# 14 SCHEDULE OF COMMITMENTS

The following details the mitigation measures arising from the assessment of the development that will be referred to in determining the environmental commitments and requirements which should be adhered to during the project construction and operation. In the event of the project being granted permission, it is intended that this Schedule of Commitments would inform the Construction Environment Management Plan (CEMP) to be adhered to by the project.

## 14.1 PROJECT AND CONSTRUCTION MANAGEMENT

### 14.1.1 WORKING HOURS

Site development and building works will generally be carried out during normal working hours. In exceptional circumstances works may be required outside of these hours.

### 14.1.2 WASTE MANAGEMENT

All waste arising during the construction phase will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts and regulations and any of the relevant Local Authorities Waste Management Plans. A Construction Waste Management Plan will be implemented to minimise waste and ensure correct handling and disposal of construction waste streams in accordance with the *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of the Environment, July 2006.*

### 14.1.3 REINSTATEMENT OF LAND

Once all works are complete, the access route and the construction areas around the overhead line structures will be restored to their original condition. Generally this work is carried out by a specialised agricultural contractor and is carried in accordance with the relevant IFA agreements and in consultation with the individual landowner.

A landscaping scheme for the Ballyragget and Coolnabacky substations forms part of the planning application which will be implemented towards the end of the construction phase.

### 14.1.4 COMMERCIAL FORESTRY AND HEDGING

#### 14.1.4.1 Commercial Forestry

The proposed new Ballyragget – Coolnabacky line crosses commercial forestry. The normal corridor widths centred on the line to be left clear of trees for 110 kV lines is 61 metres.

#### 14.1.4.2 Hedges

Hedges need to be managed under powerlines. All trees should be outside their falling distance from any part of any overhead line support.

### 14.1.5 CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

For infrastructure projects of this nature it will be a requirement of the construction contract to prepare a Construction Environment Management Plan (CEMP). For similar projects where An Bord Pleanála has granted planning approval a condition has been attached in relation to preparing a CEMP. The wording in the condition is generally as follows[34]:

*Prior to commencement of construction, a Construction Environment Management Plan (CEMP) shall be submitted to, and agreed in writing with, the planning authorities, following consultation with relevant statutory agencies. This plan shall incorporate the mitigation measures indicated in the EIS, and any*

[34] An Bord Pleanála references PL08 .VA0012, PL25 & VA0013, PL06F.VA0014.

*others deemed necessary, and shall provide details of intended construction practice for the proposed development, including:*

a. *location of the site and materials compound(s) including area(s) identified for the storage of construction refuse,*
b. *location of areas for construction site offices and staff facilities,*
c. *details of site security fencing and hoardings,*
d. *details of on-site car parking facilities for site workers during the course of construction,*
e. *details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site,*
f. *measures to obviate queuing of construction traffic on the adjoining road network,*
g. *measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network,*
h. *alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road during the course of site development works,*
i. *details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels,*
j. *containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater,*
k. *disposal of construction/demolition waste and details of how it is proposed to manage excavated soil,*
l. *a water and sediment management plan, providing for means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local water courses or drains,*
m. *details of a water quality monitoring and sampling plan.*
n. *if peat is encountered - a peat storage, handling and reinstatement management plan.*
o. *measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed).*

In the event that An Bord Pleanála grants approval for the proposed development, a CEMP will be prepared addressing these and any other issues specified by An Bord Pleanála for agreement with the planning authorities.

## 14.1.6 MAINTENANCE

The design life for all the units of the development is 50 to 60 years.

During this lifespan there will be on-going maintenance on the different units. The routine maintenance within the substations will be contained to the substation site and no environmental impacts are envisaged. The maintenance on the overhead lines will require access through third-party lands from time to time. The following section describes the expected maintenance requirements for the overhead lines over the lifetime of the project.

### 14.1.6.1 Overhead Lines Maintenance

#### 14.1.6.1.1 Overhead line Patrolling

Helicopter patrols of overhead lines are carried out once a year. These patrols will be advertised in advance.

Foot patrols of overhead lines are carried out every 5 years. The landowners will be contacted in advance.

#### 14.1.6.1.2 Towers

Tower Painting at approx. 35 to 40 years' service for all steel structures to get additional 15 to 20 years prevention of steel corrosion.

#### 14.1.6.1.3 Woodpoles

Poleset replacement is generally due to rot or damage. Over a 50 year period is normal for approximately 25% of the polesets to be replaced.

#### 14.1.6.1.4 Insulator & earthwire hardware

It is estimated that 25% earthwire hardware replacement, less than 5% glass insulator replacement on the 400 kV line will be required after 30 years and less than 5% composite insulator replacement on the 110 kV line will be required after 30 years.

#### 14.1.6.1.5 Foundation

No foundation maintenance work is generally required.

#### 14.1.6.1.6 Conductor

No conductor maintenance work is generally required.

### 14.1.7 DECOMMISSIONING

The expected lifespan of the development is in the region of 50 to 60 years. In the event that part of, or, the entire proposed infrastructure is to be decommissioned, all structures, equipment and material to be decommissioned will be removed and the land reinstated.

### 14.1.8 HEALTH & SAFETY

#### 14.1.8.1 Design & Construction

During the design, and throughout the construction of the development EirGrid/ESB personnel, designers, project supervisors, contractors, and workers have been and will be required to comply with current Health and Safety legislation.

ESB have policies, procedures and systems, which will be in place, in the unlikely event of an accident or emergency incident occurring during the construction of the development.

#### 14.1.8.2 Development lifetime

Safety is a core ESB Group value and is fundamental to ESB's commitment to operate in a socially responsible manner. ESB regard the health, safety and welfare of their workforce, contractors and the communities they serve as a priority.

For this type of development ESB have policies, procedures and systems in place, in the unlikely event of an accident or emergency incident occurring during the lifetime of the development.

## 14.2 HUMAN BEINGS AND POPULATION

The proposed route of the overhead line has avoided towns and villages and has taken account of the number of dwellings and tourist attractions etc. at the outset – mitigation through the design of the line. The locations of the new substations have been designed to minimise the impact on the amenities of the area.

During construction, the contractor will ensure that any works which could involve the transport of large loads along the public roads will be managed to avoid any conflicts with festivals and events likely to attract large numbers of people to the region, such as the Electric Picnic festival.

As regards particularly sensitive locations, it is noted in Section 6.4.2.1.3 of the Landscape and Visual Impact section that there will be no effects on the Haywood Demesne or gardens, or Timahoe Round Tower. Views from the Rock of Dunamase southwards towards the proposed route are obscured by areas of high ground around Hewson Hill.

## 14.3 LANDSCAPE

The principal landscape mitigation method employed was the route selection process. This was carried out to anticipate, avoid or minimise the location of the proposed route in areas likely to give rise to significant adverse effects on the appearance or character of the landscape. This approach avoided the environs of settlements, minimised crossings of water bodies or prolonged routing along prominent upland ridges.

## 14.4 CULTURAL HERITAGE

The detailed assessment process i.e. constraints report, route selection report and assessment of the preferred route has resulted in no profound or significant impacts on the archaeological, architectural or cultural heritage along the proposed reinforcement project being identified. Whilst a number of mitigation measures are required, the majority of archaeological, architectural and cultural heritage features were 'designed out' of the proposed development. The following is recommended in the interest of protecting the archaeological heritage:

Any lands containing recorded monuments and newly discovered sites to which access was not permitted at the time of survey should be inspected by an archaeologist prior to the commencement of construction works.

The following mitigation measures are recommended and discussed according to each unit. All mitigation measures are suggestions only and are done so in the interest of safeguarding the archaeological, architectural and cultural heritage. Such mitigation measures should be included in the Construction, Environmental and Management Plan (CEMP) for the project.

### 14.4.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

- Given the presence of crop marked field systems (both recorded monuments and new sites – see Section 7.3.1.2.2 and 7.3.1.2.3) within proximity to the substation site, it is recommended that the proposed substation site be archaeologically tested prior to the commencement of construction. The use of geophysical survey should also be considered at the earliest stage possible in order to detect previously unknown sites of potential. A report outlining the results of the testing will be submitted to the DAHG and the National Museum for consideration. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.

### 14.4.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

- Pre-construction licensed archaeological testing of all tower bases along the 400kV line as requested by the DAHG in pre-planning consultation. A report should be submitted to the Local Authority and the DAHG for consideration. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.
- Access to the proposed line at the construction stage of the development will largely utilise existing roads, tracks and farm passages where present. Impacts on the archaeology or cultural heritage by the tracking/ operating of heavy machinery on such access routes are therefore likely to be minimal. In the interest of ensuring that such impacts do not occur an examination of the proposed construction access routes adjacent to Recorded Monuments/Cultural Heritage features which were not subject to field survey (permission was not granted) should be undertaken by an archaeologist prior to the commencement of the development. Access tracks which extend close to a recorded monument should be clearly delineated prior to commencement of construction and machinery should not deviate from the delineated track.

### 14.4.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

- Pre-construction licensed archaeological testing of the proposed cable routes. A report should be submitted to the Local Authority and the DAHG for consideration. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.

### 14.4.4 UNIT 4 - A NEW 110KV / 38KV / MV SUBSTATION IN BALLYRAGGET, CO. KILKENNY

- Pre-construction licensed archaeological testing of the substation site should be undertaken by a licensed archaeologist and a report submitted to the relevant authorities for consideration. This is in order to mitigate against the presence of potential sub-surface archaeological finds, features or deposits. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.

### 14.4.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

- Access tracks which extend close to a recorded monument or a cultural heritage feature should be clearly delineated prior to commencement of construction and machinery should not deviate from the delineated track.
- Geophysical Survey should be undertaken in the vicinity of the KK005-095 Field System and KK005-094 Enclosure where it is proposed to access the site and construct the poleset. This should be undertaken prior to construction taking place to confirm the extent of the identified field system. This may be followed by archaeological testing depending on the results of the geophysics.
- Pre-development archaeological testing (depending on the results of the geophysics) of poleset BC5 in order to confirm whether any sub-surface archaeological deposits are present in the area of the proposed poleset. A report on the testing will be submitted to the Local Authority and the DAHG for consideration. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.
- Archaeological monitoring of Poleset BC5 and BC6 at Rathduff due to proximity of leveled enclosure KK005-094 and KK005-095.
- Consider utilizing alternative access track (existing farm track) between BC5 and BC6.
- Archaeological Monitoring of BC12 and movement of machinery along construction access track – 19m from possible ringfort
- Archaeological monitoring of angle mast BC18 adjacent to field system KK005-016 at Ballymartin.
- Archaeological Monitoring of poleset and associated construction access track to BC109 adjacent to levelled enclosure LA024-025
- Archaeological Monitoring of machinery along construction access track between BC103 and BC104 adjacent to limekiln on 1st Ed map
- Archaeological Monitoring of guard point construction between BC88 and BC89 adjacent to Boleybeg Bridge
- Archaeological monitoring of machinery along access track to BC56 in the vicinity of ringfort LA030-022
- Archaeological monitoring of machinery along proposed construction access track to BC33 due to limekiln in area of track (1st Ed map)
- Archaeological monitoring of poleset BC75 and associated construction access track adjacent to LA030-016
- Archaeological monitoring of guard point and access tracks associated with BC46 and BC47 adjacent to Ecclesiastical Complex at Loughill KK001-004
- Archaeological monitoring of BC131 and associated guard point adjacent to possible Fulacht Fiadh (Aerial Photo) at Cremorgan.

- Archaeological Monitoring of movement of machinery along proposed construction access track between BC129 and BC130 due to site of limekiln on 1st Ed map.
- Archaeological monitoring of BC147 adjacent to Possible Field System at Money Lower.

### 14.4.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

- Proposed construction access tracks which extend close to a recorded monument or cultural heritage feature should be clearly delineated prior to commencement of construction and machinery should not deviate from the delineated track.
- Avoidance of any direct impacts on Dunmore Park demesne Wall when re-positioning poleset BK61 at WL58/59 boundary
- Archaeological monitoring of BK4 angle mast, guard points and movement of machinery adjacent to KK005-096 and 024
- Archaeological monitoring of BK12 poleset replacement adjacent to ringfort at Ballyragget KK010-003. Given the proximity of the monument to the proposed works, it is recommended that the monument be temporarily fenced off prior and during construction works. A 15m buffer zone should be established around the monument (see Figure 7.38). The movement of machinery to the east of the ringfort should also be supervised by an archaeologist after the ringfort has been fenced off.
- Archaeological monitoring of ground works at angle mast BK19 and movement of construction machinery. The centre point of the levelled enclosure KK010-183 at Donaghmore is located 53m from the nearest structure. The full extent of the enclosure is not known therefore it is possible that the original outer extent of the monument is closer to the poleset.
- Archaeological monitoring of ground works associated with BK24 due to its proximity to levelled enclosure KK010-141.
- Archaeological monitoring of ground works associated with BK25 due to presence of levelled monument KK010-154 and several similar monument types to SW.
- Archaeological monitoring of BK62 and associated movement of machinery adjacent to KK014-040 levelled ringfort
- Archaeological monitoring of poleset BK76 adjacent and to NW of ringfort KK014-068 at Brownstown. Archaeological monitoring of movement of machinery along proposed construction access track to BK76 due to proximity to KK014-68.
- An archaeologist should record (including drawings and photographs) the limekiln 4 prior to the commencement of development.
- Archaeological monitoring of poleset replacement BK 30 and 27 adjacent to three new sites of local heritage significance (lime kilns 4, 6 and 7) at Connahy. The replacing of polesets in these locations should take into account the location of the lime kilns.

### 14.4.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

No mitigation necessary.

### 14.4.8 UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

- Archaeological monitoring of replacement of polesets AP101 and 102 due to proximity to field systems.
- Pre-development archaeological testing of AP105 due to its location in an area high in occurrence of crop-marked field systems. A report on the testing should be submitted to the Local Authority and the DAHG for consideration. Should archaeological finds or features be uncovered during the testing preservation *in situ*, preservation by record (excavation) or further monitoring of ground works may be required.
- Access tracks which extend close to a recorded monument or cultural heritage feature should be clearly delineated prior to commencement of construction and machinery should not deviate from the delineated track.

# 14.5 ECOLOGY

This section provides recommendations for measures, which can mitigate or compensate some of the predicted ecological impacts of the proposed development.

## 14.5.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

Few ecological impacts have been identified in relation to the construction of the Coolnabacky substation and therefore little mitigation is required as outlined below.

The main impact identified is the potential effects on surrounding watercourses due to site run-off during the construction and operation phase of the project. Measures to mitigate these potential impacts are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. Existing road infrastructure is to be used to access the substation site. A rigorous site selection process examined a number of alternative site locations, the results of which were presented in a site selection report. This selection process considered potential ecological impacts in recommending the current site as being most suitable.

It is intended that excavated material will be used on site for landscaping or for re-instatement measures. Other wastes will be removed for disposal at an appropriate licensed waste disposal facility (see Section 11.3). Note that this mitigation measure applies to all units.

In relation to potential impact on groundwater fed watercourses it is proposed that continuous monitoring will be employed where the contractor proposes any dewatering during the construction phase and proposals for dewatering and monitoring will be approved by the designers and ecologist for the project.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

*Mitigation by remedy*

Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction and Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts. This plan shall incorporate the mitigation measures indicated in the EIS, and any others deemed necessary, and shall provide details of intended construction practice for the proposed development, including the following which are of relevance to ecology:

a) details of site security fencing and hoardings,
b) details of on-site car parking facilities for site workers during the course of construction,
c) details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site,
d) measures to obviate queuing of construction traffic on the adjoining road network,
e) measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network,
f) alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road during the course of site development works,
g) details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels,
h)
i)Measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed)

Monitoring of the construction phase shall be carried out by an environmental engineer and an ecologist each of whom shall be appropriately qualified and experienced, to ensure that all mitigation measures contained in the CEMP are implemented.

*Specific mitigation relating to birds, bats and mammals*

Construction: Any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

*Specific mitigation relating to water quality*

Surface water Protection

Drainage and runoff controls will be installed prior to starting site clearance and earthworks.

Erosion Control

Erosion control (preventing runoff) is much more effective than sediment control in preventing water pollution. Erosion control is less subject to failure from high rainfall and requires less maintenance.

Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments are provided for in the design. This is primarily the use of existing site drains to channel runoff from up slope portions of a catchment around any construction areas or areas disturbed as a result of construction works.

Other inherent erosion control measures in the design include the design of roadways with minimum falls which do not exceed 15%.
Additional erosion control measures will be provided for in the construction management proposals. These measures will include the following:

- Minimise the area of exposed ground. Backfilling and construction will occur in conjunction with excavation and excavation will not proceed faster than the rate of construction. Re-vegetating of disturbed area to take place as soon as possible.
- Monitoring of the weather forecast prior to planning excavation works.

- Providing impermeable mats (plastic sheeting) as covers to mounded excavated material and open excavations during periods of heavy rainfall.

Silt fences to be provided at the toe of any significant areas where excavated material is stored.

Sediment Control
The Settlement Ponds are an integral part of the sediment control and containment measures on site and the protection of watercourses. Settlement ponds will be provided adjacent to the areas of the site where the most excavation or earthworks are planned.

The settlement ponds on the site have been sized to provide an adequate treatment volume for the first flush from the developed station and the ponds will ultimately have an attenuation volume so that surface water runoff can be limited to Greenfield runoff rates. This attenuation volume can be utilised as additional treatment volume in the construction phase when sediment generation is greatest.

The stone check dams which divide the pond into primary, secondary and final settlement compartments will further reduce turbulence which will aid settlement and provide filtering of water.

Surface water from the site will be discharged to existing vegetated drainage ditches within the site where further settlement of solids and filtering of surface water will occur prior to ultimate discharge to the adjacent watercourse.

Risk Management
The best way to manage pollution incidents is to prevent them. The contractor will identify and quantify risks associated with erosion and sediment for each work practice. Risks such as an unplanned bank collapse, mud slide and unforeseen rainfall event can be constantly assessed through geotechnical risk management and monitoring of weather forecasts.

Emergency Plans and Procedures
The contractor will prepare an emergency response plan and set of procedures for events likely to cause pollution including the pollution of watercourses with silt or sediment. There will be a contingency plan in place during construction which will be displayed at appropriate locations.

Equipment, Training and Corrective Action
Equipment required in responding to an emergency event with the capability of generating additional erosion and sediment laden runoff will be stored on site. Staff will be trained in the use and application of these temporary emergency measures which may involve the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood fibres and gravel) to stabilise or protect cleared areas;
- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Staff will be trained and made aware of procedures for notification of emergency events with the potential for pollution of watercourses.

Monitoring
Ongoing water monitoring at the discharge points and the receiving waters will be a key indicator of the effectiveness of the erosion and settlement control measures and the requirement for corrective action or the deployment of additional measures as outlined above. Methods, frequency and parameters to be monitored will be discussed and agreement sought with Inland Fisheries Ireland and National Parks and Wildlife Service prior to construction commencing.

Groundwater Quality Protection
The contractor will store all chemicals, hydrocarbon based fuels and oil filled equipment when not in use in bunded areas of the site.

The contractor will have emergency spill kits comprising oil absorbent materials on site and staff trained in the use of these. Emergency response measures to oil/ fuel leaks will be displayed prominently on the site.

Sustainable Drainage Systems (SuDS) in the drainage network design will be put in place early in the construction phase to filter and biodegrade hydrocarbons in the unlikely event that any enter the water on the site.

In the operational phase, all oil filled equipment will be stored in impermeable concrete bunds. Surface water generated in the bunded areas will be pumped out of the bunds by an oil sensitive pump. There will also be an oil separator on the drainage network. Surface water will be routed through ponds and vegetated drainage ditches before discharge to the watercourse.

There will be no large scale batching of concrete on the site. All concrete will come from a licensed supplier with environmental certification. No washing out of concrete supply trucks will be allowed on the site. No cementitious material will be allowed enter the water or groundwater on the site. Monitoring and emergency response measures for any escape of cementitious material will be put in place by the contractor.

Any foul waste generated in the construction and operational phase of the project will be collected and disposed off site by a licensed contractor. No contamination of groundwater will occur from foul waste.

### 14.5.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

Few ecological impacts have been identified in relation to the new connection to Coolnabacky from the existing Moneypoint-Dunstown 400kV line and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

All structure locations are removed from any habitats of ecological importance being confined to intensively farmed agricultural lands. Access to structure locations will be via existing tracks used by farm machinery on a regular basis as shown by the ‘indicative access routes’.

Machinery used during construction will be cleaned prior to entering construction sites to prevent the spread of non-native invasive plants. In general, relevant recommendations in the manual 'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' (NRA, 2008) will be followed to minimise the risk of invasive species becoming established in the development area.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

*Specific mitigation relating to birds, bats and mammals*
Construction: Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

Prior to construction, once the felling requirements of the project are known, bat surveys of specific trees due for felling will be undertaken by a bat specialist. This survey will identify bat roosts that would be impacted due to felling. To proceed with the felling of those trees that may be identified as bat roosts, it will be necessary to acquire a derogation license from National Parks and Wildlife Service.

Guidance developed by the NRA[35] in relation to tree felling and hedgerow removal will be followed throughout the construction phase of the project. These measures will be outlined in detail in the Environmental Management Plan that is to be drawn up for the construction phase of the project.

### 14.5.3 Unit 3 New connection to Coolnabacky from the existing Athy-Portlaoise 110kV line

Few ecological impacts have been identified in relation to the new connection to Coolnabacky and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
The route of the proposed connection avoids habitats of ecological value. Existing road infrastructure is to be used to access the substation site.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

*Specific mitigation relating to birds, bats and mammals*
Construction: Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

### 14.5.4 Unit 4 - A new 110kV / 38kV / MV substation in Ballyragget, Co. Kilkenny

Few ecological impacts have been identified in relation to the construction of the Ballyragget substation and therefore little mitigation is required as outlined below.

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. The site adjoins an existing 38kV substation at Ballyragget. Existing road infrastructure is to be used to access the substation site.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 14.5.2.

[35] *National Roads Authority. Guidelines for the treatment of bats during construction of national road schemes. NRA, Dublin.*

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

*Specific mitigation relating to birds, bats and mammals*
Construction: Any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

*Specific mitigation relating to water quality*

Groundwater and surrounding surface water protection

The contractor will store all chemicals, hydrocarbon based fuels and oil filled equipment when not in use in bunded areas of the site.

The contractor will have emergency spill kits comprising oil absorbent materials on site and staff trained in the use of these. Emergency response measures to oil/ fuel leaks will be displayed prominently on the site.

In the operational phase, all oil filled equipment will be stored in impermeable concrete bunds. Surface water generated in the bunded areas will be pumped out of the bunds by an oil sensitive pump. There will also be an oil separator on the drainage network. Only after these measures will surface water then be recharged to groundwater through source control techniques (soakaways) in line with SuDS best management practices.

There will be no large scale batching of concrete on the site. All concrete will come from a licensed supplier with environmental certification. No washing out of concrete supply trucks will be allowed on the site. No cementitious material will be allowed enter the water or groundwater on the site. Monitoring and emergency response measures for any escape of cementitious material will be put in place by the contractor.

Foul waste generated in the construction of the project will be collected and disposed off site by a licensed contractor. Foul Waste generated in the unmanned station during the operational phase will be treated on site before being further treated and disposed of to ground water in a designed percolation area. A suitably qualified professional has carried out a site assessment and designed the percolation area in accordance with EPA guidelines.

### 14.5.5 Unit 5 - A new 110kV overhead line between Ballyragget and Coolnabacky

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, structures have been located removed from habitats of ecological importance. Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 14.5.2.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

Where hedgerows and treelines are directly impacted at structure locations (including surrounding works areas), reinstatement by planting with native hedgerow species will be undertaken immediately following the completion of construction works with the aim of re-establishing the structure of the hedgerow as soon as possible.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

*Specific mitigation relating to birds, bats and mammals*

Collision Risk
To reduce the potential of bird fatalities associated with collisions, the current design of the scheme has avoided those areas highlighted as being important to bird species of conservation concern (see Appendix 8.1).

To further reduce any potential for impacts on sensitive bird species it is recommended that bird flight diverters be installed on the proposed line at a single location where the risk of collision is considered greatest, namely where the line crosses the Owenbeg River, at Boleybeg. Although few water birds were recorded utilising this area, it is probable that they use the river as a commuting route.

There are different types of flight deflector available and different types are suited to different local situations. Based on a review of literature, it is suggested that a spiral type marker similar to that used successfully in reducing swan collisions in the UK be considered (Frost 2008) (see Figure 8.4). These markers have recently been installed at water crossings along two 110kV lines in County Kerry in agreement with NPWS. The markers should be fitted on the earth wires at five metre intervals.

**Figure 14.1 Spiral type bird flight diverter proposed for use at the crossing of Owenbeg River at Boleybeg**

Disturbance

Prior to construction, once the felling requirements of the project are known, bat surveys of specific mature trees due for felling will be undertaken by a bat specialist. This survey will aim to confirm the number and location of Bat Roosts that would be impacted by felling. To proceed with the felling of those trees that may be identified as bat roosts, it will be necessary to acquire a derogation license from National Parks and Wildlife Service.

Guidance developed by the NRA[36] in relation to tree felling and hedgerow removal will be followed throughout the construction phase of the project. These measures will be outlined in detail in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project.

In relation to Otters, during field surveys undertaken along the proposed line route, no evidence of Otter activity (spraints, slides, feeding remains, runs, holts or couches etc.) was identified at or in close proximity to watercourse crossings. These surveys paid particular attention to those areas where construction works are proposed in proximity to watercourses and concentrated on suitable otter habitat such as river banks and areas of nearby dense vegetation that would provide suitable cover.

However, it remains a possibility that Otter territories could become established in proximity to the line route prior to construction commencing. Due to the strict legal protection of Otters (and their resting or breeding places) it is recommended that further pre-construction surveys be undertaken at watercourses

[36] *National Roads Authority. Guidelines for the treatment of bats during construction of national road schemes. NRA, Dublin.*

and adjacent habitats that occur in close proximity to structure locations to confirm the absence of Otter breeding sites. Should an otter resting or breeding site be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[37,38].

Similarly with Badgers, areas of woodland, scrub and hedgerows were surveyed for the presence of Badger setts throughout the length of the line route. No evidence of badgers was recorded during field surveys. While the survey results do not imply the absence of Badgers from the area they do suggest the absence of Badger setts (resting and breeding sites) and a relatively low level of Badger activity at those locations where the proposed line route crosses suitable habitat. Due to the strict legal protection afforded to Badgers (and their resting or breeding sites) it is recommended that further pre-construction surveys be undertaken in areas of suitable habitat that occur in close proximity to structure locations to confirm the continued absence of Badger setts. Should a Badger sett be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[39].

Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

*Specific mitigation at structure locations in proximity of watercourses*

Poleset Construction - Erosion & Sedimentation Control

Polesets are constructed over the short duration of 1 day per poleset. The main mitigation measure in this case will be to not carry out construction on days when there is rain or rain forecast (for the sensitive polesets noted above which are in the proximity of a watercourse). The contractor will monitor the weather forecast as part of the construction planning for the polesets.

It should be noted that, should groundwater seepage be encountered in excavations for the polesets, there is no requirement for de-watering. The top vegetated layer will be excavated carefully to keep the vegetation and root system intact. This layer will be placed carefully to one side and protected for the short duration of the construction. This layer will be reinstated following backfill around the polesets which will limit the potential for sediment runoff immediately after the construction of each poleset.

Excavated material will be stored safely so that the distance from the watercourse is maximised within the confines of the construction area and to ensure that there is a natural filter strip of vegetation between the excavated material and any water course. It should be noted that the entire volume of spoil per poleset will not exceed 40m$^3$ and the associated spoil heap will not occupy an area exceeding 20m$^2$. Sediment laden runoff from this small area during predominantly dry conditions is unlikely.

In the unlikely event of significant non-forecasted rainfall the contractor will have access to emergency sediment control measures in a site compound that can be transported to the poleset construction location within a short time period. These measures would include the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood
- fibres and gravel) to stabilise or protect cleared areas;

*[37] National Roads Authority. Guidelines for the treatment of Otters prior to the construction of National Road Schemes. NRA, Dublin.*
*[38] Northern Ireland Environment Agency. Otters and Development. NIEA, Belfast.*
*[39] National Roads Authority. Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. NRA, Dublin.*

- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Polesets Construction - Pollution Control

The risk of non-sediment related pollution during the construction for the polesets is minimal and may only be associated with oil leaks from the plant and machinery used in the construction. The following measures will be in place to mitigate the risk of and to respond in the event of an oil leak:

- All vehicles will be regularly serviced and kept in good condition;
- Vehicles will be checked daily for indications of leaking oil;
- No refuelling operations will take place at the construction site of the polesets;
- Spill kits will be readily available to drivers/ operators of plant and machinery; and
- Drivers/ operators of plant and machinery will be trained in the use of spill kits and aware of the contractor's emergency procedures for dealing with and reporting oil and fuel spills.

Angle Mast Construction - Erosion & Sedimentation Control

Angle Masts foundations are constructed over a period of less than 2.5 weeks per Angle Mast with the majority of this time required due to concrete setting time. Once the foundation is constructed and backfilled, the foundation is generally left for approximately 28 days before the mast is assembled. The mast assembly will cause no ground disturbance and takes place over a very short duration of time. The major mitigation measure in this case will be to not carry out construction at sensitive Angle Mast locations noted above which are in the proximity of a watercourse when there is a significant amount of rainfall forecast. The contractor will monitor the weather forecast as part of the construction planning for these Angle Masts.

Should the excavations for the Angle Mast foundations require dewatering due to groundwater seepage this water will be pumped through a portable settlement tank before discharge to the nearest drainage ditch. Existing vegetation as a filter strip prior to discharge to the drainage ditch will also be utilised where conditions allow.

The top vegetated layer will be excavated carefully to keep the vegetation and root system intact. This layer will be placed carefully to one side and protected for the short duration of the construction. This layer will be reinstated over the foundations following backfill around the Angle Mast foundations which will limit the potential for sediment runoff immediately after the construction of each Angle Mast foundation.

Excavated material will be stored safely so that the distance from the watercourse is maximised within the confines of the construction area and to ensure that there is a natural filter strip of vegetation between the excavated material and any water course. It should be noted that the entire volume of spoil per Angle Mast will not exceed 140 $m^3$. Much of this excavated material will be removed from site immediately as it will not be required for backfilling and landscaping around the Angle Mast foundations. The excavated material stored adjacent to the Angle Mast construction area for the short duration of the works is therefore unlikely to exceed 50-66 m3. The associated spoil heap will not occupy an area exceeding 36-46m2. Sediment laden runoff from this small area during predominantly dry conditions is unlikely.

In the unlikely event of significant non-forecasted rainfall during the construction period, the contractor will have access to emergency sediment control measures in a site compound that can be transported to the Angle Mast construction location within a short time period. These measures would include the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood fibres and gravel) to stabilise or protect cleared areas;
- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Angle Mast Construction - Pollution Control

The risk of non-sediment related pollution during the construction for the Angle Masts is minimal and may only be associated with oil leaks from the plant and machinery used in the construction or from the escape of cementitious material during the foundation construction. No chemicals will be stored at the construction site.

The following measures will be in place to mitigate the risk of and to respond in the event of an oil leak:

- There will be no fuel or oil stored at the Angle Mast construction location;
- All vehicles will be regularly serviced and kept in good condition;
- Vehicles will be checked daily for indications of leaking oil or fuel;
- No refuelling operations will take place at the construction site of the Angle Masts;
- Spill kits will be readily available to drivers/ operators of plant and machinery; and
- Drivers/ operators of plant and machinery will be trained in the use of spill kits and aware of the contractor's emergency procedures for dealing with and reporting oil and fuel spills.

The following measures will be in place to mitigate the risk of and to respond to the escape of cementitious material during foundation construction for Angle Masts:

- There will be no on site batching of concrete, grout or cement mortar at the Angle Mast construction locations;
- No washing out of concrete delivery vehicles or dumping of excess concrete will be permitted at the Angle Mast construction sites;
- Concrete skips, concrete pumps and machine buckets will be positioned so as not to allow slewing over water while placing concrete (the use of skips and pumps not envisaged);
- Freshly placed Concrete is to be covered to avoid surface washing away in heavy rain; and
- Clean up any spillages of cementitious materials immediately and disposed of correctly.

If temporary welfare facilities are required at the sensitive Angle Mast construction locations following investigation of alternative arrangements, these will be self-contained units and foul waste generated will be collected and disposed of by an approved licensed contractor.

*Specific mitigation relating to felling of conifer plantations*

General Mitigation Measures

- Forestry Operations within the Freshwater Pearl Mussel Catchment areas, including at the forest stands within the Owenbeg river catchment will be carried out strictly in accordance with the Forestry and Freshwater Pearl Mussel Requirements Site Assessment and Mitigation Measures published by the Forest Service.
- The Forestry and Freshwater Pearl Mussel Site Assessment Forms A and B which have been revised by Coillte and NPWS shall be used for all forestry operations within the Freshwater Pearl Mussel Catchments associated with the overhead line construction.
- The contractor appointed to harvest the timber will be fully briefed on the ecological sensitivity of the site and will work in collaboration with an ecologist to set out the proposed method and delineate working areas.
- Construction will adhere to the guidance document issued by Inland Fisheries Ireland South-eastern River Basin District Maintenance and Protection of the Inland Fisheries resource during road construction and improvement works published by the South-eastern Regional Fisheries Board. (Note that a new Guidance document is expected to be published shortly by Inland Fisheries Ireland entitled "Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters". Construction will adhere to this guidance once published).
- Should the need for any in stream crossings by construction vehicles be identified the Inland Fisheries Ireland shall be consulted and the approach to the crossing agreed with them. Any and all watercourses which have to be traversed during site development and associated track/road construction works should be effectively bridged prior to commencement.
- Work method statements should be developed and implemented by construction contractors for poleset construction.

- Access to construction areas should utilise existing field tracks to the extent possible to minimise the need for additional track construction.
- Proposed access tracks should be assessed by a qualified geotechnical engineer and ecologist to ensure the route minimises surface disturbance and silt generation.
- Re-fuelling of vehicles should not take place on site but in a secure bunded area well away from any watercourse.
- All oils and fuels should be stored in secure bunded areas, and particular care and attention should be taken during refuelling and maintenance operations on plant and equipment

Sediment Impact Mitigation

- Brash from the clearfell should be utilised as roading material for pole construction tracked vehicles to reduce impact on ground thereby minimising ground disturbance
- Existing forest drainage shall be reinstated where damaged to allow use to be made of vegetated ground areas to reduce the flow of silt overland.
- Silt traps and silt fences, such as geotextile membrane and straw bales, should be placed in the forest drainage network to minimise silt loss. These should be inspected and cleaned regularly. A series of stepped silt traps fences to trap any silt/debris will be installed. Their purpose will be to slow water flow and allow settlement of solids to occur. These will be regularly inspected and cleared out to ensure they are functioning properly.
- Traps should not be constructed immediately adjacent to natural water courses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact so as to assist in silt interception. They should be installed on forest drains.
- Pesticide if used for suppression of growth beneath the established overhead line should be minimised and used strictly in accordance with Forest Service Guidelines. Any plants used for the re-establishment of the site should be pre-dipped if required.
- Brash arising from forest felling should be used as roading for poling contractor tracked vehicles to the extent possible to avoid ground disturbance.

Nutrient Impact Mitigation

Potential nutrient release, particularly phosphorous will be limited by the fact that the trees are not at maturity and the quantities of brash generated will be relatively small compared to mature forest felling hence nutrient generation from brash decay will be low. In addition the forest stands are located on mineral soil types which generally adsorb phosphorous further reducing potential release to the aquatic environment. To further reduce the potential from nutrient impact:

- Brash should be windrowed at a distance of 20m from any main drain identified on site when the corridors through the forest stands have been clearfelled.

Monitoring

An ecologist will be present during the construction phase to ensure that all mitigation measures are adhered to, and to monitor the effectiveness of mitigation.

### 14.5.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

*Mitigation by avoidance*

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 14.5.2.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Also see hedgerows and treelines text under *Mitigation by remedy* under Section 14.5.5.

*Specific mitigation relating to birds, bats and mammals*
Disturbance
No impacts on bat roost sites are foreseen due to the proposed works on the Ballyragget to Kilkenny as there is no requirement for felling of mature trees.

In relation to Otters, during field surveys undertaken along the proposed line route, no evidence of Otter activity (spraints, slides, feeding remains, runs, holts or couches etc.) was identified at or in proximity to watercourse crossings. These surveys paid particular attention to those areas where construction works are proposed in proximity to watercourses and concentrated on suitable otter habitat such as river banks and areas of nearby dense vegetation that would provide suitable cover.

However, it remains a possibility that Otter territories could become established in proximity to the line route prior to construction commencing. Due to the strict legal protection afforded to Otters (and their resting or breeding places) it is recommended that further pre-construction surveys be undertaken at watercourses and adjacent habitats that occur in close proximity to structure locations to confirm the absence of Otter breeding sites. Should an otter resting or breeding site be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[40,41].

Similarly with Badgers, areas of woodland, scrub and hedgerows were surveyed for the presence of Badger setts throughout the length of the line route. No evidence of badger were recorded during field surveys. While the survey results do not imply the absence of Badgers from the area they do suggest the absence of Badger setts (resting and breeding sites) and a relatively low level of Badger activity at those locations where the proposed line route crosses suitable habitat. Due to the strict legal protection afforded to Badgers (and their resting or breeding sites) it is recommended that further pre-construction surveys be undertaken in areas of suitable habitat that occur in close proximity to structure locations to confirm the continued absence of Badger setts. Should a Badger sett be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[42].

Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

[40] *National Roads Authority. Guidelines for the treatment of Otters prior to the construction of National Road Schemes. NRA, Dublin.*
[41] *Northern Ireland Environment Agency. Otters and Development. NIEA, Belfast.*
[42] *National Roads Authority. Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. NRA, Dublin.*

*Specific mitigation at structure locations in proximity of watercourses*
*Those measures outlined in Section 8.5.5 will be applied at those structure locations that occur in close proximity to watercourses.*

## 14.5.7UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

Few ecological impacts have been identified in relation to the construction of the Ballyragget substation and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. The proposed works are confined to the site of the existing Kilkenny substation. Existing road infrastructure is to be used to access the substation site.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 14.5.2.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

*Specific mitigation relating to birds, bats and mammals*
Disturbance
Construction: Any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

## 14.5.8UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

*Mitigation by avoidance*
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 14.5.2.

*Mitigation by reduction*
Impacts will be minimised by limiting the extent of the works to the development footprint.

*Mitigation by remedy*
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Also see hedgerows and treelines text under *Mitigation by remedy* under Section 14.5.5.

*Specific mitigation relating to birds, bats and mammals*
Measures outlined in Section 8.5.6 above should be undertaken to minimise any potential impacts on birds, bats and mammal species prior to and during the construction phase of the Athy to Portlaoise line route.

# 14.6 SOILS AND GEOLOGY

The design of the proposed substations and line routes has taken account of the potential impacts of the developments on the soils and geology environment local to the area where construction is taking place. Measures have been incorporated in the design to mitigate the potential effects on the surrounding soils and geology environment. These measures seek to avoid or minimise potential effects in the main through the implementation of best practice construction methods and adherence to all relevant legislation.

A project-specific Construction and Environmental Management Plan (CEMP) will be established and maintained by the contractors during the construction and operational phases. The CEMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the procedures. In consideration of soils and geology the Plan will, as a minimum, consider the following sources:

- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA)[19]
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005[20]
- CIRIA Control of water pollution from linear construction projects. Technical guidance (C648), 2006[21]

The mitigation measures for end of lifetime decommissioning phase would be the same as the measures highlighted for the construction phase. The pole sets will be removed. It is not expected that the foundations of the towers will be fully removed, as they will already be partially vegetated, however part of the neck of the foundation will be cut away. The lower impact option is to cover the exposed area with stored topsoil and allow it to revegetate. The underground cables will be removed and the ducting will be abandoned. No fluids or toxic materials are contained within the cables.

The following mitigation measures are designed to address the impacts associated with the construction and operational phase of the reinforcement project. Due to the inter-relationship between soils and geology and water (hydrology and hydrogeology) the following mitigation measures discussed will be considered applicable to both. Waste Management is also considered an interaction in some sections.

## 14.6.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

### 14.6.1.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils

- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management
- Proximity to Site of Geological Interest

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). An additional 3,500$m_3$ of soil will be imported from the Ballyragget substation site (Unit 4) to supplement the berms.

Contractors will be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works. Where soil stripping occurs the resulting excavated soil fractions will be separated into topsoil/fill and subsoil stockpiles.

Compaction of areas will be avoided where possible. Where compaction has occurred due to truck movements and other construction activities, restoration will be undertaken with areas reinstated to their original condition, where possible.

Temporary storage of spoil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any ditches or surface water drains.

In order to minimise potential degradation of in situ soil as a result of construction activities, the following measures will be implemented during the construction phase of the proposed line route:

- In so far as practicable, compaction of any soil or subsoil which remains in situ along the proposed line route will be avoided
- Stockpiles of soil/subsoil will be restricted to less than 3m in height
- Repeated handling of soil will be avoided and ideally all soil stockpiles will remain undisturbed pending later re-use and re-establishment along the proposed line route
- Construction traffic within the site will be required to follow dedicated routes

*Excavation of soils and/or subsoils*

In order to reduce potential erosion of in situ and excavated soils/subsoil and minimise sediment discharge during the construction phase, the following measures will be implemented:

- Leaving soil and/or subsoil undisturbed in situ for as long as possible prior to excavation
- Minimising excavation and stockpiling activities during wet weather periods
- Shaping stockpiles of excavated soil and/or subsoil so as to shed water
- Construction of silt traps at an early stage in the construction programme
- Interception and channelling of surface water runoff over exposed soil/subsoil surfaces to sumps, silt traps or settlement ponds where practicable, prior to discharge to existing drains or outfalls
- Interception and diversion of surface water runoff away from open excavations where practicable

*Contamination of soils and/or subsoils*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within specially constructed dedicated temporary bunded areas. Oil and fuel storage tanks will be stored within designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located

entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

In order to reduce the risk of contamination arising as a result of spills or leakages mitigation measures will include, but will not be limited to, the following:

- Storing fuels, chemicals, liquid and solid waste on impermeable surfaces
- Undertaking refuelling of plant, equipment and vehicles on impermeable surfaces
- Ensuring all tanks and drums are bunded in accordance with established best practice guidelines
- Provision of spill kits and hydrocarbon absorbent packs in all construction vehicles.

No concrete batching facility will be required at the site. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.
- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.
- Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas, where possible, and not on-site. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. Any refuelling on site will take place at a designated distance away from watercourses (>10m) in accordance with the buffer zone guidelines highlighted in Section 10 Water (Interaction). A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored within temporary bunded storage areas prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

*Management of excavated materials at off-site locations*

If it is not feasible to immediately incorporate excess soil/subsoil into the permanent works, the appointed contractor will be required to dispose of, re-use the material off-site or store any excess earthworks materials at an appropriately permitted or licensed waste management facility, in accordance with the requirements of the *Waste Management Act of 1996 (as amended)* and associated Regulations. This restriction will ensure that potential indirect impacts on soil and geology at off-site locations will be subject to adequate environmental control and monitoring.

Where practicable, excess earthworks materials will be temporarily stored at appropriately permitted or licensed waste management facilities, pending processing or re-use on future public works and/or private development projects.

Implementation of these mitigation measures during the construction phase will ensure that excavated materials generated by site construction activities will be directed, where necessary, to waste recovery or disposal facilities, where the existing baseline rating of soil and/or subsoil is typically low or very low and the level of protection provided to the environment is appropriate to the risks involved.

*Waste Management*

In the event of soils being taken off site they will be removed and disposed of by contractors licensed under the *Waste Management Act of 1996 (as amended), the Waste Management (Facility Permit & Registration) Regulations of 2007 (as amended) and the Waste Management (Collection Permit) Regulations of 2007 (as amended)*. The issuing of such a permit to contractors allows them to use such material for landscaping and land reclamation, subject to conditions defined in the permit if the material has been classified as suitable for this use. Otherwise, the material will be classified for disposal at a suitably licensed landfill and removed off-site by a licensed waste contractor. In terms of surplus soil, any residuals will be stored within appropriate storage areas of sufficient capacity prior to removal by a suitably licensed waste management contractor for off-site treatment/recycling/disposal.

A construction and demolition waste management plan will be developed by the appointed contractor in accordance with the *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006)* to ensure that all construction waste is stored, managed, moved, reused or disposed of in an appropriate manner by appropriate contractors in accordance with all relevant waste legislation. See Section 11.3 Waste (Interaction) for more detailed information.

*Proximity to Site of Geological Interest*

The GSI have stated that the only direct impact on any CGS would be from locating substations, structures or similar, at those locations[17]. The construction activities associated with the substation will not take place within the outline of the Timahoe Esker extents as issued by the GSI.[17]

The GSI requested notification of any ground excavations, etc. undertaken that might provide good geological exposures for their examination. Ground excavations will be in shallow subsoils only. Consultation will take place with the GSI before and during the construction phase to ensure that the substation construction is at a suitable distance from the Timahoe Esker. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of a CGS. Distance is decided on a project by project basis.

### 14.6.1.2 Operational Phase

In order to prevent potential contamination of soil/groundwater media with surface water runoff that may be contaminated with oil/solids from transformers and on-site activities, an interceptor will be installed through which surface water run-off will be channelled, prior to discharge to the on-site surface water system.

At the proposed substation in order to minimise any impact on the underlying subsurface strata from material spillages, oil and fuel storage tanks will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

Any vehicles utilised during the operational phase will be regularly maintained and checked regularly to ensure any damages or leakages are corrected.

In the event of an environmental incident at the proposed substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

The implementation of these mitigation measures will minimise the potential for the migration of potential contaminants from the surface into the underlying groundmass.

## 14.6.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

### 14.6.2.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management
- Proximity to Site of Geological Interest

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil and bedrock excavated (if encountered) will be, where possible, retained for use on site.

Some locations for angle masts will require access over unprotected soil. To minimise impacts to the integrity of soil strata and reduce risks of soil destabilisation and sediment release, all traffic will take place using preselected routes and where necessary soil protection, such as geotextile, bog mats and bridging will be utilised where possible.

See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible

contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996* (as amended) and associated regulations.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

*Proximity of construction to Site of Geological Interest*

The GSI have stated that the only direct impact on any CGS would be from locating substations, structures or similar, at those locations[17.] The construction activities associated with the proposed line route will not take place within the outline of the Timahoe Esker extents as issued by the GSI.[17]

The GSI requested notification of any ground excavations, etc. undertaken that might provide good geological exposures for their examination. Ground excavations will be in shallow subsoils only. Consultation will take place with the GSI before and during the construction phase to ensure that the construction of the proposed line route is at a suitable distance from the Timahoe Esker. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of a CGS. Distance is decided on a project by project basis.

### 14.6.2.2 Operational Phase

Apart from the general maintenance of the polesets and angle masts there will be few on-site activities during the operational phase.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated. For the Laois – Kilkenny project material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

### 14.6.3.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management
- Proximity to Site of Geological Interest

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil excavated will be, where possible, retained for use on site.

Some locations for angle masts will require access over unprotected soil. To minimise impacts to the integrity of soil strata and reduce risks of soil destabilisation and sediment release, all traffic will take place using preselected routes and where necessary soil protection, such as geotextile, bog mats and bridging will be utilised where possible.

See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996* (as amended) and associated regulations.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

*Proximity of construction to Site of Geological Interest*

The GSI have stated that the only direct impact on any CGS would be from locating substations, structures or similar, at those locations[17]. The construction activities associated with the cable connection will not take place within the outline of the Timahoe Esker extents as issued by the GSI.[17]

The GSI requested notification of any ground excavations, etc. undertaken that might provide good geological exposures for their examination. Ground excavations will be in shallow subsoils only. Consultation will take place with the GSI before and during the construction phase to ensure that the construction cable connection is at a suitable distance from the Timahoe Esker. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of a CGS. Distance is decided on a project by project basis.

### 14.6.3.2 Operational Phase

It is anticipated that the need to access the cables for maintenance will be infrequent. However when access and works are required these will be carried out in accordance with the same measures highlighted in the Construction and Environmental Management Plan.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.4 UNIT 4 - A NEW 110KV / 38KV / MV SUBSTATION IN BALLYRAGGET, CO. KILKENNY

### 14.6.4.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil excavated will be transported to the proposed Coolnabacky substation site (Unit 1).

See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use and the findings of the site investigations report[11,12] the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that *any of the soil excavated is contaminated, this will be dealt with appropriately as per the Waste Management Act of 1996 (as amended)* and associated regulations.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

### 14.6.4.2 Operational Phase

In order to prevent potential contamination of soil/groundwater media with surface water runoff that may be contaminated with oil/solids from transformers and on-site activities, an interceptor will be installed through which surface water run-off will be channelled, prior to discharge to the on-site surface water system.

At the proposed substation in order to minimise any impact on the underlying subsurface strata from material spillages, oil and fuel storage tanks will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

In the event of an environmental incident at the proposed substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

The implementation of these mitigation measures will minimise the potential for the migration of potential contaminants from the surface into the underlying groundmass.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

### 14.6.5.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil and bedrock excavated (if encountered) will be, where possible, retained for use on site.

Some locations for angle masts will require access over unprotected soil. To minimise impacts to the integrity of soil strata and reduce risks of soil destabilisation and sediment release, all traffic will take place using preselected routes and where necessary soil protection, such as geotextile, bog mats and bridging will be utilised where possible.
See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs

of possible contamination such as staining (visually assessed) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996 (as amended)* and associated regulations.

In relation to the storage of creosote treated wood poles during the construction phase, these will be stored in designated bunded areas. When required, the poles will be transported directly to the work location.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated and transferred to the works site separately. For the Laois – Kilkenny project material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.
Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

### 14.6.5.2 Operational Phase

Apart from the general maintenance of the polesets and angle masts there will be few on-site activities during the operational phase.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated. A specific method statement will be employed for works carried out during the replacing of the poles (approximately every 40 years) to ensure there is no impact on the surrounding water environment.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

### 14.6.6.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management
- Proximity to Site of Geological Interest

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil and bedrock excavated (if encountered) will be, where possible, retained for use on site.

Some locations for angle masts will require access over unprotected soil. To minimise impacts to the integrity of soil strata and reduce risks of soil destabilisation and sediment release, all traffic will take place using preselected routes and where necessary soil protection, such as geotextile, bog mats and bridging will be utilised where possible.

See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996 (as amended)* and associated regulations.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated and transferred to the works site separately. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

*Proximity to Site of Geological Interest*

The GSI have stated that the only direct impact on any CGS would be from locating substations, structures or similar, at those locations[15]. The construction activities associated with the proposed line route will not take place within or adjacent to Ballyragget Quarry, Dunmore Cave and Ballyfoyle Channels.

The GSI requested notification of any ground excavations, etc. undertaken that might provide good geological exposures for their examination. Ground excavations will be in shallow subsoils only. Consultation will take place with the GSI before and during the construction phase to ensure that the construction of each poleset/angle mast is at a suitable distance from each site of geological interest. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of a CGS. Distance is decided on a project by project basis.

### 14.6.6.2Operational Phase

Apart from the general maintenance of the polesets and angle masts there will be few on-site activities during the operational phase.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

### 14.6.7.1 Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil and bedrock excavated (if encountered) will be, where possible, retained for use on site.
See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

Due to the agricultural nature of the land use the likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996 (as amended)* and associated regulations.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

### 14.6.7.2Operational Phase

In order to prevent potential contamination of soil/groundwater media with surface water runoff that may be contaminated with oil/solids from on-site activities, an interceptor will be installed through which surface water run-off will be channelled, prior to discharge to the on-site surface water system.

In order to minimise any impact on the underlying subsurface strata from material spillages, oil and fuel storage tanks will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

In the event of an environmental incident at the proposed substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

The implementation of these mitigation measures will minimise the potential for the migration of potential contaminants from the surface into the underlying groundmass.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

## 14.6.8UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

### 14.6.8.1Construction Phase

During the construction phase the mitigation measures on soil and geology are associated with the following:

- Degradation of soils and/or subsoils
- Excavation of soils and/or subsoils
- Contamination of soils and/or subsoils
- Management of excavated materials at off-site locations
- Waste Management
- Proximity to Site of Geological Interest

*Degradation of soils and/or subsoils*

Planned construction works will be carried out in such a manner as to ensure the least feasible disturbance of soils. It is envisaged that all topsoil will be retained on site where possible and reused as fill material (if suitable). Some of the subsoil and bedrock excavated (if encountered) will be, where possible, retained for use on site.

Some locations for angle masts will require access over unprotected soil. To minimise impacts to the integrity of soil strata and reduce risks of soil destabilisation and sediment release, all traffic will take place using preselected routes and where necessary soil protection, such as geotextile, bog mats and bridging will be utilised where possible.

See also relevant text under *Degradation of soils and/or subsoils* Section 14.6.1.1.

*Excavation of soils and/or subsoils*

See text under *Excavation of soils and/or subsoils* Section 14.6.1.1.

*Contamination of soils and/or subsoils*

The likelihood of hazardous waste being encountered during the construction phase is low however, if encountered; all excavated materials will be assessed for signs of possible contamination such as staining (visual assessment) or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be dealt with appropriately as per the *Waste Management Act of 1996 (as amended)* and associated regulations.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated and transferred to the works site separately. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Also see text under *Contamination of soils and/or subsoils* Section 14.6.1.1.

*Management of excavated materials at off-site locations*

See text under *Management of excavated materials at off-site locations* Section 14.6.1.1.

*Waste Management*

See text under *Waste Management* Section 14.6.1.1.

*Proximity of construction to Site of Geological Interest*

The GSI have stated that the only direct impact on any CGS would be from locating substations, structures or similar, at those locations[17]. The construction activities associated with the proposed line route will take place within the outline of the Timahoe Esker extents as issued by the GSI.[17]

The GSI requested notification of any ground excavations, etc. undertaken that might provide good geological exposures for their examination. Ground excavations will be in shallow subsoils only. Consultation will take place with the GSI before and during the construction phase as a poleset (AM89) is located within the Timahoe Esker extents. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of a CGS. Distance is decided on a project by project basis.

### 14.6.8.2Operational Phase

Apart from the general maintenance of the polesets and angle masts there will be few on-site activities during the operational phase.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

ESB will not be carrying out creosote treatment of wooden poles at storage facilities or at work sites, all poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Also see paragraphs regarding re-fuelling, hazardous waste residuals and maintenance of vehicles under Section 14.6.1.2.

# 14.7 WATER HYDROLOGY AND HYDROGEOLOGY

The design of the proposed Laois-Kilkenny Reinforcement Project has taken account of the potential impacts of the development and the risks to the water environment local to the area where construction is taking place. Measures have been developed to mitigate the potential effects on the local water environment. These measures seek to avoid or minimise potential effects in the main through the implementation of best practice construction methods and adherence to all relevant legislation.

A project-specific Construction and Environmental Management Plan (CEMP) will be established and maintained by the contractors during the construction and operational phases of the proposed Project. The Plan will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the procedures. As a minimum, the manual will be formulated in consideration of the standard best international practice including but not limited to:

- National Roads Authority (NRA), Guidelines for the Crossing of Watercourses during the Construction of National Road Line routes.[21]
- NRA (2008) Guidelines and Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Roads Schemes. Dublin: National Roads Authority.[22]
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005[23]
- BPGCS005, Oil Storage Guidelines.[24]
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites. [25]
- CIRIA 697, The SUDS Manual, 2007.[26]
- CIRIA Control of water pollution from linear construction projects. Technical guidance (C648), 2006[27]
- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors[28]
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004[29]
- The Forest Service (2000), Forest and Water Quality Guidelines, Department of the Marine and Natural Resources.[30]

The mitigation measures for end of lifetime decommissioning phase would be the same as the measures highlighted for the construction phase. The pole sets will be removed. It is not expected that the foundations of the towers will be fully removed, as they will already be partially vegetated, however part of the neck of the foundation will be cut away. The lower impact option is to cover the exposed area with stored topsoil and allow it to revegetate. The underground cables will be removed and the ducting will be abandoned. No fluids or toxic materials are contained within the cables.

The following mitigation measures are designed to address the impacts associated with the construction and operational phase of the reinforcement project. Due to the inter-relationship between water (hydrology and hydrogeology), ecology and soils & geology the following mitigation measures discussed will be considered applicable to these sections. Waste Management is also considered an interaction in some sections.

## 14.7.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

### 14.7.1.1 Construction Phase

In relation to the proposed Coolnabacky 400/110kV Substation, the control of site runoff will be critical to minimising the potential for impact from this site. In particular the site drainage works and settlement ponds proposed will be developed in the first phase of construction activity and all surface water will be directed to the settlement ponds.

It is proposed to provide a clean water cut off drain to stop water running across construction areas and to discharge this to an adjacent stream. Drainage channels will collect runoff from the construction and development areas. These drainage channels will discharge to 2 no. dedicated Settlement Ponds constructed on site. 2 no. settlement ponds will be constructed at the site. Pond 1, located to the North of the substation will have a capacity to treat approx. the first 20mm of rainfall on the 400kV substation building and the stone area of the site. Pond 2 will have capacity to treat the first 33mm of rainfall generated from the transformers bund and the 110kV Substation building. These will be installed before site clearance and earthworks. The settlement ponds will be comprised of a system of check dams which will further divide the ponds into primary, secondary and tertiary pond. The settlement ponds will be lined with geotextile material on a bed of 200mm of single size clean stone. The settlement ponds will have a permanent water depth of 300mm and a combined treatment volume of 180m$^3$. The pond will provide suitable attenuation for the 100 year rainfall return period. The permanent water depth and treatment volume can be increased during the construction phase when silt generation is at its highest. Temporary drainage from the site berms will be provided via French Drains until the berms are vegetated. The berms will be surrounded by silt fences until vegetated.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased Runoff and Sediment Loading
- Contamination of local water courses and groundwater
- Dewatering
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed substation.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through the settlement ponds. The settlement ponds will be located between the area of construction and the nearest field drain. Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- A drainage plan has been drawn up and submitted. The drainage system and settlement ponds will be constructed as a first step before major site clearance activities occur.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Silt traps, such as geotextile membrane, will be placed in the existing drainage network around the substation site and along the proposed access road prior to the establishment of the settlement ponds and access road construction to minimise silt loss. These should be inspected and cleaned regularly.
- Swales will be located along the access road.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at the site. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater:

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.
- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.
- Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed substation. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. The riparian zone is the land immediately adjoining the aquatic zone and influenced by it. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [30], which are shown in Table 14.1:

| Average slope leading to aquatic zone | Buffer zone width on each side of the aquatic zone | Buffer zone width for highly erodible soils |
|---|---|---|
| Moderate (even to 1 in 7 / 0-15%) | 10 m | 15 m |
| Steep (1 in 7 to 1 in 3 / 15-30%) | 15 m | 20 m |
| Very steep (1 in 3 / >30%) | 20 m | 25 m |

**Table 14.1 Buffer Zone Guidelines**

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines in Table 14.1.

If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented from entering watercourses by diverting runoff to the settlement ponds on site, and removing the material off-site as soon as possible to designated storage areas.

It is recommended that a 25m buffer zone is applied around the tufa deposits to ensure protection of the deposits. No works during construction and operation will occur within this area, including re-fuelling, batching of concrete or storage of fuels and soil stockpiles. See Appendix 10.1.

Guidelines stated at the beginning of this section will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed substation is minimised. In particular, the ESB CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

In order to ensure that on-going works are being carried out in accordance with the CEMP, water monitoring will be undertaken our during the construction phase. Sampling points will be located at the following designated locations:

- Upstream of the construction site discharge points (surface water)
- Outlet from the proposed settlement ponds (surface water)
- Downstream of the construction site discharge points (surface water)
- Up gradient of the construction site (BH1 – ground water)
- Down gradient of the construction site (BH4 – ground water)

*Dewatering*

The Site Investigations[13,18] indicates that the sand and gravel deposits are not saturated and groundwater flow into the excavation during construction is expected to be limited. However, should on-going dewatering be required during excavations it is recommended that a low-permeability barrier be installed around the excavation walls. This will ensure that any potential for drawdown that could affect the water environment is minimised.

*Flood Risk*

Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation. The surface water drainage system proposed ensures that there is no increase in surface water runoff from the proposed substation, as Greenfield run-off rates will be maintained during operation. See the Drainage and Infrastructure Report (ESBI Report Ref: PE687-F0261-R261-016) for details.

*Localised alteration of groundwater flow, rate and direction*

The construction of the proposed substation will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations.
- Locally excavated material will be reinstated surrounding the foundation base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

### 14.7.1.2 Operational Phase

Oil storage and the transformers will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

Water from this bunded area will be pumped out by an oil sensitive pump ensuring that only non-contaminated water enters the site drainage network. The surface water generated in the bunded areas will discharge to the ponds via a Class 1 Full Retention Oil Separator. The ponds will provide filtration through the check dams and exposure to sunlight will provide a further breakdown of hydrocarbons (if present).

In the event of an environmental incident at the proposed substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

On site sanitary facilities will be provided on site. These are fitted with the required proprietary system.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.7.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

### 14.7.2.1 Construction Phase

In relation to the proposed new connection to Coolnabacky from the existing Moneypoint-Dunstown 400kV line, the control of site runoff will be critical to minimising the potential for impact from this route. In particular the site drainage works will be developed in the first phase of construction activity at each mast location.

The erection of the masts require minimal disturbance to the ground and with good construction practice there will be little risk of sediment loss. Construction activity is also spread out along the line route with a small footprint at each location. Duration on site is expected to be no more than one week for angle mast. A work method statement will be developed and implemented by construction crews for each angle mast.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Diversion/Erosion of local watercourses
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed line route.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a settlement trap. The settlement trap will be located between the area of construction and the nearest watercourse. A settlement trap works by channelling the runoff specifically to allow any suspended solids to settle before discharge. Types of settlement traps include straw bales, silt fences, settlement ponds and pumps. The settlement traps will be inspected regularly and immediately after heavy rainfall events.

Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- Where access tracks are excavated to bedrock/rock the fill material used will have sufficient permeability to allow cross drainage and not provide a barrier to flow
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at the work site. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater:

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.
- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.
- Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed line route, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed line route. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the

guidance set out by the Department of the Marine and Natural Resources [27], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

In the event of any in-stream works taking place during the construction phase the following mitigation measures apply.

- In salmonid catchments, all in-stream works will be carried out during the period May to September. In the event that these waters contain Lamprey the National Parks and Wildlife Service (NPWS) will be contacted for the relevant advice.
- No in-stream works will be carried out without the written approval of the IFI[22]. A method statement will be agreed in advance of works.
- Any machines working in the watercourse will be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- In-stream earthworks will be executed so as to minimise the suspension of solids.

The above measures will in conjunction with the ESB CEMP, submitted by the appointed contractor for review by the IFI, Laois County Council and other relevant consultees.

Guidelines stated at the beginning of Section 10.5 will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed line route is minimised. In particular, the ESB Construction and Environmental Management Plan, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Diversion/Erosion of local watercourses*

As far as is possible, the temporary existing access roads will be utilised to minimise the number of watercourse crossings. Access roads will be developed only when no other access route can be identified.

In relation to temporary crossing structures over rivers and streams so as to allow for movement of plant, equipment and construction personnel, IFI require that watercourses be effectively bridged prior to commencement of works. In accordance with IFI recommendations, clear span 'bailey bridge' type structures will be installed.
All watercourse crossings will be planned in consultation with Laois County Council, and in accordance with guidelines issued by the IFI and other applicable guidelines.

Any diversions of watercourses will be designed to replicate the existing natural watercourse. The creation of the new watercourse will be carried out in the dry, in isolation from the existing watercourse. Diversion will only take place during the period May to October unless otherwise agreed with the IFI.
To avoid siltation of watercourses from crossing point locations, silt traps will be placed beside temporary crossing points with an associated buffer strip. Silt-traps will be maintained and cleaned regularly during the construction phase.

*Flood Risk*

During the entire construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.

*Localised alteration of groundwater flow, rate and direction*

The construction of angle mast bases will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Machinery will be operated from access tracks, where possible.
- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations.
- Locally excavated material will be reinstated surrounding the angle mast base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

#### 14.7.2.2 Operational Phase

Apart from the general maintenance of the masts there will be few on-site activities during the operational phase.

All watercourse crossings will be planned in consultation with the IFI and Laois County Council, and in accordance with the necessary guidelines.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

The risk of polluting the local hydrological and hydrogeological regime from the operating equipment is limited. As part of the standard operations procedures, routine monitoring and maintenance will be carried out to minimise these risks to acceptably low levels of likelihood and severity.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible, and not on-site. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

### 14.7.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

#### 14.7.3.1 Construction Phase

In relation to the proposed new connection to Coolnabacky from the existing Moneypoint-Dunstown 400kV line, the control of site runoff will be critical to minimising the potential for impact from this route. During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed connection.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a settlement trap. The settlement trap will be located between the area of construction and the nearest watercourse. A settlement trap works by channelling the runoff specifically to allow any suspended solids to settle before discharge. Types of settlement traps include straw bales, silt fences, settlement ponds and pumps. The settlement traps will be inspected regularly and immediately after heavy rainfall events.

Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- Where tracks are excavated to bedrock/rock the fill material used will have sufficient permeability to allow cross drainage and not provide a barrier to flow
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at any site works location. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater.

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.
- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.
- Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed line route. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [30], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

In the event of any in-stream works taking place during the construction phase the following mitigation measures apply:

- In salmonid catchments, all in-stream works will be carried out during the period May to September. In the event that these waters contain Lamprey the NPWS will be contacted for the relevant advice.
- No in-stream works will be carried out without the written approval of the IFI[25]. A method statement will be agreed in advance of works.
- Any machines working in the watercourse will be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- In-stream earthworks will be executed so as to minimise the suspension of solids.

The above measures will in conjunction with the ESB CEMP, submitted by the appointed contractor for review by the IFI, Laois County Council and other relevant consultees.

Guidelines stated at the beginning of this section will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed substation is minimised. In particular, the ESB CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Flood Risk*

During the entire construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.

*Localised alteration of groundwater flow, rate and direction*

The construction of proposed cable route and the angle masts will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Machinery will be operated from access tracks, where possible.
- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations.
- Locally excavated material will be reinstated surrounding the typical angle mast base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

#### 14.7.3.2 Operational Phase

Apart from the general maintenance of the masts there will be few on-site activities during the operational phase.

All watercourse crossings will be planned in consultation with the IFI, Laois County Council, and in accordance with the necessary guidelines.

The construction of the angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions.
This would ensure that there will be little corrosion of the angle mast bases during the operational phase.

The risk of polluting the local hydrological and hydrogeological regime from the operating equipment is limited. As part of the standard operations procedures, routine monitoring and maintenance will be carried out to minimise these risks to acceptably low levels of likelihood and severity.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible, and not on-site. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

### 14.7.4 Unit 4 - A new 110kV / 38kV / MV substation in Ballyragget, Co. Kilkenny

#### 14.7.4.1 Construction Phase

In relation to the proposed 110kV / 38kV / MV substation in Ballyragget, Kilkenny, the control of site runoff will be critical to minimising the potential for impact from this site. No major surface water features or field drains were found at or adjacent to the proposed substation location therefore in relation to surface water runoff no mitigation measures are proposed.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of groundwater
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed substation.

*Increased Runoff and Sediment Loading*

- A drainage plan has been drawn up and submitted. The drainage system will be constructed as a first step before major site clearance activities occur.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Silt traps, such as geotextile membrane, will be placed in the existing drainage network around the substation site and along the proposed access road, if necessary. These will be inspected and cleaned regularly.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at the site. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater:

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.
- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.

Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site and no such wash waters will be discharged to groundwater.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed substation. See Section 11.3 Material Assets – Waste.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines in Table 14.1.

If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to the proposed Coolnabacky substation location.

The Site Investigation[13] indicates that no groundwater was found at the site therefore no dewatering is expected.

Guidelines stated at the beginning of this section will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed substation is minimised. In particular, the ESB CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Flood Risk*

Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation. The surface water drainage system proposed ensures that there is no increase in surface water runoff from the proposed substation, as Greenfield run-off rates will be maintained during operation. See the Drainage and Infrastructure Report (ESBI Report Ref: PE687-F0261-R261-017) for details.

*Localised alteration of groundwater flow, rate and direction*

The construction of the proposed substation will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The findings of the Site Investigation[13] suggest this will not occur however, if required the following mitigation measures will be adopted:

- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations.
- Locally excavated material will be reinstated surrounding the foundation base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

### 14.7.4.2 Operational Phase

Oil storage and the transformers will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

Water from this bunded area will be pumped out by an oil sensitive pump ensuring that only non-contaminated water enters the site drainage network. The surface water generated in the bunded areas will discharge to a soakaway via a Class 1 Full Retention Oil Separator.

In the event of an environmental incident at the proposed substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component

of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

On site sanitary facilities will be provided on site. These are fitted with the required proprietary system.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.7.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

### 14.7.5.1 Construction Phase

In relation to the proposed new 110kV overhead line between Ballyragget Substation and Coolnabacky, the control of site runoff will be critical to minimising the potential for impact from this route. In particular the site drainage works will be developed in the first phase of construction activity at each site works location.

The erection of the polesets and angle masts require minimal disturbance to the ground and with good construction practice there will be little risk of sediment loss. Construction activity is also spread out along the line route with a small footprint at each location. Duration on site is expected to be no more than a half day for each poleset and one week for angle mast. A work method statement will be developed and implemented by construction crews for each poleset/angle mast.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Diversion/Erosion of local watercourses
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed line route.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a settlement trap. The settlement trap will be located between the area of construction and the nearest watercourse. A settlement trap works by channelling the runoff specifically to allow any suspended solids to settle before discharge. Types of settlement traps include straw bales, silt fences, settlement ponds and pumps. The settlement traps will be inspected regularly and immediately after heavy rainfall events.

Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- Where tracks are excavated to bedrock/rock the fill material used will have sufficient permeability to allow cross drainage and not provide a barrier to flow
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at any site works location. All concrete will be brought to site by truck. Wet concrete operations adjacent to watercourses will be avoided where possible. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater. The pouring of concrete for angle mast bases will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media.

Any water in the excavation is pumped out prior to any concrete being poured into the foundation. Concrete trucks shall be brought as close as possible to the excavation to pour directly into the excavation. In the event of this not being possible concrete shall be transported in dumpers, in the event that the ground is very poor and wheel dumpers will not transport the concrete over the terrain, track dumpers may be used.

The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site and no such washwaters will be discharged to groundwater.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed line route. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [230], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left

unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

The requirement for any in-stream works is minimal however, in the event of any in-stream works taking place during the construction phase the following mitigation measures apply.

- In salmonid catchments, all in-stream works will be carried out during the period May to September. In the event that these waters contain Lamprey the National Parks and Wildlife Service will be contacted for the relevant advice.
- No in-stream works will be carried out without the written approval of the Inland Fisheries Ireland[25]. A method statement will be agreed in advance of works.
- Any machines working in the watercourse will be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- In-stream earthworks will be executed so as to minimise the suspension of solids.

The above measures will in conjunction with the ESB CEMP, submitted by the appointed contractor for review by the IFI, Laois County Council, Kilkenny County Council and other relevant consultees.

In relation to the use of creosote oil, the timber poles used will be treated with Creosote to maintain their integrity in use.

Creosote oil is composed of a mixture of hydrocarbons but primarily Polycyclic Aromatic Hydrocarbons (PAHs).

The suppliers of wood-poles will be required to ensure that the moisture content of poles prior to creosote impregnation is between 20% to 25%. At this moisture content, the wood cells are void of water. In addition, a negative back vacuum must be applied to all treated poles at the end of the treating process. This is to ensure that any excess creosote is removed from the pole before it emerges from the treatment cylinder. This leads to a dry pole. The pole remains at the facility for at least 4 weeks before use.

When required, the poles will be transported directly to the work location. All poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Guidelines will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed line route is minimised. In particular, the ESB Networks CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Diversion/Erosion of local watercourses*

As far as is possible, the temporary access roads will be developed to minimise the number of watercourse crossings. Access roads will be developed only when no other access route can be identified.

In relation to temporary crossing structures over rivers and streams so as to allow for movement of plant, equipment and construction personnel, IFI require that watercourses be effectively bridged prior to commencement of works. In accordance with IFI recommendations, clear span 'bailey bridge' type structures will be installed. All watercourse crossings will be planned in consultation with Laois County Council and/or Kilkenny County Council, and in accordance with guidelines issued by the IFI and other applicable guidelines.

Any permanent diversions of watercourses will be designed to replicate the existing natural watercourse. The creation of the new watercourse will be carried out in the dry, in isolation from the existing watercourse. Diversion will only take place during the period May to October unless otherwise agreed with the IFI.

To avoid siltation of watercourses from crossing point locations, silt traps will be placed beside temporary crossing points with an associated buffer strip. Silt-traps will be maintained and cleaned regularly during the construction phase.

The above measures will in conjunction with the ESB CEMP.

*Flood Risk*

During the entire construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.

Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation.

*Localised alteration of groundwater flow, rate and direction*

The construction of angle mast and poleset bases will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Machinery will be operated from access tracks, where possible.
- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations. During any dewatering activities a standard water filtration system will be utilised to control the amount of sediment in surface water runoff.
- Locally excavated material will be reinstated surrounding the base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

### 14.7.5.2 Operational Phase

Apart from the general maintenance of the angle masts and polesets there will be few on-site activities during the operational phase.

All watercourse crossings will be planned in consultation with Laois County Council and/or Kilkenny County Council, and in accordance with the necessary guidelines.

The construction of the typical angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the typical angle mast bases during the operational phase.

All poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

The risk of polluting the local hydrological and hydrogeological regime from the operating equipment is limited. As part of the standard operations procedures, routine monitoring and maintenance will be carried out to minimise these risks to acceptably low levels of likelihood and severity.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible, and not on-site. If it is not possible to bring machinery off-site to a

refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.7.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

### 14.7.6.1 Construction Phase

In relation to the proposed uprate to the existing Ballyragget-Kilkenny 110kV overhead line, the control of site runoff will be critical to minimising the potential for impact from this route. In particular the site drainage works will be developed in the first phase of construction activity at each poleset/mast location.

The erection of the polesets and angle masts require minimal disturbance to the ground and with good construction practice there will be little risk of sediment loss. Construction activity is also spread out along the line route with a small footprint at each location. Duration on site is expected to be no more than a half day for each poleset and one week for angle mast. A work method statement will be developed and implemented by construction crews for each poleset/angle mast.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Diversion/Erosion of local watercourses
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed line route.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a settlement trap. The settlement trap will be located between the area of construction and the nearest watercourse. A settlement trap works by channelling the runoff specifically to allow any suspended solids to settle before discharge. Types of settlement traps include straw bales, silt fences, settlement ponds and pumps. The settlement traps will be inspected regularly and immediately after heavy rainfall events.

Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- Where tracks are excavated to bedrock/rock the fill material used will have sufficient permeability to allow cross drainage and not provide a barrier to flow
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at any site works location. All concrete will be brought to site by truck. Wet concrete operations adjacent to watercourses will be avoided where possible. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater. The pouring of concrete for angle mast bases will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media.

Any water in the excavation is pumped out prior to any concrete being poured into the foundation. Concrete trucks shall be brought as close as possible to the excavation to pour directly into the excavation. In the event of this not being possible concrete shall be transported in dumpers, in the event that the ground is very poor and wheel dumpers will not transport the concrete over the terrain, track dumpers may be used.

The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site and no such washwaters will be discharged to groundwater.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed line route. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [27], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

The requirement for any in-stream works is minimal however, in the event of any in-stream works taking place during the construction phase the following mitigation measures apply.

- In salmonid catchments, all in-stream works will be carried out during the period May to September. In the event that these waters contain Lamprey the National Parks and Wildlife Service will be contacted for the relevant advice.
- No in-stream works will be carried out without the written approval of the Inland Fisheries Ireland[25]. A method statement will be agreed in advance of works.
- Any machines working in the watercourse will be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- In-stream earthworks will be executed so as to minimise the suspension of solids.

The above measures will in conjunction with the ESB Construction and Environmental Management Plan, submitted by the appointed contractor for review by the IFI, Kilkenny County Council and other relevant consultees.

In relation to the use of creosote oil, the timber poles used will be treated with Creosote to maintain their integrity in use.

Creosote oil is composed of a mixture of hydrocarbons but primarily Polycyclic Aromatic Hydrocarbons (PAHs).

The suppliers of wood-poles will be required to ensure that the moisture content of poles prior to creosote impregnation is between 20% to 25%. At this moisture content, the wood cells are void of water. In addition, a negative back vacuum must be applied to all treated poles at the end of the treating process. This is to ensure that any excess creosote is removed from the pole before it emerges from the treatment cylinder. This leads to a dry pole. The pole remains at the facility for at least 4 weeks before use.

When required, the poles will be transported directly to the work location. All poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Guidelines will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed line route is minimised. In particular, the ESB Networks Construction and Environmental Management Plan, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Diversion/Erosion of local watercourses*

As far as is possible, the temporary access roads will be developed to minimise the number of watercourse crossings. Access roads will be developed only when no other access route can be identified.

In relation to temporary crossing structures over rivers and streams so as to allow for movement of plant, equipment and construction personnel, IFI require that watercourses be effectively bridged prior to commencement of works. In accordance with IFI recommendations, clear span 'bailey bridge' type structures will be installed. All watercourse crossings will be planned in consultation with Kilkenny County Council, and in accordance with guidelines issued by the IFI and other applicable guidelines.
Any permanent diversions of watercourses will be designed to replicate the existing natural watercourse. The creation of the new watercourse will be carried out in the dry, in isolation from the existing watercourse. Diversion will only take place during the period May to October unless otherwise agreed with the IFI.

To avoid siltation of watercourses from crossing point locations, silt traps will be placed beside temporary crossing points with an associated buffer strip. Silt-traps will be maintained and cleaned regularly during the construction phase.

The above measures will in conjunction with the ESB CEMP.

*Flood Risk*

During the entire construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.
Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation.

*Localised alteration of groundwater flow, rate and direction*

The construction of angle mast and poleset bases will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Machinery will be operated from access tracks, where possible.
- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations. During any dewatering activities a standard water filtration system will be utilised to control the amount of sediment in surface water runoff.
- Locally excavated material will be reinstated surrounding the base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

### 14.7.6.2 Operational Phase

Apart from the general maintenance of the angle masts and polesets there will be few on-site activities during the operational phase.

All watercourse crossings will be planned in consultation with Kilkenny County Council, and in accordance with the necessary guidelines.

The construction of the typical angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the typical angle mast bases during the operational phase.

All poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

The risk of polluting the local hydrological and hydrogeological regime from the operating equipment is limited. As part of the standard operations procedures, routine monitoring and maintenance will be carried out to minimise these risks to acceptably low levels of likelihood and severity.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible, and not on-site. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.7.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

### 14.7.7.1 Construction Phase

In relation to works at the existing Kilkenny 110kV Substation, the control of site runoff will be critical to minimising the potential for impact from this site. In particular the site drainage works proposed will be developed in the first phase of construction activity and all surface water will be directed to a silt trap or similar.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased Runoff and Sediment Loading
- Contamination of local water courses and groundwater
- Dewatering
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed substation.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a silt trap, or similar. The silt trap will be located between the area of construction and the nearest watercourse. Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- A drainage plan has been drawn up and submitted.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Silt traps, such as geotextile membrane, will be placed in the existing drainage network around the substation site and along the proposed access road, if required.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at the site. All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include the following measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater.

- The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site.
- Only the chute of the concrete delivery truck will be cleaned on site, using the smallest volume of water necessary.
- Concrete trucks will be directed back to their batching plant for washout.
- The arrangements for concrete deliveries to the site will be discussed with suppliers before commencement of work, agreeing routes, prohibiting onsite washout and discussing emergency procedures.

- Clearly visible signs will be placed in prominent locations close to concrete pour areas, stating that washout of concrete Lorries are not permitted on the site.
- Wash down water from exposed aggregate surfaces and cast-in-place concrete, and from washing of delivery truck chutes will be trapped on site to allow sediment to settle out and reach neutral pH before clarified water is released to a stream or drain system or allowed to percolate into the ground.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the substation. See Section 11.3 Material Assets – Waste.

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [30], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

Guidelines stated at the beginning of this section will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed substation is minimised. In particular, the ESB CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Dewatering*

Should dewatering be required during excavations it is recommended that a low-permeability barrier be installed around the excavation walls. This will ensure that any potential for drawdown that could affect the water environment is minimised.

*Flood Risk*

During the construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.

Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation. The surface water drainage system proposed ensures that there is no increase in surface water runoff from the proposed substation, as Greenfield run-off rates will be maintained during operation.

*Localised alteration of groundwater flow, rate and direction*

The construction at the Kilkenny substation will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid unnecessary drawdown of the water table outside of the excavations. During any dewatering activities a standard water filtration system will be utilised to control the amount of sediment in surface water runoff.
- Locally excavated material will be reinstated surrounding the foundation base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site

### 14.7.7.2 Operational Phase

On site sanitary facilities are available on site. These are fitted with the required proprietary system.

Oil storage and the transformers will be stored in designated areas with an impervious base. These areas will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

Water from this bunded area will be pumped out by an oil sensitive pump ensuring that only non-contaminated water enters the site drainage network. The surface water generated in the bunded areas will discharge via a Class 1 Full Retention Oil Separator.

In the event of an environmental incident at the substation the ESB Networks Emergency Response Procedure will be activated. The Environmental Incident Reporting System is a key component of this procedure. Environmental significance is classified into major, minor and general. All environmental incidents will be reported to the ESB Networks Environmental Systems Manager immediately. All environmental incidents/non-conformances will be logged in the Environmental Incident Reporting System within 2 working days. Details of the appropriate corrective action taken by the relevant supervisor in charge will be entered into the environmental incident reporting system, for review by the environmental management team within ESB Networks.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.7.8UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

### 14.7.8.1 Construction Phase

In relation to the proposed Modifications to existing Athy-Portlaoise 110kV line, the control of site runoff will be critical to minimising the potential for impact from this route. In particular the site drainage works will be developed in the first phase of construction activity at each poleset/mast location.

The erection of the polesets and angle masts require minimal disturbance to the ground and with good construction practice there will be little risk of sediment loss. Construction activity is also spread out along the line route with a small footprint at each location. Duration on site is expected to be no more than a half day for each poleset and one week for angle mast. A work method statement will be developed and implemented by construction crews for each poleset/angle mast.

During the construction phase the mitigation measures have been applied for the following potential impacts:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Diversion/Erosion of local watercourses
- Flood Risk
- Localised alteration of groundwater flow, rate and direction

The mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter any watercourses during the construction of the proposed line route.

*Increased Runoff and Sediment Loading*

During the construction phase any drains carrying a high sediment load will be diverted through a settlement trap. The settlement trap will be located between the area of construction and the nearest watercourse. A settlement trap works by channelling the runoff specifically to allow any suspended solids to settle before discharge. Types of settlement traps include straw bales, silt fences, settlement ponds and pumps. The settlement traps will be inspected regularly and immediately after heavy rainfall events.

Surface water runoff will not be discharged directly to local watercourses.

The following mitigation measures will be adopted:

- Where tracks are excavated to bedrock/rock the fill material used will have sufficient permeability to allow cross drainage and not provide a barrier to flow
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise potential for groundwater ingress into excavations.
- Weather conditions should be taken into account when planning construction activities to minimise risk of run off from the site.

*Contamination of local water courses and groundwater*

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, paints and fuels used during construction will be stored within temporary bunded areas and each of these areas will be bunded to a volume of 110% of the capacity of the largest tank/container within it (plus an allowance of 30 mm for rainwater ingress). Filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

No concrete batching facility will be required at any site works location. All concrete will be brought to site by truck. Wet concrete operations adjacent to watercourses will be avoided where possible. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to groundwater. The pouring of concrete for angle mast bases will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media.

Any water in the excavation is pumped out prior to any concrete being poured into the foundation. Concrete trucks shall be brought as close as possible to the excavation to pour directly into the excavation. In the event of this not being possible concrete shall be transported in dumpers, in the event

that the ground is very poor and wheel dumpers will not transport the concrete over the terrain, track dumpers may be used.

The contractor will be required to make provision for removal of any concrete wash waters, most likely by means of tankering off-site and no such washwaters will be discharged to groundwater.

Any effluent generated by temporary onsite sanitary facilities will be taken off-site for appropriate treatment.

To minimise the vulnerability of groundwater during the removal of the soil and/or subsoil during construction of the proposed substation, all ground works will be completed in an appropriately managed manner. A procedure for managing this activity will be included as part of the Construction & Demolition Waste Management Plan, for the proposed line route. See Section 11.3 Material Assets – Waste (Interaction).

Some construction works on site may take place in the vicinity of watercourses in the riparian zone. A buffer area will be established to protect the riparian and aquatic zones from disturbance. The buffer area generally extends beyond the riparian zone. The width of a buffer area will be determined by the guidance set out by the Department of the Marine and Natural Resources [30], which are shown in Table 14.1.

Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible. Re-fuelling will be avoided in so far as possible at the other work sites but where necessary will take place within appropriately bunded areas at a designated distance away from watercourses (>10m). This is in accordance with the buffer zone guidelines (see Table 14.1) be carried out within appropriately bunded areas away from surface water gullies or drains. If it is not possible to bring a machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in the cab of each vehicle and operators will be fully trained in the use of this equipment.

The generation of runoff from stockpiles of soils, excavated during construction, will be prevented by the installation of temporary bunds around the stockpile, and removing the material off-site as soon as possible to designated storage areas.

The requirement for any in-stream works is minimal however, in the event of any in-stream works taking place during the construction phase the following mitigation measures apply.

- In salmonid catchments, all in-stream works will be carried out during the period May to September. In the event that these waters contain Lamprey the National Parks and Wildlife Service will be contacted for the relevant advice.
- No in-stream works will be carried out without the written approval of the Inland Fisheries Ireland[25]. A method statement will be agreed in advance of works.
- Any machines working in the watercourse will be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- In-stream earthworks will be executed so as to minimise the suspension of solids.

The above measures will in conjunction with the ESB CEMP, submitted by the appointed contractor for review by the IFI, Laois County Council and other relevant consultees.

In relation to the use of creosote oil, the timber poles used will be treated with Creosote to maintain their integrity in use.

Creosote oil is composed of a mixture of hydrocarbons but primarily Polycyclic Aromatic Hydrocarbons (PAHs).

The suppliers of wood-poles will be required to ensure that the moisture content of poles prior to creosote impregnation is between 20% to 25%. At this moisture content, the wood cells are void of water. In addition, a negative back vacuum must be applied to all treated poles at the end of the treating process. This is to ensure that any excess creosote is removed from the pole before it emerges from the treatment cylinder. This leads to a dry pole. The pole remains at the facility for at least 4 weeks before use.

When required, the poles will be transported directly to the work location. All poles will be provided pre-treated. Material to be used for the construction of the overhead lines will come from the ESB storage yard at Kilteel by way of just-in-time deliveries.

Guidelines will be adhered to, thus ensuring that the impact on the water environment during the construction phase of the proposed line route is minimised. In particular, the ESB Networks CEMP, which sets out methods for minimising the environmental risks associated with construction works, will be referred to in the planning of any construction works in the vicinity of watercourses.

*Diversion/Erosion of local watercourses*

As far as is possible, the temporary access roads will be developed to minimise the number of watercourse crossings. Access roads will be developed only when no other access route can be identified.

In relation to temporary crossing structures over rivers and streams so as to allow for movement of plant, equipment and construction personnel, IFI require that watercourses be effectively bridged prior to commencement of works. In accordance with IFI recommendations, clear span 'bailey bridge' type structures will be installed. All watercourse crossings will be planned in consultation with Laois County Council, and in accordance with guidelines issued by the IFI and other applicable guidelines.

Any permanent diversions of watercourses will be designed to replicate the existing natural watercourse. The creation of the new watercourse will be carried out in the dry, in isolation from the existing watercourse. Diversion will only take place during the period May to October unless otherwise agreed with the IFI.

To avoid siltation of watercourses from crossing point locations, silt traps will be placed beside temporary crossing points with an associated buffer strip. Silt-traps will be maintained and cleaned regularly during the construction phase.

The above measures will in conjunction with the ESB CEMP.

*Flood Risk*

During the entire construction phase, the works will be programmed and phased so that any blocking of the existing drainage network will be avoided so as to prevent localised flooding.

Measures to prevent localised flooding will be implemented by proper design of the construction works and maintenance of existing drainage within the proposed substation.

*Localised alteration of groundwater flow, rate and direction*

The construction of angle mast and poleset bases will temporarily change the groundwater regime should excavations extend below the water table and should pumping be required to enable the pouring of concrete. The following mitigation measures will be adopted:

- Machinery will be operated from access tracks, where possible.
- Time for excavations being open will be minimised as far as possible.
- Lowering of groundwater table, if required, will be mitigated by avoiding unnecessary pumping and dewatering of excavations. Where possible, groundwater exclusion techniques will be used such as drainage or sheet piling which will reduce the need for dewatering and will avoid

unnecessary drawdown of the water table outside of the excavations. During any dewatering activities a standard water filtration system will be utilised to control the amount of sediment in surface water runoff.
- Locally excavated material will be reinstated surrounding the base immediately following construction to allow recovery of any potential groundwater level change as quickly as possible.
- Aggregate will be imported rather than quarried on site.

#### 14.7.8.2 Operational Phase

Apart from the general maintenance of the angle masts and polesets there will be few on-site activities during the operational phase.

All watercourse crossings will be planned in consultation with Laois County Council and in accordance with the necessary guidelines.

The construction of the typical angle mast foundations would be from concrete that is sulphate resistant and appropriate for the site conditions. This would ensure that there will be little corrosion of the typical angle mast bases during the operational phase.

All poles will be provided pre-treated.

The risk of polluting the local hydrological and hydrogeological regime from the operating equipment is limited. As part of the standard operations procedures, routine monitoring and maintenance will be carried out to minimise these risks to acceptably low levels of likelihood and severity.

Re-fuelling of equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place off site, where possible, and not on-site. If it is not possible to bring machinery off-site to a refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

All associated hazardous waste residuals will also be appropriately stored prior to removal by a licensed waste management contractor for off-site treatment/recycling/disposal.

## 14.8 MATERIAL ASSETS

### 14.8.1 TRAFFIC

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 reinstalled 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.

### 14.8.2 WASTE

- 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 $m^3$ (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.

### 14.8.3 UTILITIES

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.

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.

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.

### 14.8.4 AIR NAVIGATION

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.

### 14.8.5 AGRICULTURAL IMPACT ASSESSMENT

- 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.

# 14.9 AIR AND CLIMATE

## 14.9.1AIR QUALITY AND CLIMATE

### 14.9.1.1Construction Phase

Traffic-related effects, site excavation works and material storage are the principal potential sources of airborne dust and these can be managed through a comprehensive construction management plan for the sites, setting out the mitigation measures set out below and detailing how they will be enforced:

- Transport of materials to and from the sites will take place in normal working hours and along routes agreed with the local authority.
- Vehicle speeds will be restricted on haul roads.
- Vehicles will be routinely maintained to minimise emissions.
- Site haul roads will be dampened down with water during prolonged dry periods if necessary.
- Dusty materials such as excavated materials will be stored and handled appropriately (for example, by covering where necessary and minimising the drop heights of materials).
- Wheel-wash facilities of vehicles leaving site will be provided.
- Materials likely to be a source of dust will be transported in an appropriate manner (for example, by covering the load).
- Suitable hoardings will be used at the construction site to prevent dispersal of materials by wind.
- Site management practices will incorporate appropriate dust monitoring.
- All construction will be completed in a timely fashion.
- Bare areas will be re-vegetated on contractor's completion.
- Maintain plant and equipment to minimise fuel consumption.

Any impacts of construction on air quality will be of short duration and will be rendered negligible by implementation of these mitigation measures through the construction management plan.

### 14.9.1.2 Operational Phase

During the operational phase, there will be no significant impacts on receptors in the area and no specific mitigation measures are proposed.

## 14.9.2 NOISE

### 14.9.2.1 Construction Phase - Substations

Noise during the construction stage will be limited by the scale of the project. The noise levels will be maintained within the limits set in National Roads Authority guidelines (the only 'official' construction noise guideline in Ireland). The construction stage contract will include provision for independent noise monitoring to ensure that noise limits are being adhered to.

### 14.9.2.2 Operational Phase - Substations

Landscaping and planting of trees and shrubs at the sites will reduce visual impacts and perceived noise levels.

It is not expected that audible noise generated from within the substations will cause annoyance, as outlined previously. The landscaping and screening around the substation site will further help to reduce the noise level.

Following commissioning of the substations, a noise assessment will be carried out to ensure that noise levels emanating from the substation do not exceed 45 dB(A) $L_{Aeq}$ (15 minutes) at night and 55 dB(A) $L_{Aeq}$ (1 hour) during the day at any noise-sensitive location. In the event that there is a significant tonal content in the noise, the limits will be reduced by 5 dB(A).

### 14.9.2.3 Operational Phase - Overhead lines

As outlined in the previous sections, it is not expected that noise arising from corona will give rise to complaints. Corona noise, if present, will be audible only under certain weather conditions and in close proximity to the line.

Aeolian noise very rarely occurs on overhead lines and is not expected to arise on the proposed lines. As outlined earlier, mitigation measures for Aeolian noise include the fitting of air-flow spoilers on conductors and the replacement of disc insulators.

Any noise complaints will be investigated and mitigation measure implemented if necessary.