Kildare County Council

M7 Osberstown Interchange & R407 Sallins Bypass

Outline Environmental Operating Plan

REP/030

Issue 1 | 30 May 2014

Job number 227136

Ove Arup & Partners Ireland Ltd

Arup
15 Oliver Plunkett Street
Cork
Ireland
www.arup.com

ARUP

Contents

Appendices

1 Introduction

The Following is an Outline Scheme Specific Environmental Operating Plan.

This document is presented to inform and provide practical experience of building, submitting and maintaining an Environmental Operating Plan for the proposed M7 Osberstown Interchange and R407 Bypass Scheme.

1.1 Purpose and Scope

This outline Environmental Operating Plan sets out the mechanism by which environmental protection is to be achieved on the proposed M7 Osberstown Interchange and R407 Bypass Scheme. This Environmental Operating Plan (EOP) describes the Environmental Management System of the project, which shall be devised according to the criteria of ISO 14001:2004 – Environmental Management Systems. The EOP shall be complemented by General Procedures, Work Procedures and Operations Instructions. These documents will be in place within the site administration offices and appropriate site locations during works.

This Plan covers the activities of the Successful Contractor Name and that of its contractors. It outlines the environmental commitments posed by the construction works; how these commitments are to be managed; and assigns responsibilities for ensuring the effective implementation of this Plan.

1.2 Environmental Policy Statement

Environmental Management is fundamental to the successful operation of construction activities. Therefore, the Environmental Policy must be understood as a priority by all involved parties in the contract, and adhered to throughout the course of the works, to allow for the legal compliance and continuous improvement.

Successful Contractor Name Policy Statement is detailed below.

2 General Project Details

This section includes the following as a minimum:

- Brief overview
- Location of project
- Location of compounds
- Contact Sheets – both site, employer and third party contacts.
- Register of all applicable legislation, including relevant standards, Codes of Practice and Guidelines.
- Organisational chart
- Duties and responsibilities

3 Planning Consent

If planning permission is granted for the proposed scheme, the entire contents of the planning consent are inserted at this location.

4 Schedule of Commitments

The schedule of commitments comprises both the mitigation measures as outlined in Chapter 21 of the EIS, Summary of Mitigation Measures and Residual Impacts and any additional commitments which may arise as part of the EIA process up to and including the Oral Hearing.

The current schedule of commitments is outlined in Appendix D.

In addition, the Contract documents, the conditions imposed by An Bord Pleanala, the Schedule of Commitments, and relevant environmental legislation all prescribe environmental performance criteria.

The following table lists the complete suite of Environmental Commitments together with the relative specification and evidence of how each commitment will be met.

An example of entries to this table is given below:

Environmental Commitments Table

Environmental Commitment	Legislation/ Specific Ref.	Action Owner	Evidence	Target Date	Close Date
Ecology	EIS Chapter 14 Volume 2, Part 3, Chapter 5, EIS Volume 3, 14.1 to 14.2b, EIS Volume 4 Appendix 14.1	Env Manager/ specialist ecologist/ Env Designer / Site Agent / Foreman	Method Statement/Ecological Walkover/Pre-surveys/Regulatory agreement from NPWS and RFBs/Site Inspections	On-going	End of Contract
Noise and Vibration	EIS Chapter 11. Volume 2. EIS Volume 3, Figures 11.1 to 11.3, EIS Appendix A11.1	Env Manager / Environmental Designer / Site Agent / Foreman	Method Statement / Monitoring Data/Environmental Control Measure Sheet	On-going	End of Contract

5 Construction and Demolition Waste Management Plan

A Construction & Demolition (C&D) Waste Management Plan (WMP) is prepared to ensure that waste arising during the construction and demolition phase of the development on site will be managed and disposed of in a way that ensures the provisions of the Waste Management (Amendment) Act, 1996- 2011 and associated Regulations (1996-2011) are complied with to ensure that optimum levels of reduction, re-use and recycling are achieved.

An Outline of such a plan which is consistent with mitigation measures as contained within the EIS and the schedule of commitments at this time is contained in Appendix A.

6 Sediment and Erosion Control Plan

This document outlines the procedures and technical practices for implementing effective erosion and sediment control through a variety of delivery methods and provides an effective tool for reducing potential environmental effects arising from both erosion and the off-site release of sediment.

An Outline of such a plan which is consistent with mitigation measures as contained within the EIS and the schedule of commitments at this time is contained in Appendix B.

7 Incident Response Plan

This document describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and suitable for particular circumstances.

An Outline of such a plan which is consistent with mitigation measures as contained within the EIS and the schedule of commitments at this time is contained in Appendix C.

Appendix A

Construction & Demolition
Waste Management Plan

Kildare County Council

M7 Osberstown Interchange & R407 Sallins Bypass

Outline Construction & Demolition Waste Management Plan

Rep/023

Issue 1 | 30 May 2014

Job number 227136-00

Ove Arup & Partners Ireland Ltd

Arup
15 Oliver Plunkett Street
Cork
Ireland
www.arup.com

ARUP

Document Verification

ARUP

Job title		M7 Osberstown Interchange & R407 Sallins Bypass			**Job number** 227136-00
Document title		Outline Construction & Demolition Waste Management Plan			**File reference**
Document ref		Rep/023			
Revision	**Date**	**Filename**	227136_REP023_C&D Waste Management Plan.docx		
Draft 1	3 Apr 2014	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Sheila O'Shea	Eileen McCarthy
		Signature			
Issue 1	30 May 2014	**Filename**			
		Description			
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Sheila O'Shea	Eileen McCarthy
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

1 Introduction

This **Outline** Project Construction & Demolition (C&D) Waste Management Plan (WMP) has been formulated to ensure that waste arising during the construction and demolition phase of the development on site will be managed and disposed of in a way that ensures the provisions of the Waste Management (Amendment) Act, 1996- 2011 and associated Regulations (1996-2011) are complied with to ensure that optimum levels of reduction, re-use and recycling are achieved.

This Outline Plan has been prepared for the provision of waste management for the construction phase of the proposed project, taking into account the many guidance documents on the management and minimisation of construction and demolition waste including:

- Best Practice Guidelines on the Preparation of Waste Management Plans for construction and Demolition Projects (Department of Environment, Heritage and Local Government, July 2006)
- Provisions of the Waste Management Acts 1996 – 2011 and associated regulations
- CIRIA document 133 Waste Minimisation in Construction
- NRA guidelines including Guidelines for the Management of Waste from National Road Construction Projects, NRA, 2008

This document is preliminary in nature as it has been prepared at a stage when exact quantities and volumes of waste cannot be determined. Therefore, any quantities presented are subject to further detailed design and should not be taken as definitive. To date no discussions have been held with regards to waste disposal sites however final arrangements for the selection of disposal sites will be subject to commercial consideration and the possession by any such site/facility of the necessary regulatory permission to accept that particular waste type.

On commencement of the detailed design a Waste Management Co-ordinator shall be appointed by the Contractor to assume responsibility for the preparation of the Construction & Demolition Waste Management Plan and the management and treatment of all waste materials created during the construction of the proposed road development.

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects were published in 2006 by the NCDWC (National Construction & Demolition Waste Council). These Guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These Guidelines have been followed in the preparation of this report.

2 Description of the Proposed Road Development

2.1 Key Scheme Elements

The proposed scheme comprises the construction of a new motorway interchange on the M7 Naas Bypass, the M7 Osberstown Interchange, and a bypass of Sallins Town, the R407 Sallins Bypass.

The proposed scheme comprises the following elements:

- A grade separated dumb-bell interchange north-west of Naas town centre connecting the M7 Motorway with the proposed R407 Sallins Bypass and with the L3012 Western Distributor Road
- The R407 Sallins Bypass from the M7 Osberstown Interchange to the R407 Clane Road north of Sallins and a new link road from the bypass to Sallins town centre (the Sallins Link Road). The details of the proposed bypass are outlined below:
    - Dual carriageway road section, 1.7 km in length, from the proposed M7 Osberstown Interchange to the proposed Sallins Link Road Roundabout
    - A single carriageway cross-section of length 1.85 km from the proposed Sallins Link Road Roundabout to the proposed R407 roundabout north of Sallins
    - A new at-grade roundabout junction on the R407 Clane Road north of Sallins town connecting to the proposed bypass
    - The Sallins Link Road, a single carriageway cross-section, from the proposed Sallins Link Road Roundabout to the Millbank / Sallins Road Junction, 1.2 km in length
    - Upgrading of the existing traffic signal junction control at Millbank / Sallins Road Junction where the proposed Sallins Link Road joins Sallins Main Street
- The proposed scheme also includes the requirement for the following structures:
    - Osberstown Road Overbridge
    - Sallins Bypass Railway Bridge
    - Grand Canal Underbridge
    - 2 River Liffey Underbridges
    - Sallins Link Road Culvert
- Demolition of an existing M7 accommodation overbridge and a dwelling on the Canal Road
- Associated earthworks, realignment of existing roads, construction of accommodation tracks and ancillary works

- Excavation of unacceptable material, excavation of rock and disposal & recovery of unacceptable material
- Drainage works, landscaping and diversion of services and ancillary works

2.2 Scheme Description

The grade separated junction, the M7 Osberstown Interchange, will be located between the existing M7 Maudlins and Newhall Interchanges, north and south of Naas respectively. The interchange will connect to the R407 Sallins Bypass to the north and the existing local and regional road network to the south. The interchange will be a typical dumbbell interchange with capacity to cater for future traffic needs to a design year of 2030.

The R407 Sallins Bypass will be located to the west of Sallins town, commencing at the proposed M7 Osberstown Interchange and tying into the existing R407 Clane Road to the north of Sallins town. The bypass will proceed in a north easterly direction from the M7 Osberstown Interchange and will cross under the Dublin to Cork railway line, cross over the Grand Canal, and cross over the River Liffey at two locations before tying into the existing R407 Clane Road. The bypass will be approximately 3.6km in length. Cyclist and pedestrian facilities are proposed on the R407 Sallins Bypass between the railway crossing and the tie in at the existing R407 Clane Road.

An alternative cyclist and pedestrian route is proposed from the railway line to Naas, using existing local roads, to avoid routing cyclists and pedestrians through the M7 Osberstown Interchange. An additional dedicated pedestrian and cyclist connection is also proposed to connect the Canal Road to the Western Distributor Road, where full cyclist and pedestrian facilities exist. This will facilitate a cyclist friendly route/connection between the proposed R407 Sallins Bypass and the employment areas in Millennium Park without the need to negotiate the proposed M7 Osberstown Interchange.

There are two link roads proposed as part of the proposed scheme. The Sallins Link Road will connect the R407 Sallins Bypass to the centre of Sallins town and the Distributor Link Road will connect the M7 Osberstown Interchange to the Western Distributor Road. Provisions for cyclists and pedestrians will be made in both directions on the Sallins Link Road.

The R407 Sallins Bypass will cross the existing local Osberstown Road approximately 200m south of the Dublin to Cork railway line. The Osberstown Road will be realigned horizontally and vertically to accommodate the crossing of the bypass under the local road.

2.3 Road Cross-Section

2.3.1 M7 Osberstown Interchange

The M7 Osberstown Interchange is designed as a dumbbell layout comprising of two roundabouts with one overbridge across the M7 providing connectivity between the M7 Motorway, proposed R407 Sallins Bypass and proposed Distributor Link Road.

The overbridge cross-section proposed is in accordance with the NRA DMRB TD 27/11 Table 3 Type 2 Dual Carriageway and Table 4 Verge Widths on underbridges refer to Table 1 below. No dedicated pedestrian or cyclist facilities shall be provided through the M7 Osberstown Interchange.

Table 1: M7 Overbridge Cross-section

Road Section	**Width**
Western Verge Width (minimum)	2.0m (including 1.5m raised verge and 0.5m nearside hardstrip)
Western Carriageway Width	7.0m (2 x 3.5m lanes)
Central Reserve Width (minimum)	1.5m (including 2 x 0.5m offside hardstrip)
Eastern Carriageway Width	7.0m (2 x 3.5m lanes)
Eastern Verge Width (minimum)	1.1m (including 0.6m raised verge and 0.5m nearside hardstrip)
Total Width (minimum)	**18.6m**

2.3.2 R407 Sallins Bypass

A Type-1 Single Carriageway is proposed for the section of the R407 Sallins Bypass north of Sallins Link Road Roundabout and a Type-2 Dual Carriageway for the section south of the Sallins Link Road Roundabout.

The road cross-section proposed for the R407 Sallins Bypass south of Sallins Link Road Roundabout is in accordance with the NRA DMRB TD 27/11 Table 3 Type 2 Dual Carriageway, and is described in Table 2 below:

Table 2: Type 2 Dual Carriageway Cross-section

Road Section	**Width**
Western Verge Width (minimum)	3.0m (including 0.5m nearside hardstrip)
Western Carriageway Width	7.0m (2 x 3.5m lanes)
Central Reserve Width (minimum)	1.5m (including 2 x 0.5m offside hardstrip)
Eastern Carriageway Width	7.0m (2 x 3.5m lanes)
Eastern Verge Width (minimum)	3.0m (including 0.5m nearside hardstrip)

Total Width (minimum)	**21.5m**

The road cross-section proposed for the R407 Sallins Bypass north of Sallins Link Road Roundabout is in accordance with the NRA DMRB TD 27/11 Table 3 Type 1 Single (S2), refer to Table 3:

Table 3: Type 1 Single Carriageway Cross-section

Road Section	Width
Western Verge Width (minimum)	3.0m
Western Hard Shoulder	2.5m
Carriageway Width	7.3m (2 x 3.65m lanes)
Eastern Hard Shoulder	2.5m
Eastern Verge Width (minimum)	3.0m
Total Width (minimum)	**18.3m**

North of the railway line structure to the existing R407 Clane Road connection, the eastern verge width will cater for a combined cyclist and pedestrian facility. The total eastern verge width including the cyclist and pedestrian facility is 4.5m minimum, consisting of a 1.5m segregation verge, 2.5m combined cyclist and pedestrian facility and 0.5m grass verge.

At the River Liffey structures and the Grand Canal structure the western verge width will reduce to 0.6m in accordance with NRA DMRB TD 27/11 Table 6.

2.3.3 Sallins Link Road

The carriageway cross-section proposed for the Sallins Link Road is 7.0m, in accordance with Figure 4.55 of the DTTAS DMURS for a link street frequently used by larger vehicles. It is summarised in Table 4 below:

Table 4: Sallins Link Road Cross-section

Road Section	Width
Northern Verge Width	5.55m minimum (consisting of 1.5m grass verge, 1.75m one-way cycle track, 1.8m footpath, 0.5m grass verge)
Carriageway Width	7.0m (consisting of 2 x 3.5m lanes)
Southern Verge Width	5.55m minimum (consisting of 1.5m grass verge, 1.75m

	one-way cycle track, 1.8m footpath, 0.5m grass verge)
Total Width	**18.6m minimum**

2.3.4 Distributor Link Road

The road cross-section proposed for the Distributor Link Road is described in Table 5:

Table 5: Distributor Link Road Cross-section

Road Section	**Width**
Northern Verge Width	3.0m minimum
Eastern Carriageway Width	6.5m (consisting of 2 x 3.25m lanes)
Central Reserve	2.0m minimum
Western Carriageway Width	6.5m (consisting of 2 x 3.25m lanes)
Southern Verge Width	3.0m minimum
Total Width	**21.0m minimum**

Details of cross-sections of side roads and link roads can be found in Chapter 4 of the EIS.

2.4 Construction Phase

As the construction of the scheme is dependent on funding, a final decision has not yet been made on the exact contractual arrangements for the construction of the proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme. It may be that the construction of the proposed road development will be progressed as two separate construction contracts. The M7 Osberstown Interchange may be progressed with the adjacent M7 Naas to Newbridge By-Pass Upgrade Scheme, or the M7 Osberstown Interchange may be constructed first in time on its own after the M7 Naas to Newbridge By-Pass Upgrade Scheme and the R407 Sallins Bypass may follow at a later stage.

If the proposed road development is progressed as a single construction contract, it is currently anticipated that the proposed scheme construction phase will extend over a period of approximately 18 months. If the construction phase is split over two construction contracts, it is likely that each of the individual contracts will extend over a period of 18 months.

2.5 Construction Procurement

As outlined in Chapter 4 of the EIS, a decision on the exact contractual arrangements for the construction of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme has not yet been made, but the proposed scheme is suitable for development as a Design and Build (D&B) Scheme.

If constructed as part of a D&B Scheme, the detailed design for the scheme would be completed by the design and build contractor and may therefore vary in precise line, level and detail from the proposals set out in this report, as modifications may be made to avail of opportunities to improve the design provided this has no significant adverse environmental effects. The Contractor will be required to construct the proposed road development in accordance with the obligations of the EIS, any commitments given to An Bord Pleanála at the Oral Hearing and any conditions imposed in any subsequent approval from the Board.

3 Waste Management Strategy

3.1 Scope

The Contractor shall develop a Waste Management Plan that will detail:

- Licensing of Waste Disposal
- Site clearance
- Excavations, stockpiling and disposal of materials
- Measures to protect water quality
- Importation, stockpiling and placing of fill
- Management of drainage works to ensure no pollution of watercourses
- Construction vehicle management
- Dust and noise abatement measures

3.2 Waste & Recycling Management

The management of C&D waste will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority succeeded by reuse and recycling. During site clearance and construction works, there are numerous opportunities for the beneficial reuse and recycling of materials. The subsequent use of recycled materials in reconstruction works also reduces the quantities of waste which ultimately needs to be consigned to landfill sites.

The Contractor shall develop and implement a plan and manage all waste with a goal of achieving the waste hierarchy in accordance with the relevant statutory provisions as shown in Figure 1.

**Source: Changing Our Ways, Department of the Environment, Heritage and Local Government, 1998*

Waste generated on the construction site will be identified and segregated according to its category as described by the European Waste Catalogue (EWC). In order to effect this, designated Waste Storage Areas (WSAs) will be created at the construction compounds or other suitable locations for the storage of segregated wastes prior to transport for recovery/disposal at suitably licensed /permitted facilities. Suitably sized containers for each waste stream will be provided within the WSA and will be supervised by a Waste Management Co-ordinator (WMC) who will be appointed by the contractor. This will be the person responsible for the management of waste during the entire project. The number and sizing of containers will be agreed with Waste Contractors in advance of the commencement of the proposed project. Source segregation of waste will result in cost savings to the project as well as providing an environmentally sound route for the management of all C&D wastes.

In order to prevent and minimise the generation of waste, the contractor will be required to ensure that raw materials are ordered so that the timing of delivery, the quantity delivered and the storage is not conductive to the creation of unnecessary waste. The contractor will be required to develop a programme in conjunction with the material suppliers showing the estimated delivery dates and quantities for each specific material associated with each element of work. Following a "just in time" approach improves cash flow, utilises storage space better, and reduces potential loss to theft and accidental damage as well as making the site safer.

It is essential that construction works planning is carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for recycling. The contractor will be required to continuously seek to improve the waste management process on site during all stages of construction and maximise opportunities for reuse or recycling where they exist. For example in relation to waste packaging, the contractor will seek to negotiate take back of as much packaging waste as possible at source to ensure maximum recycling. The CWMP

will be included as an agenda item at the weekly construction meetings. In addition, the plan will be communicated to the whole team (including the client) at the monthly meetings. This will include any updates for earlier revisions to the document.

The waste management strategy for the project will follow the accepted waste hierarchy and the Contract will implement the following types of measures to reduce waste and maximise opportunities for recycling:

- Whenever possible, materials for construction activities will be ordered as to prevent the minimum storage time and kept in the storage area before release to site for use.
- Materials shall be ordered, where possible, in sizes to prevent wastage e.g. in form of offcuts and waste to be able to be returned to the original supplier e.g. plastic pipe.
- Appoint a person responsible for handling, storage and delivery of materials to the project
- Ensure that that stored material is protected from damage from plant and environmental factors such as rain and wind.
- Secure storage areas to prevent unauthorised access
- Establish a waste management compound to handle incoming waste from construction activities. This should be facilitate the segregation of key waste streams to maximise the opportunity to re-use, recycle and return wastes generated on site.
- Provide a separate secured area for dealing with Hazardous waste
- Provide separate facilities for the storage of fuels and chemicals

3.3 Waste & Recycling Targets

The Contractor's waste management plan, waste handling and proposed construction methods should endeavour to achieve the following targets

- The reuse of all earthworks materials on site where possible
- A zero waste to landfill target will be established onsite. This target will be achieved through the implementation of onsite segregation and utilisation of modern recovery processes.
- 100% recycling of surplus reinforcement and other metals where possible.
- No contamination of skips – No additional costs due to inappropriate materials being placed in skips designated for particular waste streams.

3.4 Waste & Recycling Opportunities

The contractor shall seek opportunities wherever possible to reduce the amount of waste generated on site and maximize the potential for recycling materials in accordance with the waste hierarchy through the following

- Maximising the reuse of soils and rock on site during the construction of the project and utilising the proposed peat recovery areas for dealing with soft material arising from the project
- Storing materials in designated areas and separate from wastes to minimise damage.
- Returning packaging to the producer where possible.
- Segregating construction and demolition wastes into reusable, recyclable and non-recyclable materials.
- Reusing and recycling materials on site during construction where practicable.
- Recycling other recyclable materials through appropriately permitted / licensed contractors and facilities.
- Disposing of non-recyclable wastes to licensed landfills

4 Waste Disposal

4.1 Licensing Requirements

Under the Waste Management (Collection Permit) Regulations 2007, a waste collection permit for appropriate EWC Code(s) and designations is required by a waste haulier to transport waste from one site to another. Compliance with the Waste Management (Movement of Hazardous Waste) Regulation, 1998 is also required for the transportation of hazardous waste by road. The export of waste from Ireland is subject to the requirements of the Waste Management (Shipment of Waste) Regulations, 2007. The contractor will ensure that the transport and movement of all waste are carried out in compliance with these requirements.

Waste may only be treated or disposed of at facilities that are licensed to carry out that specific activity, e.g. chemical treatment, landfill, incineration etc., for a specific waste type. Records of all waste movements and associated documentation will also be held on-site. Generally operators of waste management sites will facilitate a site visit and inspection of documentation if deemed necessary. Prior to any on-site recovery process, including the operation of mobile plant, an operator must apply to the governing local authority for a waste facility permit under the Waste Management (Facility Permit and Registration) Regulations 2007. It is planned that waste activities at the site will comprise of source segregation, storage and collection and therefore highly unlikely that any waste licensable or waste permissible activity will be undertaken.

4.2 Exclusion from Legislation

The Directive on Waste contains a number of exclusions which make clear that certain materials are not subject to its requirements. A key exclusion affecting construction projects such as this development is set down in Article 2(1)(c). This states that the requirements of the EU legislation do not apply to:
"uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated"

This provision is repeated in the Waste Management Act, as Section 3(1)(c)1 (as amended by the European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011). Should materials generated by construction activities fall within this provision, they are not then subject to the other requirements of the EU or national waste legislation. This means that, for example, such materials are not defined as "waste", do not need to be handled by duly authorised waste collectors and do not need to pass to disposal or recovery facilities that are subject to waste licences or other equivalent form of statutory authorisation. In addition, the requirements of the Waste Hierarchy do not apply.

5 Proposed Construction Methodology and Material Usage

5.1 Site Preparation

There may be up to 60 Hectares of land that will require clearance as part of the project including:

- Stripping of topsoil
- Clearance of vegetation and felling of trees
- Clearance of ditches and streams
- Demolition of buildings
- Demolition of bridges and structures

The contractor's WDP will need to take the following into account:

- The extent of the areas to be cleared and the potential types and volumes of arisings
- The location of the building or structure to be demolished
- Statutory requirements
- Specific environmental requirements and seasonal requirements (i.e., bats, birds and salmonids)

Scrub and vegetation removal will be required as part of site preparation. Vegetation cleared from the site to facilitate construction works will be collected and stored on site wherever possible. For any non-reusable vegetation this will be disposed of at an appropriately licensed landfill.

5.2 Site Offices, Construction Compounds and Security

There will be a number of construction compound sites along and / or in the vicinity of the scheme. The location, size and suitability of the sites selected will be at the discretion of the contractor, but will be located within the lands being made available to the contractor. The M7 Osberstown Interchange and R407 Sallins Bypass EIS indicates potential locations of proposed compounds in the vicinity of the interchange and in the vicinity of the Sallins Link Road, which are selected due to ease of access from an existing major road and proximity to proposed structures. If the contractor requires additional storage outside of the development boundary, he will locate this at a facility with suitable permissions for such a use.

The construction compounds will be fully engineered with appropriate services and will be fenced off for security purposes. Access to the compound will be restricted to site personnel and authorised visitors only. Any storage of hydrocarbons or any chemicals within the compounds will not be within 100m of a watercourse. All fuel storage area will be bunded to 110% of storage capacity to prevent spills and provide sufficient additional capacity in the event of rainfall occurring simultaneously. The compounds will also have appropriate levels of security to limit potential vandalism, theft and unauthorised access within the compounds.

Following completion of construction, these areas will be cleared and reinstated. Temporary buildings and containers, parking areas, and waste material such as rubble, aggregates and unused construction materials will not be permitted to remain exposed on these sites and will need to be removed and disposed of appropriately.

As with the main scheme construction works, materials and equipment storage will be subject to restrictions on the nature and timing of operations so that they do not cause undue disturbance to neighbouring residential and community properties.

5.3 Earthworks Quantities

Earthworks quantities along the proposed scheme are subdivided into a number of earthworks sections based upon natural physical boundaries such as railway embankments, canals and rivers. The estimated quantities of imported and exported fill within these areas are outlined in Table 6.

Table 6: Summary of Estimated Material Requirement

Earthworks Area	Import Fill (m^3)	Export Fill (m^3)
Sallins Bypass: Ch. 0+000 to 1+050	36,500	4,500
Sallins Bypass: Ch. 1+050 to 1+250	71,000	2,500

Sallins Bypass: Ch. 1+250 to 1+580	119,000	1,000
Sallins Bypass: Ch. 1+580 to 1+980	33,000	4,000
Sallins Bypass: Ch. 1+980 to 3+050	0	7,000
Sallins Bypass: Ch. 3+050 to 3+650	11,500	3,500
M7 Osberstown Interchange	263,000	5,000
Sallins Link Road & Roundabout	137,500	4,500
Clane Road & Roundabout	0	3,000
Osberstown Road	31,500	1,000
Total Scheme	**703,000**	**36,000**

In total, estimated quantities of fill along the proposed road development are 703,000 m^3 for importation and 36,000 m^3 for exportation. Therefore, the proposed road development is estimated to have a net deficit of 667,000 m3, and the significance of the impact on geology for removal of materials off-site is considered to be slight.

Surplus materials which are not reused within the proposed road development will be disposed of in an appropriate manner based on the nature of the material in accordance with the Waste Management Act, 1998–2006. Imported material will be sourced from within earthworks areas, wherever possible, to minimise the construction traffic. Material will be sourced from quarries registered under Section 261 of the Planning and Development Act 2000.

5.4 Earthworks Waste Arising

Inevitably, materials will be encountered which cannot reasonably be processed into unstable fill material. These materials are generally suitable for other activities such as landscaping within the site area. Any surplus material remaining which cannot be incorporated into the works will be disposed of off-site at suitably licenced tips.

If encountered, contaminated soils will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998–2006, and associated regulations and guidance provided in the NRA's Guidelines for the Management of Waste from National Road Construction projects (National Roads Authority, 2008).

5.5 General Construction and Demolition Works

Quantities of general construction and demolition wastes are made up of waste such as wood, packaging, metals, plastics, bricks, blocks, canteen waste, some hazardous waste (e.g. oils, paints and adhesives), site clearance and residual waste will be generated during the construction phase primarily from the construction of the project. While it is difficult at this stage to predict precise tonnage of different types of waste expected from the proposed scheme, the EPA has produced figures for the C&D waste recorded in the National Waste Database. This includes a percentage breakdown of each waste type in the C&D stream. A more detailed estimate of the anticipated quantities of these materials

will be provided in the detailed Waste Management Plan (WMP) following appointment of the contractor at construction stage.

Table 7 shows the breakdown of the C&D waste types (from Irish EPA figures) produced on a typical site.

Table 7: Waste Materials generated on a typical Irish construction site

Waste Types	**%**
Soil & Stones	51
Concrete, Bricks, Tiles, Ceramics, Plasterboard	39
Asphalt, Tar and Tar Products	2
Metals	2
Other	6
Total Waste	**100**

An overview of the methods to manage the primary waste streams expected is presented below. The main types of construction waste produced will be:

5.5.1 Excavated Clay, Soil, Peat and Stones

Excavated soils, clay, peat and rock will be loaded directly from the excavation face to vehicles for use within the project as appropriate (e.g. as fill material). Intermediate and short term temporary storage of material will in some cases be unavoidable. The method of storage of such material will be key to its potential use as certain types of soils and clays are likely to degrade if left uncovered in wet weather due to its low plasticity and silty nature. Topsoil will be stored separately from other soil types and where possible clay mounds will not be more than two metres in height as they may damage the soil structures and limit its future use.

Inevitably, materials will be encountered which cannot reasonably be processed into unstable fill material. These materials are generally suitable for other activities such as landscaping within the site area. Any surplus material remaining which cannot be incorporated into the works will be disposed of off-site at suitably licenced tips.

If encountered, contaminated soils will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998–2006, and associated regulations and guidance provided in the NRA's Guidelines for the Management of Waste from National Road Construction projects (National Roads Authority, 2008).

5.5.2 Concrete

Waste concrete is likely to arise during the construction of bridges and retaining walls as part of this project. It is proposed that where possible waste concrete generated will be returned to the supplier for reuse. Where this cannot be achieved the concrete may be crushed and screened out and used within the project where

appropriate to do so, such as in sub base etc. the necessary permission for any crushing and screening activities required will be discussed with the environmental department of the local authority prior to any works being undertaken.

For every tonne of concrete waste that is recycled for aggregate in new concrete, significant savings are made in energy and carbon dioxide emissions. It also saves money by avoiding disposal costs which continue to increase. Residual concrete waste will be source segregated and stored in designated containers at the WSA for subsequent separation and recovery at a remote facility.

5.5.3 Metals

Metal waste has a significant scrap value. Although it is now common practice for sites to segregate metals for reuse and recycling, there are still sites where metal is thrown away with general rubbish. One of the primary sources of metal waste is rebar. Wastage of rebar will be reduced by ordering made to measure rebar from the manufacturer and detailed scheduling of all Reinforced Concrete (RC) structural elements.

Skip hire companies may provide free skips for the storage of scrap metal on sites and this will be investigated prior to construction commencing. When metal storage containers are full they will be removed by the waste storage contractor and sent to a metals recycling facility.

5.5.4 Timber

Timber waste will be stored separately as it is readily contaminated by other wastes and if it is allowed to rot will reduce the recyclability of other stored wastes. Any pallets will be returned to the supplier for reuse. Off cuts and trimmings will be used in formwork where at all possible. A container for waste wood will be covered where possible and will be placed in the WSA. The waste wood will be collected by a waste contractor who will forward it to a wood recycling facility for chipping.

Treatment of timber with chemicals and the overuse of nails will be minimised and avoided as this will make it difficult to reuse/recycle the timber afterwards. The utilisation of reclaimed timber products will also be investigated.

5.5.5 Packaging and Plastics

Packaging waste can become a major problem on a construction sites. Double handling will be avoided by segregating packaging wastes immediately after unwrapping. Many suppliers are now prepared to collect their own packaging for recycling, and this will also be investigated prior to works commencing. It is intended that where possible materials with recycled packaging will be purchased. Waste packaging will be segregated and stored in separate containers, preferably covered, in the WSA for collection by the contractor and distribution to packaging recycling facilities.

5.5.6 Blocks, Bricks and Tiles

The careful storage of these raw materials will significantly reduce the volume of these wastes arising on site. The most likely wastes produced will be off-cuts, trimmings and waste arising from breakages. Every effort will be made to use broken bricks and off cuts. Final quantities of these wastes generated will be stockpiled (possibly crushed and/or screened) and used at the site as sub base material for roads, hardstand etc.

5.5.7 Hazardous Wastes

Site investigations have been undertaken as part of the EIS which have not revealed any hazardous waste to date. However further detailed site investigations, surveys of buildings to be demolished and certain construction activities may give rise to hazardous waste.

Prior to being removed from the site, this waste will undergo a comprehensive waste assessment and classification, by a suitably qualified person, in accordance with the European Waste Catalogue (EWC) and Hazardous Waste List. It should be noted that if non-hazardous waste becomes contaminated with hazardous waste the entire load will be considered hazardous. It is therefore critical to ensure that waste segregation areas are to provide and are used properly to separate out hazardous, non-hazardous and inert waste arising. Hazardous wastes will be identified, removed and kept separate from other construction and demolition waste materials in order to avoid cross contamination. Specific method statements detailing the necessary mitigation measures required during excavation, handling transportation and disposal of hazardous wastes encountered on the site will be prepared as required.

The likely disposal/treatment options for any hazardous wastes available to the Contractor will depend on the nature of the hazardous material and the concentration of parameters of concern. The costs associated with treatment and disposal will equally vary depending on the concentration of parameters of concern and on the tonnage involved. There are several operators / facilities in operation within Ireland that could potentially accept the contaminated material depending upon the results of the Waste Acceptance Criteria testing (WAC) or assist in the export of the material abroad for special treatment where required. Full details of the disposal route for Hazardous Wastes will be provided in the Detailed Waste Management Plan following the appointment of the contract and completion of the further investigations required.

5.5.8 Hazardous Liquids (Oils, Paints and Chemical)

Hazardous liquid waste arising from the construction process will require careful handling. Oils, paints, bitumen, adhesives and chemicals will be kept in a separate contained storage area which will be locked when not in use. Lids will be kept on containers in order to avoid spillage or waste by evaporation. Waste oils, paints and chemical will require careful handling and disposal. This includes the containers and will be stored in a containment tray.

Fuels and chemical will be stored in double skinned containers or within a bund i.e. an impervious structure with the capacity to contain 110% of the volume of the largest tank stored within it. All containers will be carefully labelled.

5.5.9 Canteen Wastes

Staff canteens have the potential to generate food waste and packaging waste. Designated receptacles will be provided at the canteen to allow for the segregation and storage of individual waste streams. These will include receptacles for food waste (e.g. brown bin for waste foods, peelings etc.), dry recyclables (e.g. green bin for packaging, plastics, metals, wood, paper, cardboard, tetrapack, etc.), and residual bin (e.g. black bin for mixed food and packaging waste). Separate receptacles for the recyclable fractions may be provided such as plastics, metals, and glass and this will be designed and detailed by the WMC in consultation with the selected waste management contractor.

5.5.10 Other Wastes (Residual)

Waste material other than those outlined above can constitute a significant proportion of the total waste generated by a construction site. This waste is normally made up of residual non-recyclable waste, such as soiled paper, cloth, cardboard or plastics, as well as canteen waste including food as above and general waste found on the sites including plastic bottles, bags, cans etc. present at the surface close to the foreshore along boundary ditches and walls. Given the heterogeneous nature of this material it is most important that residual waste is kept separate from the other waste streams to avoid contamination. This material will be stored in a dedicated container in the WSA. Container size and collection frequency will be assessed with waste management contractors as works proceed. All residual wastes will be dispatched to a suitably licensed facility for disposal. Other construction and demolition waste material will be collected in receptacles with mixed construction and demolition waste materials for subsequent separation and disposal at a remove segregation facility.

5.6 Bridge Demolition

The existing farm overbridge on the M7 will be demolished to allow for the construction of the Osberstown Interchange. Demolition methods will be assessed for safety, noise and viabration, nuisance, disruption to traffic, creation of dust and issues relating to public interest in observing the works. A detailed method statement for this work will be prepared by the contractor to address each of these issues.

All buildings and other structures proposed for demolition will be risk assessed and re-examined for bat presence by a bat specialist in advance of operations. Demolition can proceed when bats and hazardous materials such as asbestos are noted to be absent. Should asbestos be encountered during the pre-demolition survey, expert advice will be sought for its safe disposal prior to any demolition taking place.

6 Assignment of Responsibilities

A waste management co-ordinator will be appointed who will have overall responsibility for waste management on the site. The Employer will receive summaries of any audit reports which will be completed within three months of the end of each calendar year. The effectiveness and accuracy of the documentation may also be monitored on a regular basis via routine site visits. Following appointment of the preferred contractor the Waste Management Plan will be updated in accordance with the final design scheme and copies of the plan will be distributed to the Employer, the Site Manager and the site subcontractors. The WMC appointed by the Contractor will be appropriately trained and experienced in all aspects of waste management. In addition he/she and the site crew must be in a position to:

- Distinguish reusable materials from material suitable for recycling
- Ensure maximum segregation at source
- Co-operate with site manager on best locations for stockpiling reusable material
- Separate material or recovery
- Identify and liaise with operators of recovery outlets.

The WMC will be responsible for educating all site staff, subcontractors and suppliers about the available alternative to conventional waste disposal. Training will also be given to all site staff in materials management on sites. The WMC will continually identify waste minimisation actions on sites and this will be updated in the plan.

7 Training

Copies of the WMP will be made available to all personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provision. This is traditionally carried out during the induction process for new staff members. Where source segregation and material reuse techniques apply, each member of staff will be given instructions on how to comply with the waste management plan. Site notices will be designed to reinforce the key messages within the Management Plan and will be displayed prominently for the benefit of staff.

8 Waste Records

When establishing the system for managing the details of all arisings, movement and treatment of C&D waste in the WMP, the use of electronic tools should be considered to provide for convenient recording of information in a useful format such as “SMARTwaste”.

The contractor will be required to arrange for full details of all arisings, movements and construction and demolition waste to be recorded during all

stages of the project. Each consignment of C&D waste removed from the site will be documented in the form of a Waste Movement Record form which will ensure full traceability of the material to its final destination. Separate record forms will be completed in respect to each waste transfer that takes place. The contractor will also receive printed documents/records from waste disposal companies employed during quantifying the exact amount of waste material removed from site. The sheet from the disposal company also identifies how much material went to landfill and how much went for recycling. All such records will be retained in a designated location and made available for auditing of the waste management plan.

9 C&D Waste Plan Summary

Waste will inevitably be generated during the construction and demolition phase of the proposed project. It is intended that all waste soils, rock and concrete will be used over the length of the project where possible for infilling landscaping. At this preliminary stage it is anticipated that the bulk of surplus excavation arisings will be used on site. Materials that cannot be reused or processed into suitable material will be disposed of at appropriately licensed facilities. Preliminary estimates indicate that there will be a net import in the order of 667,000m^3 of fill to complete the project.

Other than spoil material from excavations, waste arising during the construction phase will be minimised by the purchasing manager by timing the ordering of materials for the site in a manner which reduced the likelihood of over purchase or damage during storage. C&D waste fractions will be segregated and stored on site in designated areas or containers in the WSA prior to transport by licensed hauliers to facilities for segregation recycling and disposal.

A WMC will be appointed to ensure the contractor's WMP is followed. Training will be given to all staff so that they are aware of the WMP and know their responsibilities.

Records will be kept to trace the inputs and outputs of the construction works at the site and this should allow the Employer to make informed decisions regarding waste management in the future. These records will be made available to Kildare County Council and the EPA should it be required.

The design and implementation of the detailed CWMP in conjunction with the EOP for the scheme will provide for the optimum planning/management and handling of waste generated by the project and will ensure that there will be no worse than a neutral imperceptible impact from waste management practices during construction.

The contractor appointed to undertake the construction and design of the M7 Osberstown Interchange and R407 Sallins Bypass Project shall develop their own Construction & Demolition Waste Management Plan based on their detailed design, the requirements of this Outline Construction & Demolition Waste

Management Plan, the requirements of the EIS and any commitments given as part of the scheme approval process and the Employer's requirements and specifications for executing the project.

Appendix B

Sediment and Erosion Control Plan

Kildare County Council

M7 Osberstown Interchange & R407 Sallins Bypass

Sediment and Erosion Control Plan

REP/022

Issue 1 | 30 May 2014

Job number 227136-00

Ove Arup & Partners Ireland Ltd

Arup
15 Oliver Plunkett Street
Cork
Ireland
www.arup.com

ARUP

Document Verification

ARUP

Job title		M7 Osberstown Interchange & R407 Sallins Bypass			**Job number** 227136-00
Document title		Sediment and Erosion Control Plan			**File reference**
Document ref		REP/022			
Revision	**Date**	**Filename**	227136_REP022_Sediment&ErosionControlPlan.docx		
Draft 1	27 Mar 2014	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Sheila O'Shea	Eileen McCarthy
		Signature			
Issue 1	30 May 2014	**Filename**	227136_REP022_Sediment&ErosionControlPlan.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Sheila O'Shea	Eileen McCarthy
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

1 Introduction

1.1 General

This **Outline** document outlines the procedures and technical practices for implementing effective erosion and sediment control through a variety of delivery methods. The report provides an effective tool for reducing potential environmental effects by:

- Identifying erosion and sediment control objectives before construction
- Encouraging planning to manage water, control erosion and control sediment by identifying potential impacts and mitigation measures
- Providing a mechanism for clear communication to workers
- Defining a performance expectation
- Assuring owners and regulators that due diligence has been exercised

The purpose of a Construction Erosion and Sediment Control Plan (CESCP) is to:

- Minimise erosion potential by effective planning, procedures and water management
- Apply erosion control measures to prevent the movement of sediment
- Apply sediment control measures to prevent off-site sediment release in the event of sediment movement

The plan is intended to be a working document and has been prepared to inform the Construction Stage Erosion and Sediment Control Plan which, in turn, will form an integral part of the Environmental Operating Plan for the proposed road development. In particular, the mitigation, control, monitoring and emergency measures for the proposed road development in relation to Erosion and Sediment Control are described in this document.

1.2 Description of the Proposed Road Development

The proposed scheme comprises the construction of a new motorway interchange on the M7 Naas Bypass, the M7 Osberstown Interchange, and a bypass of Sallins Town, the R407 Sallins Bypass.

The proposed scheme comprises the following elements:

- A grade separated dumb-bell interchange north-west of Naas town centre connecting the M7 Motorway with the proposed R407 Sallins Bypass and with the L3012 Western Distributor Road
- The R407 Sallins Bypass from the M7 Osberstown Interchange to the R407 Clane Road north of Sallins and a new link road from the bypass to Sallins town centre (the Sallins Link Road). The details of the proposed bypass are outlined below:

  - Dual carriageway road section, 1.7 km in length, from the proposed M7 Osberstown Interchange to the proposed Sallins Link Road Roundabout
  - A single carriageway cross-section of length 1.85 km from the proposed Sallins Link Road Roundabout to the proposed R407 roundabout north of Sallins
  - A new at-grade roundabout junction on the R407 Clane Road north of Sallins town connecting to the proposed bypass
  - The Sallins Link Road, a single carriageway cross-section, from the proposed Sallins Link Road Roundabout to the Millbank / Sallins Road Junction, 1.2 km in length
  - Upgrading of the existing traffic signal junction control at Millbank / Sallins Road Junction where the proposed Sallins Link Road joins Sallins Main Street
- The proposed scheme also includes the requirement for the following structures:
  - Osberstown Road Overbridge
  - Sallins Bypass Railway Bridge
  - Grand Canal Underbridge
  - 2 River Liffey Underbridges
  - Sallins Link Road Culvert
- Demolition of an existing M7 accommodation overbridge and a dwelling on the Canal Road
- Associated earthworks, realignment of existing roads, construction of accommodation tracks and ancillary works
- Drainage works, landscaping and diversion of services and ancillary works

1.3 Contract Procurement

As outlined in Chapter 4 of the EIS, a decision on the exact contractual arrangements for the construction of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme has not yet been made, but the proposed scheme is suitable for development as a Design and Build (D&B) Scheme.

At the heart of the Design/Build approach is the concept that better value for money can be achieved through the utilisation of private sector enterprise due to the enhanced scope for innovation and by allocating the risk to the party best able to manage it. This type of contract places a responsibility on the appointed contractor to design and construct the project in accordance with the obligations of the EIS.

Regardless of the form of contract, the contractor for the works will be contractually bound within the contract by any conditions arising from the site constraints, the recommendations of the EIS, the Employer's Requirements for the

project, any modifications that may be imposed on the proposed scheme by An Bord Pleanála and all Statutory Regulations. Prior to construction a Construction Management Plan will be required to be prepared by the contractor and approval received from Kildare County Council. This may incorporate alternative details provided it can be demonstrated that it provides the same performance criteria (or higher) than those outlined in this plan.

1.4 Consultations

Consultation has taken place with the National Parks and Wildlife Services (NPWS), Waterways Ireland and the Inland Fisheries Ireland (IFI) and their comments/observations with regard to practical measures for water quality protection have been adopted within the plan.

1.5 Principles of Erosion and Sediment Control

The principles of erosion and sediment control during the construction stage of a Roads Project as outlined in CIRIA C648 include;

- Erosion control (preventing runoff) is much more effective than sediment control in preventing water pollution. Erosion control is less subject to failure from high rainfall, requires less maintenance and is also less costly.
- Plan erosion and sediment controls early in the project and incorporate into the works programme
- Install drainage and runoff controls before starting site clearance and earthworks
- Minimise the area of exposed ground
- Prevent runoff entering the site from adjacent ground, as this creates additional polluted water
- Provide appropriate control and containment measures on site
- Monitor and maintain erosion and sediment controls throughout the project
- Establish vegetation as soon as practical on all areas where soil has been exposed

This plan will initiate these principles for eventual incorporation and expansion in the Construction Stage erosion and sediment control plan.

1.6 Contents of Outline Plan

This plan contains the following information:

(i) An identification of existing land use, surface water features, low-lying areas and natural drainage ways

(ii) An outline of the main construction activities likely to be relevant in relation to erosion and sediment generation

(iii) Identification of the areas most likely to have the potential for runoff

(iv) Collection of information on soil types, rainfall data, etc.

(v) Selection of the best controls to reduce runoff and erosion

(vi) Ensure that control measures are correctly installed and sized - initial runoff controls to be in place before site works begin

(vii) An outline of the inspection and maintenance programme throughout construction to ensure the controls are working adequately or whether further measures are required

(viii) Emergency Procedures

2 Site Characteristics

2.1 General

The following gives a general overview of the landscape character and the main natural drainage pathways which are relevant in terms of erosion and sediment control.

2.2 Landscape Character

Landscape character is derived from the appearance of the land, and takes account of natural and man-made features such as topography, landform, vegetation, land use and built environment and their interaction to create specific patterns that are distinctive to particular localities.

Naas, the primarily urban settlement in the area, is separated from the town of Sallins by the existing alignment of the M7 Motorway. The motorway curves around the north and west of Naas, passing a variety of business, industrial and retail parks off Monread Road as well as residential and green field areas, before passing under the R407 Naas to Sallins Regional Road and continuing to the immediate northwest of Millennium Business Park. The motorway also crosses the Naas Branch of the Grand Canal north of the prominent old Leinster Mills complex.

Planting along the M7 Motorway has developed significantly over recent years and as such views both to and from the motorway are increasingly screened by vegetation – particularly when in-leaf. Lands north and northwest of the motorway at Naas are generally in agricultural use, with new and old residential properties prominent both located along local roads and within stand-alone sites.

Sallins is a small town located on the Grand Canal over 1 km north of the M7 Motorway. The existing R407 Naas to Clane Road passes through the centre of the town where it bridges over the canal at Sallins Harbour. The Dublin to Cork railway line also runs through Sallins and the River Liffey flows in a south – north direction approximately 1 km west of the town.

The surrounding landscape is typical of lowlands of northeast Kildare being visually flat and sub-divided by strong hedgerows and tree-lines. The landscape is punctuated by small stands of mature trees – often associated with older or historic properties, e.g. Osberstown House and Osberstown Hill House or with the corridor of the River Liffey, which add character and diversity.

The River Liffey and the Grand Canal, including the Naas Branch, are significant features of the landscape. Though neither is widely visible within the landscape, they offer amenity, biodiversity, landscape and recreational value and include features such as the Leinster Aqueduct and bridges which are of cultural and historic significance.

2.3 Soils along the Proposed Scheme

Information regarding soils was sourced from the 'General Soil Map of Ireland' (1980) and the EPA Soils Datasets available on the EPA website. The dominant soil is a deep free draining soil (EPA reference code 12). In the north east of the study area a shallow well drained soil dominates (EPA reference code 12).

There are alluvial soils (EPA reference code 51) along the river Liffey and in the north east of the study area along the canal. The topography of the area is generally flat.

2.4 Natural Drainage Ways

The proposed road development is located in the catchment of the River Liffey and crosses this watercourse twice. The catchment area of the River Liffey up to the first crossing of the proposed road development is calculated at approximately 631 km² with an urban land cover of approximately 4%.

The Naas Stream is a tributary of the River Liffey in the vicinity of the proposed road development. It carries surface water flow from a small sub-catchment of the River Liffey, outfalling to the River Liffey upstream of the proposed road development crossing. The Naas Stream is culverted under the existing M7 Motorway via a 750mm diameter pipe.

The proposed M7 Osberstown Interchange western auxiliary lanes require widening of the existing M7 Motorway carriageway where the Naas Stream is currently crossed.

2.5 Existing Carriageway Drainage and Outfalls

The existing M7 in the vicinity of the M7 Osberstown Interchange shows a constant fall longitudinally towards the location of the existing M7 accommodation overbridge. The road surface water drainage on the M7 is currently provided by a system of filter drains. In the vicinity of the M7 Osberstown Interchange the M7 storm water runoff outfalls at four locations, into the Naas Stream and three adjacent land drains to the east which converge into the Osberstown Stream, which then converges into the Naas Stream further downstream. Two of the three adjacent land drains carry the outflow from the Osberstown Attenuation Pond as detailed in Section 2.6 below.

The Naas Stream and the three adjacent land drains flow in a northerly direction crossing under the M7 via piped culverts. The existing M7 Motorway drainage and culverts shall be extended, diverted, maintained and protected from the works as required.

The road surface drainage of the existing R407 Clane Road is collected via a kerb and gully network into a sewer which flows towards the treatment plant in Sallins

town. The existing R407 Clane Road drainage shall be diverted, maintained and protected from the works as required.

2.6 Osberstown Attenuation Pond and Osberstown Stream

The existing attenuation pond is an artificial waterbody to the south of the M7, fed by two small inflowing streams from the south. The pond is approximately 1 hectare in area. It was constructed in the mid-2000's to attenuate the surface water flows from the planned development in Millennium Park. The assumed catchment area is 127 hectares.

There are two outlets from the pond flowing in a northerly direction. The outlet flows are culverted under the M7 via two 900 mm diameter pipes (as detailed in Section 2.5 above) where they then enter drainage ditches and converge into the Osberstown Stream which discharges to the Naas Stream and ultimately to the River Liffey.

The proposed M7 Osberstown Interchange crosses the northwest corner of the Osberstown Attenuation Pond, along with the outlet pipes and drainage ditch.

3 Potential Sources of Runoff

The following paragraph outlines what are considered to be the main sources of pollution arising from the Construction Stage of the proposed road design.

3.1 Earthworks

The most significant area of concern regarding erosion and sediment control on any road construction project is the processes where topsoil, subsoil and peat surfaces are exposed.

Typically these surfaces are exposed during:

- The initial site clearance works/top soil strip
- Excavation of cuttings
- Construction of fill slopes with acceptable glacial till material
- Excavation and backfilling of soft spots underneath proposed embankments
- The construction of spoil repositories
- Construction of haul roads for earthworks operations
- Stockpiling of acceptable and unacceptable earthworks material for reuse or removal offsite

These sources of pollution have been reviewed through a detailed review of the project design.

3.2 Structures & Concrete

Concrete, grout and other cement-based products which would typically be used in the construction of structures are highly alkaline and corrosive and can have a devastating effect upon water quality. Cement-based products generate very fine, highly alkaline silt (11.5 pH) that can physically damage fish by burning their skin and blocking their gills. This alkaline silt can also smother vegetation and the bed of watercourses and can mobilise pollutants such as heavy metals by changing the water's pH. Concrete and grout pollution is often highly visible.

Particular risks are posed to water quality when construction is taking place over or near surface waters (e.g. bridges or headwalls).

Cement and lime may also be used in soil improvement techniques and in soil stabilisation. As with the construction of structures it is critical that areas, where soil improvement through lime or cement stabilisation is undertaken, are cordoned during construction to prevent runoff to surrounding lands and to watercourses.

3.3 Watercourse Crossings and In-stream Works

There are numerous minor watercourse crossings and stream diversions associated with this proposed road development. Diversion or maintenance of these channels has the potential to generate sediment laden pollution.

3.4 Construction Compounds & Machinery Re-fuelling/lubrication

The location of construction compounds will be determined by the contractor during the construction phase of this project. Particular considerations in relation to the location of such facilities and their generation of pollution during the construction stage include:

- Sanitary Wastewater treatment
- Hard-standing runoff
- Potential for hydrocarbon pollution to groundwater and surface water

4 Key Receptors

The key receptors that could be impacted by sediment laden pollution are generally considered to be those relating to aquatic ecology and fisheries are outlined below:

The Grand Canal pNHA is crossed by the proposed route at Ch. 1+560 and the 'dead canal' spur is crossed on the Sallins Link Road at Ch. 0+330. The Grand Canal pNHA is rated of National Importance.

The Grand Canal supports a number of protected species including otter and kingfisher, and acts as an important linear habitat and corridor for animal movement. The 'dead canal' crossed by the Sallins Link Road also forms a valuable corridor between the River Liffey and Grand Canal.

The main channel of the Grand Canal will be crossed by a clear span structure encompassing both the tow path and local road on either side of the canal. The bridge deck will result in some shading under the deck and may limit the growth of marginal and submerged aquatic vegetation.

The semi mature treeline along the canal's northern bank would be fragmented as a result of the works. Overall however, the structure will not interfere with the canal's ecological integrity and continuity, as the waterway and the adjacent towpath and local road will remain open and not impede movement of mammals, birds or aquatic fauna. Subject to the adoption and adherence of measures prescribed in Chapter 14 of the EIS, the construction of the crossing will not present a significant risk of impacting on water quality. The impact on the pNHA at this location is rated as slight.

The 'dead canal' being crossed by the Sallins Link Road at Ch. 0+330 will be crossed by a portal frame culvert which allow for the retention of a natural base through the culvert. The culvert will allow for the unimpeded movement of otter and aquatic fauna, though may not be conducive to movement of kingfisher. The River Liffey, while not designated for nature conservation, supports populations of a number of species listed under Annex II of the EU Habitats Directive and Annex I of the EU Birds Directive including salmon, otter, brook lamprey, freshwater crayfish, kingfisher and little egret. The wooded islands on the River Liffey upstream and downstream of the crossing at Ch. 2+000 may conform to the Priority habitat Alluvial Woodland under the EU Habitats Directive. Due to the range of protected species occurring within the River Liffey and its overall biodiversity value, the site is rated of County Importance.

The treelines, hedgerows, minor watercourses and the pond at Osberstown are rated of Local Importance (higher value) due to their associated biodiversity and functionality as a network for faunal movement.

5 Investigation and Survey Information

5.1 General

Likely significant impacts with regard to Soils and Geology associated with both the construction and operational phases of the proposed road development were considered. The study area extended 250 m beyond the CPO line for the proposed road development.

The scope of the preliminary ground investigation included:

- Shell and auger boreholes
- Rotary core boreholes
- Trial pits
- Groundwater level monitoring
- Geotechnical and environmental testing on soil and groundwater samples

The assessment of the likely significant impacts of the proposed road development on soils and geology considered the following specific topics:

- Soils (range of agricultural uses, fertility and drainage characteristics)
- Requirements for treatment and/or handling of soft, unstable or contaminated soils, subsoils or other geological materials
- Requirements for excavation, disposal and/or recovery of soils, subsoils or other geological materials which may be unsuitable for re-use in construction of earth structures or present a risk to human health and/or the environment
- Economic Geology (mines, pits and quarries)
- Geological Heritage

The proposed scheme primarily traverses open undulating agricultural land. The topography of the site is generally low-lying flat with a canal crossing, two river crossings and local high points created by embankments of made ground at the proposed M7 Osberstown Interchange and the railway crossing.

5.2 Soils

The GSI Subsoils map describes the soils of the area as till derived from limestone. The soils map of Kildare specifies an overburden of grey-brown podzols. There may also be limited areas of alluvium near the River Liffey crossings.

The results of the preliminary ground investigation are outlined in Table 1 below.

Table 1: Geological Feature Importance within Study Area

Strata	**Depth to top of strata*** **(m BGL†)**	**Thickness*** **(m)**	**Notes**
Topsoil	0.0	0.1 – 0.5	Observed in majority of explorations
Made Ground	0.0 – 0.3	0.2 – 1.4	Observed in six locations, all close to proposed M7 Osberstown Interchange Contains traces of red brick, plastic and timer within a sandy gravelly clay matrix
Glacial Till	0.1 – 4.5	0.3 – 5.3	Brown to brown/grey sandy gravelly silty clay with low cobble count
Fluvio-glacial sand and gravel	0.1 – 8.2	0.2 -14.7	Grey silty sandy gravel and silty gravelly sand; gravel is subangular to subrounded

** Figures quoted are indicative only*

† BGL – Below Ground Level

The 1:100,000 GSI soil and subsoil maps (Sheet 16) indicate the presence of alluvial deposits along the banks of the River Liffey. Alluvial deposits are typically associated with the lower parts of a river course (i.e. low energy environment) and may comprise clay, silt, sand and gravels, as well as organic material. These deposits are characterised by high compressibility and, as such, may provide poor foundation conditions.

Alluvial deposits, in the form of loose very silty fine sand, were encountered in the region bounded by the two proposed river crossings. It should be noted that these deposits are highly variable over short distances.

5.3 Solid Geology

The 1:100,000 GSI bedrock geology map (Sheet 16) shows the overburden in this area to overlie Carboniferous limestone at depth. More specifically it is shown to overlie the Waulsortian and Rickardstown Formations, which are described as a massive unbedded limestone and a cherty often dolomitised limestone, respectively. The bedrock geology of the area is shown on Figure 15.2 of the EIS. A series of parallel faults running in a northwest-southeast direction are indicated in this region. The 1:100,000 GSI bedrock geology map (Sheet 16) indicates that rockhead is likely to be several metres below the overburden. Rock is unlikely to be removed as there are no major excavations associated with the proposed scheme.

In total, 12 no. rotary coreholes were continued from cable percussive boreholes as part of the ground investigation works. A moderately strong, thinly bedded, light grey to grey fine grained limestone was encountered in 11 no. rotary cores at 6–14.8 m Below Ground Level (BGL); bedrock was not reached in 1 no. rotary core, which was advanced to 14.5 m BGL.

Refer FIG. 15.2 Volume 3 of EIS

5.4 Summary of Geological Feature Importance

The Geological Features encountered along the proposed road development within the 250 m EIS study area are presented in Table 2 below. They have been rated in accordance with NRA Guidelines.

Importance	Feature	Criteria
High	Agricultural land: Well drained and/or highly fertile soils	Attribute has a high quality, significance or value on a local scale
Low	Made Ground: Recent site for construction and demolition wastes	Degree or extent of soil contamination is minor on a local scale

Low	Alluvial soil: Poorly drained and/or low fertility soils	Soft organic soil underlying route is small on a local scale

5.5 Hydrology

5.5.1 Water Quality

5.5.1.1 EPA Monitoring River Programme – River Liffey

The EPA carries out water quality assessments of river water quality as part of a nationwide monitoring programme. Data is collected from physico-chemical and biological surveys, sampling both river water and the benthic substrate (sediment) in contact with the water.

Water sampling is carried out throughout the year with the main parameters that are usually analysed for including: conductivity, pH, colour, alkalinity, hardness, dissolved oxygen, biochemical oxygen demand (BOD), ammonia, chloride, ortho-phosphate, oxidised nitrogen and temperature.

Biological surveys are normally carried out between the months of June and October. These look at the relationship between water quality and the relative abundance and composition of the macro-invertebrate communities in the sediment of rivers and streams. The macro-invertebrates include the aquatic stages of insects, shrimps, snails and bivalves, worms and leeches. It is generally found that the greater the diversity the better the water quality is.

The collated information relating the water quality and macro-invertebrate community composition is condensed to a numerical scale of Q-values or Biotic Index. The indices are grouped into four classes based on river's suitability for beneficial uses such as water abstraction, fishery potential, amenity value, etc. (Table 2).

Table 2: Biological river water quality classification system

Biotic Index (Q value)	Quality Status	Quality Class	Condition
Q5, Q4-5, Q4	Unpolluted	Class A	Satisfactory
Q3-4	Slightly Polluted / Eutrophic	Class B	Transitional
Q3, Q2-3	Moderately Polluted	Class C	Unsatisfactory
Q2, Q1-2, Q1	Seriously Polluted	Class D	Unsatisfactory

The EPA conducts water quality assessment for both physical-chemical and biological water quality at various locations along the River Liffey. The monitoring stations in the vicinity of the proposed scheme are as follows:

• (1100) Caragh Br

• (1200) Castlekeely Ford (RHS)

• (1400) Millicent Br

• (1500) Alexandra Br. Clane (d/s side)

The most recent EPA survey of the Liffey took place in 2010 and indicated that water quality in the area nearest Osberstown was considered moderate. The previous seven years of survey Q (Quality) ratings are indicated in Table 3.

Table 3: River Liffey Biological Quality Ratings (EPA, 2013)

Biological Quality Rating (Q Value)							
Station	Year						
	1991	1995	1998	2002	2005	2007	2010
1100	4-5	-	-	-	-	-	-
1200	3-4	3-4	2	4	4	3-4	3-4
1400	3-4	3-4	3	-	-	-	-
1500	3-4	3	3-4	4	3-4	3-4	4

5.5.1.2 Grand Canal

The Grand Canal is designated as an Artificial Water Body (AWB) by the Water Framework Directive and therefore is not subject to the same Biotic or Q Rating classification as rivers. Canals are required to achieve good ecological potential rather than ecological status. Ecological potential means that the water body is managed to achieve the biology that can be attained given its artificial nature.

The ecological potential classification system is set out by the EPA and is summarised in Table 17.5 of the EIS. For classification purposes the ecological potential can be maximum, good, moderate, poor or bad.

Table 4: Grand Canal Ecological Potential Classification (EPA, 2009 & 2010)

Ecological Potential						
Artificial Water Body (AWB)	Status					
	2004	2005	2006	2007	2008	2009
Grand Canal Main Line East of Lowtown (GCEEa)[1]	Good	Good	Good	Good	Good	Good
Grand Canal Main Line East of Lowtown (GCESe)	Good	Good	Good	Good	Good	Good
Grand Canal Main Line West of Lowtown (GCWSe)	Good	Good	Good	Good	Good	Good

[1] Section of the Grand Canal AWB that the proposed R407 Sallins Bypass will cross

5.5.2 Flooding

5.5.2.1 River Liffey

The construction of a structure within the floodplain results in the loss of an area that could have been used to store water (floodplain storage). This will result in increased flows downstream, with an increased risk of flooding.

There is a potential impact on water levels upstream of the crossing points on the River Liffey as the existing floodplain is extensive and there is potential for adverse impacts in terms of flooding to land and properties upstream. However findings from the hydraulic modelling showed that the proposed two span and three span structural crossings in combination with ground levelling in the vicinity of the structure had no significant effect on existing flood levels or the extent of flooding in the area.

In general, no negative impacts to floodplain storage are anticipated at river crossing points. The piers of the River Liffey crossing are located within the floodplain, with a negligible impact.

5.5.2.2 Osberstown Attenuation Pond

The proposed road development traverses the north western corner of the Osberstown Attenuation Pond. The attenuation pond will have to be reshaped to ensure adequate flood storage is maintained.

6 Erosion and Sediment Controls

6.1 General

The principal objectives in relation to erosion and sediment control during the earthworks operation will be:

- To keep the area exposed to the elements to an absolute minimum
- To minimise the amount of runoff from the site
- To organise the work so that it progresses from the low point towards the high point within each outfall catchment
- To have an efficient earthworks operation to ensure that fill is placed as material is removed
- To ensure that the unacceptable material is removed and placed in controlled repository areas in an efficient manner

6.2 Principal Avoidance Measures

The protection of watercourses from pollution from construction works is achieved by avoidance in the first instance. In this regard, the following measures will be implemented during the construction phase:

i. Site clearance involving topsoil stripping will progress along with the earthworks and will not be carried out over large areas in advance of the earthworks as a separate operation resulting in areas being exposed for long periods of time.

ii. There is a surplus of Topsoil generated across the scheme This will be used for the following:

   a. Landscaping attenuation/treatment ponds

   b. Habitat restoration areas within the site boundary

   Any surplus materials remaining which cannot be incorporated into the works will be disposed to a licensed landfill off-site.

iii. Haul Roads will be limited to the confines of the Land Made Available (LMA). Haul roads outside the limits of the site or permanent earthworks are not anticipated.

iv. As far as is practicable, construction works shall proceed within predetermined Construction Areas on a phased basis. These areas will be determined by the contractor during the construction phase of the project.

6.3 Principal Control Measures

6.3.1 General

The following outline the principal mitigation measures that will be prescribed for the construction phase to protect all the catchments, watercourses and ecologically protected areas. Specific measures are described in Section 7.0 of this report:

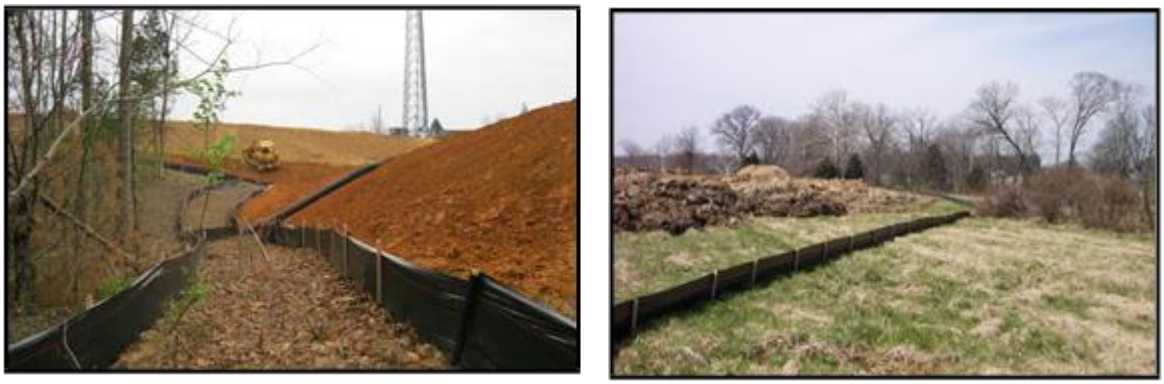
- All constructional compound areas will be required to be located on dry land and set back from river and stream channels and out of potential floodplain areas.
- The storage of oils, fuel, chemicals, hydraulic fluids, etc. will not occur with 100m of the River Liffey or Grand Canal and will be undertaken

in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005) on an impervious base within a bund and appropriately secured.

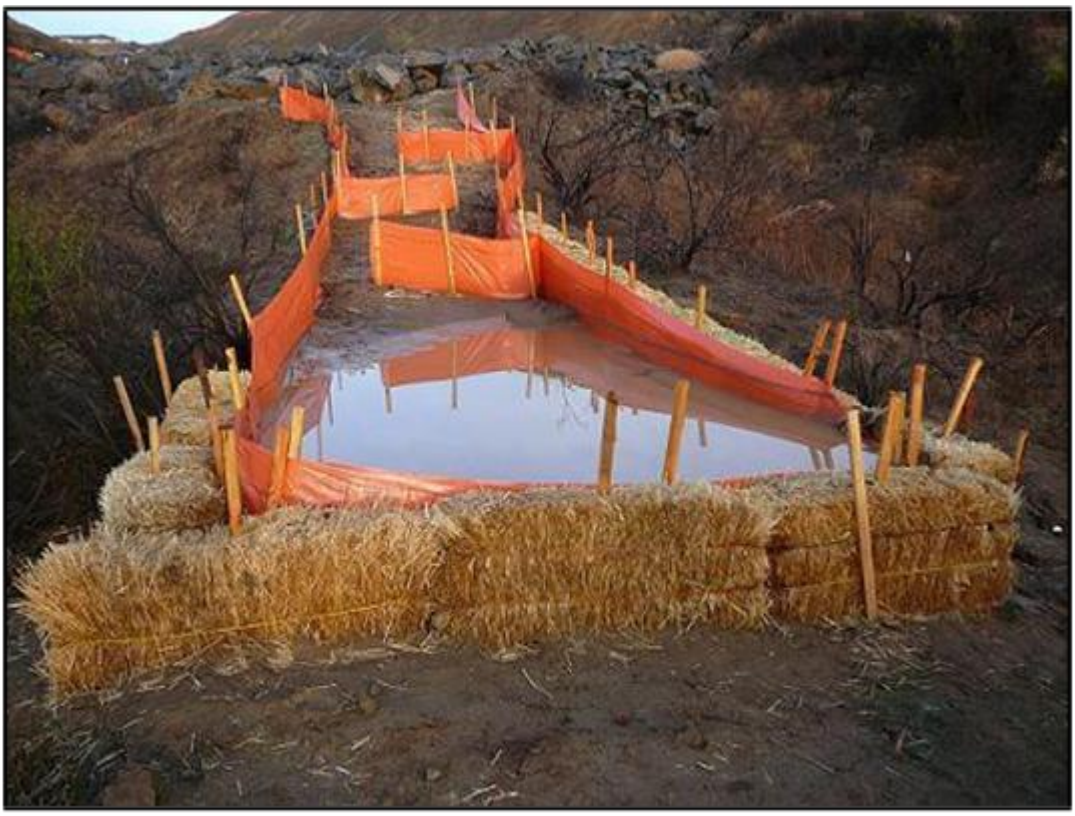
- Surface water flowing onto the construction area will be minimised through the provision of berms and diversion channels.

Photograph 1 Typical Diversion Channels in a Settlement Pond

- Management of excess material stockpiles to prevent siltation of watercourse systems through runoff during rainstorms will be undertaken. This may involve allowing the establishment of vegetation on the exposed soil and surrounding stockpiles with cut-off ditches to contain runoff.
- Where construction works are carried out alongside stream and river channels, and particularly the River Liffey and the Grand Canal, protection of such watercourses from silt load should be carried out. This will be through the use of grassed buffer areas, timber fencing with silt curtains or earthen berms so as to prevent direct runoff of waters from the construction site to watercourses. Typical examples of where silt fences would be employed adjacent to stockpiled materials and a road cutting are indicated on Photo 2 below.



Photograph 2 Typical Silt Fence Usage



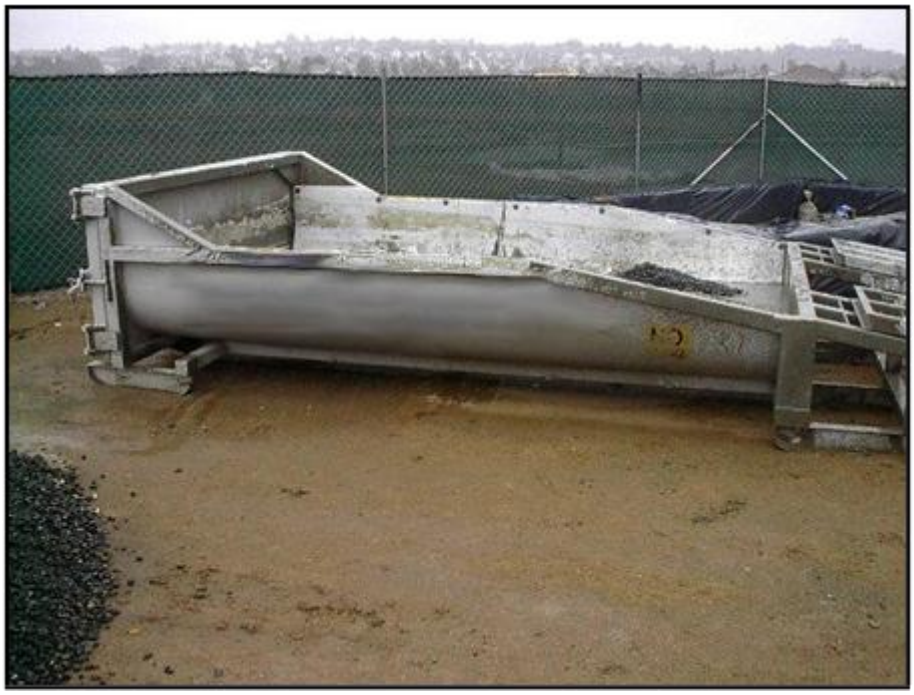
Photograph 3 Typical Silt Fence Adjacent to Road Cutting

- Use of settlement ponds, silt traps and bunds and minimising construction within watercourses. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap. Typical settlement ponds/lagoons are indicated in Photo 4 below.


Photograph 4 Typical Settlement Pond / Lagoon

- All watercourses that occur in areas of land that will be used for site compound/storage facilities will be fenced off at a minimum distance of 5 m. In addition, measures will be implemented to ensure that silt-laden or contaminated surface water runoff from the compound does not discharge directly to the watercourse. Compounds shall not be constructed in lands designated as Flood Zone A or B in accordance with the OPW Flood Risk Management Guidelines (November 2009). Compounds will not be permitted in or within 100 metres of an SAC.
- Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with recognised standards as laid out by the EPA. All chemical and fuel filling locations will be contained within bunded areas.
- Foul drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent pollution of rivers and local water supply.
- The quality of surface water discharge from the site will meet water quality targets specified to protect riparian ecosystems and protected species. Appropriate Environmental Quality Standards, namely the Surface Water Regulations 2009 will be utilised to determine specific water quality targets.
- Riparian vegetation will be fenced off to provide a buffer zone for its protection and will be specified in consultation and agreement with the Inland Fisheries Ireland and NPWS.
- Any surface water abstracted from a river for use during construction shall be through a pump fitted with a filter to prevent intake of fish.
- The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which as stated earlier has a deleterious effect on water chemistry and aquatic habitats and species. Alternate construction methods are encouraged for example, use of pre-cast concrete or permanent formwork will reduce the amount of in-situ concreting required. Where on-site batching is proposed by the contractor this activity should be carried out well away from watercourses. Washout from such mixing plant will be carried out only

in a designated contained impermeable area. A typical washout facility is indicated in Photo 5 below.



Photograph 5 Typical Washout Facility

7 Specific Mitigation Measures

7.1 Designated Areas

The crossing of Grand Canal pNHA at Ch. 1+555 will be by a clear span structure encompassing the canal and both the tow path and adjacent local road, which is designed to allow for uninterrupted continuity of the linear habitat and associated fauna. The construction area will be minimised to reduce the disturbance to the canal and associated linear features including the treeline along the northern side.

The working area will be defined at the outset of works by a robust fence which will allow for the continued unimpeded movement of fauna along the canal. Measures to avoid impacts on water quality are prescribed below in Section 7.6.

7.2 Habitats

The crossings of the River Liffey at Ch. 2+000 and Ch. 3+050 will be by bridge structures as detailed in Chapter 4 of the EIS. The design of both structures has been developed to provide a clear span across the river channel at both locations maintaining both river banks intact in order to avoid any in-stream disturbance and to maintain the riparian zone of the channels.

The principle risks of impacts arise during the construction phase. Measures of pollution control for road run-off to the River Liffey during the operation phase of

the proposed scheme include provision of vegetated treatment systems which will function as attenuation, treatment systems and containment to accommodate accidental spillage.

The construction work zones along the River Liffey shall be defined at the outset of construction using rigid timber or equivalent robust fencing. Within the site boundary fence, earth bunds shall be constructed to contain surface water run-off and channel it to a silt trap before discharge. This shall entail a mechanism for containment of runoff in the event of accidental spillage to enable clean-up and appropriate disposal through licensed facilities. The east side of the river at structure S5 can be accessed from the proposed Sallins Link Road while the east side of the river at structure S6 can be accessed from the existing R407. This means that it will only be necessary to construct one temporary crossing which will be a clear-span Bailey Bridge type structure.

The measures described below under Mitigation for Aquatic Habitats will serve to ensure that any potential impacts on the River Liffey, Grand Canal and other waterbodies from siltation or pollution during both the construction and operation phases are avoided or remedied.

7.3 Aquatic Habitats

A suitably qualified project ecologist will be employed as part of the client's representative team to ensure successful implementation of the mitigation measures.

All design, construction and operation will be carried out in accordance with Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2006), Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Murphy, 2007) and Control of water pollution from construction sites; Guidance for Consultants and Contractors (SP156) (CIRIA, 2002) in addition to the specified requirements within the EIS.

Design and construction method statements will be submitted to Inland Fisheries Ireland for approval prior to commencement of construction.

Sediment traps or settlement ponds will be provided for on all watercourses during construction. Total suspended solid levels in all waters discharging to the River Liffey system shall be in compliance with the Quality of Salmonid Water Regulations (SI 293:1988).

Where site investigation (including archaeological works) is required in the vicinity of or adjacent to the watercourses within the River Liffey system, these works will be carried out with due sensitivity and appropriate measures employed to minimise siltation.

Site compounds and soil storage areas will be located at a minimum distance of 50m from the River Liffey. All drainage from these facilities will be directed through adequately sized settlement ponds with appropriate capacity and measures to provide spill containment.

The contractor will undertake an inspection and maintenance programme of all treatment facilities during the construction phase to ensure compliance with the discharge limits.

Watercourse crossing and approach road design will incorporate best environmental practice and design in the control of road run-off and accidental spillage. All stormwater discharges will be directed through hydrocarbon interceptors.

Realignments of the Osberstown Stream will incorporate hydraulic and morphological continuity with the existing channel. Bankside protection if required will utilise natural materials only. All in-stream works will be completed during the period May to September unless otherwise agreed with IFI.

Run-off from the road during operation will be channelled through a stilling process to allow suspended solids to settle out (this may be in open ditches, ponds, hydrodynamic separators, etc.) or through some form of spill containment facility and vegetated treatment system prior to discharge to a watercourse.

The short-term storage and removal/disposal of excavated material will be planned and managed such that the risk of pollution from these activities is minimised.

Specific measures for the River Liffey outfalls include provision of vegetated treatment systems which will function as attenuation, treatment systems and containment to accommodate accidental spillage. Discharge from the system will be via a penstock or similar to enable retention of accidental spillages, into a shallow drainage channel excavated towards the river. As the channels will be shallow channels (swales) discharging at the river bank, no headwalls will be required at the river banks, thus avoiding any in-stream works or requirements for headwalls, scour protection etc. within the river.

An emergency-operating plan will be established to deal with incidents or accidents during construction that may give rise to pollution within any watercourse. This will include means of containment in the event of accidental spillage of hydrocarbons or other pollutants (including oil booms, soakage pads, etc.).

Landscaping and design in the vicinity of all watercourses will focus on the establishment of naturally occurring habitat types using native species to re-establish the linear corridor of vegetation along watercourses in accordance with A Guide to Landscape Treatments for National Road Schemes in Ireland (NRA, 2006).

Angling access will be maintained along the River Liffey and the Grand Canal.

Throughout all stages of the construction phase of the project the contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the freshwater environments and the requirement to avoid pollution of all types.

The storage of oils, hydraulic fluids, etc., will be in a bunded facility with filling and take-off points within the bunded area in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005). The bunds will be protected against accidental tank rupture and will ensure any spilled oil can be retained for subsequent disposal to an appropriate facility.

During construction, temporary, contained chemical toilet facilities will be used, which will be taken off site for emptying at a suitably licensed disposal location. Consequently, there will be no discharge of sewage to surface waters.

Adequate security measures will be put in place to prevent any acts of vandalism that may result spillage or discharge of pollutants.

The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc., will be completed in the dry to avoid pollution of the freshwater environment. As grout/cementitious materials are highly toxic to aquatic life all such works must be maintained in complete isolation of all waters and the storm water system. Wash down from delivery and concrete pumping areas will be contained and removed off site for appropriate disposal.

All machinery operating in the vicinity of watercourses will be steam-cleaned in advance of works and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken on dry land.

The risk of accidental transfer of non-native invasive species will require adherence to current best practice protocol for avoiding the spread or transfer of all invasive plants and animals in accordance with the NRA Guidelines on the Management of Noxious Weeds and Non-native plant species on National Road Schemes (2010) along with any modified or updated approaches to invasive alien species control (www.invasivespeciesireland.com).

These measures will be enforced during construction to ensure accidental spread does not occur on machinery or materials from / to the site. The developers will also adopt any modified or updated approaches to invasive alien species control.

For terrestrial habitats, the principle mitigation will be the minimisation of impacts during the construction phase coupled with the design of the landscaping associated with the proposed scheme. In the vicinity of trees and other woody vegetation to be retained, protection will be afforded in accordance with BS 5837:2012 (Trees in relation to design, demolition and construction – Recommendations). Landscape design will utilise a native suite of trees and shrubs in accordance with A Guide to Landscape Treatments for National Road Schemes in Ireland (NRA, 2006).

7.4 Fauna

7.4.1 Otter

Mitigation requirements for otter require the provision of safe passage along all watercourses crossed by the proposed scheme. This will be achieved by the incorporation of a suitable mammal passage facility in conjunction with otter proof fencing along the road network to prevent animals from accessing the carriageway. The specification for otter passage and fencing design will be in accordance with the Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2007). The maintenance of water quality is covered in Section 7.1 above.

7.4.2 Freshwater Crayfish and Brook Lamprey

Mitigation requirements for freshwater crayfish and brook lamprey similarly entail maintenance of good water quality as detailed in Section 7.1 above. Marginal aquatic vegetation is of particular importance to crayfish and the

requirement for the maintenance and development of this habitat listed above equally applies. Provision for the salvage of crayfish and lamprey from the Osberstown Stream and attenuation pond edge at Osberstown where impacted, should be made at the outset of works. This task should be undertaken by appropriately experienced personnel under license from the NPWS.

7.4.3 Badger

The provision of otter passage along all watercourses may also facilitate badger movement across the proposed scheme. However, the detailed design of measures should be in accordance with the specifications as outlined Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Scheme (NRA, Rev.2006).

7.4.4 Other Mammals

Measures detailed for otter, bats and badger above will serve to mitigate against impacts for other mammals species also.

7.5 Construction Phase Mitigation

Prior to construction this Environmental Operating Plan (EOP) will need to be prepared by the Contractor. The following will be implemented as part of the EOP:

- An Incident Response Plan detailing the procedures to be undertaken in the event of a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident with any permit of license issues. The Plan should also address flood risks.
- Ensure staff are trained in the implementation of the Incident Response Plan and the use of any spill control equipment as necessary
- Prepare a Water Quality Management Plan (please see below for further details) to ensure compliance with current environmental quality standards (EQSs) specified by legislation
- Prepare method statements for the control, treatment and disposal of potentially contaminated surface water
- Inform the relevant fisheries board of all in-stream construction work scheduled to take place
- Obtain all necessary permits and licences for in-stream construction work and culverting from Kildare County Council, the OPW and the NPWS
- Prepare a site plan showing the location of all surface water drainage lines and proposed discharge points to surface water. This will also include the location of all existing and proposed surface water protection measures, including monitoring points, sediment traps, settling basins, interceptors etc.

Dewatering and surface water runoff discharges on the site, during construction and prior to completion will be controlled and discharged to the existing surface water network at agreed rates of flow in consultation with Kildare County Council. All necessary facilities will be incorporated (settlement tanks/ponds/oil/grit interceptors) to ensure that only clean surface water is discharged (to meet the relevant standards) to the surface watercourses.

In addition, pollution of aquatic systems during the construction phase will be reduced by the implementation of the following best practice mitigation measures. Due cognisance is paid to the following guidance documents for construction work on, over or near water:

- Eastern Regional Fisheries Board for use by all Regional Fisheries Boards - Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites
- Central Fisheries Board – Channels and Challenges, The Enhancement of Salmonid Rivers
- CIRIA – Guideline Document C532 Control of Water Pollution from Construction Sites, Guidance for consultants and contactors
- CIRIA – Guideline Document C648 Control of Water Pollution from Linear Construction Projects
- CIRIA – Guideline Document C697 The SUDS Manual
- CIRIA – Guideline Document C624 Development and flood risk – guidance for the construction industry
- UK Environment Agency – PPG5 Pollution Prevention Guidelines Works and Maintenance in or near Water

Based on these guidance documents the following mitigation measures are prescribed for the construction phase to protect all the catchments, watercourses and ecologically protected areas with which the proposed scheme interacts (traversing catchments, watercourse crossings and discharging to):

- Use of settlement ponds, silt traps and bunds and minimising construction within watercourses
- Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap.
- Management of excess material stockpiles to prevent siltation of watercourse systems through runoff during rainstorms will be undertaken. This may involve allowing the establishment of vegetation on the exposed soil and surrounding stockpiles with cut-off ditches to contain runoff.
- All land drains and streams that occur in areas of land that will be used for site compound/storage facilities will be fenced off at a minimum distance of 5 m. In addition, measures will be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to the watercourse.
- Site compounds and storage facilities will be located at a minimum distance of 50 m from the River Liffey watercourse.

- Surface water flowing onto the construction area will be minimised through the provision of berms and diversion channels.
- Any surface water abstracted from a river for use during construction shall be through a pump fitted with a filter to prevent intake of fish.
- All chemical and fuel fill points and hoses will be contained within bunded areas.
- Foul drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent pollution of rivers and local watercourses in accordance with the relevant statutory regulations.
- Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with recognised standards as laid out by the EPA.
- Routine monitoring of water quality will be carried out at appropriate locations during construction. Parameters to be monitored will include pH, Total Suspended Solids (TSS), BOD and COD. In addition, biological monitoring (Q value assessment) will be carried out.
- The quality of surface water discharge from the site will meet water quality targets specified to protect riparian ecosystems and protected species.
- Appropriate current Environmental Quality Standards specified by legislation will be utilised to determine specific water quality targets for each catchment.
- Riparian vegetation will be fenced off to provide a buffer zone for its protection and will be specified in consultation and agreement with the appropriate Fisheries Board and NPWS.

Particular risks are posed to water quality when construction is taking place over or near surface waters. As previously mentioned, concrete and cementitious compounds have a deleterious effect on water chemistry and aquatic habitats and species. Due to the sensitivity of all of the receiving surface waters in the study area, alternative construction methods shall be investigated if work in or in close proximity to the water is necessary. For example, use of pre-cast or permanent formwork will reduce the amount of in-situ concreting required. Ready-mix suppliers will be used in preference to on-site batching.

For any construction work within or directly adjacent to the water the following mitigation measures will apply:

- Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used, to promote the early set of concrete surface exposed to water. When working in or near the surface water and the application in situ cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be considered.
- Where concrete is to be placed under water it will be designed to provide a cohesive mix to limit segregation and washout of fine material.This will be achieved by having either a higher than normal

fines content, a higher cement content or the use of chemical admixtures.

- Underwater concrete will be placed within the confines of a cofferdam or caisson. Normally, the forms of the construction works will be provided by pre-cast sections or sheetpiles. In either case, it is essential to seal joints securely and to engage clutches on sheetpiles properly to prevent fine particles polluting the watercourse.
- Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters.
- Any river re-alignment work will be undertaken in consultation and with the agreement of the appropriate regional fisheries board.

Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses. The following construction mitigation measures will be utilised to control concrete and cementitious material wash down water interaction with surface water:

- All batching and mixing activities will be located in areas well away from watercourses and drains.
- Surface water drainage around the batching plant will be controlled via the provision of perimeter bunding with runoff diverted to appropriate treatment facilities.
- There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials.
- Washout from mixing plant of concrete lorries will be carried out in a designated, contained impermeable area.

7.6 Proposed Water Quality Monitoring

Water Quality Monitoring will be required prior to, during and post construction. The monitoring team will report findings to the relevant local authorities.
Baseline sampling shall commence a minimum of six months prior to construction and conclude a minimum of three months after full operation has commenced to assess potential residual impact. The road authority will make recommendations regarding all the water quality parameters to assess and the sampling periods.

However as a minimum requirement there will be monthly water quality analysis from a minimum of one upstream and one downstream sampling point at each construction water outfall and surface water crossing point. The following water quality parameters shall be analysed for regularly (monthly) throughout the construction phase:

- Temperature
- pH
- Electrical Conductivity
- Turbidity/Transparency

- Biological Oxygen Demand
- Chemical Oxygen Demand
- Total Hardness
- Total Suspended Solids
- Total Dissolved Solids
- Nitrate
- Nitrite
- Ammoniacal Nitrogen
- Orthophosphate
- Polycyclic Aromatic Hydrocarbons (ICES 16)
- Petroleum Range Hydrocarbons
- Diesel Range Hydrocarbons
- Dissolved Metals (Al, Cd, Cu, Fe, Pb, Zn)
- Chlorophyll
- Total Coliforms
- Faecal Coliforms (E.coli)

The monitoring regime shall include visual monitoring of the surface water network for visible signs of construction impact e.g. riparian vegetation loss or river borne sediment plumes as well as submitting samples to a certified laboratory for physico-chemical testing. The monitoring team will compare results with current Environmental Quality Standards (EQSs) arising from the water quality standards (Surface Water Regulations 2009) and the monthly meteorological conditions. Monthly monitoring data will be compared with the Maximum Allowable Concentration EQS (MAC-EQS) specified by the 2009 Regulations.

Should any water quality parameter MAC-EQS be exceeded, further monitoring will be required to determine efficiency of the construction pollution control mechanisms for that catchment and to determine if an alternative source had an influence on the receiving water quality. The Water Quality Management Plan will outline construction procedures (including alternative water treatment mechanisms) should an EQS be breached as a result of the proposed scheme construction.

7.7 Operation Phase

All rainfall runoff will be prevented from discharging directly to the receiving surface waters by the proposed road sustainable drainage system. Road runoff will only outfall to receiving surface waters at specified outfall locations.

Catchment sizes will be conserved as far as practicable by minimising diversion of sub-catchment runoff from one watercourse into another. As outlined in Chapter 4 of the EIS, the proposed sustainable drainage system incorporates a

range of appropriate pollution control mechanisms to prevent pollutants from entering the receiving watercourses. All outfalls are designed to prevent impact to river morphology and surface water flow hydrodynamics. The installation of emergency spill containment facilities will mitigate against any potential adverse impacts to the receiving surface waters arising from an accidental spillage associated with road haulage along the proposed road development.

The proposed drainage attenuation system will be sized to accommodate any potential increase in surface water runoff and accommodate increased rainfall during storm events up to the 30 year return period storm. For ponds designed in flood prone areas this design is increased to cater for storm events up to the 100 year return period storm.

All culverts and bridges are designed to prevent impact to river morphology and to prevent impoundment or alteration of surface water flow hydrodynamics. For further information on the design of the proposed new bridges please refer to Chapter 4 of the EIS. All culverts and bridges are also designed to allow for both aquatic and mammalian species migration, and to maintain the existing river bed as far as possible, in accordance with "Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes," NRA, 2008. Culverts and bridges will be sized in accordance with the requirements of the Arterial Drainage Act, Section 50 consent by the OPW. This will allow conveyance of surface water flow and maintain the hydraulic capacity of surface water features.

The current proposal for flood mitigation measures in the River Liffey area consist of a two span structure at the southern crossing and a three span structure at the northern crossing. These measures will ensure that there will be negligible increase to upstream or downstream water levels and flood risk from the proposed road development.

All watercourse re-alignment work will create new channels that will be designed to achieve maximum ecological benefits and improve on the existing hydrological environment.

There will be no use of persistent herbicides, pesticides or artificial fertilisers in any landscaping or subsequent maintenance within 2 m of a watercourse. If a further distance is specified on the label of the particular herbicide or pesticide to be used that specified distance shall be maintained. Applications of herbicides or pesticides shall be in accordance with manufacturer's recommendations. In particular such applications shall be confined to periods when the vegetation is not wet from rainfall or dew within a zone of 10 m from any watercourse or groundwater abstraction. Applications of herbicides or pesticides should be postponed if significant rainfall is forecast within 48 hours. .

8 Monitoring and Audit

8.1 Introduction

This erosion and sediment control plan will be developed by the contractor into the Construction Erosion and Sediment Control Plan (CESCP) and will form part of the Environmental Operating Plan (EOP). The EOP shall be prepared in accordance with the NRA's Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan.

While the final details of the CESCP will require agreement with the NPWS and IFI, the minimum requirements of same shall include all of the controls, measures, mitigations and monitoring described in this document. The monitoring of all aspects of the EOP, including the CESCP, will be carried out by the contractor as the responsible party. The responsibilities of the Employer will be discharged by the Employer's Site Representative staff.

8.2 Monitoring and Audit

8.2.1 General

The avoidance, control and mitigation measures outlined in this document will ensure that erosion and sediment arising from the works is controlled. They have been developed in accordance with best practice, in consultation with environmental organisations including NPWS and IFI, and have been shown to work on other projects. As with all systems, there is a requirement to have monitoring, audit and feedback loops to demonstrate the operation of the system. The following describes the framework pre-construction monitoring and construction monitoring regime.

8.2.2 Pre-Construction

Permanent continuous monitoring for Turbidity will commence 6 months in advance of construction and will continue through to completion of same. Monitors will be placed on the watercourses as following consultation with IFI and NPWS. In addition, the suspended solids concentration in the watercourses will be measured at each location on a weekly basis.

This monitoring will be reviewed on an on-going basis during construction; should investigatory levels (a breach of the limits set out in the second schedule to the European Communities (Quality of Salmonid Waters) Regulations, 1988, measured at the point of discharge to the nearest watercourse) be reached then corrective action shall be taken.

8.2.3 Construction Stage

The pre-construction monitors (Turbidity) will continue to be operated.

8.2.4 Contractor

The procedures and monitoring and audit regime outlined in this section shall be used by the contractor to ensure and demonstrate the effective operation of the avoidance, control and mitigation measures for Erosion and Sediment control. It will facilitate use as a feedback loop to target any issues that may arise.

8.2.5 Site Environmental Manager (SEM)

In order to help ensure the successful development, implementation and maintenance of the EOP, it is recommended that the main contractor appoint a site Environmental Manager.

The Environmental Manager should possess sufficient training, experience and knowledge appropriate to the nature of the task to be undertaken, a Level Eight qualification recognised by the Higher Education and Training Awards Council (HETAC), or a University equivalent, or other qualification acceptable to the Employer, in Environmental Science or Environmental Management, or other subject acceptable to the Employer.

Separate from the on-going and detailed monitoring carried out by the contractor as part of the EOP; the SEM shall carry out the inspection/ monitoring regime described below on behalf of the employer. The results will be stored in the SEM's Monitoring file and will be available for inspection/ audit by the Client, NPWS or IFI staff. All inspections/ monitoring/ results will be recorded on standard forms.

i. Inspect the Principal Control Measures outlined in this plan on a weekly basis. Report findings to the Contractor

ii. Inspect surface water treatment measures (ponds, tanks, mini-dams, sandbags, etc.) on a daily basis and obtain turbidity readings

iii. Inspect all outfalls to watercourses on a daily basis and obtain turbidity readings. Where excavation, deposition, pumping out or concreting works are on-going in the vicinity obtain turbidity readings three times per day

iv. Daily visual inspection of watercourses to which there is a discharge from the works and those where there is construction works in the vicinity

v. Wheel wash facilities shall be inspected on a weekly basis

vi. Borrow Pits shall be inspected on a daily basis while in operation and on a weekly basis thereafter.

vii. Spoil Repositories shall be inspected on a daily basis while in operation and on a weekly basis thereafter.

viii. Stockpiles shall be monitored on a daily basis while being filled or emptied and otherwise on a weekly basis.

ix. Control measures for works at or near water bodies shall be inspected on a daily basis.

x. Concrete operations at or near watercourses shall be supervised and designated chute washing out facilities shall be inspected on a daily basis.

xi. Site Compounds and satellite compounds shall be inspected on a weekly basis.

xii. The Contractor's EOP monitoring results shall be audited on a frequent basis (6 times per quarter at a minimum).

xiii. Any and all exceedance of the investigatory level for turbidity shall be reported to the NPWS and IFI and shall be investigated thoroughly by the SEM and the Contractor. Where the works are identified as the source causing the exceedance, the procedure outlined in Item "n(i) to n(iv)" below shall be followed.

xiv. Any direct release of sediment to a watercourse causing plumes or exceedance of the turbidity investigatory levels shall result in:

(a) the relevant NPWS and IFI staff being notified immediately

(b) the contractor will be required to take immediate action and to implement measures to ensure that such discharges do not re-occur

(c) Works if stopped shall not recommence until appropriate corrective measures to avoid any repetition are put in place. Such measures shall be agreed with the SEM following consultation with the NPWS and IFI.

(d) Works and/ or discharges from the works shall not recommence until written consent is received from the SEM.

xv. Where the SEM considers that the risk of a sediment release is high, he/she shall inform the contractor and request protective action to be taken. Where the contractor does not take immediate action the SEM shall instruct the contractor to take action and same shall be reported to the Contract Manager and the Client.

xvi. The SEM will be delegated powers under the contract sufficient for these instructions to be issued and for an instruction.

9 Emergency Procedures

9.1 Introduction

Prior to commencing works, the Contractor shall prepare an Incident Response Plan based on a thorough risk assessment. The plan shall detail the procedures to be undertaken in the event of the release of any sediment into a watercourse, serious spillage of chemical, fuel or other hazardous wastes (e.g. concrete), non-compliance incident with any permit or license, or other such risks that could lead to a pollution incident, including flood risks.

9.2 Resources

Relevant staff, including cover staff, shall be trained in the implementation of the Incident Response Plan and the use of any spill kit/ control equipment as necessary. The contractor shall provide a list of all such staff to the Employer's

Site Representative detailing the name, contact number, and training received, and the date of that training.

The Contractor shall provide a full list, including the exact locations, of all pollution control plant and equipment to the Employer's Site Representative. All such plant and equipment shall be maintained in place and in working order for the duration of the works.

9.3 Spill Response

The Incident Response Plan shall include a simplified Spill Response with the following as a minimum:

i. Instruction to stop work

ii. Instruction to contain the spill

iii. Details of spill clean-up material location

iv. Name and contact details of responsible staff

v. Measures particular to the location and the activity

vi. Instruction to contact the SEM (including Name and Contact Details)

This Spill Response shall be displayed at several locations throughout the site and at all sensitive locations.

The SEM shall decide on whether or not the NPWS/ IFI should be notified and shall also determine if and when works may proceed once corrective actions have been completed.

9.4 References

Control of water pollution from linear road projects: CIRIA (C648)

Guidelines for the Crossing of Watercourses during the Construction of Road Projects: National Roads Authority (2006)

Preliminary Design Report – M7 Osberstown Interchange & R407 Sallins Bypass – M7 Osberstown Interchange & R407 Sallins Bypass Project

NRA Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan: National Roads Authority (2007)

M7 Osberstown Interchange & R407 Sallins Bypass EIS: Arup, Kildare County Council and various sub-consultants

Other EISs for similar projects

Appendix C

Incident Response Plan

Kildare County Council

M7 Osberstown Interchange and R407 Sallins Bypass

Incident Response Plan

REP/024

Issue 1 | 30 May 2014

Job number 227136-00

Ove Arup & Partners Ireland Ltd

Arup
15 Oliver Plunkett Street
Cork
Ireland
www.arup.com

ARUP

Document Verification

ARUP

Job title		M7 Osberstown Interchange and R407 Sallins Bypass			**Job number** 227136-00
Document title		Incident Response Plan			**File reference**
Document ref		REP/024			
Revision	**Date**	**Filename**	227136_IncidentReponsePlan.docx		
Draft 1	4 Apr 2014	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Eileen McCarthy	Eileen McCarthy
		Signature			
Issue 1	30 May 2014	**Filename**			
		Description			
			Prepared by	Checked by	Approved by
		Name	Niamh O'Regan	Eileen McCarthy	Eileen McCarthy
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

1 Introduction

This document describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and suitable for particular circumstances. This document has been developed to provide the information that each employee may need to respond to an emergency and to handle the emergency effectively.

2 Objective of Plan

The primary objective of this document is to:

- Ensure the health and safety of workers and visitors along the site
- Minimise any impacts to the environment and ensure protection of the water quality and the aquatic species dependent on it
- Protect property and operations at the proposed site to minimise the impact on the business continuity
- Establish procedures that enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss and reduces the potential for affecting health, property, and the environment

3 Responsibility

It is the responsibility of the Environmental Manager to maintain and change this Incident Response Plan (IRP) as required.

This Incident Response Plan will be reviewed on an on-going basis and immediately amended, as necessary, when one or more of the following occur:

- Applicable regulations are revised
- The Plan fails in an emergency
- The project changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for impacts on the environment, workers or visitors to the site (users of the river)
- Amendments are required by a regulatory authority

4 Other Plans

Kildare County Council has a Major Emergency Plan prepared in accordance with the Government's Major Emergency Management Framework available at:

http://kildare.ie/CountyCouncil/FireService/EmergencyPlanning/

The plan details the initial contact that should be made in case of an emergency incident as well as those responsible for following up once an emergency event is declared.

5 Incident Response Plan

Name & Address of Company: The Client for this project is Kildare County Council, Aras Chill Dara, Naas, Co.Kildare **Site Location:** North of Naas, interchange located to the south-west of Sallins, before the R407 Sallins Bypass runs northward on the western side of Sallins, crossing the Dublin-Cork railway line, the Grand Canal and the River Liffey in two locations before tying into the existing Clane Road to the north of Sallins town.	**Link to Map:** See Appendix A

Overview of the activities on site:

The proposed scheme comprises the following major elements;

- A grade separated dumb-bell interchange connecting the M7 Motorway with the proposed R407 Sallins Bypass and with the L3012 Western Distributor Road
- R407 Sallins Bypass: dual carriageway road section, 1.7 km in length, from the proposed M7 Osberstown Interchange to the proposed Sallins Link Road Roundabout
- R407 Sallins Bypass: a single carriageway cross-section of length 1.85 km from the proposed Sallins Link Road Roundabout to the proposed R407 roundabout north of Sallins
- A new at-grade roundabout junction on the R407 Clane Road north of Sallins town connecting to the proposed bypass
- The Sallins Link Road, a single carriageway cross-section, from the proposed Sallins Link Road Roundabout to the Millbank / Sallins Road Junction, 1.2 km in length
- Upgrading the existing traffic signal junction control at Millbank / Sallins Road Junction
- The proposed scheme also includes the requirement for the following structures:
    - Osberstown Road Overbridge
    - Sallins Bypass Railway Bridge
    - Grand Canal Underbridge
    - 2 River Liffey Underbridges
    - Sallins Link Road Culvert
- Demolition of an existing M7 accommodation overbridge and a dwelling on the Canal Road
- Associated earthworks, realignment of existing roads, construction of accommodation tracks and ancillary works
-

Description of the scheme and surrounding area:

The grade separated junction, the M7 Osberstown Interchange, will be located between the existing M7 Maudlins and Newhall Interchanges, north and south of Naas respectively. The typical dumbbell interchange will connect to the R407 Sallins Bypass to the north and the existing local and regional road network to the south.

The R407 Sallins Bypass will be located to the west of Sallins town commencing at the proposed M7 Osberstown Interchange and tying into the existing R407 Clane Road to the north of Sallins town. The bypass will proceed in a north easterly direction from the M7 Osberstown Interchange and will cross under the Dublin to Cork railway line, cross over the Grand Canal, and cross over the River Liffey at two locations before tying into the existing R407 Clane Road. The bypass will be approximately 3.6km in length. Cyclist and pedestrian facilities are proposed on the R407 Sallins Bypass between the railway crossing and the tie-in at the existing R407 Clane Road.

There are two link roads proposed as part of the proposed scheme. The Sallins Link Road will connect the R407 Sallins Bypass to the centre of Sallins town and the Distributor Link Road will connect the M7 Osberstown Interchange to the Western Distributor Road. Provisions for cyclists and pedestrians will be made in both directions on the Sallins Link Road.

Appendix A

Proposed Scheme

A1

FOR INFORMATION

Notes:

1. This Drawing is only to be used for the Design Element identified in the title box. All other information shown on the drawing is to be considered indicative only.
2. These drawings are to be read in conjunction with all other relevant design drawings.

Legend:

- CPO Line
- Proposed Alignment Plan Layout
- Proposed Road Lighting

Naas Stream
M7 Oberstown Interchange
Dublin to Cork Railway Line
Grand Canal
Sallins Link Road Roundabout
Distributor Link Road
Osberstown Stream
River Liffey
Realigned Osberstown Road
R407 Sallins Bypass
Single Carriageway
Dual Carriageway
R407 Sallins Bypass
Western Distributor Road
Sallins Link Road
Canal Road
Clane Road Roundabout
R407 Clane Road
Sallins Road
Monread Road
Main Street (R407 Sallins Road)

Issue	Date	By	Chkd	Appd
-	Dec 2013	KJ	SOS	EMC

Kildare County Council
Comhairle Contae Chill Dara

Naas Town Council
Comhairle Baile an Náis

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

NDP
NATIONAL DEVELOPMENT PLAN

Job Title
M7 Osberstown Interchange & R407 Sallins Bypass EIS

Scale at A3 1:10.000

Date: December 2013

Consultant
ARUP
Arup, 50 Ringsend Road
Dublin 4
Tel +353(0)1 233 4455 Fax +353(0)1 668 3169
www.arup.ie

Drawing Title
Proposed Scheme Layout

Drawing Status
For Information

Job No	Drawing No	Issue
227136-00	**Figure 1.2**	**-**

Do not scale

Appendix D

Schedule of Commitments

Kildare County Council

M7 Osberstown Interchange & R407 Sallins Bypass Scheme 2013

Schedule of Commitments
22 May 2014

Kildare County Council
Áras Chill Dara,
Devoy Park,
Naas,
Co. Kildare

Tel: 045-980200 **Fax: 045-980240**