

9 MATERIAL ASSETS

9.1 TRAFFIC

9.1.1 INTRODUCTION

This section describes the existing environment in relation to traffic and transport considerations 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 Report.

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.

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9.1.2 METHODOLOGY

The assessment was undertaken following guidance from the Traffic and Transport Assessment Guidelines (TTAG) published by the National Roads Authority (NRA) in September 2007.

On site traffic counts were undertaken on Regional Roads R426, R432 and National Secondary Road N77 in June/July 2012 by Aecom consultants. The equipment used was a metrocount MC5600 ATC.

9.1.2.1 Traffic and Transport Assessment Guidelines (TTAG) Thresholds

The TTAG guidelines set down the 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. The thresholds above which a TTA is automatically required are given in Table 9.1.

Traffic Management Guidelines Thresholds for Transport Assessments
Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists or the location is sensitive.
Residential development in excess of 200 dwellings.
Retail and leisure development in excess of 1000m ² .
Office, education and hospital development in excess of 2,500m ² .
Industrial development in excess of 5,000m ² .
Distribution and warehousing in excess of 10,000m ² .

Table 9.1 Thresholds above which a TTA is automatically required

In certain circumstances, the management of a development may require tighter control. Where applications affect National Routes (including those which impact on interchanges or urban areas with no bypasses) additional threshold criteria are assessed to determine if a TTA is required. These threshold criteria are listed in Table 9.2.

Advisory Thresholds for Traffic and Transport Assessment		
Vehicle Movements	100 trips in/out combined in the peak hours for the proposed development	
	Development traffic exceeds 10% of turning movements at junctions with and on National Roads	
	Development traffic exceeds 5% of turning movements at junctions with National Roads if location has potential to become congested or sensitive.	
Size	Retail	1,000m ² Gross Floor Area
	Leisure facilities including hotels, conference centres and cinemas	1,000m ² Gross Floor Area
	Business	2,500m ² Gross Floor Area
	Industry	5,000m ² Gross Floor Area
	Distribution and warehousing	10,000m ² Gross Floor Area
	Hospitals and education facilities	2,500m ² Gross Floor Area
	Stadia	1,500 person capacity
	Community Facilities including places of worship, community centres	1,000m ² Gross Floor Area
Housing	50 dwellings within urban areas with a population less than 30,000. 100 dwellings within urban areas with a population equal to or greater than 30,000.	
Parking Provided	100 on-site parking spaces.	

Table 9.2 Advisory thresholds for TTA where national roads are affected

The NRA guidance document also lists additional sub-threshold criteria for developments which don't automatically meet the standard criteria. These criteria are designed to capture those developments where the type and volume of generated traffic on National Roads may be of a nature to raise concerns about effects on road safety and road structure. In these cases, it is recommended that if the proposed development meets two or more criteria from Table 9.2, then a TTA should be requested.

Sub Threshold Criteria	
Vehicle Movements	The character and total number of trips in / out combined per day are such that as to cause concern
Location	The site is not consistent with national guidance or local plan policy or accessibility criteria contained in the Development Plan
Other Considerations	<ul style="list-style-type: none"> • The development is part of incremental development that will have significant transport implications • The development may generate traffic at peak times in a congested area or near a junction with a main traffic route. • The development may generate traffic, particularly heavy vehicles in a residential area. • There is significant concern over the development's effect on road safety • The development is in tourist areas with potential for congestion • Planning authority considers the proposal will result in a material change in trips or raises significant transport implications.

Table 9.3 Sub-thresholds Criteria for Traffic and Transport Assessment

The developments of the Laois Kilkenny reinforcement project does not meet any of the automatic or sub-threshold criteria listed in Table 9.1 to Table 9.3 above, and therefore a full TTA is not required. However, a comprehensive study of the existing environment, the potential impacts and any mitigation

measures required was undertaken as part of this report. Key elements of a TTA are also included within this study.

9.1.3 RECEIVING ENVIRONMENT

The principle roads in the development area are as follows, as can be seen in Figure 9.1:

- 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

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

Unit 2: The new connection to Coolnabacky 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 -Coolnabacky line is approximately 26 km in length and crosses over three Regional roads: the R426 Money Cross - Timahoe, the R430 Boleybey - 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 & N10 Paulstown – Kilkenny, two regional roads, R432 Ballinakill – Ballyragget, & 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.

9.1.3.1 Traffic Volumes

The main development areas in relation to construction traffic volumes will be associated with the proposed Coolnabacky substation site, the proposed Ballyragget substation site and to a lesser degree, the Kilkenny substation site. Construction traffic to polesets and tower locations will involve many individual short access routes; however, volumes will be minor to each site.

Traffic volumes on the county roads are generally low and are generally associated with local residences, small businesses and agricultural activities. Heavy Goods Vehicles are relatively rare, although bulk tankers associated with the dairy industry travel these routes daily.

Data for 24-hour two-way traffic flows for National Roads on an average day, known as Annual Average Daily Traffic (AADT) values, are available from the National Roads Authority (NRA). The AADT values at the measurement locations closest to the project area for 2006 and 2010 are listed in Table 9.4.

Traffic Location	Counter	Year	AADT	% HCV	No. HCV
Abbeyleix N08-27		2006	12825	18.2	2334
Dunmore N77-02		2006	10273	9.1	935
Dunmore N77-02		2010	9292	7.4	688

Table 9.4 Estimated 2006 and 2010 AADT Values for N77 and N8 (NRA)

There is no specific traffic data from the NRA on the N77 at Ballyragget, R432 or the R426 and as expected, there is no data for minor county roads in the vicinity of the development of the overhead lines. As a consequence, a traffic survey using ATC's (Automatic Traffic Counters) was undertaken on the R426 road at Coolnabacky, Portlaoise, Co. Laois and at two locations at Ballyragget, Co.Kilkenny - on the R432 and on the N77 outside Ballyragget village on the Ballyragget - Durrrow road. Traffic survey locations can be seen in Figure 9.2. A summary of the count results is presented in Table 9.5. Appendix 9.1 contains Traffic Count Data for Coolnabacky and Ballyragget.

Site	Count Location	Total Vehicles	5 day average	HGV 5 day average	HGV %	85%ile Speed km/h
1	Ballyragget R432	1982	*991	*38	*3.8%	*76.70
2	Ballyragget N77	25076	5015	434	8.7%	97
3	Coolnabacky R426	6792	1358	47	3.5%	86

* R432 only has data for 2 full days

Table 9.5 Summary of Automatic Traffic Counter Results June/July 2012 (AECOM Transportation)

9.1.3.2 Public Transport

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

9.1.3.3 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 2009. The distance of the nearest collision to the proposed site entrances of the three substations is approximately 400m. This data is summarised in Table 9.6.

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
R432 Road section between Ballyragget and Ballinakill	1.2km	2005 2009	0	0	1 1	2
N77 Road Section between Durrow and Junction with N77 & N78	1.4km	2005 2006 2007 2008 2009	0	0 1 0 0 0	8 3 5 1 3	21
R712 Road section between Kilkenny (N10) and Paulstown	430m	2005 2006 2007 2008 2009	0	1 0 0 0 1	4 4 5 7 2	24

Table 9.6 Summary results for fatal and injury collisions

9.1.3.4 Proposed Site Access

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

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

The proposed substation compound is adjacent to a local laneway which is approximately 1.2 kilometres distance from the R426 Money Cross to Timahoe regional public road.

AECOMs Feasibility Report on Access Options highlights an optimum site access at "Position 1" with sightlines northbound at 142 metres and southbound at 65 metres. Sightlines required according to the NRA Design Manual for Roads and Bridges (DMRB) are northbound 177m and southbound 151m (based on an 85th percentile of vehicles speed). The area of Position 1 will require cutting back and/or removal of a section of the hedge to the south of the proposed access, to achieve a reasonable sightline to the south. It is the alignment of the road through the bend to the north which precludes increasing the sightline further than the 142m.

From discussions with Laois County Council, it was agreed that the location at Position 1 was appropriate, and having regard to the proposal to remove the tree to the north of the access, sightlines of 65m to the south and 142m to the north for a 3m setback would be appropriate for the limited operational use of the proposed access, having regard to the improvements which will be made. Drawing Number *60241205_001_P_Rev A.pdf* contains the site access layout for Coolnabacky. AECOMs Feasibility Report for Coolnabacky is included in Appendix 9.2.

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 9.3.

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.

9.1.3.5 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 2014, with an estimate of energisation in 2017.

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 site at any one time
- Maximum of 30 - 40 heavy vehicle deliveries to the site 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 local roads. These trips are incorporated into figures in Table 9.7.
- Three abnormal loads (transformers for example) over the course of the construction programme.

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 9.7 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	Indicative No of car movements per day	Ave Daily vehicles Jun 2012 (Traffic Counts)	Ave Daily HGV Jun 2012 (Traffic Counts)	% Inc of HGV	% Inc in Traffic
Coolnabacky						
Site Clearance	10	20	1358	47	64%	2.21%
Civil Constr.	40	30	1358	47	85%	5.15%
Electrical works	2	40	1358	47	64%	3.09%
Ballyragget						
Site Clearance	30	20	991	38	79%	5.05%
Civil Constr.	40	30	991	38	105%	7.06%
Electrical works	2	40	991	38	79%	4.24%

Table 9.7 Summary of Postulated Traffic Impacts arising from Substation Activities

9.1.4 POTENTIAL IMPACT

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 a significant long-term 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.

9.1.4.1 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 Coolnabacky, 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 Coolnabacky 400/110kV Substation (Unit 1)

The Coolnabacky site is adjacent to a local laneway which is approximately 1.2 kilometres distance from the R426 Money Cross to Timahoe regional road. To access this junction, traffic is likely to use the M7 motorway (from north), exiting at junction 16 (Portlaoise East), R425 regional road and continue onto the R426 to the site location. The use of the M7 motorway will divert traffic away from Portlaoise town to Coolnabacky substation. This is the route that will be taken for the 400kV transformers.

From the south, traffic is likely to use the N77 to Abbeyleix, the R427 through Ballyroan and continue onto the R426 to the site location.

AECOM Transportation was consulted by ESBI to prepare a *Haulage Route Assessment Report* for the transportation of two 400kV transformers from Dublin Port to the proposed site at Coolnabacky. A summary of the report is 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 Coolnabacky, 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, using a designated route on closed roads and under escort from An Garda Síochána.

The purpose of this report is to:

1. Outline the route which will be taken
2. Locate possible issues on the route by use of Irish Grid co-ordinates
3. Identify any hazards at these locations and recommend possible remedial action.

Route Selection and Assessment Methodology

The transportation route will include a number of local authorities, primarily with Dublin City Council where the route runs through a large built-up area. There are several possible routes for haulage of oversized and abnormal loads from Dublin Port to sites outside the City, such as:

- i. Via the City Quays and the N4 to the M50
- ii. Via East Wall Road - Alfie Byrne Road - Howth Road - Collins Avenue - Malahide Road and the N32 to the M50, or
- iii. As per option ii above, but due to overhead height restrictions on Clontarf Road and Howth Road, the alternative route is via Clontarf Road - Windmill Road (Raheny) and onto Collins Avenue via the Howth Road.

Following a desktop study of the potential routes and consultation with Dublin City Council, the most suitable haulage route was identified as option ii (above).

Route Option II

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 M50, transportation continues to Junction 9 passing through both Final County Council and South Dublin County Council. Route continues to N7/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. Total haulage route is approximately 124km and length will be divided into three sections for assessment purposes:

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

Route option ii was assessed by Aecom on 7th February 2012, which involved driving the exact route set out in option ii above. Photographs and videos of route were taken when deemed necessary.

Findings of Route Assessment

Section 2 of Aecom's report examined all three route sections separately. Within each section, photographs were taken, hazards were identified, locations were noted with reference to grid-coordinates and the locations marked on maps for verification purposes. Suggested remedial measures were also proposed for issues where applicable.

Summary and Conclusion

Summary

The haulage route total is approximately 124km. 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 discernable obstacles or alignment constraints and progress will be straight forward. From the examined sections, 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.

Conclusion

In summary, transporting the transformer on this route should not prove insurmountable. Dublin City Council has designated this route 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 specialise in the haulage of abnormal loads and 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 this report. 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.

To briefly summarise, the report concluded that the transportation of transformers on this route should not prove insurmountable. The report also recommended that Autotrack analysis is carried out on key junctions prior to construction. Liaison is to be made with NRA, An Garda Síochána, Irish Rail and Local Authorities involved in the planned route.

Proposed Ballyragget 110/38kV Substation (Unit 4)

The Ballyragget site is adjacent to regional road R432 - Ballyragget to Ballinakill whose junction with the N77 Ballyragget - Kilkenny road is approximately 1.3 kilometres away. To access this junction, traffic is likely to use the N77 National Secondary Road from both the north and south.

Excess excavated material from Ballyragget will be transported to the Coolnaback site in Co. Laois (approximately 35 kilometres). The proposed transportation route for the material is from the R432 (Ballyragget) - N77 - N8 (Durrow - Abbeyleix) - R425 (Ballyroan) - R426 to substation site at Coolnaback. The volume of inert material for transportation from the site is approximately 3,500m³. This volume equates to approximately 400 vehicle movements (assuming a factor of 9m³ per vehicle) of material leaving the Ballyragget site which equates to approximately 800 vehicle movements including empty trucks back to site. Assuming, per day, an estimate of 5 trucks are in operation and assuming each truck transports 3 loads of material (27m³) then the volume of traffic associated with this activity would approximately be 30 trips in/out of the site per day. By these calculations it would take less than 6 weeks (based on consecutive days excluding weekends) to transport the excavated material. Table 9.7 incorporates these trips in calculating the percentage increase in traffic associated with this work, which is just over 5% increase in traffic.

An underground cable will connect the substation to the nearest interface tower from the Ballyragget - Coolnaback 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. Road access will be reduced to one lane as the cable is laid. Disruption to traffic is expected, but for a short duration only. Traffic signage and traffic light systems will aid the flow of traffic while temporary disruptions take place. Traffic Management plan will be agreed with Local Authority and AnGarda Síochána.

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.

9.1.4.2 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 9.8. 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 9.8 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.

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.

9.1.4.3 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.

9.1.4.4 Air Navigation & Railways

Midlands Heliport is located near Ballinakill, Portlaoise, Co.Laois and is currently in use as a micro-light training aerodrome. The Irish Aviation Authority was contacted with respect to the development and no issue was identified by them with respect to aviation. 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.

The mitigation applied is the careful routing of the line route in the vicinity of the Heliport. Aircraft warning spheres can be attached to the overhead line in consultation with the Heliport owners and the IAA if required. The distance from the Heliport to the proposed overline route is approximately 600m.

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.

9.1.5 SAFETY

Road Safety Audits (RSA) were completed by AECOM Transportation on the proposed existing access roads at Coolnabacky and Ballyragget.

The site access proposal at Coolnabacky includes moving the 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 is carried out to achieve sightline requirements. The Safety Audit Reports indicates problems identified and provides recommendations for solving these problems. Appendix 9.4 and 9.5 of this report contains the Coolnabacky and Ballyragget Road Safety Audits. Attached also the the RSA reports are the designers responses to the road safety audit reports.

9.1.6 MITIGATION

The following mitigation is proposed.

ESB will liaise with Laois County Council and Kilkenny County Council in regard to traffic management during construction and adhere to all its 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.
- A road sweeper and/or wheel washing facilities will be utilised to clean the public roads of any mud that may be introduced from the site roads.
- 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 extendable transported vehicles on return journeys.

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 possible, 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 agreed with the relevant Local Authorities.

A condition assessment of county and regional roads will be undertaken and in the event of damage the roads will be reinstated 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 proposed Coolnabackey site.

9.1.7 RESIDUAL IMPACTS

There will be low short term traffic impacts on the R426 and R432 regional roads during the construction works at Coolnabackey 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.

9.2 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 the following legislation:

- 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 current Waste Management Plans are being evaluated under the transposing regulations (S.I. 126 of 2011) of the Waste Framework Directive (2008/98/EC). The Directive states that all plans are to be evaluated and revised by 31 December 2012. 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:

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

9.2.1 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). Development works of overhead lines will mainly generate waste including, steel, conductors and insulators from decommissioned lines. Reuse of materials will be practiced where possible.

9.2.2 POTENTIAL IMPACT

9.2.2.1 Proposed Substations

9.2.2.1.1 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 would allow the material to be beneficially reused and would 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 Coolnabacy 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 to obtain a *Certificate of Registration* if excavated material is being disposed or recovered. 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 requires 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.

Foul Effluent

Temporary facilities will be provided for construction works at Coolnaback 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.

9.2.2.1.2 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.

9.2.2.2 Overhead Lines

It is envisaged that little waste will arise from the new Coolnaback 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.

Wooden Poles

Poles not suitable 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.

Steel & Aluminium

The upgrading of lines requires 16 steel towers to be replaced. Steel will be sent to a licensed metal contractor for recycling. Approximately 14 towers will be decommissioned as waste from the Ballyragget to Kilkenny line and 2 from the Athy to Portlaoise line.

Timber & Hedges

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.

9.2.3 DECOMMISSIONING PHASE

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 sixty years.

Any decommissioning will be agreed in advance with the Local Authority.

9.2.4 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 Coolnabacky. A Certificate of Registration will be sought from the Local Authority for the reuse of excavated soil at Coolnabacky.
- 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.

9.2.5 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 Coolnabacky 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.

9.3 UTILITIES

9.3.1 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 sites. However, the information only provides a general guide. Service pipes are not shown but their presence should be anticipated until such time as a pre-construction audit confirms the position.

The nearest gas pipeline to the sites in Laois is located some distance away in Portlaoise and Athy. 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.

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.

9.3.2 TELECOMS

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

Mitigation

A site specific risk assessment must be completed. 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.

9.3.3 WATER SUPPLY

9.3.3.1 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.

9.3.3.2 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 from the substation from the local groundwater resource through a bored well. The expected demand will be similar to 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.

9.3.3.3 Mitigation Measures

There is no mitigation required.

9.3.4 WASTEWATER TREATMENT

9.3.4.1 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.

9.3.4.2 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 off 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 off 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.

9.3.4.3 Mitigation Measures

- All sewage at Coolnabacky 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. Percolation will be carried out by an approved site assessor.

9.3.5 ENERGY SUPPLY

9.3.5.1 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.

9.3.5.2 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.

9.3.5.3 Mitigation Measures

Diesel generators onsite during construction should be placed in a bunded area and drip trays should be used when refuelling.

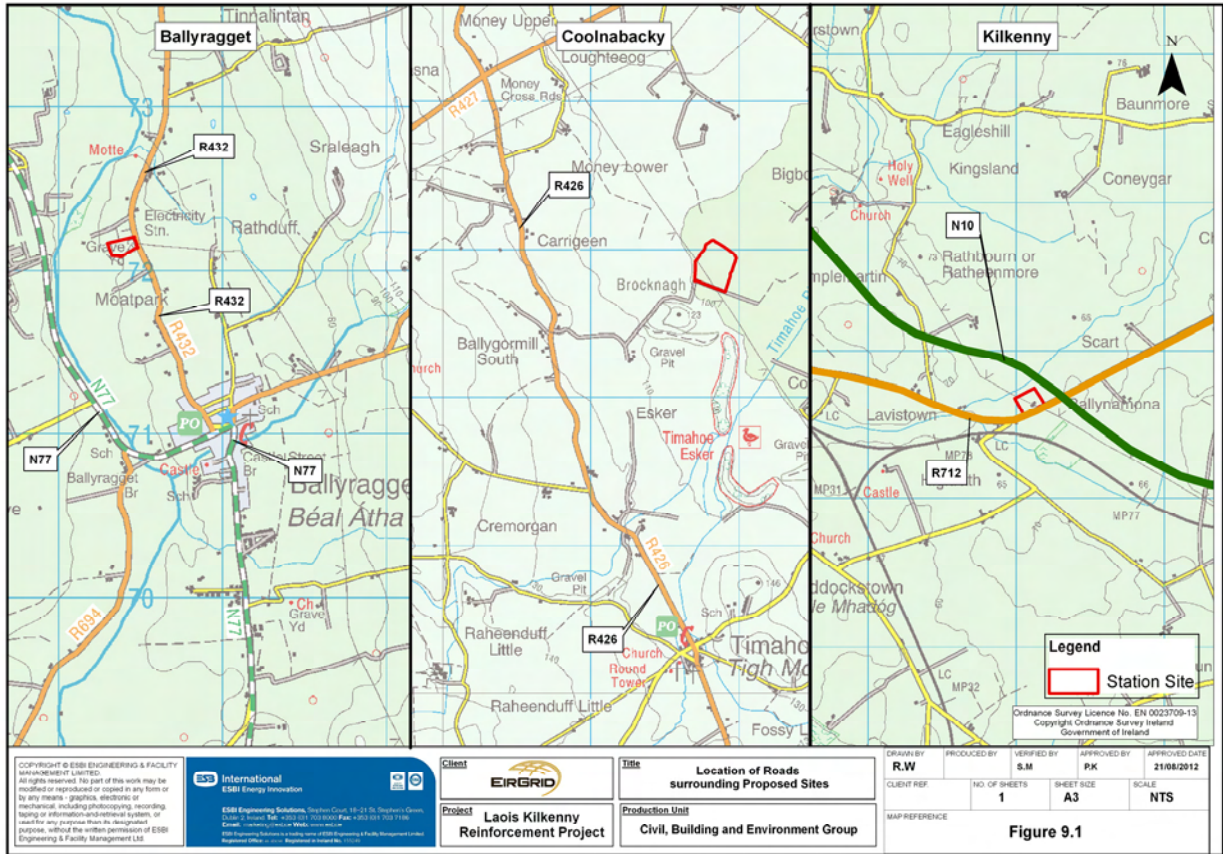


Figure 9.1 Principle Roads in Development Area

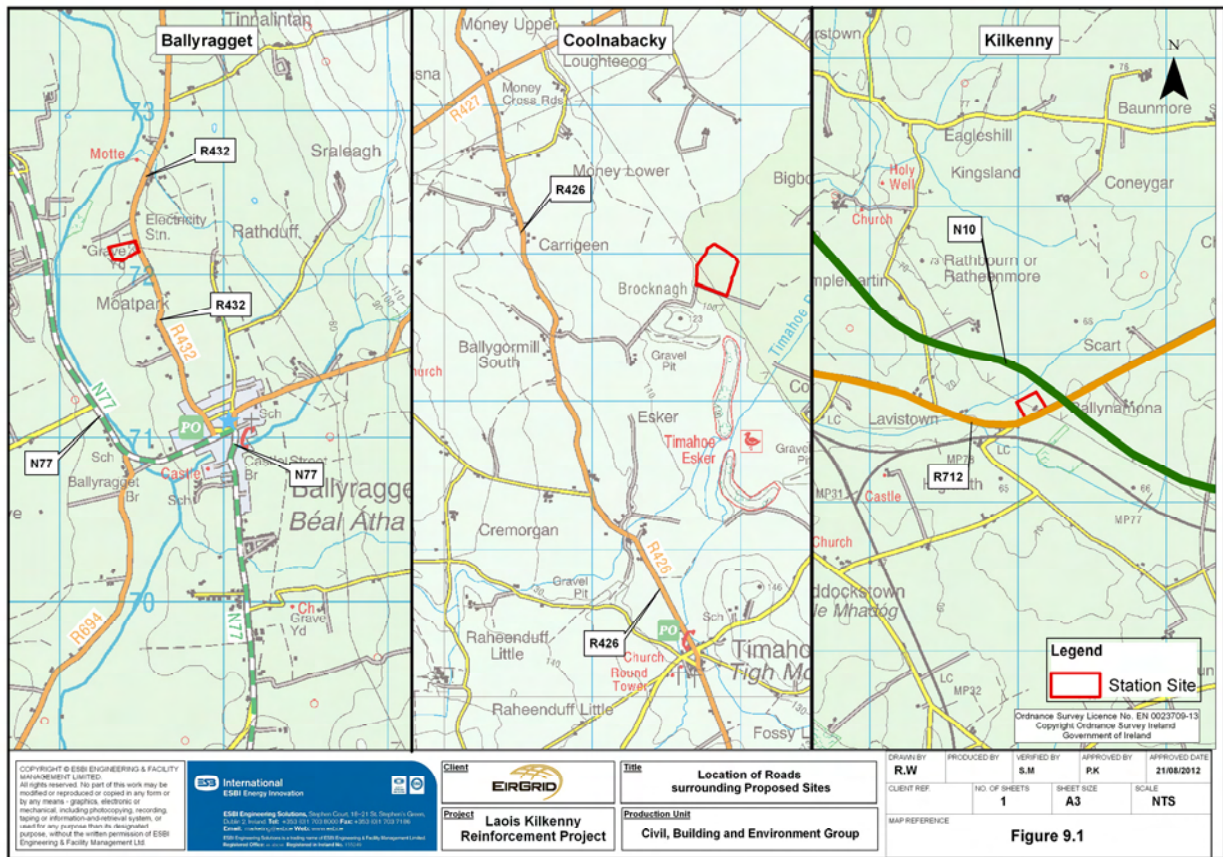


Figure 9.2 Automatic Traffic Count Locations