

11 MATERIAL ASSETS

11.1 INTRODUCTION

This section describes the existing environment in relation to certain material assets, i.e. traffic and transport aspects, waste, utilities and air navigation issues associated with the Laois Kilkenny Reinforcement Project. Earlier in this EIS, cultural, architectural and archaeological heritage (which are also material assets pursuant to the provisions of Annex IV to the EIA Directive and Article 94 of and Schedule 6 to the Planning and Development Regulations 2001), have been considered in a separate cultural heritage chapter.

11.2 TRAFFIC

11.2.1 INTRODUCTION

This section describes the existing environment in relation to traffic and transport aspects on the Laois-Kilkenny Reinforcement Project. The project includes a number of components which are broken down into units for ease of description (Units 1 - 8). A description of each unit is presented in Section 2 of this EIS.

The potential impacts on prevailing traffic conditions during the construction, operational and decommissioning phases of the proposed development have been assessed. Mitigation measures are proposed, where appropriate, to address the likely impacts associated with the proposed development.

This chapter has been completed by the following authors:

- Stephen Reid BEng Civil & Transportation (Hons), Associate Director, AECOM Transportation;
- Paddy Kavanagh BSc PhD Senior Environmental Consultant ESB International; and
- Rose Walsh PGDip Environmental Protection (Hons) Environmental Consultant ESB International.

11.2.2 METHODOLOGY

The assessment was undertaken on the basis of accepted guidance on preparation of traffic and transport impact assessment, with regard to the Traffic and Transport Assessment Guidelines (TTAG) published by the National Roads Authority (NRA) in September 2007.

This assessment also has regard for the transportation policies and objectives in the following adopted documents:

- Laois County Development Plan 2011-2017 (Laois County Council) – Section 10; and
- Kilkenny County Development Plan 2008-2014 (Kilkenny County Council) – Section 9.

In recognising that the traffic activity levels during construction would be highest at the substation sites, traffic counts were undertaken on key roads in the vicinity of the Ballyragget and Coolnabacky substation sites, in June/July 2012 by AECOM Transportation consultants. Further counts were taken in April 2013.

11.2.2.1 Traffic and Transport Assessment Guidelines (TTAG) Thresholds

The NRA TTAG set out best practice guidance for the preparation of Traffic and Transport Assessments (TTA) and explain the relevance of a TTA in the planning process. Section 2.1 of the guidelines considers the thresholds at which the production of TTAs in relation to planning applications is recommended.

These are set out at Tables 2.1.-2.3 of the TTAG, and it is considered from a review of the threshold criteria that the operational traffic impacts for the proposed developments in the Laois-Kilkenny Reinforcement Project would be insignificant (as normal operational conditions will result in very infrequent access by maintenance staff only) and therefore the completed development does not meet any of the automatic or sub-threshold criteria listed in Tables 2.1 - 2.3 of the TTAG.

As such, a full TTA is not required. However, having regard to the location of the project and the likely generation of traffic movements by heavy vehicles during the construction period, it was considered appropriate to undertake a comprehensive study of the existing environment, the potential impacts and any mitigation measures required was undertaken as part of this assessment. Key elements of a TTA are also included within this study.

11.2.3 RECEIVING ENVIRONMENT

There are three key substation locations being developed as part of the project. The site at Coolnabackey is a new site, while the Ballyragget and Kilkenny sites are existing substations which are being upgraded for this project.

The project has been broken into eight 'units', which have been summarised as follows:

Unit 1: The proposed substation at Coolnabackey, Portlaoise, Co. Laois is located off the R426 Money Cross – Timahoe Regional Road.

Unit 2: The new connection to Coolnabackey from the existing Moneypoint-Dunstown 400kV line is 1.72 km in length and does not cross any road network. Access will be through private lands.

Unit 3: Development work on the existing Athy - Portlaoise line does not cross over any road network.

Unit 4: The proposed 110kV substation in Ballyragget, Kilkenny and 38kV substation (to be decommissioned) is located adjacent to the R432 Ballinakill – Ballyragget Regional Road.

Unit 5: The 110kV proposed Ballyragget -Coolnabackey line is approximately 26 km in length and crosses over three Regional roads: the R426 Money Cross - Timahoe, the R430 Boleybeg - Swan and the R432 Ballinakill – Ballyragget. The line also traverses thirteen local roads.

Unit 6: The uprate of the existing Ballyragget - Kilkenny line is approximately 22 km in length and involves traversing two national secondary roads, N78 Castlecomer - Dunmore and N10 Paulstown – Kilkenny, two regional roads, R432 Ballinakill – Ballyragget and R694 Ballyragget – Castlecomer and fourteen county roads.

Unit 7: The Kilkenny existing substation is located adjacent to the R712 Paulstown – Kilkenny Regional road.

Unit 8: Modifications to the existing Athy – Portlaoise 110kV line (approximately 4 km in length) involves traversing one local road.

The principal roads serving the area of the proposed development area are as follows, and are identified in Figure 11.1:

- N77 Durrrow to Kilkenny National Secondary Road
- R426 Money Cross to Timahoe Regional Road
- R432 Ballinakill to Ballyragget Regional Road
- R712 Kilkenny to Paulstown Regional Road
- Network of Local county roads

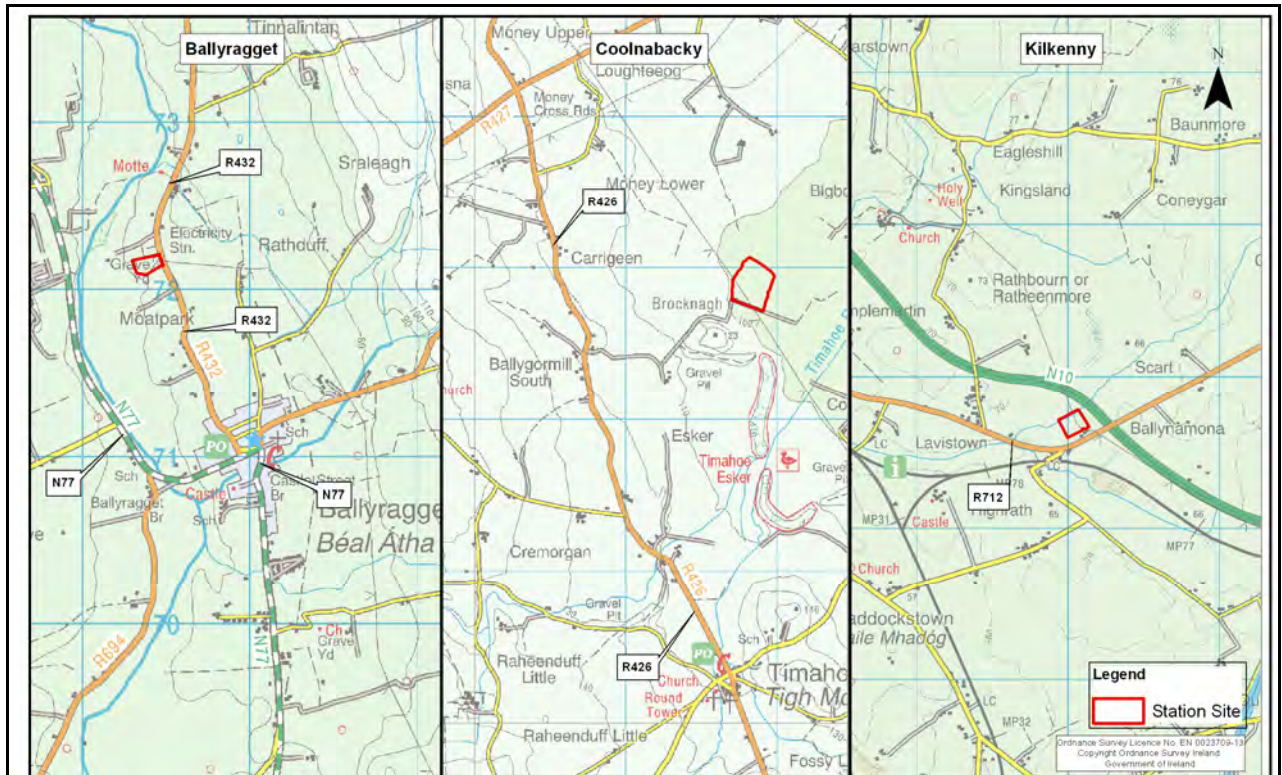


Figure 11.1 Laois-Kilkenny Substation Sites and Adjacent Road Network

11.2.3.1 Traffic Volumes

The main development activity areas in relation to construction traffic volumes will be associated with the proposed Coolnabacky substation site, the upgrades at the Ballyragget substation site and to a lesser degree, the upgrades at the Kilkenny substation site.

Construction traffic relating to the overhead line polesets and mast locations will involve a number of individual short access routes into locations off the public road network; however, on the basis of the type and scale of construction works for these elements, traffic volumes will be minor for each site.

Having regard to a project of this type, it is considered that normal construction activities would occur during the weekday daytime period, and these could involve:

- working on or near to the road
- haulage of materials
- movement of the workers into/out of work sites

Traffic on the Regional Roads are observed to be free-flowing and uncongested even when peak flows occur during commuter periods (AM and PM weekday peak hours), and in the interpeak period which occurs between the AM and PM peaks the flows are low.

Traffic volumes on the local county roads (L-roads) are generally low at all times and are associated with local residential dwellings, small businesses and agricultural activities. Heavy Goods Vehicles on the local county roads are relatively rare, although observations have identified that tankers associated with the dairy industry travel these routes daily.

The NRA has historically published traffic volume data for a number of National Roads and some Regional Roads which are bypassed 'former' National routes. A review of the counter data has identified that the nearest permanent counter locations to the project site access roads are at the N77 in Dunmore, which is considered too distant from the sites to be of relevance to this assessment.

The NRA has been upgrading the traffic data collection infrastructure on National Roads and some key Regional Roads over the last few years, however, AECOM note that new data is not yet available for public viewing on the website (date: July 2013).

As there was is no specific traffic data from the NRA website for the N77 in the vicinity of Ballyragget and no traffic count data for either of the R432 or the R426 Regional Roads, a traffic data collection was carried out using ATC's (Automatic Traffic Counters) at the following locations on the key roads:

- the R426 road at Coolnaback Co. Laois
- the R432 Ballinakill-Ballyragget road, Ballyragget, Co. Kilkenny
- the N77 Ballyragget - Durrow road, Ballyragget, Co Kilkenny.

Traffic survey locations can be seen in Figure 11.2.

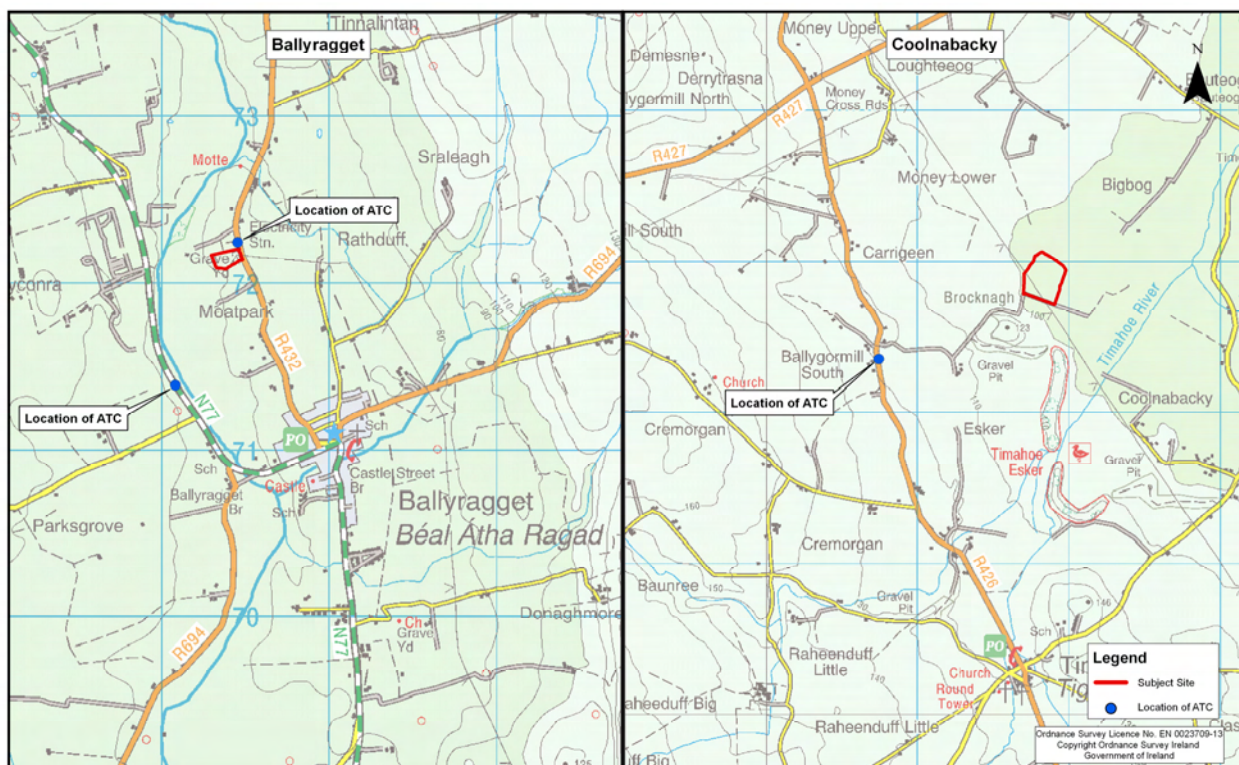


Figure 11.2 Traffic Counter Locations at Ballyragget and Coolnaback

The 2012 traffic counts were undertaken in a period when the schools were on summer holidays and as the Ballyragget counters were located close to the village, a resurvey was undertaken for the Ballyragget sites from 11th-17th April 2013.

A summary of the count results is presented in Table 11.1. Appendix 11.1 of this EIS report contains the full Traffic Count Data for the Coolnaback and Ballyragget sites.

Having regard for the nature of the project where construction-related traffic is expected to be focussed on weekdays only, the data has been extracted to provide a weekday average figure only (excludes Saturday/Sunday datasets).

Site	Count Location	Weekday average (all vehicles)	HGV week average	HGV %	85%ile Speed km/h
June/July 2012 Surveys					
1	Ballyragget R432	*954	*38	*3.8%	*76.7
2	Ballyragget N77	5,426	521	9.6%	97
3	Coolnabacky R426	1,358	49	3.6%	86
April 2013 Resurveys					
1	Ballyragget R432	908	32	3.6%	81.8
2	Ballyragget N77	5,446	635	11.65%	97.8

* R432 only has data for 2 full days in 2012

Table 11.1 Summary of Automatic Traffic Counter Results June/July 2012 and April 2013 (AECOM Transportation)

It can be seen from the summary above that there was very little difference in the traffic flows at the Ballyragget counter sites, in terms of weekday average traffic volumes, with the volume on the R432 being 5% lower in 2013 than 2012, and the volume on the N77 being only 0.4% higher in 2013 than 2012, demonstrating that the school term time traffic conditions have no impact on the total volumes using these roads on weekdays.

While the weekday traffic volumes on the N77 had not noticeably increased in 2013, the HGV percentage had increased in the 2013 count (for the N77), however in terms of total HGVs this equates to approximately 57 vehicles each way over a 24 hour period, which would not be obviously noticeable on the N77 when spread out across the entire day.

Therefore, the 2012 data is considered to remain valid for use in this section.

11.2.3.2 Public Transport

Bus operators provide a service from Ballyragget to Kilkenny city three times a day.

11.2.3.3 Accident Record

The Road Safety Authority's collision data shows a number of minor collisions and a few serious collisions along the routes R432, R712 and N77 between 2005 and 2011. The distance of the nearest collision to the proposed site entrances of the three substations is approximately 400m. This data is summarised in Table 11.2.

Road	Nearest Collision to Substation Site Entrance	Year	Type of Injury Sustained			Total
			Fatal	Serious	Minor	
R426 Road section between Money Cross and Timahoe	-	-	0	0	0	0
		2010	0	0	0	
		2011	0	0	0	
R432 Road section between Ballyragget and Ballinakill	1.2km	2005	0	0	1	3
		2009	0	0	1	
		2010	0	0	1	
		2011	0	0	0	

N77 Road Section between Durrow and Junction with N77 & N78	1.4km	2005	0	0	8	26
		2006		1	3	
		2007		0	5	
		2008		0	1	
		2009		0	3	
		2010		0	4	
		2011		0	1	
R712 Road section between Kilkenny (N10) and Paulstown	430m	2005	0	1	4	32
		2006		0	4	
		2007		0	5	
		2008		0	7	
		2009		1	2	
		2010		1	2	
		2011		0	5	

Table 11.2 Summary results for fatal and injury collisions³³

In reviewing this data, it should be noted that the R712 was historically the N10 route which connected the N9 (Dublin-Waterford road) to Kilkenny City, and this was downgraded to a regional route in 2009 when the new N10 link was opened to connect to the new M9 motorway.

No injury collisions were recorded on the database for the R26 south of Money Cross for the period of data available.

There are no indications that any of the three substations are located on sections of the road network where there is a particular issue of road traffic collisions and no patterns or incidents are reported at any of the site access points.

11.2.3.4 Proposed Site Access

AECOM Transportation was commissioned to provide traffic engineering consulting advice relating to vehicle access options for the new proposed sites at Coolnabacky and Ballyragget. These entrance designs have been agreed in principle with the relevant Local Authorities for each site.

Proposed Coolnabacky 400/110kV substation (Unit 1):

The proposed substation compound is adjacent to a local laneway and is approximately 1.2 kilometres from the R426 Portlaoise-Timahoe regional public road.

The existing access from the R426 to the site area is located southwards of the Money Cross junction. There is a series of bends on the southbound approach to the site access location

The commensurate visibility sightline requirements from a new access onto a regional road are contained in the NRA Design Manual for Roads and Bridges (DMRB), and are normally set at 160 metres in each direction, for a design speed of 85 kilometres per hour (kph).

During liaison with AECOM, Laois County Council requested a calculation of what the sightline requirements would be on the basis of "directional" 85th percentile vehicle speeds, as recorded by the Automatic Traffic Counter (ATC) installed at this location, as their experience was that the northbound traffic was travelling at a slightly higher speed than the southbound traffic in this section of the R426. It was noted that the resultant 85th percentile speeds from the ATC data were 89.6 kph northbound, and 81.7 kph southbound, which would result in the following extrapolated sightlines:

- 177m northbound (looking to the left from the access); and
- 151m southbound (looking to the right from the access).

³³ Collision data was obtained from the RSA website database on 10th July 2013.

AECOM undertook a Feasibility Report on access options for the site, having regard to the road frontage and alignment in the vicinity of the existing access road and from this identified that the optimum site access could be achieved at "Position 1" with existing available visibility sightlines from this position as follows:

- 142 metres to the right, looking north along the R426
- 65 metres to the left, looking south along the R426.

The alignment of the R426 road through the bend to the north precludes increasing the sightline to the right further than the 142m achievable. The alignment to the south bends slightly to the east and therefore precludes increasing the sightlines to the left without significant impacts on the existing hedgerows and road edge boundary to the south. From discussions with Laois County Council, it was agreed that as there would be very limited operational use of the proposed access, hedgerows to the south should not be removed and therefore the location at Position 1 was a suitable design response, having regard to the agreed proposals to remove the single tree to the north of the existing access road which is within the sightline to the right, and the proposed improvements to road signage and road markings on the R426 approaches which will be made in conjunction with the proposed new access. On this basis Laois County Council considered that the existing achievable sightlines of 65m to the left (looking south) and 142m to the right (looking north) for a 3m setback would be appropriate for the proposed access in this instance, without cutting back of hedgerows.

Drawing Number 60241205_001_P_Rev A.pdf contains the site access layout for Coolnabacky.

AECOMs Feasibility Report for Coolnabacky is included in Appendix 11.2

Proposed Ballyragget 110 kV/38 kV/MV Substation (Unit 4):

The existing 38kV substation compound and proposed substation is located adjacent to the R432 Ballinakill to Ballyragget Regional road.

AECOMs Feasibility Report at the existing site entrance at Ballyragget substation considers the potential access options and sets out the technical issues relating to road design markings, signage and surface conditions. Sightlines at the existing site are northbound 12m and southbound 8m. Sightlines required according to the NRA Design Manual for Roads and Bridges (DMRB) are 139m (based on an 85th percentile of vehicles speed). Kilkenny County Council has advised sightlines of 145m are accessed, based on an 80kph rural speed limit on Regional Roads, therefore the assessment was based on sightlines of 145m.

The sightline to the left of the access may require the removal of a mature tree and the curtailment of a block wall in order to achieve a reasonable sightline. The sightline to the right would require the removal of conifer trees and the set back of a palisade boundary fence along the frontage of the substation site between the two existing accesses. Drawing number *60273241_002_P_Rev A.pdf* contains the site access layout for Ballyragget. AECOMs Feasibility Report for Ballyragget is included in Appendix 11.3.

Existing 110kV Kilkenny Substation (Unit 7):

Access to the 110kV substation at Kilkenny will be via the existing entrance which is located adjacent to the R712 Paulstown to Kilkenny Regional road. As this road has a good horizontal alignment and a hard shoulder the existing sightlines are considered to be acceptable and no redesign was undertaken.

11.2.3.5 Trip Generation and Distribution

Construction Phase

In the event that development approval is granted, the expected proposed start date for the construction of the substations is the first quarter of 2015, with an estimate of commissioning in 2018.

A preliminary assessment of the construction traffic generation has been conducted based on the current construction plan, experience of similar schemes, and first engineering principles. For this study, worst case conditions have been based on the following assumptions:

- Maximum of 30 - 40 construction workers on Coolnabacky and Ballyragget site at any one time
- Maximum of 30 - 40 heavy vehicle deliveries to these sites during the day. The number of heavy vehicle deliveries to the site will be at its maximum during the first 12 months of construction and reduce to 1 per day for the majority of the electrical work on site.
- Excavated material from the proposed Coolnabacky and Ballyragget substation compound will be used to construct the earthen berm at the Coolnabacky site. Heavy vehicles associated with this element of the work will arise from the Ballyragget site which will require frequent use of the roads linking these two sites over a short period. These trips are incorporated into figures in Table 11.3.
- Three abnormal loads (transformers for example) over the course of the construction programme, which will be managed and escorted by a specialist haulage company.

For the purpose of trip generation and distribution, proposed developments at Coolnabacky and Ballyragget have been divided into the three stages of construction works:

- Site preparation and clearance;
- Civil construction; and
- Electrical works.

Table 11.3 shows the indicative vehicle movements per site for these stages and indicates the percentage increase in traffic associated with each stage.

Construction activities proposed at the existing substation at Scart in Kilkenny consists of the development of a new bay. It is envisaged that the percentage increase in traffic associated with this development will be minor.

Description	Indicative No of HGV movements per day (during construction period)	Indicative No of car movements per day (during construction period)	Existing Average Weekday vehicles (Jun 2012 Traffic Counts)	Existing Average Weekday HGV traffic (Jun 2012 Traffic Counts)	% Increase in Weekday HGV Traffic	% Increase in Weekday Traffic
Coolnabacky Station						
Site Clearance	10	20	1,358	49	+20.4%	+2.21%
Civil Constr.	40	30	1,358	49	+81.6%	+5.15%
Electrical works	2	40	1,358	49	+4.1%	+3.09%
Ballyragget Station						
Site Clearance	30	20	954	38	+79%	+5.24%
Civil Constr.	40	30	954	38	+105%	+7.34%
Electrical works	2	40	954	38	+5.26%	+4.40%

Table 11.3 Summary of Expected Traffic Impacts arising from Substation Activities

As the works at Kilkenny will be relatively small in comparison to the other two substation sites, it is expected to occur over 2-3 months, and on the basis of the scale of works proposed, it is considered that the typical number of operatives would be in the order of a maximum of 10 workers on site at any time. The volumes of HGVs generated by the Kilkenny site expected to be in the order of only 1 or 2 per day over a short period.

11.2.4 POTENTIAL IMPACT

11.2.4.1 Do Nothing Impact

In the event that the project did not proceed, construction project traffic would not arise.

It is noted that the proposed improvements to the road frontage at the existing Ballyragget site would not be undertaken, which would impact on sightlines for an existing site in use.

11.2.4.2 Potential Impact from Project

Short-term effects will arise during the construction period, but there will be minimal effects thereafter. The substations and overhead lines will not lead to any measurable increase in traffic once construction is completed as the proposed substations will be unmanned. Maintenance of equipment and site visits will be carried out from time to time, but on a sporadic basis.

11.2.4.3 Construction Traffic: Substations

Construction materials and equipment will be transported to the substation sites by road and there will be a slight increase in traffic during the civil works phase of the development.

The most significant traffic volumes will be associated with the main civil works at the Coolnaback, and Ballyragget sites and to a lesser extent at the Kilkenny site. Traffic volumes will involve deliveries of imported engineering fill, crushed stone and concrete, reinforcement deliveries, and transport of material off-site as waste.

Proposed Coolnaback 400/110kV Substation (Unit 1)

The proposed Coolnaback substation compound is adjacent to a local laneway and is approximately 1.2 kilometres from the R426 Portlaoise - Timahoe regional public road. The existing access from the R426 to the site area is located southwards of the Money Cross junction.

To access this site, traffic will use the M7 motorway, exiting at Junction 16 (Portlaoise East), onto the R425 Regional Road and continue onto the R426 Regional Road to the site. The use of this route for heavy goods vehicles including haul trucks and outside load deliveries will ensure that no traffic will be routed through the built up area of Portlaoise town when travelling to/from the proposed to Coolnaback substation. This is also the route that will be taken for the 400kV transformers.

While it is considered that the majority of large deliveries to Coolnaback will arrive from the north via the M7, it is proposed that traffic management will be operated during the project to ensure that any construction materials which have to be delivered to Coolnaback from the south or west of this region will also follow a designated haul route, via the M8 or M7, to M7 Junction 16, and from there onwards via the R425 and R426 to Coolnaback. This plan will ensure that Coolnaback construction traffic does not pass through the towns of Durrrow, Abbeyleix or Ballyroan Village.

In recognition of the requirement to move two 400kV transformers from Dublin Port to Coolnaback, AECOM prepared a *Haulage Route Assessment Report* for the transportation of these outside 'abnormal' loads, which is summarised below.

Summary - EirGrid 400kV Transformer; Proposed Haulage Route Assessment Report

Introduction

A key component of the Laois-Kilkenny Reinforcement Project will be the installation of two new 400kV transformers at the proposed substation site in Coolnaback, Co. Laois. Each transformer has a volume of 136m³ at 8.4m long, 3.6m wide and 4.5m high. Each weighs approximately 222 tonnes and will enter Ireland via Dublin Port. The transportation of such a load to site requires the use of highly specialised equipment (extra-long haulage tractor and purpose-designed trailer unit), using a designated route on closed roads and under escort from An Garda Síochána.

This assessment was undertaken in consultation with Dublin City Council who have designated routes for moving abnormal loads from the Port to the Motorway network, having regard for the type of load (as height restrictions apply on certain routes) and the issues of moving loads through a large urban area.

A number of routes were assessed and the route confirmed by Dublin City Council for the Transformer load is via the East Wall Road.

The route originates in Dublin Port. From here the route is as follows: Tolka Quay/Promenade Road - East Wall Road - Alfie Byrne Road - Clontarf Road - Watermill Road - Howth Road - Collins Avenue - Malahide Road - Clarehall - N32 - M1/M50 - M50 southbound.

Once on the M50, transportation continues to Junction 9 passing through both Fingal County Council and South Dublin County Council areas on the Motorway. The route continues to the N7 Naas Dual Carriageway/M7 (through Kildare and County Laois) to Junction 16 where the route will exit the M7.

After exiting the M7, transportation continues on the R425 - R426. At a location north of Timahoe on the R426 road, the transformer will be unloaded and prepared for direct transportation to site. The total haulage route is approximately 124km in length. The assessment was divided into three sections, which have different characteristics:

1. Dublin Port to M50 (21 km)
2. M50 to M7 junction 16 (91km)
3. M7 Southbound off-ramp at junction 16 (12km)

This route was fully assessed by AECOM on 7th February 2012, which involved driving the exact route set out above.

Within each section, photographs were taken, hazards were identified, locations were noted with reference to grid-co-ordinates and the locations marked on maps for verification purposes. Suggested remedial measures were also proposed for issues where applicable (typically these would involve temporary removal of street furniture or signage poles, or sandbagging to allow areas of temporary overruns on kerbs or islands).

In summary, the haulage route is approximately 124km in length. The majority of the route (91km) is high quality dual carriageway or motorway along the M50 and N7/M7. On this part of the route, there are no significant discernible obstacles or alignment constraints and progress will be straight forward, although it will be escorted at all times.

The majority of issues along the route are off the motorway and on single carriageway roads. It is expected that exiting Dublin City from Dublin Port will be the most arduous part of the operation. The most common issues encountered are overhead powerlines, refuge islands at junctions and roundabouts. Section 3 of the route does not reveal any direct obstacles or obstructions other than overhead power lines upon initial entry to the R425 after the N80 junction, and the R426/R427 junction prior to reaching the unloading location for the transformer, but it is considered that all can be addressed by the specialist haulage company through temporary measures.

Dublin City Council has designated the route from the Port to the N7 because they consider it to be the one which will most readily accommodate the transportation unit required for this project. Any potential issues regarding abnormal loads are further mitigated by the fact that the appointed haulage contractor will have to be a company who specialise in the haulage of abnormal loads in Ireland and will have used this route for this purpose in the past. It is imperative that Autotrack analysis is carried out on all the junctions identified as requiring it in Section 2 of the AECOM assessment. As well as liaising with DCC and An Garda Síochána, all local authority areas through which the route will be travelling will need to be informed of the plans in advance, as well as the NRA. Irish Rail must also be informed as the route passes over several railway line bridges. The combination of all these factors should ensure that the transportation of the transformers will be done in a timely and safe manner to the satisfaction of the client and all other parties.

Proposed Ballyragget 110/38kV Substation (Unit 4)

The Ballyragget site is adjacent to the R432 Regional Road (Ballyragget to Ballinakill road). This road connects with the N77 in Ballyragget village, approximately 1.3 kilometres to the south of the site. To access this junction, traffic is likely to use the N77 National Secondary Road (the N77 runs from Junction 17 of the M7 via Abbeyleix and Durrow, to the Kilkenny City Ring Road), and therefore provides the primary construction access route to the Ballyragget site from both the north and south.

Excess excavated material from Ballyragget will be transported to the Coolnabackey site in Co. Laois (approximately 35 kilometres). The proposed transportation route for the material is from the R432 (Ballyragget) onto the - N77 (to Durrow and Abbeyleix) and then following the R425 (to Ballyroan) and onto the R426 to the substation site at Coolnabackey. This route was selected, as the more direct alignment via the Pike (from the R430 at Abbeyleix) is not considered suitable as it is a narrow bog road. This journey will take an estimated 40-45 minutes in each direction.

The volume of inert material for transportation from the site is approximately 3,500m³. This volume equates to approximately 400 vehicle loads (assuming a factor of 9m³ per vehicle) of material leaving the Ballyragget site, which equates to approximately 800 vehicle movements including empty trucks returning from Coolnabackey to Ballyragget to collect their next load.

On a daily basis, and having regard for loading and unloading times, to ensure that there is an even spread and no bunching up at either site, it is estimated that 5 trucks will be used operation and assuming each truck transports 3 loads of material (27m³), then the volume of traffic associated with this activity would be approximately 30 trips (15 in/ 15 out) from the Ballyragget site per day, over a period of less than 6 weeks (based on consecutive days excluding weekends). Table 11.3 incorporates these trips in calculating the percentage increase in traffic associated with this work, which is just over 5% increase in daily traffic.

In terms of putting this volume of haul traffic into a clear context, it is considered that the maximum number of empty trucks arriving at the Ballyragget site in an hour would be 2, and an equal number of 2 departures in the same hour, therefore in terms of traffic haulage movements that would be observed at the junction of the R432 and N77 in Ballyragget village, this would equate to only 1 truck movement (laden or unladen) every 15 minutes, if evenly spaced (over a period from 9AM to 5PM).

This traffic will operate subject to the agreed haul route confirmed with both Kilkenny and Laois County Council, and this will not be changed.

If haulage of excavated material occurs during school term time, it is proposed to start haulage movements from the site to the N77 after the AM 'school run' in Ballyragget village.

An underground cable will connect the substation to the nearest interface tower from the Ballyragget - Coolnabackey overhead line at the Ballyragget site. The cable trench will cross the R432 road adjacent to the substation. Implications to traffic for this activity will be detailed in a Traffic Management Plan. Typically this type of road crossing excavation and reinstatement is done in two-halves, by reducing the carriageway to one lane, and operating a stop/go shuttle system of temporary traffic management.

Having regard to the volume of traffic using the R432, only minor impacts to traffic are expected and this will be for a short duration only. This will form part of a detailed Traffic Management Plan to be agreed with the Local Authority and AnGarda Sióchána prior to any works on the site.

Existing Kilkenny 110kV Substation (Unit 7)

The Kilkenny site is adjacent to the N10 National Primary Road, however the entrance to the substation is on the R712 Regional road. Traffic from the north is likely to use the M9 to Paulstown, continuing onto the R712 to the site location. Traffic from Kilkenny city is likely to use the N77 ring road and continue onto the R712 to the site location. It is considered that these routes are of a high quality and therefore the minor traffic volumes associated with work at the Kilkenny substation will not have any measurable impact on the existing operating conditions of these roads.

11.2.4.4 Construction Traffic: Overhead Lines

Due to the linear nature of the pole/tower erection for overhead line installation works, the project teams will travel with the required equipment to the relevant work location along the route.

Estimated figures on the duration of construction of steel towers and polesets are shown in Table 11.4. The estimated number of vehicle movements associated with each steel tower will be 8 HGV and 15 cars each day over 6 - 10 days.

Development Works	Duration	Est. No. of HGV's	Crew Size
Steel Tower - Foundation works	6 -10 days	3-4	4 - 6 workers
Steel Tower - Tower erection	4 days	2-3	7 workers
Poleset	1/2 days	2-3	3 workers

Table 11.4 Estimated duration and crew of Towers & Polesets

It is envisaged that two polesets will be erected per day and that the estimated number of associated HGV's and construction personnel cars will be 2 and 3 respectively, equating to 6 HGV movements and 6 car movements/day. The assessment assumes that installation of angle masts and erection of polesets are being carried out simultaneously but at different locations along each line route.

Overhead line equipment including poles will be delivered to the work sites by road, and will come from the existing ESB Kilteel storage yard, located near Naas in Co Kildare by road, via the M7 Motorway, to Portlaoise and then onwards to the specific location in Co Laois or north Co Kilkenny. Any overhead equipment to be delivered to sites near to Kilkenny city can be routed via the M9.

The impact of the development will be of short duration and temporary in terms of percentage increase in traffic on the roads. These impacts relate to the movement of traffic in the vicinity of the line to carry out the erection of angle masts, polesets and the stringing of lines. Poleset erection, angle-mast erection and stringing will take place simultaneously in different locations.

By implication, the impact of overhead line construction on traffic flows generally is not significant. Construction impacts will be short term and peaks in activity will be for short durations only. Additional traffic volumes for the construction of each angle mast and poleset will be very low and for a very limited duration. It will be well within the capacity of the road network and the impact is envisaged to be insignificant. Detailed safety operating measures have been developed over a number of years having regard to experience, safety requirements and best practice for protecting the area of road space over which power lines are being strung and these will be employed at all road crossing locations by overhead lines.

11.2.4.5 Operational Traffic: Substations & Overhead Lines

The substations will be unmanned. Traffic will be associated with a relatively small number of personnel for maintenance and servicing requirements at substations. The estimated weekly average is four vehicle movements. This will have no significant impact on existing vehicle numbers.

The presence of lines crossing a roadway could potentially place a potential height (approximately 8m) restriction on passing traffic. However, the elevation of the line above all road crossings is sufficiently high to have no bearing on traffic passing beneath.

11.2.4.6 Railways

A section of the overhead line passes over a disused railway line in County Kilkenny. The Great Southern & Western Railway (GS & WR) railway from Portlaoise to Waterford, which had a station in Ballyragget, was closed in 1963. Infrastructure associated with this rail route has been largely removed and the route is in private ownership.

Mitigation applied is that the elevation of the line above the disused rail route crossings is sufficiently high to have no bearing on traffic passing beneath. No permanent structures will be located on the rail route.

11.2.4.7 Cumulative Impacts

There are currently no other known permitted developments in the vicinity of the proposed development that could contribute to cumulative impacts.

11.2.4.8 Potential Decommissioning Impacts

Decommissioning of the proposed works set out under Units 1-8 would not be expected for a long period, and it is noted that the impacts would not be as significant, as equipment, buildings and line structures would be removed over a period, but the foundations would typically be left in place, with the earth berms at Coolnabacky spread and levelled over the site.

11.2.5 SAFETY

Road Safety Audits (RSA) were completed by AECOM's NRA-approved Road Safety Audit Team (who are experienced safety auditors and in accordance with the requirements were independent of the design team) for proposed access arrangements to both the Coolnabacky site (the R426) and the Ballyragget site (the R432).

The site access proposal at Coolnabacky includes moving the existing junction south approximately 20m, to line up with another access road on the western side of the R426. The site access proposal at Ballyragget suggests the removal of trees, the curtailment of a block wall and the set back of a palisade boundary fence to achieve sightline requirements.

The Safety Audit Reports indicate any problems identified from review of the preliminary access design drawings and from observations during a site visit by the audit team, and provide recommendations for resolving these problems. Appendix 11.4 and 11.5 of this EIS contain the Coolnabacky and Ballyragget Road Safety Audits. The Designers' Response to each of the Safety audit Reports is also included in the Road Safety Audits.

11.2.6 MITIGATION

The following mitigation is proposed.

ESB will liaise with both Laois County Council and Kilkenny County Council in regard to traffic management during construction and adhere to all their requirements.

A Traffic Management Plan will be prepared and included as part of the CEMP. It will include, but not limited to the following specific mitigation measures:

- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access and movement of construction vehicles will be restricted to these designated routes.
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material.
- Warning signs will be installed at appropriate locations.
- Temporary traffic lights and/or road or lane closures will be provided as required to ensure traffic safety.
- Parking of site vehicles on the public roads will not be permitted.
- Wheel washing facilities including judder bars will be utilised within site prior to joining the stone surfaced access roadway, to remove any spoil or other deposits prior to leaving the substation work sites.
- A road sweeper will be employed at the substation work sites to clean the public roads of any residual spoil debris that may be deposited on the public roads leading away from each site.

- All vehicles will be properly serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. All scheduled maintenance will be carried out off site.
- The appropriate authorities will be notified of the movement of abnormal loads and traffic management measure agreed in advance such as:
 - Placing warning notices to advise other road users of the presence of slow moving vehicles
 - Using lead warning vehicles and using Garda escorts where required
 - Undertaking deliveries at times that minimise the impact on other road users and resting in safe lay-bys to reduce any traffic congestion.
 - Closing up of extendable transport vehicles on return journeys.

At poleset or mast access points, traffic management measures will be put in place for the short term periods when access is required. This will be for the initial base excavation and concrete deliveries and pole/mast erection. Signage and traffic management will be removed when these works are completed, to avoid uncertainty on the part of the road user as to whether construction activity can be expected at that location. The measures will be reinstated for the later stage when the lines are strung, and again removed after this is complete.

During construction, liaison will be maintained with the residents along the line routes and in the vicinity of the stations. They will be advised of any particularly busy periods and, where practical, their suggestions and comments will be taken on board.

The transformer deliveries to Coolnabacky substation will involve a once-off unusually large load delivery. Transport will be undertaken at times that minimise the impact on other road users and will be prearranged and agreed with the relevant Local Authorities.

A condition assessment of county and regional roads which are to be used for construction traffic haul routes will be undertaken prior to commencement, with regular inspections during the works period. In the event of damage to the road pavement or remedial work to reinstate the road will be carried out at the developer's expense.

Otherwise, no mitigation of impacts is foreseen.

Traffic will be very slight and irregular during the operational phase. No mitigation of traffic impacts is required during the operational phase.

Autotrack analysis will be carried out prior to the transportation of 400kV transformers to the proposed Coolnabacky substation site.

11.2.7 RESIDUAL IMPACTS

There will be low short term traffic impacts on the R426 and R432 regional roads during the construction works at Coolnabacky and Ballyragget substations. However, such impacts can be understood in the context of the temporary nature of the construction works and the road safety improvements that comprise an integral element of the overall development proposal. There will be a slight impact in traffic on the R712 during construction works at Kilkenny substation.

Additional construction traffic volumes associated with each angle mast and poleset location will be for a very limited duration and will be well within the capacity of the road network.

Overall the impact will be low and of short term duration.

11.3 WASTE

All waste arising during the construction phase and operational phase will be managed and disposed of in a way that ensures the provisions of applicable legislation, including the following:

- Waste Management Act 1996 and amendments
- European Communities (Waste Directive) Regulations 2011
- Waste Management (Licensing) Regulations 2004 and 2010
- Waste Management Plans for Laois and Kilkenny:
 - *Waste Management Plan for the South East 2006 - 2011*
 - *Waste Management Plan for the Midlands Region 2005 - 2010*

The above Waste Management Plans are currently being evaluated under the transposing regulations (S.I. 126 of 2011) of the Waste Framework Directive (2008/98/EC). Waste Management Plan Regions are currently being updated and reviewed throughout Ireland. Until this review is completed the current plans will remain in place.

All movement of waste and the use of waste contractors will be undertaken in accordance with applicable legislation, including the following:

- Waste Management (Facility Permit and Registration) Regulations 2007 and 2008
- Waste Management (Collection Permit) Regulations 2007 and 2008

11.3.1 RECEIVING ENVIRONMENT

Development waste will be generated by the following construction activities:

- general construction waste
- waste arising from excavation at Coolnabacky substation
- waste arising from excavation at Ballyragget substation
- waste arising from redevelopment of 38kV substation
- waste arising from works at Kilkenny substation
- waste arising from uprating of overhead line

The primary construction waste will be generated from the development of Coolnabacky substation (Unit 1), development of the 110kV substation in Ballyragget and the decommissioning of the Ballyragget 38kV substation (Unit 4) and from construction works at Kilkenny substation (Unit 7). The associations with overhead line uprating will mainly comprise waste, steel, poles, conductors and insulators from decommissioned lines. Reuse of materials will be practiced where possible.

11.3.2 POTENTIAL IMPACT

11.3.2.1 Do Nothing Impact

In a 'Do nothing' situation, waste will not be generated.

11.3.2.2 Proposed Substations

11.3.2.2.1 Construction Waste

Excavated Material

As part of the construction process for Coolnabacky substation, inert soils and subsoils will be excavated, generating an estimated volume of 8,000 m³ of material. The soil will be reused on-site for landscaping works. This will allow the material to be beneficially reused and will have no traffic implications or waste disposal outside the site.

The estimated volume of excavated soil material that will be generated from Ballyragget 110kV substation is 3,500 m³ (approximately 7,000 tonnes). Due to the small footprint of this site, the majority of the material cannot be reused for landscaping purposes at this location and will be taken offsite. The material will be transported to the Coolnabacky substation site, where it will also contribute to landscaping works on the 6.6 hectare site in Coolnabacky.

The Ballyragget and Coolnaback sites are greenfield sites. In the unlikely event that any soil/subsoil is deemed to be contaminated it will be stored separately from the inert soil/subsoil, sampled and tested. The material will be appropriately classified as non-hazardous or hazardous in accordance with EU Council Decision 2003/33/EC which establishes the criteria for the acceptance of waste at landfills, before being transported to an appropriately licensed facility by permitted contractors.

The transport of materials will be carried out by contractors licensed under the *Waste Management (Collection Permit) Regulations 2007 and 2008*.

A requirement of the *Waste Management (Facility Permit and Registration) Regulations 2007 and 2008* is that a *Certificate of* from the local authority is required for recovery of excavated materials. The extract from the regulations is as follows:

CLASSES OF ACTIVITY SUBJECT TO REGISTRATION WITH LOCAL AUTHORITY OR THE AGENCY

Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land and the total quantity of waste recovered at the site shall not exceed 25,000 tonnes.

Drawing number PE610-D002-005-001 details how excavated material will be used in the form of berms in landscaping works at Coolnaback. Based on this design, the total estimated volume of material (from both Coolnaback and Ballyragget) required for landscaping works at Coolnaback is 12,000 m³ (24,000 tonnes).

As previously noted, the estimated expected amount of material arising from the Ballyragget site for reuse at Coolnaback is 7,000 tonnes. The Coolnaback site therefore will require a *Certificate of Registration* from the Local authority in relation to the reuse of excavated material arising from Ballyragget.

The application for the *Certificate of Registration* will be made to Laois County Council, in the event that planning approval is granted.

Excavated material which will be generated from the Kilkenny substation is approximately 20 m³ of soil. The soil will be reused on-site.

Demolition waste

Demolition waste will mainly be generated from Ballyragget substation from the decommissioning of the existing 38kV substation. A small quantity of waste steel will also be generated from the Kilkenny substation. All demolition waste will be transported to an appropriately licensed waste facility by a licensed waste permit holder.

Waste steel, copper and aluminium

Waste steel, copper and aluminium will be stored separately in a metal skip and recycled using a licensed waste company and recycling facility.

Other construction waste will include excess material, damaged material, waste timber and packaging waste will be stored in designated skips/bins on-site for collection by a licensed waste contractor.

Asbestos & Other Hazardous Waste

The presence of asbestos is not envisaged, however, should asbestos be found, a licensed contractor will handle and dispose of the material. It is not envisaged that any Polychlorinated Biphenyls (PCBs) waste material will arise during redevelopment of Ballyragget substation. Waste oils and oil contained material will be stored in designated bins and disposed of by a licensed hazardous waste contractor.

General waste

General waste including canteen and/or office waste will be generated during construction works at temporary facilities provided. General wet waste may contain: mixed food waste and food packaging, polystyrene, contaminated cardboard and contaminated plastic etc. This waste will be segregated correctly and placed in designated skips/bins for collection by a licensed waste contractor.

Cardboard & Plastic

Equipment and materials required for the project will include recyclable plastic, cardboard and packaging. All recyclable material will be stored in a separate skip for removal by a licensed was contractor.

Sewage Effluent

Temporary facilities will be provided for construction works at Coolnabacky and Ballyragget substations. The Contractor will provide chemical toilets/holding tank and provide for regular collection by a licensed company for discharge to the nearest Local Authority sewage treatment plant. The existing substation at Kilkenny has wastewater treatment facilities on-site.

Waste Oil

Waste oil and other hazardous waste generated over the course of construction and operational activities will be stored in a designated hazardous waste area and disposed of by a licensed hazardous waste contractor.

11.3.2.2 Operational Waste

Waste generated in the operational phase will include rags, etc. arising in maintenance and cleaning operations, lighting units replaced as required, oils arising from occasional maintenance activities and packaging materials.

All wastes will be removed off site by licensed contractors for appropriate treatment/disposal at licensed facilities.

11.3.2.3 Overhead Lines

Waste arising from the development of unit 2 (Dunstown – Moneypoint line), unit 6 (Ballyragget – Kilkenny line) and unit 8 (Athy – Portlaoise line) will include 126 structures, comprising 110 wooden poles and 16 steel masts. It is envisaged that little waste will arise from the new Coolnabacky to Ballyragget line or the new 400kV double circuit line. Excavated soil/material dug out for foundations will be used on-site as backfill and/or levelling of soil at base of polesets/towers. Any excess timber/steel or other waste will be returned by the contractor for proper storage in designated skips/bins or collected from site by a licensed waste contractor.

Wooden Poles

Poles will be taken from site by a licensed waste contractor to a licensed waste facility. Poles unsuitable for reuse will be disposed of by a licensed waste contractor.

Concrete

Waste concrete from trucks delivering concrete for tower foundations is not envisaged. There will be no concrete washing on-site. Some waste concrete may be generated from the replacement of overhead line structures. Where reuse is not applicable, waste concrete will be collected by a licensed waste contractor.

Steel & Aluminium

The upgrading of lines requires 16 steel towers to be replaced. Steel will be sent to a licensed metal contractor for recycling.

Timber

Timber waste will be generated from hedges, tree lines and forestry to clear open space for overhead line development. Qualified and certified Timber contractors will dispose of all waste arising from these activities.

11.3.2.4 Potential Decommissioning Impacts

Decommissioning of substations and overhead lines will involve demolition of buildings, compounds, and overhead lines. The impacts will be similar in the decommissioning phase to those arising in the construction phase, but of more limited scope. However, more demolition waste will be generated. Applicable mitigation measures outlined in Section 11.3.3 will also apply in the decommissioning phase. All waste arising from decommissioning will be disposed of by a licensed waste contractor. Reuse and recycling of materials will be practiced where possible.

Experience is that a life span of 50 years or more is possible for switching and transformer substations. Decommissioning in later years would involve mainly the removal of oil from the transformer for re-conditioning or safe disposal. Most of the other materials used mainly comprising steel, copper and aluminium can be recycled.

In the case of overhead lines, particularly of the type of construction proposed for this project, there is sufficient experience in Ireland to expect a life in excess of 40-50 years.

11.3.2.5 Cumulative Impacts

There are currently no other known permitted developments in the vicinity of the proposed development that could contribute to cumulative impacts.

11.3.3 MITIGATION MEASURES

- Waste management will be carried out in accordance with "*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*" produced by the Department of Environment, Community and Local Government. Regulations in relation to waste management will be adhered to. Disposal of construction waste will be to licensed disposal facilities. On-site segregation of waste will be provided by the contractor using skips for timber, steel, general waste, and recyclables.
- A Construction Waste Management Plan will be prepared and implemented by the contractor to minimise waste generation. The key principles underlying the plan will be to minimise waste generation and to segregate waste at source.
- Approximately 12,000 m³ (24,000 tonnes) of excavated material will be re-used as landscaping material at Coolnaback. A Certificate of Registration will be sought from the Local Authority for the reuse of excavated soil at Coolnaback.
- Other waste generated will be removed off site by licensed contractors for appropriate treatment/disposal or recycling at licensed facilities.
- Facilities for segregation of waste will be made available to optimise reuse and recycling of construction waste and correct disposal of domestic waste.
- Soil material will be tested regularly by a competent company prior to removal to ensure material is inert.
- Where applicable, temporary site sanitary facilities will be connected to a holding tank which will be pumped out as required and disposed of in an appropriate manner to a licensed disposal facility.
- Fuels or chemicals stored on site will be stored in an enclosed, bunded unit and located a safe distance from mobile generators or electrical equipment.
- Spill kit bags/bins will be made available at sites and in relevant vehicles should a spill occur.
- Portable bunds will be used when refuelling to avoid fuel spills.

11.3.4 RESIDUAL IMPACTS

To manage construction waste, the main contractor will be required to develop, implement and maintain a Waste Management Plan during the construction works. The main contractors will be required to minimise waste and to segregate waste at source.

The main waste arising, inert soil, will be used for landscaping purposes mainly at Coolnaback substation with a small quantity at Ballyragget.

Waste generated from construction activities will be sent to licensed facilities where recycling will occur where possible. It is envisaged that the quantities of waste arising from the project which will be sent to landfill will be slight - consisting only of domestic wet waste. All other materials can be recycled.

Following good waste management practices it is not expected that waste arisings from the project will give rise to any significant impacts.

11.4 UTILITIES

11.4.1 GAS

Information provided by Bord Gáis Networks on the gas pipe line distribution network does not indicate the presence of any gas infrastructure at the proposed substation sites or overhead line routes. However, the information provided is an indicative guide only. Service pipes are not shown but their presence should be anticipated until such time as a pre-construction audit confirms the position.

The Coolnabacky substation and overhead lines are located approximately 4 km distance from the nearest Portlaoise – Athy gas pipeline. In Kilkenny, a 4bar gas pipeline is laid from Kilkenny to Ballyragget, to the Glanbia Ingredients Ltd Plant, which is located approximately 900m from the proposed substation site and nearest proposed overhead line. Another pipeline running from Carlow to Kilkenny is approximately 1.2km distance from the existing Kilkenny substation.

Potential Impact

As the proposed development is not in close proximity to the gas pipe line, it is envisaged that the project will not impact on the gas network.

Mitigation

A pre-construction audit will be undertaken to confirm the preliminary conclusions as to the presence or absence of gas infrastructure in the construction area.

11.4.2 TELEVISION AND COMMUNICATION SIGNALS

11.4.2.1 Receiving Environment

The proposed overhead line may intersect telecommunication services where they exist alongside roads or fields.

11.4.2.2 Potential Impact

Where the crossing of existing telecom services is necessary during construction, maximum efforts will be made to minimise disruption to the service.

Gap sparking (addressed in Section 12.7.4.5.1) occurs on power lines at tiny electrical gaps that develop between mechanically connected metal parts. A combination of factors such as corrosion, vibration, wind and weather forces contribute to gap formation. Gap sparking can give rise to electrical noise, i.e. it occurs at frequencies higher than those that are audible to humans, including frequencies used for radio and television signals. Gap sparking is a direct efficiency loss on the transmission grid and is easily identified and resolved.

The ESB undertakes to investigate any reasonable complaint of interference with television or radio reception due to the presence of a transmission line. If the transmission line is proved to be interfering with reception, the ESB undertake to rectify the cause of the interference.

11.4.2.3 Mitigation Measures

A site specific risk assessment will be carried out where any telecom services are present. Consultation will take place with service provider prior to any construction works in the proximity of existing telecom services likely to be impacted, as required.

In the unlikely event of interference arising to communication networks, adjustments to the orientation of the aerial of the radio or television/internet connection will be rectified.

11.4.3 WATER SUPPLY

11.4.3.1 Receiving Environment

The proposed Coolnabackey site is a green field site and does not have a water supply. The existing 38kV substation at Ballyragget does not have a water supply. The existing 110kV substation at Kilkenny has a connection via the mains supply.

11.4.3.2 Potential Impact

Proposed Coolnabackey 400/110kV Substation (Unit 1)

Water will be imported by tanker for construction works at Coolnabackey substation. It is proposed to meet the long term water demand for the substation from the local groundwater resource through a bored well. The expected demand will be less than that of a domestic supply as it will be used for sanitary services and canteen purposes. The substation will be unmanned and the water demand will be intermittent.

Proposed Ballyragget 110/38kV Substation (Unit 4)

At the site in Ballyragget, the proposal is to connect to the existing water mains along the R432 road adjacent to the site.

11.4.3.3 Mitigation Measures

There is no mitigation required.

11.4.4 WASTEWATER TREATMENT

11.4.4.1 Receiving Environment

The proposed Coolnabackey site is a green field agricultural site in a rural area. The existing 38kV substation at Ballyragget has no wastewater treatment system at present. The existing Kilkenny substation is already connected to the local wastewater treatment system.

11.4.4.2 Potential Impact

Proposed Coolnabackey 400/110kV Substation (Unit 1)

A holding tank is proposed to collect sewage effluent from sanitary facilities at Coolnabackey. This will be emptied and disposed of by a licensed waste contractor at regular intervals.

Proposed Ballyragget 110/38kV Substation (Unit 4)

During construction works, foul sewage tanks/facilities will be made available by the contractor. These will be emptied and disposed of by a licensed waste contractor at regular intervals. A wastewater treatment system comprising septic tank and percolation area is proposed at Ballyragget as a permanent system for the station. Percolation tests have been carried out in accordance with 2009 EPA Code of Practice. The foul treatment and disposal system has been recommended by a qualified site assessor as per guidelines. The site assessment report is included in Appendix E of the *Ballyragget Substation Drainage and Services Report*, which can be found in the Supplementary Environmental Documents of this application.

11.4.4.3 Mitigation Measures

All sewage at Coolnabackey will be collected via a holding tank and disposed of by licensed waste contractor.

The wastewater treatment plant at Ballyragget will be constructed using EPA Code of Practice for Wastewater Treatment Systems for Single Houses.

11.4.5 ENERGY SUPPLY NETWORKS

11.4.5.1 Receiving Environment

The proposed site at Coolnabacky is a green field site and therefore has no energy supply associated with it. Ballyragget and Kilkenny are existing stations and have connections to a supply.

11.4.5.2 Potential Impact

The nature of the reinforcement project will have an impact on the electricity network in the surrounding vicinity of the project. Existing infrastructure includes a 38kV substation at Ballyragget, a 110kV substation in Kilkenny and an 110kV overhead line from Ballyragget to Kilkenny.

The proposed substation in Coolnabacky will connect to a number of electricity lines in the area including the Moneypoint to Dunstown 400kV network and the 110kV Portlaoise to Athy network. A new 110kV overhead line is proposed from this station to the new 110kV Ballyragget substation.

Proposed Coolnabacky 400/110kV Substation (Unit 1)

During construction, generators will be used onsite as an energy supply. The diesel generator may be connected to the station AC system until a permanent AC supply can be obtained. The permanent supply will be from a 200kVA house transformer.

11.4.5.3 Mitigation Measures

No mitigation measures required.

11.4.5.4 Do Nothing Impact (Utilities)

In a 'Do Nothing' situation, there would be no change to the existing environment.

11.4.5.5 Potential Decommissioning Impacts (Utilities)

Decommissioning impacts will be similar to impacts during construction phase. Likewise, similar mitigation measures will be employed.

11.4.5.6 Cumulative Impacts (Utilities)

There are currently no other known permitted developments in the vicinity of the proposed development that could contribute to cumulative impacts.

11.5 AIR NAVIGATION

11.5.1 RECEIVING ENVIRONMENT

Midlands Heliport is located in Aughnacross, near Ballinakill, Portlaoise, Co. Laois and is currently in use for micro-light aeroplanes.

11.5.2 POTENTIAL IMPACT

11.5.2.1 Do Nothing Impact

In a 'Do Nothing' situation, there would be no change to the existing environment.

11.5.2.2 Potential Impact from Project

The proposed Ballyragget to Coolnabacky 110kV overhead line will be a distance of approximately 600m from the microlight training centre. The height of the proposed structures will range from 13.7m to 21.7m (wood polesets) and 18m to 24.5m (steel angle masts). The nearest proposed angle mast to the centre will be a distance of more than 750m.

The Irish Aviation Authority (IAA) was contacted with respect to the development and no issue was identified by them with respect to aviation. The IAA response letter can be seen in Appendix 11.7.

11.5.2.3 Cumulative Impacts

It is not envisaged that cumulative impacts on utilities will arise from the various project elements.

11.5.3 MITIGATION

The mitigation applied entailed the careful routing of the line route in the vicinity of the Heliport. Aircraft warning spheres will be attached to the overhead line in consultation with the Heliport owners and the IAA if required.

The proposed substation at Coolnabacky (Unit 1) and proposed overhead lines (Unit 2, 3, 5 and 8) will not have an impact on safety of aviation activities at the Midlands Heliport/Midlands Microlight centre site as referenced in correspondence from the Irish Aviation Authority on 16th April 2012.

11.6 AGRICULTURAL IMPACT ASSESSMENT

11.6.1 INTRODUCTION

This section presents an overall evaluation of the potential for agricultural impacts associated with the proposed development and is based on an assessment of each farm holding potentially impacted by the project.

This assessment required consideration of the baseline agricultural environment and determination of the unmitigated impacts resulting from the construction, operation and decommissioning phases, proposed mitigation measures at each stage and determination of the mitigated residual impacts.

This section was prepared by Pat Minnock M.Agr.Sc of Minnock Agri Enterprises.

11.6.2 METHODOLOGY

The compilation of this report entailed a desktop study assessment supported by onsite assessments (by way of visual inspection surveys from public roads and vantage point surveys of affected lands).

This Agricultural Impact Assessment is based on a determination of:

- the size of holding;
- farming enterprise undertaken;
- length of line proposed;
- number and type of structures proposed;
- location of structures in the overall context of the farm; and
- assessment of proposed substations at Coolnabacky and Ballyragget.

A variety of information sources were used to complete the assessment:

- Meetings with EirGrid and ESBI staff, including routing and wayleaving specialists;
- Ordnance Survey mapping at 1:50,000 – Overview of route indicating structures by number;
- Ordnance Survey 6 Inch Route map – Indicating agricultural holdings and structures by number;
- Ordnance Survey mapping at 1:2,500 – Individual fields traversed and structures by number;
- Aerial photography maps;
- Individual landowner maps;
- List of landowners;
- Access to folios via Land Direct website;
- Visual inspection surveys from public roads as well as vantage point surveys of affected lands;
- Use of plenimeter to measure size of holding; and
- Use of scaled ruler to measure length of line.

A visual inspection survey from public roads was initially undertaken, which consisted of travelling the route accompanied by an ESB International routing expert to ensure familiarity with the overall area, including the alignment and site of the proposed development.

Further visual inspection surveys were undertaken as required by the assessor.

A comprehensive desktop study was then undertaken having regard to the information sources listed above. Data was collated and interpreted to inform the agricultural impact assessment. A database was then compiled based on the information gleaned from the desktop study and visual inspection surveys from the public roads.

It should be noted that in carrying out an assessment of this nature a number of assumptions must be made, including:

Size of Farm Holding:

- The size of the affected farm holding was determined from the 6" Route Maps however these may not show the complete extent of a farm holding as additional lands owned, rented or leased may be available to the farmer in other locations.

Farming Enterprises:

- It was attempted to identify the enterprise based on the land use evident on the day of the visual inspection survey from the public roads however in many cases no stock were present on grassland, no crops were sown in tillage ground and consequently it was only possible to give a broad idea of the type of enterprise.
- Most of the land affected appears to be grassland and most of the enterprises appear to be livestock (mainly cattle farming). Using the information provided and the visual inspection survey from the public roads, it was difficult to determine the exact break down between beef cattle, suckler cows and dairy farming as stock were absent from fields and no indication was available to highlight the type of enterprise carried on.

Length of Line Proposed:

- The length of line per holding was scaled from mapping provided.

Proposed Structures and their Location on Farm:

- The 6 inch Route maps were utilised and were matched with the Land Registry folio ownership details.
- The identification of the structures in the overall context of the farm were difficult to determine accurately from a distance, in some cases a half to a kilometre away, so our report utilises the aerial photography in conjunction with our own assessment from the road where possible.

11.6.3 RECEIVING ENVIRONMENT

The proposed route of the overhead transmission line is approximately 50km in overall length and passes through approximately 150 agricultural holdings. The makeup of the farm holdings is typical for the Irish countryside i.e. small to medium sized fields with minor roads providing access to individual or groups of fields. Agricultural interests along the proposed route are diverse based on topography, climate and soil characteristics. These characteristics combine to give a range of agricultural activities ranging from intensive tillage to extensive grassland based systems.

Table 11.5 below presents a breakdown of the agricultural activities along the length of the proposed development, whilst Table 11.6 presents a breakdown of the agricultural activities that are affected by each structure type.

Enterprise	Number of Holdings	Percentage of Holdings
Tillage	9	6
Grassland	116	78
Forestry	7	4.5
Mixed	13	8.5
Other	5	3
Total	150	100

Table 11.5 Farming Enterprises

Structure Type	Tillage		Grassland		Forestry	
	No.	%	No.	%	No.	%
Pole sets	47	17	183	65	10	3
Masts (Angle / End)	5	2	37	13	0	0
Total (282)	52	19	220	78	10	3

Table 11.6 Breakdown of Structures by Farm Enterprise

11.6.3.1 Tillage

The northern section of the proposed Coolnabacky to Ballyragget line comprises mainly good quality tillage land. The substation at Coolnabacky will be developed on land currently in tillage. This is the main concentration of tillage enterprises together with an area south of Ballyragget on the Ballyragget to Kilkenny line towards Connahy. Some additional, small scale tillage land is interspersed with grassland along the Ballyragget to Kilkenny line and located at pole sets BK 41-43, BK 57 - 61 and BK 78-79. It is proposed to develop a new (replacement) substation at Ballyragget on lands owned by ESB (1.5 ha). This land has not been farmed in the recent past.

11.6.3.2 Grassland

The majority of the line crosses good, medium and some poor quality grassland. Farm enterprises across the landscape affected could be generally described as mixed with mainly cattle / suckler farming and a good degree of dairying interspersed throughout the length of the line. Some sheep and equine farming is also evident, these are likely to be run in conjunction with cattle enterprises.

11.6.3.3 Forestry Enterprises

Forestry is evident in a number of areas along the line and is mostly owned by Coillte / Irish Forestry Trust with an exception of a commercial plantation in Knockardagur, near Spink.

11.6.3.4 Construction Access Routes

All farmland and farmyards have existing access to them from public roads. ESBI prepared a series of indicative access mapping to individual landholdings. A review of these was conducted prior to issue and concluded that they were appropriate to send out to individual landowners for the purposes of seeking feedback. The general guiding principle employed in developing these indicative access routes was to minimise disturbance to current land use and farm / land management practices by maximising use of existing farm entrances, farm tracks / roads and bridges where possible.

The access points were assessed for each landowner / wayleave by means of the original maps supplied in conjunction with the "visual inspection survey from the public roads". This has been further assessed based on more detailed Access Route Maps for each landowner. These new maps are provided on a scale of 1:2500 by ESB International which clearly outlines the location and type of structure and the access points and routes proposed for each landowner.

The access proposed for all structures will be in keeping with good farm practice. Each access point has not been individually assessed 'on the ground', however the access routes suggested on the maps

provided will minimise the damage done to both the land and the environment and to any perceived disruption to the farming activities.

Weather conditions at the time the work is being carried out will determine the severity of the damage in the majority of cases. In a grassland situation the obvious direct route to the proposed structures may be the most efficient.

In a tillage situation, access should be confined to track ways and, if not possible, should be confined to tram lines if suitable.

Table 11.7 and Table 11.8 present further breakdowns of the proposed development and affected landholdings.

Line	Number of Holdings	Percentage of Holdings
Structure – Pole set / Mast (Angle / End)	120	80
Conductor Only	30	20
Total	150	100

Table 11.7 Breakdown of Holdings Affected

Structure Type	In/at/near Hedgerow		Field	
	No.	%	No.	%
Pole sets	151	54	89	31
Masts (Angle / End)	34	12	8	3
Total (282)	185	66	97	34

Table 11.8 Location of Structures

11.6.4 POTENTIAL IMPACT

11.6.4.1 Do Nothing Impact

In the case of no development occurring, there would continue to be ongoing changes in agriculture within the study area. Possible changes in the management of agricultural land could include further land drainage, scrub clearance and afforestation, however, it is not expected that these changes would be significantly influenced by whether the proposed development proceeds or not.

11.6.4.2 General Impacts

The proposed development could impact on the scope and scale of land management activities and the productive capacity of the land affected. This would be most evident during the construction stage. Possible effects may include:

- Both temporary and permanent localised land loss.
- Local damage to soil structure during construction.
- Disruption to cultivation and land management patterns.
- Temporary localised loss of farming capability and consequent impact on farm income.
- Access restrictions to fields affected and possible access point damage.
- Disruption to existing drainage schemes.
- Disruption of provision of water to fields.
- Loss of, or gaps in, shelterbelts for cover.

11.6.4.3 Tillage

- Increased effects on operation of machinery.
- Most problematic will be the manoeuvrability of sprayers due to their operational width.
- Loss of crops and consequently loss of income.
- Interference with crop rotation.

11.6.4.4 Grassland

- At the points of structure increase in potential for livestock congregation leads to possible excessive poaching and loss of grass cover at this vicinity.
- Straying of livestock leading to disease spread issues as a result of intermixing of stock between land holdings.
- Restrictions on farm management and forage production operations.
- Effects on livestock due to dust i.e. eye irritation; dust in grazing paddocks, milk, etc.

11.6.4.5 Forestry

- For 110 kV overhead lines passing through forestry, a 61m wide corridor is cleared.
- This will lead to a reduction of forestry premiums from the Forest Service for grant purposes.
- The removal of this width of forestry in some cases can lead to wind tunnels and these wind tunnels can lead to fallen trees particularly later in the life cycle of the forest.

11.6.4.6 EU Schemes and Single Farm Payments

- There will be no loss of eligible land, due to pole sets, in a grass field. The loss in a tillage field only applies when the loss is 0.01 ha or greater.

11.6.4.7 Cumulative Impacts

There are currently no other known permitted developments in the vicinity of the proposed development that could contribute to cumulative impacts.

11.6.5 MITIGATION

- Invitation to landowner to engage in a consultative process regarding the least disruptive access point and the most advantageous access route.
- Protocols are in place for taking precautions in identification of any current disease issues (e.g. TB) on farm and awareness of implications.
- The congregation of some stock around structures can be a problem in some instances and either can be mitigated by fencing off the structures in question or tolerating the situation.
- Advance notification in local and national media of routine helicopter annual line condition patrols by ESB Networks.
- Consideration to be given to minimise disruption to all farming activity.
- If possible, works should be carried out in good weather conditions.
- Water supplies for livestock to be protected at all times and alternative supplies provided where access thereto might be compromised.
- Careful excavation and replacement of all material, particularly the storage and replacement of topsoil stripped to protect the agricultural capability of the soil / land.
- Agreement to repair damage done, reinstate land, replace removed structures e.g. gates, hedgerows, etc.
- Construction of the proposed development will be carried out in accordance with the agreed ESB/IFA Code of Practice for Survey, Construction & Maintenance of overhead lines in relation to the rights of Landowners. There is a statutory entitlement to compensation for directly affected landowners.

11.6.6 RESIDUAL IMPACTS

11.6.6.1 Construction Phase

- During the construction stage associated with the alterations to the Athy to Portlaoise line, the new 400kV Moneypoint/Dunstown to Coolnabacky line and the substations there will be impacts to farms but with adherence to the mitigation measures proposed, this will be minimal.
- The impact along the Ballyragget to Kilkenny line will be minimal as there is an existing line in place. The impact along the Ballyragget to Coolnabacky line will be greater as this is a totally new build.

11.6.6.2 Operational Phase

- The approximate amount of productive farming land that will be affected by the footprint of each pylon is relatively small (approximately 50m² for a 110 kV earthwire angle mast).
- On completion of installation, land below the lines will resume their agricultural activity as previously and farmland will be returned to its former condition. It is recognised that poles / pylons do represent an obstruction in fields, especially tillage fields, when using large farm machinery.
- There will be no significant effects on land use associated with routine inspections of the proposed overhead line.

Table 11.9 below presents a breakdown of the residual impact per landholding for each stage of the project.

Residual Impact	Construction		Operation		Decommissioning	
	No of Land holdings	%	No of Land holdings	%	No of Land holdings	%
None	30	20	30	20	30	20
Negligible	113	75.5	117	78	117	78
Minor	3	2	0	0	0	0
Moderate	3	2	2	1.5	2	1.5
Major	1	0.5	1	0.5	1	0.5

Table 11.9 Residual Impact

Embedded mitigation forming part of the Project would be the principal way that effects on land use will be minimised.

Table 11.10 below summarises the agricultural area lost to the project. The area used for pole sets is not considered lost to farming as there is no loss of eligibility for Department of Agriculture schemes and is therefore treated as zero area lost.

	No of Structures	Gross Area of Substations (ha)	Avg. Area Lost per Structure (ha)	Total Area Lost to Structures (ha)
Pole sets	240		0	0
Masts (Angle /End)	42		0.008	0.34
Substation - Coolnabacky	1	6.7		1.65
Substation - Ballyragget	1	1.5		0.43
Access road to Coolnabacky substation	1	0.865		0.865
Total		9.065		3.285

Table 11.10 Land Loss

The residual impacts of the proposed development will be negligible with most disruption considered to occur during the construction stage. The loss of productive land will be negligible. Including the sub-stations the loss comes to 12.35 ha (c. 30 acres) in total over the 150 holdings.

The embedded mitigation and careful routeing means that the permanent effects on agricultural land use, in terms of loss of and impacts on farmland would be negligible. The implementation of mitigation measures also means that effects during construction, operation, maintenance and decommissioning would be temporary and of negligible significance.

11.7 INTERRELATIONSHIPS BETWEEN ENVIRONMENTAL FACTORS

This section should be read in conjunction with Section 5 *Human Beings and Population* (including land use) and Sections 9 *Soils and Geology* and 10 *Water (Hydrology and Hydrogeology)* - which include mitigation with regard to waste management - for a full understanding of the main interactions between these environmental topics.

Section 12 *Air and Climate* considers noise and emissions arising from traffic generated by the project.