

West Galway Substation

EirGrid



Stage 2 - Lead Consultant's Report

Evaluation of Options

Document No. PE595-F1517-R517-005-002

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October 2012

File Reference:	PE595-F1517	
Client / Recipient:	EirGrid	
Project Title:	West Galway 110/38 kV Substation	
Report Title:	Stage 2 - Lead Consultant's Report Evaluation of Options	
Report No.:	PE595-F1517-R517-005-002	
Rev. No.:	002	
Volume 1 of 1		
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Latest Revision Summary:

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1 Executive Summary

EirGrid, the statutory Transmission System Operator, proposes to develop a new 110/38 kV electricity substation west of Moycullen, County Galway, at a location along or in the vicinity of the permitted Salthill – Screebe 110 kV overhead line (OHL). This line is currently under construction.

The project is following the EirGrid Project Development and Consultation Roadmap. The Stage 1 Report was published in February 2012.

This Stage 2 Report gives consideration to feedback arising from Stage 1. The report identifies a preferred substation site and substation technology. It also presents a number of alternative options in relation to the loop-in connection of the substation, in terms of both technology and location. The overall preferred project solution (all elements of the proposal West Galway Substation Project) will be confirmed at Stage 3 and this will progress towards an application for development consent.

Consultation with the public and other stakeholders is a key feature of the Roadmap. As part of this consultation process EirGrid held an Open Day on 5th March 2012 in a local community centre, published the final Environmental Constraints Report on the 22nd March 2012, and provided a six week formal consultation period ending on 13th April 2012.

A number of queries were raised by the public including; landscape and visual impact, health and safety; including electromagnetic fields (EMF), construction traffic, future development, the relationship of the proposed substation to an adjacent proposed wind farm development, peat stability, archaeology, construction issues related to the permitted Salthill – Screebe 110kV overhead line, potential for locating of the proposed substation close to the Uggool wind farm area where a 110 kV substation has already been permitted as part of that wind farm development, proximity to dwellings, site selection methodology and ecology. All these queries have been addressed in this Stage 2 Report.

Consultation with stakeholder organisations including An Bord Pleanála and Galway County Council also provided feedback on the environmental appraisal in the Lead Consultant's Stage 1 Report.

The Lead Consultant's Stage 1 Report concluded with a comparison of two potential sites within a "Southern Location" in the townland of Knockranny (identified in the Stage 1 Report as 1/1A and 3) which emerged from the Stage 1 process as being "least constrained" using a number of evaluation criteria. Whilst the conclusions of the Stage 1 Report recommended that the least constrained sites be further considered in Stage 2, this does not preclude further consideration of other feasible sites, should the need arise.

As a result of the consultation process and subsequent technical studies, a significant change to the project is that it is recommended that the previously identified sites in the Southern Location are not considered further. Instead, a site along the L-53453 Letter Road (Location E) is considered as the preferred location for the substation. This site is located in the general Northern Location as identified during the Stage 1 Report.

The type of technology to be used was also considered during Stage 2. At the request of the wind farm developers it is now proposed to change the substation technology to Gas Insulated Switchgear (GIS), which is generally contained within a building, rather than an outdoor Air Insulated Switchgear (AIS) substation as previously recommended. The change to this technology has resulted in additional sites being available for consideration.

The circuits for the required connection of the planned substation (Location E) to the Salthill – Screebe 110kV line have not yet been finally determined in terms of either technology or

location. Further technical and environmental studies of the available options need to be carried out by the Lead Consultant, ESBI, before a recommendation can be made.

Like all stages in the EirGrid Project Development and Consultation Roadmap, consultation is an important step in the Stage 2 process, so that the views of all stakeholders, including local residents can be considered as part of the final decision making process. As such, the content and conclusions of this Stage 2 Report will form the focus for public and stakeholder consultation, prior to progressing to an application for statutory consent.

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2 Introduction

2.1 Report Context

EirGrid, the statutory Transmission System Operator, proposes to develop a new 110/38 kV electricity substation west of Moycullen, County Galway, at a location along or in the vicinity of the permitted Salthill – Screebe 110 kV overhead line (OHL) (An Bord Pleanála Ref. No. VA0004) which is currently under construction. The planned substation will connect into (also known as “loop into”) the permitted line.

The system operators - EirGrid and ESB Networks, have been directed by the Commission for Energy Regulation (CER) to connect wind farms and other renewable energy generators to the National electricity grid; this occurs by a process whereby wind farm developers make applications for a grid connection. The connection applications are administered in groups or ‘gates’. The Gate 1 decision finalised in December 2004 equated to 353 Megawatts (MW) of renewable capacity. The Gate 2 decision was finalised in June 2006 for over 1,300 MW of generation from wind farms. The majority of the Gate 1 and Gate 2 projects are now either connected to the grid or in the construction stage.

The criteria for Gate 3 were finalised in December 2008, and are based on the CER’s decision papers CER/08/260, CER Direction on Criteria for Gate 3 Renewable Generation Offers. There is approximately 3,900MW of wind generation in Gate 3. Ireland has set a target of 40% of Ireland’s energy to be from renewable sources by 2020. The issuance of the Gate 3 offers commenced in December 2009 and the roll out of offers from the system operators continued until June 2011.

There is approximately 300 MW of renewable energy identified in West Galway to connect to the National electricity grid as part of the Gate 3 Offer Project. The substation that is being proposed by EirGrid is required to connect to the National electricity grid a certain amount of that renewable generation currently in the Gate 3 offer project in the West Galway area. The generators that have been offered a connection to the planned West Galway substation comprise Uggool, Seecon and Clochar na Lara wind farms, with Uggool and Seecon windfarms having already accepted their connection offers. When a connection offer is signed by a wind farm developer, EirGrid is obliged to connect that windfarm to the National electricity grid at a specified node.

The proposed electrical connection between the various wind farms located in the Uggool, Cloosh, Lettercraffoe and Seecon areas, and an associated permitted substation at Uggool, is being separately developed by the consortium of developers involved in the project, with Comhlacht Gaoithe Teoranta (CGT) acting as the lead developer for the consortium. CGT has advised EirGrid that it intends to connect the permitted Uggool substation to EirGrid’s planned West Galway substation using underground cable (UGC). For the avoidance of doubt, the permitted Uggool substation, and its connection to EirGrid’s planned West Galway substation, are not part of EirGrid’s specific project but they are considered in terms of the overall cumulative environmental impacts associated with the West Galway Substation Project.

For clarity, the EirGrid project consists of two inter-related elements:

- A new electricity substation operating at 110 and 38 kV. An electricity substation functions in much the same way as a road junction by allowing a number of electricity circuits to meet and connect with each other, thereby allowing efficient bulk transport of electricity to supply different points in the network.
- Circuits to connect into the proposed substation into the Salthill – Screebe 110 kV OHL so that the substation connects to the National electricity grid.

The process from project initiation through to lodgement of a planning application has been broken into four distinct stages, as per the EirGrid Project Development and Consultation Roadmap shown in Figure 2.1, with each stage having its own principal objective.

The Stage 1 report was published in February 2012. That report identified general Northern, Middle and Southern Locations within a wider study area where it was considered a substation could potentially be located which would meet the requirements of the project. On the basis of information gathered at that time, as well as on the basis of an early understanding of the nature and extent of the substation project (at that time comprising an outdoor Air Insulated Switchgear (AIS) substation connected to the permitted Uggool substation by means of an overhead line), it was considered that such a form of substation could most appropriately be located in the identified Southern Location. The various Northern, Middle, and Southern Locations considered in Stage 1 are illustrated in Figure 2.2, as are the two “least constrained sites” identified within the Southern Location.

It is not intended to reiterate the contents of the Stage 1 Report in this Stage 2 Report, other than to present its key findings. As such, for a complete and thorough understanding, this Stage 2 Lead Consultant’s Report, prepared by ESB International, should be read in conjunction with the Stage 1 Report which is available on EirGrid’s project webpage:

www.eirgridprojects.com/projects/westgalway.



Figure 2.1: Project Development and Consultation Roadmap

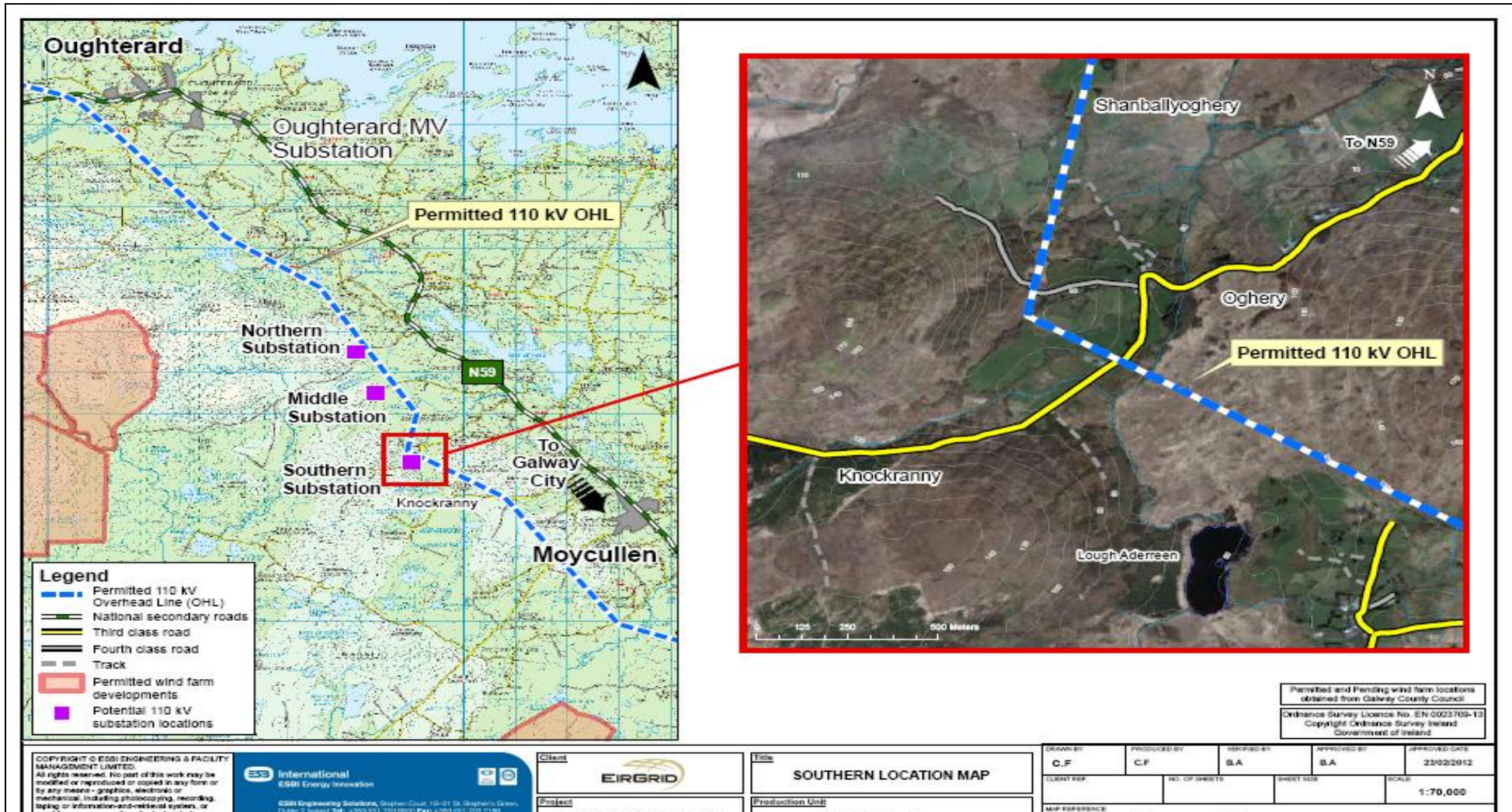


Figure 2.2: General Potential Locations of Project (as presented in the Stage 1 Report)

2.2 The Purpose of this Report

In accordance with the Project Development and Consultation Roadmap, this Stage 2 Report gives consideration to all feedback arising from Stage 1. Arising from such feedback, the report endorses a preferred a substation site and substation technology. It also presents a number of alternatives in relation to the loop-in of the substation, in terms of both technology and location. The overall preferred project solution (all elements of the proposal West Galway Substation Project) will be confirmed at Stage 3 and progress towards an application for development consent.

This Stage 2 Report details the process that is being undertaken in order to confirm the preferred project solution.

Essential to the Stage 2 evaluation is the Stage 1 Information Gathering and associated consultation process in which all interested parties and stakeholders (statutory agencies/bodies and non-statutory agencies/bodies and the general public) were given the opportunity to provide feedback and comment on the project process, procedures and conclusions, primarily as set out in the Stage 1 Lead Consultant's Report.

The findings of the Stage 1 process were published in February 2012 "STAGE 1 LEAD CONSULTANT'S REPORT IDENTIFICATION OF LEAST CONSTRAINED SITES". The publication of this report was followed by an open day in Killanin, County Galway on 5th March 2012, which was held in order to maximise understanding of the need for the planned development, and the technical and environmental work carried out to that stage as well as to seek feedback on the findings of the Stage 1 Report. A consultation period of six weeks ending on 13th April 2012 was given so that adequate time for full consideration of the findings of the report could be given to all parties. Any submissions received after these dates have also been considered.

The feedback arising from the consultation process is summarised in this report, including any additional information which emerged as a result of the consultation process.

2.3 Overview of the Stage 1 Process

The Stage 1 process of information gathering as recorded in the Stage 1 Lead Consultant's Report was as follows:

- Presented the need for the project;
- Established a study area for the project;
- Identified the environmental and other constraints within the study area;
- Identified possible locations for the project within the defined study area;
- Identified the proposed substation technology;
- Evaluated the possible locations, having regard to environmental, planning and technical constraints;
- Identified a least constrained location for the substation; and
- Identified two least constrained sites within that identified location.

2.4 Conclusions of the Stage 1 Report

It should be noted that it is the conclusions of the published Stage 1 report that are presented in this section. The purpose of Stage 2 is to incorporate the knowledge gained

from consultation following publication of the Stage 1 Report into the project. Changes to the project arising from consultation are detailed in Sections 3, 4 and 5 of this Stage 2 report. In summary, the conclusions of the Stage 1 Lead Consultant’s Report are as follows:

- Air Insulated Switchgear (AIS) is the current preferred technology for this project as it meets all technical requirements. From environmental studies carried out to date, the potential environmental impacts appear to be capable of being absorbed by the receiving environment and it is the most cost effective technology.
- The emerging preferred location is in the southern substation location in the townland of Knockranny as illustrated in Figure 2.2.
- Within that location three sites (with two additional sub-sites) have emerged as being potentially feasible as illustrated in Figure 2.3.

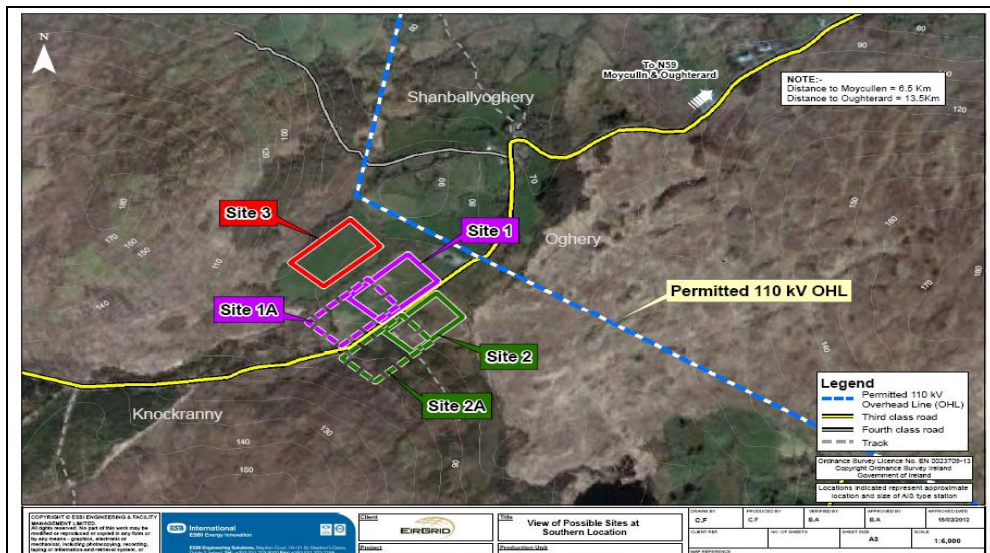


Figure 2.3: Potentially Feasible Sites (as presented in the Stage 1 Report)

- Sites 1/1A and 3 currently represent the least constrained sites identified for this project. Whilst both sites have some constraints, the extent of which requires further investigation in the subsequent Roadmap stages, it is recommended that both be further considered as part of the Stage 2 process.

Whilst the conclusions of the Stage 1 Report recommended that the least constrained sites be further considered in Stage 2, this does not preclude further consideration of other feasible sites, should the need arise.

Similarly, whilst the conclusions of the Stage 1 Report identified Air Insulated Switchgear (AIS) as the preferred technology for this project, that does not preclude consideration of other technologies.

3 Results of Technical Studies since the Stage 1 Report

3.1 Introduction

At the outset, one of the main objectives of the project was to locate a substation as close as possible to the Salthill – Screebe 110kV OHL, at a location which was both technically and environmentally feasible. It was stated in Section 8 of the Stage 1 Report that further more detailed technical appraisals and studies, including the development of mitigation measures for whichever site emerges from the site selection process will be required as the project progresses.

Since the publication of the Stage 1 Report detailed technical studies related to sites at the southern substation location at Knockranny have taken place. The findings of the studies, which have significant implications for the project, are detailed in this section.

As previously stated notwithstanding the identification of least constrained sites at Stage 1, further consideration of other feasible sites is not precluded, should the need arise. Similarly, further consideration of other technologies is not precluded, should the need arise.

3.2 Technical Studies of Southern Substation Location Sites

3.2.1 Road Survey of the L-53480

A road survey of the L-53480, public road between the N59 and the substation locations (often referred to locally as the Knockranny Road) took place in August 2012. The road is a local access route which terminates beyond the proposed site location. This survey showed that, in order to access any of the southern substation location sites at Knockranny via the L- 53480, considerable route upgrading would need to be made to render the road suitable for electricity equipment delivery and construction traffic.

Having regard to the results of the survey, consideration has been given to alternative access arrangements to the area from the L-53453, known as the Letter Road, which is a county road to the north. The first kilometre of this road is a public surfaced road, whilst the remainder, approximately 6 km, of the road is unsurfaced but is in good condition and serves as an access to Coillte forestry plantations in the Uggool and Clish Valley areas, access for turf cutting in the area and access for two dwellings. However, in order to access the Knockranny area from this road it would be necessary to construct a new link between the Letter Road (L-53453) and the Knockranny Road (L-53480) as illustrated in red in Figure 3.1.

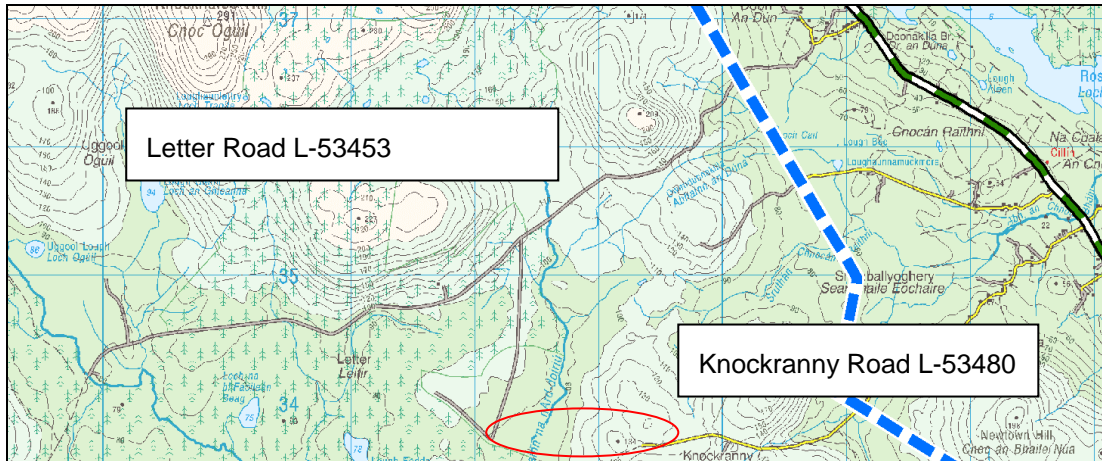


Figure 3.1: Map showing in red the location where a new link road would be required

The length of the required link road would be approximately 1.5km and it would be constructed through areas of deep peat. It would also be necessary to cross the Arderroo River. In addition to the new road link, it would also be necessary to upgrade a 1km section of road at the western end of the L-53480. Whilst preliminary studies of this option have been carried out, detailed technical and environmental studies would need to be carried out on this link road if this was to be progressed further to a design stage.

3.2.2 Fisheries Survey

A fisheries survey was carried out in the vicinity of the Southern Substation Location sites in Knockranny on the Upper Reaches of the Knockbane River. The population characteristics of Brown Trout in this area of the river showed a more numerous and diversity in size class than might have been expected for a waterway of its size. It is considered highly likely that as for other upland streams that flow into Lough Corrib, the small stream acts as a feeder for the Brown Trout population in the lake. For this reason, its sensitivity must be fully appreciated if any consideration is given to altering its path or interfering with its flow patterns. The absence of juvenile Atlantic Salmon from the site was not unexpected as this site is located on a small upland stream which is much too narrow and shallow for adult Atlantic Salmon to migrate to and spawn in.

3.3 Conclusion

The conclusions of the technical studies, particularly those related to the road survey, have resulted in the Southern Substation Location sites in Knockranny as identified in the Stage 1 Report being reconsidered in terms of their feasibility. Whilst the sites in Knockranny remain environmentally and technically feasible for the development of a substation, given the scale of the accommodation works required on the L-53480 (Knockranny Road) or the requirement for a new section of roadway to link this road to the L-53453 (Letter Road) at Arderroo, it was concluded by the Project Team that alternative locations for the substation should be considered.

4 Alternative Locations Considered

4.1 Introduction

As previously stated, one of the main objectives of the project is to locate a substation as close as possible to the Salthill Screebe 110kV OHL, at a location which is both technically and environmentally feasible. This would minimise the length of the circuits required to loop the substation into the OHL. Whilst the Stage 1 Report identified Northern and Middle Locations close to the OHL outside of the Southern Location, these locations were considered too constrained as locations for the substation, in the context of the substation technology being considered at that time comprising Air Insulated Switchgear (AIS).

In considering alternative locations it became necessary to consider locations further from the OHL, which has the consequence of increasing the length of circuits required to loop the substation into the OHL. It also became necessary to consider using the other main alternative substation technology, which is based on Gas Insulated Switchgear (GIS). As GIS has a significantly smaller footprint than AIS, a greater number of sites become available for consideration. As detailed in the Stage 1 Report, in order for the substation to function as part of the National electricity grid it is necessary for it to be looped into the OHL. A substation can be looped in using either OHL or UGC or a combination of both.

Having regard to the access requirements for constructing the substation; and consideration of GIS substation technology, the search area for alternative locations was revised to concentrate along the L-54453 Letter Road, as illustrated in Figure 4.1. It is intended that this road will be used as the route for construction traffic associated with the wind farms located in the Cloosh, Uggool, Lettercraffoe and Seecon areas. Planning permission has been granted by Galway County Council under Reg. Ref. 11/1735 (as part of a ten year planning permission for a wind farm development at Uggool) for upgrades to this road to accommodate wind farm construction traffic. With the permitted upgrades, it is considered that this road is more suitable for construction traffic associated with the proposed substation, than other county roads in the area, and that using existing upgraded roads already permitted by the Planning Authority, would be preferable to upgrading other roads or constructing new roads in the area.

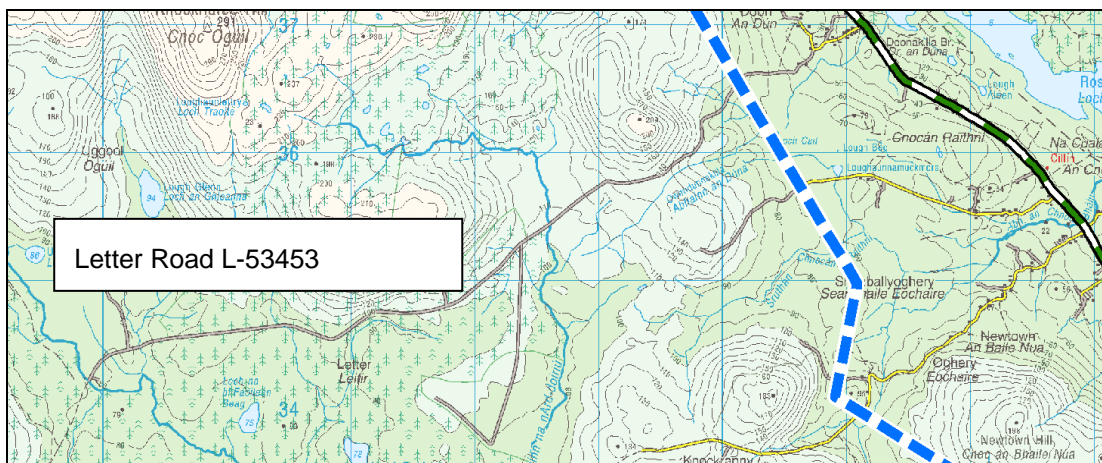


Figure 4.1: Map Showing Substation Search Area

4.2 Sites Identified

Site visits by the Project Team took place in September 2012. The purpose of the visits were to identify potential sites along the Letter Road having regard to the key constraints associated with water, ecology and landscape and to carry out preliminary assessments. Peat probing and an assessment of construction impacts was also carried out as part of these assessments. Table 4.1 and Figure 4.2 identify the locations (A – F) assessed as potential sites during September 2012. For comparison purposes, locations G and H which were assessed in the Stage 1 Report are also shown on Figure 4.2. As previously stated, because of the consideration of GIS technology a greater number of sites became available for consideration.

Location	Approximate distance to 110 kV OHL (km)
A	0
B	0.3
C	0.4
D	1.1
E	2.1
F	6.0

Table 4.1: Table Showing Potential Substation Locations



Figure 4.2: Location of Potential Substation Sites

The key features of each location are described below and the associated photographs show views of the sites.

4.2.1 Location A

Water

- Small first order streams flowing through the site general area to Lough Cait and then to Lough Parkyflaherty/Ross Lake.
- Direct hydraulic connectivity to the Ross lake system.
- Possible flood risk on site.

Ecology

- The bog at this location is relatively intact and is classified as upland blanket bog and/or wet heath.
- Dominated by such species as ling heather, deergrass, purple moorgrass, bog cotton (both *Eriophorum angustifolium* and *E. vaginatum*) and carnation sedge. Bog mosses and other bryophytes are well distributed.
- A small stream on the site flows to Lough Parkyflaherty, which is within the Ross Lake and Woods cSAC.
- The habitats at this site location are dominated by blanket bog and wet heath. Both appear relatively intact and have linkages with the EU Habitats Directive Annex I habitats Blanket bog and Wet Heath.
- This site is part of a larger peatland expanse that is likely to be at least of Local Importance, higher value or possibly of County Importance.

Landscape

- Seen against mountain backdrop.
- High visual impact due to exposed setting, resulting in open long distance views from north-eastern, eastern and southern directions including from Ross Lake environs.
- Visibility from a number of residential houses within 3km of the site.
- Screen planting with any sufficient height would be in contrast with surrounding vegetation and increase visual impact.
- High landscape impact due to the nature of the development and the location on an exposed mountain slope.

Construction

- The ground here is very undulating with rocky outcrops as well as being higher than the access road.
- This site would involve a large amount of rock breaking.
- The only level area in the vicinity has a stream running through it.
- This is adjacent to the OHL so loop-in circuits will be very short.

Conclusions

The constraints associated with this site would present significant technical challenges and environmental impacts are likely to be significant.



Figure 4.3: View of Site A Looking Towards Ross Lake and Lough Corrib

4.2.2 Location B

Water

- Site is located within the catchment of the Abhainn an Duna (Owendunakilla River) a tributary to Lough Cait and then to Lough Parkyflahertya/Ross Lake.
- Hydraulic connectivity to Ross Lake system.
- Some water flushing across site.

Ecology

- Shallow bog or wet heath with much protruding rock.
- Some old cut banks in the general area though these are difficult to distinguish.
- Area has fairly typical bog plants though not much heather (*Calluna vulgaris*). The moss layer is poorly developed. There is some flowing water/flushing through the site.
- Devil's-bit Scabious (food plant of marsh fritillary butterfly) is sparsely distributed along the road side of the site.

Landscape

- Views of parts of the substation from residential houses located within 2km to the northeast and southeast.
- Generally high visual impact due to long distance visibility of parts of the substation from Ross Lake environs.
- High impact on natural contours to accommodate construction of substation.
- Screen planting with any sufficient height would be in contrast with surrounding vegetation and increase the visual impact in close or long distance views.
- High landscape impact due to the nature of the development and the location on an exposed mountain slope.

Construction

- The ground is at a reasonable slope and there is a small overground drainage line leading from the road.
- There is gravel on the ground near the road suggesting that during heavy rainfall a significant volume of water passes over this ground.
- The ground is approx 2m lower than the road so construction of this site would involve a significant extra amount of imported fill.
- This site is relatively close to the OHL so loop-in circuits will be short.

Conclusions

Environmental impacts associated with this site would be less than Site A but this site would also present some technical challenges for construction.



Figure 4.4: View of Sites B and C Looking Eastwards (Note: Option C is the lower site closer to the mound)



Figure 4.5: View of Sites B and C Looking Westwards from the Road

4.2.3 Location C

Water

- Site located within the catchment of the Abhainn an Duna (Owendunakilla River) a tributary to Lough Cait and then to Lough Parkyflahertya/Ross Lake.
- Hydraulic connectivity to Ross Lake system.

Ecology

- Has less protruding rock and a more developed vegetation cover, with a dominance of purple moorgrass (*Molinia caerulea*).
- There is more flushing in this site than other sites as indicated by areas of rushes and sedges.
- A stand of gorse scrub occurs just off the road (probably colonised an area of spoil).
- Devil's-bit Scabious (food plant of marsh fritillary butterfly) is well distributed along the drier road side of the site.

Landscape

- Generally the same as site B, but impacts are slightly less due to the lower site level and the mound that will break the line of the substation from the northern aspect.
- Views of parts of the substation from residential houses located within 2km to the northeast and southeast.
- Generally high visual impact due to long distance visibility of parts of the substation from Ross Lake environs.
- High impact on natural contours to accommodate construction of substation.
- Screen planting with any sufficient height would be in contrast with surrounding vegetation and increase the visual impact in close or long distance views.

- High landscape impact due to the nature of the development and the location on an exposed mountain slope.

Construction

- The ground is reasonably level and is close to road level. Peat depths vary from 0m to 1.5m across the site.
- There are no obvious drainage paths across the site. However, there were also no obvious nearby watercourses to discharge surface water.
- This site is relatively close to the OHL so loop-in circuits will be short.

Conclusions

Environmental impacts associated with this site would be broadly similar to Option B but construction is likely to be less difficult.

Views are shown above under Option B.

4.2.4 Location D

Water

- Site is located in the general catchment of the Abhainn na nArd-doiriú which flows into Abhainn na Bhoth Loiscthe and then to Loch Ard-doiriú in the Connemara Bog Complex cSAC.
- Site is generally flat but relatively dry but with some pools on site.
- Roadside drainage is mainly on the opposite side of the road down to the Abhainn na nArd-doiriú river.

Ecology

- Area of bog that is obviously cutover, with the cut banks very obvious.
- The area is fairly level so the original bog would have been deeper than the other two sites which are on more sloped ground.
- Much of the area is relatively dry and with little or no moss layer though there are parts that are wet with localised pools and drains – however, the latter is not caused by flowing water and in a dry summer the entire area would be much drier.
- Only a few plants of Devil's-bit Scabious (food plant of marsh fritillary butterfly) were noted (this species is less associated with the more ombrotrophic bogs).

Landscape

- Visual impact will be less when compared to Options A - C as views from north-eastern, eastern and south-eastern areas including from Ross Lake environs will not be possible as this option is located on the western hill side and below the mountain ridge to the east.
- No residential property within approximately 2km of the site.
- Permanent visual receptors will be very sparse beyond 2km.

- Landscape impact will be less when compared to Options A - C as the substation will be seen in the context of commercial forestry.
- Impact on natural contours to accommodate the construction of the substation will be less when compared to Options A-C due to the rather even topography of site.
- Landscape impacts will remain medium due to nature of the development and the prominent location of the site.
- Screen planting with any sufficient height will be limited due to ground conditions and natural vegetation pattern in the vicinity.

Construction

- The ground is level (though some of it has been cut away). The peat depth here appears to be of the order of 800mm across the site.
- Imported stone will be required to replace excavated peat and to raise the ground slightly, but it is unlikely to be any more so than the other sites.
- There is a drain running adjacent to the road which could be connected to subject to levels. If not, the ground begins to slope down to a river beyond the south of the site.
- The site is approximately 1.1km from the OHL so the loop-in circuits will be longer than for Options A – C.

Conclusion

Environmental impacts associated with this site would be relatively low and construction is not likely to be difficult.



Figure 4.6: View of Site D

4.2.5 Location E

Water

- Site is located in the general catchment of the Abhainn na nArd-doiriu which flows into Abhainn na Bhoth Loiscthe and then to Loch Ard-doiriu in the Connemara Bog Complex cSAC.
- Site is generally flat but there are some small stream/drains which drain the forestry plantation.
- Roadside drainage is mainly on the opposite side of the road down to the Abhainn na nArd-doiriu river.

Ecology

- Site is covered by a coniferous plantation which has limited ecological importance.

Landscape

- Visual impact will be less when compared to other options as views from north-eastern, eastern and south-eastern areas will not be possible as this option is located on the western hill side and below the mountain ridge to the east.
- There is an existing medium voltage (MV) OHL traversing the site.
- It is located within a block of mature forestry on the lower slopes of rising land and will be seen against the background of this hill.
- There is one residential property within approximately 1km from the site.
- Apart from this one dwelling permanent visual receptors will be very sparse.
- Landscape impact will be less when compared to other options as the substation will be seen in the context of commercial forestry.
- Impact on natural contours to accommodate the construction of the substation will be less when compared to Options A-C due to the rather even nature of site.
- Screen planting can be easily incorporated in to the design.

Construction

- The ground appears to be relatively level although it is difficult to determine topography due to forestry cover.
- The peat depth here appears to be of the order of 2m across the site but again only preliminary information is available due to forestry cover.
- Imported stone will be required to replace excavated peat and to raise the ground slightly.
- There are drain running through the site which could be connected to subject to levels.
- The site is approximately 2.1km from the OHL so the loop-in circuits will be longer than for Options A – D.

Conclusion

Environmental impacts associated with this site would be low and construction is not likely to be difficult once forestry is cleared.



Figure 4.7: View of Site E

4.2.6 Location F

This site is located adjacent to the permitted (but as yet unbuilt) 110kV Uggool substation which is part of the larger wind farm. If this option is considered, the West Galway Substation would in all likelihood be constructed back to back with the Uggool substation. Whilst environmental information is provided for this site it should be understood that when the permitted wind farm and substation are constructed this area will change and the wind farm will be the dominant feature of the area.

Water

- Site is located in the catchment of the upper salmonid spawning and nursery areas of the Owenboliska river system.
- This system is in recovery and is undergoing conservation initiatives by Inland Fisheries Ireland.
- Silt management and maintenance of water quality will be a significant issue.

Ecology

- The site is bordered to the north by the Oughterard District Bog NHA.
- The Connemara Bog Complex cSAC is located to the south and west of the location.
- The Owenboliska river flows through the Connemara Bog Complex cSAC.

- The site is not located within any designated NHA, pNHA, cSAC or SPA but is within the catchment of the Owenboliska a salmonid river and within 15km of the Connemara Bog Complex cSAC to which it is hydraulically connected.
- The site itself is covered by peat with depths of approximately 2 metres.

Landscape

- The site is located on clear open ground which was in use for sheep grazing at the time of the site visit.
- A spur track from the main access track leads northwards past a residential farm property. The forest access track continues to farm buildings and forest areas.
- Extensive conifer forest plantation occurs to the east, south, west and northwest of the site.
- Any development at this site will be visible however receptors are limited with only one dwelling in the area.
- Visual context will change significantly when the wind farm and Uggool substation are constructed.

Construction

- The site is relatively flat but is dominated by peat with depths of up to 2 metres based on preliminary assessments.
- Large quantities of peat will require disposal.
- Imported stone will be required to replace excavated peat and to raise the ground.
- The site is approximately 6km from the OHL so the loop-in circuits will be significantly longer than for Options A – E.

Conclusion

Whilst this site is environmentally constrained planning permission has already been granted for the Uggool substation which will alter the characteristics of the site.



Figure 4.8: View of Site F

4.2.7 Locations G and H

Locations G and H have been previously assessed in the Stage 1 Report.

Location G was considered to be more constrained than other sites and was discounted in the Stage 1 Report.

Location H at Knockranny was considered to represent the least constrained location in the Stage 1 Report but subsequent technical studies, detailed in Section 3 of this report, have caused this location to be reconsidered as a potential substation site.

4.3 Summary of Constraints

A summary of the relative ranking of sites based on the visual impact, ecological, water quality and ease of construction considerations is provided in Table 4.1. Other environmental topics are not of such comparable difference so as to distinguish between the results of the identified locations. The issue of peat excavation and removal is a technical constraint. Whilst it can technically be overcome, there is significant potential for environmental impacts. These potential impacts manifest themselves principally through the environmental mediums of water and ecology. Peat is not therefore listed in Table 4.2, which ranks the potential impacts associated with each location from lowest to highest.

Location	A	B	C	D	E	F
Water	High	Medium	Medium	Low	Low	Medium
Ecology	High	Medium	Medium	Low	Low	Medium
Landscape	High	High	Medium	Low	Low	Low
Ease of Construction	Difficult	Moderate	Less Difficult	Less Difficult	Less Difficult	Moderate

Table 4.2: Matrix showing potential for environmental impacts associated with locations

Locations D and E represent the least constrained sites identified along the Letter Road.

Location E represents a marginally better site in terms of ecology and landscape as it is currently forested with coniferous plantations. Any previous areas of ecological significance on this site have been removed as a result of these plantations. Additionally, the forestry plantations provide additional screening not available at site E.

5 Consultation on the Stage 1 Report

5.1 Consultation Overview

Consultation based on the Stage 1 Report is a key element of the project, as it is vital to get as much feedback from all interested parties, in order to provide as much information as possible, so as to inform subsequent decisions regarding site identification and confirmation. For that reason, adequate time was given to allow consideration of the report and for the preparation of submissions on foot of the report findings.

The output of the consultation process is that the project team are fully informed of key issues and local and wider constraints in respect of the emerging preferences identified in Stage 1.

Consultation can be broadly categorised as follows:

- Consultation with the general public, particularly with local residents;
- Consultation with statutory agencies and/or prescribed bodies as set out in the Planning and Development Act, including An Bord Pleanála and Galway County Council; and
- Consultation with non-statutory agencies/bodies and other stakeholders identified as having an interest in the project, including the CGT lead developer for the wind farms at Cloosh, Lettercraffoe, Uggool and Seecon.

The principles behind consultation remain the same for all groups, i.e. to engage in open, honest and meaningful discussion and evaluating and incorporating where possible or appropriate, all suggestions and modifications brought to the attention of or indeed identified by the project team.

5.2 Consultation Timescales

The key timescales of the Stage 1 consultation process were as follows:

- Publication of the Stage 1 Lead Consultant's Report on the 28th February 2012.
- Open day in Killanin Community Centre, Killanin, County Galway on the 5th March 2012. This was advertised locally prior to the open day.
- Publication of the Final Environmental Constraints Report on the 22nd March 2012.
- Conclusion of the formal consultation period on 13th April 2012.

5.3 Feedback from Consultation

5.3.1 The Public

The local knowledge of landowners and local communities is invaluable to the project team and therefore their input is vital to the project. The project team must merge this local knowledge with technological and environmental information and assessments, as well as experience and expertise to come up with the optimal project solution.

The public consultation process which feeds into the Stage 2 Report for this project took the form of:

▪ **Newspaper Notices**

Upon completion of the Stage 1 Report, newspaper notices were published in the Connacht Tribune (on 1st March 2012) and the Galway Advertiser (on 29th February 2012). The purpose of these newspaper notices was to announce the availability of the report and its key messages, to provide contact details for the project team and to announce the forthcoming Open Day.

▪ **Briefing Document**

A project specific briefing document (28th February 2012) which provided key findings of the Stage 1 Report, key dates and also the contact details of the project team was produced.

The briefing document was made available online, at the open day and was also posted directly to any member of the public that left contact details with EirGrid or any of the project team during the Stage 1 consultations.

▪ **Telephone, Email, Website and Postal**

A project specific website www.eirgridprojects.com/projects/westgalway went live on 28th February 2012. This facilitates access to project data as well as providing updates as and when they occur. A dedicated email address has been established for the project and a telephone number and postal address is provided for people to contact the project team directly.

▪ **Public Information Day**

A public information day was held in the Killanin Community Centre on Monday 5th March 2012 from 3 – 8 pm. The public information day was advertised in local newspapers prior to the event. Hard copies of project reports and maps were available at this open day, and remain available on request.

Members of the project team were available at the Open Day to discuss any aspect of the project including such queries as project justification, site selection, environmental, health and EMF.

To co-ordinate interaction with the general public throughout the project to date, the project team have implemented a process ensuring that general and individual concerns are directly addressed by the project team. This primarily occurs through:

- Contact made through e-mail, by letter or telephone.
- All information received is made available to all members of the project team for review.
- The Lead Consultant liaises with the EirGrid Project Manager to decide on the appropriate course of action.
- A member of the project team contacts the individual concerned and is their point of contact for the duration of the project.
- The project team were (and continue to remain) available to meet on request.

5.3.1.1 Feedback Received

Following the publication of the Stage 1 Report on the 28th February 2012, a period of approximately 6 weeks (up to the 13th April 2012) was provided for the public and other stakeholders to make submissions to the project team. Meetings were also held with An Bord Pleanála and Galway County Council during this time.

The review and analysis of all feedback received throughout the consultation period is important for the project team.

The project team must assess if any of the feedback causes:

- Need for alternatives to, or modification of the project; or
- Changes to the identified potentially feasible substation sites(s) and substation technology.

Table 5.1 provides a breakdown of the channels through which feedback was received from the general public since the launch of the Stage 1 Report. In addition to the communications received during the stated consultation period, additional communications have been received from individuals on an ongoing basis.

Open Day	Emails	Letters	Phone Calls
34 people who signed in	12	0	4

Table 5.1: Channels through which feedback was received during Stage 1

The open day in particular provided an opportunity for local residents to give their views to the project team. Much of the detailed feedback was provided by residents in the area around the identified least constrained location (i.e. the Knockranny southern location). The queries raised by the public are summarised as follows:

- A proposed wind farm development referred to as “Knockranny Windfarm” and its relationship to the proposed substation. The wind farm was refused planning permission on 8th August 2012 by An Bord Pleanála Reg. Ref: ABP PL07.239053. The location of this is adjacent to the southern location and close to the least constrained sites.
- Gate 3 Offers and Relocation of Capacity
- Future development of the substation and associated circuits, as spare bays are provided in the substation which would facilitate future connections;
- Potential for re-locating of the proposed substation close to the Uggool wind farm area where a 110 kV substation has already been permitted as part of that wind farm;
- Substation Technology;
- Proximity of a substation to wind turbines;
- Landscape and visual impact;
- Proximity of substation locations to dwellings;
- Ecology;
- Noise;
- Property devaluation;
- Archaeology;
- Peat stability;
- Health and Safety concerns, including electromagnetic fields (EMF);
- Construction impacts associated with a substation;
- Construction issues related to the Salthill – Screebe 110kV overhead line; and

- Site selection methodology.

As part of the consultation process, EirGrid has prepared responses to frequently asked questions (FAQs) including those raised at the open day and subsequently. These are included on the project webpage www.eirgridprojects.com/projects/westgalway/faqs/. Further responses to the FAQs are included in this Stage 2 Report.

5.3.2 Statutory Agencies/Prescribed Bodies

5.3.2.1 An Bord Pleanála (ABP)

A pre-application consultation meeting was held with ABP on 13th March 2012 in accordance with the provisions of Section 182A of the Planning and Developments Acts 2000-2011. The purpose of the meeting was to brief ABP in relation to the project, to ask the Board to consider whether the project is likely to constitute Strategic Infrastructure Development (SID), as defined under the Planning Acts, and to request the opinion of the Board in relation to environmental and planning issues relating to the project.

5.3.2.2 Galway County Council (GCC)

A meeting was held with GCC Planning Department on 21st March 2012. The purpose of the meeting was to brief GCC in relation to the project and to request the opinion of GCC in relation to environmental and planning issues relating to the project.

It was advised that the principle of the proposed development was acceptable to the Planning Authority and that the technical details and environmental issues relating to the application should be discussed with the relevant departments in the County Council.

5.3.2.3 Dept of the Environment, Community and Local Government (DECLG)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of the DECLG was issued on 9th March 2012.

No response was received.

5.3.2.4 Fáilte Ireland (FI)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of FI was issued on 9th March 2012.

No response was received.

5.3.2.5 Dept of the Arts, Heritage and the Gaeltacht (DAHG)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of DAHG was issued on 9th March 2012.

A response was received from the Development Applications Unit (DAU) of the Department relating to the issue of nature conservation. The Divisional Ecologist indicated that she had no comments on the proposal at this stage and that the project may be scoped with NPWS/DAHG if an EIS or NIS is required.

No comment was received in relation to archaeological/architectural heritage.

5.3.2.6 Dept of Communications, Energy and Natural Resources (DCENR)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of DCENR was issued on 9th March 2012.

No response was received.

5.3.2.7 Dept of Agriculture, Food and the Marine (DAFM)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of DAFM was issued on 9th March 2012.

No response was received.

5.3.2.8 The West Regional Authority (WRA)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of WRA was issued on 9th March 2012.

No response was received.

5.3.2.9 Commission for Energy Regulation (CER)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of CER was issued on 9th March 2012.

No response was received.

5.3.2.10 The Heritage Council

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of the Heritage Council was issued on 9th March 2012.

No response was received.

5.3.2.11 Health Service Executive (HSE)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of HSE was issued on 9th March 2012.

No response was received.

5.3.2.12 Inland Fisheries Ireland (IFI)

Separate letters outlining the project, advising that the report was available for viewing on the project website and seeking the views of IFI at both national level and regional level (the west) was issued on 9th March 2012.

No response was received, however IFI had previously verbally advised that electrofishing should take place on relevant fisheries in the area of the project.

On foot of this advice, electrofishing has been undertaken in the upper reaches of the Knockbane River (in the vicinity of sites 1, 2 and 3) in order to provide further information in relation to fisheries. Details of this survey have been given previously in section 3.2.

5.3.2.13 National Roads Authority (NRA)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of NRA was issued on 9th March 2012.

A response was received dated 17th April 2012. The NRA advised that they had no comment to make at this stage but stated that issues related to traffic management would need to be considered at construction stage.

5.3.2.14 Údarás na Gaeltachta

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of Údarás was issued on 9th March 2012.

No response was received.

5.3.3 Non-Statutory Agencies/Bodies

5.3.3.1 Coillte

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of Coillte was issued on 9th March 2012.

No response was received.

5.3.3.2 An Taisce

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of An Taisce was issued on 9th March 2012.

No response was received.

5.3.3.3 Geological Survey Ireland (GSI)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of GSI was issued on 9th March 2012.

No response was received.

5.3.3.4 Birdwatch Ireland

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of Birdwatch Ireland was issued on 9th March 2012.

No response was received.

5.3.3.5 Irish Peatland Conservation Council (IPCC)

A letter outlining the project, advising that the report was available for viewing on the project website and seeking the views of IPCC was issued on 9th March 2012.

No response was received.

Organisation	Consultation Method	Key Issues
An Bord Pleanála	Meeting 13 th March 2012	<ul style="list-style-type: none"> Does project constitute SID Cumulative environmental impacts Follow up meetings to discuss specific design issues as project proceeds
Galway County Council	Meeting 21 st March 2012	<ul style="list-style-type: none"> Cumulative Environmental Impacts Follow up meetings to discuss specific design issues as project proceeds
DOECLG	Letter 9 th March 2012	No response
Fáilte Ireland	Letter 9 th March 2012	No response
DAHG	Letter 9 th March 2012	<ul style="list-style-type: none"> No specific comments at this stage Project to be scoped at a later stage with NPWS
DCENR	Letter 9 th March 2012	No response
DAFRD	Letter 9 th March 2012	No response
Western Regional Authority	Letter 9 th March 2012	No response
CER	Letter 9 th March 2012	No response
Heritage Council	Letter 9 th March 2012	No response
Health Service Executive	Letter 9 th March 2012	No response
Inland Fisheries Ireland	Letter 9 th March 2012	<ul style="list-style-type: none"> No response Previous verbal advice indicated an electrofishing survey should be undertaken
National Roads Authority	Letter 9 th March 2012	<ul style="list-style-type: none"> No specific comment at this stage Consider traffic management during construction
Údarás na Gaeltachta	Letter 9 th March 2012	No response
Coillte	Letter 9 th March 2012	No response
An Taisce	Letter 9 th March 2012	No response
Geological Survey Ireland	Letter 9 th March 2012	No response
Birdwatch Ireland	Letter 9 th March 2012	No response
Irish Peatland Conservation Council	Letter 9 th March 2012	No response

Table 5.2: Summary of Consultation with Statutory and non-Statutory Agencies/Bodies

As indicated in Table 5.2 written responses were not received from many organisations. Whilst it is desirable to get early feedback, it is not unusual at this stage of projects to receive limited feedback from such agencies/bodies. Experience on other projects has shown that comments are usually made by such organisations later on in the process. Where comments from such organisations have been received in relation to other substation projects recently completed by EirGrid, these have, where relevant, been considered in the context of the current project. As the project progresses consultation with all parties included organisations listed in Table 5.2 will continue.

The information that was received has been considered by the Project Team.

5.4 Response to Queries Raised During Consultation

Responses to some of the queries raised during consultation were published as part of the frequently asked questions (FAQs) provided on the project website and this section provides a response to those queries detailed in section 5.1.1.1.

5.4.1 Proposed Wind farm Development ABP Reg. Ref. PL07.239053

This refers to a proposed wind farm development of 14 turbines, associated buildings and ancillary works on a site adjacent to the southern location, known locally as “Knockranny Wind Farm”. This application was granted planning permission by Galway County Council in May 2011 and refused planning permission by An Bord Pleanála on 8th August 2012. The application was refused for the following reasons:

Reason No.1

The Galway County Development Plan, 2009–2015 sets out policies in relation to the protection of archaeological heritage. Policy HL23 seeks to “support the preservation, conservation and maintenance of archaeological sites, together with the integrity of the setting of these monuments and sites.

Development, which would destroy, alter or damage monuments or archaeological sites, or cause inappropriate change to their settings and character will be prohibited.” Policy HL25 seeks to “protect and preserve archaeological sites, which have been identified subsequent to the publication of the Record of Monuments and Places.” The archaeological surveys submitted on file identify an archaeological landscape of post-medieval settlements with intact associated field systems, and several prehistoric features newly-documented on the site, including fulachtaí fia, kilns and huts.

It is considered that the number and layout of wind turbines, and the locations of the associated access roads, do not take account of the archaeological heritage of the site. The development, as proposed, would therefore be seriously detrimental to the archaeological and cultural heritage of the site.

Furthermore, recorded national monument GA067-029 is located at the peak of Knockranny Hill, and the Board is not satisfied, on the basis of the submissions on file, that the turbine layout, which surrounds this hill, takes sufficient account of the visual impact on this monument or would not seriously injure the setting of the monument. The proposed development would therefore contravene the policies of the Development Plan and would be contrary to the proper planning and sustainable development of the area.

Reason No.2

Notwithstanding the detailed geotechnical surveys undertaken, the Board is not satisfied that all geotechnical/peat slippage risks have been fully resolved for all turbine locations, and it is considered that the resultant risk of environmental damage is unacceptable, that the proposed development would therefore pose an unacceptable risk of environmental pollution, and would be contrary to the proper planning and sustainable development of the area.

During the Stage 1 Public Consultation period this application was on appeal with An Bord Pleanála.

Whilst members of the community perceived that the proposed substation would facilitate the operation of the planned Knockranny Wind Farm, it is the case that that proposed development, now refused permission by An Bord Pleanála, did not have a connection offer or agreement to connect to the National electricity grid and therefore has not been considered under the scope of this substation project.

Having regard to the proximity of the wind farm site, the refusal reasons were reviewed and considered by the project team in order to determine whether they affected the conclusions reached in the Stage 1 report.

Initial reviews of the An Bord Pleanála decision, when considered in the context of the proposed substation project, concluded that the nature and extent of the developments are quite different (the proposed substation is significantly smaller in scale when compared to the wind farm and is confined to a specific site), the refusal reasons are not immediately applicable to the Knockranny substation sites.

5.4.2 Gate 3 Offers and Relocation of Capacity

Section 2.1 of this report has indicated how the “Gate” process operates. During Stage 1 consultation a number of queries arose relating to the connection status of wind farm developments in Galway and whether these could be relocated.

EirGrid has a comprehensive list of all applications for generator connection on the EirGrid website:

<http://www.eirgrid.com/customers/gridconnections/listofconnectedandcontractedgenerators/>

Once a connection offer is accepted, the generator moves to the Contracted Wind Farms list which can be found on this page:

<http://www.eirgrid.com/customers/gridconnections/completedgenerationapplications/>

There are certain circumstances, where a wind farm may request to ‘relocate’ its capacity, in other words, a developer can request EirGrid or ESB Networks to make a change to the offer to move their wind farm capacity to a different location than was originally applied for. This request would be reviewed and may be granted if a number of conditions are met. Further information on this can be found on the Commission for Energy Regulation’s website at this link: <http://www.cer.ie/en/electricity-transmission-network-current-consultations.aspx?article=5438e4b6-b1c7-4d3c-82ae-0d9eb82f7acd>.

5.4.3 Future Development of the Substation and Associated Circuits

When EirGrid is planning projects, future proofing development to allow flexibility for the future development of the transmission system is a consideration. Electricity transmission infrastructure has a design life of approximately 40 - 50 years and it would be considered poor practice both from an operational and economic view point not to allow for future development.

Future proofing of a substation ensures that the capacity exists for additional circuits to connect into the substation. Currently it is proposed to connect those wind farms that have signed connection offers into the proposed substation. The electricity will then be transmitted from the proposed substation to existing substations in the Galway City area via the Salthill – Screebe 110 kV OHL. In the event that additional connection offers are signed,

the electricity to be transmitted will exceed the carrying capacity of the permitted OHL and an additional circuit will be required from the West Galway substation to existing transmission substations in the Galway City area. EirGrid is not progressing this additional circuit at this stage.

If an additional circuit is required it will be subject to the requirements of the Planning and Development Acts and Regulations.

Notwithstanding this, the current scope of the development provides for such a future scenario, and allows for the following;

- 1 x 110 kV bay – Uggool 110 kV line
- 1 x 110 kV bay – Salthill 110 kV line
- 1 x 110 kV bay – Screebe 110 kV line
- 1 x 110 kV bay – future circuit to the transmission grid in Galway City area
- 1 x 38/110 kV transformer bay – proposed Clochar na Lara 38 kV line (for which a Gate 3 connection offer has been made, but which has not yet progressed to “sign-off”)
- Space for 3 x 110 kV bays – spare (to allow for possible future connections; it is reiterated that no such additional connection offers currently exist)

5.4.4 Alternative Substation Location Closer to Uggool Wind Farm

In response to this query raised during Stage 1 consultation and subsequent technical studies in relation to the Southern substation location, the conclusions of the Stage 1 report which recommended that sites in the southern substation location be considered further, have been revisited. As part of this Stage 2 Report alternative sites closer to the Uggool substation along the Letter Road have been considered and these have been discussed previously in Section 4.

In relation to relocating the substation at Uggool wind farm, the Uggool substation is located approximately 6 km from the permitted Salthill – Screebe 110kV line. In order to “loop into” this line this would require two circuits to connect the line and the substation. Although it would require one less substation, the overall footprint of the development would be significantly increased due to the longer lengths of circuits required.

5.4.5 Alternative Substation Technology - GIS

It was stated in the Stage 1 Report that Air Insulated Switchgear (AIS) was the emerging preferred technology. During Stage 1 consultation it was queried whether a change in station technology to Gas Insulated Switchgear (GIS) would change the relative rankings of the sites identified during Stage 1. GIS has a significantly smaller footprint than AIS and has a lower visual impact; however the relative ranking of each site would have remained the same regardless of the technology.

However, as previously stated in Section 4, the use of GIS technology is now being considered as part of this Stage 2.

5.4.6 Proximity of a Substation to Wind Turbines

There are no proposed wind turbines in close proximity (within 1.5 km) to any of the potential substation sites considered in Section 4.

5.4.7 Landscape and Visual Impact

The substation that EirGrid is proposing will connect into the permitted Salthill – Screebe 110 kV overhead line, which is currently under construction. This line consists mainly of double wood poles and steel angle structures are used where the line changes direction. The landscape assessment in the Stage 1 Report carried out a review and a comparative assessment of the visual impact of three possible locations considered in the Stage 1 Report. This concluded that the southern sub-station location at Knockranny creates the lowest level of visual impact when compared with other locations, particularly in the context of visual changes in the area which will occur when the OHL is completed in this area. This is due mainly to the lower topography of the landscape at this location.

Potential substation sites along the Letter Road distant from the OHL were not considered as part of the Stage 1 Report as one of the objectives of the project at that time was to consider potential sites immediately adjacent to the OHL, based on the assumption of an AIS substation design and footprint.

Section 4 provides a visual assessment of all sites considered along the Letter Road.

A full visual impact assessment including photomontages will be prepared for the application for Statutory Approval.

5.4.8 Proximity of Substation Locations to Dwellings

The approximate distances from each of the proposed possible substation locations identified in the Stage 1 Report and the subsequent emerging preferred site identified at Stage 2 to the nearest dwellings are as follows:

- From the northern substation location: 915 m
- From the middle substation location: 770 m
- From the southern substation location: 385 m
- From the emerging preferred Location E on the Letter Road: approximately 600 m

5.4.9 Ecology

The development of a substation at any location will have an impact on the ecology of an area. Preliminary ecology studies of all locations and sites were undertaken as part of the Stage 1 Report. These studies identified the least constrained sites which were recommended to be brought forward for further consideration in the Stage 2 process. In relation to potential sites along the Letter Road preliminary ecological assessments have been carried out at all sites. Further ecological studies including consultations with the National Parks and Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI) will take place. Any impact the substations, lines or cable may have on the surrounding environment will be included in the environmental studies that will be prepared for the planning application.

5.4.10 Noise

There will be some noise from the substation; however for the most part the noise will be low. The use of GIS technology ensures that noise emissions are minimised as the majority of electrical equipment which could give rise to noise is housed within a building. Projected noise levels will be included in the environmental studies that will be prepared for the application for Statutory Approval.

5.4.11 Archaeology

In the Stage 1 Report as Section 6.9 page 26 it stated that *“there are no recorded monuments in the database within 1km of all locations; therefore there is no differentiation between them.”*

A review of the database of recorded monuments, having regard this issue being raised at the open day, shows that there is one recorded monument at the top of Knockranny Hill, within approximately 300 metres of the southern location. This has already been identified in the Final Environmental Constraints Report published on the 22nd March 2012.

A detailed Archaeological Impact Assessment (including consultation with the Development Applications Unit and Galway County Council as well as incorporating further public feedback) will take place as the project proceeds to subsequent stages of the Roadmap.

5.4.12 Peat Stability

Geotechnical assessments were carried out as part of the initial substation surveys at each site and will continue to be assessed. As part of the detailed design (Stage 3) detailed geotechnical surveys, to more accurately establish peat depths and volumes will be undertaken and the risks of peat slippage will be fully assessed. The substation design will incorporate any necessary mitigation measures required for peat stability.

ESBI has considerable experience with developing substations and overhead lines in areas where peat is found. Integral to peat management is the development of peat repository areas.

5.4.13 Health and Safety Queries, including Electromagnetic Fields (EMF)

5.4.13.1 EMF

EirGrid regards the protection of the health, safety and welfare of its staff and the general public as a core company value. It is EirGrid's policy to design and operate the transmission network to the highest safety standards and to comply with the most up-to-date international guidelines and recommendations.

The public expressed concerns and a lack of understanding about the Electric and Magnetic Fields (EMF) emitted from electricity infrastructure. In basic terms, an EMF is the space within which an electric or magnetic object can influence something else. For example, a hair-dryer can affect the reception on a TV, if the TV is within range of its EMF. The same applies to all electrical equipment, from MP3 players to high-voltage power lines and substations. Over the past 40 years extensive worldwide scientific studies have been carried out into the effects of EMFs on human health. This includes such bodies as:

- World Health Organisation (WHO)
- National Radiological Protection Board (NRPB) in the UK
- International Agency for Research on Cancer (IARC)

These independent and authoritative international and national review panels of scientific experts have reviewed studies on possible health effects. These have found that it has not been established that power frequency electric and magnetic fields encountered in normal living and working conditions cause adverse health effects in humans. The studies have also enabled bodies such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the European Commission to establish recommendations on EMF exposures. It is recognised that some individuals are genuinely concerned about electric

and magnetic fields and health. EirGrid is committed to addressing these concerns by continuing to:

- Design and operate the transmission system in the most up-to-date recommendations and guidelines of the various expert and independent international bodies.
- Closely monitor and support engineering and scientific research in this area.
- Provide advice and information to the public on this issue.

More comprehensive information is available on EirGrid's website: www.eirgridprojects.com/yourhealth/ or a brochure can be requested by contacting EirGrid directly. EirGrid can make available an EMF expert to meet with members of the public upon request to discuss specific concerns.

5.4.14 Construction Impacts Associated with a Substation

Construction of a 110 kV substation is similar to many construction projects. There are a number of stages as follows:

- Site preparation – This involves clearing the site of to a level area and importing any required fill to form a construction base.
- Construction of buildings – This involves bringing various materials (steel, concrete, pre-cast, etc.) to site for the construction of buildings.
- Installation of electrical equipment – This involves bringing all electrical equipment to site, installing and commissioning it.

The construction period for a substation of this size is in the order of 12 months with installation following.

As with any construction project there will be some disruption and inconvenience to local residents. EirGrid acknowledges that it is import that construction be managed to minimise any such inconvenience. Construction traffic in particular is likely to be a source of particular concern to local residents.

Detailed construction impacts will be included the planning application once the site is selected and detailed site investigations and design have been completed during Stage 3.

5.4.15 Construction Issues Related to the Salthill – Screebe 110kV OHL

A number of local residents raised issues relating to the on-going construction of the Salthill – Screebe 110kV OHL in their area. These issues were forwarded on to ESB Networks for their attention. ESB Networks have advised that the Salthill-Screebe 110kV line is due for completion in late 2013.

5.4.16 Site Selection Methodology

The site selection methodology follows a structured process as set out in the EirGrid Project Development and Consultation Roadmap.

Stage 1 – Information collection identifies constraints in the study area. These constraints influence where it might be possible to locate the substation.

In determining the significance of constraints, no specific weighting is applied to constraints, as it is important to ensure qualitative judgement can be used having regard to the site

specific factors and the objectives of the project. In balancing competing environmental constraints relative to each other, the objective is to seek the project solution, in terms of technology, location and design which minimises impacts on the environment.

The objective of this Stage 2 Report is to consider the findings and conclusions of the Stage 1 Report, having regard the queries raised by consultation and subsequent technical studies, and to determine if changes to the project are required.

5.5 Clarifications/Amendments to the Stage 1 Report

Arising from information gathered during the consultation process two minor amendments are required to the Stage 1 report.

Section 6.9 page 26

As stated in Section 3.4.12 of this report a recorded monument should have been included in Section 6.9.

Section 8 Conclusions and Recommendations and Table 8.1

During public consultation it was suggested that the conclusions stated in this section when compared to the table were somewhat unclear.

For clarity, it should be understood that the conclusion of the Stage 1 Report concludes that the least constrained sites, are sites 1A and 3 within the Southern Location. This is followed by sites 1 and 2/2A also within the Southern Location.

6 Changes to the Project

6.1 Introduction

As stated in the Stage 1 Report, the purpose of the EirGrid Project Development and Consultation Roadmap is threefold;

- To ensure and demonstrate a consistency of approach by EirGrid and its consultants in the planning and development of all major projects which require statutory consent - whether linear (e.g. lines) or site based (e.g. substations);
- To provide clarity to the public, stakeholders and the consenting authority about where a process or deliverable occurs at any point in time, relative to the overall project development; and
- To coordinate project deliverables and project progress with public and other consultation and engagement, and to ensure adequate opportunity for public and stakeholder input at all stages of the process of shaping the development proposal.

The roadmap allows for changes to the project to be made at any point but particularly at Stage 2, when the information collected and subsequent consultation during Stage 1 is evaluated.

In light of the above considerations and subsequent technical studies, it is the view of the Lead Consultants that sites in the Knockranny area should not be considered further at this stage, and instead a site along the Letter Road should be considered as a location for the West Galway substation.

6.2 Recommended Substation Technology

Since the publication of the Stage 1 Lead Consultants Report, the wind farm developers who intend to connect into the West Galway Substation requested a change in station technology to Gas Insulated Switchgear (GIS) technology for the substation. Figure 6.1 shows an illustration of a 110 kV GIS substation. It should be noted that this is located in an urban context as there are no similar 110kV substations in a rural context.



Figure 6.1: Illustration of a 110 kV GIS Substation in an Urban Setting

The key benefits of GIS technology when compared to AIS technology and the reasons why it is now being considered for this project are as follows:

- A significantly smaller footprint for GIS (approx. 2,500 sq m) is about 18% of the footprint required for AIS (approx. 14,000 sq m);
- The smaller footprint requires significantly less peat to be removed from the site and less fill to be imported;
- GIS has a significantly reduced visual impact as the majority of electrical equipment is contained within a building; and
- The building can be architecturally designed to be more sympathetic to the local environment.

6.3 Recommended Substation Location

It is recommended that Location E as discussed in Section 4 is brought forward as the location for the substation.

Preliminary assessments have concluded that development at this location is likely to create the lowest level of environmental impacts in overall terms having regard to the full scope of the project.

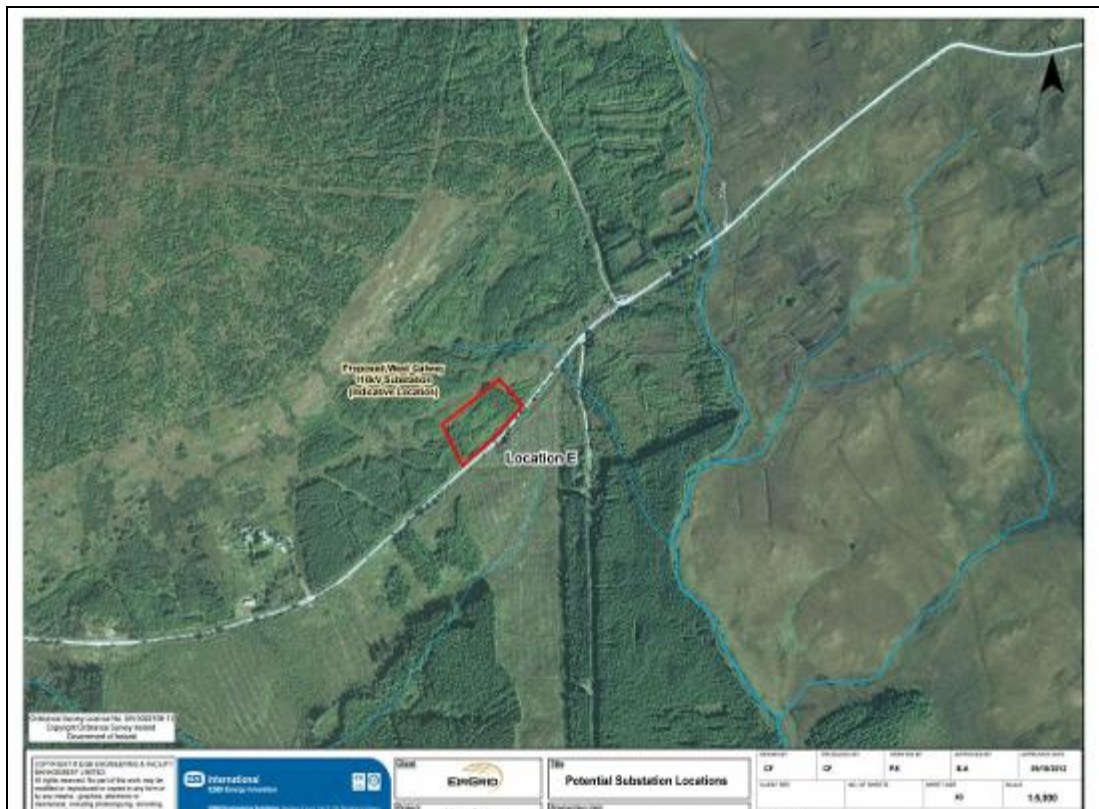


Figure 6.2: Location E – Aerial Photograph of Recommended Substation Location

Figure 6.2 shows an aerial photograph of E. The area shown on the photo is the forestry block within which the substation could be located. Site investigations are taking place within this block to determine the optimal location for the substation. The final location which will be submitted in the application for Statutory Approval will be within this block.

6.4 Circuits to the OHL

6.4.1 Circuit Technology

As previously stated in Section 4 the consequences of locating the substation on Site E is that the required circuits to loop the substation to the OHL will be somewhat longer than if it was located directly underneath the existing Salthill-Screebe 110 kV OHL. However, that is not to suggest that there is any inherent difficulty, from a technical viewpoint, of a loop-in from Site E to the existing OHL.

The loop-in circuit can be achieved by OHL, UGC or a combination of both. Regardless of the option chosen the environmental impacts of the loop-in need to be considered as part of the project.

At this point the circuit technology has not been determined, as further technical studies are required to finally confirm the optimal technology for this project.

6.4.2 Circuit Route Alternatives 1 - 4

Four alternative options (1 – 4) have been identified for achieving the loop-in as illustrated in Figure 6.3.

These are illustrated on the figure as straight lines in order to give an approximate indication of the route that could be taken with the proposed circuits.

As previously stated, the technology for the loop-in circuits has not yet been determined. Technology will be one factor in evaluating the routing for the loop-in, in addition to the various environmental criteria. The final design, technology and specific location of any circuit will be determined following technical and environmental surveys.

- Option 1 – This leaves the substation and proceeds in a northerly direction through forestry over a distance of approximately 3.4km;
- Option 2 – This leaves the substation and proceeds in a north easterly direction through forestry over a distance of approximately 3km;
- Option 3 – This leaves the substation and proceeds in an easterly direction through open landscape, in relatively close proximity to the Letter Road, over a distance of approximately 2.3km; and
- Option 4 – This leaves the substation and proceeds in a south easterly direction through open landscape over a distance of approximately 2.5km.

6.5 Modifications to the OHL

In order to connect the UGC to the OHL it will be necessary to break into the OHL at some point. In order to do this, two masts will be placed along the OHL and the OHL will be diverted onto these masts. The section of OHL between these masts will then be removed. This will be required for whatever connection method or location is ultimately proposed. The required masts will have a similar character to the existing angle masts along the Salthill-Screebe 110 kV overhead line.

6.6 Overall Project Solution

As previously detailed in this report, the full scope of the project required to connect the permitted Uggool 110kV substation to the Salthill – Screebe 110kV OHL involves the following separate but inter-related elements which are being planned by EirGrid and will constitute the application for Statutory Approval to An Bord Pleanála. These elements are illustrated in Figure 6.3 and described as follows:

- A. The West Galway 110kV substation; and
- B. Loop-in circuits connecting the West Galway substation to the Salthill – Screebe 110kV OHL.

The full development in the area will also include the construction of a 110kV collector substation at Uggool and an underground cable to connect this station to the West Galway Substation. The Uggool 110kV Station and the 3.5km (approximately) of underground cable are not part of the project planned by EirGrid but have been considered in the overall development of the project solution, particularly in terms of the overall cumulative environmental impacts. They are shown in pink in Figure 6.3.

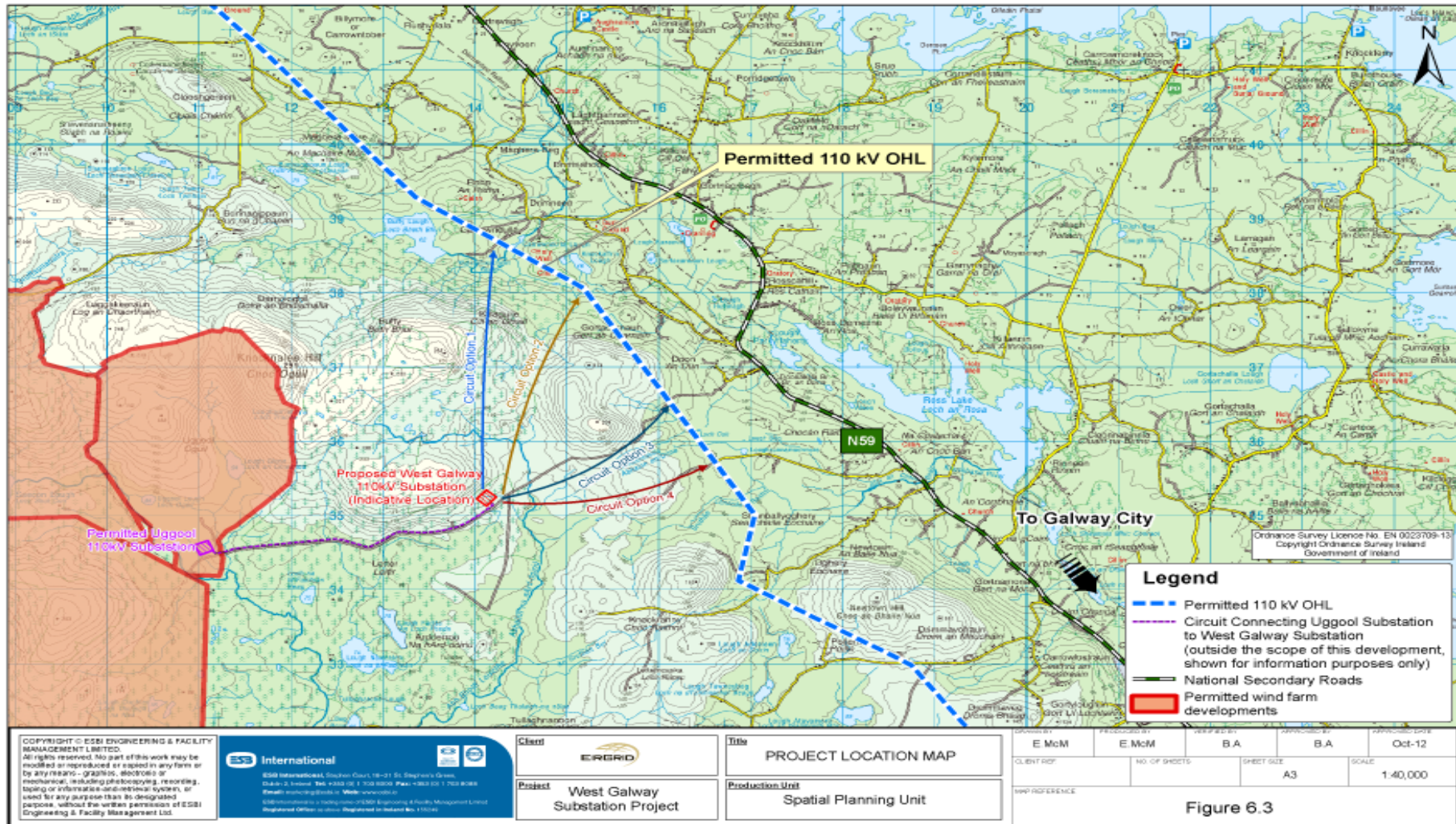


Figure 6.3: Overall Scope of West Galway Substation Project

7 Conclusions and Next Steps

Preliminary environmental and civil engineering appraisals have been carried out on six different sites A to F, along the Letter Road and previously at sites G and H.

As detailed in Section 6 of this report, Location E has emerged as the most preferred location, primarily on account of lower environmental impacts.

As the purpose of Stage 2 is to Evaluate Options it is the recommendation of the Lead Consultants that;

- Location E, in the townland of Letter be confirmed as the West Galway Substation site; and
- GIS be confirmed as the substation technology.

It is further recommended that following the completion of the necessary technical studies by the Lead Consultant ESBI, that the connection method for the loop-in circuits, in terms of routing and technology, be confirmed by EirGrid prior to Stage 3 - Confirm Design.

The next steps will involve consultation with all stakeholders in respect of this Stage 2 Report, and the issues arising, before the project solution is confirmed by EirGrid prior to Stage 3 – Confirm Design, and the submission of an application for Statutory consent.