

## 14 SCHEDULE OF ENVIRONMENTAL MITIGATION

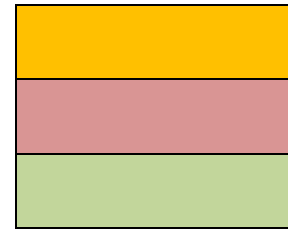
### 14.1 INTRODUCTION

This Schedule of Environmental Mitigation summarises and sets out an implementation programme for all environmental mitigation measures recommended in the Environmental Impact Assessment Report (EIAR) for the proposed Kilcumber Bridge 110kV substation development.

### 14.2 FORMAT OF THE MITIGATION SCHEDULE

The schedule on the following pages is structured in accordance with the following project phases:

- **Prior to Commencement of Construction**
- **During Construction Phase**
- **Post Construction/ Operational Phase**



The schedule is presented in a Table format which outlines, for each of the project phases:

- i. the environmental aspect or resource for which mitigation is required,
- ii. the required or proposed mitigation measure to undertake/implemented,
- iii. the persons responsible for implementing the mitigation,
- iv. the relevant actions, procedures and plans relating to implementation of the mitigation.

**Table 14-1: Schedule of Environmental Mitigation Measures**

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Safety and Health Plan</b>	A Safety and Health Plan covering all aspects of the construction process will be prepared in advance of construction and will comprehensively deal with safety and health related issues.	Appointed Project Contractor	Chapter 3 Population & Human Health  Safety & Health Plan to be prepared.
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction Traffic Management Plan (CTMP)</b>	A detailed Construction Traffic Management Plan will be developed at the construction stage (or commenced during planning compliance stage) to ensure controls are in place with all suppliers coming to the project site, including coordination with the permitted Cushaling Wind Farm construction.	Appointed Project Contractor	Chapter 11 Traffic & Transportation  Develop CTMP and submit to planning authority for comment.
PLANNING STAGE/PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction Environmental Management Plan (CEMP)</b>	A Construction Environmental Management Plan (CEMP) has been prepared for the project and will be implemented during construction in order to ensure that the project is constructed in accordance with best practice, with the minimum impact on the surrounding environment. The implementation of proposed mitigation measures, environmental commitments of the project and the monitoring and supervision of these measures will be managed through the CEMP. It includes measures to control/manage the following: <ul style="list-style-type: none"> <li>• Noise and Dust Emissions;</li> <li>• Protection of Water Quality/Sediment and Erosion Control;</li> <li>• Fuel and Oils Management;</li> <li>• Management of Concrete;</li> <li>• Ecological Management (Protection of Habitats and Fauna);</li> <li>• Invasive Species Management;</li> <li>• Management of Archaeology;</li> <li>• Waste Management;</li> <li>• Emergency Response;</li> <li>• Site Environmental Training and Awareness;</li> <li>• Monitoring and Auditing;</li> <li>• Managing Environmental Incidents and Complaints.</li> </ul>	Developer Project Manager	Chapter 2 Project Description  Appendix 4 CEMP  To be communicated to Appointed Project Contractor and incorporated into final CEMP.
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Construction &amp; Environmental Management Plan (CEMP)</b>	A final CEMP will be prepared by the appointed main construction contractor in advance of works commencing and will be submitted to the local authority(s) for approval. Construction method statements will be prepared prior to commencement of construction and incorporated into the CEMP.	Appointed Project Contractor  and	Develop final CEMP and submit to planning authority for comment.

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
			Responsible personnel identified in the CEMP	
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Best Practice</b>	<p><b><u>Environmental Manager</u></b> An Environmental Manager with appropriate experience and expertise will be employed for the duration of the construction phase to ensure that all the environmental mitigation measures are implemented. This manager will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted in the EIAR.</p> <p><b><u>Ecological Clerk of Works</u></b> A suitably qualified and experienced Ecologist will be employed during the construction phase of the project. Duties will include the review of all method statements, delivery of toolbox talks and monitoring of construction phase to ensure all environmental controls and EIAR mitigation are implemented in full. The Ecologist will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated in the EIAR</p>	Developer Project Manager and/or Appointed Project Contractor	Chapters 4 Biodiversity Appoint Project Team Personnel
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Ornithology – Tree Felling</b>	Acknowledging that works required for development are exempt from conditions stipulated in the Wildlife Acts, removal of trees during the preconstruction and construction stages will be conducted where possible outside the general bird breeding season which runs from the 1 <sup>st</sup> of March to the 31 <sup>st</sup> of August inclusive.	Appointed Project Contractor	Chapter 4 Biodiversity
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Protection of Water Quality – Design Measures</b>	<ul style="list-style-type: none"> <li>• A site-specific drainage system has been designed for the project.</li> <li>• Prior to any construction activity, the site will be inspected for areas that would be prone to siltation of the nearby River Figile.</li> </ul>	Developer Project Manager and/or Appointed Project Contractor	Chapter 4 Biodiversity Chapter 6 Water Appendix 4 CEMP
<b>PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS</b>	<b>Biodiversity – Otter</b>	Pre-construction surveys will be undertaken to ensure that newly established holts do not occur within the works area before the commencement of construction. Should a holt be identified, additional surveys/enabling works will only be undertaken under the appropriate NPWS licence.	Developer Project Manager Ecologist	Chapter 4 Biodiversity Appendix 4 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Biodiversity – Badger</b>	A survey of setts within 50m of the scheme (150m if piling is required) is required no more than 10-12 months in advance of construction (NRA, 2005). This will ensure that there will be sufficient time to comply with all licensing requirements and that the necessary actions are undertaken to protect the badger populations prior to the commencement of construction. The survey should be supplemented by a further inspection of the development area immediately prior to site clearance to ensure that no new setts are established in the intervening period and that setts previously identified continue to be used by badgers. Additional surveys/enabling works will only be undertaken under the appropriate NPWS licence.	Developer Project Manager  Ecologist	Chapter 4 Biodiversity Appendix 4 CEMP
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Biodiversity – Invasive Species</b>	An invasive species survey shall be undertaken prior to commencement of construction. Should newly established invasive species be identified within the site, an Invasive Species Management Plan will be incorporated into the final CEMP.	Developer Project Manager  Ecologist	Chapter 4 Biodiversity Appendix 4 CEMP
PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	<b>Archaeology/ Cultural Heritage</b>	Licensed archaeological test excavations should be undertaken in advance of construction at the substation and the proposed towers for the grid connection.	Developer Project Manager  and/or  Appointed Project Contractor	Chapter 10 Archaeology/Cultural Heritage  Commission qualified archaeologist to undertake test excavations/surveys and monitoring.

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
<b>DURING CONSTRUCTION</b>	<b>Best Practice</b>	All construction practices are to be managed in line with the Safety, Health and Welfare at Work (construction) Regulations and amendments.	PSDP, PSCS, Appointed Project Contractor	Chapter 2 Project Description  Prepare Safety and Health Plan
<b>DURING CONSTRUCTION</b>	<b>Management of Excavations</b>	<ul style="list-style-type: none"> <li>• Soils excavated during construction will be reused for localised landscaping and reprofiling. Excavation will be carried out from access road or hardstanding areas to reduce the compaction.</li> <li>• Excavation and construction of the substation and entrance road will be carried out by excavation of the topsoil followed by replacement with compacted crushed rock. Machinery will not operate directly on excavated/stockpiled soils.</li> <li>• Drainage will be constructed in parallel with substation and road construction. This approach will be used in combination with the installation of other drainage protection measures in advance of construction, such as the installation of silt fencing or other waterway protection measures.</li> <li>• Within excavations and around excavations, pore water pressure will be kept low by avoiding loading the soil/subsoil and giving careful attention to the existing drainage and how structures could affect it.</li> <li>• All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Where appropriate and necessary, cuts and excavations will be protected against ingress of water or erosion by the use of cut off drains around the excavation works. Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.</li> <li>• Plant and materials will be stored in approved locations only (such as the proposed site compound) and will not be positioned or trafficked in a manner that would surcharge existing or newly-formed slopes.</li> </ul>	Appointed Project Contractor	Chapter 5 Land & Soils Chapter 6 Water Chapter 4 Biodiversity Appendix 4 CEMP
<b>DURING CONSTRUCTION</b>	<b>Management of Ground/ Slope</b>	<ul style="list-style-type: none"> <li>• All site excavations and construction should be supervised by a suitably experienced engineer. The Contractor's method statements for each element of work should be reviewed and approved by the engineer prior to site operations.</li> <li>• The existing network of drainage within the site should be utilised whenever possible.</li> </ul>	Appointed Project Contractor	Chapter 5 Land & Soils Chapter 6 Water Appendix 4 CEMP
<b>DURING CONSTRUCTION</b>	<b>Storage and Management of Excavated Material</b>	<ul style="list-style-type: none"> <li>• Excavated topsoil and subsoil will be stored onsite for reuse. Temporary stockpiles of soils will not be permitted within 50m of any watercourse.</li> </ul>	Appointed Project Contractor	Chapter 5 Land & Soils Chapter 6 Water Appendix 4 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
DURING CONSTRUCTION	Protection of Water Quality - Concrete Control	<ul style="list-style-type: none"> <li>• During the pouring of concrete at the substation effective containment measures are to be implemented to avoid spilling concrete outside the construction area and prevent concrete entering the drainage system.</li> <li>• To reduce the potential for cementitious material entering watercourses, concrete pours will be supervised by the Construction Manager.</li> <li>• The construction manager will ensure that the area of the pour is completely drained of water before a pour commences.</li> <li>• Pours will not take place during forecasted heavy rainfall.</li> <li>• There will be a dedicated concrete chute washout area on site.</li> <li>• Concrete trucks will be washed out off site at the source quarry.</li> <li>• Wet concrete operations are not envisaged for this site within or adjacent to watercourses or aquatic zones. However, if wet concrete operations are required in such locations, a suitable risk assessment will be completed prior to works being carried out.</li> </ul>	Appointed Project Contractor	Chapter 6 Water Appendix 4 CEMP
DURING CONSTRUCTION	Biodiversity - Disturbance to Fauna (general measures)	<ul style="list-style-type: none"> <li>• Acknowledging that works required for development are exempt from conditions stipulated in the Wildlife Acts, removal of trees will be conducted where possible outside the general bird breeding season which runs from the 1<sup>st</sup> of March to the 31<sup>st</sup> of August inclusive.</li> <li>• Spraying of vegetation using pesticides (herbicides, fungicides and insecticides) will not be permitted at any stage of development.</li> <li>• Habitat disturbance to fauna will be limited by controlling the movement of maintenance vehicles. Construction vehicles will not encroach onto habitats beyond the proposed development footprint;</li> <li>• Duration of construction activities will be restricted to between 7.30am and 7.30pm, Monday to Friday and between 8am and 6pm on Saturdays. Construction work will not take place at night unless in exceptional circumstances to reduce potential disturbance to fauna.</li> <li>• In the unlikely event that protected faunal species are found actively using the site for breeding/roosting during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist; and</li> <li>• Should the resting or breeding places of any protected species be discovered within the site during construction works, the NPWS will be informed. Any mitigations required for badgers will be carried out under license from NPWS, and using NRA Guidelines (2005) (now TII) where applicable; Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.</li> </ul>	Appointed Project Contractor  Appointed Ecological Clerk of Works	Chapter 4 Biodiversity Appendix 4 CEMP

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
<p><b>DURING CONSTRUCTION</b></p>	<p><b>Protection of Water Quality</b></p>	<ul style="list-style-type: none"> <li>• The riparian border will be retained at the River Figile.</li> <li>• Maintenance of the existing vegetative land drains in order to keep them vegetatedContinuation of flows by natural flow paths via existing drains before entering the watercourse, providing further retention and treatment of discharges.</li> <li>• Existing land drains will be utilised at the site for drainage.</li> <li>• Where necessary, existing pollution prevention measures (vegetation in drains, check dams and silt ponds) will be maintained / upgraded to ensure optimum standard of water running into the River Figile from the land drainage system.</li> <li>• Where the drains have a gradient greater than 2%, check dams will be installed in the drains.</li> <li>• Where each land drain exits the proposed development a double silt trap will be placed. Each silt trap will be made up of a stone or straw dam combined with a silt fence. See <b>Chapter 6 Water Figure 6-8</b> for the location of the silt traps</li> <li>• Additional silt fencing and emergency spill kits will be kept on site for use in emergencies.</li> <li>• Silt and runoff will be prevented from entering ground water, surface water drains or water courses using appropriate means. These include the temporary installation of silt fences, cut off drains, silt traps and drainage to vegetated areas where appropriate.</li> <li>• Re-fuelling and storage of machinery will be in dedicated bunded areas only. Spill kits will be available within each plant/vehicle on site and also located close to identify pollution sources or sensitive receptors (fuel storage areas, etc.).</li> <li>• Interceptor drip trays will be positioned under any stationary mobile plant to prevent oil contamination of the ground surface or water. Plant and site vehicles are to be well maintained and any vehicles leaking fluids must be repaired or removed from site immediately. Any servicing operations shall take place over drip trays.</li> <li>• Daily visual monitoring of the drainage system will occur in order to ensure the drainage system is working properly.</li> <li>• A surface water monitoring schedule, drawn up prior to construction, and agreed with the county council will be followed. Suspended solids monitoring will be undertaken on a weekly basis and ad-hoc if required (rainfall event for example), while monthly monitoring of pH, metals, nitrates and phosphates will also take place.</li> </ul>	<p>Appointed Project Contractor</p> <p>Appointed Ecological Clerk of Works</p> <p>Appointed Environmental Manager</p>	<p>Chapter 4 Biodiversity Chapter 6 Water Appendix 4 CEMP</p>

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
DURING CONSTRUCTION	<b>Biodiversity – Tree Felling/Bats</b>	<p>If felling of trees with bat roosting potential (i.e. mature trees with voids, cracks, loose bark and/or ivy cover) is required, a bat survey will be required by a suitably qualified bat ecologist prior to felling; as such works have the potential to cause disturbance and/or damage to roosting bats. Should any tree roosts be identified, a derogation licence from the NPWS will be required to fell or undertake works in close proximity these trees.</p> <p>If felling of such mature trees is required, the following TII (2006) guidance will be followed:</p> <ul style="list-style-type: none"> <li>• Immediately prior to felling, trees should be inspected for the presence of bats and/or other bat activity by a suitably qualified bat ecologist during daylight hours and night-time using a bat detector. This survey should be carried out from dusk through the night until dawn to ensure bats do not re-enter the tree;</li> <li>• Where examination of the tree has shown that bats have not emerged or returned to tree, felling may proceed the following day. Should a delay in felling be encountered, resurveying is required;</li> <li>• In areas where bat activity has been recorded, tree-felling must not be conducted in June to early August; and</li> <li>• Felling during winter months (December – February) should be avoided as this increases the risk to hibernating bats.</li> </ul>	<p>Appointed Project Contractor</p> <p>Appointed Ecological Clerk of Works</p>	<p>Chapter 4 Biodiversity Appendix 4 CEMP</p>
DURING CONSTRUCTION	<b>Biodiversity – Management of Invasive Species</b>	<ul style="list-style-type: none"> <li>• Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site;</li> <li>• All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species;</li> <li>• All washing must be undertaken in areas with no potential to result in the spread of invasive species. This process will be detailed in the contractor's method statement;</li> <li>• Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present; and</li> <li>• All planting and landscaping associated with the proposed development shall avoid the use on invasive shrubs.</li> <li>• Non-native species control will be practised according to the following IFI documents, noting that some works components are located near the Figile River, or drains that feed this watercourse:                         <ul style="list-style-type: none"> <li>○ 'IFI Biosecurity Protocol for Field Survey Work' (IFI, 2010);</li> <li>○ 'Disinfection of scuba diving equipment' (IFI, 2011); and</li> </ul> </li> </ul>	<p>Appointed Project Contractor</p> <p>Appointed Ecological Clerk of Works</p>	<p>Chapter 4 Biodiversity Appendix 4 CEMP</p>



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		<ul style="list-style-type: none"> <li>○ 'Invasive species biosecurity guidelines for boaters' (IFI, 2013).</li> </ul>		
DURING CONSTRUCTION	Traffic	<ul style="list-style-type: none"> <li>• Ensure regular maintenance of plant and equipment. Technical inspection of vehicles to ensure they will perform most efficiently</li> <li>• Implementation of the construction Traffic Management Plan to minimise congestion.</li> <li>• All site vehicles and machinery to be switched off when not in use - no idling.</li> </ul>	Appointed Project Contractor	Chapter 11 Traffic Appendix 4 CEMP
	Noise	Best practice in the form of <i>BS5228 –1&amp;2:2009, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites</i> should be adopted during the construction phase in order to minimise the noise generated by construction activities and nuisance to neighbours.	Appointed Project Contractor	Appendix 4 CEMP Chapter 8 Noise
	Waste	<ul style="list-style-type: none"> <li>• A Waste Management Plan will be prepared by the Appointed Project Contractor for the construction phase. This will be prepared with reference to 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' (DoEHLG, 2006).</li> <li>• Any material deemed unsuitable for re-use in the works will be transported off site in trucks and disposed of under license from Offaly County Council. This will prevent any contaminated run-off to drains adjacent to access tracks during heavy rainfall.</li> <li>• All personnel working on site will be trained in pollution incident control response, and an emergency response plan will be prepared as part of the CEMP.</li> </ul>	Appointed Project Contractor	Chapter 6 Water

TIME FRAME / SCHEDULE	ENVIRONMENTAL MITIGATION		PERSONS RESPONSIBLE	RELEVANT CHAPTER /ACTION REQUIRED
POST CONSTRUCTION /OPERATIONAL PHASE	<b>Biodiversity Ecological Replacement Enhancement</b>	<p><u>Habitat Replacement</u> There will be removal of approximately 160 metres of hedgerow to facilitate the development. Replanting of hedge line will occur on the northwest and south eastern sides of the development on the outside of the palisade fence. The length of replanting will equal the amount of hedgerow lost. The planting will consist of native hedgerow species which will provide habitat and food sources for local wildlife, including bat and bird species.</p> <p><u>Bats</u> As foraging habitat and potential roost sites (mature trees) will be removed to facilitate project, it is proposed three bat and three bird boxes will be erected at suitable locations in the study area (e.g. in standing trees).</p> <p>Bat boxes will be installed and maintained (if required) by an Ecologist according to manufacturer's instructions. Any boxes installed should be robust and cater for a range of species. Guidance for installation of bat boxes should follow:</p> <ul style="list-style-type: none"> <li>• Bat Conservation Ireland (BCI) Guidance Notes for Agri-environmental Schemes (2015); and</li> <li>• Bat Mitigation Guidelines for Ireland (Kelleher and Marnell, 2006).</li> </ul> <p><u>Pond Creation</u> As there will be a loss of Drainage ditch habitat to facilitate the proposed substation three small ponds at least 10 m<sup>2</sup> and 1 m deep will be constructed, these standing bodies of water will provide habitats for Common Frog and Smooth newt. The location will be decided by the project ecologist in conjunction with the site manager/engineer.</p> <p><u>Other</u> Any trees cut down will be stacked in piles to create hedgehog resting habitat, dead wood also creates a damp invertebrates habitat for and their larvae which can be a nutritious food source for birds and mammals.</p>	Developer  Appointed Ecologist	Chapter 4 Biodiversity
POST CONSTRUCTION /OPERATIONAL PHASE	<b>Protection of Water Quality – Management of Stormwater / Domestic Effluent</b>	<ul style="list-style-type: none"> <li>• During the operational phase, a wastewater holding tank will be used on site for toilet facilities. This will be maintained by the service contractor on a regular basis.</li> <li>• During the operational phase of the project, the stormwater drainage system will direct storm water from the impermeable areas (entrance road and control building) within the compound through a fuel interceptor and discharge into a soakpit.</li> </ul>	Substation Operator	Chapter 2 Project Description Chapter 6 Water