ROUTE CONSTRAINTS REPORT SEPTEMBER 2007
ADDENDUM

Prepared for EirGrid to support a Planning Application for the Cavan-Tyrone 400kV Project

Client: EirGrid
27 Fitzwilliam Street Lower
Dublin 2

ESB International

By: **AOS Planning Limited**
4th Floor
Red Cow Lane
71 / 72 Brunswick Street North
Smithfield
Dublin 7

Tel 01 872 1530
Fax 01 872 1519
E-mail: enquiries@aosplanning.ie
www.aosplanning.ie

MAY 2008

Table of Contents

Section 1 – Executive Summary

1.1 Context

This addendum completes the Route Constraints Report 2007. This report including this addendum provides a basis for the Consultants to propose route A as the emerging preferred route corridor and the location of the station that will be submitted for planning. These proposals, if adopted, will be the subject of a full Environmental Impact Statement (EIS).

This report should be read in conjunction with the Route Constraints report 2007. As illustrated in Figure 3 of this report an indicative technical feasible route within each route corridor is delineated on the map. By no means are the line routes definitive. Upon selection of the preferred route corridor a more rigorous assessment of the line route selection would be necessary to take cognizance of the final environmental reports of the preferred line route and the existing and proposed built environment. Section 3 of this report sets out the key findings in relation to each environmental topic in terms of relevant constraints relating to each route corridor.

Following from this Route Constraints and from finalisation of the preferred route corridor, a further report will provide a more detailed assessment of the likely environmental impacts of the preferred overhead line route and station location that are being submitted for planning. This report will be incorporated into a full Environmental Impact Statement (EIS).

The public consultation phase of this project commenced with local newspaper ads being placed in the relevant local papers followed by open day meetings where members of the public were invited to attend and be informed about the project. The process is still on-going and ESBI will remain party, where required, to any of EirGrid's work in meeting stakeholders and addressing any concerns they may have in regard to the project proposal.

Section 2 – Introduction

2.1 General Background

AOS Planning Limited has been commissioned by EirGrid to prepare environmental reports to cover the areas of Socio-Economic, Landuse, Landscape/Visual and Ecology. In addition, reports on Soils and Water were carried out by AWN Consulting and Cultural Heritage from Archaelogical Development Services. These reports assisted in identifying the key environmental factors within the study area, on which the potential route corridors for electricity transmission lines and the location of an electricity station may have an impact. In addition, these reports assisted in selecting a route corridor for the Cavan-Tyrone 400kV Project. The project is a joint EirGrid-Northern Ireland Electricity project which will achieve the objective of strengthening the electricity grid in both jurisdictions.

The reports cover the portion of the project that is located in the Republic of Ireland only. A separate report and EIS will cover that portion of the project located in Northern Ireland. ***Figure 1*** shows the full length of the proposed project in indicative terms in its entirety South and North.

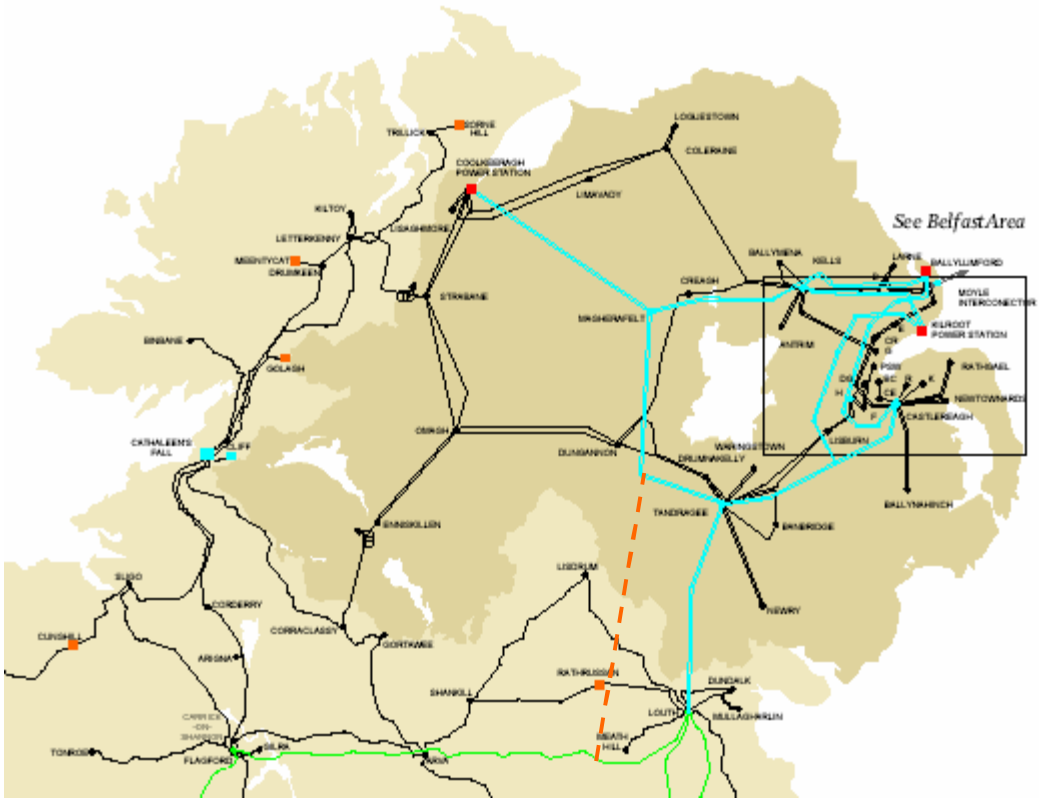

Figure 1 Indicative Cavan – Tyrone 400kV Route (Dashed Orange line)

The environmental reports cover the areas of Socio-Economic, Landuse, Landscape/Visual, Ecology, Soils and Water and Cultural Heritage.

The reports are required to identify the key environmental factors within the study area, on which the potential route corridors for electricity transmission line and the location of an electricity station may have an impact.

The reports are produced in accordance with a tender submitted to EirGrid and having regard to the 'Specification of Environmental Consultants' as provided by EirGrid in the tender request, and they follow the *Guidelines of Information to be included in Environmental Impact Statements* (EPA, 2002) as well as the *Guidance Notes on current EIA practice* (EPA, 2003).

2.2 The Project

The proposed Cavan-Tyrone 400kV Project is a joint EirGrid-Northern Ireland Electricity project which will achieve the objective of strengthening the electricity grid in both jurisdictions.

The portion of the project in the Republic of Ireland consists of the construction of a new 400kV overhead electricity transmission line from a new 400/220kV station in the environs of Kingscourt, Co. Cavan, located in the vicinity of the existing Flagford - Louth 220kV electricity line, to a border crossing point to the north east of Clontibret, Co. Monaghan. The proposed line will then continue into Northern Ireland to a station in the vicinity of Drumkee, Co. Tyrone. The proposed line covers a distance of approximately 45km in total in the Republic and also involves the provision of a new electricity station.

2.3 Methodology

The environmental reports were undertaken in the following manner:

Stage 1 – Route Constraints Report

For this reporting stage ESBI identified three route corridors as shown on ***Figure 2 - Route Corridor Alternatives Map*** below. In addition, an indicative technical feasible line route within each route corridor is identified as shown on ***Figure 3 – Indicative Technical Feasible Line Route within Route Corridor***

These corridors are referred to in the report as:

- Route Option A – a western corridor
- Route Option B – a central corridor
- Route Option C – an eastern corridor

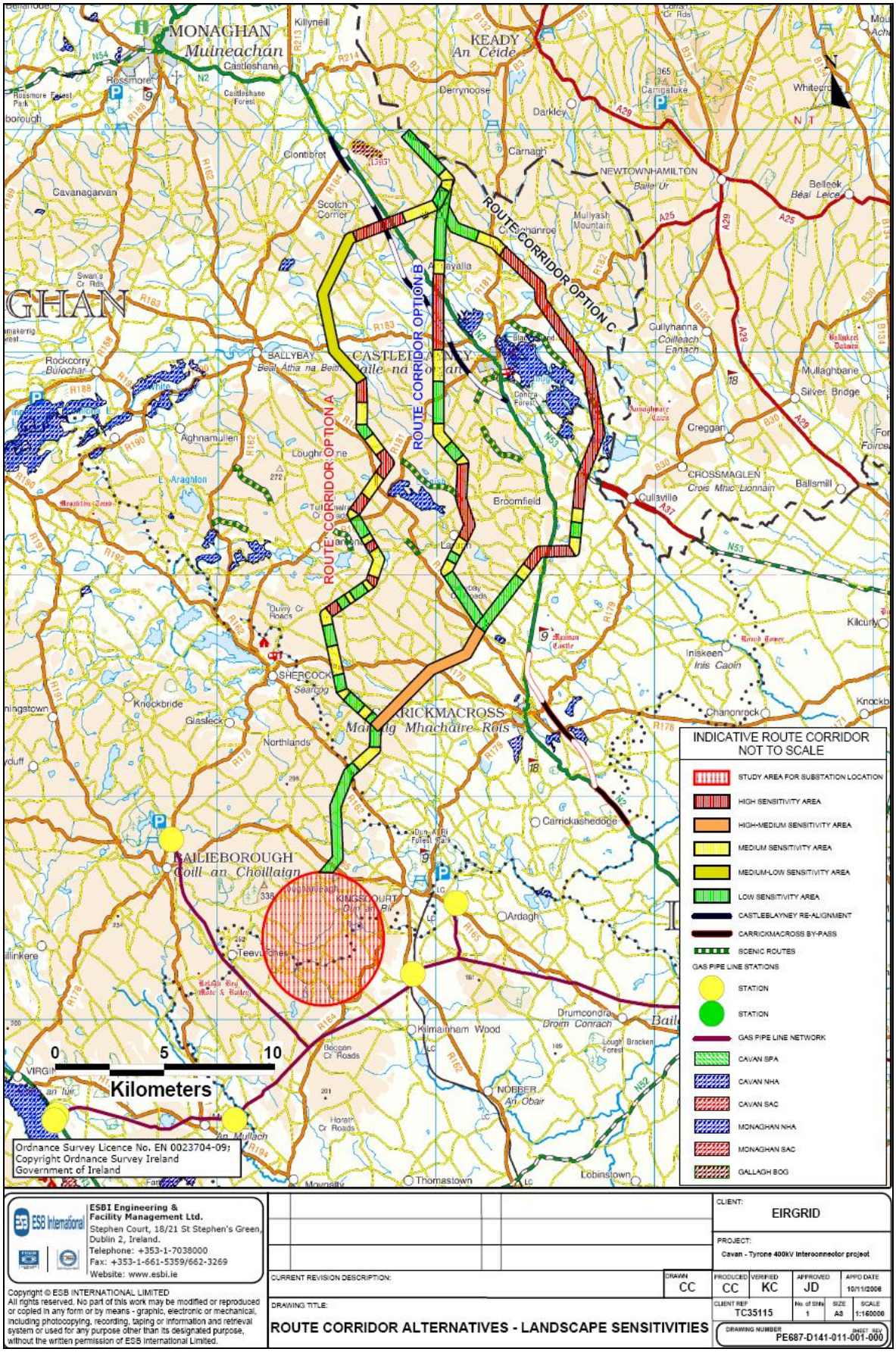

Figure 2 Route Corridor Alternatives Map

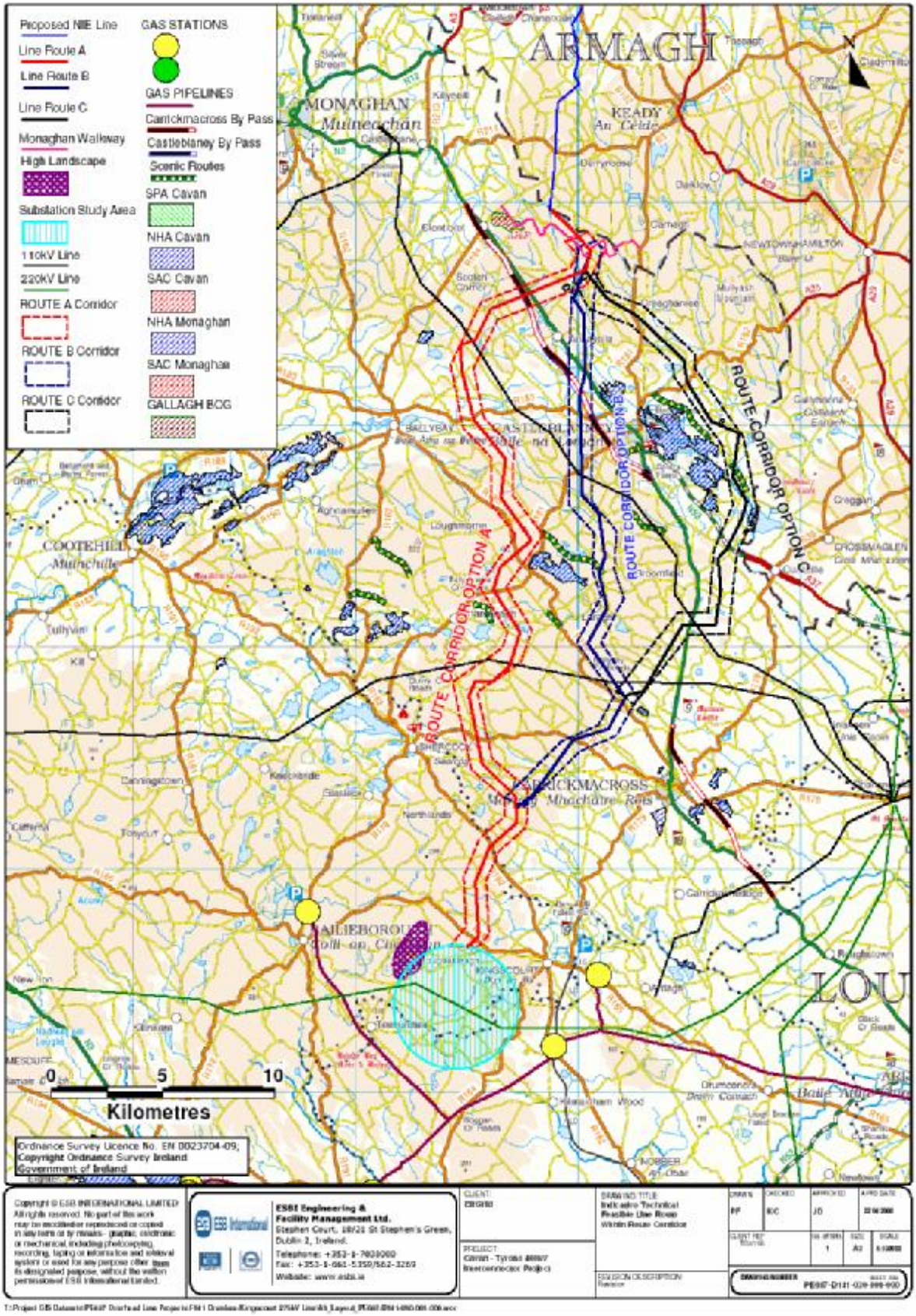

Figure 3 Indicative Technical Feasible Line Route Within Route Corridor

More detailed maps will be made available on the EirGrid website www.eirgrid.com or alternatively ring the project helpline at 1890 25 26 90 or e-mail CavanTyroneInterconnector@eirgrid.com.

The purpose of this stage is for Consultants to identify key environmental issues within the study area, on which the potential route corridors for the electricity transmission line and the location of the station may have an impact. This stage involves desk studies and site visits to evaluate environmental constraints. Details of desk and site studies, identification of potential impacts and proposed route alternatives within the study area are evaluated.

Stage 2 – Report

Following from this Route Constraints and from finalisation of the preferred route corridor, a further report will provide a more detailed assessment of the likely environmental impacts of the preferred overhead line route and station location that are being submitted for planning. This report will be incorporated into a full Environmental Impact Statement (EIS).

2.4 Route Selection Process and Issues

2.4.1 General Issues

The objective of the route selection process is to initially identify a route corridor in which to connect the electricity grid in the Republic of Ireland to the Northern Irish electricity grid, having regard to a variety of factors such as planning, environmental, engineering, ground conditions etc.

In preparing the environmental reports, the relevant planning and environmental issues are considered at National, Regional and Local levels, as these will form the basis for the evaluation of the planning application when it is made to the appropriate authorities.

National – Relevant considerations include the National Development Plan, the National Spatial Strategy, All Island Energy Development Market Framework, and other relevant plans and policies.

Regional – Considerations include the Regional Planning Guidelines for the Border Region and Regional Development Plan for Northern Ireland.

Local – Considerations include County Development Plans for Counties Cavan and Monaghan, the Armagh Area Plan, local amenities, tourist attractions, areas of ecological interest etc.

2.5 Study Area and Route Corridors

The study area is defined as the broad geographical area within which the route corridors are located. A route corridor is defined as a corridor approximately 1km wide within which the electricity transmission line can be located. The report covers the entire study area and examines the 3 route corridors.

Section 3 – Assessment of Environmental Constraints and Potential Impacts

3.1 Introduction

This section sets out the key findings in relation to each environmental topic in terms of relevant constraints relating to each route corridor. It should be noted that consultation with statutory authorities and the general public is ongoing.

3.2 Key Findings with Regard to Impacts Arising

3.2.1 Socio-Economic

The provision of a higher quality and more secure power supply to the transmission system on both sides of the border will have considerable indirect positive effects on the region, because it will help to support the provision of lower voltage electricity infrastructure, thereby putting in place improved infrastructure which facilitates the potential for economic growth in an area. Local amenities have the potential to be impacted through visual impacts or effects on biodiversity – these impacts are considered in the relevant reports.

Impacts with a potential to affect the socio-economic status of the study area would only arise indirectly through other topics – such as effects on landscape, cultural heritage and biodiversity. The mitigation measures for these issues are dealt with in other specialist subsections within the route constraints report. The proposed development will have a positive long term impact on the Region and the country as a whole. The development and improvement of the country's energy infrastructure are a prerequisite for economic development. Effective and reliable energy supply will make the country and the region a more attractive location for inward investment.

The same types of socio-economic impacts are likely to arise regardless of the route corridor selected.

3.2.2 Landuses

The area comprises an almost uniform pattern of pasture based agriculture at relatively low levels of intensity. There are smaller areas where intensive stock-raising and poultry operations occur – though these are few in the context of the overall number of holdings.

While there may be localised impacts on individual farmholdings in terms of structures on lands, depending on the final route selected, there is little potential for adverse effects on agriculture – the principle landuse in the area. There is some potential for localised indirect impacts on tourism resources

due to visual impacts, these will be addressed in more detail in the final EIS. No specific mitigation measures are likely to be required to address the impacts on landuses.

The same types of land use impacts will arise regardless of the route corridor selected.

3.2.3 Landscape

The project and route corridors lie predominately within County Monaghan. It is clear that the study area consists of a remarkably uniform landscape type of drumlin landscape overlain on a very gradual north-south ridge. There are protected views and landscapes at a number of locations within the study area. These are almost all associated with lakes.

In general terms Route Option A – a western corridor has the least potential to be visible and has the least potential for visibility from sensitivity receptors.

In general terms Route Option B – a central corridor is located along the most elevated underlying topography of the three routes and will cause the most widespread visibility especially from portions of the N2 – though it appears to be the shortest route which is an advantage.

In general terms, Route Option C – an eastern corridor passes closest to the most significant landscape resources – i.e. Lough Muckno and the outskirts of Castleblayney.

Route Corridor A will cause least visibility – though it is the longest route. Route Corridor B will be the most conspicuous in the wider landscape – but it is the shortest route. Route Corridor C has the greatest capacity to affect sensitive landscapes and regionally significant landscape resources.

3.2.4 Flora and Fauna

The study area lies within a regionally ecologically significant area, both in terms of fisheries and nature conservation designated areas.

The study area lies within the catchments of the Rivers Glyde and Fane, which drain a significant area of Cavan, Monaghan and adjacent counties. These are significant fisheries with coarse fisheries predominantly in lakes and game fisheries along the Glyde and Fane and associated tributaries.

The potential route corridors pass through an area that is sensitive to water pollution (historically through agricultural fertiliser run-off). However, the nature of the development will not have a significant impact on local water quality and/or fisheries assuming appropriate care is given to excavation of foundations, etc.

There are a number of rare and restricted distribution species recorded from the study area; these are located in designated areas. There are sixteen designated areas of conservation value within the study area ***See Table 1***. While none of the proposed route corridors pass directly through these designated areas, there are instances where the route corridors pass directly adjacent to the sites. Most of the designated areas are lakes and associated fringing habitats, and are sensitive to activities in the local catchments.

Table 1 Designated conservation areas within the study area

Code	Site	Designation	Distance from Route A	Distance from Route B
001666	Tassan Lough	pNHA	0.5km	1km
001607	Lough Smiley	pNHA	7km	2km
001268	Cordoo Lough	pNHA	2km	7km
000563	Muckno Lough	pNHA	8km	4km
001605	Lough Egish	pNHA	1km	1km
001596	Black Lough	pNHA	5km	12km
	Derrygoney Lough		5km	12km
	Bawn Lough		5km	12km
001599	Creevey Lough	pNHA	8km	1km
002077	Nafarty Fen	pNHA	8km	4km
000560	Lough Fea Demesne	pNHA	5km	5km
001670	Spring & Corcin Loughs	pNHA	6km	6km
000561	Lough Naglack	pNHA	6km	6km
001608	Moynalty Lough	pNHA	7km	7km
001495	Lough Ross	pNHA	10km	10km
001600	Drumakill Lough	pNHA	6km	6km

The area south of Carrickmacross and west of Route option C are the densest areas of conservation sites. Route options A and B largely avoid designated areas.

The Northern Regional Fisheries Board and Central Fisheries Board have expressed issues of concern in relation to construction of the electricity transmission line. EirGrid should follow the Fisheries Board guidelines to mitigate against potential run-off instances. The National Parks and Wildlife Service request that all designated areas be avoided. Also, there is some concern relating to measures to lessen any likely collisions with wildfowl and migratory species. This will require ongoing consultation with NPWS local staff pre-and during construction of the power line. Subsequent to the Route Constraints Report September 2007, field studies were undertaken between November 2007 and March 2008 to determine the numbers and distribution of Whooper swans within the study area that includes the route corridor options for the proposed Cavan – Tyrone 400kV Project. The results of which will be made available in due course.

The line will not have a significant impact on the ecology of the study area, and/or the wider area. This is assuming that due consideration is paid to

recommendations following a more extensive ecological field survey and evaluation of habitats along the preferred route.

The preferred route corridor for the electricity line based on this assessment is Option B. This is based on the least impact on fisheries and designated areas. It is also the shortest route. Route A is considered the second preferred option, given the avoidance of designated areas. Route C is considered less feasible given the proximity to a relatively large cluster of hydrologically linked pNHAs.

3.2.5 Water

There are a number of watercourses identified in the vicinity of the proposed route corridors. Baseline data has been collected in order to form a comprehensive database of the water quality in the area. This will assist in the assessment of any potential impact(s) on the hydrological and hydrogeological environment from the proposed developments.

Due to the interrelationship between the hydrology and hydrogeology at the proposed location of the development, the potential impacts and mitigation measures will be common to both.

The construction phase of the development will involve the following key activities that may have potential impacts on the local hydrology and hydrogeology:

- Watercourse crossing
- Site compound construction
- Oil, fuel and site vehicle storage
- Construction of lattice towers
- Concrete pouring
- Site cabling
- Stockpilng of material
- Surplus Material
- Borrow Pits (if required)
- Land Slippage

During the operational phase potential impacts include contamination (oil, fuels and sediment) from maintenance traffic. All of the above potential impacts can be mitigated through standard construction and operational mitigation measures that are employed on such projects on an ongoing basis.

Based on the findings of the desk study, for hydrology, the most preferred route corridor is Option A. The potential impacts in relation to the construction of the lattice towers will be identical for each route option. However route corridor Option A provides a route whereby construction within the vicinity of the river and lakes is avoided. The aforementioned mitigation measures highlighted will ameliorate the potential impact of the proposed

developments on the surrounding environment in terms of hydrology and hydrogeology.

3.2.6 Soils

The potential impacts of the proposal for the construction and operation phases of the development on the soil and geological environment are outlined in the following paragraphs.

Removal of the upper soil layers will occur in a development such as this. The most likely contaminant that may be found is hydrocarbon contamination, from vehicles. As there will be large volumes of material excavated during each phase of construction, mitigation measures will be employed to ensure that there is no negative impact on the soil environment from the storage and transport of this material.

Machinery used during the construction phase will include diesel-powered trucks, excavators, bulldozers, cranes and graders. The potential impacts to the underlying soil and geology from the construction of the proposed development could derive from accidental spillage of fuels, oils, paints and solvents, which could impact soil, bedrock and groundwater quality, if allowed to infiltrate to the ground during storage and dispensing operations.

Where development occurs in deep peat, peat slides can potentially occur in areas greater than 0.5m deep. Peat depths around proposed access roads and tower locations should be confirmed prior to construction, as is normal engineering practice.

In relation to the construction phase the potential impact on the soils and geology is considered to be permanent and imperceptible. Due to the fact that (based on the information available and the site reconnaissance) there does not appear to be significant features of geological value. The potential impact of the development on the local geology is considered to be neutral.

Based on the findings of the desk study for soils, the most preferred route corridor is Option A. The potential impacts on soils in relation to the construction of the lattice towers will be identical for each route option.

3.2.7 Cultural Heritage

The route corridor option appraisal table below (***See Table 2***) lists all of the known archaeological sites and monuments which are directly impacted on by the route corridor options for the power line. Before assessing the results it is important to note the limitations of this table and also the other impact tables in this report. It is difficult to ascertain the exact impact level due to the potential to reveal at a future date, previously unknown archaeology and sub-surface archaeology as part of a possible archaeological testing strategy.

The route corridor option with the least predicted impacts, based on known archaeological sites, is Option C (black) which impacts on one recorded ringfort (MO015-004). The second preferred route corridor is option B (blue) which impacts on two recorded sites, a ringfort (MO028-058) and an earthwork site (MO028-142). Finally, the least preferred route corridor is option A (red) which impacts on five known sites.

In all of the above cases however, there exists the possibility to refine the routing of the power line so as to avoid the known archaeology for all three routes. It is important to note that with regard to option A four of the five directly impacted sites are earthwork sites. These monuments are sub-surface with no visible above ground expression. The location of support towers away from these sites would be necessary, however it may be possible to still locate the route of the line across these sites as there would be no visible or physical impact.

The route corridor options were identified following a desktop study coupled with a comprehensive site assessment in order to identify insofar as possible all of the constraints within the study area.

There is a possibility that those sites that are directly impacted may in fact not be, and vice versa those sites which are indirectly impacted may actually be directly impacted. The national grid references for all known archaeological sites are provided and it is recommended that these figures are checked.

Table 2 Cultural Heritage Route Corridor Option Appraisal Table

Impact Level	**Route Option C**	**Route Option B**	**Route Option A**
Significant	Direct Impact on the following: recorded ringfort (MO015-004)	Direct impact on the following: recorded ringfort (MO028-058); recorded earthwork site (MO028-142)	Direct impact on the following: recorded earthwork site (MO027-096); recorded megalithic tomb (MO014-022); recorded earthwork site (MO027-072); recorded earthwork site (MO027-110); recorded earthwork site (MO027-075)
Negative Moderate	Close proximity to(10m) recorded earthwork site (MO020-003) Close proximity (30m) to recorded ringfort (MO028-040)		Close proximity (20m) to recorded ringfort (MO030-021)
Preference Level	**<u>First</u> Preference**	**<u>Second</u> Preference**	**<u>Third</u> Preference**

The potential impacts on the archaeological heritage for the routing of powerline in general are considered moderate to low due to:

- The inherent and relative flexibility of the routing of power lines with possibility for avoidance of archaeological sites.
- The low invasive impact of the support tower footprints.

3.2.8 Substation

The constraints circle for the location of the proposed substation measures about 5.5km by 5.5km. The footprint of the substation will be about 300m by 300m. The number of archaeological sites within this circle is 38. All known archaeological sites should be avoided when evaluating the preferred location of the substation. ***Figure 4 Search Area for Sub-Station*** shows the general search area for the substation.

The predominant archaeological site type, within the constraints circle, is the ringfort. These monuments often appear in groups and this pattern is evident from the supporting maps. Should the location of the substation be placed amidst a clearly related group of ringforts this would be of some concern and would require further investigation to assess whether there is a real relationship between these sites.

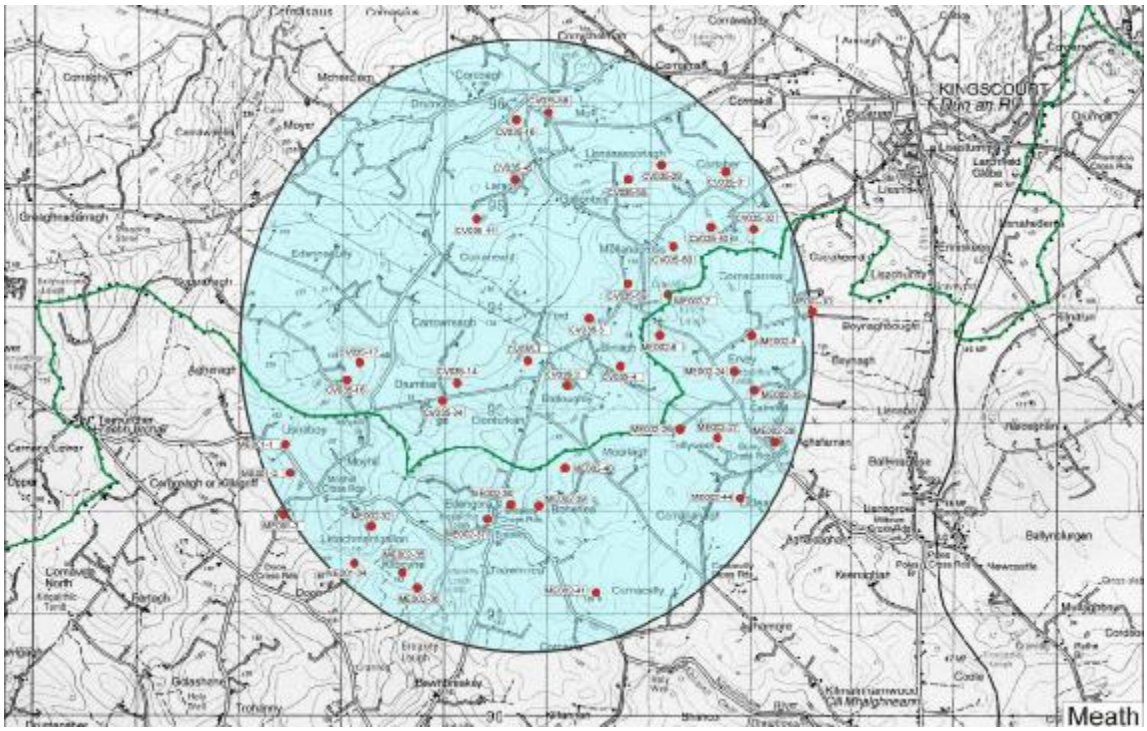

Figure 4 Search Area for Sub-Station

The quadrant to the west and north-west of the constraints circle is relatively devoid of known archaeological sites and may prove a suitable location for the substation. However, it must be borne in mind that the potential for the discovery of previously unknown sub-surface archaeology will require further evaluation once the exact location of the substation is known.

Section 4 – Public Consultation

4.1 Format of Public Consultation Process

The public consultation phase of this project commenced with local newspaper ads placed in the Cavan Anglo Celt on the 10th and 17th October 2007 and in the Monaghan Northern Standard on the 11th and 18th October 2007. The first press release went out on Monday the 1st October 2007. The process of public consultation is still on-going. The format of the public consultation generally consisted of open day meetings held in Monaghan and Cavan inviting all various stakeholders to attend and be informed about the project. A comprehensive document will be compiled by the public relations consultants to collate the information and methodologies used in the process.

4.2 Summary of Issues Raised from Public Consultation

The summary of issues raised from the public consultation open days, e-mail, phone calls that were registered by Mary Murphy Associates and RPS Group communications consultants are enumerated below.

- EMF and Health issues
- Devaluation of Property
- Underground v Overground
- Visual Impact
- Interference with mobiles, TV, pacemakers
- Impact on livestock and poultry
- Environmental Impact
- Impact on tourism landscape and recreation
- Sterilisation of land
- Impact on protected wildlife and their habitat
- Impact on greyhounds
- Impact of proposal on Lough-an-Leagh
- Impact of substation study area on Lough-an-Leagh
- Lack of adequate public information
- Impact on Flora and Fauna
- Not compatible with sustainable development

The above issues will be addressed as part of the Environmental Impact Statement which will be submitted along with the planning application to An Bord Pleanála. Engagement with the public will enable the EirGrid project team to assess the key issues pertinent to this proposal. Information collated from the consultation process has bolstered the existing desktop studies and site investigations which were carried out on the route corridor options. These findings will be taken into consideration in the EIA decision making process.

Section 5 – Conclusion

5.1 Emerging Preferred Route Corridor

Each environmental topic either recommends a particular route corridor or rates all route corridors equal in terms of their environmental impacts.

In conclusion, it may be determined at this preliminary stage that Route Corridor Option A is emerging as the preferred option, particularly from a visual and amenity perspective. This is the most significant environmental issue associated with the project and can only be successfully mitigated through route and tower design selection. Potential impacts associated with other environmental topics including ecology, water and cultural heritage can be successfully mitigated when selecting the actual line route within the preferred route corridor.

Although it is slightly longer than the proposed second preference Route Option B, it appears that overall the Route option A will have the least environmental impact. Route C is considered to have significant visual and ecological impacts which can only be mitigated through avoidance of this route.

As illustrated in Figure 3 an indicative technical feasible route within each route corridor is delineated on the map. By no means are the line routes definitive. Upon selection of the preferred route corridor a more rigorous assessment of the line route selection would be necessary to take cognizance of the final environmental reports of the preferred line route and the existing and proposed built environment.

5.2 Conclusion

This report including this addendum provides a basis for the Consultants to propose Route A as the emerging preferred route corridor and the location of the station. These route corridors are now submitted to EirGrid for further consideration.