



Llywodraeth Cymru
Welsh Government

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A487 New Dyfi Bridge

Environmental Statement –
Volume 1, Chapter 17
Environmental Management Plan

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17 Environmental Management Plan

17.1 Introduction and Purpose

17.1.1 The Environmental Impact Assessment (EIA) presented within the Environmental Statement (ES) has identified the potentially significant effects associated with the Scheme and set out strategies as to how these can be avoided, reduced or remedied. To ensure these measures are implemented and to ensure compliance with relevant legislation, it is essential there is an effective Environmental Management Plan throughout the pre-construction, construction, and operational phases of the Scheme including maintenance and aftercare.

17.1.2 Environmental management during the construction of the Scheme (referred to as Key Stage 6) would be delivered through:

- The operation of an Environmental Management System (EMS);
- The development of a Construction Environmental Management Plan (CEMP).
- At this stage, a Pre-CEMP has been produced and is presented in ES Volume 3 Appendix 17.1. The Pre-CEMP includes a number of Annexes, referred as Outline Management Plans, see Table 17.1.

17.1.3 These measures will ensure that environmental issues associated with the construction of the Scheme are appropriately identified, assessed, planned for and addressed in line with the requirements of the EMS and CEMP.

17.2 Construction Strategy

17.2.1 The Construction Strategy for the Scheme is set out in Section 2.3 of this ES. The construction programme would be finalised by the main contractor in advance of the works. The duration of the works is currently estimated to require a construction period of 25 months, including advance works/vegetation clearance/utility diversions, archaeological testing and de-trunking of the existing road. However, depending on the final earthworks strategy this could increase or reduce slightly.

17.2.2 The sequence of construction activities for the Scheme would be typical of a major road scheme and consist of the following:

- Advance/preparatory works likely to be undertaken prior to construction;

- Site establishment and clearance;
- Main construction works involved in the Scheme drainage earthworks, including the flood alleviation infrastructure;
- Main viaduct and bridge structure construction;
- Road works and other associated structures; and
- Final tie-ins and soft landscape works.

17.2.3 The working day would vary between the seasons. However, it would typically be Monday – Friday 7am to 7pm in the summer months and 7am to 5pm in the winter. Weekend or night work would be required in some instances, typically for works on or adjacent to existing highways.

17.2.4 Following construction there will be a 36 month aftercare maintenance and monitoring period. Further information on the key construction activities are described in Section 2.3 of this ES.

17.3 Environmental Management System (EMS)

17.3.1 The Contractor, will construct the Scheme and shall implement a scheme specific EMS in compliance with ISO 14001 and ISO 14004, and the requirements of Design Manual for Road and Bridges Volume 0, 10 and 11 and relevant Interim Advice Notes.

17.3.2 The Contractor will appoint an Environmental Coordinator (ECO) who will oversee environmental compliance throughout each Key Stage including Construction. The ECO will implement the EMS and the CEMP. The Ecological Clerk of Works (ECoW) will support the ECO during pre-construction and construction.

17.3.3 The EMS shall include the following:

- the CEMP;
- targets and commitments to continual improvement, sustainable construction objectives, prevention of pollution and waste, compliance with legislation and the requirements of Statutory Environmental Bodies;
- framework for setting and reviewing objectives and targets;
- monitoring and review process that audits and reports on compliance; and
- guidance for the future operation and maintenance of the Scheme.

17.3.4 The Contractor shall make his staff, and those of his sub-Contractors and suppliers, aware of:

- the requirement to comply with the EMS;
- the significant environmental impacts, actual or potential and with due reference to the ES, of their work activities and the environmental benefits of improved personal performance;
- their roles and responsibilities in meeting the requirements of the EMS including remedial and emergency procedures;
- the potential consequences of departure from operating procedures including references to good practice and statutory guidance; and
- environmental hold points at which construction work shall cease until the ECO agrees that work can proceed.

17.4 Environmental Policy

17.4.1 The Contractor will provide an Environmental Policy to guide the EMS and the CEMP. The Environmental Policy will be a declaration of intent to ensure that all works are effectively managed, environmental impacts are minimised, and the operation and environmental management of activities are subject to continual improvement.

17.4.2 The EMS shall be based upon an Environmental Policy that:

- contains commitments to continual improvement, sustainable construction objectives, prevention of pollution and waste, compliance with legislation and the requirements of Statutory Environmental Bodies;
- contains a framework for setting and reviewing objectives and targets;
- includes a monitoring and review process that audits and reports on compliance; and
- provides the basis for the future operation and maintenance of the completed Scheme.

17.5 Construction Environmental Management Plan (CEMP)

17.5.1 In accordance with DMRB Volume 11 Section 2 Part 6 HD 48/08 and DMRB IAN 183/14, the CEMP will be the fundamental document for managing environmental compliance and best practice on site during the construction phase and the aftercare period.

17.5.2 The CEMP provides the framework for recording environmental risks, commitments and other environmental constraints and clearly identifies the structures and processes that will be used to manage and control these aspects. The CEMP also seeks to

ensure compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives. It also provides the mechanism for monitoring, reviewing and auditing environmental performance and compliance.

17.5.3 The purpose of a CEMP is to manage the environmental effects of the Scheme. The key aims are to:

- Act as a continuous link and main reference document for environmental issues between the design, construction and the maintenance and operation stages of a project;
- Demonstrate how construction activities and supporting design will properly integrate the requirements of environmental legislation, policy, good practice. and those of the environmental regulatory authorities and third parties;
- Record environmental risks and identify how they will be managed during the construction period;
- Record the objectives, commitments and mitigation measures to be implemented together with the programme and date of achievement;
- Identify the key staff structures and responsibilities associated with the delivery of the project and environmental control and communication and training requirements as necessary;
- Describe the contractor's proposals for ensuring that the requirements of the environmental design are achieved, or are in the process of being achieved, during the Contract Period;
- Act as a vehicle for transferring key environmental information into the Handover Environmental Management Plan (HEMP) for operational management. This will include details of the asset, short and long term management requirements and any monitoring or other environmental commitments; and
- Provide a review, monitoring and audit mechanism to determine effectiveness of, and compliance with, environmental control measures and how any necessary corrective action will take place.

17.5.4 At this Key Stage, the Pre-CEMP has been compiled and is provided in Volume 3 Appendix 17.1. As part of the detailed design, the ECO will refine and expand the Pre-CEMP into a CEMP.

17.5.5 The CEMP will be a 'live' document that would be developed further during Key Stage 4 (leading up to a public inquiry if one

is required) and Key Stage 6 in consultation with the Statutory Environmental Bodies.

17.5.6 The CEMP will contain all current environmental management plans, method statements, permits, relevant licences, certificates, health & safety plans, the register of environmental commitments, quality assurance procedures, and any other relevant documentation the site environmental team require in order to manage the site effectively.

17.6 Status of the CEMP

17.6.1 As already stated, the CEMP is a 'live' document, a Pre-CEMP has been produced during the EIA. A number of Outline Management Plans which will be provided as part of the CEMP have already been produced as part of the Pre-CEMP (identified in Table 17.1) and are contained within Volume 3 Appendix 17.1. It is anticipated that there will be additional management plans required as the design of the Scheme progresses.

Table 17.1 Annexes within ES Volume 3 Appendix 17.1 Pre-CEMP

Annex	Description
Annex A - Regulatory Framework	This is a list of the legal statutory requirements for construction staff working on this Scheme. The list compiled is not exhaustive.
Annex B - Preliminary List of Permits/Consents	A list of the statutory consents and permits required before construction can proceed. Some items are subject to seasonal requirements.
Annex C - Invasive Species Management Plan	Identifies which invasive species have been identified on site and the procedure for construction works on how to deal with invasive species.
Annex D - 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.
Annex E - Outline Site Waste Management Plan	Site Waste Management Plan ("SWMP") – used to plan, implement, monitor and review waste minimisation and management on construction sites. The Outline SWMP has been based upon the Waste and Resources Action Programme's ("WRAP") SWMP template;
Annex F - Outline Ground and Surface Water Management Plan	Developed in consultation with Natural Resources Wales (NRW). It shall describe the design of each element of surface water management system required to manage surface water runoff during construction and potential risks to surface waters. This shall include consideration of temporary storage and settlement requirements to manage sediment load of waters. The Ground and Surface Water

Annex	Description
	Management Plan shall define the water quality criteria to ensure any discharge to receiving watercourses meets regulatory requirements.
Annex G - Outline Materials Management Plan (MMP)	The Scheme's Materials Management Plan ("MMP"), shall detail how all construction phase materials (material resources and waste) would be managed, developed and implemented by the appointed Contractor. This Outline MMP provides a framework which will be used as a basis from which to develop the Scheme's MMP.
Annex H - Outline Cultural Heritage Management Plan (CHMP)	Informed by the outcome of the EIA the CHMP contains 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.).
Annex I – Outline Ecological Management Plan	This outline plan sets out the measures and procedures for reducing impacts on ecological receptors. It outlines the procedures for pre-construction surveys, vegetation clearance, draining ponds and translocating of hedges.

17.6.2 The CEMP would include updates from pre-construction surveys and any modifications as a result of commitments made at the Public Inquiry. The CEMP would then be agreed with key stakeholders, including Natural Resource Wales (NRW) and local planning authorities, and would be in place before construction begins.

17.6.3 During construction, the CEMP will be revised and change procedures followed, should any of the following occur:

- modifications to the design;
- changes to the design and/or Register of Commitments as a result of the Key Stage 4 Public Inquiry;
- changes in external factors (for example, regulations or standards);
- any unforeseen circumstances (for example, unknown areas of contaminated land);
- any failings in environmental performance arising from routine inspections;
- any new findings such as protected species or habitats; and
- any new archaeological findings.

17.6.4 Towards the end of the construction period the CEMP will be refined into a HEMP which will contain essential environmental information needed by the body responsible for the future maintenance and operation of the asset.

17.6.5 There shall be two electronic copies of the CEMP, one to be held on site and the other off site. Both copies are to be kept up to date by the ECO with daily site record details, meeting notes, consents, correspondence etc. At the end of the contract period the completed CEMP is to be handed over to the Employer.

17.6.6 Table 17.2 provides an overview of how the EMP is generally developed and the corresponding owner over each Key Stage for the Scheme.

Table 17.2 Status of the EMP

Project Key Stage	Description	Status of Environmental Management Plan	Stage Responsibility
Key Stage 0	Strategy, Shaping and Prioritisation	None – but consider high level environmental objectives through Client Scheme Requirements	Client
Key Stage 1	Option Identification		
Key Stage 2	Option Selection		
Key Stage 3	Preliminary Design	Pre-Construction Environmental Management Plan (Pre-CEMP)	Designer
Key Stage 4	Statutory Procedures and Powers		Designer/Contractor
Key Stage 5	Construction Preparation	Construction Environmental Management Plan (CEMP)	Contractor
Key Stage 5/6	Construction completion	Aftercare Environmental Management Plan (AEMP)	Contractor
Key Stage 6	Commissioning and Handover	Handover Environmental Management Plan (HEMP)	Employer
Key Stage 7	Operation and Maintenance		

17.7 Environmental Masterplan

17.7.1 The key environmental mitigation measures incorporated within the design of the Scheme are illustrated on the Environmental Masterplan drawings (see Figure 8.7, Volume 2). The Environmental Masterplan drawings have been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 10, Section 0, Parts 1 to 8, which uses Environmental Functions, Landscape Elements, Environmental Elements and Planning Policy features to describe areas shown on the Environmental Masterplan drawings.

17.7.2 Each existing or proposed environmental feature on or adjacent to the highway which is a part of the Scheme will either have one or more functions, and an element which describes its physical attributes or designation in statutory terms. This includes the ability, when appropriate, to ascribe highway and structural elements an environmental function that will inform its design and influence maintenance techniques. These are described as follows:

- Environmental Function: The intended purpose of features within the highway estate in environmental terms;
- Landscape Elements: Landscape features found within the highway estate, which can encompass both hard landscape features (i.e. retaining walls, hard surfacing) and elements of the soft estate (i.e. grasslands and woodlands);
- Environmental Elements: Non-landscape features of the highway estate that have environmental functions, i.e. noise attenuation measures, water quality controls, protected species, and legislated elements such as injurious weeds and pests; and
- Planning Policy Features: Features pertaining to, or situated in close proximity to, the highway estate that have a specific designation or land use, i.e. Special Area of Conservation (SAC), Scheduled Ancient Monuments and National Park.

17.7.3 The landscape and environmental design proposals forming the environmental mitigation for the proposed new section of highway are fully described in Chapter 8 (Landscape and Visual). The following Environmental Functions are referenced on the Environmental Masterplan drawings:

- Visual Screening (EFA);
- Landscape Integration (EFB);
- Enhancing Built Environment (EFC);
- Nature Conservation and Biodiversity (EFD);
- Visual Amenity (EFE);
- Heritage (EFF);
- Auditory Amenity (EFG);
- Water Quality (EFH);
- Agricultural/Highway Boundary (EFJ); and
- Access (EFK).

17.7.4 Landscape Elements shown on the Environmental Masterplan drawings include Grassland (LE1), Native Planting (LE2) and Hedgerows (LE4). Environmental Elements include Auditory

Amenity (E1), Water Quality (E2) and Nature Conservation and Biodiversity (E3).

17.7.5 In addition to a range of existing features including retained vegetation, watercourses and culverts, the Environmental Masterplan drawings also show a number of designated areas, such as Scheduled Ancient Monuments Listed Buildings and Sites of Special Scientific Interest (SSSI).

17.8 Environmental, Landscape and Ecology, Monitoring, Aftercare and Management Plan

17.8.1 The Contractor shall carry out environmental monitoring, aftercare and management for a period of three years following the completion of the works.

17.8.2 For consistency, the reports shall be named “Environmental Performance Report 20## (year), Environmental, Landscape and Ecology Aftercare and Management Year # (1, 2, 3 etc.)”.

17.8.3 Following each monitoring visit, the Contractor shall submit to the Project Manager a report summarising the survey, the monitoring undertaken and actions outstanding and covering the items detailed above. The monitoring reports shall be summarised in annual Environmental Design Performance Reports (During Construction), Final Environmental Design Performance Reports (Post Construction) and then a Handover Environmental Performance Report at the end of the 3 year aftercare period.

17.8.4 The performance reports shall identify any deficiencies in the mitigation measures undertaken and the Contractor’s proposals/actions taken to rectify and suggestions as to how such deficiencies could be avoided in future. The report shall also identify where mitigation measures have been successful and include copies of any related correspondence from environmental or other bodies.

17.8.5 The Handover Environmental Performance Report will inform the maintenance and management programme for the period covered by the HEMP.

17.9 Handover Environmental Management Plan (HEMP)

17.9.1 At the end of the 3 year aftercare period the Contractor shall produce a HEMP, written in accordance with DMRB requirements. It shall incorporate the Environmental Performance Reports, and the Environmental Management Plans.

- 17.9.2** The HEMP will cover management of all environmental features, including, but not limited to:
- Soft landscape planting, grass areas and existing vegetation;
 - Notifiable weed control;
 - Nature conservation;
 - Water quality and drainage; and
 - Noise and vibration.
- 17.9.3** The HEMP will set out the environmental maintenance and management required for the completed project (following the aftercare period) for a period of 10 years and will be developed in consultation with the Employer's Agent and the Environmental Manager of North and Mid Wales Trunk Road Agency (NMWTRA) in order to complement their existing Route Environmental Management Plan.
- 17.9.4** The HEMP will include indicative costs for the management of the environmental areas for the year post-Aftercare Period to allow NMWTRA to make reasonable allowance in their maintenance costs. This shall be submitted to Welsh Government as a draft document 8 weeks before the issue of the Environmental Aftercare certificate.
- 17.9.5** A minimum of four weeks prior to the end of the Aftercare Period the Contractor shall arrange for an Environmental audit to be undertaken including a site walk over by NMWTRA and the Employer's Agent. The Contractor shall undertake all remedial works identified during the audit prior to issue of the Environmental Aftercare Certificate.
- 17.9.6** The following environmental design records are required for inclusion in the HEMP:
- Drawings and specifications of environmental design incorporated into the works;
 - The final Environmental Masterplans prepared in Environmental Information Systems (EnvIS) format/or to a format agreed with NMWTRA;
 - Records of the soft landscape works to include planting soil depths, plant species, ground treatment and plant protection works;
 - Details of agreements with landowners for such measures;
 - Copies of relevant correspondence with landowners/authorities relating to agreements reached about mitigation measures;

- Essential mitigation fences and other boundary treatments, including access locations and type: gates, stiles identifying who is responsible for maintenance; and
- Areas of specific Invasive Non-Native Species (INNS)¹ control treatment, for example for Japanese Knotweed, and/or other ‘burial’ sites.

17.10 Roles and Responsibilities

Environmental Coordinator (ECO)

- 17.10.1** The ECO will be a Chartered Member of an appropriate environmental professional body. The ECO will oversee the Environmental Compliance Process for each Key Stage. Competent at managing environmental surveys and undertaking environmental design work, completing EIAs, Assessment of Implications on European Sites (AIES), preparing the environmental masterplans, the Environmental Statements & AIES reports, experience of preparing and giving evidence at Public Inquiry’s overseeing and auditing implementation of environmental mitigation and aftercare and compliance with environmental management systems, in relation to major highway schemes or similar in environmentally sensitive areas. The ECO will have experience of overseeing and reporting on sustainable construction requirements.
- 17.10.2** The ECO shall report on the use of materials (including timber) in the monthly environmental reports.
- 17.10.3** The Contractor shall establish and maintain procedures in the CEMP to identify works that are likely to have a significant environmental impact. The Contractor is to identify Environmental hold points at which construction work shall cease until the ECO and/or the ECoW, agrees that work can proceed.
- 17.10.4** The Contractor shall monitor, measure and review the environmental performance project against the commitments, objectives and targets/key performance indicators identified in the CEMP. The CEMP shall contain procedures for checking, auditing and corrective action. These shall include regular meetings, internal and external audits to review the operation and effectiveness of the CEMP. The results shall be reported to the Project Manager by the ECO at the monthly progress meetings.

¹ See standard UK Government information on INNS - <https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants>

- 17.10.5** Interim site visits during each year of the aftercare period shall be arranged and attended by the ECO to review performance with respect to landscape maintenance, the mitigation measures and ensure the establishment and development of the soft landscape works.

Environmental Clerk of Works (ECoW)

- 17.10.6** The ECoW will be competent in environmental management of construction, managing environmental surveys and overseeing and auditing implementation of environmental mitigation and compliance with environmental management systems, preferably in relation to highway schemes or similar in environmentally sensitive areas. The ECoW will be a Chartered Member of an appropriate environmental professional body.

17.11 Draft Register of Commitments

- 17.11.1** A draft Register of Commitments (draft ROC) has been created and is provided in the Pre-CEMP, ES Volume 3, Appendix 17.1. This is a record of the Scheme specific environmental actions and commitments to be implemented and managed through all stages of the Scheme. The draft ROC lists commitments made within the ES (principally taken from the mitigation sections of each chapter).
- 17.11.2** The draft ROC is critical to the success of an EMP and subsequently the environmental performance of a Scheme. The ROC would be implemented through the CEMP and the Environmental, Landscape and Ecology, Monitoring, Aftercare and Management Plan.
- 17.11.3** The draft ROC has been provided in table format providing for:
- Identification of the environmental aspect in question;
 - The objective of the mitigation/action;
 - A clear and specific description of the mitigation/action;
 - References for source documentation/further information;
 - Naming of the person responsible for the mitigation/action i.e. Contractor or ECO;
 - The project stage of implementation and/or achievement;
 - Details of any monitoring required, what should be monitored and how results should be used to effect necessary action; and
 - Achievement criteria and reporting requirements.
- 17.11.4** Where it is required that mitigation/ action must be monitored to determine success the details of monitoring, success criteria,

reporting requirements and trigger level for remedial works should be clearly defined.

17.12 Summary

17.12.1 In line with the requirements under DMRB and ISO 14001, Environmental Management of the Scheme is an ongoing process during design, construction, operation and maintenance. The Contractor will implement a scheme specific EMS and a CEMP

17.12.2 As identified within this chapter, there are a number of management plans within the CEMP which will be treated as 'live' documents. These documents will ensure that design and mitigation measures from the EIA will be implemented on site by the Contractor. The CEMP will identify those responsible for implementing the various management plans. These management plans will compliment and inform one another as well as require regular updates and revisions. Outline versions of these management plans have been prepared at Key Stage 3 and are provided as Annexes to the Pre-CEMP in ES Volume 3 Appendix 17.1.

17.12.3 The objective of the EMS and the CEMP is to mitigate environmental impacts and have a comprehensive management plan in place to reduce any unforeseen environmental impacts.