

A5 Western Transport

Draft Construction Environmental Management Plan (CEMP)

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Produced for



Roads Service Western Division



Prepared by

Project Office:
Mouchel
Shorefield House
30 Kinnegar Drive
Holywood
County Down
Northern Ireland
BT18 9JQ

T 028 9042 4117

F 028 9042 7039

E stuart.ireland@mouchel.com

Contents

| | | |
|----------|--|----------|
| 1 | Introduction | 1 |
| 1.1 | Project Summary | 1 |
| 1.2 | Purpose of this Document | 1 |
| 1.3 | Scope of the Construction Environmental Management Plan (CEMP) | 1 |
| 1.4 | Structure of the CEMP | 1 |
| 1.5 | Roles and Responsibilities | 2 |
| 2 | Training and Induction..... | 5 |
| 2.1 | Site Induction..... | 5 |
| 2.2 | Specific Training and Awareness Raising | 5 |
| 3 | Consultation and Communication | 6 |
| 3.1 | Statutory and Non-Statutory Bodies | 6 |
| 3.2 | Public..... | 6 |
| 3.3 | Statutory Consents, Licences and Permits | 6 |
| 3.4 | Environmental Alerts | 6 |
| 3.5 | Meetings and Records | 6 |
| 4 | Environmental Impacts and Mitigation | 7 |
| 5 | Pollution Control and Contingency Plan | 8 |
| 5.1 | Surface Water Run-off, Groundwater and Silt..... | 8 |
| 5.2 | Fuel, Oil and Chemical Spillage | 8 |

| | | |
|-----------|---|-----------|
| 5.3 | Concrete/Mortar Washout | 8 |
| 5.4 | Material Storage | 9 |
| 5.5 | Emergency Procedures..... | 9 |
| 6 | Environmental Performance Management | 10 |
| 6.1 | Environmental Risk Register | 10 |
| 6.2 | Consents and Exemptions | 10 |
| 6.3 | Method Statements and Risk Assessments..... | 10 |
| 6.4 | Inspections | 10 |
| 6.5 | Auditing | 10 |
| 6.6 | CEMP Review Programme | 10 |
| 6.7 | Environmental Complaints | 10 |
| 6.8 | Notices of Non-Conformance | 11 |
| 6.9 | Complaints Handling | 11 |
| 6.10 | Key Performance Indicators and Objectives | 11 |
| | Annex 1: Environmental Advice Notes..... | 12 |
| Annex 1.5 | EAN 005 Environmental Consents..... | 23 |
| | Annex 2: Construction Procedures | 25 |
| | Annex 3: Site Access Locations | 38 |
| | Annex 4: Traffic Management..... | 47 |

Glossary of Terms and Abbreviations

| | |
|---------|--|
| A5WTC | A5 Western Transport Corridor |
| CEMP | Construction Environmental Management Plan |
| CEEQUAL | The Civil Engineering Environmental Assessment and Awards Scheme |
| COSHH | The Control of Substances Hazardous to Health Regulations |
| DRD | The Department for Regional Development |
| ECoW | Ecological Clerk of Works |
| EM | Environmental Manager |
| ES | Environmental Statement |
| HSEQ | Health, Safety, Environment and Quality Management |
| MER | Management Environmental Representative |
| NIEA | Northern Ireland Environment Agency |
| PMP | Project Management Plan |
| SWMP | Site Waste Management Plan |

1 Introduction

1.1 Project Summary

The Department for Regional Development (DRD) Roads Service is proposing improvements to the A5 Western Transport Corridor (A5WTC). The proposals include the construction of 85km of new build road at dual carriageway standard.

The scheme has been divided into three sections for the purposes of delivery, each subject to a separate construction contract.

1.2 Purpose of this Document

Each contractor is required to develop and implement a Construction Environmental Management Plan (CEMP) to help ensure that construction activities are planned and managed in accordance with the environmental requirements identified within the Environmental Statement (ES).

It is anticipated that the contractors use this document as the template for their individual CEMP.

Further details specific to the works being undertaken under each of the three construction contracts will be worked up by the Contractors into their CEMP as the scheme progresses.

1.3 Scope of the Construction Environmental Management Plan (CEMP)

This document provides a summary of the generic principles applicable to all three contracts and provides guidance on a consistent approach to ensure that the requirements of the ES are incorporated in the CEMP and within method statements prepared by each of the three Contractors.

The CEMP will document the Contractors' plans to ensure compliance with their legal and contractual obligations as well as implement best practice in construction environmental management.

The CEMP will be applicable to all works associated with the A5WTC scheme including those carried out by sub-contractors.

1.4 Structure of the CEMP

The structure of this guidance document mirrors that anticipated for the section CEMP to be prepared by each of the three Contractors. The contents can be summarised as follows:

- Chapter 1 - Introduction
- Chapter 2 - Training and Induction
- Chapter 3 - Consultation and Communication
- Chapter 4 - Environmental Impacts and Mitigation

- Chapter 5 - Pollution Control and Contingency Plan
- Chapter 6 - Auditing and Monitoring of Environmental Performance
- Annex 1 – Environmental Advice Notes
- Annex 2 – Construction Procedures
- Annex 3 – Construction Information

1.5 Roles and Responsibilities

The Contractor is responsible to ensure that all members of the Project Team, including sub-contractors comply with the procedures set out in the CEMP. The Contractor will ensure that all persons working on site are provided with sufficient training, supervision and instruction to fulfill this requirement.

The Contractor will ensure that all persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

The principal environmental responsibilities for key staff can be identified as follows:

1.5.1 *Site Manager*

The Site Manager's environmental management responsibilities include but are not limited to:

- preparation and implementation of the CEMP;
- close liaison with the Environmental Manager to ensure adequate resources are made available for implementation of the CEMP;
- ensuring that the risk assessments for control of substances hazardous to health regulations (COSHH), noise and environmental risk are prepared and effectively monitored, reviewed and communicated on site; and
- managing the preparation and implementation of method statements. Ensuring that the Environmental Manager reviews all method statements and that relevant environmental protocols are incorporated and appended.

1.5.2 *Environmental Manager (EM)*

The responsibilities of Environmental Manager include but are not limited to:

- maintaining environmental records;
- providing guidance for the site team in dealing with environmental matters, including legal and statutory requirements affecting the works;
- reviewing environmental management content of method statements;
- reporting environmental performance to the Site Manager;
- liaison with statutory and non statutory bodies and third parties with an environmental interest in the scheme; and

- collection and collation of CEEQUAL evidence.

1.5.3 *Engineering Staff*

The engineers' environmental management responsibilities include but are not limited to:

- reporting any operations and conditions that deviate from the CEMP to the Site Manager;
- taking an active part in site safety and environmental meetings; and
- ensuring awareness of the contents of method statements, plans, supervisors' meetings or any other meetings that concern the environmental management of the site.

1.5.4 *Supervisors*

The supervisors' environmental management responsibilities include but are not limited to:

- ensuring all personnel affected by a method statement are briefed and fully understand its content. Monitor operatives for compliance, including sub-contract operatives;
- implementation of environmental management activities required by the CEMP and works method statements; and
- ensuring that all inspections are carried out as prescribed in the CEMP.

1.5.5 *Ecological Clerk of Works (ECoW) (part of the Client's supervisory site staff)*

The ECoW will be on site when required to monitor work to ensure that no wildlife comes to harm and also to provide advice to site workers regarding best practices. ECoW duties include, but are not limited to:

- monitoring site works;
- provision of status reports and updates;
- provision of advice to and liaison with workers on site;
- identifying environmental risks and developing environmental controls;
- delivery of environmental training for site personnel and sub-contractors; and
- liaison with the Site Manager.

1.5.6 *Archaeologist*

The Archaeologist will be on site when required to monitor excavation works and also to provide advice to site workers regarding best practices. The archaeologist's duties include but are not limited to:

- completion of mitigation works; in the form of targeted trial trenching, archaeological excavation and watching briefs, as required;

- production of detailed method statements to define how archaeological mitigation is sequenced with earthworks operations;
- certification of cleared areas prior to commencement of construction works;
- agreeing areas for topsoil strip or the use of toothless buckets;
- ensuring that all scheduled state care monuments and other known archaeological features requiring protection are demarcated with protective fencing and adequate signage;
- provision of induction training to site teams on archaeological controls;
- providing instructions to the site teams on how and when to access expert advice and opinions; and
- examination of incidental or unexpected finds; and agreeing programmes with the Site Manager for investigation and recording of the archaeological remains.

2 Training and Induction

2.1 Site Induction

All personnel involved in the Scheme will receive environmental awareness training. The environmental training and awareness procedure will ensure that staff are familiar with the principles of the CEMP, the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

2.2 Specific Training and Awareness Raising

A project specific training plan that identifies the competency requirements for all personnel allocated with environmental responsibilities will be produced by the Contractor.

Training will be provided by the Contractor to ensure that all persons working on site have a practical understanding of environmental issues and management requirements prior to commencing activities.

A register of completed training is to be kept by the Environmental Manager.

The Site Manager will ensure that environmental emergency plans are drawn up and the Environmental Manager will conduct regular checks to ensure that the plan is effective by means of emergency drills.

3 Consultation and Communication

3.1 Statutory and Non-Statutory Bodies

During the construction works, communication will be required with external parties such as, statutory authorities, interest groups and the public. Communication may take the form of scheduled meetings, site visits and written correspondence.

3.2 Public

The Site Manager shall ensure that the public is kept informed of operations that may have an effect upon them. This may involve letter drops and meetings to keep local residents up to date with progress with the scheme and any new operations that are to be carried out. The Site Manager will provide details of contacts within the project team for the public to contact should any issues arise.

3.3 Statutory Consents, Licences and Permits

The provisions for controlling, pumping and discharging water will be agreed with the Northern Ireland Environment Agency (NIEA). The Contractor will ensure that any licences required are in place prior to works commencing.

3.4 Environmental Alerts

Legislative changes or proposed improvements to manage processes on site that have a bearing on the commitments given in the Environmental Statement or other consultations will be communicated by the Site Manager to the Client.

3.5 Meetings and Records

Environmental issues relevant to the project will be discussed during weekly Site Progress Meetings attended by the Site Manager and Environment Manager. Environmental performance will also be discussed at regular HSEQ meetings. This will include dissemination and discussion of the findings of audits, environmental reports and other inspections where appropriate.

4 Environmental Impacts and Mitigation

An environmental review of the Scheme has been completed to identify all the commitments and agreements made within the ES and other consultations. From this, a schedule of environmental commitments has been produced, which details deliverables including measures identified for the prevention of pollution or damage to the environment during the construction phase. Environmental commitments have also been incorporated by the design team into archaeological, ecological, landscape and other relevant designs and specifications.

5 Pollution Control and Contingency Plan

5.1 Surface Water Run-off, Groundwater and Silt

All operations on site will be carried out in a manner to minimise the production and discharge of silty waters. In particular, where any dewatering has to be carried out an assessment will be made as to the method of disposal of the waters and agreed with the Site Manager.

The management of surface water run-off will be defined within the operation specific method statement and risk assessment. This will ensure that the right solution is implemented for each works activity.

5.2 Fuel, Oil and Chemical Spillage

All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.

Storage tank levels will be checked before delivery to prevent overfilling and to ensure that the product is delivered to the correct tank.

The storage of materials in the main compound and work sites will be controlled in such a manner to ensure that materials are not damaged prior to use either through vehicle or people movements or through exposure to the elements.

All fuel, oil and chemicals will be stored on an impervious base within a bunded area and secured. The bund shall have a capacity of 110% of the volume of the products stored within it. All tanks and containers will be kept in a secure compound and be protected from vandalism, and will be clearly marked with their contents. Stores shall be located at least 10 metres from any watercourse.

All mobile plant will be refuelled in a designated area on an impermeable surface and away from drains. In case of any spillages there will be a spill response kit available at each refuelling point and within each machine working within the highway corridor. Where it is impractical to refuel within a bunded area, a drip tray will be available to catch any spills caused by over fuelling.

5.3 Concrete/Mortar Washout

There will be a designated area for the washout of concrete wagons, shoots and mortar bins at each work site. This will be either a lined skip or a pit lined with an impervious membrane to prevent the escape of the alkaline and silty waters entering groundwater or surface water. These pits will be located in areas of low groundwater sensitivity. Excess concrete remaining in the delivery wagon at the end of a pour will be returned to a designated collection area. Once each worksite has been completed any solid concrete in the washout area will be broken out and used either as suitable fill or disposed of to a licensed waste facility.

5.4 Material Storage

Stockpiles should be positioned as far away from sensitive receptors as possible and suitable measures implemented to prevent run off and dispersion if left for any length of time. Any powders should be stored in sealed bags or silos prior to use. All deliveries of dry powder should be undertaken in a manner to minimise dust emissions.

5.5 Emergency Procedures

A Site Environmental Emergency Plan will be prepared prior to construction and communicated to all members of the project team including sub-contractors and Emergency Services.

The plan will detail the following controls:

- site drainage controls;
- fuel handling procedures;
- incident notification procedures;
- pollution control equipment requirements;
- procedures for the control of dust and mud;
- protection of aquifer; and
- measures to protect watercourses and wildlife from chemical spills or sediment laden run off.

Responsible staff will be trained in emergency procedures to form an Emergency Team, so that these procedures can be implemented swiftly and effectively. Periodic testing of emergency procedures will be undertaken by the Site Manager. The Environmental Manager will observe the test and to report on results. Any corrective actions are taken forward for review and approval.

Should an emergency incident occur, the Environmental Manager will be notified immediately. The emergency response will be co-ordinated by the Site Manager. Protective measures, mitigation, clean up and remediation actions will be identified from the evaluation and shall be put into place, having regard for the sensitivities of the environment. A record of the emergency incident will be kept to show the nature of the corrective action undertaken.

6 Environmental Performance Management

6.1 Environmental Risk Register

The Environmental Manager will prepare and maintain an Environmental Risk Register having regard for legal requirements, project environmental commitments the potential for aspects of works to cause significant environmental impact.

The Environmental Manager will record responsibilities assigned for actions required for mitigation and control of the environmental risks in the Environmental Risk Register.

The Environmental Risk Register will be subject to regular review by the Environmental Manager together with the Site Manager.

6.2 Consents and Exemptions

The Scheme will require consents and exemptions from various regulatory bodies in advance of construction activities. Copies of legal consents, permits, assents and licences of exemptions obtained will be held in the site environmental file by the Environmental Manager.

6.3 Method Statements and Risk Assessments

Specific environmental risks will be assessed during preparation of method statements. Actions and environmental constraints associated with specific construction operations will be included in method statements, field control sheets and activity plans where appropriate. Generic environmental requirements will be included in all method statements.

6.4 Inspections

Routine inspections to check that pollution control measures are in place will be undertaken by the Environmental Manager, who will produce weekly inspection reports.

Daily inspections will be made by the supervisors during each shift and any environmental problems or risks that are identified will be actioned as soon as is reasonably practicable. Any issues arising from the daily inspections will be notified to the Environmental Manager.

6.5 Auditing

A Project HSEQ internal audit schedule will be prepared. This will include: audits of the implementation of the CEMP and audits of sub-contractor and supplier environmental performance by the Environmental Manager.

6.6 CEMP Review Programme

The CEMP is a live document that will be updated by the Contractor and reviewed by the Environmental Manager on a monthly basis.

6.7 Environmental Complaints

The Environmental Manager will ensure that all environmental complaints and concerns will be responded to in 24 hours.

6.8 Notices of Non-Conformance

In instances where the requirements of the CEMP are not upheld a Non-Conformance and Corrective Action Notice will be produced. The Notice will be generated during the inspections conducted by the Supervisors, the Site Manager, Environmental Manager or external third-party audits. The Site Manager will be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming.

6.9 Complaints Handling

The response to any complaints will be managed by the Site Manager, who will inform the Environmental Manager of any environmental complaints.

A Complaints Register will be maintained to detail the name and contact details of the complainant, date and time of the complaint, nature of complaint, action taken to resolve issues, and date of complaint handover.

6.10 Key Performance Indicators and Objectives

The Contractor will set Environmental Objectives in order to continuously improve environmental performance on the site. The Contractor will set objectives based on each significant environmental impact and they will be reviewed, and revised if necessary, on a monthly basis. Procedures, monitoring requirements and key performance indicators will be measured against achievable targets.

Annex 1: Environmental Advice Notes

Annex 1.1 EAN 001 In-stream Works Timing Restrictions

Table 6G.1 Tier One In-stream Works Timing Restrictions

| River | Section | Chainage | Structure Ref | Crossing Grid Ref | Fish present | Designation | FFD Categorisation | WFD Risk Category" | HQA | HMS | Working Windows | | | | | | | | | | | |
|--------------|---------|---------------|---------------|-------------------|---|-------------|--------------------|--------------------|-----|--------------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Burn Dennet | 1 | 10500 | S1/B06 | IC 37261 04308 | Atlantic salmon; Brown trout; River/Brook lamprey; European eel. | - | Salmonid River | 2a | 40 | Obviously Modified | | | | | | | | | | | | |
| Glenmornan | 1 | 12700 | S1/B08 | IC 36548 01938 | Atlantic salmon; Brown trout; European eel. | - | Salmonid River | 1b | 31 | Significantly Modified | | | | | | | | | | | | |
| Mourne River | 1 | 17900 | S1/B14 | IH 33501 98061 | Atlantic salmon; Brown trout; European eel; River/Brook lamprey; Gudgeon. | SAC; ASSI | Salmonid River | 1b | 16 | Severely Modified | | | | | | | | | | | | |
| River Finn | 1 | 18700 - 19500 | No structure | - | Atlantic salmon; Brown trout; River/Brook lamprey. | SAC; ASSI | Salmonid River | 1a | | Obviously Modified | | | | | | | | | | | | |
| River Derg | 2 | 34330 | S2/B07 | IH 36387 87669 | Atlantic salmon; Brown trout; European eel; Perch; Roach. | SAC; ASSI | Salmonid River | 1b | 39 | Predominantly Unmodified | | | | | | | | | | | | |
| Fairy Water | 2 | 50100 | S2/B19 | IH 43178 74923 | Atlantic salmon; Brown trout; Roach; Gudgeon; Pike; Perch. | - | Salmonid River | 1b | 30 | Significantly Modified | | | | | | | | | | | | |
| Drumragh | 2 | 56590 | S2/B28 | IH 45772 69866 | Atlantic salmon; Brown trout; River/Brook lamprey. | - | Salmonid River | 2a | 35 | Significantly Modified | | | | | | | | | | | | |
| Routing Burn | 3 | 71700 | S4/B08.1 | IH 51977 61401 | Atlantic salmon; Brown trout; European eel; River/Brook lamprey. | - | Salmonid River | 1b | 74 | Pristine/semi-natural | | | | | | | | | | | | |

| River | Section | Chainage | Structure Ref | Crossing Grid Ref | Fish present | Designation | FFD Categorisation | WFD Risk Category" | HQA | HMS | Working Windows | | | | | | | | | | | |
|------------|---------|---------------|---------------|-------------------|---|-------------|--------------------|--------------------|-----|--------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Blackwater | 3 | 93300 - 93600 | No structure | IH 66562 50670 | Atlantic salmon; brown trout; lamprey sp.; stone loach; minnow; European eel; gudgeon; and white-clawed crayfish. | - | | | 60 | Obviously modified | | | | | | | | | | | | |

Table 6G.2 Tier Two In-stream Works Timing Restrictions

| River | Section | Chainage | Culvert Ref | Grid Ref | Fish present | Designation | FFD Categorisation | WFD Risk Category | HQA | HMS | Working Windows | | | | | | | | | | | |
|-------------------|---------|------------------|---------------------------------|-------------------|--|-------------|--------------------|-------------------|-----|--------------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Coolagh Burn | 2 | 36500 | S2/B09.1 | IH 36344 87548 | | - | - | 2a | 54 | Significantly Modified | | | | | | | | | | | | |
| Fireagh Burn | 2 | 50200 | tbc | IH 42541 73990 | | - | - | 2a | - | - | | | | | | | | | | | | |
| | 2 | 51100 | tbc | IH 42826 72440 | | - | - | 2a | - | - | | | | | | | | | | | | |
| | 2 | 52700 - 54400 | tbc | IH 43528 71273 | | - | - | 2a | - | - | | | | | | | | | | | | |
| Ramelly Drain | 3 | 64500 - 66000 | tbc | IH 48567 68806 | Atlantic salmon; Brown trout. | - | - | - | 33 | Obviously Modified | | | | | | | | | | | | |
| Letfern | 3 | 68800 | tbc | IH 50401 63942 | | - | - | 1b | 36 | Severely Modified | | | | | | | | | | | | |
| River 30 | 3 | 73800 - 74700 | tbc | IH 53102 60693 | | - | - | - | - | - | | | | | | | | | | | | |
| River 33 | 3 | 78200 | tbc | IH 56601 57200 | Atlantic salmon, Poss. White claw crayfish. | - | - | - | 54 | Obviously Modified | | | | | | | | | | | | |
| Roughan River | 3 | 81400 | tbc | IH 59651 56381 | Atlantic salmon; Brown trout; River/Brook lamprey, Poss. White claw crayfish. | - | - | 1a | 38 | Obviously Modified | | | | | | | | | | | | |
| Ballygawley River | 3 | 83800 | S3/17.3, S3/17.4, S3/17.5 | IH 61926 55769 | Brown trout; European eel. Poss. White claw crayfish. | - | - | 1a | 44 | Significantly Modified | | | | | | | | | | | | |
| River 34 | 3 | 86400 - 86600 | tbc | IH 64093 54758 | Poss. White claw crayfish. | - | - | - | 46 | Predominantly Unmodified | | | | | | | | | | | | |
| River 35 | 3 | 88100 | tbc | IH 65514 53984 | Poss. White claw crayfish. | - | - | - | - | - | | | | | | | | | | | | |
| River 36 | 3 | 89500 | tbc | IH 66760 53553 | Poss. White claw crayfish. | - | - | - | 67 | Predominantly Unmodified | | | | | | | | | | | | |

Table 6G.3 Tier Three In-stream Works Timing Restrictions

| River | Section | Chainage (approx) | Culvert Ref | Grid Ref | Fish present | Designation | FFD Categorisation | WFD Risk Category | HQA | HMS | Working Windows | | | | | | | | | | | |
|--------------------|---------|-------------------|-------------|-------------------|--------------|-------------|--------------------|-------------------|-----|------------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | J | F | M | A | M | J | J | A | S | O | N | D |
| River 1 | 1 | 550 | tbc | IC 41143 12785 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 2 | 1 | 2500 | tbc | IC 39783 11389 | | - | - | - | 74 | Significantly Modified | * | | | | | | | | | | | |
| Blackstone Burn | 1 | 3350 | tbc | IC 39247 10773 | | - | - | - | 73 | Significantly Modified | * | | | | | | | | | | | |
| River 4 | 1 | 5850 | tbc | IC 37706 08892 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 5 | 1 | 8300 | tbc | IC 37324 06483 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 9 | 1 | tbc | tbc | IH 33492 94493 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 10 | 2 | 29800 | tbc | IH 33553 91041 | | - | - | - | 57 | Severely Modified | * | | | | | | | | | | | |
| Liscreevaghan Burn | 2 | 31500 | tbc | IH 34638 89829 | | - | - | - | 60 | Significantly Modified | * | | | | | | | | | | | |
| Back Burn | 2 | 39300 | tbc | IH 39779 84955 | | - | - | - | 49 | Obviously Modified | * | | | | | | | | | | | |
| River 17 | 2 | 40600 | tbc | IH 40918 83843 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 18 | 2 | 41300 | tbc | IH 41271 83293 | | - | - | - | - | - | * | | | | | | | | | | | |
| Beltany Burn | 2 | 41900 | tbc | IH 41483 82765 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 20 | 2 | 43300 | tbc | IH 41653 81476 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 21 | 2 | 43500 | tbc | IH 41666 81233 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 22 | 2 | 44400 | tbc | IH 41878 80383 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 23 | 2 | 46300 | tbc | IH 42472 78051 | | - | - | - | 71 | Significantly Modified | * | | | | | | | | | | | |
| River 25 | 2 | tbc | tbc | IH 41796 77387 | | - | - | - | - | - | * | | | | | | | | | | | |
| | 2 | 47400 | tbc | IH 42577 75694 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 38 | 2 | 56000 - 56400 | tbc | IH 45038 69620 | | - | - | - | - | - | * | | | | | | | | | | | |
| River 27 | 2 | 57400 | tbc | IH 45999 69314 | | - | - | - | 49 | Significantly Modified | * | | | | | | | | | | | |
| River 37 | 3 | 89500 | tbc | IH 67678 | Poss. White | - | - | - | - | - | | | | | | | | | | | | |

Annex 1.2 EAN 002 Protected Species Timing Restrictions

Table 6G.6 Protected Species Work Timing Restrictions

| Species | Section | Chainage | Legal protection | Timing Restriction | Working Windows | | | | | | | | | | | |
|----------------------------|---------|---|---------------------|---|-----------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|
| | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
| Winter birds | 1 | 5000-6000 and 8500 - 10500 | HRA process | No heavy works October - March. No piling, large scale earth movement etc. | | | | | | | | | | | | |
| Nesting birds | All | All woody vegetation | WO 85 | Woody vegetation clearance September - February | | | | | | | | | | | | |
| Nesting Barn owl | All | None found in baseline surveys, but potentially throughout scheme | WO 85 | Destruction of existing nests Sep-Feb only; replacement provided up to 1 year in advance of destruction | | | | | | | | | | | | |
| Nesting king fishers | All | None found in baseline surveys, but potentially throughout scheme | WO 85 | Netting of suitable river banks to prevent summer nesting where necessary | | | | | | | | | | | | |
| Otter holts | 2 | 34400 and 50000 confirmed, 17500, 41800 and 71700 likely. | HR 95 & HRA Process | No time restriction on closure, will be dependant upon activity. Licence and creation of artificial holt up to 1 year in advance of holt closure | | | | | | | | | | | | |
| Bat roosts** | 1 | 3250 and 19000 confirmed (more likely during veg clearance). | HR 95 | Bat licence and creation of artificial roosts up to one year prior to roost closure (Preferred october - April) | | | | | | | | | | | | |
| Badger setts | All | Main setts: 7200, 7700, 34250, 54750, 79500, 81100, 83500 (A4 link road) (more likely during veg clearance) | WO 85 | Badger licence up to one year prior to sett closure (only allowed 1st July – 30th November) creation of alternative sett up to 1 year prior to original's closure | | | | | | | | | | | | |
| Smooth newt breeding ponds | 2 | 19500 | WO 85 | Licence required for trapping and relocation of newts up to one year prior to pond destruction (trapping March-August) creation of alternative pond up to 2 years prior to original's destruction | | | | | | | | | | | | |
| Red Squirrel dreys | 3 | possible 34400 and 79400-79700 | WO 85 | No time restriction on destruction, will be dependant upon activity. Licence up to 1 year in advance of drey destruction | | | | | | | | | | | | |
| White clawed crayfish | 3 | All water courses 78000 - 93000 | WO 85 | No works affecting stream May-June. Licence may be required for removal of individuals from works area July - October | | | | | | | | | | | | |
| Protected flora | 1 | 18000 | WO85 | Translocation of trees November to Feb | | | | | | | | | | | | |

*It will not be possible to locate all breeding sites or resting places prior to vegetation clearance and site construction works. Provision should be made for the unexpected discovery of any of these features.

Bat Roosts** timings only applicable for summer roosts, if maternity or hibernation roosts discovered in update surveys further restrictions will apply.

Table 6H.7 Key Indicating Work restrictions

| | |
|--|--|
| | Work Restrictions Dependant Upon Animal Activity |
| | Restricted Works |
| | Recommended Periods for Works |

Annex 1.3 EAN 003 Timetables of Ecology Construction Tasks

Table 6G.8 Draft Ecology Works Timetable

| Species/Task | Jan - Aug 2011 | Sep 2011-Feb 2012 | March-August 2012 | Sep 2012 - Feb 2013 | March - Aug 2013 | Sep 2013 - Feb 2014 | March-August 2014 | Sep 2014 - Feb 2015 | March - Aug 2015 |
|---|---|--|--|-------------------------------------|------------------|---|-------------------------|---|------------------|
| Hedges, woodland and other habitats suitable for nesting birds | | vegetation clearance where necessary for 2012 work | vegetation clearance under ecologist supervision, if active nests found clearance cannot go ahead in that location until approved by ecologists | vegetation clearance for 2013 works | | vegetation clearance Sep-Feb for 2014 works | | | |
| Sch. 8 Protected Plants (requires licence) | update Sch 8 surveys | Possible translocation dependent upon NIEA licence terms | Set sch. 8 exclusion zones | | | | | | |
| Sch. 9 Invasive Species | update Sch 9 surveys | | Set sch. 9 exclusion zones, treatment of areas as required | | | | | | |
| Planting | | | planting around culvert entrances, verges and on exposed earthworks where possible | | | | general scheme planting | | |
| Newts (requires licence) | update ecology surveys (April-May) and construction of 1 x replacement pond | | Fencing of newt areas, creation of new hibernacula (April) / trapping and translocation of newts to new pond area and new hibernacula (May-July) / original pond and hibernacula destruction | | | | | | |
| Badgers (requires licence) | | update badger surveys and sett monitoring | | | | update badger surveys and sett monitoring | | update badger surveys and sett monitoring | |
| | artificial badger sett creation August-Dec 2011 for closure 2012 | | | | | | | | |
| | badger sett closure July-Nov incl. | | | | | | | | |
| | installation of measures to maintain badger commuting routes (inc. cover excavations, temp fencing etc) | | | | | | | | |
| | installation of permanent deterrent fencing along scheme boundary and underpasses as required | | | | | | | | |

| Species/Task | Jan - Aug 2011 | Sep 2011-Feb 2012 | March-August 2012 | Sep 2012 - Feb 2013 | March - Aug 2013 | Sep 2013 - Feb 2014 | March-August 2014 | Sep 2014 - Feb 2015 | March - Aug 2015 | |
|-----------------------------------|--|--|--|-------------------------------------|---|-----------------------------|---|-----------------------------|---|--|
| Otters (requires licence) | update surveys and otter holt monitoring | | otter holt monitoring | | | otter holt monitoring | | otter holt monitoring | | |
| | | artificial otter holt creation pre October 2011 for closure pre April 2012 | | | | | | | | |
| | | | closure of holts dependent upon activity | | | | | | | |
| | | | installation of measures to maintain otter commuting routes (inc. cover excavations, temp fencing etc.) | | | | | | | |
| | | | installation of ledges into new culverts during construction to be ready when water courses are diverted | | | | | | | |
| Bats (requires licence) | update roost surveys | | | | | | | | | |
| | artificial roost creation | artificial roost monitoring | | | | artificial roost monitoring | | artificial roost monitoring | artificial roost monitoring | |
| | | Monitoring for casual summer roost, some trees and buildings destroyed under ecologist supervision | | | | | | | | |
| | | Maternity and summer roost closure | Hibernation roost closure | Maternity and summer roost closure | | | | | | |
| | | | installation of measures to maintain bat commuting routes (inc. artificial hedges etc.) | | | | | | | |
| | | | scheme planting to involve 'hop overs' | | | | | | | |
| Aquatic (requires licence) | | installation of pollution prevention/sediment traps etc | | weekly monitoring of sediment traps | | | | | | |
| | | | trapping and exclusion of aquatic species from construction areas (July-August) | | trapping and exclusion of aquatic species from construction areas (July-August) | | trapping and exclusion of aquatic species from construction areas (July-August) | | trapping and exclusion of aquatic species from construction areas (July-August) | |
| | | | instream works culverting for sensitive water courses (July-August) | | instream works culverting for sensitive water courses (July-August) | | instream works culverting for sensitive water courses (July-August) | | instream works culverting for sensitive water courses (July-August) | |
| Birds | pre-construction update barn owl survey | barn owl nest closure (if required) and construction of artificial nest | | | | | | | | |

| Species/Task | Jan - Aug 2011 | Sep 2011-Feb 2012 | March-August 2012 | Sep 2012 - Feb 2013 | March - Aug 2013 | Sep 2013 - Feb 2014 | March-August 2014 | Sep 2014 - Feb 2015 | March - Aug 2015 |
|------------------------------|---|--|---|---------------------|---|---------------------|---|---------------------|---|
| | pre-construction update kingfisher survey | netting of suitable riverbanks for kingfisher | | | | | | | |
| Supervision / clerk of works | | ecologist clerk of works supervision as required | | | | | | | |
| | | | ecologist tool box talks for all construction staff | | ecologist tool box talks for all construction staff | | ecologist tool box talks for all construction staff | | ecologist tool box talks for all construction staff |

Table 6H.9 Key Draft Ecology Works Timetable

| | |
|--|--------------------------------------|
| | Recommended Periods for Works |
| | Action TBC Following Detailed Design |

Annex 1.4 EAN 004 Invasive Species Risk Register

Table 6G.10 Invasive Species Risk Register

| Species to be added to Sch. 9 Wildlife Order 1985 | Risk Category | Latin | Habitat Occurrence | Means of Spread | Impacts | Current Range in Co. Tyrone | Confirmed A5 Locations | Control Methods |
|---|---------------|---------------------------------|--|---|--|-------------------------------|---|---|
| Knotweed, Japanese | | <i>Fallopia japonica</i> | Waste ground, river banks and parks. | vegetative fragments in contaminated soil | Forms extensive stands | Widespread throughout Tyrone. | Burn Dennet (chainage) Mourne (chainage), Strabane Nature Reserve. River Derg (NVC ID Area 26). | Attempting to get rid of stands of Japanese knotweed by digging up or cutting the plant rarely succeeds unless combined with herbicide applications. Fragments of the rhizomes or aerial shoots can regenerate, so must be destroyed by burning. Riverside colonies may spread by fragments floating downstream. The Centre for Aquatic Plant Management (CAPM) recommends control by herbicides as the best option. Transport of soil away from the site containing fragments of Japanese knotweed should be avoided; it might introduce the species to uninfected sites. |
| Knotweed, Giant | | <i>Fallopia sachalinensis</i> | Waste ground, river banks, lakesides, old gardens, etc. | Flowers, rhizomes and vegetative fragments in contaminated soil | Forms extensive stands | Scattered throughout Tyrone. | Burn Dennet | Currently the most effective method of control is repeated spraying with herbicides over a number of years, which gradually reduces the vigour of the plant. This is carried out in early autumn, when the herbicide in thought to have the most impact on the plant. New sites and larger stands may also be sprayed in early summer as well, to stunt the growth before the autumn spraying. |
| Hogweed, Giant | | <i>Heracleum mantegazzianum</i> | Along riversides, stream banks, and other damp waste sites. In suitable environments, it can be abundant. It can extend along several miles of river bank. | Seed dispersal via water transportation and in soil adhering to shoes and machinery. Seeds can stay viable for several years. | Poisonous to people and animals | Widespread throughout Tyrone. | Large stands along R. Finn and Mourne confluence near Strabane. | Eradication programmes may vary depending on the degree of infestation. Small numbers can be controlled by digging out the whole individual plant; docking the plant to prevent it flowering will divert reserves to ensuring the plant survives to attempt to flower the following year. It is best to cut the stem at below ground level, to ensure that the rootstock is damaged. Larger numbers can be sprayed, preferably when the plants are actively growing and less than 1m tall, with a glyphosate herbicide (this is the only herbicide which can be used near water). This can be done either as a spot treatment, or using long reach sprays. The monitoring of the treated area for several years is necessary, to find new seedlings. Establishing greensward or reseedling with native plants is also beneficial after initial eradication. |
| Salmonberry | | <i>Rubus spectabilis</i> | Country parks, river banks, forestry plantations etc. | This plant spreads rapidly by vigorous suckering from the base. It is likely that it could also be spread by careless disposal of garden waste. | Displaces native species. | Widespread throughout Tyrone. | None confirmed. | With well-established large infestations only physical removal involving cutting or digging up the plants, either by hand or mechanically, is feasible. Herbicide should be applied to remaining stumps. |
| Balsam, Himalayan | | <i>Impatiens glandulifera</i> . | River banks and lakesides. | There are no special vectors for long-distance dispersal, although dispersal by water is probable. Local dispersal is by seed from existing colonies. | Displaces native species. Bare patches created in winter when the plant dies back may result in increased riverbank erosion. | Widespread throughout Tyrone. | Scattered along route, particularly along watercourses. | Mechanical control, by repeated cutting or mowing, is an effective control, but plants can regrow if the lower parts are left intact. Regular grazing also suppresses this species. Control by herbicides is effective — for detailed advice on this, see the Centre for Aquatic Plant Management web site (Information Sheet 3: Himalayan Balsam). Herbicide should be sprayed before flowering. |

| Species to be added to Sch. 9 Wildlife Order 1985 | Risk Category | Latin | Habitat Occurrence | Means of Spread | Impacts | Current Range in Co. Tyrone | Confirmed A5 Locations | Control Methods |
|---|---------------|--------------------------------|---|---------------------------------------|---|---|---|---|
| Waterweeds (all species) | | <i>Elodea</i> (all species) | Still or slow-flowing, shallow or deep water. | vegetative fragments in water courses | Can impede flow, increase flooding, destroy ecosystem and affect recreation | <i>E. canadensis</i> scattered throughout Tyrone. <i>E. nuttallii</i> rare in Tyrone. | <i>E. canadensis</i> abundant in pond adjacent to River Finn H32509673. | <i>Elodea canadensis</i> is now an established part of Ireland's aquatic ecosystems. It provides good habitat for many aquatic invertebrates and cover for young fish and amphibians and food for waterfowl. In the case of excessive growth, physical removal is probably the best option, taking care to dispose of the excess material responsibly (by composting or burning). It can also be controlled by suitable herbicides and there is a biological method of control using grass carp (<i>Ctenopharyngodon idellav</i>) which graze the plant. Control of <i>Elodea nuttalli</i> is similar although this species is less widespread than <i>E. canadensis</i> although it is reported to be increasing across the British Isles whilst <i>E. canadensis</i> has declined. This has been linked with generally increasing eutrophication of waters. |
| Knotweed (all species) | | <i>Fallopia</i> (all species) | Comments as per <i>F. japonica</i> and <i>F. sachalinensis</i> . Hybrid between these two spp. - <i>Fallopia x bohémica</i> . <i>F. baldschuanica</i> (a climber) rarely becomes established in wild. | | | | | |
| Rhubarb, Giant | | <i>Gunnera tinctoria</i> | Damp grassland, woodland and shaded areas near water | self sown and vegetative fragments | Forms extensive stands and may impede stream flow | Rare in Tyrone. | River Derg | Mechanical removal and chemical treatment. |
| Bluebell, Spanish | | <i>Hyacinthoides hispanica</i> | Woodlands, parkland and gardens. | bulbs in waste soil | Hybridisation with native species | Rarely naturalised in Tyrone. Hybrid with native species is more common. Native sp. is most widespread. | None confirmed. | The complete removal of Spanish or hybrid bluebells from an extensively contaminated site is probably uneconomic and undesirable. The focus of management should be on prevention of further spread into natural woodland or other natural habitats by the removal of garden escapes as and when discovered. |

Table 6H.11 Invasive Species Risk Categories

| | |
|---------------|--|
| High Risk | |
| Moderate Risk | |
| Low Risk | |

Annex 1.5 EAN 005 Environmental Consents

Table 6G.12 EAN 005 Consents

| Licence | Info | Responsibility | Programme | Input Required (input and team) |
|---|---|----------------|---|---|
| <p>FEPA</p> <p>FEPA guidance note information:</p> <p>http://www.ni-environment.gov.uk/fepa_guidance_notes.pdf</p> <p>Construction Licence Application Form:</p> <p>http://www.ni-environment.gov.uk/construction_application.pdf</p> <p>the Deposits in the Sea (Exemptions) Order (Northern Ireland), 1995:</p> <p>http://www.ni-environment.gov.uk/ni_wml_consultation_document.pdf</p> | <p>WMU has suggested that the construction works may occur within 50 metres of the Mean High Water Spring Tide mark of the tidal section of the River Foyle. Therefore you may require a licence issued under Part II of the Food and Environment Protection Act 1985 (A FEPA Licence). This also applies to proposed pipeline outfalls terminating in the sea.</p> <p>WMU's Marine Assessment and Licensing Team should be contacted to determine if the construction works are within this zone and to determine if an FEPA Licence is required. If the works are within 50 m then a CONSTRUCTION LICENCE will be required.</p> <p>Some minor works of construction may be exempt from FEPA licensing, these are listed in the Deposits in the Sea (Exemptions) Order (Northern Ireland), 1995, please find attached link in left hand column.</p> | Contractor | <p>It is recommended that contact of the environment and heritage team Northern Ireland takes place as soon as possible.</p> <p>An application form will need to be submitted FOUR MONTHS BEFORE LICENCE IS REQUIRED. Please find attached link in left hand column.</p> <p>FEPA licences cannot be issued retrospectively. Licences are valid for 12 months. A separate application must be submitted for each stage of construction work.</p> <p>The application will need to be submitted to the environment and heritage team with the following application fee:</p> <ul style="list-style-type: none"> Marine Construction: £175 administration fee. <p>The application fee must be paid before the application can be processed.</p> | <p>The following information is required for the construction licence application:</p> <p>Project costs (Project Manager)</p> <p>Environmental Statement; only If the project is subject to a planning application (Environment Team)</p> <p>Description of materials to be deposited (Design Engineers)</p> <p>Method of construction; is needed if the project involves land reclamation (Construction Engineers)</p> |
| <p>Discharge Consent</p> | <p>The scheme will require discharge consent, issued under the Water</p> | Contractor | <p>It is recommended that contact of the environment and heritage team Northern Ireland takes place as soon as possible.</p> | <p>The following information is required for the discharge consent licence application:</p> |

| Licence | Info | Responsibility | Programme | Input Required (input and team) |
|---|--|----------------|--|--|
| <p>Discharge Consent application form:</p> <p>http://www.ni-environment.gov.uk/discharge_consent_gn.pdf</p> <p>Annex 2 (WO1 – Annex 2 Trade Effluent Discharge, includes site drainage):</p> <p>http://www.ni-environment.gov.uk/wo1-annex2-trade-effluent-and-site-drainage.pdf</p> | <p>(Northern Ireland) order 1999, prior to commencement of any works. Discharge consents will also be required for any temporary toilets or wash areas that discharge to the aquatic environment.</p> <p>The scheme is most likely to fall under Annex 2 of the discharge consent application.</p> | | <p>An application form will need to be submitted FOUR MONTHS BEFORE LICENCE IS REQUIRED. Please find attached link in left hand column.</p> <p>The Department has four months from the date on which a valid application is received (or such further period as may be agreed in writing between the applicant and the Department) to determine the application, otherwise it is deemed to have been refused by the department.</p> <p>Annex 2 (WO1 – Annex 2 Trade Effluent Discharge, includes site drainage) should be completed in addition to the main application form. A separate application form and fee must be submitted for each type of effluent discharge. Please find attached link in left hand column.</p> | <p>Need to state the nature of the discharge, type amount etc (waste team)</p> <p>Site details including site drainage (Engineers)</p> <p>Details of receiving Environment and impacts (Environment Team)</p> |
| <p><u>Abstraction /impoundment</u></p> <p>Abstraction/Impoundment Application form:</p> <p>http://www.ni-environment.gov.uk/licence_abstract_impound_water.pdf</p> | <p>If the scheme involves abstraction (e.g. dewatering of an excavation) or an impoundment a pool of water formed by a dam or pit) an appropriate abstraction/impoundment license may be required.</p> | Contractor | <p>It is recommended that contact of the Abstraction and Impoundment Licensing Team of WMU takes place as soon as possible.</p> <p>For Impoundment and Abstraction a Comprehensive Application for a Licence to Abstract and/or Impound Water F0002 will be required. Please find attached link in left hand column.</p> <p>The form will NOT be required if extraction is below 10m³ per day (conditions in annex A) Please find attached link in left hand column.</p> <p>With effect from 1st April 2010 the following charges will apply:</p> <ul style="list-style-type: none"> • A flat rate fee of £135 for all abstraction • applications of 20 cubic metres per day or more. • A fee of £30 for any variations to an existing licence. • For abstractions greater than 100 cubic metres per day an annual charge may apply | <p>The following information is required for the discharge consent licence application:</p> <p>Proposed and existing abstraction/impoundments of water.</p> <p>Abstraction volume details including volume per day for surface, estuarine or coastal waters and groundwater.</p> <p>Monthly Abstraction Volumes in Cubic Metres (m3) (daily maximum).</p> <p>Information on water storage, land etc.</p> <p>(All from engineers)</p> |

Annex 2: Construction Procedures

The Contractors and their sub-contractors shall employ the Construction Procedures listed below as a practical means to effect environmental mitigation while working on the project.

Annex 2.1 Procedures Site Clearance

Table 6G.13 Procedure for Site Clearance

| Procedure for Site Clearance | | CP01 |
|-----------------------------------|---|----------------|
| | | Rev: A |
| | | Date: Nov 2010 |
| Purpose | To minimise the impacts of site clearance works on ecological habitats and wildlife in the area. | |
| Responsibility for control | Environmental Manager | |
| Procedures | <p>Before any work is undertaken the proximity to water bodies and ecologically sensitive features shall be assessed.</p> <p>Whole trees shall be removed by trained operators using mulchers specifically designed for the purpose.</p> <p>As far as possible all woody vegetation shall be removed outside of the bird breeding season (March-August inclusive). Where this is not possible woody vegetation shall be checked prior to removal for active birds nests. If any are found works in that location shall cease until the nest can be confirmed as no longer active.</p> <p>Removal of top soil shall be undertaken in accordance with the soil stripping methods detailed in Procedure CP02.</p> <p>Removal of vegetation or top soil within 20m of a water course shall be carried out under the supervision of the Ecological Clerk of Works.</p> <p>If active birds nests, animal holes of sufficient size to be used by badger or otter, squirrel dreys, bats, lizards or newts are found during vegetation clearance then works in that location shall cease and ecologist advice sought.</p> <p>Removal of trees highlighted as potential bat roosts in the ES or in update surveys shall be undertaken using a 'soft felling' method as detailed in the ES. A licence from NIEA may be required if a roost is confirmed as present.</p> <p>Removal of confirmed bat roosts shall take place under NIEA licence and in accordance with the method detailed in the ES. As the confirmed roosts to be destroyed are summer roosts the licence would probably only be granted between October and February.</p> <p>Removal of vegetation or top soil within 50m of an otter holt or breeding site as highlighted in the ES or update surveys shall be carried out under licence from NIEA.</p> <p>Construction activities that are likely to damage or disturb an active badger sett as highlighted in the ES or update surveys shall be carried out under a licence from NIEA. Closure of badger setts can only be undertaken between July and November</p> <p>Removal of ground flora or top soil within 250m of a newt pond as highlighted in the ES or update surveys shall be carried out in accordance with the specific</p> | |

| Procedure for Site Clearance | | CP01 | |
|---|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| | <p>newt habitat clearance guidance as detailed in the ES.</p> <p>Removal of ground flora or top soil within or adjacent to a newt pond as highlighted in the ES or update surveys shall be carried out under a licence from NIEA. This licence shall be required for the destruction of a newt pond and most probably only be granted between March and September.</p> <p>Removal of woody vegetation within 30m of an active squirrel drey as highlighted in the ES or update surveys shall be carried out following the methodology detailed in the ES and may require an NIEA licence.</p> <p>Removal of invasive species highlighted within the ES, update surveys or by site contractors shall be carried out under specific invasive species clearance methodology detailed in Environmental Consents (Appendix 1.4 of the CEMP).</p> | | |
| Environmental Controls | All necessary, ecological licenses shall be in place prior site clearance start. | | |
| Plant & Equipment | <p>Excavator mounted and purpose built tracked mulchers.</p> <p>Excavator harvesters.</p> <p>Hand strimmers.</p> <p>Chainsaws.</p> <p>Tree climbing equipment.</p> | | |
| Monitoring | The Ecological Clerk of Works shall supervise vegetation removal in ecologically sensitive areas, all sites within 20m of water courses, all sites subject to a licence from NIEA, all vegetation cleared during bird breeding season and be on call during all vegetation clearance works. | | |
| Emergency, preparedness and response | If active birds nests, animal holes of sufficient size to be used by badger or otter, bats or squirrel dreys are found during vegetation clearance the works in that location shall cease and the Ecological Clerk of Works shall be contacted. | | |
| References | Environmental Statement. | | |

Annex 2.2 Soil Strip

Table 6H.14 Procedure for Soil Strip

| Procedure for Soil Strip | | CP02 | |
|---|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Purpose | <p>To minimise the impacts on ecological habitats and wildlife in the area during soil stripping.</p> <p>To prevent damage to any archaeological remains discovered during construction.</p> <p>To enable the re-use of topsoil and the re-establishment of vegetation after work is complete.</p> | | |
| Responsibility for control | Environmental Manager | | |
| Procedures | <p>Prior to any topsoil being stripped, the topsoil shall be assessed for suitability for re-use on agricultural land, cut and fill slopes, planted landscape mitigation areas or on any areas of ecological interest.</p> <p>Method statements shall be prepared to identify the locations where the topsoil shall be stripped from, temporarily stockpiled and spread.</p> <p>Topsoil stripped from the area of excavations and the footprint of structural fill embankments shall be stockpiled in locations convenient for re-use once cut and fill slopes and landscape mitigation areas are ready for top soiling.</p> <p>Topsoil deemed suitable for re-use for agricultural regeneration or for shrub planting and other landscape mitigation shall be placed in stockpiles not exceeding 3 metres high.</p> <p>Stockpiles shall be allowed to vegetate to prevent erosion or weathering and shall be located away from drainage ditches.</p> <p>Finished worked slopes that are to be spread with topsoil shall be prepared as the earthworks progress and topsoil shall be spread as early as is practicable.</p> | | |
| Environmental Controls | <p>Where required, Archaeological observers shall be present during the topsoil strip for a watching brief.</p> <p>Topsoil that has been identified as “ecologically interesting” shall be recorded as such within the method statement and shall be stockpiled for reuse in windrows no more than 1.5 metres high by 3 metres wide, shaped to shed water.</p> <p>Silt control measures shall consist of small bunds at the toe of the stockpiles as required. Spraying shall be carried out to prevent the proliferation of weeds.</p> | | |
| Plant & Equipment | Topsoil shall be removed and loaded by a 360° excavator using a toothless bucket to dump trucks for transport to stockpile. A 360° excavator shall handle and shape the topsoil at the stockpile site. | | |
| Monitoring | Daily haulage record sheets used in productivity analysis shall provide a second reference to identify which topsoil is stripped from where and where it was placed. | | |
| Emergency, preparedness and response | <p>If animal holes of sufficient size to be used by badger or otter are found during vegetation clearance the works in that location shall cease and the Ecological Clerk of Works shall be contacted.</p> <p>If items of potential archaeological value are uncovered then works in that location shall cease and the Archaeologist shall be contacted.</p> | | |

| | | | |
|---------------------------------|--------------------------|---------------|-----------------------|
| Procedure for Soil Strip | | CP02 | |
| | | Rev: A | Date: Nov 2010 |
| References | Environmental Statement. | | |

Annex 2.3 Earthworks and Drainage

Table 6G.15 Procedures for Earthworks and Drainage

| Procedure for Earthworks and Drainage | | CP03 | |
|---------------------------------------|--|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Purpose | <p>To minimise the impacts of earthworks on ecological habitats and wildlife in the area.</p> <p>To avoid pollution to water courses.</p> <p>To minimise nuisance to the local community due to deterioration of air quality and the creation of dust, noise and vibration.</p> <p>Minimise the surplus materials arising from earthworks.</p> | | |
| Responsibility for control | Environmental Manager | | |
| Procedures | <p>Landowners and authorities shall be informed in advance of commencement of filling at deposition areas.</p> <p>Bunting poles shall be erected around overhead services.</p> <p>Advance pre-earthworks, temporary drainage and dewatering shall be undertaken as required to prevent ingress of water to the earthworks and discharge away from the earthworks. Discharge licenses shall be in place before commencement of any works and appropriate treatment provided prior to discharge to watercourses.</p> <p>No water shall be allowed to pond on the formation layer.</p> <p>When unsuitable material is encountered this shall be removed in accordance with the Site Waste Management Plan.</p> <p>Method statements shall be prepared setting out procedures to monitor and control dust, noise, vibration and deposition on roads.</p> <p>Haul Roads shall be constructed to enable access to the works and movement of the earthworks through the site and to disposal areas.</p> <p>Temporary stockpiles of excavated earth shall be constructed within the lands made available. Stockpiles shall be shaped to ensure rainfall does not degrade the stored material.</p> <p>Drains shall be installed along the toe of embankments in fill areas.</p> <p>Embankments shall be constructed and graded to allow water to shed off the completed earthworks.</p> <p>Embankments shall be sealed at the end of each working shift to avoid ingress of water.</p> <p>The earthworks material shall be placed and compacted in layers to prevent water ingress and degradation of the material.</p> | | |
| Environmental Controls | <p>Temporary drainage or dewatering shall be in place to prevent ingress of water to the earthworks and discharge away from the earthworks.</p> <p>Discharge licenses shall be in place and appropriate treatment provided prior to discharge to watercourses.</p> | | |
| Plant & Equipment | <p>50t – 70t primary excavators</p> <p>20t – 30t excavators</p> | | |

| Procedure for Earthworks and Drainage | | CP03 | |
|---|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| | Rock breaking and processing equipment Bulldozers Graders 30t – 40t articulated dumptrucks Compaction plant including various rollers Soil stabilisation plant | | |
| Monitoring | Daily physical inspection of the site including; watercourses, haul roads, mechanical state of all plants, shall be undertaken to detect any signs of contamination or disturbance. A program to monitor watercourses, air quality, dust, noise and vibration shall be in place during the construction phase. | | |
| Emergency, preparedness and response | If animal holes of sufficient size to be used by badger or otter are found during vegetation clearance the works in that location shall cease and the Ecological Clerk of Works shall be contacted. If items of potential archaeological value are uncovered then works in that location shall cease and the Archaeologist shall be contacted. An emergency plan shall be prepared to ensure that any unforeseen release of silty water or other polluted effluents are brought quickly under control and remediated in consultation with the NIEA. | | |
| References | Environmental Statement. | | |

Annex 2.4 Bridge Construction

Table 6G.16 Procedure for Bridge Construction Across the Rivers

| Procedure for bridge construction across the rivers | | CP04 | |
|---|--|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Purpose | <p>To minimise the impacts on ecological habitats and wildlife in the area during bridge construction.</p> <p>To minimise noise nuisance.</p> <p>To prevent environmental pollution incidents.</p> | | |
| Responsibility for control | Environmental Manager | | |
| Procedures | <p>Installing temporary bridges</p> <p>Bunds shall be constructed to surround the working platforms at a level to prevent floodwaters overtopping.</p> <p>Erosion protection shall be installed to the temporary bridge abutments and lead-in and lead-out edges of the bunds.</p> <p>The bridge shall be assembled in sections on a working platform. A crawler or all terrain mobile crane shall be used to lift the longitudinal truss sections over the river.</p> <p>Cross members between the trusses shall be infilled using a crane. To remove the bridge the reverse process to erection shall be employed.</p> <p>The deck shall be longitudinally sloping to give positive drainage of the deck surface. The water from rain or cleaning operations shall be channelled into the moat areas on the floodplain to be pumped to the discharge area.</p> <p>Solid face ply board panelling shall be installed to the sides of the deck to prevent any material that might fall from the trucks from falling into the river. It shall also stop splash water entering the river. Open flooring decking shall not be used.</p> <p>A maintenance regime for cleaning the deck of the bridge and cleaning the approach ramps to the bridge shall be in place. Regular dust suppression shall be required during dry periods to keep the surface of the haul road damp.</p> <p>Piling for foundations</p> <p>Any vibration shall be limited to those agreed with the local authorities.</p> <p>Spoil shall be removed by excavator to keep the work area clear and when necessary the excavator shall load the spoil to transportation for removal.</p> <p>Ground water within the bore displaced during placing of concrete shall be pumped away to a washout facility set up off the flood plain.</p> <p>Any spills of concrete shall be cleared up to avoid the possibility of cement contaminating water from rainfall or washing down of equipment.</p> <p>Excavation for pier foundations</p> <p>Prior to commencing the bulk excavation of the cofferdam one or more sump holes shall be excavated to the full depth of the excavation.</p> <p>The cofferdam shall be excavated using an excavator with a perforated bucket.</p> <p>Low water table levels shall be maintained inside the cofferdam by pumping.</p> | | |

| Procedure for bridge construction across the rivers | | CP04 | |
|---|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| | <p>Water from the pumping shall not be discharge back into any watercourse without appropriate attenuation and treatment.</p> <p>Structure base construction</p> <p>Prefabrication of formwork shall be undertaken remote from the floodplain and any debris from onsite fixing and fabrication shall be sent in skips for recycling.</p> <p>Dewatering of the cofferdam shall be maintained until the concrete base has been constructed, the piers are constructed to above ground level and the cofferdam has been backfilled.</p> <p>Deck construction</p> <p>The sub-deck shall have edge upstands, shall be watertight and shall drain to the moats either side of the river.</p> <p>The sub-deck shall provided a second line of protection to catch debris and liquids that would otherwise reach the river. It shall be designed to deflect objects away from the river to a place where they can be collected and disposed of.</p> <p>Until the permanent deck drainage is installed, measures shall be implemented to ensure run-off water from the deck is collected and piped to the moat area on the floodplain where it shall be pumped to discharge areas following suitable attenuation and treatment.</p> | | |
| Environmental Controls | <p>Method statements shall be prepared for the control of noise and vibration.</p> <p>A 15 M.P.H. speed limit shall be imposed on the haul road across the floodplains and watercourses. This shall reduce the risk of dust contamination and pollution of the river.</p> <p>Equipment shall be selected to minimise noise and where appropriate with built in noise attenuation.</p> <p>Some construction materials will be subject to a COSHH assessment.</p> | | |
| Plant & Equipment | <p>Crawler or all terrain mobile crane.</p> <p>Vibrating hammer/extractor.</p> <p>Breakers or crushing plant.</p> <p>Jack hammering.</p> <p>Crane pitching.</p> <p>Vibrating internal poker</p> <p>Concrete pumps.</p> <p>Vibrating rolling screed.</p> <p>Mechanical scabblers.</p> <p>Blacktop pavers and rollers.</p> | | |
| Monitoring | <p>Drainage treatment areas used to accept dewatering and drainage water shall be subject to regular maintenance and monitoring.</p> | | |
| Emergency, preparedness and response | <p>An emergency plan shall be prepared to ensure that any unforeseen release of silty water or other polluted effluents are brought under control and remediated in consultation with the NIEA.</p> | | |

| | | | |
|--|--------------------------|---------------|-----------------------|
| Procedure for bridge construction across the rivers | | CP04 | |
| | | Rev: A | Date: Nov 2010 |
| References | Environmental Statement. | | |

Annex 2.5 Blasting

Table 6G.17 Procedure for Blasting

| Procedure for Blasting | | CP05 | |
|----------------------------|--|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Purpose | <p>To minimise the impacts on ecological habitats and wildlife in the area from blasting.</p> <p>To avoid pollution to water courses and land.</p> <p>To minimise nuisance to the local community cause by deterioration of air quality and the creation of dust, noise and vibration.</p> | | |
| Responsibility for control | Environmental Manager | | |
| Procedures | <p>An explosives supervisor shall be appointed.</p> <p>A site specific method statement and detailed risk assessment shall be produced prior to any blasting operations taking place.</p> <p>Notice shall be provided to the public informing them of the timing of planned blasts and providing the name, address and telephone number of a contact within the project team, who shall deal with their queries.</p> <p>Method statements shall be prepared to specify arrangements for the monitoring of noise and vibration.</p> <p>Site Rules shall be drawn up to govern shot-firing for rock extraction. These rules shall state how explosives are stored, transported, used and disposed of.</p> <p>Method Statements shall be prepared to specify arrangements for the safety of the workforce and the public. They shall also set down permitted shot-firing times, the determination of danger zones for vibration, warning systems, arrangements for disposal of surplus explosives and monitoring.</p> <p>The disposal of surplus explosives and packaging shall be carried out in strict accordance with the manufactures or suppliers instructions and guidelines.</p> <p>Where rock is excavated and stored temporarily, stockpiles shall be constructed within the lands made available.</p> <p>No water shall be allowed to pond on the rock surface.</p> <p>PSNI shall be fully involved in the approval and awareness of any activities associated with the use of explosives</p> | | |
| Environmental Controls | Design of blasting methodology to maximize efficiency and reduce the transmission of vibration including appropriate charging based upon site specific regression analysis. | | |
| Plant & Equipment | <p>Rotary drill rig</p> <p>Explosives delivery truck or explosives mixing truck</p> <p>Exploders</p> <p>Circuit Testers</p> <p>Wooden or anti-static plastic hand tools</p> | | |
| Monitoring | <p>A program to monitor watercourses, air quality, dust, noise and vibration shall be put in place during the construction phase.</p> <p>Continuous vibration meters shall be positioned at receptors adjacent to the site</p> | | |

| Procedure for Blasting | | CP05 | |
|--------------------------------------|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| | prior to shot-firing. | | |
| Emergency, preparedness and response | The Site Manager shall ensure that emergencies response procedures are in place to cover situations involving injury, unforeseen damage to property and unaccountable loss of explosive materials. These procedures shall clearly identify responsibilities for liaison with Police, Fire and Ambulance forces. | | |
| References | Environmental Statement. | | |

Annex 2.6 Demolition

Table 6G.18 Procedure for Demolition

| Procedure for Demolition | | CP06 | |
|----------------------------|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Purpose | <p>To avoid pollution to water courses and land during demolition works.</p> <p>To minimise nuisance to the local community cause by deterioration of air quality and the creation of dust, noise and vibration.</p> | | |
| Responsibility for control | Environmental Manager | | |
| Procedures | <p>A site specific method statement and detailed risk assessment shall be produced prior to commencement of any demolition works.</p> <p>All underground pipes, tanks and services shall be located and marked. All tanks shall be labelled with their content and capacity.</p> <p>Visible signs of leaking tanks or pipes and any signs of contaminated ground or groundwater shall be checked.</p> <p>Recyclable waste arisings shall be segregated at source.</p> <p>Asbestos and other hazardous materials shall be separated for safe disposal.</p> <p>Licences shall be obtained from the local environmental health officer before any concrete, masonry or other material is crushed on site.</p> <p>Before removing or perforating tanks, all of their contents and residues shall be emptied for safe disposal by a competent operator in accordance with the Site Waste Management Plan.</p> <p>Pipes shall be capped or valves closed, to prevent spillage.</p> <p>Measures to avoid noise and vibration nuisance shall be agreed with the Local Planning Authority (LPA) and NIEA in advance.</p> <p>A method statement shall be prepared to specify how dust control measures (such as damping down) shall be implemented.</p> <p>All runoff from the site shall be controlled. Discharge licenses shall be in place and appropriate treatment provided prior to discharge to watercourses.</p> <p>Dust shall be prevented from escaping from materials in lorries leaving the site. If it is not possible to cover lorries because there are pieces of protruding material, they shall be sprayed them with water just before they leave.</p> | | |
| Environmental Controls | <p>Adequate inspection to plant and equipment in operation shall be carried out prior to demolition works to ensure that noise and vibration levels do not exceed those agreed with the local authorities.</p> <p>Suitable spill response materials and emergency instructions shall be available on site and staff shall have been adequately trained.</p> | | |
| Plant & Equipment | <p>360° tracked excavator fitted with breaker</p> <p>Saw fitted with dust suppressant</p> <p>40 Tonne tracked crawler crane / 80t mobile if necessary</p> <p>Stihl saw</p> <p>Harness and appropriate Personal Protective Equipment (PPE) if necessary</p> | | |

| Procedure for Demolition | | CP06 | |
|--------------------------------------|---|--------|----------------|
| | | Rev: A | Date: Nov 2010 |
| Monitoring | A program to monitor air quality, dust, noise and vibration shall be put in place during the construction phase. | | |
| Emergency, preparedness and response | Emergency response plans will be incorporated into the Contractors' method statements for each individual demolition operation. | | |
| References | Environmental Statement. | | |

Draft versions of the Construction Procedures are set out below for guidance purposes.

The Contractor shall develop these further as an integral part of their operational procedures for issue as Controlled Documents.

Annex 3: Site Access Locations

Table 6G.19 Site Access Locations

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|------------------------------------|-------------------|----------------------------------|---|--|
| Section 1 | | | | |
| Junction 1 - New Buildings | 500 | 20 per day (240 days) | Directly off existing A5 | |
| Junction 2 - New Buildings (South) | 1750 | 20 per day (240 days) | New Junction 2 link road | |
| Shared Accommodation Access | 2850 | 20 per day (300 days) | Shared access to treatment works | |
| Meenagh Road | 4950 | 20 per day (360 days) | "Using existing side road (permanent stop off)" | |
| Existing A5 | 6400 | 20 per day (360 days) | Directly off existing A5 | |
| Donagheady Road | 7750 | 12 per day (240 days) | New Donagheady side road | |
| Existing A5 | 9100 | 20 per day (360 days) | Directly off existing A5 | |
| Existing A5 | 11600 | 70 per day (360 days) | Directly off existing A5 | |
| Junction 3 | 14700 | 160 per day (480 days) | New Junction 3 link road | Surplus from south of river Mourne & imported fill material. |
| Existing A5 | 16700 - 17900 | 90 per day (480 days) | Directly off existing A5 | Surplus from south of river Mourne & imported fill material. |
| Junction 6 (Existing A5) | 18050 | 50 per day (480 days) | Directly off existing A5 | |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|----------------------|-------------------|----------------------------------|--|--|
| Strahans Road | 20400 | 200 per day(360 days) | "Using existing side road (improvements required)" | Surplus cut south of river Mourne hauled north via Strahans road. |
| Orchard Road | 21400 | 15 per day (360 days) | Using existing Orchard road | |
| Junction 8 | 22100 | 10 per day (240 days) | New Junction 8 link road | |
| Peacock Road | 22400 | 20 per day (360 days) | "Using existing side road (improvements required)" | |
| Section 2 | | | | |
| Primrose Park | 27215 | 25 per day (240 days) | From Peacock Road/Ex. A5 | Temporary Diversion to north side. |
| B165 Bells Park Road | 27990 | 20 per day (240 days) | From Ex. A5 | Temporary Diversion to north side. Not required if new alignment is offline from existing. |
| Garden Road | 28000 | | | Assumed Closed until complete with Bells Park Rd. |
| High Road | 28595 | | | |
| Seein Road | 29090 | 10 per day (120 days) | From Bells Park Rd. | Now offline. Shuttle work (traffic lights) to complete tie-ins. |
| Concess Road | 30140 | | | Short term Road Closures to construct road and beam lifts. |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|-------------------------|-------------------|----------------------------------|------------------------------------|---|
| B72 Fyfin Raod | 31445 | 50 per day (360 days) | From B165 & Ex. A5 | Shuttle work (traffic lights) to upgrade pavement & markings etc (width/depth). |
| Stone Road | 31910 | | | Temporary closure with diversion using realigned Urbalreagh Rd. |
| Urbalreagh Road (North) | 32000 | 20 per day (360 days) | From B72 Fyfin Rd. | |
| Urbalreagh Road (South) | 32000 | | From B72 Fyfin Rd. | |
| Unnamed Road | 32600 | | | |
| Derg Road | 33960 | 20 per day (240 days) | From Ex. A5 onto Old Bridge Rd. | Temp Diversion using existing to south of new realignment. |
| B164 Deerpark Road | 34700 | 20 per day (240 days) | | Temp Diversion to the north of the new realignment. |
| Milltown Road | 35280 | | | |
| Magheracolton Road | 36270 | 20 per day (240 days) | From B164 and B84/Drumlegagh Rd. | Short term Road Closures to construct road and beam lifts. |
| Drumlegagh Road | 37050 | 20 per day (240 days) | From Magheracolton Rd to JN2 only. | |
| Golf Course Road | 37200 | | | |
| B84 Baronscourt Road | 37300 | 50 per day (360 days) | From Old A5 Strabane Rd & Ex. A5. | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Oldcastle Road | 38590 | | | Temp Diversion to the north |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|---------------------------|-------------------|----------------------------------|--------------------------------|--|
| | | | | of the new realignment. |
| Honeyford Lane | 39000 | | | |
| New Glen to Old Glen Link | 39350 | | | |
| Glen Road | 39420 | | | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Gortgranagh Road | 39500 | | | |
| Castletown Road (North) | 39910 | 50 per day (360 days) | From Old A5 in Newtownstewart. | Maintain existing road until new overbridge complete. |
| Grange Road | 40050 | | | |
| West Road | 41110 | | | Temp Diversion to the north of the new realignment. |
| Joe's Road | 42410 | 25 per day (240 days) | From Ex. A5. | Maintain existing road until new overbridge complete. |
| Unnamed Road | 43590 | 50 per day (240 days) | | Becomes a shared access track. |
| Killinure Road | 44960 | | | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Castletown Road (South) | 45670 | 20 per day (360 days) | From Ex. A5 | Short term Road Closures to construct road and beam lifts. |
| Cashty - Castletown link | 45750 | | | |
| Cashty Road | 46880 | | | |
| Dunteige Road | 46940 | 20 per day (360 days) | From Castletown Rd at | Temp Diversion to the north |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|------------------------|-------------------|----------------------------------|--------------------------|--|
| | | | Mountjoy | of the new realignment. |
| Lisnagirr Road | 47550 | 20 per day (480 days) | From Ex. A5. | |
| Tully Link Road East | 48000 | | | |
| Rash Road | 48070 | 20 per day (240 days) | From Ex. A5. | |
| Tully Link Road West | 48200 | | | |
| Proposed JN3 Link Road | 49230 | 25 per day (360 days) | From Ex. A5. | Shuttle work (traffic lights) to complete tie-ins. |
| South Drumlegagh Road | 49620 | 25 per day (360 days) | From Ex. A5. | |
| Todds Road | 49825 | | | |
| Mellon Park Drive | 50440 | | | |
| Armstrong's Lane | 50770 | | | |
| B50/Gillygooley Road | 51280 | 50 per day (360 days) | From Ex. A5. | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Mullaghmena Road | 51350 | | | Temporary Road Closure to construct & finalise to new B50. |
| Aghnamoyle Road | 52010 | 20 per day (240 days) | From B50 Gillygooley Rd. | Use existing and realigned Botera Road as temporary diversion until Overbridge complete. |
| Botera Road | 52100 | | | |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|----------------------|-------------------|----------------------------------|-----------------------------------|---|
| Tamlaght Road | 53100 | 10 per day (240 days) | From Brookmount Rd/ Ex. A5. | Full Road Closure for duration of bridge construction. |
| Brookmount Road | 53720 | 10 per day (240 days) | From Ex. A5. | Short term Road Closures to construct road and beam lifts. |
| A32/Clannobogan Road | 54020 | 50 per day (360 days) | From A32 | Short term Road Closures to construct road and beam lifts. |
| Loughmuck Road | 54350 | 20 per day (120 days) | From Dromore Rd/A32 | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Beagh Road | 55910 | | | |
| Ballynahatty Road | 56430 | 20 per day (240 days) | From Old A5, Dublin Rd, Omagh | Now mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| Blackfort Road | 57000 | 20 per day (120 days) | From Section 3/ B83 Seskinore Rd. | Use existing and realigned Blackfort Road as temporary diversion until Overbridge complete. |
| Drumragh Road | 57100 | 20 per day (240 days) | From Section 3/ B83 Seskinore Rd. | |
| Section 3 | | | | |
| Seskinore Road (B83) | 62065 | 120 per day (540 days) | Use existing side road | Large quantities of export and import required. |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|----------------------------|-------------------|----------------------------------|---|--|
| Tattykeel Cottages North | 62600 | 20 per day (360 days) | Use existing side road | |
| Tattykeel Cottages Central | 62850 | 20 per day (360 days) | Access directly from existing A5 | Access to Doogary Bog |
| Tattykeel Cottages South | 63800 | 20 per day (360 days) | Use existing side road | |
| Drumconnelly Road 1 | 64400 | 70 per day (450 days) | Use existing side road and realigned side road | Large quantities of export and import required. |
| Tullyrush Road | 66000 | 35 per day (450 days) | Use existing side road with minor upgrade works | |
| Rarone Road | 66900 | 25 per day (360 days) | Use existing side road with minor upgrade works | |
| Drumconnolly Road 2 | 67900 | 25 per day (360 days) | Use existing side road with minor upgrade works | |
| Moylagh Road | 68700 | 50 per day (450 days) | Use existing side road | Large quantities of export and import required. |
| Augher Point Road | 68800 | 30 per day (360 days) | Use existing side road and realigned side road | |
| Greenmount Road | 71150 | 65 per day (450 days) | Use existing side road | Large quantities of export and import required. |
| Springhill Road | 73800 | 100 per day (720 days) | Use existing side road and temporary road | Large quantities of export and import required. No suitable alternative access between Springhill and Glenhoy. |
| Tullanafoile Road | 75900 | 10 per day (200 days) | Use existing side road | |
| Tullycorker Road | 76600 | 10 per day (200 days) | Use existing side road | |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|----------------------------|-------------------|----------------------------------|---|--|
| Rarogan Road | 78450 | 10 per day (200 days) | Use existing side road | |
| Glenhoy Road | 80300 | 100 per day (720 days) | Use existing side road and realigned side road | Large quantities of export and import required. No suitable alternative access between Springhill and Glenhoy. |
| Ballynasaggart Road | 81650 | 40 per day (720 days) | Use existing side road with minor upgrade works | Large quantities of export and import required. |
| Feddan Road | 83300 | 10 per day (200 days) | Use existing side road | |
| Tullybryan Road | 83400 | 20 per day (360 days) | Use existing side road and realigned side road | |
| A4 Annaghilla Road | 83500 | 100 per day (720 days) | Use existing side road | Large quantities of export and import required. |
| Tullyvar Road (crosses A4) | N/A | 20 per day (360 days) | Use existing side road | |
| Tullywinny Road 2 | 85500 | 130 per day (540 days) | Use existing side road accessed from Ballynany Road | |
| Lisginny Road | 86800 | 200 per day (540 days) | Use existing side road with minor upgrade works | Large quantities of export and import required. |
| Old Chapel Road | 88000 | 10 per day (240 days) | Use existing side road | |
| Tullyvar Road (A5) | 88500 | 160 per day (720 days) | Use existing side road | Large quantities of export and import required. |
| Carnteel road (B35) | 90500 | 110 per day (360 days) | Use existing side road and | Large quantities of export |

| Site Access | Mainline Chainage | Average Truck Movements (period) | Access Description | Comments |
|---|-------------------|----------------------------------|--|---|
| | | | realigned side road | and import required. |
| Rehaghy road (B128) | 91050 | 50 per day (360 days) | Use existing side road and realigned side road | |
| Caledon road | 92200 | 60 per day (360 days) | Use existing side road | |
| Monaghan Road (stopped up, turning head provided) | 93300 | 30 per day (360 days) | Use existing side road | Large quantities of export and import required. |

Annex 4: Traffic Management

Table 6G.20 Traffic Management Description

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------------|----------------------------|-------------------|----------------------|--|---|
| Section 1 | | | | | |
| | Junction 1 (New Buildings) | 500 | No | Yes | One way TM (traffic lights) to complete tie-ins with the existing A5 and the junction changes associated with Woodside Road. |
| | Junction 2 | 1750 | No | Yes | One way TM to complete tie-ins. |
| S1 / SR / 01 | Dunnalong Road | 3900 | No | No | Local School bus route. Temporary diversion to the north of the existing road. |
| | Meenagh Road | 4950 | Yes | Yes | No TM requirements. Landowner access will be maintained during works. |
| | Existing A5 | 6400 | No | Yes | Traffic flows will be maintained on existing A5 during bridge construction works. Assumed that A5 remains at grade and only requires the relocation of a bus lay-by to the north of the proposed structure. Night closure required for bridge beam lifts. |
| S1 / SR / 05 | Tamnabraday Road | 6400 | No | No | New link road running across the top of the Bready cutting will require TM to complete tie-in. |
| S1 / SR / 04 | Cloghboy Road | 6500 | No | No | Realigned Cloghboy Road constructed offline. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------|---------------------|-------------------|----------------------|--|---|
| S1 / SR / 06 | Donagheady Road | 7750 | No | No | No TM requirements. Existing Donagheady Road maintained until new side road / structure completed. One way TM to complete tie-ins. |
| S1 / SR / 24 | Willow Road | 8900 | Yes - in part | No | Realigned Willow Road constructed offline. |
| | Existing A5 | 9100 | No | Yes | Traffic flows will be maintained on existing A5 during bridge construction works. Assumed that A5 remains at grade and requires no upgrade works. Night closure required for bridge beam lifts. |
| S1 / SR / 09 | Ash Avenue | 9600 | Yes | No | Establish Ash / Drumenny link prior to closing Ash Avenue. |
| S1 / SR / 10 | Drumenny Road | 10050 | Yes | No | Traffic will use Ash Avenue during bridge construction works. |
| S1 / SR / 11 | Ballydonaghy Road | 10950 | Yes | No | Temporary diversion to the north of the existing road. |
| S1 / SR / 12 | Moss Road | 11000 | No | No | Traffic will use Ballydonaghy / Moss link during construction. |
| S1 / SR / 14 | Greenlaw Road | 13000 | Yes | No | Establish Park Road / Greenlaw Road link prior to closing Greenlaw Road. |
| S1 / SR / 15 | Park Road (north) | 13550 | No | No | Traffic flows will be maintained on existing Park Road during bridge construction works. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------------|---------------------|-------------------|----------------------|--|--|
| | Junction 3 | 14750 | No | Yes | Various local temporary diversions for the realigned existing A5, Woodend Road and Park Road will be required during construction works. One way TM will be required at intervals during construction. |
| S1 / SR / 16 | Spruce Road | 15000 | Yes | No | Early closure, access via. Park Road during construction. |
| S1 / SR / 17 | Park Road (south) | 17000 | Yes (junction) | No | Existing junction with the A5 to be stopped up and diverted through the realigned link through Junction 4. |
| | Greenbrae Park | 17400 | Yes | No | Road to be closed – no TM required |
| S1 / SR / 18 | Lifford Road | 17900 | No | Yes | Various local temporary diversions will be required during construction works. One way TM may be required at intervals during construction. |
| | Junction 5 | 17900 | No | Yes | New arm to be provided on the roundabout for the southbound slip road; TM will be required to complete the tie-in. |
| | Junction 6 | 17900 | No | No | New arm to be provided on the roundabout for the slip roads; TM will be required to complete the tie-in. |
| S1 / SR / 19 | Urney Road | 19600 | No | No | Realigned offline. One way TM to complete tie-ins. |
| S1 / SR / 26 | Carrick Avenue | 19600 | No | No | Realigned offline. One way TM to complete tie-ins. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|------------------|-------------------------|-------------------|----------------------|--|---|
| Section 2 | | | | | |
| S2 / SR / 01 | Primrose Park | 27215 | No | Yes - from Sion Mills | Temporary diversion to north side. |
| S2 / SR / 02 | B165 Bells Park Road | 27990 | No | Yes | New alignment is offline from existing. |
| S2 / SR / 49 | Garden Road | 28000 | Diverted | No | Assumed closed until complete with Bells Park Road. |
| S2 / SR / 03 | High Road | 28595 | Yes | No | |
| S2 / SR / 04 | Seein Road | 29090 | No | Yes - from Bells Park Road | Offline. Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 05 | Concess Road | 30140 | No | Yes - from Bells Park Road | Short term road closures to construct road and beam lifts. |
| S2 / SR / 06 | B72 Fyfin Road | 31445 | No | Yes | Shuttle work (traffic lights) to upgrade pavement & markings etc (width/depth). |
| S2 / SR / 07 | Stone Road | 31910 | No | Yes | Temporary closure with diversion using realigned Urbalreagh Road. |
| | Urbalreagh Road (North) | 32000 | Diverted | Yes | |
| | Urbalreagh Road (South) | 32000 | Diverted | Yes | |
| S2 / SR / 10 | Derg Road | 33960 | No | Yes - from Ex. A5 | Temp diversion using existing to south of new realignment. |
| S2 / SR / 11 | Deerpark Road | 34700 | No | Yes | Temp diversion to the north of the new realignment. |
| S2 / SR / 12 | Milltown Road | 35280 | Yes | No | |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------|-------------------------|-------------------|----------------------|--|--|
| S2 / SR / 13 | Magheracoltan Road | 36270 | No | Yes | Short term road closures to construct road and beam lifts. |
| S2 / SR / 14 | Drumlegagh Road North | 37050 | Diverted | Yes | Linked to Junction 10 connector road |
| S2 / SR / 15 | Golf Course Road | 37200 | Yes | Yes | |
| S2 / SR / 16 | Baronscourt Road | 37300 | No | Yes | Offline. Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 17 | Oldcastle Road | 38590 | No | No | Temp diversion to the north of the new realignment. |
| S2 / SR / 18 | Honeyford Lane | 39000 | Yes | No | |
| S2 / SR / 19 | Glen Road | 39420 | Diverted | Yes | Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 20 | Gortgranagh Road | 39500 | Diverted | No | Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 21 | Castletown Road (North) | 39910 | No | Yes | Maintain existing road until new overbridge complete. |
| S2 / SR / 22 | Grange Road | 40050 | Diverted | No | |
| S2 / SR / 23 | West Road | 41110 | No | No | Temporary diversion to the north of the new realignment |
| S2 / SR / 24 | Joe's Lane | 42410 | Diverted | Yes | Maintain existing road until new overbridge complete. |
| S2 / SR / 25 | Gordon's Lane | 43590 | Yes | Yes | Abandoned between Castletown Road and existing A5. Proposed underbridge (for landowner access) offline to the north. |
| S2 / SR / 26 | Killinure Road | 44960 | No | Yes - from Ex. A5 | Mostly offline. Shuttle work (traffic lights) to complete tie-ins. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------|--------------------------------|-------------------|----------------------|--|--|
| S2 / SR / 27 | Castletown Road (South) | 45670 | No | Yes - from Ex. A5 | Short term road closures to construct road and beam lifts. |
| S2 / SR / 28 | Cashty - Castletown link | 45750 | Diverted | Yes | |
| S2 / SR / 29 | Dunteige Road | 46940 | No | Yes | Temp diversion to the north of the new alignment. |
| S2 / SR / 30 | Lisnagirr Road | 47550 | Yes | No | |
| S2 / SR / 31 | Tully Road (East) | 48000 | Diverted | No | |
| S2 / SR / 32 | Rash Road | 48070 | No | Y | Temp diversion via Tully Road (East). |
| S2 / SR / 33 | Tully Road (West) | 48200 | Yes | No | |
| S2 / SR / 34 | Proposed Junction 11 Link Road | 49230 | - | Yes | Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 35 | Drumlegagh Road South | 49620 | Yes | Yes | Link provided to Junction 11. |
| S2 / SR / 36 | Todds Road | 49825 | Yes | No | |
| S2 / SR / 37 | Mellon Park Drive | 50440 | Diverted | Yes | |
| S2 / SR / 38 | B50/Gillygooly Road | 51280 | No | Yes | Offline. Shuttle work (traffic lights) to complete tie-ins. |
| | Mullaghmena Road | 51350 | No | | Temporary road closure to construct and finalise tie-in to new B50. |
| S2 / SR / 39 | Aghnamoyle Road | 52010 | No | Yes | Use existing and realigned Botera Road as temporary diversion until Overbridge complete. |
| S2 / SR / 40 | Botera Road | 52100 | Diverted | No | |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------|----------------------|-------------------|----------------------|--|--|
| S2 / SR / 41 | Tamlaght Road | 53100 | No | Yes | Full road closure for duration of bridge construction. |
| S2 / SR / 42 | Brookmount Road | 53720 | No | Yes | Short term road closures to construct road and beam lifts. |
| S2 / SR / 43 | A32/Clanabogan Road | 54020 | No | Yes | Short term road closures to construct road and beam lifts. |
| S2 / SR / 44 | Loughmuck Road | 54350 | No | Yes | Offline to the north. Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 45 | Beagh Road | 55910 | No | Yes | Mostly offline to the south. Partial temp diversion to the north. |
| S2 / SR / 46 | Ballynahatty Road | 56430 | No | Yes | Mostly offline. Shuttle work (traffic lights) to complete tie-ins. |
| S2 / SR / 47 | Blackfort Road | 57000 | No | Yes | Use existing and realigned Drumragh Road as temporary diversion until overbridge complete. |
| S2 / SR / 48 | Drumragh Road | 57100 | Diverted | No | |
| S2 / SR / 01 | Primrose Park | 27215 | No | Yes - from Sion Mills | Temporary diversion to north side. |
| S2 / SR / 02 | B165 Bells Park Road | 27990 | No | Yes | New alignment is offline from existing. |
| S2 / SR / 49 | Garden Road | 28000 | Diverted | No | Assumed closed until complete with Bells Park Road. |
| S2 / SR / 03 | High Road | 28595 | Yes | No | |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|------------------|--|-------------------|----------------------|--|---|
| Section 3 | | | | | |
| S3/SR/001 | Seskinore road (B83) | 62065 | Re-aligned | Yes | Temporary road construction for tie-in. Possibly traffic lights for Western tie-in through bog. |
| S3/SR/043 | Doogary road (A5) - joins Seskinore road | 62100 | Re-aligned | Yes | Temporary road construction for tie-ins. |
| S3/SR/044 | Tattykeel cottages north | 62600 | Yes | Yes | Road closure agreed, access provided from south. |
| S3/SR/044 | Tattykeel cottages central | 62850 | Re-aligned | Yes | Road closure agreed, access provided from south. |
| S3/SR/044 | Tattykeel cottages south | 63800 | Yes | Yes | Remains open until central section re-opens. |
| S3/SR/045 | Drumconnelly road 1 | 64300 | Re-aligned | Yes | Short duration closure required to construct tie-in. |
| S3/SR/007 | Tullyrush road | 66000 | No | Yes | Road closure agreed for duration of structure. Diversion via Seskinore Road. |
| S3/SR/008 | Rarone road | 66900 | No | Yes | Road closure agreed for duration of structure. Diversion via Seskinore Road. |
| S3/SR/049 | Drumconnolly road 2 | 67900 | Yes | Yes | Remains open until Rarone Road re-opened. |
| S3/SR/009 | Moylagh road | 68700 | Re-aligned | Yes | Temporary road required for tie-in. |
| S3/SR/011 | Augher point road | 68800 | Re-aligned | Yes | Temporary road required for tie-in. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|---------------|----------------------------|-------------------|----------------------|--|---|
| S3/SR/012 | Killadroy road | 70950 | Re-aligned | No | Short duration closure required to construct tie-in. |
| S3/SR/013 | Greenmount road | 71150 | Re-aligned | Yes | Short duration closure required for tie-ins, beam lifts access via Killadroy. |
| S3/SR/014 | Routingburn road | 72000 | Yes | No | |
| S3/SR/015 | Springhill road | 73800 | No | Yes | Temporary road constructed to south. |
| S3/SR/017 | Cormore road | 75000 | Yes | No | |
| S3/SR/046 | Tullanafoile road | 75900 | No | Yes | Road closure agreed. Phased with Tullycorker. |
| S3/SR/047 | Tullycorker road | 76600 | No | Y | Road closure agreed. Phased with Tullanafoile. |
| S3/SR/022 | Tycanny road | 78200 | Re-aligned | N | Short duration road closure required for tie-in. |
| S3/SR/023 | Rarogan road | 78450 | No | Y | Road closure agreed. Phased with Tullycorker. |
| S3/SR/024 | Glenhoy road | 80300 | No | Y | Short duration road closure required for tie-in. |
| S3/SR/050 | Ballynasaggart road | 81650 | No | Y | Road closure agreed. Phased with Crew Road. |
| S3/SR/025 | Crew road | 82000 | Yes | N | Remains open until Ballynasaggart re-opens. |
| S3/SR/027 | Feddan road | 83300 | No | Y | Road closure required. Alternative access via Ballynasaggart Road. |
| S3/SR/029 | Tullybryan road | 83400 | No | Y | Online construction. Road closure required. |
| S3/SR/031 | A4 Annaghilla road | 83500 | No | Y | Online construction. Temporary traffic restrictions (dual to single). |
| S3/SR/030 | Tullyvar road (crosses A4) | N/A | No | Y | Temporary road required for construction of embankments. |

| Side Road Ref | Side Road/ Junction | Mainline Chainage | Side Road Stopped Up | Preferred for Import of Materials & all Vehicles | Comments Temporary Diversion / Road Closure |
|------------------|---|-------------------|----------------------|--|---|
| | Ballynany road | 83700 | Yes | Y | Road closure required. Phased with Tullywinny. |
| S3/SR/032 | Tullywinny road (Tie-In with A4) | N/A | Yes | N | Road closure required. |
| S3/SR/033 | Tullywinny road 2 | 84400 | No | Y | Road closure required. Phased with Ballynany. |
| S3/SR/034 | Lisginny road | 86500 | No | Y | Short duration closure agreed for construction of tie-ins. |
| S3/SR/035 | Old chapel road | 87800 | No | Y | Road closure required for duration of structure. |
| S3/SR/036 | Tullyvar road (A5) | 88350 | No | Y | Temporary roads required for construction of tie-ins. |
| S3/SR/038 | Loughans road | 88420 | No | N | Road closure required for duration of structure. |
| S3/SR/039 | Carnteel road (B35) | 90280 | No | Y | Temporary roads required for construction of tie-ins. |
| S3/SR/040 | Rehaghy road (B128) | 90800 | No | Y | Short duration closures required for beam lifts, road closures. |
| S3/SR/041 | Caledon road | 91920 | No | Y | Temporary road required for construction of tie-ins. |
| S3/SR/042 | Monaghan road (stopped up, turning head provided) | 93100 | Yes | Y | Possibly traffic lights/ temporary road for construction of tie-in. |