based on the description of significant effects as outlined in the EPA guidance (EPA, 2017).

Table 16.1: Significance criteria for likely significant effects on material assets - utilities

Significance Level	Criteria
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	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 most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics

16.2.4 Significance Criteria - Land Use

The assessment of land use considers any significant existing trends evident in the overall growth of decline of various land uses, or any changes in the proportion of one type of activity relative to any other. Consideration is also given to any residential, commercial or sensitive land use activities which are likely to be directly affected, including any resultant environmental effects.

The location of any sensitive neighbouring occupied premises likely to be directly affected, and other premises which although located elsewhere, may be the subject of secondary effects such as alteration of traffic flows or increased urban development is also considered.

The assessment of land use effects is carried out in accordance with the criteria outlined in **Table 16.2.**

Table 16.2: Significance criteria for likely significant effects on material assets - land use

Significance Level	Criteria
Significant Negative	An effect that would substantially affect land use and property (i.e. property acquisition and CPO)
Moderate Negative	An effect that causes a noticeable negative change to the character of land use in the area (including business and trading environment)
Slight Negative	An effect that causes noticeable negative changes in business or premises without affecting trade.
Imperceptible	No appreciable effects on land use (property use and operation)
Slight Positive	An effect that causes noticeable positive changes in land use or property
Moderate Positive	An effect that causes a noticeable positive change to land use (character, intensity etc)
Significant Positive	An effect that would substantially positively affect land use (causing positive changes in property, intensity and nature of use and attractiveness of business or trading patterns).

16.2.5 Categorisation of the Baseline Environment

To inform the baseline material assets assessment, a desk study of existing service and utility information was carried out.

16.2.6 Impact Assessment Methodology

A desk study has been carried out to identify the existing material assets associated within the various working areas and determine the likely significant effects of the construction, operation and decommissioning of the proposed development on those material assets.

Having regard to **Chapters 3** *Proposed Development* and **Chapter 4** *Construction Strategy*, the likely significant effects of the proposed development on existing material assets have been assessed in the context of the significance criteria set out in **Tables 16.1** and **16.2**.

16.3 Baseline Environment

16.3.1 Land-use and Property

The converter station, tail station, landfall site and onshore route are located in generally rural, agricultural areas which are sparsely populated. The largest residential area that the proposed development (onshore cable route) passes through is Ramsgrange, a small village located on the R733, roughly half way between the converter station and the landfall site. The landfall site is located at Baginbun Beach which is used by locals and transient population.

Construction of the proposed development will require temporary land take to accommodate construction activities in addition to permanent land take required to accommodate specific above ground elements of the proposed development. Land will be temporarily required to accommodate construction compounds and temporary on-site activities.

Greenlink Interconnector Limited will permanently acquire the proposed converter station and tail station site. Wayleave agreements over land have been made with the relevant landowners. The wayleave agreements provide sufficient legal interest for the consent applications to be made and for the proposed development to be constructed. The land for the proposed car park close to Baginbun Beach and for the footpath improvements at Ramsgrange will also be acquired from the landowners. **Chapter 3**, *Proposed Development*, provides information on the land requirements for the proposed development.

The effects this land use will have on third parties are addressed in **Section 16.4.4.2** below.

16.3.2 Electricity

There is a High Voltage (HV) power line crossing the south west corner of the converter station site. This does not impact on the converter station footprint.

Underground and overhead power lines near the proposed working areas are maintained by the network owner (Electricity Supply Board Network (ESB) as appropriate). No significant electricity service crossings will be required.

The converter station and tail station will require power to operate. The power will come from the DNO (Distribution Network Operator), ESB Networks, system. A DNO substation is located close to the Eirgrid 220kV substation on the SSE site.

Section 3.4.3. of **Chapter 3** *The Proposed Development* describes the existing services in proximity to the proposed cable route.

16.3.3 Gas

There is an existing gas transmission pipeline running north-south just outside the western boundary of the converter station site.

The proposed 220kV HVAC cable connecting from the converter station and tail station to the Great Island substation will cross the gas transmission pipeline. It is not intended that any gas connection will be made for the proposed development. Gas Networks Ireland have been consulted on the crossing of this pipeline.

Section 3.4.3. of **Chapter 3** *The Proposed Development* describes the existing services in proximity to the proposed cable route.

16.3.4 Telecommunications

There is an existing Eircom fixed line service on the public road at the entrance to the SSE power station site. The area is also served by mobile phone networks.

The fibre optic cable laid with the HVAC and HVDC cables will be used for operation and control of the interconnector.

Section 3.4.3. of **Chapter 3** *The Proposed Development* describes the existing services in proximity to the proposed cable route.

16.3.5 Water Supply Infrastructure

There is a water main running east-west at the northern boundary of the converter station and tail station site – this was installed by Irish Water to serve the SSE power plant at Great Island.

Wexford County Council have confirmed that this new water main has ample capacity for the proposed development.

Section 3.4.3. of **Chapter 3** *The Proposed Development* describes the existing services in proximity to the proposed cable route.

16.3.6 Foul/Combined Sewers and Surface Water Drainage

No foul water services or surface water drains currently serve the proposed development areas.

Section 3.4.3. of **Chapter 3** *The Proposed Development* describes the existing services in proximity to the proposed cable route.

16.4 Potential Effects

16.4.1 Do-Nothing Scenario

In the scenario where the proposed development does not proceed as planned, none of the effects as set out in this chapter would occur. Under the 'do nothing' scenario, the material assets baseline as presented in **Section 16.3** would persist and no significant effects would arise.

The positive effects on electricity generation, the transmission system and the single electricity market in Ireland, resulting from the proposed development, would also not arise.

16.4.2 Construction Phase

16.4.2.1 Effects on Land Use and Property

Direct Effects

Lands will be permanently acquired for the converter station and tail station. Permanent wayleaves will be acquired along the cable route. The converter station and tail station site is 9.3ha.For the installation of the cables and contractor compounds, there will be temporary use of land which will return to its original condition and use after the works are complete. **Section 3.3** in **Chapter 3**, *Proposed Development*, provides information on the extent of the temporary and permanent change of land use for the proposed development. It also describes the wayleave agreement along the cable route.

Construction phase effects on land use and property, within the red-line boundary, are expected to be significant and negative for the duration of the construction phase.

There will not be a direct negative effect on property, or the use of any land, outside the red-line boundary of the proposed development.

The construction phase will generate 250 jobs. Construction workers would be expected to travel from Wexford Town, the other towns in the County, and further afield. There will also be a short-term increased demand for rental property in the region. This will be a local short-term significant positive effect.

Indirect Effects

There is the potential for dust and noise emissions from the construction works to have an indirect effect on land use and property just outside the red-line boundary. These potential dust and noise effects, which would be very localised, are addressed in **Chapter 7** *Air Quality and Climate* and **Chapter 8** *Noise and Vibration*. Effects on traffic and transportation in the area are of the proposed development are discussed in **Chapter 6** *Traffic and Transportation*.

Given the implementation of mitigation measures, as outlined in **Chapter 7**, **Chapter 8** and **Chapter 6,** the indirect effects on land use and property from dust emissions, noise and traffic associated with the construction of the converter station site and the installation of the cables are expected to be slight, negative, and temporary.

16.4.2.2Effects on Utilities

Direct Effect - Electricity

Electricity will be provided to the converter station site via the distribution network operated by ESB networks. The DNO connection will be laid along the HVAC cable route to the converter station site. The DNO substation is close to the existing 220kV Eirgrid substation.

Apart from a temporary outage to make that connection, there will be no disruption to the existing distribution network near the proposed development.

If electricity is required at the various works areas along the cable route this will be provided by generators. For the Lewistown and Baginbun construction compounds, electricity will be supplied by a connection to the medium voltage network, in proximity to these sites.

With the use of generators for works areas along the cable route and the connection to the medium voltage network at the construction compounds, it is predicted that the proposed development will have an imperceptible effect on electricity supplies during the construction phase.

Direct Effects - Telecommunications

An underground connection for the converter station and tail station will be made to the Eircom fixed line service, which is located on the public road at the entrance to the SSE power station site. The area is also served by mobile phone networks. The construction works along the cable route will be served by the mobile phone networks.

The population of the electoral districts in the vicinity of the proposed works, presented in **Table 15.1** in **Chapter 15** *Population and Human Health*, in 2016 was 4345. The vast majority of these are expected to have mobile phones. An additional 250 construction workers, which will be a temporary circa 6% increase in mobile phone users, is not expected to have a significant negative impact on the mobile phone services in the area. Apart from a temporary outage to make the connection to the fixed line, there will be no disruption to existing telecommunications near the proposed development.

Direct Effect - Gas

During the construction of the proposed development, the 220kV HVAC, fibre optic and DNO cables will cross under an existing gas transmission pipeline running north-south outside the west boundary of the converter station site. The cable crossing construction in this area will be overseen by Gas Networks Ireland to ensure that it will not give rise to adverse effects to the gas pipeline. The precautionary measures for the gas pipeline crossing are described in **Chapter 4**, *Construction Strategy*.

No gas connection is required for the proposed development. Therefore, the proposed development will have no effect on gas services during the construction phase of the proposed development.

Direct Effects - Water Supply

The expected water requirement for the construction phase welfare facilities is 225l/head/day. Up to 190 staff will be employed on the converter station and tail station site, 10 on the landfall and Campile River Estuary HDDs and up to 50 on the cable construction, as described in **Section 4.8.2** of **Chapter 4**, *Construction Strategy*.

The water demand for the proposed converter station and tail station site construction phase welfare facilities will be 43m^3/day. Water will also be required for the wheel washes and for dust control in dry windy weather. The quantity of water for these uses is difficult to predict as it is weather dependent. This water will be supplied via an existing water main which was installed for the CCGT project and which, Wexford County Council has advised, has ample capacity. This watermain is located along the converter station site northern boundary.

The water required in the works areas along the proposed cable route/landfall site and the construction compounds at Baginbun and Lewistown, during the construction period, will be provided via mobile bowsers. The welfare facilities are expected to require 13.5m^3/day. Water will also be required in these areas for the wheel washes and for dust control in dry windy weather.

There is the possibility that existing asbestos watermains will be encountered during the construction phase of the proposed development while installing the onshore cable route in the road network. Where asbestos is uncovered on site, the Asbestos Containing Material will be double-bagged, stored, collected and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation. As requested by Wexford County Council the appointed contractor will have a sufficient stock of pipe on site in order to minimise the repair time by the local authority. Management of asbestos containing materials is addressed in the Construction Waste Management Plan, which will form part of the Construction Environmental Management Plan, which is described in **Chapter 14** *Resource and Waste Management*.

Direct Effects - Foul/Combined Sewers and Surface Water Drainage

In work areas along the cable routes and the HDD contractor compounds, foul water services will be provided via portable toilets which will be maintained by licensed contractors, and the contents disposed-off to a licensed facility, which has significant spare capacity. In the construction compounds, welfare facilities will discharge to a holding tank which will be maintained by licensed contractors, and the contents removed to a licensed facility at regular intervals. The volume of waste water is expected to be up to 43m^3 per day from the converter station construction compounds and a total of up to 13.5m^3 per day from the other facilities. The impact on the sewage treatment plant will be moderate, for the duration of the construction phase.

The proposed road-side carparking near Baginbun Beach includes the widening of the existing roadway. Stormwater run-off will continue to naturally infiltrate

on both sides of the road in accordance with Wexford County Council's requirements.

Therefore, the proposed development will have an imperceptible effect on water services during the construction phase of the proposed development.

Direct Effects - Miscellaneous Underground Services

The HVDC cable trench will cross underground services and utilities along the route.

These have been identified through consultation with the utility owners and Wexford County Council. There is the potential for disruption to these utilities when the cable trench is being excavated. Some utilities will be disconnected for a brief period, with the agreement of the utility owner. With the implementation of the mitigation measures described in Section 16.5.1 below, the effect on underground utilities is expected to be short term minor adverse.

Indirect Effects

The construction phase will generate 250 jobs, most of whom are expected to reside in the region for the duration of the construction project. This will lead to short term increased demand for services and a greater use of material assets in the region. Given the sufficient network capacity and the temporary nature of the construction works the indirect effects are considered to the local, short term and moderate negative.

16.4.3 Operation Phase

16.4.3.1Effects on Land-Use and Property

Direct Effects on Land Use

Direct effects will occur through operational restrictions on activities within the wayleave width once the proposed development is operational. The restrictions are essential for the safety of personnel and the integrity of the cables. These restrictions are outlined below:

- No building will be allowed within the wayleave width in the off-road sections;
- No storing of materials or changing of ground levels will be allowed within the wayleave width (i.e. soil, sand, straw or hay);
- No crossing the HVDC cables with other utilities, will be allowed, without written agreement from Greenlink Interconnector Limited;
- No direct digging within the wayleave width will be allowed, without written agreement from Greenlink Interconnector Limited. Any excavation over cables will have to be by hand and supervised by Greenlink Interconnector Limited staff;

- No planting of deep-rooted plants will be allowed within the wayleave width.

Normal farming activities will be able to proceed as usual within the wayleave width. There will be occasional access to the link-boxes or pillars (every 2 years) to test the cable.

All restrictions within the wayleave width along the off-roads sections, which are approximately 2.6km in total length, have been agreed with each landowner.

Therefore, the operation of the proposed development will have a long-term slight, negative effect on the future land use in the area of the proposed cable route.

16.4.3.2Effects on Utilities

Direct Effect - Electricity

There will be a slight increase in demand on the existing power supply network during the operation of the proposed development. However, as there is sufficient capacity within the network this effect will be long-term imperceptible.

Security and Diversity of Supply of Electricity

Greenlink will provide 500MW of interconnector capacity. Greater interconnection will allow Ireland and Great Britain to pool reserve capacity, reducing the future peaking plant requirement. The impact of supply shocks or unplanned power station outage or fault at peak demand in either system, which could result in voltage reductions and emergency demand controls or even partial blackouts, could be mitigated by the transmission system operators using Greenlink. It will also enable system balancing arrangements to respond to different weather conditions in Ireland and Great Britain and, via Great Britain, to continental Europe, against the background of high intermittent renewable energy generation.

Maintaining a diverse supply of electricity sources will protect consumers from overreliance on one source of generation and the resulting risk of price volatility or a risk of interruption to the supply of that source.

Support for Low Carbon Energy Generation

Greenlink will play an important role in in reducing the fiscal cost of renewable support schemes and will contribute to diversity of supply by:

- Reducing the need for curtailment,
- Providing access to higher priced markets,
- Increasing the addressable market size.

EirGrid and the System Operator Northern Ireland (SONI) reported on the amount of wind energy dispatched down (i.e. turned-off) in 2018. In 2018, the total wind energy generated in Ireland and Northern Ireland was 11,076 GWh,

while 707 GWh of wind energy was dispatched-down. This represents 6% of the total available wind energy in 2018 and is an increase of 321 GWh on the 2017 value. **Figure 16.1** illustrates wind generation and dispatch down from 2011 to 2018. (Dispatch-down of wind energy refers to the amount of wind energy that is available but cannot be used by the system. This is because of broad power system limitations, known as curtailments, or local network limitations, known as constraints.)

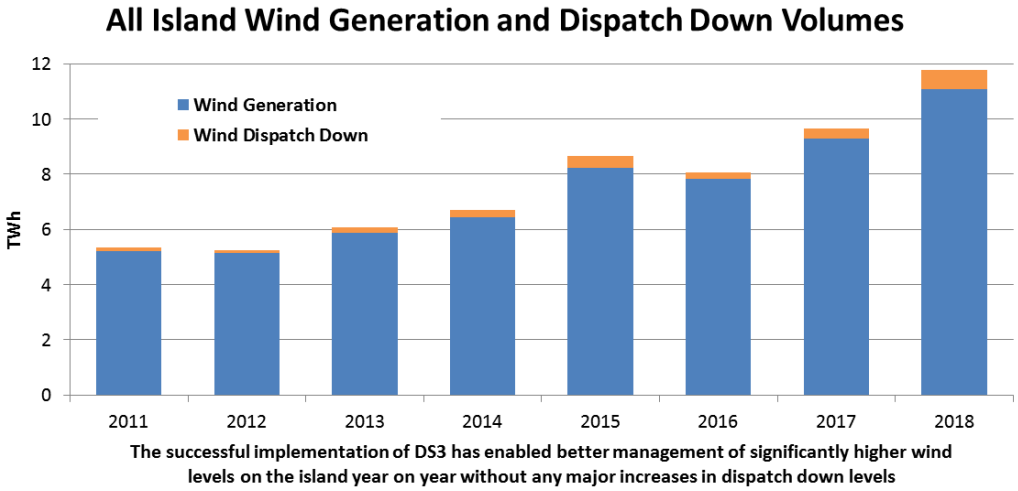

Figure 16.1 All Island Wind Generation and Dispatch Down Volumes 2018

Source: EirGrid & SONI's Annual Renewable Energy Constraint and Curtailment Reports 2018, http://www.eirgridgroup.com/site-files/library/EirGrid/Annual-Renewable-Constraint-and-Curtailment-Report-2018-V1.0.pdf, accessed January 2020

Direct Effect - Telecommunications

The fibre optic cable laid with the HVAC and HVDC cables will be used for operation and control of the interconnector. The converter station will be manned by two staff 24 hours per day. The tail station will be unmanned. The operation and maintenance of the proposed development will not have an adverse effect on fixed line telecommunications network or the mobile networks in the area.

Direct Effect - Gas

The operation of the proposed development will not require a connection to a gas supply. Therefore, no adverse effects on the gas supply will occur during the operation or maintenance of the proposed development.

Direct Effect - Water Services

Two staff will be based in the converter station at all times. The rest of the proposed development will not normally be manned during operation. There will be no process water requirement. The water demand will be minimal and will be similar to a domestic requirement. Water will be supplied to welfare facilities in the converter station via an existing mains supply. Therefore, the

proposed development will have a long-term imperceptible effect on water services during the operation and maintenance of the proposed development.

Direct Effects - Foul/Combined Sewers and Surface Water Drainage

Two staff will be based in the converter station. The rest of the proposed development will not normally be manned during operation.

Waste water from welfare facilities in the converter station and tail station will discharge to a holding tank, which will be maintained by a licensed contractor, and the contents removed at regular intervals to a licensed facility, which has significant spare capacity.

There are no storm water drains in the vicinity of the converter station. Storm water will be discharged via an attenuation pond to an existing stream in the eastern part of the site, as described in **Section 3.6.11.3** in **Chapter 3** *Proposed Development*.

Indirect Effects

The operation of Greenlink will support renewable generation by reducing curtailment at times of surplus generation. The indirect effect will be to reduce electricity generation in fossil fuel power plants.

16.4.4 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 and tail 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.

The decommissioning activities will be somewhat similar to the construction activities but will not involve excavation or inground works. The construction workforce will be smaller.

The footprint of the development will not change but the converter station and tail station site will be available for a future development. The potential impact on land and property will be positive, as the site will be available for future development.

The decommissioning activities will consume power, telecoms and water. Existing utility connections will be used, and their disconnection would be expected to be amongst the last actions in the decommissioning phase. The potential impact on utilities and services will be imperceptible.

The effect of the decommissioning phase will be the removal of the interconnector capacity provided by Greenlink. It is possible that alternative interconnection capacity will be provided or that an alternative grid technology will be developed in the future to achieve the same results. In the absence of these, the increased security and diversity of electricity supply, support for low

carbon generation, increased competition in the energy market in Ireland and the direct economic benefits will end. This will be a significant negative effect.

16.5 Mitigation Measures and Monitoring

16.5.1 Mitigation

16.5.1.1Construction Phase

Effects during the construction phase will be temporary in nature and last only for the duration of the construction works.

GIL will require the contractor to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider. Adequate separation distances will be established between the cables and the existing services. Further methods that will be used to mitigate the risk of damage to existing services will be as follows.

- Assessing route records for existing assets to understand their depth, location and proximity to the planned cable trenches;
- The use of Ground Penetration Radar (GPR), to provide greater confirmation of the locations of existing assets;
- The use of trial holes, again to provide greater knowledge on the exact location of existing assets; and
- Full liaison with asset owners to discuss and agree clearances and where necessary designs.

Surface water management measures will be adopted at all the working areas, as outlined in **Chapter 13** *Water and Hydrology*.

All works near existing services and utilities will be carried out in ongoing consultation with the relevant utility company or local authority and will follow any requirements or guidelines they may have.

16.5.1.2Operational Phase

Due to the measures already incorporated in the design as outlined above, there will be minimal negative impact on services during operation. No mitigation measures will be necessary during the operational phase.

The restrictions on the activities which can be undertaken within the wayleave width cannot be mitigated. However, the wayleave width has been minimised.

16.5.1.3Decommissioning Phase

The mitigation measures employed during the decommission phase will be the same as during the construction phase, where relevant, and updated to reflect the current good practice at that time.

16.5.2 Monitoring

16.5.2.1 Construction and Operational Phase

Construction phase mitigation measures have been proposed to ensure that significant negative effects on material assets will be avoided, prevented or reduced during the construction of the proposed development.

Service providers have been and will continue to be consulted throughout the design and construction process. Requirements for each service will be agreed with the respective provider and a representative of the service provider will be present on site as necessary during the works for monitoring purposes.

16.5.2.2 Decommissioning Phase

The monitoring employed during the decommission phase will be the same as during the construction phase, where relevant, and updated to reflect the current good practice at that time.

16.6 Residual Effects

16.6.1 Construction Phase

Following implementation of the mitigation measures outlined above, it is anticipated that the proposed development will have **no significant residual effects** on land-use and property, electricity, telecommunications, gas, water supply or the sewer network and drainage infrastructure.

16.6.2 Operational Phase

The delivery of the proposed development will result in long-term significant positive effects on the electricity network of Ireland, and long-term slight negative effects on activities and development within the cable wayleave.

The Greenlink project will have a significant long-term positive transboundary effect on the security of power supply and will support renewable energy generation by reducing the need for curtailment and providing access to higher priced markets.

16.6.3 Decommissioning Phase

The future ongoing residual effect of the decommissioning phase will be the removal of the interconnector capacity provided by Greenlink. This will be a future significant negative effect.

16.7 Cumulative and Transboundary Effects

16.7.1 Cumulative Effects

16.7.1.1 Greenlink Project Cumulative Effects

The proposed development forms part of the Greenlink project, which also includes offshore elements, and works in Wales. The construction, operation and decommissioning of the elements of the project offshore and in Wales have no potential to have a cumulative impact on land use or material assets in Ireland or Wales.

16.7.1.2 Cumulative Effects – Other Developments

The proposed development has the potential to give rise to cumulative effects with regard to other proposed developments, either consented or currently under construction. Two projects have been identified which are of sufficient scale to have the potential to have a significant cumulative impact with the proposed development. These are the Great Island – Kilkenny 110kV Line Uprate Project and the Great Island Energy Storage System. The SSE Great Island power station is included as part of the material assets baseline and is not considered in this section.

Both these projects will be connected to the utilities' networks, will consume power and water and will generate waste water. The Line Uprate project will extend from Great Island 49km northwards into County Kilkenny. The extent of the construction works at Great Island is expected to be minor. The Line Uprate project will involve upgrading or replacing existing structures and replacing existing conductors. There will be minimal additional permanent land take.

The Energy Storage project will be located on a 1.5ha site adjacent to the converter station. Construction is due to start in December 2020 and take 21 weeks, i.e. finishing at the end of May 2021. The preliminary works on the converter station site is planned to commence in July 2020 but main mobilisation will be in August 2021. The construction of the Energy Storage project will not overlap with the main construction at the converter station site. Consequently, the potential cumulative effects of the construction phase of the three projects on material assets are not expected to be significant, given the implementation of standard construction environmental measures and the Construction Environmental Management Plan for the proposed development.

The operation of the Line Uprate and Energy Storage projects will have minimal effect on material assets. There is not expected to be a significant cumulative effect on utilities during the operation of the proposed development. Permanent land take for the converter station will be 9.3ha. The cumulative land take will be 10.8ha, which will not be significant, given the total extent of arable land in the area.

The Energy Storage project will have a 20 year life and will be decommissioning before the proposed development. It is assumed that the Line Uprate project will have at least a 40 year life, as the environmental report submitted with its planning application does specify it. As the Line Uprate project will extend from Great Island 49km northwards into County Kilkenny, the extent of the decommissioning works at Great Island is expected to minor. There is not expected to be a significant cumulative effect during the decommissioning of these projects and the proposed development.

16.7.2 Transboundary Effects

The transboundary effects of Greenlink will be beneficial and significant.

The effects will be:

- 500MW of interconnector capacity between Ireland and Great Britain, and onwards to continental Europe;
- 500MW of interconnection providing increased security of electricity supply in Ireland and Great Britain;
- 500MW of export capacity providing support for low carbon generation in Ireland and Great Britain by reducing the need for curtailment and providing access to higher priced markets; and
- 500MW capacity of increased market trading opportunities for efficient generators in Ireland or Great Britain, potentially lowering energy prices by increasing market competition.

When Greenlink will be decommissioned in the future, these beneficial transboundary effects will be eliminated.

16.8 Impact Assessment Summary

Receptor	Potential Effects	Mitigation	Monitoring	Residual Effects
Land use and existing utilities	Temporary occupation of farmland and temporary disturbance to services during construction	Measures will be put in place to protect existing services	Ongoing consultation with service providers	**Short term significant effect on land use**
National energy security	Improved energy security and promotion of	None required	None	**Long-term positive effects**

Receptor	Potential Effects	Mitigation	Monitoring	Residual Effects
	the use of sustainable energy			
Land use	Restrictions on activities and development over the cable wayleave during operation	None	None	**Long-term slight negative effects**
Electricity supply	Slight Increase in demand for electricity from the operation of the proposed development	None	None	**Not significant**
Mains water supply	Slight increase in water demand during operation	None	None	**Not significant**
Wastewater	Moderate volume to be discharged local sewage treatment plant during operation Negligible volume to be discharge to local sewage treatment	None	None	**Moderate, during construction phase** **Negligible during operation**

Receptor	Potential Effects	Mitigation	Monitoring	Residual Effects
	plant during operation			

16.9 Conclusions

As stated above, with the implementation of the proposed mitigation measures and monitoring, no significant negative residual effects on material assets is predicted during construction.

A long-term significant positive effect on the electricity network of Ireland, and long-term slight negative effects on activities and development within the cable wayleave are predicted during operation. A significant negative effect is predicted following decommissioning of the interconnector.

16.10 References

ARUP (2010) *Infrastructure Guidance Note 02 Drainage Design,* ARUP, Dublin

EirGrid & SONI (2019), Annual Renewable Energy Constraint and Curtailment Reports 2018, http://www.eirgridgroup.com/site-files/library/EirGrid/Annual-Renewable-Constraint-and-Curtailment-Report-2018-V1.0.pdf accessed January 2020

EPA (2017*) Guidelines on Information to be contained in Environmental Impact Assessment Reports (draft)*.