UWF Grid Connection
Environmental Management Plan (2019)

Tab 8
Environmental Surveying and Monitoring Measures

ENVIRONMENTAL PROTECTION MEASURE – Environmental Surveying and Monitoring Measures	
Responsibility of	**Role/Duty**
Environmental Clerk of Works	Engaging specialist environmental and engineering experts to carry out Environmental Survey Requirements
Environmental Survey requirements included as Project Design Environmental Protection Measures *(in some instances, only those parts of a PD which are relevant to scheduling or timing is included below)*	
PD02 Hen Harrier	If works at Mountphilips Substation site are programmed to begin in the Hen Harrier breeding season (March to August) confirmatory Hen Harrier breeding surveys will be completed, before such works initiate, such that all pre breeding nuptial activity, nesting activity and active nests are recorded within 2km of the entire construction works area boundary. These surveys will be completed prior to the start-up of all construction activities. A report including nesting activity and levels of usage will be provided to the Competent Authority and NPWS following the completion of each survey season. The Project Ecologist will keep NPWS informed of the real-time status of nesting Hen Harrier as a result of the monitoring associated with this project.
PD03 Hen Harrier	Although no hen harrier roosts are currently known to occur within 1km of UWF Grid Connection, confirmatory surveys will be completed to record any roosting locations within 1km of UWF Grid Connection. A report including roosting activity and levels of usage, will be provided to the Competent Authority and NPWS following the completion of each survey season.
PD08 Material Assets	Confirmatory consultations with Irish Water, Eir and ESB and review of all relevant infrastructure mapping before works, along with confirmatory ground surveys at service locations will be carried out ahead of works.
PD14 Archaeology	All initial groundworks within 500m of an RMP or NIAH site, will be monitored by an archaeologist under license from the National Monuments Service, to archaeologically record and preserve, either in situ or by record, any structures, features or objects of archaeological significance which may be encountered during the works..
PD16 Underwater archaeology	Where excavations occur at culvert replacement locations along the 110kV UGC, and at the 3 No. new watercourse crossing at the Mountphilips Substation site, excavations will be monitored by an appropriately qualified archaeologist under license from the National Monuments Service, the excavated material will be examined for any evidence of archaeological material and metal detected as part of a finds retrieval strategy.
PD32, PD41 Water quality	The instream works at W1, W2 and W3 at Mountphilips Substation site, and the culvert replacement works at the 13 existing culverts on the public road, and all works (including concrete placement) within the boundary of the Lower River Shannon SAC, will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice Measures are followed.
PD45 Water quality	The horizontal directional drilling works at W8 and W9 will be supervised and managed by a competent and experienced Mud Engineer who understands the technicalities and challenges of drilling works. The Mud Engineer will monitor the watercourse bed during drilling works, and will supervise the drilling works including the drilling pressures and the implementation of any contingency measures.
PD46	All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for

All	compliance with the Environmental Commitments, which include the Project Design Measures, as per the Environmental Management Plan for UWF Grid Connection (see Volume D).
PD47 Water Quality	Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection.
PD52 Otter	Confirmatory surveys for active Otter holts and breeding activity will be carried out 150m upstream and downstream of watercourse crossing locations including those watercourses evaluated as unsuitable for Otter in the current appraisal.
PD59 Dipper	Works will not take place at any bridge during the Dipper breeding season (Feb-June inclusive) without a confirmatory survey to determine Dipper presence or absence.
PD60 Grey Wagtail	Where works will be carried out at parapet walls, no works will take place between the period April-August without confirmatory survey as to the presence or absence of breeding Grey Wagtail.
PD61 Kingfisher	Works will not take place at any bridge during the Kingfisher breeding season (March to July inclusive) without a confirmatory survey to determine nesting/breeding Kingfisher presence or absence within 150m upstream or downstream of the bridge.
PD62 General birds	All bridges/structures where works are proposed will be subject to confirmatory surveys for General breeding birds prior to works commencing.
PD64 Bat	Tree felling only pertains to the Mountphilips Substation site. Confirmatory surveys will be carried out at all trees that will require felling or other major modifications (e.g. removal of rotten branches) in order to confirm the findings of the 2016 / 2017 surveys regarding the suitability of the trees for roosting bats. These trees will be subject to a ground-level visual inspection by the Project Ecologist (or a bat specialist acting on their behalf) prior to site clearance works.
PD65 Bat	While it is not expected that any trees with high suitability for roosting bats will be felled, the following measures will be implemented where a tree with moderate or high bat suitability is to be felled: a presence/absence bat surveys will be carried out; The Project Ecologist will supervise the installation of bat boxes in order to ensure that they are sited appropriately.
PD66 Bat	All bridges of moderate suitability for bats will be subject to a confirmatory survey prior to the commencement of construction works. Bridges of negligible or low suitability do not need to be surveyed, but this will be reviewed by the Environmental Clerk of Works and Project Ecologist.
PD67 Badger	No badger setts were recorded within 50m of the UWF Grid Connection during pre-planning surveys. Confirmatory surveys will be carried out within 50 m of either side of the construction works area boundary to determine if any new setts have been established in the intervening period following initial pre-planning surveys and the commencement of construction activity. These confirmatory badger surveys will be undertaken no more than 12 months in advance of proposed construction activities, during the period November and April when vegetation cover is reduced.
PD69 Invasive Species	All covering of vegetative invasive knotweed infestations with high density polyethylene grass carpet terram will take place, at all identified locations prior to any works commencing on UWF Grid Connection or any other element of the Whole UWF Project. The covering of these infestations will only be carried out under the direct supervision of an ecologist with prior experience of this type of work i.e. this work cannot be carried out by any general construction staff.
Traffic Management	Along the 110kV UGC route on the public road, confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will

Plan	be undertaken Along the additional local road L5337-1 at Tullow, which will be used for construction materials haulage only (i.e. no trenching works), confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken along the routes of concentrated construction traffic between the R503 and the works locations on the local road network.

Surface Water Management Plan	<u>Drainage Inspections at Mountphilips Substation site</u>
	The following periodic inspection regime at Mountphilips Substation site will be implemented, and inspections recorded:
	• Daily general visual inspections by Environmental Clerk of Works;
	• Weekly (existing & new drains) inspections by site Construction Manager;
	• All inspection to include all elements of drainage systems;
	• Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required;
	• Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should be implemented immediately.
	• High risk locations such as settlement ponds will be inspected on a daily basis by the Construction Manager;
	• Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement;
	• Event based inspections by the Environmental Clerk of Works as follows:
	  ○ >10 mm/hr (*i.e.* high intensity localised rainfall event);
	  ○ >25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or,
	  ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).
	• Weekly, Fortnightly and Monthly (depending on weather conditions and the nature of on-going construction works) site inspections by the Project Hydrologist during construction phase
	
	<u>Water Quality Monitoring</u>
	• Daily field monitoring of water quality parameters and collection of samples will be undertaken by the Environmental Clerk of Works. He/she will be appropriately trained on the required monitoring methods and the use, calibration and maintenance of all monitoring equipment used.
	• Regular (i.e. weekly or fortnightly depending on weather conditions) field monitoring will be carried out by the Project Hydrologist.
	• Surface water quality will be monitored during the construction phase and this monitoring will also extend into the post construction phase. Proposed monitoring locations downstream of the works areas. The locations of the surface water monitoring points will be agreed with Inland Fisheries Ireland and Tipperary County Council in advance of the construction phase.
	• Laboratory analysis of water samples will also be undertaken as part of the monitoring programme by an independent and appropriately certified laboratory.
	
	<u>Frequency of Water Quality Monitoring</u>
	• Daily visual checks at watercourse crossing locations where works are taking place;
	• Weekly sampling for suspended solids and turbidity in catchments where earthworks or watercourse crossing work is on-going;
	• Fortnightly sampling for the full suite of parameters (Table 7) in catchments where works are on-going;
	• Event based sampling, e.g. after heavy rainfall;
	• Additional sampling in the event of trigger level exceedance, after heavy rainfall, etc; and,

	• Post construction sampling programme (monthly sampling) for a period of six months
Invasive Species Management Plan	Pre-Construction confirmatory surveys will be completed by an invasive species specialist, 3 – 4 weeks before construction begins. Mapping, showing the most up to date distribution and extent of each infestation, will be distributed to the Client, Owners Engineer and the Contractor; The covering of vegetative knotweed infestations with high density polyethylene grass carpet terram at all identified locations prior to any works commencing on that section and the monitoring of construction works at that section when it happens; To ensure the effective implementation of the biosecurity measures, an invasive species specialist will monitor each infestation location during all critical stages of construction works; Visual inspections will be carried out on all machinery and equipment (particularly for machinery and equipment exiting the site and which has come into contact with water or soils) for evidence of attached plant or animal material, or adherent mud or debris.
Best Practice Measures for Water quality	• The Construction Manager will be responsible for monitoring weather conditions • All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments • Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection • Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase All permanent overburden storages areas will be checked / monitored daily until stabilised to ensure no drainage issues of surface water quality impacts are occurring
Best Practice Measures for Dust Control	• Public roads works areas will be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from their surface, as necessary; • The private paved road in Knockcurraghbola Commons will also be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from its surface, as necessary;
Best Practice measures for Local employment	• Monitor the recruitment and training of local employees in line with Local Employment & Local Sourcing Policy
Best Practice Measures for operational UWF Grid Connection	• A confirmatory survey of Electromagnetic Field emissions from the Mountphilips 110kV Substation and from locations along the 110kV UGC will be carried out by a competent engineer following commissioning of the UWF Grid Connection. • Recording and reporting of the annual renewable electricity production of the operational Upperchurch Windfarm.