15. SCHEDULE OF MITIGATION

15.1 Introduction

All mitigation measures relating to the pre-commencement, construction and operational phases of the proposed development are set out in the relevant chapters of the EIAR and associated documents submitted as part of this planning application.

All mitigation measures proposed for the project are outlined in Table 16-1 below. The mitigation measures have been grouped together according to their environmental field/topic and are presented under the following headings:

- Construction Management
- Drainage and Water Quality
- Biodiversity
- Subsoils
- Air Quality and Dust Control
- Noise and Vibration
- Material Assets including Traffic and Utilities
- Landscape and Visual
- Cultural Heritage
- Environmental Management

The mitigation proposals in the below format provides an easy to audit list that can be reviewed and reported on during the future phases of the project. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plans (CEMPs) which are included as Appendix 4-3 in Volumes 3a, 3b & 3c(i) and as Appendix 4-2 in Volumes 3d, 3e & 3f of this EIAR. The mitigation and monitoring proposals are set out in separate tables in the CEMP (Appendix 4-2) for clarity and tracking of the pre-commencement survey requirements. Where particular monitoring proposed is considered to be a measure of mitigation, it has been included in the consolidated table for all mitigation measures proposed (Table 16-1).

It is intended that the CEMP will be updated where required, prior to the commencement of the development, to include all mitigations measures, conditions and or alterations to the EIAR and application documents should they emerge during the course of the planning process and would be submitted to the Planning Authority for written approval.

15.2 Mitigation Measures

Table 15-1 Mitigation Measures

Ref. No.	Mitigation Measure	Audit Result	Action Required
	Construction Phase		
Land, Soils and Geology			
MM1	Excavated (existing) overburden and/or bedrock material will be reused on site, where possible; Excavated materials will be used at adjacent sites subject to Article 17 authorisations or other regulatory consents in order to minimise environmental effects. A minimal volume of topsoil and subsoil will be removed to allow for infrastructural work to take place due to optimisation of the layout by mitigation by design; and, Construction of service trenching, and surface water attenuation features will generate excess material, and excess material will be used locally within the site for achieving building formation levels and landscaping. Any spoil generated which will be removed offsite will be done so in accordance with the relevant regulations and best practice including waste management legislation if the material is considered a by-product or waste.		
MM2	All plant and machinery will be serviced before being mobilised to site;		
MM4	Refuelling will be completed in a controlled manner using drip trays at all times;		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM5	Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;		
MM6	Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;		
MM7	Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored		
MM8	Ancillary equipment such as hoses and pipes will be contained within the bund;		
MM9	Taps, nozzles or valves will be fitted with a lock system;		
MM10	Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;		
MM11	Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills		
MM12	Only designated trained operators will be authorised to refuel plant on site;		
MM13	Procedures and contingency plans will be set up to deal with emergency accidents or spills;		
MM14	An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment		
MM15	Highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the site and surrounding environment during construction. A suitably qualified individual will be given the task of overseeing the pollution		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	prevention measures agreed for the site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.		
MM16	The underlying in-situ soils and subsoils will be subject to a certain amount of compaction, but this will be unavoidable		
MM17	Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining drainage properties. This will be relevant within the proposed landscaped and green areas of the site		
Material Assets			
MM18	The area where excavations are planned will be surveyed and all existing services will be identified. All relevant bodies i.e., ESB, Bord Gáis, Irish Water, Eircom, Meath County Council, Kildare County Council etc. will be contacted prior to construction works and all drawings for all existing services sought. All plant operators and general operatives will be inducted and informed as to the location of any services.		
MM19	Design stage Construction and Environmental Management Plans and Waste Management Plans have been prepared and will be updated prior to the commencement of construction works to take account of all requirements of the Planning Authority. The waste hierarchy will always be employed to ensure that the least possible amount of waste is produced during the construction phase, through reuse, recovering and recycling.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM20	Water will be supplied on site by water tankers for general use. Unless a temporary water supply is secured from Irish Water, potable water will be provided in the form of bottled water for staff use during the construction phase (prior to connections to the municipal water supply).		
MM21	Portable toilets will be provided for those working on the construction sites throughout the Proposed Development. Wastewater arising on-site from these toilets is stored in a sealed tank located within the portable toilets, and these will be emptied periodically (as required) by permitted waste contractors and transported to municipal wastewater treatment plants for treatment.		
Air & Climate			
MM22	**Dust Emissions** All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise.		
MM23	Overburden will be progressively removed from the working area in advance of construction.		
MM24	Dampening down the dust at the source by the use of barriers such as debris netting on scaffolding around the buildings to block dust escaping where the building is within 10m of the site boundary where residential properties or public roads exist.		
MM25	Site roadways will be maintained in a stoned hard-core condition not allowing soil to accumulate which when dry can create dust.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM26	Wheel wash equipment will be set up at the site exit gates for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways		
MM27	The roads adjacent the site will continue to be regularly inspected by the Site Manager for cleanliness and cleaned as necessary		
MM28	If necessary, sporadic wetting of loose stone and soil surface will be carried out during the construction phase to minimise movement of dust particles to the air		
MM29	Any hardstanding areas/site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions		
MM30	The transport of material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles		
MM31	Dust levels will be monitored visually, on a daily basis by the project Environmental Officer. If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g., wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed.		
MM32	Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne.		
MM33	Road Sweepers may be deployed as required on public roadways in the unlikely event that mud or dust be transported from the site.		
MM34	A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase. A CEMP is included with this application and includes further details of the above dust suppression measures and dust monitoring measures		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM35	All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise.		
MM36	All machinery will be switched off when not in use.		
MM37	Users of the site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum.		
MM38	The methods of working will comply with all relevant legislation and best practice guidelines in reducing the environmental impacts of the works. A detailed CEMP will be prepared and submitted to Meath County Council and Kildare County Council for approval in advance of the works.		
MM39	Aggregate materials for the construction of the proposed developments will be obtained from local quarries and batching facilities where needed. This will significantly reduce the distance that delivery vehicles will need to travel to access the site.		
Noise			
MM40	Construction operations will in general be confined to the period Monday-Friday 0700-1900 h, and Saturday 0800-1600 h.		
MM41	Where it is proposed to operate plant during the period 0700-0800 h at locations within 100 m of offsite receptors, standard 'beeper' reversing alarms will be replaced with flat spectrum alarms		
MM42	Hooting will be prohibited onsite. Drivers of plant and vehicles will be instructed to avoiding hooting at all times		
MM43	Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM44	Queuing of trucks near offsite receptors will be prohibited		
MM45	Machinery not in active use will be shut down.		
MM46	A site representative will be appointed as a liaison officer with the local community.		
MM47	Where evening or night-time operations are required, local residents will be notified through the liaison officer		
MM48	All complaints of noise received during the construction phase will be logged in a register and investigated immediately. Details of follow-up action will be included in the register		
MM49	Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance.		
MM50	Where generators or compressors are required within 100 m of offsite receptors, or previously completed receptors onsite, these will be fitted with manufacturers' acoustic enclosures, or alternatively will be screened by a local acoustic screen or subsoil stockpile.		
MM51	Guidance set out in British Standard BS 5228-1:2009+A1:2014 with respect to noise control will be applied throughout the construction phase		
Landscape and Visual			
MM52	The mitigation measures proposed include the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials and appropriate car parking.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM53	Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures, work practices and a waste management plan to ensure the site is kept tidy, dust is kept to a minimum and that public areas are kept free from building material and site rubbish.		
Cultural Heritage			
MM54	Pre-development targeted archaeological test trenching under licence from the National Monuments Service should take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A report on the results of targeted test trenching and a detailed archaeological impact assessment shall be compiled and submitted to the relevant authorities. If any archaeological sites or features are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same.		
MM55	The development footprint of the project has been mitigated by design to avoid removal of townland and field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal.		
Flora & Fauna			
MM56	**Site A** **Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat** Hedgerow habitat along the northern boundary will be retained, ensuring ecological connectivity to the wider landscape is maintained.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM57	157 semi mature trees will be planted within the development site. New treeline habitat will be created along the western and southern boundaries		
MM58	An additional 165 whip trees are proposed		
MM59	Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia).		
MM60	The plan includes for the planting of a new native hedgerow along the eastern boundary of Site A, mainly along the R157. The planting of new native hedgerows will ameliorate any hedgerow loss and to maintain connectivity to the wider area.		
MM61	Native hedgerow species to be planted include such as Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium)		
MM62	Large sections of grasslands throughout the site will be management as Wildflower meadows and planted with native wildflowers, including Common knapweed (Centaura nigra), Ribwort Plantain (Plantago lanceolata), Red clover (Trifolium pratense) and Birds foot trefoil (Lotus comiculatus).		
MM63	The creation of swales will also add new wetland habitat to the landscape, provide new habitat for various invertebrates and amphibians.		
MM64	The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site.		
MM65	A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM66	**Assessment of potential effects on water quality and aquatic faunal species and habitats during construction** Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats		
MM67	A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities.		
MM68	The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated		
MM69	As construction advances there may be a requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground;		
MM70	Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing		
MM71	A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM72	Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present.		
MM73	Daily monitoring and inspections of site drainage during construction will be completed.		
MM74	Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River		
MM75	The necessary pipelaying works will be undertaken within this defined area		
MM76	Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall		
MM77	No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		
MM78	Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.		
MM79	A submersible pump will be used to dewater inside the coffer dammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag		
MM80	The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM81	The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed		
MM82	The surface water discharge point is likely to take less than one day to install.		
MM83	Sondes will be put in place in the Rye Water River upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the ECoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified		
MM84	Biotic and abiotic baseline data will be gathered on the Rye Water River both close to the development site and at a distance away from the site. Gathering this data will allow for a comparison between the current situation and that which may develop during the construction or operational phase		
MM85	**Fauna- Disturbance/Habitat loss** All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works. This will avoid any potential impacts on crespular or nocturnal species, including bat species		
MM86	Hoarding will be placed around the construction site. This will screen the site and minimise any disturbance impacts on fauna in the wider surroundings.		
MM87	All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 “European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996”.		
MM88	Plant machinery will be turned off when not in use		
MM89	Operating machinery will be restricted to the proposed works site area.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM90	**Assessment on the potential impacts on bats during construction** Habitat Loss: Following the precautionary principle, a pre-construction survey will be undertaken on the two ash trees in the east of the site with 'Low to Moderate' suitability for bats to be felled, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the bat survey in July 2021.If bats are found to be roosting in any of the trees, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist. Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006.Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006		
MM91	Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006.		
MM92	**Disturbance** The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats		
MM93	**Assessment on the potential impacts on birds during construction**		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	Disturbance: Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded.		
MM94	**Site B** **Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat** The landscaping plan has also been designed to retain the mature treeline along the southern boundary of the site and hedgerow habitat at the northern boundary		
MM95	100 new trees will be planted within the application site		
MM96	This will significantly increase the tree coverage throughout the entire site, improving connectivity to the wider landscape and providing new nesting, foraging and commuting habitat for local biodiversity.		
MM97	Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia).		
MM98	The plan includes for the additional planting of new native hedgerow throughout the site. This will be located along the eastern boundary where the existing hedgerow will be removed. Additional hedgerow s will also be planting throughout the centre of the development. The planting of new native hedgerows will greatly increase the hedgerow habitat coverage within the area and increase ecological connectivity to the wider landscape		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM99	Native hedgerows will be planting with Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium).		
MM100	Native hedgerows will be maintained and managed for wildlife, this includes allowing hedgerows to grow wide and dense at the base, with a wide, uncultivated grassy margin. Hedgerows should be allowed to mature before the first cut and future cutting should happen on a 3/5-year rotation. Hedgerows should be kept as dark spaces to allow commuting and foraging habitat for local wildlife.		
MM101	The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site.		
MM102	A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction.		
MM103	Assessment of potential effects on water quality and aquatic faunal species and habitats during construction Mitigation measures outlined to protect water quality during the construction of the main development areas have been outlined in section 8.6.3.5 of Chapter 8 of this EIAR and are fully described in the CEMP located in Volume 3.b, Appendix 4-3. The mitigation measures are the same as Site A The measures are the same as Site A, please see above.		
MM104	Fauna- Disturbance/Habitat loss Same as Site A.		
MM105	Assessment on the potential impacts on bats during construction		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	See Mitigation for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for Site B.		
MM106	**Assessment on the potential impacts on birds during construction** See Mitigation for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for Site B.		
MM107	**Disturbance** Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded.		
MM108	**Site C** **Assessment of the potential effects on the loss of Treeline (WL2) and Hedgerow (WL1) habitat** The development has been designed to retain approximately 590m of mature treeline habitat along the southern boundary of the project area and hedgerow habitat along the eastern boundary, maintaining connectivity to wider environment. Approx. 888m of hedgerow will be retained within the site.		
MM109	A landscaping plan has been prepared for the proposed development and is available in Appendix 4-7. The tree survey report accompanying this application outlined the removal of 29 trees at the site, many of which have been highlighted for removal due to poor condition. A total of 125 trees will be retained at the site		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM110	In addition to this, 591 new trees will be planted within the site		
MM111	This will significantly increase the tree coverage throughout the entire site, improving connectivity to the wider landscape and providing new nesting, foraging and commuting habitat for local biodiversity		
MM112	The plan includes for the planting of a new native treeline along the southern boundary of the site. To ameliorate any tree loss and to maintain connectivity to the wider area.		
MM113	Approximately 364m^2 of native hedgerow is proposed for planting along the northern and western boundaries. This will ensure habitat connectivity is maintained to the wider landscape		
MM114	Native tree species to be used for planting include Alder (*Alnus glutinosa*), Pedunculate oak (*Quercus robur),* Scots Pine (Pinus sylvestris), Silver Birch (*18pprox pendula*) and Rowan (Sorbus aucuparia).		
MM115	Native hedgerows will be planting with Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Holly (*Ilex aquifolium*).		
MM116	In addition to native hedgerow and tree planting, approximately 11,492m^2 of shrub planting is proposed throughout the development site. Pollinator friendly species such as *Lavandula angustifolia* and *Hypericum Hidcote* will provide a large increase in food source availability in the proposed shrub planting areas.		
MM117	Large sections of grasslands throughout the site will be management as Wildflower meadows and planted with native wildflowers, including Common knapweed (*Centaura nigra*), Ribwort Plantain (*Plantago lanceolata*), Red clover (*Trifolium pratense*) and Birds foot trefoil (*Lotus comiculatus*).		
MM118	The creation of swales will also add new wetland habitat to the landscape, provide new habitat for various invertebrates and amphibians.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site		
MM119	A tree protection plan is included in this application This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction.		
MM120	**Assessment of the potential effects on the loss of Mixed Broadleaved Woodland (WD4)** The development has been designed to retain the vast majority of the woodland within the site boundary, with only a very small section (4.5%) of the woodland being lost to the development. Whilst no significant loss of woodland will occur, a landscaping plan has been prepared for the proposed development which provides for the replanting of native woodland habitat within the development site to ameliorate any tree loss and to maintain connectivity with the wider. For Mitigation measures please see above		
MM121	**Assessment of the potential impacts on water quality and aquatic faunal species and habitats during construction** Mitigation measures outlined to protect water quality during the construction of the main development areas have been outlined in section 8.6.3.6 of Chapter 8 of this EIAR and are fully described in the CEMP located in Volume 3.c, Appendix 4-3. The mitigation measures are summarised in Site A. Exception is The following best practice construction measures will be followed to ensure that there are no significant effects on the Rye Water River or the Blackhall Little River as a result of the in-stream construction works related to the outfall pipes .		
MM122	Aquatic species-White Clawed Crayfish The following section described the mitigation measures that will ensure there is no significant effect on white clawed crayfish as a result of the in-stream construction works proposed.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM123	Prior to any construction works carried out within the Rye Water River or Blackhall Little River, a pre-commencement white clawed crayfish survey will be undertaken to ensure no crayfish occur within the works areas.		
MM124	The survey will be carried out by a qualified professional under licence from the National Parks and Wildlife Services (NPWS).		
MM125	All works within this area will be subject to strict biosecurity protocols to prevent the spread of the crayfish plague which is caused by the fungal-like organism, Aphanomyces astaci.		
MM126	The following best practice construction measures will be followed to ensure that there are no significant effects on the Blackhall Little River as a result of the construction of the two pedestrian and cycle bridges.		
MM127	The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses.		
MM128	Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Blackhall Little Stream		
MM129	The necessary pipelaying works will be undertaken within this defined area.		
MM130	Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Blackhall Little Stream will be removed to facilitate the construction of the outfall.		
MM131	No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM132	Cofferdams will be constructed using one tonne sandbags at the edge of the Blackhall Little Stream at the outfall point to create dry working areas.		
MM133	A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag.		
MM134	The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).		
MM135	The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed.		
MM136	The surface water discharge point is likely to take less than one day to install. During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas		
MM137	The Kildare Bridge upgrade works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer. Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected.		
	Fauna- Disturbance/habitat loss		
MM138	Assessment on the potential impacts on bats during construction		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	Following the precautionary principle, a pre-construction survey will be undertaken on two trees to be felled in the east of the site, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in July and August 2021. If bats are found to be roosting in any of the structures, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist		
MM139	**Disturbance** The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats		
MM140	**Assessment of the potential impacts on birds during construction** **Habitat Loss** In order to mitigate for the loss of a small area of woodland, trees and hedgerow it is proposed to plant and maintain additional areas of native woodland and trees within the site boundary.		
MM141	**Disturbance** Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded.		
MM142	Although no barn owls were recorded during the dedicated barn owl survey carried out in 2021, a pre-construction Survey will be undertaken on Moygaddy castle to ensure no barns owls are nesting there. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the barn owl survey in July 2021.		
MM143	**Assessment of the potential impact on badgers during construction** **Habitat loss/Fragmentation:** The retention of the hedgerow, woodland habitat and grassland within the southern section of the site will ensure that badger foraging habitat remains available. Areas seeded with wildflower meadow mix will establish a species rich grassland which is likely to provide higher quality foraging habitat locally than the existing improved agricultural grassland habitat		
MM144	**Disturbance** A section of footpath is proposed within 22 metres of the identified badger sett along the Blackhall Little River. As such, the following mitigation is prescribed during the construction phase to avoid impacts on badgers:		
MM145	**Mitigation** Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery will be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM146	During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.		
MM147	If construction works are required closer to the active sett during the breeding season, consultation with the NPWS will be carried out and appropriate mitigation measures will be put in place, e.g. sett screening, restricted working hours, etc.		
MM148	Although no badger activity was recorded at the outlier sett along the hedgerow within the site, taking a precautionary approach, the following mitigation is prescribed during the construction phase to avoid impacts on badgers.		
MM149	Mitigation It is recommended that a pre-construction badger survey be carried out in order to assess activity levels at the outlier sett and to identify any additional sett entrances that may have been excavated in the intervening period. All badger survey work will be undertaken in line with current NRA best practice guidance.		
MM150	Should this sett found to be in use by badgers during the pre-construction badger monitoring, it will be necessary to apply to NPWS for a licence for the temporary closure of the sett during the construction phase only.		
MM151	Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS.		
MM152	Where survey indicates that suitable alternative natural setts are not present, a badger expert may recommend the construction of an artificial sett to replace the sett that will be affected		
MM153	Assessment on the potential impacts on Otter during construction		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	Prior to the commencement of construction works associated with the installation of the new pedestrian bridge and outfall, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2007).		
MM154	From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of the construction of the proposed bridge construction and the construction of the outfall. In the unlikely event that an otter holt is identified within or immediately adjacent to the proposed development footprint, consultation will be undertaken with the National Parks and Wildlife Service and a derogation licence applied for. All conditions of a derogation licence will be implemented in full. No works should be undertaken within 150m of any holts at which breeding females or cubs are present. No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence (TII, 2006).		
MM155	All of the above works will be undertaken or supervised by an appropriately qualified ecologist.		
MM156	The MOOR Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat In order to mitigate for the significant loss of hedgerow habitat associated with the MOOR, approximately 6,208m of new hedgerow will be planting along the extend off the MOOR boundary		
MM157	Native hedgerow species such as Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa) and Holly (Ilex aquifolium) will in the replanting schedule		
MM158	In addition to the 6,208m of new hedgerow proposed, 373 semi mature new trees will also be planted along the extent of the MOOR		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM159	Native species to be used for planting include Alder (Alnus glutinosa), Pedunculate oak (Quercus robur), Scots Pine (Pinus sylvestris), Silver Birch (betula pendula) and Rowan (Sorbus aucuparia).		
MM160	The planting of 6,208m of hedgerow habitat and 373 semi mature trees will increase the coverage of linear habitat on the overall proposed development site.		
MM161	This will significantly increase the nesting, foraging and commuting habitat for wildlife while maintaining ecological connectivity to the wider landscape		
MM162	The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site		
MM163	A tree protection plan is included in this application. This will ensure that any trees or tree lines that are to be retained within the site are fully protected in accordance with the British Standard BS 5837: Trees in Relation to Construction		
MM164	Assessment of potential effects on water quality and aquatic faunal species and habitats during construction Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats		
MM165	A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities		
MM166	The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated.		
MM167	As construction advances there may be a requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground.		
MM168	Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing		
MM169	A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc		
MM169	Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present;		
MM170	Daily monitoring and inspections of site drainage during construction will be completed;		
MM171	No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		
MM172	All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed Kildare Bridge pedestrian/cycle structure upgrade works, the Blackhall Little Bridge and the Moyglare Bridge.		
MM173	Surface water outfalls will be constructed in accordance with the measures described in 8.6.3.4.4 and subject to agreement with IFI		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM174	Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will be implemented, will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRlA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment		
MM175	During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas		
MM176	The MOOR stream crossing upgrade works, the Moyglare Bridge and the Kildare Bridge Works will all require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer		
MM177	Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan, which will be updated upon grant of permission and to provide any additional measures required pursuant to planning conditions and agreements with the planning authority		
MM178	The following best practice construction measures will be followed to ensure that there are no significant effects on the Rye Water River as a result of the construction of the two pedestrian and cycle bridges: The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses		
MM179	Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River		
MM180	The necessary pipelaying works will be undertaken within this defined area.		
MM181	Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall		
MM182	No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		
MM183	Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.		
MM184	A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag		
MM185	The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).		
MM186	The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed.		
MM187	The surface water discharge point is likely to take less than one day to install		
MM188	The bridge works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM189	Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected.		
MM190	As part of the application process, Inland Fisheries Ireland were consulted regarding the proximity of the works to the Blackhall Little and the River Rye Water.		
MM191	**Fauna- Disturbance/Habitat loss** › Same as Site A		
MM192	**Assessment on the potential impacts on bats during construction** **Habitat Loss** › Following the precautionary principle, a pre-construction survey will be undertaken on the individual tree adjacent to the Blackhall Little stream with 'Low to Moderate' suitability for bats to be felled, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the bat survey in July 2021		
MM193	› If bats are found to be roosting in any of the trees, a bat derogation licence must be obtained, and further mitigation prescribed by a licenced ecologist.		
MM194	› Tree felling will follow guidelines set out in National Roads Authority, Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. 2006.		
MM195	**Fragmentation**		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	› See mitigation measures in Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for the MOOR.		
MM196	**Disturbance** › The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats		
MM197	**Assessment on the potential impacts on birds during construction** See Mitigation measures for Assessment of the potential effects on the loss of Hedgerow (WL1) and Treeline (WL2) habitat for the MOOR **Disturbance** Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded.		
Human Beings			

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM198	**Site A, B, C , the MOOR, Kildare and Moyglare Bridges** will be constructed and operated in accordance with all relevant Health and Safety Legislation, including: Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended; Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. 291 of 2013), as amended; and Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).		
MM199	During construction of **Site A, B, C, the MOOR, Kildare and Moyglare Bridges**, all staff will be made aware of and adhere to the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006'*. This will encompass the use of all necessary Personal Protective Equipment, Risk Assessment and Method Statements and adherence to the site Health and Safety Plan		
MM200	Fencing will be erected in areas of the site where uncontrolled access is not permitted. Appropriate health and safety signage will also be erected on this fencing and at locations around the site. Only appropriately qualified and trained personnel will be permitted to operate machinery onsite. **Site A, B, C , the MOOR, Kildare and Moyglare Bridges** will not be accessible to members of the public during the construction phase. A Construction and Environmental Management Plan (CEMP) has been prepared for each site and submitted with the relevant planning applications, and if planning permission is granted, it is envisaged that the Developer will engage with the local authority to agree an appropriate Traffic Management plan for the purposes of the Construction phase so as to minimise the impact of the construction works on the local road network		
MM201	A Traffic Management Plan and the CEMP will be developed and implemented to ensure any impact is short term in duration and slight in significance during the construction of Site A, B, C, the MOOR, the		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	Kildare and Moyglare Bridge. Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made clear. Local access to properties will also be maintained throughout any construction works and local residents will also be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum. The construction and environmental management plans (CEMP) include mitigation measures related to noise, dust and landscaping which will be in place to protect residential amenity. Construction operations will also in general be confined to the period Monday-Friday 0700-1900 h, and Saturday 0800-1600 h, reducing noise emissions in the local area during social hours.		
Hydrology & Hydrogeology			
MM202	Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work as follows: Silt fencing will be constructed around the construction footprint, where there is a surface water receptor, in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint (other than operational surface water outfall installations which are described below) and surface water receptors and associated riparian habitats.		
MM203	A silt fence will also be attached to solid boundary fencing where it is in place and where there is a surface water receptor. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities.		
MM204	The silt fence will comprise a geotextile membrane that will buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated		
MM205	As construction advances there may be a requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground;		
MM206	Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing		
MM207	A suitably sized detention basin or settlement area will be installed at the lowest point before discharge to ground where excess run- off must leave the site. Silt curtains or earth berms will be used to channel run-off to locations where it can be controlled. These may take the form of an open detention area or, where the need arises, a portable skip/s, or similar, where inflow passes through straw bales, gravel etc		
MM208	Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present		
MM209	Daily monitoring and inspections of site drainage during construction will be completed		
MM210	No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		
MM211	All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed works		
MM212	All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed Kildare Bridge pedestrian/cycle structure upgrade works, the Blackhall Little Bridge and the Moyglare Bridge		
MM213	Surface water outfalls will be constructed in accordance with the measures described in Chapter 6 and 8.6.3.4.4 and subject to agreement with IFI		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM214	Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will be implemented, will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRlA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment		
MM215	During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas		
MM216	The MOOR stream crossing upgrade works, the Moyglare Bridge and the Kildare Bridge Works will all require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer		
MM217	Preventative measures during construction have been incorporated into the Construction and Environmental Management Plan, which will be updated upon grant of permission and to provide any additional measures required pursuant to planning conditions and agreements with the planning authority		
MM218	For directional drilling the area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages.		
MM219	Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area		
MM220	Spills of drilling fluid will be clean up immediately and stored in an adequately sized skip before been taken off-site		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM221	The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used		
MM222	The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse		
MM223	This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling will be immediately stopped		
MM224	Any frac-out material will be contained and removed off-site		
MM225	Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: Silt fencing measures as described above will be installed		
MM226	Appropriate temporary interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place, as required		
MM227	If required, pumping of excavation inflows will prevent build-up of water in the excavation		
MM228	The pumped water volumes will be discharged to ground within the site through a silt bag at a distance of over 30m from nearby watercourses (Rye Water River and Blackhall Little Stream)		
MM229	There will be no direct discharge to any water body, and therefore no risk of hydraulic loading or contamination will occur		
MM230	Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows: All plant and machinery will be serviced before being mobilised to site		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM231	No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed		
MM232	Refuelling will be completed in a controlled manner using drip trays at all times		
MM233	Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water		
MM234	Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores		
MM235	Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored		
MM236	Ancillary equipment such as hoses and pipes will be contained within the bund		
MM237	Taps, nozzles or valves will be fitted with a lock system		
MM238	Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage		
MM239	Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills		
MM240	Only designated trained operators will be authorised to refuel plant on site		
MM241	Procedures and contingency plans will be set up to deal with emergency accidents or spills		
MM242	An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM243	Mitigation measures proposed for wastewater disposal: A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works		
M244	No wastewater will be discharged on-site during either the construction or operational phase		
MM245	Mitigation measures proposed for cement based products: No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place		
MM246	No washing out of any plant used in concrete transport or concreting operations will be allowed on-site		
MM247	Where possible pre-cast elements for culverts and concrete works will be used		
MM248	Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds		
MM249	Weather forecasting will be used to plan dry days for pouring concrete		
MM250	The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event		
MM251	Morphological Changes to Surface Water Courses & Drainage Patterns & Water Quality: The proposed design for water course crossings and culverts, which minimises interactions with water courses, ensures that there will be no perceptible effects on the morphology of those watercourses		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM252	Prior to the outset of these works, small defined works areas will be fenced off at the location of the storm water outfall (between the main construction site and both water courses). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Rye Water River.		
MM253	The necessary pipelaying works will be undertaken within this defined area		
MM254	Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Rye Water River will be removed to facilitate the construction of the outfall		
MM255	No instream works will take place outside the period July 31st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters		
MM256	Cofferdams will be constructed using one tonne sandbags at the edge of the Rye Water River at the outfall point to create dry working areas.		
MM257	A submersible pump will be used to dewater inside the cofferdammed area and will discharge any waters to land at a location of over 30m from the rivers. The pumped waters will discharge through a silt bag		
MM258	The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).		
MM259	The banks and channel bed will be reinstated to avoid erosion or run off of silt. Following this the dams will be removed		
MM260	The surface water discharge point is likely to take less than one day to install		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM261	Subject to agreement with IFI, short sections of the Rye Water River may be temporarily dammed with sandbags at times of low water. One dam will be constructed immediately downstream of the outfall point and the other, immediately upstream		
MM262	Machinery will not enter the water, the construction of the outfall will only occur after the dry working area is created		
MM263	Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sand bags placed instream will not be re-used in other watercourses		
MM264	All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the proposed works		
MM265	As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI		
MM366	During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM267	The Kildare Bridge and Moyglare Bridge upgrade works will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent, where considered necessary by the designer.		
MM268	Potential Water Impacts on Designated Sites and Habitats; The proposed mitigation measures for protection of surface water and groundwater quality which will include on site drainage control measures (i.e., silt fences, silt bags etc.) will ensure that the quality of runoff from Site A, B, C, the MOOR, the Kildare Bridge areas will be good. All mitigation measures outlined throughout Section 8.6.3.1, 8.6.3.4 (the MOOR), 8.6.3.5 (the Kildare Bridge and Moyglare Bridge) above provides controls which will be put in place to manage risks associated with sediment, hydrocarbons/chemicals and cement-based products used during construction phase.		
MM269	The standard drainage design controls will ensure the development will not give rise to any significant surface water or groundwater impacts at or downstream of the site or in the SAC. The majority of runoff from the existing site discharges to the river and stream via shallow subsurface flows as shown by the results of the SI investigations and the ground water level data. The drainage design ensures that these discharges will continue at the existing greenfield rates and therefore the hydrological regime locally and regionally will not be affected by Sites A, B, C, the MOOR, the Kildare Bridge and Moyglare Bridge		
Operational Phase			
Flora and Fauna			
MM270	**Assessment of potential impacts on bats during the operational phase associated with site A, B, C** **Mitigation**		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	› The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats.		
MM271	› The lighting plan has been designed to maintain a dark corridor along the hedgerow on the northern boundary of the site. This will ensure commuting and foraging habitat is maintained to habitats west of the site		
MM272	› All luminaires are fitted with photocells which automatically switch luminaires on during night time and off during daytime. Additionally, all luminaires are to automatically dim by 75% 00:00 – 06:00 (U14 profile). If required and with agreement of the local authority additional dimming is available		
MM273	› The proposed lighting design uses warmest available LEDs for chosen luminaires (colour temperature set by worst case luminaires, all luminaires same colour temperature for consistency), the peak wave length is 600nm		
MM274	› For Site A and C: The proposed lamps have limited backward light properties thus assisting in reducing backward light spill. Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill		
MM275	› For Site B and C: Bat surveys carried out in 2021 indicate the Treeline along the southern boundary of the site is the most important commuting habitat for bats. This linear feature will remain in darkness and not have any artificial lighting		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM276	› For Site C: No lighting is proposed in proximity to the Moygaddy castle and surrounding woodland habitat		
MM277	› For Site C: Pedestrian footpaths which are located in close proximity to the Blackhall Little Stream and River Rye Water have been specified to a colour temperature of 2200k		
MM278	**Assessment of the potential impact on bats during the operational phase the MOOR** Bat surveys carried out in identified the treeline along the southern boundary of the MOOR to be the most important commuting habitat for bats across both sites. This habitat is being retained and will not be subject to artificial lighting. A lighting plan has been prepared as part of the MOOR application. › The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats.		
MM279	› The proposed lamps have limited backward light properties thus assisting in reducing backward light spill. Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill		
MM280	› Bat survey results from 2021 indicate the most important commuting habitat for bats within the proposed development site is the treeline along the southern boundary with high levels of activity also recorded at Moygaddy castle. These areas will not be subject to artificial lighting and will remain in darkness		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM281	› All luminaires are fitted with photocells which automatically switch luminaires on during night time and off during daytime. Additionally, all luminaires are to automatically dim by 75% 00:00 – 06:00 (U14 profile). If required and with agreement of the local authority additional dimming is available		
MM282	› The proposed lighting design uses warmest available LEDs for chosen luminaires (colour temperature set by worst case luminaires, all luminaires same colour temperature for consistency), the peak wavelength is 600nm		
MM283	**Impacts on water quality during the operational phase for Site A and B** › The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and the Rye Water River		
MM284	› Wastewater from the Proposed Development will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station		
MM285	**Impacts on water quality during the operational phase for Site C** › The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River and the Blackhall Little Stream via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and the two watercourses.		
MM286	› Wastewater from the Proposed Development will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM287	**Impacts on water quality during the operational phase for the MOOR** › The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River and Blackhall Little via, attenuation tanks, filter drains and petrol/oil interceptors. It is also proposed to retain the existing riparian zone which will act as a buffer between the development and that stream.		
MM288	**Potential Impacts on Rye Water Valley/Carton SAC for Site A, B, C, the MOOR** › The proposed mitigation measures for protection of surface water and groundwater quality which will include on site drainage control measures (i.e., silt fences, silt bags etc.) will ensure that the quality of runoff from Proposed Development areas will be good. All mitigation measures outlined throughout Section 8.6.3 of Chapter 8 provides controls which will be put in place to manage risks associated with sediment, hydrocarbons/chemicals and cement-based products used during construction phase		
MM289	› The standard drainage design controls will ensure the development will not give rise to any significant surface water or groundwater impacts at or downstream of the site or in the SAC. The majority of runoff from the existing site discharges to the river and stream via shallow subsurface flows as shown by the results of the SI investigations and the ground water level data. The drainage design ensures that these discharges will continue at the existing greenfield rates and therefore the hydrological regime locally and regionally will not be affected by the Proposed Development		
Material Assets			
MM290	**Site A, B, C**		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	The below measures have been incorporated into the design of the proposed development and will be used to avoid any negative impacts on utilities or services during the operational phase of the proposed development: › An operational phase Waste Management Plan has been prepared (Appendix 4-5) and will be updated prior to operation to take account of all requirements of the Planning Authority.		
MM291	› The Engineering Services Reports in Appendix 4-9 of this EIAR present the proposals for the proposed development with regard to Surface Water Drainage, Wastewater Drainage and Potable Water Supply. These elements have been taken into consideration throughout the design of the proposed development and will be implemented in line with all required legislation and relevant best-practice guidelines.		
MM292	› Solar PV panels have been incorporated into building design throughout the development where appropriate, to facilitate the supply of renewable electricity for the energy demands of the buildings.		
Hydrology & Hydrogeology			
MM293	**Site A, B, C, Moyglare Bridge:** › The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage and gravity sewer network, and by using underground attenuation tanks and flow restrictors for drainage management which will control discharge to the Rye Water River at pre-development greenfield rates. Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM294	› The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River via, attenuation tanks, filter drain and petrol/oil interceptors as described above. For Sites A, B & C it is also proposed to retain the existing riparian zone which will act as a buffer between the development and that stream. Wastewater from Site A, B & C will be directed to an EPA regulated wastewater treatment plant via a proposed onsite pumping station		
MM295	› During the operational phase all surface water arising on site will drain to attenuation tanks, hydrocarbon interceptor and filter drain before discharge to Rye Water River at controlled greenfield rates. Groundwater quality risks are reduced during the operational phase by use of hydrocarbon interceptors and silt traps prior to discharge to the watercourse.		
MM296	**The MOOR:** › The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage network, and by using attenuation areas and flow restrictors for drainage management which will control discharge to pre-development greenfield rates. Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps as described in Chapter 4		
MM297	› The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water via, attenuation systems, filter drains and petrol/oil interceptors as described above		
MM298	**Kildare Bridge:** › The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage proposals and the nature of the proposed works in this area..		

Ref. No.	Mitigation Measure	Audit Result	Action Required
Noise			
MM299	› No mitigation measures are required in relation to the completed Site C, apart from those relating to inward noise impacts as discussed in Section 10.4.4.		
Landscape and Visual			
MM300	› The designated landscape plan also includes planting of trees, shrubs and other vegetation. The planting will naturally mitigate the effects of the Proposed Development through replacement of green spaces and biodiversity which will be lost during the construction phase, as well as providing some additional visual screening of the Proposed Development from visual receptors. It is noted that this mitigation will improve over time as vegetation establishes following the commencement of the operational phase		
Cultural Heritage			
MM301	**Site A, B, C** › Pre-development targeted archaeological test trenching under licence from the National Monuments Service will take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A report on the results of targeted test trenching and a detailed archaeological impact assessment shall be compiled and submitted to the relevant authorities. If any archaeological sites or features are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same.		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM302	› The development footprint of the project has been mitigated by design to avoid removal of field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal.		
MM303	**The MOOR** › Pre-development targeted archaeological test trenching under licence from the National Monuments Service should take place to ascertain if the sub-surface features identified in the geophysical survey are archaeological in nature. Test trenching should also take place in areas of the site not covered by the geophysical survey, if development is proposed in these areas. A dive survey, undertaken under licence from the National Monuments Service should be undertaken at the location of the proposed bridge (s). A report on the results of test trenching shall be compiled and submitted to the relevant authorities detailing the results of the test trenching. If any sites are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same		
MM304	› The development footprint of the project has been mitigated by design to avoid removal of field boundaries wherever possible. Where it is not possible to maintain by design, an archaeological record (written and photographic) will be made of them prior to their removal		
MM305	› No mitigations are proposed. The closest Recorded Monument is Moygaddy Castle. It is partially surrounded by a growth of mature trees, which lessens the visual impact of the proposed MOOR development		
MM306	**Kildare and Moyglare Bridge**		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	› Pre-development archaeological dive survey, and test trenching under license from National Monuments Service will take place to ascertain if sub-surface archaeological features are present at the location of the construction works for the proposed bridge. A report on the results of dive survey and test trenching shall be compiled and submitted to the relevant authorities detailing the results of the test trenching. If any sites are identified during the pre-construction test trenching, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same. It is not possible to carry out pre-development test trenching along the route of the rising main. Excavation works should be archaeologically monitored under licence from the National Monuments Service. A report on the results of the monitoring shall be compiled and submitted to the relevant authorities detailing the results of the monitoring. If any sites are identified during the archaeological monitoring, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same.		