



Llywodraeth Cymru
Welsh Government

Llywodraeth Cymru / Welsh Government
A494 RIVER DEE BRIDGE REPLACEMENT

Environmental Statement

Volume 3: Technical Appendices

**Appendix 18a: Outline Construction
Environmental Management Plan**

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1.1 Introduction and background

Responsibility for producing this EMP

- 1.1.1 This document is the Design Environmental Management Plan 'Design EMP' for the A494 River Dee Bridge Improvements 'the Scheme'. The Scheme Designer is responsible for producing the first iteration of this EMP.

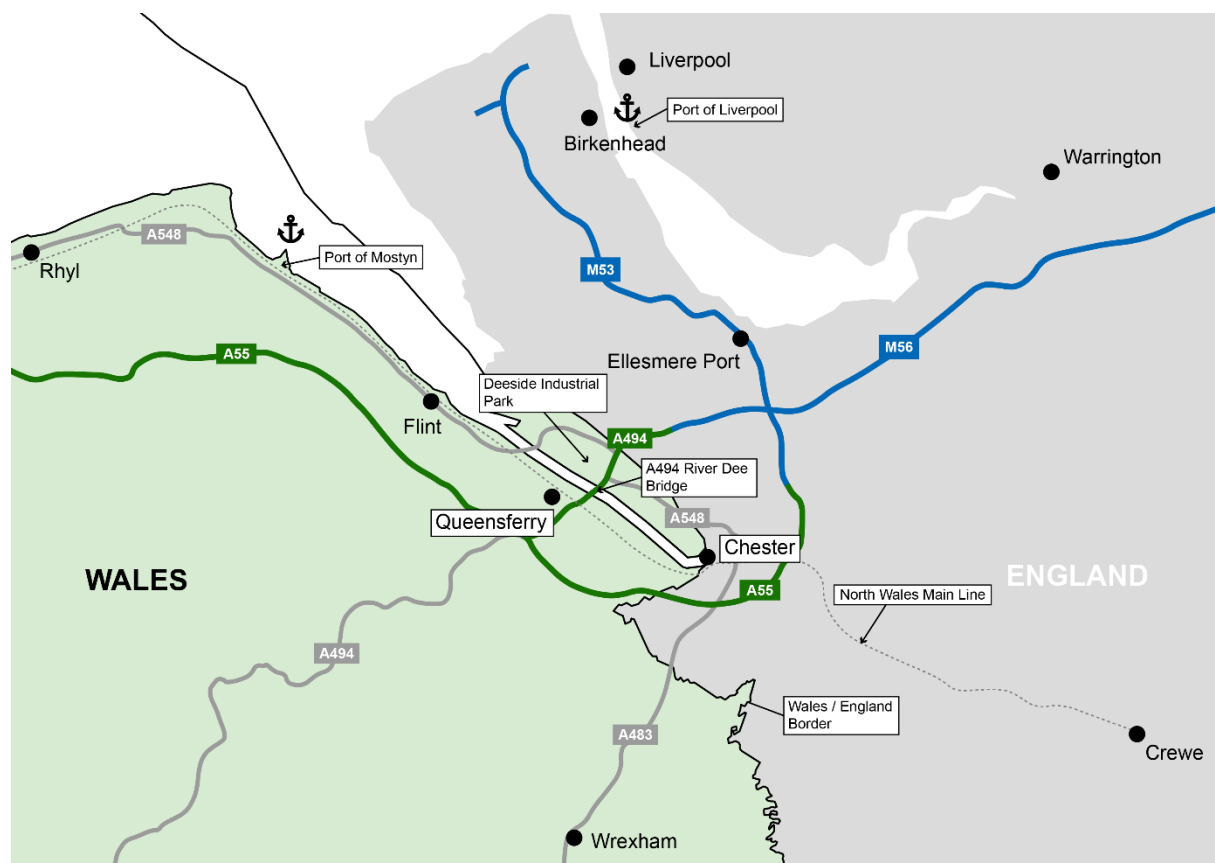
Purpose of this document

- 1.1.2 The Design EMP sets out control measures and the standards to be implemented throughout construction of the Scheme, which have been developed through the Environmental Impact Assessment (EIA), as reported in the Environmental Statement (ES).
- 1.1.3 The Scheme is within the administrative areas of Flintshire County Council. A description of the site, the Scheme and a high-level construction strategy is provided in Chapter 2 of the Environmental Statement. Chapter 18 of Environmental Statement also provides an overview of the Design- EMP and the Environmental Management requirements for construction. Each of the assessment chapters 6 to 16 set out the required mitigation and monitoring commitments. The EMP is intended to be a mechanism to carry these actions and commitments through design, construction and aftercare to ensure effective protection of the environment.

1.2 The Scheme

- 1.2.1 The Scheme is known as the River Dee Bridge Replacement and straddles the River Dee at Queensferry located in Flintshire, North Wales, approximately 10km west north west of the centre of the city of Chester, and 9.5km north east of Mold, the county town of Flintshire.

Figure 1-1 Scheme Location Plan



1.3 The programme

- 1.3.1 It is anticipated that the new bridge and connections could be open to all traffic by the end of 2029 subject to the consenting process, procurement of a contractor and construction programme. To achieve the opening date the following are the key anticipated dates:

Public Local Inquiry (if required):	Spring/Summer 2026
Ministers' decision to proceed:	Summer 2026
Site enabling works:	Autumn 2026 (earliest possible date)
Start of construction (<i>subject to utility diversion timescales</i>)	Winter/Spring 2027
Completion Construction Works:	Summer/Autumn 2029
Completion of 62 Month of contract Aftercare	Autumn 2034

The reason for the Scheme

- 1.3.2 There is evidence that the concrete deck of the A494 River Dee Bridge is deteriorating. This has continued despite routine maintenance and repairs by North and Mid Wales Trunk Road Agent (NMWTRA). There is a prohibition restricting the movement of abnormal loads over the structure. Closure of the bridge without a replacement would result in serious disruption including long distance diversions and disruption to the local road network and nearby communities over a lengthy period of time. Replacement of the bridge close to the south-eastern side of the existing bridge, to accommodate all traffic on two lanes in both directions, followed by demolition of the original bridge deck, forms the basis of the Scheme. The completed project would provide a single replacement bridge with two lanes of traffic and a total length of 1.25km improved carriageway either side of the bridge.

1.4 Project objectives

- 1.4.1 The following Transport Planning Objectives (TPOs) were aligned with Welsh Government and formalised as part of Stages 0/1 and 2 of the WeITAG process, to

provide clear aims for the project. Stakeholders participated in the setting of these TPOs which are set out in their final form as part of the WeITAG Stage 2 report.

Scheme Objectives

- 1.4.2 The Scheme's SMART objectives have been reviewed and updated to reflect the latest policy ambitions and priorities and are to:
 - 1.4.3 Maintain connectivity of the A494 strategic corridor by addressing the life expired River Dee Bridge.
 - 1.4.4 Maximise opportunities for modal shift through better provision for alternative modes.
 - 1.4.5 Minimise Scheme whole-life carbon emissions through applying carbon reduction measures to design, construction, and operation.
 - 1.4.6 Maintain and enhance the local environment by securing long term net benefit for biodiversity.
 - 1.4.7 Improve resilience on the A494 corridor by minimising the impacts of incidents and accidents and enhancing safety for road users and maintenance personnel.
 - 1.4.8 Maintain connectivity along the A494 strategic corridor during construction to minimise impacts on residents, businesses, strategic and local traffic.

Environmental Objectives

- 1.4.9 A set of draft Environmental Objectives (EO's) have been developed by the project team to align with Welsh Government planning and environmental policies and to improve and enhance the environmental performance of the best performing Scheme option (Option E). The nine EO's are set out below:
 - 1.4.10 Protect and safeguard the designated site of the river Dee by avoiding or minimising adverse environmental impacts.

- 1.4.11 Enhance ecosystem resilience and secure long-term benefits for biodiversity.
- 1.4.12 Minimise environmental risks such as air and noise pollution and those posed by flood risk and coastal change.
- 1.4.13 Improve connectivity to adjacent ecosystems and deliver positive enhancement measures.
- 1.4.14 Protect and enhance the biodiversity and value of the soft estate and its resilience for future change.
- 1.4.15 Secure long-term mitigation and enhancement measures that are effective and resilient to climate change.
- 1.4.16 Deliver a network of green infrastructure and open green spaces and soft estate.
- 1.4.17 Minimise the use of carbon and reduce greenhouse gas emissions arising from construction and operational phases of the bridge replacement Scheme.
- 1.4.18 Ensure short-and long-term environmental mitigation and management measures are in place through the construction and operational stages of the Scheme.

2. Responsibilities

2.1.1 The key staff roles under the CEMP, are set out in Table 1.1. Additional roles and responsibilities will be developed as the detailed design progresses.

Table 2-1 Responsibilities

Name	Position/Responsibilities
Contractor's Environmental Manager	Responsible for running the Contractor's Environmental Management System, for managing the development of the River Dee Bridge Construction Environmental Management Plan and liaising with the Project Manager and Environmental Coordinator.
Designer's Environmental Coordinator	Working as part of the Contractor's design team Liaising with Statutory Environmental Bodies (SEBs), organising, chairing and reporting to the Environmental Liaison Group, working with the contractor's team to maintain and update the Register of Environmental Actions and Commitments (REAC) during detailed design, construction and aftercare. Agreeing environmental protection measures and controls in accordance with SEB requirements and to meet the requirements of the Ensuring measures and controls are implemented and communicated effectively. Liaising with the Project Manager and Environmental Clerk of Works to Investigating any incidents.
Construction Staff and workforce	Responding to and implementing the requirements for environmental actions or commitments, reporting environmental incidents in line with this plan and the procedure included within. Front line responsibility to enact requirements of the plan.
Contractor's Project Manager	Responsible for ensuring procedures are followed.
Employer's Environmental Co-ordinator	Monitoring the implementation of environmental mitigation during the Scheme and reporting to the Employer.

3. Content of the EMP and the REAC

3.1 Design iteration of the EMP

- 3.1.1 In advance of the procurement of a contractor for construction, the design team have prepared this draft Construction EMP containing several management plans which will inform the environmental management process.
- 3.1.2 The second iteration of the EMP, for construction will be prepared in accordance with the requirements of LA 120 Revision 1, referring to Appendix A Environmental Management Plan Structure, Table A.2.

3.2 Purpose of the Outline-CEMP

- 3.2.1 The Outline-CEMP would include updates from pre-construction surveys and any modifications because of commitments made at the Public Inquiry. The Outline-CEMP would then be made available for the key stakeholders to comment on and would be in place before construction on site commences. During construction the CEMP would be modified as necessary to take account of changes arising during construction works. These modifications could include changes to the design to reflect site conditions, but also because of:
- a) new legislation or standards;
 - b) unforeseen site conditions, for example the discovery of ground contamination, a previously unknown protected species, or archaeological discoveries;
 - c) failings in the environmental performance of the Contractor that require improved procedures, or changes in the design.
- 3.2.2 The Outline-CEMP provides a consistent approach to the management of construction activities. The purpose of the Outline-CEMP is to:
- a) record environmental risks and identify how they would be managed during the construction period;
 - b) provide a means of identifying environmental commitments, objectives and targets;

- c) provide a means of monitoring and reporting performance against the objectives and targets;
- d) provide a framework to ensure that all parties are aware of their responsibilities;
- e) set out the personnel required to implement the CEMP and the responsibilities of each person;
- f) establish a checklist of control procedures which must be integrated into the overall environmental management system.
- g) describe how construction activities would be undertaken and managed in accordance with the obligations of environmental legislation and policy, and the requirements of environmental regulatory authorities and third parties;
- h) provide detailed Environmental Management and Action Plans for reducing the potential for environmental impacts during construction;
- i) define the activities that may require consents or licences;
- j) act as a link and main document reference for environmental issues between the design and construction stage; and
- k) ensure the requirements of the Environmental Statement (ES) and the Commitments Register are met.

3.3 Stages in development of the Design-EMP

- 3.3.1 The Outline-CEMP is a 'live' document subject to refinement, amendment and expansion as necessary, following engagement with stakeholders and local communities, and following any modifications made at the Public Local Inquiry. Further evolution occurs as the Scheme design, assessment and consenting processes proceed.

3.3.2 A summary of the stages of the development of the CEMP is presented below:

Stage	Description	Output
EIA	Assessment of the environment to identify sensitivity to development and likely requirements for avoidance, mitigation and monitoring	Environmental Statement Draft REAC Outline CEMP
Design EMP	Developed as the Scheme proceeds through the statutory processes towards construction, setting out a series of proposed measures and standards of work that will be applied during the contract, aftercare and operation of the Scheme.	CEMP Preconstruction REAC
Construction EMP	Adopted and implemented by the Contractor in accordance with the requirements of ISO 14001, the CEMP is reviewed and continuously updated through construction by the contractor's environmental manager. Performance would be reported to the Environmental Liaison Group. On completion of construction the CEMP, with the REAC at its core, will contain records and evidence of the completion of all stages of the Scheme to the required standard.	Final CEMP Completed REAC Evidence base of reports, photographs, as built drawings, minutes of meetings, records of incidents, audits and proposed changes to procedures.
	Taken through aftercare with continuing development adding records of site activities and problems encountered as well as innovations applied to might assist the future maintenance body.	Records of innovation that might assist the maintaining body.
Final CEMP	Handover Environmental Management Plans ("HEMP") - towards the end of the construction and aftercare period the final CEMP will form the HEMP which will contain all the evidence and history of completion and setting out the proposed strategy for the future maintenance and management of all environmental areas and mitigation	Package of information handed on to the Maintaining body.

4. Draft Register of Environmental Actions and Commitments

- 4.1.1 The Outline-CEMP contains a Register of Environmental Actions and Commitments (REAC) which is designed to record the mitigation and other commitments adopted by the project team. The draft REAC contains initial commitments and is intended for updating as a live document as the Scheme is developed through design and consultation.
- 4.1.2 Produced during the Design stage, the Outline REAC is available as an appendix in Volume 3 of the ES. It provides the following:
- a) clear and specific description of the action/commitment, including the specific location;
 - b) the assumptions on which the action is based;
 - c) the objective of the action, including alignment with those set out in Section 1.3. Reference to relevant legislation requirements;
 - d) how the action is to be implemented/ achieved, including details of risk management;
 - e) the source of the action (e.g. EAR/ES, Habitat Regulations assessment, Equality Impact Assessment, Traffic Management Plan) including confirmation of commitments agreed with stakeholders;
 - f) name of the person responsible for the action;
 - g) achievement criteria;
 - h) the anticipated project stage, date of implementation or achievement; and 9) details of any monitoring required (including in relation to likely significant adverse effects). Note: Include reference to mitigation commitments relied on within the EIA screening (determination).

5. Environmental Asset data and drawings

- 5.1.1 An Environmental Masterplan is included as figures within Volume 2 of the ES.
- 5.1.2 Further drawings will be produced at Detailed Design and As-built drawings will be prepared following completion of construction.
- 5.1.3 Details of environmental surveys are provided in the ES Volumes 1 and Volume 3.
- 5.1.4 All drawings and survey data will be updated during the detailed design and construction. A register of those drawings and reports is to be maintained within the CEMP and the current revision will be available in a digital form for reference.

6. Details of maintenance and EMP monitoring activities

6.1.1 The requirements for maintenance and monitoring are set out in Appendix 18B.

7. Glossary

7.1.1 Several terms are used to describe the stages of implementing environmental mitigation. The Contractor's project manager would have overall responsibility for the construction of the new Scheme and appoint or nominate staff to manage the environmental aspects for the contractor before construction commenced. The specific tasks of the Employer's and Contractor's environmental staff will be set out in the CEMP.

7.1.2 The following terms are important:

<i>Terms used</i>	Used to describe:
<i>'Design'</i>	The period of route identification, preliminary design and consenting process. This is the first iteration of the EMP.
<i>'Construction'</i>	All site preparation, demolition, earthworks, waste removal and related engineering and construction activities required for the Scheme to be built. Second iteration of the EMP refined during the construction stage but in advance of construction activity.
<i>'End of construction'</i>	Completion of all construction activity. The third iteration of the EMP refined at the end of construction stage to support future management and operation.
<i>'Aftercare'</i>	the period after construction works are completed and the contractor is responsible for the management and maintenance of soils, existing vegetation, ecological measures, new grass, and newly planted trees and shrubs within the Scheme boundary. Aftercare is normally between 3 and 5 years in duration and often included monitoring of these performance of mitigation
<i>'Handover'</i>	is the period when responsibility for maintenance and management is transferred to Welsh Government's maintenance contractor. The REAC would be handed over to the body responsible for managing and monitoring the soft estate on behalf of Welsh Government.
<i>'Soft estate'</i>	the full extent of landscape, ecological and environmental mitigation and enhancement measures within the land controlled by Welsh Government for a given scheme.

‘REAC’

Register of Environmental Actions and Commitments. A spreadsheet which is updated throughout the development and operation of the Scheme to maintain a record of all data relevant to the state of the soft estate and environmental commitments. It serves as proof of actions being completed and commitments fulfilled at the time and place required.

8. Annexes

Table 8-1 Annexes within the Outline-CEMP

Annex title		Description
A	Regulatory Framework	A list of the legal statutory requirements for construction staff working on this Scheme.
B	Preliminary List of Permits and Consents	A list of the statutory consents and permits required before construction can proceed. Some items will be subject to seasonal requirements.
C	Invasive Non-Native Species (INNS) Management Plan	Identifies which invasive species have been identified on site and the procedure for construction works on how to deal with invasive species.
D	Soils Management Plan	To ensure that soils are stripped, stored to avoid compaction and deterioration, and reinstated in accordance with best practice and the DEFRA Code.
E	Outline Ground and Surface Water Management Plan	Developed in consultation with Natural Resources Wales (NRW). It describes the design of each element of the surface water management system required to manage surface water runoff during construction and potential risks to surface waters. It would include consideration of temporary storage and settlement requirements to manage waterborne sediment, water quality criteria to ensure that any discharge to receiving watercourses meets regulatory requirements.
F	Outline Pollution Control and Prevention Plan	Identifies the main risks of pollution during construction and the prevention measures which should be implemented to prevent or reduce the effects. Will include concrete batching and all other high pollution risk activities.
G	Outline Cultural Heritage Management Plan (CHMP)	Using the findings of the EIA, the CHMP should contain detailed method statements for the management of cultural heritage during construction (from survey, machine excavation, hand-excavation, environmental sampling etc. to office-based activities such as finds processing, database use, reporting etc.). The 'Written Scheme of Investigation' for archaeology would provide the core of the CHMP.
H	Outline Ecological Management Plan	This outline plan sets out the easures and procedures for reducing impacts on ecological receptors. It outlines the procedures for preconstruction surveys, vegetation clearance, draining of water features, translocating of hedges or trees, temporary or permanent measures for protected species.
I	Contaminated Materials Management Plan	Control of activities associated with contaminated materials and on-site treatment
J	Dust Control Plan	To set out the measures for management of dust generating materials and activities.

Annex title		Description
K	Construction Noise Management Plan	To set out how the Best Practicable Means will be applied to limit construction noise.
L	Materials Management Plan	The MMP is used to plan and implement materials reuse on construction sites.
M	Outline Site Waste Management Plan (SWMP)	The Outline SWMP is used to plan, implement, monitor and review waste minimisation and management on construction sites. The plan can be based on the Waste and Resources Action Programme's ("WRAP") SWMP template. The plan should outline the procedures applicable to conducting a waste audit.
N	Hazardous Waste Plan	
O	Outline Materials Management Plan (MMP)	The Scheme's Outline MMP would detail how all construction phase materials (material resources and waste) would be managed, developed and implemented by the appointed Contractor and provides a framework which will be used as a basis from which to develop the Scheme's MMP.
P	Outline Cultural Heritage Management Plan (CHMP)	Informed by the outcome of the EIA the CHMP should contain detailed method statements for the Scheme construction (from survey, machine excavation, hand-excavation, environmental sampling etc. to office-based activities such as finds processing, database use, reporting etc.).
Q	Outline Ecological Management Plan	This outline plan sets out the measures and procedures for reducing impacts on ecological receptors. It outlines the procedures for preconstruction surveys, vegetation clearance, draining of ponds, translocating of hedges or trees, temporary or permanent measures for protected species.
R	Bio-security Risk Assessment	The contractor shall prepare a bio-security risk assessment to include the risks of introducing or spreading invasive species and the risk of introducing or spreading diseases which could affect both terrestrial and marine habitats and species.
S	Demolition Plan	Requires the Contractor to set out the method and sequence of construction and associated environmental protection, and to cross refer to other plans A to K, as necessary.
S	Construction Stage Traffic Management Plan	The contractor shall prepare a plan for traffic management to minimise effects on the environment and local residents / businesses. The plan shall cover footpath and cycleway closures, diversions and reopening.
T	Hazardous Weather and Flood Management Plans	To address climate change risks including storms, high temperatures, safe public access, heavy rainfall and flood risks

8.2 Annexe A: Regulatory Framework for construction phase

Introduction

- 8.2.1 This is a list of the main regulations and standards that apply to environmental protection during construction. There are other documents that apply, which are listed in the ES Chapter 5, and in the assessment Chapters 6 to 18. Generally, Welsh Government road schemes are developed under the Highways Act 1980.

Noise and Vibration

- 8.2.2 British Standards Institution (BSI) (2014). British Standard 5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites. Part 1: Noise +AI: 2014.

- 8.2.3 British Standards Institution (BSI) (2014). British Standard 5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites. Part 2: Vibration.

- 8.2.4 Part III of the Control of Pollution Act (1974).

Air Quality

- 8.2.5 Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Volume 2.

- 8.2.6 Environmental Protection Act 1990 and particularly Section 79(1)(d) relating to statutory nuisance.

- 8.2.7 Institute of Air Quality Management (IAQM) (2012). Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance.

- 8.2.8 Institute of Air Quality Management (IAQM) (2014) Guidance on the assessment of dust from demolition and construction.

Geology and Soils

- 8.2.9 Environmental Damage (Prevention and Remediation) Regulations 2009
Environment Act 1995

8.2.10 Environmental Protection Act 1990 and particularly Part IIA relating to contaminated land

Nature Conservation

8.2.11 The Conservation of Habitats and Species Regulations 2017;

8.2.12 Wildlife and Countryside Act 1981 (as amended);

8.2.13 The Environment (Wales) Act 2016;

8.2.14 Salmon and Freshwater Fisheries Act 1975;

8.2.15 The Protection of Badgers Act 1992;

Materials and Waste

8.2.16 The Waste (England and Wales) Regulations 2011 (as amended)

8.2.17 Hazardous Waste (England and Wales) Regulations 2005 (as amended)

8.2.18 Environmental Protection Act 1990

8.2.19 Environment (Wales) Act Part 1: "Sustainable management of natural resources" 2015

8.2.20 Environmental Permitting Regulations (England and Wales) 2010 (as amended)

8.2.21 Control of Pollution (Oil Storage) (Wales) Regulations 2016.

8.2.22 Protection of Surface and Groundwater Resources

8.2.23 Environmental Permitting (England and Wales) Regulations 2010 (as amended).

8.2.24 Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009

8.2.25 The Groundwater (England and Wales) Regulations 2009

8.2.26 Water Resources Act 1991

8.3 Annexe B: Preliminary list of permits/consents

Introduction

- 8.3.1 The permits and licences likely to be required for the Scheme are listed in 1.2. The likelihood of these being required is subject to the presence of species, the detailed design of the Scheme and the methods of Scheme construction. Consultation with the consenting authority will be undertaken in preparation for the submission of applications. Some licences can only be issued once the statutory process for the scheme has been completed, and in these cases the regulator will be asked to approve a 'ghost licence' indicating in advance their approval for the proposed activity.

Table 8-2 Summary of potential consents and licences

Consent/licence	Regulatory regime	Consenting authority	Status/comment (2025)
Derogation Licence for protected species	Conservation of Habitats and Species Regulations 2017	NRW	To be added
Marine Licence	Marine Licensing	NRW	To be added
Appropriate Assessment	Conservation of Habitats and Species Regulations 2017	NRW	To be added
PDO Assent	Wildlife and Countryside Act	NRW	To be added
Flood Risk Activity Permit	Flood Risk	NRW	To be added
Land Drainage Consent	Land Drainage Act 1991	FCC	To be added
Section 61 Consent for noise-generating activity	Control of Pollution Act 1974	FCC	To be added
Discharge Consent	Environmental Permitting	NRW	To be added
Abstraction Licence		NRW	To be added
Environmental permit (use of imported waste material)	Environmental Permitting	NRW	To be added

8.4 Inductions, training and briefing procedures for staff

Introduction

- 8.4.1 The site induction is a legal requirement for a health, safety and environmental briefing to be given to all personnel arriving at the site. This should occur from the start of a construction project through to completion with accurate and up to date records kept of all those who complete the induction. The briefing is intended to inform everybody on site about the site rules, hazards and procedures for day-to-day activity and for emergencies so ensure safe working and to protect the environment.
- 8.4.2 The Contractor will provide or instruct the Inductions, daily briefings and toolbox talks. Details will be set out in this section of the Contractor's Construction EMP.

Site Induction

- 8.4.3 The Induction should include:
- a) Ensure that all personnel (main contractor, subcontractor, client staff and advisors) understand the layout of the site, the locations of entrances to the working area, welfare facilities, procedures for moving around the site;
 - b) Potential hazards, the risks associated and how to avoid harm and apply control and mitigation measures;
 - c) Emergency procedures, first aid arrangements, reporting of accidents and environmental damage;
 - d) Site rules and legal responsibilities;
 - e) The use of standard Personal Protection Equipment (PPE) and special requirements for additional measures.
 - f) Traffic management;
 - g) Policies regarding smoking, drinking and taking recreational drugs;

Daily briefing

- 8.4.4 Daily briefings are required for each construction team to bring personnel up to date with new site information, the day's tasks and any specific requirements for health, safety and environmental protection that apply during those tasks.

Toolbox talks

- 8.4.5 Will be provided by specialists in the contractor's teams to explain particular or unusual site requirements of personnel.

8.5 Annexe C: Outline invasive species management plan

Introduction

- 8.5.1 This is an Outline Invasive Species Management Plan which will be developed as the design of the Scheme progresses and in line with consultation and agreement with statutory bodies.

Invasive Species records at Key Stage 3.

- 8.5.2 The following invasive species have been recorded during pre-construction surveys or desk study:
- a) Japanese knotweed (*Reynoutria japonica*);
 - b) Chinese Mitten Crab (*Eriocheir sinensis*) in the River Dee banks.

Locations of Invasive Species

- 8.5.3 Japanese knotweed was found on the southern and northern faces of the railway embankment at the rear of Dundas Street. Historically it was also present along the boundary between the Wastewater Treatment Works (WWTW) and the footpath leading north from Chemistry Lane.

Impact of Invasive Species

- 8.5.4 The release of material contaminated with invasive plant material or seeds could result in adverse effects on other habitats where material is deposited or stored. Effects of invasive species can include the displacement of native species and alteration of habitats, physical damage and obstruction, and economic damage or additional costs of routine maintenance.

Construction management and invasive species

- 8.5.5 The Invasive Species Management Plan will be implemented during construction to comply with legislation:
- a) under the Wildlife and Countryside Act 1981 (as amended): it is an offence to allow listed species to spread into the wild; and

- b) under the Environmental Protection Act 1990, Japanese Knotweed is classed as 'controlled waste' and as such must be disposed of safely at a licensed landfill site.

- 8.5.6 Before construction the detailed Invasive Species Management Plan will be developed and agreed with relevant statutory environmental bodies as part of the Construction Environmental Management Plan during the detailed design stage.
- 8.5.7 All site personnel should be made aware of the identification of the above species. Identification sheets for invasive species are available at:
<https://www.nonnativespecies.org/non-native-species/information-portal>
- 8.5.8 The following UK Government site also provides useful background information on Invasive Species at
<https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants>
- 8.5.10 At construction stage, where invasive species are identified, a photographic record should be taken to confirm the species and details of the location (using a global position system (GPS) location reference). Findings should be reported to the ECoW as soon as practicable and always in advance of works which might cause their spread.
- 8.5.11 Methods of treating invasive species will be considered during detailed design when the quantities and exact location of invasive species which will need to be removed are identified. Where possible, material contaminated with invasive plant material (rhizomes, roots, stems corms or seeds) will either a) be isolated from disturbance and managed using appropriate herbicide or other means, or b) be disposed of within the construction site to reduce as far as possible the amount of material that might need to be disposed of at a suitably licensed landfill site.
- 8.5.12 Excavations close to areas of invasive species will be controlled to maintain appropriate stand-off distances and all excavation arisings will be inspected for the presence of invasive plant material in accordance with best practice and guidance.

8.6 Annexe D: Outline pollution control and prevention plan

Purpose of the plan

- 8.6.1 The purpose of this plan is to identify the main risks of pollution occurring on the site during construction and demolition activity, to identify and implement appropriate pollution prevention measures, and to reduce the effects of any pollution incidents that may occur. The plan should be read in conjunction with the Outline Ground and Surface Water Management Plan and CEMP.
- 8.6.2 The document comprises an Outline Pollution Control and Prevention Plan and is based on the information available at the outline design stage. As the detailed design progresses, the Plan would be reviewed and updated accordingly. The final Pollution Control and Prevention Plan would be agreed with Natural Resources Wales (NRW) before the start of construction.

Technical guidance

- 8.6.3 Best practice measures to prevent pollution will be implemented during the construction of the Scheme and the plan will take note of technical guidance, including:
- a) Natural Resources Wales (NRW), PPG6 Construction and demolition sites: prevent pollution,
 - b) Northern Ireland Environment Agency (NIEA) and the Scottish Environmental Protection Agency (SEPA) the Guidance for Pollution Prevention (Works and maintenance in or near water :GPP 5 (February 2018)),
 - c) Construction industry guidance including CIRIA,
- 8.6.4 The plan would be implemented throughout the construction phase of the Scheme and all construction staff would be required to follow its provisions.

Responsibilities

- 8.6.5 The key staff roles under the Outline Pollution Control and Prevention Plan, are set out in Table 1.3. Additional roles and responsibilities will be developed as the detailed design progresses.

Table 8-3 Responsibilities

Name	Position/Responsibilities
Contractor's Environmental lead	Liaising with NRW to update the Plan during detailed design. Agreeing the pollution controls in accordance with NRW requirements. Ensuring pollution controls are implemented and communicated effectively. Investigating any incidents. Communicate learning from incidents. Liaise with regulatory bodies
Construction Staff and workforce	Responding to a pollution incident in line with this plan and the procedure included within. Front line responsibility to enact requirements of the plan.
Contractor's Project Manager	Responsible for ensuring procedures are followed.
Employer's Environmental Co-ordinator	Monitoring the implementation of environmental mitigation during the Scheme and reporting to the Employer

Pollution risk assessment

- 8.6.6 The risk assessment will consider:
- Materials stored or transported and the condition of storage containers.
 - Hazardous substances known or possibly present in the structures to be demolished, e.g. lead in paint on existing A494 bridge, accumulations of tyre and brake dust.
 - Effects of accidents, flooding, vandalism and failure of containment.
 - Location on watercourses in proximity to the Scheme;
 - Sensitive groundwater location;

- f) Designated and sensitive habitats.
- g) Surface water drains that flow off the site.
- h) Areas of unsurfaced ground.
- i) Operations and layout of the construction site and contractor's compounds and lay down areas.

8.6.7 Table 1.4 sets out the materials that would be handled on site and activities that may be a hazard.

Table 8-4 Materials handled on site

Material	Hazards arising from activities
Fuels/chemicals/paints/coatings	Spillage during refilling (overfilling or poor handling) Damaged or leaking storage containers Equipment and containment failure
Sediment	Failure of pre-earthworks drainage Failure of lateral bunds Working too close to watercourse
Cementitious Dust	Inappropriate storage containers
Concrete and mortar	Spillage during handling Contact with watercourses (inappropriate placement, incorrect wash-out procedures)
Fill and aggregates	Silt run-off / dust blow to sensitive locations Drainage of acidic / alkaline water to sensitive locations

Site Design: Location and layout of construction compounds

- 8.6.8 Site compounds and carparks will be located away from all surface water features and watercourses and outside the floodplain (unless in areas protected by existing defences).
- 8.6.9 Risks arising from water pollution, storage of fuels, oils, wheel wash facilities, drainage and surface water run-off are detailed in the Outline Ground and Water Management Plan. Mitigations measures are described and will be developed and agreed before start of construction.

8.6.10 Wheel and heckle washing facilities will be established at designated site locations, away from watercourses and drains. Cleaning will be carried out in a bunded area and waste water will be either recycled or discharged to foul sewer (with consent from the sewerage undertaker). Contaminated waste will be removed from site by a licensed waste carrier for disposal to an appropriately licensed facility.

Pollution incident response plan

8.6.11 A pollution incident response plan will be designed for every construction compound, haul road and laydown area. The plan will set out the actions to be taken in the event of a pollution incident and identify the pollution control equipment and the control devices and where they should be located.

8.6.12 The Response Plan would contain the following key information:

- a) External and internal list containing 24 hour contact details for organisations that may need to be involved during or after an incident, for example, the emergency services, NRW, or Flintshire County Council;
- b) Chemical and waste inventory: an up-to-date record of all substances stored on site would be maintained together with an estimate of the likely quantities stored and product data sheets. The location of drums, containers or bulk storage vessels used for storing potentially polluting chemicals would be identified on the site plan. The inventory would be made accessible to emergency responders;
- c) Pollution prevention equipment inventory. This would include equipment and materials on site to deal with pollution incidents (for example spill kits, drain mats/covers, pipe blockers, absorbents) and contact details of staff trained in the use of specialist equipment (where relevant);
- d) Site plan showing access routes and meeting points for emergency services; areas or facilities used to store raw materials, products and wastes; watercourses located within or near the site; and site drainage.

8.6.13 Key actions for the response plan would include:

- a) Immediate cessation of the affected works;

- b) Containing the spillage to avoid escalation of the problem (refer to Pollution Control Hierarchy);
- c) Immediate notification of the Environmental Coordinator and any other key staff;
- d) Evacuation of staff if necessary;
- e) Call to emergency services, if required;
- f) Deployment and application of pollution control equipment;
- g) A written record of the event should be made covering the cause of the incident and the action taken. This should be supported by a photographic record where feasible;
- h) Replace pollution control equipment where required to ensure readiness for further events;
- i) Identification of improvements to procedures to support any response to future events.

Practice

8.6.14 Staff will be trained in the procedures to follow if there is a pollution incident, in particular:

- a) where the personnel protective equipment and pollution control equipment is stored;
- b) how to use the equipment; and
- c) the location of pollution incident response plan.

8.6.15 In the development of the pollution incident response plan, drafts will be sent to NRW, and/or Flintshire County Council, as relevant, for comment including advice on when to notify the regulators about a spill.

Fire plan

8.6.16 The contractor will develop a fire plan following guidance set out in PPG18 Pollution prevention guidelines - managing fire water and major spillages. Plan to set out action to be taken in the event of fire including:

- a) Raising the alarm
- b) Calling the Fire Brigade
- c) On hearing the alarm, the area must be evacuated immediately and staff to assemble at the Muster point.
- d) Escorting visitors, clients and external contractors to the assembly point.
- e) Turning off generators, compressors and other powered equipment.
- f) Turning off heat-producing equipment and shut cylinder valve.
- g) Attacking the fire with the fire-fighting equipment if it is safe to do so.
- h) Obeying instructions from the Office Fire Marshall or supervisory staff.
- i) Ensuring that nobody re-enters the working area until told it is safe to do so. If necessary, inform others who may be affected by the fire (smoke near hospitals, schools and other sensitive locations).

8.6.17 The capacity of the construction surface water management system should be sufficient to contain the water applied by a fire engine within the site's boundaries, avoiding direct spillage of potentially contaminated material into the natural watercourses.

Pollution hierarchy

8.6.18 Response plans for pollution incidents consisting of spillage of liquids, or contamination of water, should be based on following hierarchy:

- a) Contain at source
- b) Contain close to the source
- c) Contain on the surface
- d) Contain in the drainage system
- e) Contain on or in the watercourse

8.6.19 The preliminary pollution risk assessment has identified that the most likely causes of a pollution incident would involve:

- a) spillage of oils or chemicals;

- b) discharge of sediment-laden water or other pollutant into a watercourse; or
- c) fire-fighting water runoff.

8.6.20 Pollution control equipment would be appropriate for the chemicals/substances being used, and the location of the site (particularly works within the River Dee). For example, absorbent materials such as sand, spill granules, absorbent pads and booms will be kept at each site compound, on plant working near watercourses and particularly at refuelling areas and where fuel or oil is stored.

8.6.21 Following a pollution incident, used pollution control equipment (for example, spill kits) would be disposed of appropriately and new /replacement equipment would be provided.

8.6.22 Response plans should consider:

- a) **PRIORITY:** stop spillage or leak and contain at source when possible;
- b) contain spillage or leak as close to source as possible;
- c) stop pollutant spreading by using oil booms, terram-wrapped barriers, sand bags, earth dams, hay bales as applicable;
- d) trace impacts further downstream to establish extent of pollution;
- e) review the activity that caused the pollution before restarting work;
- f) **RESERVE:** when it is impossible to prevent the spill at source reaching a watercourse;
- g) stop the pollutant flow at point of discharge;
- h) stop the flow spreading;
- i) dam the flow with earth/sand/polythene/absorbent material;
- j) divert the flow from drains/watercourses where possible;
- k) blank off drains with drain covers or sandbags;
- l) check the site drainage plan- where will spill end up?

Discovery of contaminated land

8.6.23 The Pollution Control and Prevention Plan should anticipate encountering previously unidentified chemical contamination and asbestos during construction works by ensuring that personnel involved in the earthworks are briefed on the

likely nature and type of soils that could indicate the presence of contamination (e.g. asbestos, discolouration, oils, odours, ash and clinker materials).

8.6.24 If contaminated material is encountered:

- a) The environmental lead should be contacted immediately to inspect the material and instruct its isolation if necessary.
- b) Suspected contaminated material will be tested and the material will not be reused or removed until the results of the tests have been reviewed.
- c) Contaminated materials will be handled and managed in line with Annexe G.

Training

8.6.25 This procedure will be discussed in the Site induction. It will be displayed on noticeboards along with contact details of relevant individuals.

8.6.26 All personnel must attend a site induction before commencing work on the site. A separate site induction should be developed for all site visitors.

8.6.27 The induction will discuss the Pollution Control and Prevention Plan and include key environmental issues on the project including the sensitivity of the watercourses, contamination, and air quality management. The briefing will emphasise the methods and working practices employed for protection, including emergency procedures for reporting and dealing with environmental incidents.

8.6.28 Toolbox talks and method statement briefings should be given to the construction (and demolition) teams as work proceeds and would cover the types of wastes produced at each key build stage, and the site waste management plan controls related to specific activities undertaken during the works. A full register of toolbox talks and method statement briefing attendance would be maintained on site.

8.6.29 All staff will receive relevant training on environmental issues throughout the construction of the project.

8.6.30 All training records were to be maintained and filed on site. The records would include the content of the training courses (induction and toolbox training), record of attendance and schedule of review.

8.6.31 All method statements will include an environmental section and any specific pollution control and prevention information.

8.6.32 Drills of the emergency response plans will be carried out regularly to ensure understanding.

Monitoring, review and reporting

8.6.33 Should a situation arise where the proposed mitigation is not adequate, this plan will be reviewed. It will also be reviewed quarterly by the contractor's Environmental lead to ensure it is up to date and accurate.

8.6.34 Specific monitoring requirements will be detailed. Nominated staff will carry out regular site inspections to control measures are in place and adhered to during the works.

8.6.35 Any instances of pollution or spill will be reported immediately to the Environmental lead who will investigate and communicate the investigation's conclusions to the project team to aid continuous improvement and to prevent reoccurrence of the event.

8.6.36 Records including inspection records, site plans and progress reports will be maintained to show compliance with the Pollution Control and Prevention Plan.

8.6.37 Surface water monitoring will be undertaken to demonstrate no adverse effects on water quality during construction works. An appropriate monitoring schedule and programme will be agreed with NRW.

8.7 Annexe E: Outline site waste management plan

Purpose of the plan

- 8.7.1 The purpose of the Site Waste Management Plan (SWMP) is to set out proposals for the identification, segregation, handling and storage of different types of wastes identified as arising from the works. These wastes (by quantity/type/chemical composition/EWC code, etc.) will be recorded and their disposal route, including the place of their final disposal, shall be reported in the Construction Environmental Management Plan and the REAC where specific actions and commitments require.
- 8.7.2 The aim of using a SWMP is to minimise the amount of waste produced by activities within the project, minimising environmental impacts and maximising cost savings. The Employer and Principal Contractor (to be appointed) shall take all reasonable steps to ensure all waste from this site shall be dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 (Duty of Care Regulations 1991 (b)) and materials will be handled efficiently and waste managed appropriately.
- 8.7.3 The existing bridge over the River Dee is to be demolished once the new bridge is completed. The substantial volumes and weight of waste generated by the demolition must not be allowed to enter the river which is protected by several statutory designations.

Estimated Waste Arisings

- 8.7.4 The classification of substances as waste is the basis for the formulation of waste management and the application of controls to protect the environment and human health.
- 8.7.5 The EU Waste Framework Directive (Directive 2008/98/EC) includes a common definition of 'waste', which is *'any substance or object which the holder discards or intends to discard'*. The term 'discard' includes the disposal, recovery or recycling of a substance. Re-using suitable materials on site in accordance with a Materials Management Plan can avoid material becoming waste – see Annexe G.

- 8.7.6 Some types of waste are harmful to human health, or to the environment, either immediately or over an extended period. These are called hazardous wastes in England and Wales.
- 8.7.7 Once a material has become waste, it remains waste until it has been fully recovered in accordance with an Environmental Permit ('End of Waste' status) and no longer poses a potential threat to the environment or to human health, at which point it is no longer subject to the controls and other measures required by the Directive. Certain waste activities can be carried out by registering an Exemption from the need for an Environmental Permit.
- 8.7.8 The type and quantities of waste likely to arise because of each stage of the project are listed in Table 1.5. The intended use of each waste arising has been identified, based on the current available information. The table is not an exhaustive list of waste types and will require extension as the detailed design develops.

Waste management hierarchy

- 8.7.9 Construction waste generated from the Scheme will be managed according to the principles of the waste hierarchy which ranks waste management options according to environmental impact. The waste hierarchy indicates "waste prevention" as the best outcome for the environment and "disposal" as the least favoured.
- 8.7.10 The SWMP will set out how waste will be managed throughout each stage of the project. Before construction starts, the Principal Contractor will identify suitable waste management contractors and investigate opportunities to recycle other materials. The SWMP will record measures to be implemented to prevent and minimise the quantity of waste produced during the project. The following measures have been identified at this stage:
- a) all waste arisings to be segregated on site;
 - b) re-usable materials to be identified on site and removed for storage and re-sale;
 - c) recyclable materials to be removed from site for processing in licenced facilities; and

- d) recoverable materials will be removed from site for processing in licenced facilities.

Waste Prevention

- 8.7.11 The Contractor will ensure that waste is prevented where possible, by using less material in design and manufacture, and only ordering the quantities of material required.
- 8.7.12 The Outline Materials Management Plan (Annexe G) sets out the procedure for managing the materials to minimise the amount of waste generated.

Waste Re-use

- 8.7.13 The Contractor will ensure that any waste generated on site will be re-used where possible. The materials that have the potential to be re-used on site have been identified in Table 1.5. This will be confirmed during detailed design.

Waste Recycling

- 8.7.14 As a requirement of this SWMP only appropriately qualified and licensed waste management facilities would be used. Recycling facilities in the vicinity of the proposed Scheme location will be identified by the Principal Contractor, evaluating the waste management market and identifying suitable options.

Table 8-5 Estimated waste arisings from each stage

Project Activity	Waste arisings from the project	Quantities of waste arisings	Additional information on waste arisings
Site clearance	Inert concrete	Quantities not available at this stage.	Segregated and disposed of off-site, or crushed for re-use
	Packaging (general waste from compound area and welfare set-up)	Quantities not known at this stage	Total over construction period
	Inert materials	Quantities not known at this stage	Unsuitable for re-use; disposed of off-site
	Existing surfacing materials bituminous	Quantities not known at this stage	Recycled for re-use on site

Project Activity	Waste arisings from the project	Quantities of waste arisings	Additional information on waste arisings
Demolition and construction	Invasive non-native species (INNS) including Japanese Knotweed (plants and infested soils)	Quantities not known at this stage	See Annexe C Outline Invasive Species Management Plan
	Vegetation (branches, stumps etc)	Quantities not known at this stage	Typically shredded for re-use
	Surplus and unsuitable soils	Quantities not known at this stage	Removed for off-site use or recycling
	Mixed construction and demolition wastes	Quantities not known at this stage	Removed for off-site recycling
	Surplus concrete	Quantities not known at this stage	Return to batching plant for recycling
	Packaging and domestic waste from site compound	Quantities not known at this stage	Segregated and disposed of off-site, recycled where possible
	Liquid waste from site compound septic tank	Quantities not known at this stage	Transported to off-site treatment works
Operation and maintenance of asset	Crushed stone (material imported for temporary bridge launch platform)	Quantities not known at this stage	Recycled for re-use on site. Dependent on scale an exemption or environmental permit may be required.
	Replacement of bearings	Quantities not known at this stage	Removed for off-site recycling
	Replaced expansion joints	Quantities not known at this stage	Removed for off-site recycling
	Replaced parapets	Quantities not known at this stage	Removed for off-site recycling
	Resurfacing material	Quantities not known at this stage	Removed for off-site recycling
More?	Vegetation (branches, tree thinning)	Quantities not known at this stage	Shredded or habitat piles on site
	Details	Details	Details

Waste Recovery

- 8.7.15 Several sites in Flintshire and neighbouring counties accept inert wastes (mainly soils) for 'Recovery by Deposit' uses, such as restoring former quarries.

Waste Disposal

- 8.7.16 Any waste that cannot be prevented, re-used, recycled or recovered, will be disposed of in a responsible manner.
- 8.7.17 Local waste management facilities will be identified and assessed to ensure adequate capacity for the waste generated by the proposed Scheme. It is not anticipated that there will be a large amount of waste associated with the proposed Scheme.

Waste Storage

- 8.7.18 To be confirmed at detailed design stage

Waste management facilities (on-site)

- 8.7.19 To be confirmed at detailed design stage

Implementing the Site Waste Management Plan

Roles and Responsibilities

- 8.7.20 The key roles and associated responsibilities regarding this plan are outlined below. The Construction (Design and Management) Regulations 2015 also identify the legal duties, responsibilities and obligations of all the major roles within the construction team.
- 8.7.21 The Employer will be responsible for the following:
- a) appointing the Principal Contractor for the purpose of the SWMP;
 - b) ensuring that the SWMP is implemented effectively; and

- c) reviewing, revising and refining the SWMP (where necessary) in conjunction with the Principal Contractor.
- d) The Principal Contractor has the overall responsibility for:
- e) updating and delivering this SWMP on behalf of the client;
- f) ensuring all procedures in this SWMP are followed;
- g) ensuring all contractors are suitably qualified and experienced in implementing the measures within this SWMP. These measures would be contained within the terms of contracts to ensure understanding and accountability;
- h) making and maintaining arrangements that enable those engaged in construction and demolition to co-operate effectively in promoting measures to manage waste in accordance with the terms of the SWMP;
- i) ensuring, so far as is reasonably practicable, that waste produced during construction is re-used, recycled or recovered;
- j) regularly reviewing (every three months as a minimum) the SWMP and update where necessary;
- k) reporting on the performance of the SWMP within three months of the work being completed;
- l) establishing procedures for the regular review and recording of the quality of the works as part of the Quality Management System; and
- m) maintaining records relevant to this SWMP.

Training

8.7.22 A training programme focused on the provisions of the SWMP would be provided for all relevant members of the construction team, including those carrying out demolition works, to ensure their competence in carrying out their duties on the Scheme.

8.7.23 A general site induction would be developed to introduce all site personnel to the main provisions of the SWMP, important environmental controls associated with the construction of the Scheme and effective delivery of the SWMP (for example, waste

storage arrangements, waste segregation at source). A full register of induction attendance would be maintained on site.

- 8.7.24 Toolbox talks and method statement briefings would be given to the construction (and demolition) teams as work proceeds and would cover the types of wastes produced at each key construction stage, and the SWMP controls related to specific activities undertaken during the works. A full register of toolbox talks and method statement briefing attendance would be maintained on site.

Monitoring, Review and Reporting

Monitoring of the SWMP

- 8.7.25 Monitoring of the SWMP would principally be achieved through the completion of the Waste Management Data sheets and regular inspections of the works areas by the Principal Contractor to ensure that the provisions of this SWMP and control measures outlined in relevant method statements are being implemented.
- 8.7.26 Duty of Care paperwork documenting the movements of waste from the site (i.e. Waste Transfer Notes) and the registered carriers' details would be retained.

Review of the SWMP

- 8.7.27 During the construction process, the SWMP would be reviewed as often as necessary or at least once every three months to ensure that the plan accurately reflects the progress of the Scheme, its waste estimates and targets. As part of the review, the Principal Contractor must record the following:
- a) the types and volumes of waste produced;
 - b) identify on the plan the work area where the waste was removed from;
 - c) the types and volumes of waste that have been:
 - d) re-used (and whether this was on or off site);
 - e) recycled (and whether this was on or off site);
 - f) sent for another form of recovery (and whether this was on or off site);
 - g) sent to landfill; or

h) otherwise disposed of.

Reporting the SWMP

- 8.7.28 Within three months of the end of construction, the Principal Contractor will report on the performance of the SWMP. This would include confirmation that the plan has been monitored on a regular basis to ensure compliance with the provisions of the SWMP, that the plan was updated accordingly and that any deviations from the plan would be explained.
- 8.7.29 In addition to the above, the report would include a comparison of the estimated quantities of each waste type against the actual quantities of each waste type, performance against the Scheme standards and an estimate of the cost savings achieved by and costs incurred in completing and implementing the plan.

8.8 Annexe F: Outline ground and surface water management plan

Introduction

- 8.8.1 This outline Ground and Surface Water Management Plan is based on the information available at the preliminary design stage. As the detailed design progresses, the plan would be reviewed and updated accordingly. The outline Ground and Surface Water Management Plan would be developed in consultation with Natural Resources Wales (NRW) and would be agreed before the start of construction.
- 8.8.2 The final Ground and Surface Water Management Plan (GSWMP) would consider all drainage required during the construction phase and refer to appropriate industry and regulatory pollution prevention guidelines. It shall describe the design of each element of surface water management system required to manage surface water runoff during construction and manage risks to surface waters. This shall include consideration of temporary storage and settlement capacity to manage the sediment load of waters. The GSWMP shall define the water quality criteria to ensure any discharge to receiving watercourses meets regulatory requirements.
- 8.8.3 The GSWMP shall consider all activities to be undertaken during the construction phase that may require groundwater control through pumping. The GSWMP shall consider structures required for managing groundwater in areas of cut, the excavations required for bridge pier foundations (particularly any requiring cofferdam construction) and excavations required for subsurface structures/utilities that may encounter shallow groundwater. The GSWMP shall define the nature and approach for groundwater management following its abstraction, including monitoring to determine the acceptability of chemical and physical quality for discharge to the surface water system.

Table 8-6 Responsibilities

Name	Position/Responsibilities
Environmental lead	Ensuring adequate planning is undertaken to protect surface and groundwater from pollution, and for monitoring the effectiveness of these plans.
Construction Staff and workforce	For the day-to-day implementation of the mitigation measures required minimising the impact arising from the works and for ensuring appropriate consents are in place and adhered to.
Project Manager	Responsible for ensuring procedures are followed.

Consents

- 8.8.4 The treatment of waters arising from construction activities, including any point source discharges resulting from the treatment of materials regulated by mobile plant licence, would require regulation by NRW. An application for an environmental permit (Discharge Consent) will be submitted before works commence. The permit will regulate the discharge of treated contaminated waters to ground, via re- injection (or possibly soakaway). A separate environmental permit will be required for each location.
- 8.8.5 An abstraction licence would be required for de-watering operations, and to provide water for dust suppression or pressure testing on site. A separate licence would be required for each location. An impoundment of water in any watercourse, or abstraction exceeding 20 cubic metres per day, would be controlled by means of NRW consent (Abstraction Licence).
- 8.8.6 Construction works carried out over, under or near a main river, or in a flood plain or flood defence (including a sea defence) will require a Flood Risk Activity Permit. A permit will be required for each location.
- 8.8.7 A Land Drainage Consent, issued by Flintshire County Council, is required for all works carried out over, under or near an ordinary watercourse. Ordinary watercourses include non-main rivers and all ditches, drains, cuts, culverts, dikes, sewers (other than public sewers) and passages through which water flows.

Mitigation Measures

Induction of site personnel

- 8.8.8 All personnel are to attend a site induction before commencing work on site. The briefing is to emphasise the sensitivity of the watercourses, surrounding habitat, and methods and working practices employed to protect the water environment.

Emergency Response Planning

- 8.8.9 An emergency response plan is to be developed in accordance with EA Guidance PPG21- Pollution Incidence Response Planning and Annexe D of this Outline-CEMP.

General Measures

- 8.8.10 Temporary drainage systems are to be installed and carefully managed to prevent localised flooding or pollution of surface and groundwater from silt and other contaminants.
- 8.8.11 In areas where potentially contaminated land has been identified, specific mitigation measures will be designed to manage and contain potential contamination in line with the Remediation Strategy Report. Detailed method statements will be prepared for works in these areas.
- 8.8.12 Risks arising from the main work activities to be carried out throughout the Scheme, and water management proposals currently being considered in mitigation, are listed in Table 8-7. This table is to be developed by the contractor when appointed.

Table 8-7 Outline mitigation measures

Risk or construction activities	Mitigation
Concrete wash water reaching groundwater	Details here
Excavation activities	Details here
Extensive filling operation	Details here
Site Compound Facilities (including Car Parks)	Details here
Vehicle/Plant Movements	Details here
Wheel wash facilities	Details here
Aquatic Protection	Details here
Storage of fuels, oils and other chemicals	Details here
Drainage and flood risk	Details here
Surface water run-off/Silt from earthworks and bridge abutment works.	Details here

Special measures

8.8.13 This section is to be completed at detailed design stage by the Contractor.

Fuel Storage and Refuelling

8.8.14 All fuel storage would be in bunded, locked tanks, located in secure areas at the compounds, outside the floodplain. A controlled procedure for refuelling of plant is to be adopted across the works. All practicable means of securing fuel on mobile plant are to be utilised. Refuelling will be carried out by appointed competent persons only. Measures to prevent pollution would be developed in alignment with PPGs and would include:

- a) drip trays to be utilised underneath static plant; including generators;
- b) spill kits to be available within each item of mechanical plant. Trained persons would be present on site to deal with fuel spillage;
- c) no plant to be positioned within a watercourse (including all existing dry ditches and field drains) without full consideration of all available alternatives.

Topsoil Stripping and Storage

- 8.8.15 Wherever possible, vegetated topsoil will be left in place to minimise the amount of unprotected ground exposed to runoff. Essential topsoil stripping will be programmed to minimise the duration of exposed ground. Topsoil will be stored in designated locations outside the floodplain.
- 8.8.16 Before vegetation clearance and soil stripping operations within 10m of a watercourse commence, silt and runoff control measures would be implemented to prevent contamination.
- 8.8.17 Topsoil stockpiles would be created and managed in accordance with best practice guidance. The stockpiles would be graded and 'sealed' by surface compaction to minimise water ingress, prevent ponding, and to help shed rainwater. Exposed stockpiles that are to remain for long periods would be seeded with a simple grass seed mix immediately upon completion and in suitable weather conditions. This would minimise soil erosion during the soil storage period and to help reduce colonisation of nuisance weeds.
- 8.8.18 Where necessary, silt fencing would be installed around the margins of topsoil mounds to minimise the risk of sediment-laden runoff reaching watercourses.

Cut off ditches

- 8.8.19 Cut-off ditches would be constructed where site planning shows them to be required to intercept overland flow from adjacent land areas, protecting the site.
- 8.8.20 Within the cut-off ditches, temporary baffles will be formed to break up the flow distances and promote the settlement of fines. These baffles would be constructed from clean stone within geotextile bags and would be placed where there is a significant gradient in the ditch and/or long ditch sections leading to a single outfall.
- 8.8.21 Run off from earthworks areas will be intercepted before entering watercourses, or filtered by silt fencing, to prevent pollution. Similarly baffles and other methods (e.g. straw bales) would be employed to prevent dirty water reaching local watercourses.

Settlement Pond Maintenance

- 8.8.22 Pond and/or ditch maintenance during the construction phase would be carried out during periods of dry weather. The ponds would be drained, and sediment will be removed utilising a small excavator. The operator would be careful not to disturb the ponds' formation whilst removing silt. This operation would not be carried out whilst water is flowing or prior to a forecasted rainfall event due to the potential remobilisation of silt. Ponds would be regularly inspected for integrity and any defects remedied immediately.

Management of Dust

- 8.8.23 Dust mobilisation from haul routes would be minimised by controlling vehicle speeds and damping down when required. This would minimise dust pollution causing nuisance to neighbouring properties and businesses along the route.

Controlling Mud on local roads

- 8.8.24 Wheel washing and other road / vehicle cleaning facilities would be provided as suited to each location where vehicles need to move onto the public highway.

Monitoring, Review and Reporting

- 8.8.25 In accordance with Pollution Prevention Guidelines (PPGs) and relevant construction industry guidance, best practice measures to protect the water environment will be implemented during the construction of the Scheme.
- 8.8.26 Should a situation arise where the proposed mitigation is not adequate, this plan will be reviewed. It will also be reviewed quarterly by the Environmental lead to ensure it is up to date and accurate.
- 8.8.27 Specific monitoring requirements will be detailed. Nominated staff will carry out regular site inspections to control measures are in place and adhered to during the works.
- 8.8.28 Any instances of surface or groundwater pollution will be reported immediately to the Environmental lead who will investigate and communicate the investigation's

conclusions to the project team to aid continuous improvement and to prevent reoccurrence of the event.

8.8.29 Records including inspection records, site plans and progress reports will be maintained to show compliance with the GSWMP.

8.8.30 Surface water monitoring will be undertaken to demonstrate no adverse effects on water quality during construction works. An appropriate monitoring schedule and programme will be agreed with NRW.

8.9 Annexe G: Outline materials management plan

Introduction

- 8.9.1 The Contractor shall include within the Construction Environmental Management Plan (CEMP) a Materials Management Plan (MMP) if required. This shall be based on an appropriate risk assessment.
- 8.9.2 This report presents the approach for managing the reuse of site-won soils and provides an outline Material Management Plan in accordance with Contaminated Land: Applications in Real Environments (CL:AIRE) guidelines. This MMP has been prepared to support the requirements of the CL:AIRE Definition of Waste: Industry Code of Practice (DoWCoP), Version 2 (CL:AIRE, 2011).
- 8.9.3 CL:AIRE is the current management organisation for the DoWCoP which sets out good practice for the development industry to use when assessing on a site-specific basis whether excavated materials are classified as waste or not; and when determining on a site-specific basis when treated excavated waste can cease to be waste for a particular use; and it describes an auditable system to demonstrate that this DoWCoP has been adhered to.
- 8.9.4 The scope of this MMP is to cover the Scheme. It will identify the information from the Scheme design and construction documentation to demonstrate the requirements of the CL:AIRE DoWCoP can be met.
- 8.9.5 At Key Stage 3 the earthworks strategy for the Scheme, and hence this MMP, is at an outline stage and will be developed further as the Scheme design progresses.

Overview of materials management plan

- 8.9.6 A variety of different materials will be required for the Scheme. The Scheme will be designed to minimise the volumes of the waste materials generated and of the imported construction materials, by reusing or recycling the existing materials available along the Scheme. The estimated material resources required for the project and the quantities and sourcing of materials has been listed in 1.8.

Table 8-8 List of materials required for the Scheme

Table to be populated by the Contractor. See ES Chapter 14 Materials for initial list

Project Activity	Material resources required for the project	Quantities of material resources required	Additional information on material resources
Earthworks	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
Site construction	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
Operation and maintenance of asset	Details	Details	Details
	Details	Details	Details
	Details	Details	Details
	Details	Details	Details

8.9.7 Earthworks estimates predict a deficit of approximately 75,000 m³ of general earthworks materials, subject to appropriateness of the fill material. Where possible this material, and the other materials to be used as a part of the Scheme, will be obtained locally.

8.9.8 The Contractor shall ensure that materials are treated and used as set out in the MMP. At the completion of works, the Contractor shall provide evidence that materials have been treated and used in an acceptable manner.

Supporting Documentation

8.9.9 The information expected to be required to support the completion of an MMP for the Scheme would be drawn from the following documents, including other sections of this CEMP:

- a) Invasive Species Management Plan;
- b) Earthworks Strategy;
- c) Land Contamination Management Strategy;
- d) Remediation Strategy including a Verification Plan;
- e) Earthworks Specification;
- f) Cut/Fill requirements and Earthworks Movements Plan;
- g) Design Statement I Remediation Strategy;
- h) Qualified Person Declaration;
- i) Verification Report; and
- j) Proforma MMP.

8.9.10 The other supporting documentation listed will be prepared separately and references incorporated into the MMP as regulator agreement is obtained. The draft MMP will be reviewed and updated during detailed design of the proposed Scheme.

Summary

- 8.9.11 There is an intent to maximise the use of site-won materials for the construction of the proposed Scheme. Careful planning and procurement of imported materials would minimise the potential for waste. The Contractor is to plan for managing material through careful storage and recording, so that surplus can be retained for productive use or transferred to others.

8.10 Annexe H: Outline cultural heritage management plan

Introduction

- 8.10.1 A Cultural Heritage Management Plan (CHMP) shall be a live document prepared during the design stage and implemented during construction (Key Stage 6). The CHMP shall include, without limitation, the following:
- a) procedures for advance works, set out in the Written Scheme of Investigation;
 - b) procedures for watching brief, set out in the Written Scheme of Investigation;
 - c) protection of archaeological features where this is considered necessary;
 - d) phasing of archaeological activities on site; and
 - e) production of archaeological reports.
- 8.10.2 This document is the Outline CHMP which begins the process at Key Stage 3 of identifying procedures and management of construction in relation to cultural heritage assets affected by the Scheme. This document shall be developed by the contractor, and the mitigation measures implemented during construction (Key Stage 6).

Purpose of the plan

- 8.10.3 The main purpose of the plan is to set out steps which the contractor is to take during construction to protect, record and investigate cultural heritage assets. It provides an overview of key Cultural Heritage aspects and features in the context of the Scheme and is a guide for construction management decisions.
- 8.10.4 The CHMP is based on information gathered from the Environmental Statement.

Description of Project

- 8.10.5 Refer to Environmental Statement Chapter 2.

Address of Project

8.10.6 Address of Site office: (to be inserted when identified)

Details of where this plan will be kept on site

8.10.7 The contractor will keep an up-to-date version of the CHMP on site throughout the construction stage. The CHMP should be kept at the main site office and uploaded to the Scheme website.

Table 8-9 CHMP details

Date site CHMP originally prepared	Contractor to populate
Project start date	Details
Project end date	Details
Estimated duration	Details
Client	Details
Principal contractor	Details
Originator	Details
Responsible party for ensuring compliance with CHMP	Details

Description of cultural heritage baseline

8.10.8 Refer to Environmental Statement Chapter 10.

Procedures for Advance Works (if required)

8.10.9 Before construction a programme of recording, sampling or investigation together with procedures for a Watching Brief will be agreed with the consultees, and the methodology set out in a Written Scheme of Investigation (WSI).

8.10.10 During topsoil strip, and any other activities requiring excavation, an archaeological watching brief will be maintained, in line with the Chartered Institute for Archaeologists Standard and Guidance for an Archaeological Watching Brief. As a minimum one archaeologist will be present on site at appropriate times, however where works are occurring concurrently in multiple locations, an archaeologist must be present at each location.

8.10.11 If unexpected archaeological remains are found, the following process will be followed:

- a) excavation in that location will cease, save for any works required by the archaeologist to expose the area of interest fully;
- b) the area of interest may require demarcation to prevent accidental damage before recording;
- c) where feasible, excavation will continue outside the area of interest, under archaeological supervision;
- d) the archaeologist will undertake recording of the archaeological remains through limited excavation, written and drawn records and photography;
- e) if unexpected archaeological remains of particular significance are encountered, the local planning authority archaeological officer will be consulted regarding requirements for further recording;

8.10.12 Once archaeological recording has taken place, excavation can recommence under archaeological supervision.

Protection of Archaeological Features (if required)

8.10.13 All known features are either identified for investigation and removal or are considered too distant from the works boundary. Protection may be required if further features are found.

Phasing of Archaeological Activities on Site (if required)

8.10.14 To be added when the WSI is agreed.

Production of Archaeological Reports

- 8.10.15 Reports on investigations and the results of the archaeological watching brief will be produced as set out in the WSI. If archaeology of particular interest is identified, publication in appropriate professional journal may be required by the consultees.

Monitoring and review

- 8.10.16 The Contractor is to allow arranged access for the works to be monitored and reviewed by the relevant local planning authority or Clwyd-Powys Archaeological Trust staff.

Appendices and maps

- 8.10.17 At the outline stage, the cultural heritage assets are identified in ES Chapter 10.

- 8.10.18 These will be developed during the detailed design and final figures are to be provided in the final CHMP.

8.11 Annexe I: Outline ecological management plan

Introduction

- 8.11.1 Appropriate measures will be adopted to protect the ecology of the site with special attention to specified ecological resources, as identified by the Environmental Assessment. A full detailed Ecological Management Plan will be produced as part of the CEMP during the detailed design stage of the Scheme.
- 8.11.2 The important receptors to be considered and protected through the implementation of the Final CEMP are set out in the Environmental Statement Chapter 8.
- 8.11.3 Environmental mitigation forms part of the design and will be implemented by the contractor within the works.
- 8.11.4 Detailed method statements recognising ecological constraints will be prepared by the contractor. Works within the scope of European Protected Species Licences

and Marine Licences shall follow the conditions and methods set out in those licences.

- 8.11.5 The contractor will reduce any habitat loss within the land provided for the Project, by keeping the working area to the minimum practicably required for construction of the Scheme.

Measures to reduce potential impacts on ecological resources

- 8.11.6 Management measures for potential ecological impacts are addressed in other sections of the Outline-CEMP and are not repeated here. These include measures relating to:

- a) Outline Invasive species control and management (see Annex C);
- b) Outline Pollution control and prevention (see Annex D); and
- c) Outline Ground and surface water management (see Annex F).

Pre-construction Surveys

- 8.11.7 Before the construction phase of the Scheme, pre-construction surveys will be undertaken in accordance with best practice guidelines where information is incomplete or not up to date. These surveys will include:

- a) Otter presence / activity within the Scheme footprint
- b) Bat roosts within trees affected by the Scheme
- c) Pre-demolition surveys for bats of structures to be demolished
- d) Nesting bird checks if the removal of vegetation and structures is within the nesting bird season (generally March – August but can be longer depending upon seasonal weather)
- e) Badger presence /activity within the Scheme footprint
- f) Pre-construction and site clearance checks for water voles within any ditches to be affected

- 8.11.8 The results of the pre-construction surveys will be reviewed to determine, in conjunction with the Statutory Environmental Bodies, whether further protected species licences are required.

8.12 Annexe I: Outline ecological management plan

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- 8.12.2 The important receptors to be considered and protected through the implementation of the Final CEMP are set out in the Environmental Statement Chapter 8.
- 8.12.3 Environmental mitigation forms part of the design and will be implemented by the contractor within the works.
- 8.12.4 Detailed method statements recognising ecological constraints will be prepared by the contractor. Works within the scope of European Protected Species Licences and Marine Licences shall follow the conditions and methods set out in those licences.
- 8.12.5 The contractor will reduce any habitat loss within the land provided for the Project, by keeping the working area to the minimum practicably required for construction of the Scheme.

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- f) Pre-construction and site clearance checks for water voles within any ditches to be affected

8.12.8 The results of the pre-construction surveys will be reviewed to determine, in conjunction with the Statutory Environmental Bodies, whether further protected species licences are required.

Procedures for Demolition and Vegetation Clearance

8.12.9 Where possible, vegetation clearance will be undertaken outside the bird breeding season (March to September). Within this season, survey for breeding birds will be conducted before clearance or disturbance. Irrespective of the timing, all vegetation will be searched by an ecologist before clearance to identify the presence of any legally protected or notable species.

8.12.10 If legally protected species or their resting places are encountered during vegetation clearance works, vegetation clearance will where necessary be suspended and licences obtained, before further clearance.

8.12.11 Amphibians, reptiles, hedgehogs, or Section 7 species (as listed in Environment Act Wales 2016) encountered will be carefully moved out of the construction areas to suitable receptor areas outside of the construction footprint. Within grassland

areas, the height of the sward will be reduced in stages within the construction area to encourage animals to move out of the footprint of the Scheme. The use of this method may vary depending on the time of year and ambient temperatures.

Procedures for draining of waterbodies

8.12.12 Where waterbodies are required to be in-filled or re-profiled, they will be drained down under the supervision of an ecologist. Checks for the presence of water voles will be conducted prior to dewatering, if evidence is found, the ecologist will advise the way forward. As water levels decrease the speed of dewatering will be slowed to allow any fish or amphibians to be removed to suitable receptor locations. Where possible aquatic vegetation from drained waterbodies will be placed on the banks of retained waterbodies for a minimum of 24 hours to allow invertebrates to move out of the vegetation.

8.12.13 Care will be taken during the draining of waterbodies to adhere to the requirements in relation to invasive aquatic plant species of the outline invasive species management plan in Annexe C.

Procedures for working near the River Dee

8.12.14 The contractor is to establish a programme of site inspection to ensure that passage along the River Dee banks for Otters is maintained and the site is kept free of litter or discarded food items.

8.12.15 No materials, packaging or other items which could fall, blow or wash into the river are to be left unsecured during the works.

Ecological Compliance Audit

8.12.16 As required by European Protected Species (EPS) licences, a licence report will be submitted to NRW by the contractor on expiry of the licence, and at interim stages where appropriate.

8.12.17 The fulfilment of the mitigation commitments in the REAC will be audited following methods to be agreed with NRW and recorded in the REAC. Progress will be

reported to the ELG. REAC commitments extending beyond the contract period will be adopted by NMWTRA.

8.13 Annexe J: Bio-security risk assessment

Introduction

- 8.13.1 The contractor shall prepare a bio-security risk assessment to include the risks of introducing or spreading invasive species (refer to Annexe C) and the risk of introducing or spreading diseases which could affect habitats and species.
- 8.13.2 Biosecurity risks associated with works within the River Dee will be assessed as part of the Marine Licence for the works.

8.14 Annex K: Construction Traffic Management Plan

Introduction

- 8.14.1 The contractor shall prepare a plan for traffic management to minimise effects on the immediate surroundings, wider environment and residents / businesses.

8.15 Annex L: Demolition plan

- 8.15.1 The existing bridge is planned to be demolished once the replacement bridge is completed.
- 8.15.2 Without avoidance and mitigation the demolition of the bridge could be a source of potentially adverse effects on environmental receptors and residential amenity. The environmental effects arising during demolition will be temporary, short lived and shall be avoided or mitigated.
- 8.15.3 This Method Statement shall be developed by the contractor's demolition specialist to set out the programme, timescale, actions, temporary works and controls required to protect the environment.
- 8.15.4 The Method Statement will be required before demolition commences and will include the following elements which are intended to protect the environment and will be in addition to those elements required for health and safety:
- A. A brief description of the surrounding environment, highlighting those elements of the environment that could be adversely affected by the demolition activities. The following aspects will demonstrate how these elements are to be protected and monitored.
 - B. A programme for demolition identifying start and finish dates and taking into account any environmental constraints such as seasonal limits, any requirements for lighting of the works and the start and finish times for each demolition activity.
 - C. Details of the method of demolition to be used setting out how the works will progress, and debris be removed.
 - D. Details of how the generation of dust will be avoided or contained to minimise adverse effects on the environment and residents and to avoid the spillage of demolition debris into the River Dee.
 - E. Details of plant and equipment to be used and the means of controlling noise.

- F. Details of the use of any hazardous substances to be used and the means by which they will be applied to prevent debris entering the River Dee.
- G. Arrangements for the protection of the public and the construction workforce against noise and hazardous substances, such as asbestos or other dust.
- H. Details of arrangements for containment and recovery if pollution incidents occur.
- I. Arrangements for the separation and disposal of waste.

Training and Environmental Awareness

- 8.15.5 Training is essential to ensure that the provisions of the Demolition Plan are implemented efficiently and effectively. The plan shall specify the requirements of environmental training and awareness for all project personnel involved in demolition to ensure they perform their designated tasks to an acceptable standard. Training and awareness program will include:

Site induction

- Familiarization with the site and environmental risks.
- EMP requirements and environmental measures being implemented.
- Method for reporting observations and implementing corrective actions.
- Emergency response.

Response to Non-Compliance

- 8.15.6 The system to be used for dealing with non-compliance will be described and made clear to all project workers