APPENDIX 3

EIAR ADDENDUM

MKO Planning and Environmental Consultants

EIAR Addendum

Moyglare Bridge Planning Application

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Table of Contents

INTRODUCTION 3

DESCRIPTION 5

2.1 Moyglare Bridge 5
2.2 Invasive Species 5
2.2.1 Control Measures for the Management of Invasive Species 5
2.3 Proposed Surface Water Drainage 6

BIODIVERSITY 7

3.1 Habitat Description of the Existing Environment 7
3.1.1 Moyglare Bridge habitat description 7
3.2 Impacts during Construction 13
3.2.1 Assessment of potential effects on water quality and aquatic faunal species and habitats during construction 13
3.3 Impacts during Operation 15

HYDROLOGY & HYDROGEOLOGY 16

4.1 Scoping and Consultation 16
4.2 Receiving Environment 18
4.2.1 Surface Water 18
4.2.1.1 Existing Local and Site Drainage 18
4.3 Proposed Development Services 18
4.3.1 Proposed Surface Water Site Drainage 18
4.4 Likely, Significant Impacts and Mitigation Measures 20
4.4.1 Construction Phase 20
4.4.1.1 Potential Pollution Event on receiving waterbodies. 20
4.4.2 Operational Phase 22
4.4.2.1 Moyglare Bridge 22

TABLE OF TABLES

Table 3-1. Habitats recorded within the Moyglare bridge site 7

Table 3-2. Assessment of the potential impacts on water quality and aquatic species and habitats during the construction phase 13

Table 4-1 Summary of Water Environment related Scoping Responses 16

TABLE OF PLATES

Plate 3-1 Dry meadows and grassy Verges habitat recorded south of the Rye Water River within Moyglare site 8

Plate 3-2 Spoil and bare ground fringed by dry meadows and grassy verges within Moyglare site 8

Plate 3-3 Rye Water River categorised as Eroding upland river within Moyglare site. 9

Plate 3-4 Drainage feature recorded at the location of the proposed Moyglare bridge 10

Plate 3-5. Open manhole located west of surface water feature. It should be noted the flow of water was in a westerly direction into the water feature. 11

Plate 3-6. Outfall located at the Rye River 12

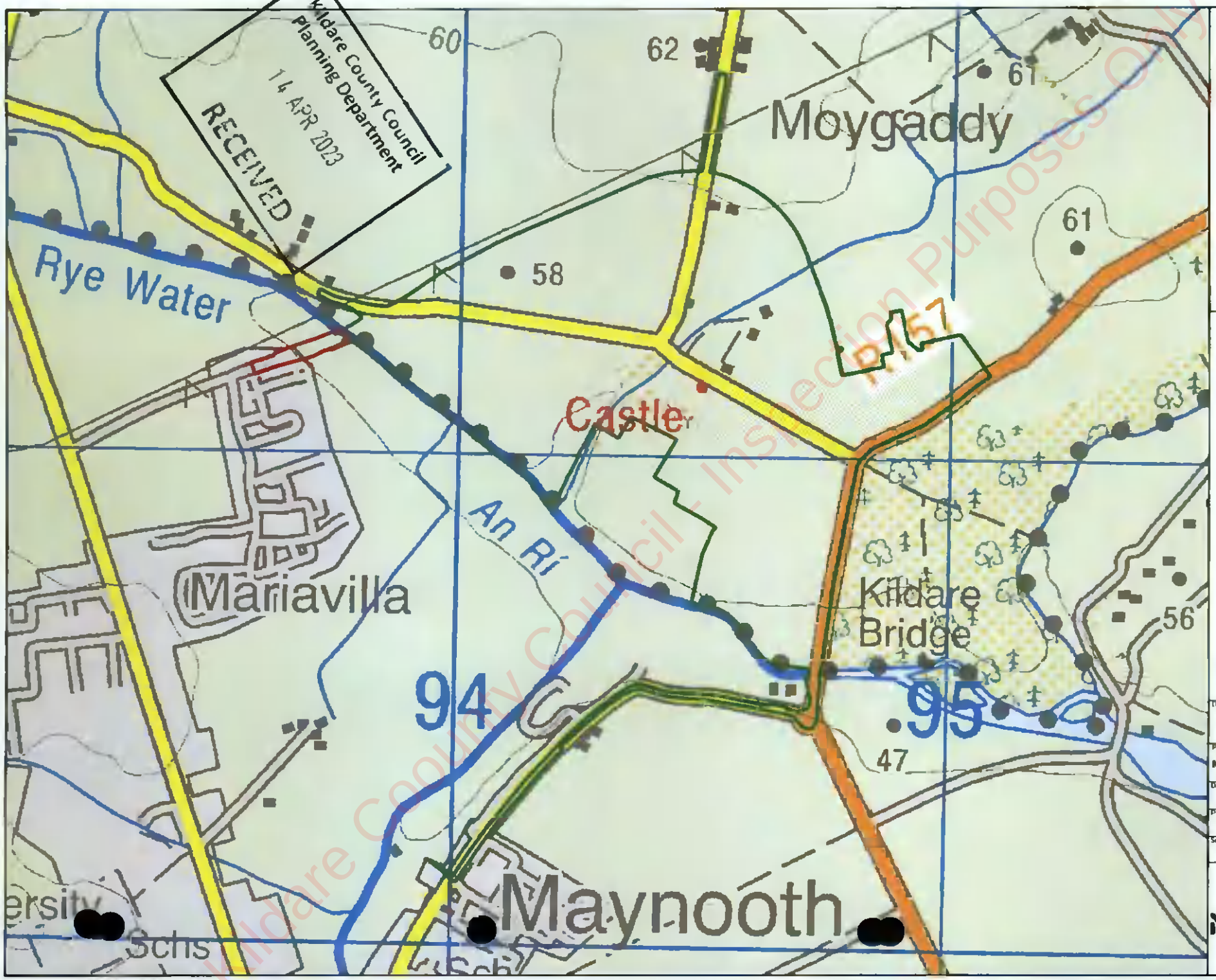
TABLE OF FIGURES

Figure 1 - Site Location Map 4

INTRODUCTION

This addendum provides an update to the Environmental Impact Assessment Report (EIAR) previously submitted as part of the planning application for the proposed construction of the Moyglare Bridge. This addendum has been completed following the request for further information issued by the Planning Authority and the below sections accordingly update the text within the EIAR.

In order to aid the reader, the updated text has been indicated in red, with removed text indicated by a strikethrough. Figure 1 below includes an updated Site Location map which includes a revised boundary in order to facilitate the location of the proposed new surface water outfall to the Rye Water River.



2 DESCRIPTION

2.1 Moyglare Bridge

It is anticipated that the Moyglare Bridge will be completed in one phase (See Figure 4-6 in Chapter 4 of the EIAR). Detailed design is expected to be completed by Q4 2023 ~~Q2 2023~~ with construction commencing by Q1 2024. ~~Q3 2023.~~ Construction is expected to be completed by Q1 2025 ~~Q3 2024~~ and it's anticipated that the construction duration will be approximately 1224 months.

2.2 Invasive Species

The introduction and/or spread of invasive species such as Japanese Knotweed and Himalayan Knotweed for example, could result in the establishment of the species and this may have knock on effects on the surrounding environs. No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded during the dedicated invasive species survey. An additional invasive species survey was carried out on the Moyglare Bridge in response to a further information request from Kildare County Council. No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded during the additional survey. A dedicated invasives species survey of the area will be carried out three months prior to commencement of works on site to determine if any species is present throughout the site.

Appropriate control measures will be incorporated into the design and construction phase of the development to ensure that the relevant measures (outlined in the following section below) will be implemented.

2.2.1 Control Measures for the Management of Invasive Species

Invasive species, such as Japanese Knotweed, Himalayan Knotweed, Himalayan Balsam, Guinea and Giant Hogweed pose a serious threat to biodiversity and the health of native vegetation types. Construction machinery can act as a vector for the spread of these plants. Machinery that has worked at an infected site is likely to cause the spread of such species by transferring their tiny seeds or plant fragments, in soil trapped in their tyre tread for instance. Equally, they can cause the spread of species within a site. The duration of the impact could be short-term or permanent depending on whether or not an eradication effort is made but once established, eradication is time-consuming and expensive. Himalayan Knotweed, for example, propagates vegetatively, forming a new plant from even very small plant fragments. Thus, there is a high risk of causing the spread of this species to other parts of the site. The UK Environment Agency's 'Japanese Knotweed Code of Practice' provides guidance on managing Japanese Knotweed and Himalayan Knotweed on development sites. A number of control measures have been drawn up and included in the design and construction phase of the proposed works to avoid the introduction and spread of invasive plant species. The following project design elements have been devised to avoid such effects. The following measures address potential effects associated with the construction phase of the development:

- Invasive species surveys have confirmed that there are no existing stands of invasive species on site. However, should any be found, prior to the commencement of the construction of the development, they will be clearly demarcated by temporary fencing and tracking within them will be strictly avoided. A minimum buffer of seven metres will be applied to avoid disturbance of lateral rhizomes.
- All earthworks machinery will be thoroughly pressure-washed prior to arrival on site and prior to their further use elsewhere.

- Care will be taken not to disturb or cause the movement of invasive species fragments, either intentionally or accidentally.
- All contractors and staff will be briefed about the presence, identification and significance of Japanese Knotweed before commencement of works.
- Good construction site hygiene will be employed to prevent the spread of these species with vehicles thoroughly washed prior to leaving any site with the potential to have supported invasive species. All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species such as Japanese Knotweed and Rhododendron. All washing must be undertaken in areas with no potential to result in the spread of invasive species.
- When working at locations in proximity to natural watercourses, a suitable barrier will be erected between the watercourse and the stand of invasive species. This will assist in preventing the spread of any invasive species into the watercourse during their removal. Cognizance will be had of any watercourses in the area.
- Any material that is imported onto any site will be verified by a suitably qualified ecologist to be free from any invasive species listed on the 'Third Schedule' of Regulations 49 & 50 of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). This will be carried out by searching for rhizomes and plant material.
- If any excavations must be carried out in areas of Japanese Knotweed, the excavated material will not be moved from the location. The machinery must be thoroughly pressure-washed in a designated area at least 25 metres from any watercourse before moving on to an area that is not yet infected.
- Any soils or subsoils contaminated with invasive species will sent for disposal to an authorized waste facility.

2.3 Proposed Surface Water Drainage

Moyglare Bridge Application

It is proposed that surface water run off on the Moyglare Bridge is to be captured by the proposed surface water drainage system which includes trapped road gullies, filter drain/infiltration trenches along the tree-lined grass verge, a Class 1 bypass fuel separator and the proposed system will allow for nature based Sustainable Drainage System (SuDS) which will provide interception of surface water prior to discharge. The rainfall runoff is to be attenuated to a maximum flow rate of 1.5 l/s, using a flow control (hydrobrake or similar approved). The existing surface water drainage system which forms part of the existing Maynooth Outer Orhital Road to the west of the development (which on inspection has been identified as being incomplete) will be reconstructed and will utilise the same outfall as the new infrastructure. ~~the proposed drainage features proposed as part of the MOOR. A adequately spaced trapped road gullies, which connect to a main carrier drain under the road.~~

~~The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent.~~

It is proposed that surface water from the ~~MOOR and~~ Moyglare Bridge is to be subject to SuDS measures and will discharge the treated and attenuated runoff from each catchment to the existing watercourses at the proposed new outfall location, namely the Rye Water River. Refer to appendix 1 of the overall response document for design drawings and detailed drainage information.

3 BIODIVERSITY

3.1 Habitat Description of the Existing Environment

3.1.1 Moyglare Bridge habitat description

The habitats described below refer to the habitats recorded with the Moyglare Bridge application site.

Table 3-1. Habitats recorded within the Moyglare bridge site

Habitat (Fossitt)	Code
Spoil and Bare ground	*ED2*
Dry Meadows and grassy verges	*GS2*
Eroding upland River	*FW1*
Drainage Ditch (FW4)	*FW4*

The area to the south of the Rye Water River is dominated by rank grassland categorised as Dry Meadows and grassy verges (GS2). The species diversity here was low and dominated by tussocky vegetation composing of Broad-leaved dock (*Rumex obtusifolius*), Ragwort (*Jacobaea vulgaris*), Creeping thistle (*Cirsium arvense*), Yorkshire fog (*Holcus lanatus*) and Cock's foot (*Dactylis glomerata*) See Plate 3-1. A small section of Spoil and bare ground (ED2) habitat was recorded to the south of the Moyglare Bridge-Kildare application boundary, in the area adjacent to the Moyglare Hall Estate. See Plate 3-2.

The Rye Water River occurs at the northern boundary of the Moyglare Bridge-Kildare application site and is categorised as Eroding upland River (FW1). See Plate 3-3.

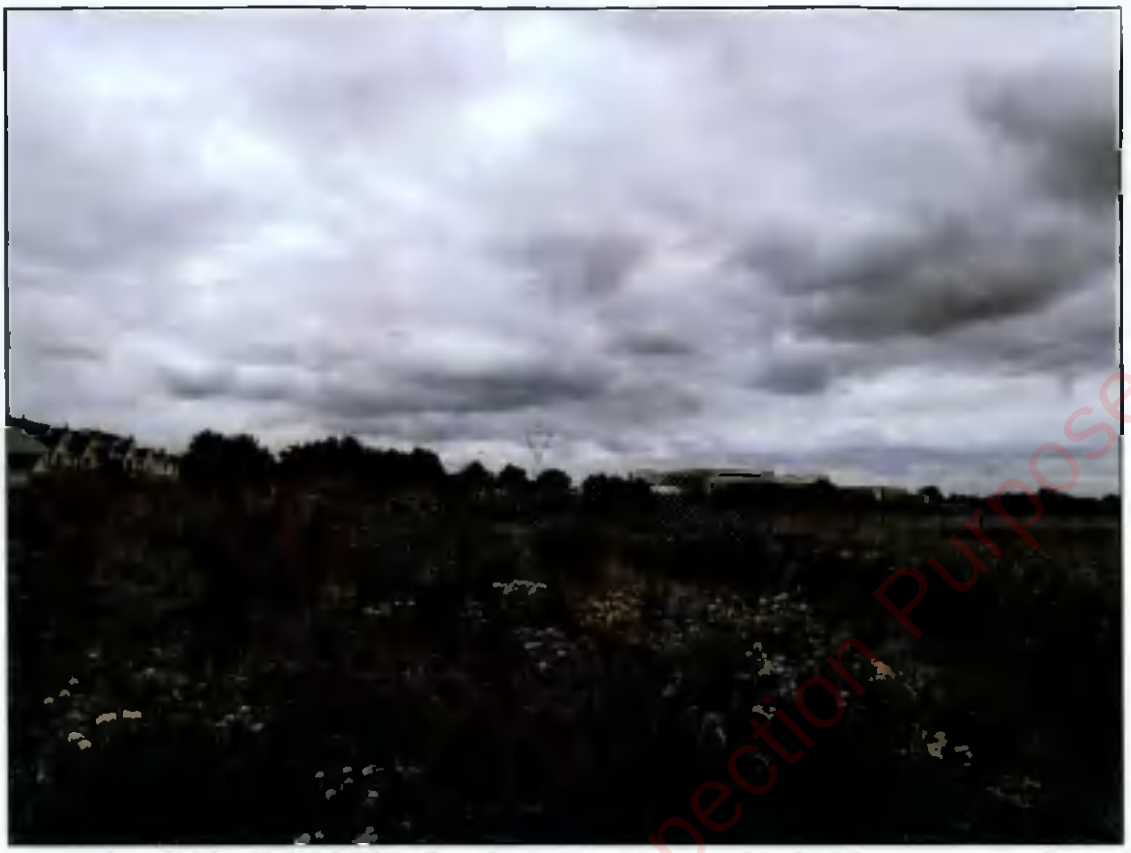


Plate 3-1 Dry meadows and grassy Verges habitat recorded south of the Rye Water River within Moyglare site

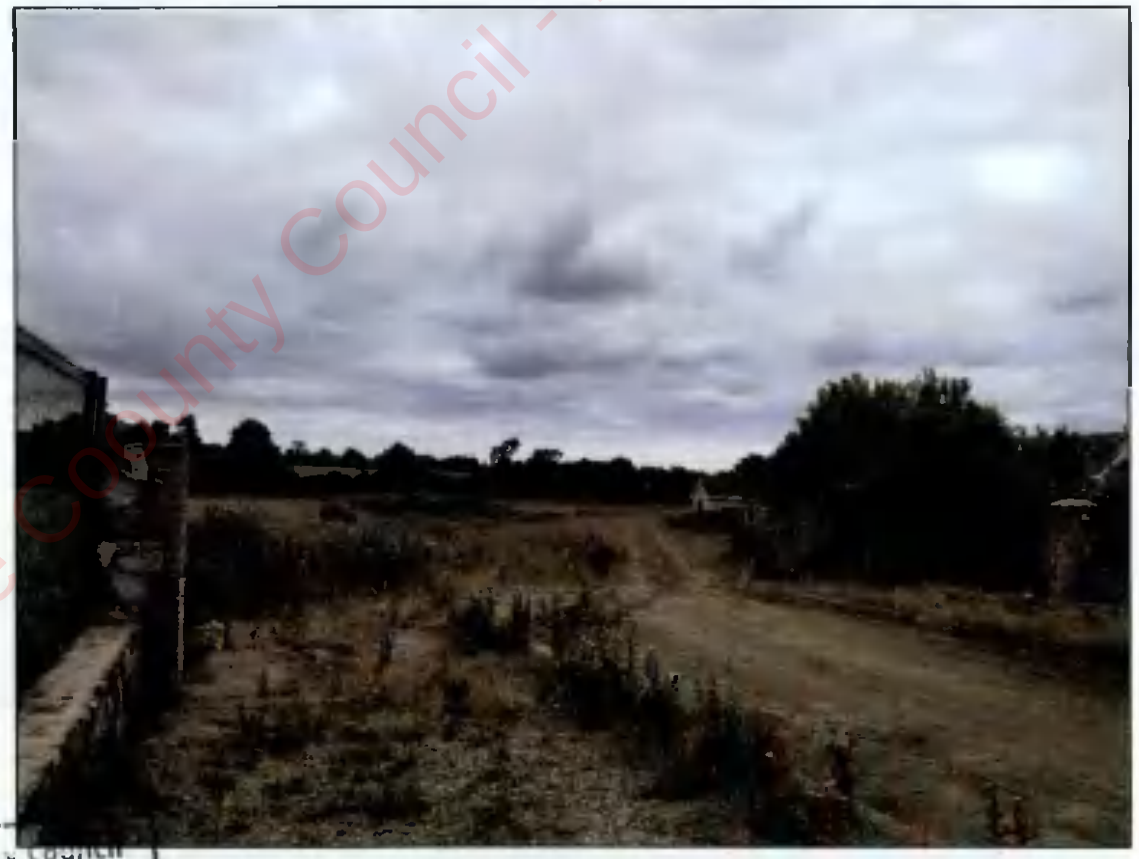


Plate 3-2 Spoil and bare ground fringed by dry meadows and grassy verges within Moyglare site

Plate 3-3 Rye Water River categorised as Eroding upland river within Moyglare site.

MKO ecologists revisited the site in January 2023 following a request for further information from Kildare County Council.

The aquatic feature identified in the Arup report was assessed and it comprised of a man-made surface water feature located within an agricultural field to the west of the Moyglare hall housing estate (Grid reference: N 93710 39222) which is outside of the Applicant's ownership. This habitat was categorized as Drainage Ditch (FW4), in accordance with the guidelines set out in 'A Guide to Habitats in Ireland" (Fossitt, 2000). Species recorded here included Soft rush (Juncus effusus), Common water starwort (*Callitriche stagnalis*), Curled dock (*Rumex crispus*) and Whorl grass (*Catabrosa aquatica*), see plate 3-4 below.

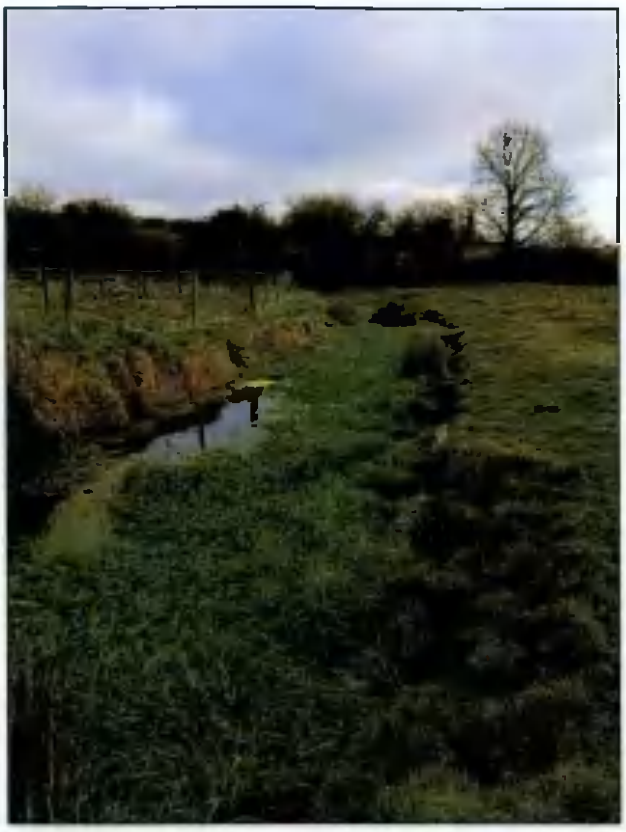


Plate 3-4 Drainage feature recorded at the location of the proposed Moyglare bridge, which is located on lands that are outside of the applicants ownership-

There are two main man holes located adjacent to the drainage feature. One of the manholes was open and a clear flow to the east into the Rye Water River was evident (Plate 3-5). The channel of the drainage feature runs alongside the fence and looks to have been excavated to direct flow into the Rye River. The channel is culverted and leads to an outfall at the Rye (Plate 3-6). This habitat does not correspond to the Annex I Petrifying springs with tufa formation (Cratoneurion) [7220], designated as a Qualifying Interest (Qi) of the Rye Water Valley/Carton SAC. The area was extensively searched during the survey and no tufa deposits were found at this aquatic feature.

This habitat would be categorised as a receptor of Local Importance (Lower Value), inline the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009).

MKO consulted with the NPWS regarding the aquatic habitat and to inquire if there were any previous records of Petrifying springs with tufa formation (Cratoneurion) [7220] occurring within or in the vicinity of the proposed Moyglare bridge development site. The NPWS concluded there are no records of Petrifying springs in this area. The email correspondence with the NPWS ts located in Appendix 7 of the main Further Information response document.

Since the additional survey, which was carried out by MKO in January 2023, it has been noted that maintenance works on the open drainage ditch have occurred.

Plate 3-5. Open manhole located west of surface water feature. It should be noted the flow of water was in a westerly direction into the water feature.

Plate 36. Outfall located at the Rye River

3.2 Impacts during Construction

3.2.1 Assessment of potential effects on water quality and aquatic faunal species and habitats during construction

Table 3.2 Assessment of the potential impacts on water quality and aquatic species and habitats during the construction phase

Description of Effect	The construction of the Moyglare Bridge crossing has the potential to result in the deterioration of water quality. The Rye Water River flows into the River Rye/Carton Valley SAC, located east of the proposed development site boundary. The South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA are also hydrologically connected to the proposed development site via the Blackhall Little Stream, Rye Water River & River Liffey. Taking a precautionary approach, the proposed development has the potential, in the absence of mitigation, to impact on surface water quality through pollutants including hydrocarbons, fuel and cement during the construction phase. This section assesses the potential for likely significant effects on aquatic receptors including aquatic habitats (i.e. watercourses) salmonids, lamprey, coarse fish, European eel, aquatic invertebrates, molluscs and other aquatic species identified during the desk study as likely to occur downstream of the site.
Characterisation of unmitigated effect	In the absence of best practice design and mitigation the potential impact on water quality and aquatic species is considered to be a moderate negative effect.
Assessment of Significance prior to mitigation	Significant effects on water quality could occur at a local level as a result of the construction works, should mitigation measures not be installed.
Mitigation	Mitigation measures outlined to protect water quality during the construction of the main development areas have been outlined in section 8.6.3.11 of Chapter 8 of this EIAR and are fully described in the CEMP located in Volume 3.f, Appendix 4-3. The mitigation measures are summarised below. › At surface water crossings silt fencing will be constructed around the construction footprint in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint and surface water receptors and associated riparian habitats. › 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. › 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; › 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;

- 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.
- Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present;
- Daily monitoring and inspections of site drainage during construction will be completed;
- 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.
- 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;
- Surface water outfalls will be constructed in accordance with the measures described in Chapter 6 and subject to agreement with IFI.
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance, which will he 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', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.
- 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; and,
- 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.
- 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.

In the event a water pollution event during the construction phase of the proposed bridge, a detailed escalation process has been prepared:

This has been fully described in section 4.4.1.1 this EIAR addendum and included within the revised CEMP.

Prior to entering the works area, all machinery and personnel entering the works area will be thoroughly disinfected.

As part of the application process, Inland Fisheries Ireland were consulted regarding the proximity of the works to the Rye Water River.

Prior to the commencement of any construction work associated with the development, the following pre-construction survey work will be undertaken to satisfy the recommendations outlined by IFI during consultation stage:

	› 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.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant effects are predicted.
Potential for Cumulative Effect	The proposed development will not result in any significant effects to water quality. It therefore cannot contribute to any significant cumulative effect in this regard.

3.3 Impacts during Operation

The surveys undertaken have identified that the site of the proposed development and the surrounding is used by a range of common bird species, small mammal and invertebrate species and provides biodiversity in the local context. Direct disturbance resulting from the operation of the proposed development has been assessed and the potential for effect is the same as for construction disturbance and thus the finding of the assessment is provided in section 6.7.5.1 of the EIAR. This assessment is not repeated here but the conclusion that, following the mitigation described, there will be no significant residual impacts on faunal species are anticipated as a result of disturbance.

Local faunal species are likely to be habituated to anthropogenic activity in the area, given the developments close proximity to busy local roads and nearby residential housing. Impacts on fauna as a result of disturbance during the operational phase are not considered to be significant at any geographic scale.

The lighting proposal along the Moyglare bridge has been designed to minimise potential disturbance on commuting and foraging bats.

A full list of mitigation measures outlined to prevent surface and groundwater pollution during the operational phase of the Moyglare bridge is described in section 8.5.4.14 of chapter 8. A full description of the mitigation measures proposed to prevent pollution to surface and groundwater and aquatic fauna and habitats has been described in section of 4.1.1.1 of this document.

4 HYDROLOGY & HYDROGEOLOGY

4.1 Scoping and Consultation

The scope for this chapter of the EIAR has also been informed by consultation with statutory consultees, bodies with environmental responsibility and other interested parties. This consultation process is outlined in Section 2.6 of this EIAR. Issues and concerns highlighted with respect to the hydrological and hydrogeological environment are summarised in Table 8-1 below.

Table 4-1 Summary of Water Environment related Scoping Responses

Consultee	Description	Addressed in Section
Geological Survey of Ireland (GSI)	• Recommended use of Groundwater Data Viewer to identify areas of High to Extreme Vulnerability and 'Rock near or at surface'.	8.3.1 & 8.4.4 The Groundwater Data Viewer was used during the desk study of the and has been used for the assessment. As outlined in Section 8.3.1 below.
Health Service Executive (HSE)	• Any natural flood plains or wetlands on or in the vicinity of the Proposed Development should be identified and measures implemented to ensure they are protected from the development. • The impact the Prosed Development could have on watercourses further downstream should be identified and assessed. • An integrated approach to surface water management should be implemented on site. • It is recommended that green space and nature-based solutions are provided for the storage and conveyance of rainwater on site to improve flood mitigation as outlined in the Greater Dublin Strategic Drainage Study (SUDS).	8.4.3 & 8.5.1 The recommendations set out by the HSE have been taken into account in the project design and EIAR & NIS.
Inland Fisheries Ireland (IFI)	• The Liffey Catchment is regarded as a very important fishery and so requests due consideration to the catchment area. • A buffer zone of 10 meters (minimum) is requested between the Rye Water River and the Proposed Development. • The Blackhall Little Stream which runs through the middle of the site should not be altered or disturbed, and again a buffer zone is requested. • Riparian vegetation should be left undisturbed as much as possible.	8.4.3.2, 6.4.2& 8.5.1 The project design has taken account of and implemented the IFI requests.

Consultee	Description	Addressed in Section
	• Best practice is recommended at all times in relation to activities that may impact surface waters. • Comprehensive surface water management measures must be implemented.	
Department of Agriculture, Food & the Marine	• Following initial scoping and consultation the department made no observations or raised any concerns related to the Proposed Development	N/A
Irish Water (IW)	• No response received at the time of report issue.	N/A
Meath County Council, Water Services	• No response received at the time of report issue.	N/A
National Parks and Wildlife Services (NPWS)	• NPWS were engaged in relation to the potential for Petrifying Springs at Moyglare Bridge in response to FI Item 10. • NPWS responded to the request noting that they hold no data on Petrifying Springs within the vicinity of the proposed development	RFI Response Letter
Waterways Ireland	• Waterways Ireland were engaged in relation to the proposed development at the Moyglare Bridge in response to the FI Item 28. Details of the proposed development were presented to Waterways Ireland on the 20th February 2023, who were welcomed to comment on the proposed development, in particular the bridge design and clearance proposed. • Waterways Ireland responded to the request on the 23rd February 2023noting that the proposed development is not within their zone of influence and will not be commenting.	RFI Response Letter

4 Receiving Environment

4.1 Surface Water

4.1.1 Existing Local and Site Drainage

A visual inspection was carried on the greenfield site at the proposed development including the Moyglare Bridge on the 5th of August 2021 and 19th August 2022. The results of the site visit noted an agricultural field with a small section of spoil and bare ground. An additional survey on the 24th of January 2023 was carried out in response to this request for further information by Kildare County Council. The findings of the additional survey identified an existing man-made surface water drain which is located within a short section of the existing road at Moyglare Hall estate to the west of the proposed Moyglare bridge site, comprising of a traditional pipe and gully system leading to an open ditch, with runoff being discharged to the Rye Water River.

From inspection there was no apparent outfall from the section of existing infrastructure to the manmade open ditch. This is likely due to the section of road not being complete and the localised levels not being sufficiently raised, in order to secure the pipe network, which has resulted in ponding occurring at the location. Since the additional survey, which was carried out by MKO in January 2023, it is understood that maintenance works on the open drainage ditch have been completed.

4.3 Proposed Development Services

4.3.1 Proposed Surface Water Site Drainage

The proposed surface water drainage layout and design details for the Proposed Development is shown on OCSC drawings, Engineering Services Report, See Volumes 3a, 3b & 3c(i) Appendix 4-9 and the MOOR Preliminary Design Report in Volume 3d, Appendix 4-6 of this EIAR. Design details on the proposed Moyglare Bridge are shown in the response to RFI Item no. 2 provided by OCSC which can be found in Appendix 1 of the overall response document.

Surface water management for the Proposed Development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) policies and guidelines and the requirements of Meath County Council. The surface water design includes for a climate change factor of 20%

It is proposed that surface water within Site A (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attention storage areas, to an existing ditch along the southern boundary, which is to be replaced by a new filter trench as part of the upgraded and re-aligned R157. This drain conveys surface water runoff in a southerly direction, ultimately towards the Rye Water River at the proposed outfall location described below.

It is proposed that surface water within Site B (from roads, roofs and hardstanding areas) will drain via gravity, and via hydrocarbon interceptors, and infiltration area/attention storage (located in the shared carpark at Site B), to an outfall at the Rye Water River, just west of the Kildare Bridge.

It is proposed that surface water within Site C (from roads, roofs and hardstanding areas) will drain via gravity to hydrocarbon interceptors, and infiltration area/attention storage. The surface water network is to be split into a number of catchments in order to best integrate Sustainable drainage Systems. Each sub-catchment will look to provide treatment to surface water runoff at source or through design. All runoff will be directed to the Blackhall Little and the Rye Water River.

The main Site A, Site B and Site C attenuation systems will comprise underground poly-tunnel systems, to be located within the Proposed Development's green spaces in Site A and within the shared car park

area of Site B and within the public open spaces in Site C with adequate drainage to maintain functionality.

The discharge rates for both Site A and Site B are to be restricted to a flow rate less than the current greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on adjoining and other downstream properties.

The discharge rate for Site C is to be restricted to a maximum flow rate which is less than greenfield equivalent runoff rate, to ensure that there is no increase in flow rates and volumes to be discharged from the Proposed Development to the receiving infrastructure and waterbodies. Therefore, there will be no adverse impact on adjoining and other downstream properties.

It is proposed that surface water run off on the MOOR is to be captured by adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff only being collected by the road's gully network. Surface water attenuation will be used to control runoff from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate which is less than the calculated greenfield runoff equivalent.

It is proposed that surface water run off on the Moyglare Bridge is to be captured by trapped road gullies. The rainfall runoff on the aligning footpath and cycle track shall be intercepted by the dividing tree-lined grass verge, with excess runoff being collected by the road's gully network. The existing surface water drainage system will be reconstructed, and it is proposed that the outfall will be re-configured in order to have it discharge alongside the new outfall which will serve the new section of road, immediately downstream of the new bridge infrastructure.

Various other SuDS (sustainable drainage systems) have been incorporated into the surface water drainage design of the Proposed Development including permeable pavements, swales, hydrocarbon interceptors, rainwater harvesting systems, and downstream attenuation/infiltration.

The surface water network, attenuation storage and site levels are designed to accommodate a 100-year storm event and includes climate change provision. Floor levels of buildings are set above the 100-year flood levels by a minimum of 0.5m for protection.

Run-off rates from the site are controlled by vortex flow control devices. Surface water management proposals for the development also incorporate the following elements to reduce impacts on downstream water quality:

- The proposed drainage systems have been designed in accordance with GDSDS requirements;
- The proposed drainage systems have incorporated
  - SUDS features, e.g. permeable paving in high risk parking areas;
  - Rainwater harvesting systems are also proposed at each office building to re-use the collected rainwater for welfare facilities, or landscaping purposes and reduce the overall volume of rainfall runoff entering the surface water network.
- On-line attenuation/infiltration facilities with a petrol separator prior to discharge to local watercourses and existing drainage network.

4.4 Likely, Significant Impacts and Mitigation Measures

4.4.1 Construction Phase

4.4.1.1 Potential Pollution Event on receiving waterbodies.

In absence of mitigation or a pollution prevention plan in the event of an unforeseen pollution event during the construction phase, the potential for pollution of the Rye Water River would result in a significant effect on the aquatic species within the watercourse.

Pathways: Drainage and surface water discharge routes.

Receptors: Watercourses (Rye Water River) and dependant ecosystems and aquatic species.

Pre-Mitigation Potential Impact: Direct, negative, moderate, short-term, likely impact.

Proposed Mitigation Measures

The implementation of mitigation measures set out in Section 8.6.3.11 of the EIAR will ensure no adverse impact on receiving waterbodies will occur.

A detailed Pollution Prevention Plan will be prepared prior to construction of the development which will be put in place by the appointed contractor. The Plan shall include the provision of a Schedule of Works Operation Record (SOWOR) which is a means of monitoring works during construction but also determining whether the necessary conditions and mitigation measures are in place prior to the commencement of construction works. Further details on the SOWOR are provided in the revised Moyglare Bridge CEMP.

An Emergency Response Plan is included within the CEMP in the event of a pollution incident. In the event of an environmental emergency the construction manager will carry out the following in the event of the emergency situations occurring.

- Make the area safe if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow procedures for contacting the emergency services.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident.
- Contact any regulatory body or service provider as required.
- Contact the next of kin of any injured personnel where appropriate.

In the event of a fuel spill occurring, the following control measures provide the procedure to be followed to avoid any escalation of such an incident

- The contractors Emergency Response Procedure will be required to include details of the fuel spillage/clean up team and procedure. This is to be displayed on site and communicated to all personnel during the Environmental Toolbox Talks
- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.

- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, such as containment booms, track mats or other material as required.
- The containment boom should be placed within the watercourse to contain and capture the fuel on the surface of the watercourse and to prevent pollutants travelling downstream
- Do not spread or flush away the spill.
- If possible, cover or block any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- Once the spill has been contained, efforts to remove the pollutants can begin.
- If possible, clean up as much as possible using the spill control materials. The spill kit should contain several forms of hydrophobic absorbant materials such as pillows, pads, loose pulp and granular material.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Clerk of Works (ECoW) immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Kildare County Council, Meath County Council, Inland Fisheries Ireland, National Parks and Wildlife Service, etc. if deemed necessary.

In the event of sediment run off entering the watercourse, the following control measures provide the procedure to be followed to avoid any escalation of such an incident.

- Stop the source of the sediment entering the watercourse and raise the alarm to alert people working in the vicinity of any potential dangers.
- Contain the sediment using the physical barriers such as a boom or silt curtains/fencing, or other material as required.
- If possible, cover or block off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, dam the watercourse and deploy a pump and silt bag in order to remove the silt before allowing the water to re-enter the watercourse downstream.
- A mobile settlement tank should be on hand in the event of an emergency which can be deployed at short notice.
- The provision of emergency settlement ponds should be used where appropriate. Settlement ponds can be excavated and in place where water can be diverted to in the event of sediment run off entering the watercourse.
- If possible, clean up as much loose sediment which is in the vicinity of the watercourse.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the sediment and prevent further run-off from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Kildare County Council, Meath County Council, Inland Fisheries Ireland, National Parks and Wildlife Service, etc. if deemed necessary.

In the event of riverbank instability or failure during the construction phase, which has the potential to cause siltation as a result of the bank collapsing and solid material entering the watercourse, the

following control measures provide the procedure to be followed to avoid any escalation of such an incident.

- Bank instability or collapse should be contained with the use of an excavator which will be used to remove the bank material from the watercourse swiftly.
- Contain the sediment with the use of physical barriers downstream of the incident such as silt curtains and fencing.
- If possible, dam the watercourse and deploy a pump and silt bag in order to remove the silt before allowing the water to re-enter the watercourse downstream.
- Bank restoration or containment will be undertaken as advised by the peoject engineer or geotechnical specialist in consultation with the project ecologist.
- The ECoW will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to restore the bank and clean up the sediment to prevent further run-off from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Kildare County Council, Meath County Council, Inland Fisheries Ireland, National Parks and Wildlife Service, etc. if deemed necessary.

Residual Impact

The mitigation outlined above, will in the first instance limit and prevent any pollution entering the watercourse through the use of silt fencing in place, breaking the pathway of pollution between works on the bank and the watercourse (receptor). The pollution prevention plan and emergency response plan are in place in the unforeseen event of any pollution at the site having the potential to enter the watercourse. The plans outline the procedure to control, contain and clean up the pollution within the site and therefore negating any potential impacts on aquatic species downstream of the works area. Subject to the implementation of the listed mitigation measures the residual impact will be a negative, indirect, imperceptible and short term.

Significance of Effects

For the reasons outlined above, no significant effects on the surface water quality are anticipated following implementation of proposed mitigation measures.

4.4.2 Operational Phase

4.4.2.1 Moyglare Bridge

4.4.2.1.1 *Potential Increased Downstream Flood Risk due to Increased Hardstanding Area*

In the absence of mitigation, replacement of the greenfield surface with hardstand surfaces would result in an increased risk of pluvial flooding due to low permeability surfaces which will inhibit any downward percolation of rainwater. Furthermore, in the absence of mitigation measures the uncontrolled discharge of water to the Rye Water River could result in an increased risk of downstream fluvial flooding due to increased peak discharges in the river.

The drainage of the proposed road will be designed such that surface water drainage and sub-grade drainage will be provided for the mainline carriageway, ~~and all new sections of minor roads~~. This discharge will be directed to the existing watercourses and discharged, following attenuation and treatment through fuel separators.

The road drainage for the scheme has been designed in accordance with the GDSDS. The elements of the drainage to be constructed will be constructed in accordance with the Greater Dublin Region Code of Practice for Drainage Works. Any SuDS elements incorporated into the scheme will be designed in accordance with The SuDS Manual, C753 (published by CIRIA, 2007). All drainage designs have been carried out with regard to both Meath and Kildare County Council's respective Development Plans and Frameworks.

The updated Flood Risk Assessment (included in Appendix 2 of the overall response document) of the green field run-off rates conclude that the development is not at risk of flooding due to pluvial or groundwater flood events.

Pathway: Site Surface water drainage network.

Receptor: Site, adjacent lands and nearby infrastructure.

Pre-Mitigation Impact

If the Proposed Development design did not include mitigation measures to minimise the risk of increased flooding there would be a direct, negative, slight, long term, low probability impact.

Proposed Mitigation Measures

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 areas and flow restrictors for drainage management which will control discharges to the Rye Water River at pre-development greenfield rates. Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps as described in Chapter 4.

Residual Impact

Dtrect, neutral, imperceptible, long term, low probability impact in relation to flood risk.

Significance of Effects

No significant impacts in terms of flooding are expected due to the Proposed Development.

4.4.2.1.2 Potential Operational Phase Water Quality Impacts

Once the construction phase is completed potential emissions to ground and / or surface water include storm water run-off and wastewater. All rainfall runoff on the new Bridge and the section of MOOR is to be captured by the proposed surface water drainage system which includes trapped road gullies, filter drain/infiltration trenches along the tree-lined grass verge, a Class 1 bypass fuel separator and will allow for nature based Sustainable Drainage System (SuDS) which will provide interception of surface water prior to discharge. The rainfall runoff is to be attenuated to a maximum flow rate of 1.5 l/s, using a flow control (hydrobrake or similar approved). The existing surface water drainage system which forms part of the existing Maynooth Outer Orbital Road will be reconstructed and will redirected to utilise the same outfall as the new infrastructure.

~~adequately spaced trapped road gullies, which connect to a main carrier drain under the road. The rainfall runoff on the aligning footpath and cycle track will be intercepted by the dividing treelined grass verge, with excess runoff only being collected by the road's gully network.~~

~~Surface water attenuation will be used to control surface water runoff rates from all hard surfaces in accordance with the GDSDS, with these being restricted to a maximum flow rate of 5.5 l/s/ha, which is less than the calculated greenfield runoff equivalent. The attenuation systems are to largely comprise enclosed vegetated ponds, and shall be preceded by a Class 1 bypass fuel separator~~

Rainfall allowed to percolate to ground and/or flow via subsurface flow to the Rye Water River within the green/ landscaped areas of the Proposed Development are not a significant source of pollution related to these areas.

Pathway: Site surface water and foul water drainage network.

Receptor: On-Site, adjacent and downstream water courses and foul water infrastructure

Pre-Mitigation Impact: If the measures described above had not been incorporated into the development design there would be potential for direct, negative, slight, long term, low probability impact on water quality

Proposed Mitigation Measures

The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Rye Water River via, attenuation systems, filter drains and petrol/oil interceptors as described above.

Residual Impact

The potential source of pollution can be readily controlled and standard procedures will ensure no significant releases will occur. Mitigation measures, in particular the attenuation systems, filter drains and petrol/oil interceptor will break the pathway from the proposed works areas to the watercourse. The residual impacts are indirect, neutral, imperceptible, long term, unlikely impact.

Therefore, significant effects on surface water or ground water quality will not occur.