



VOLUME 4: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN






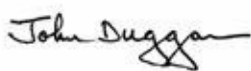
**A477 ST CLEARS TO RED ROSES
IMPROVEMENT**



16454/EN033-04

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

CONTROLLED DOCUMENT

<i>Ramboll Document No:</i>	16454-EN033-rev 05		
<i>Status:</i>	Rev 5	<i>Copy No:</i>	
	<i>Name</i>	<i>Signature</i>	<i>Date</i>
<i>Prepared by:</i>	David Bunyan		17/6/13
<i>Checked:</i>	Roland Tarrant		19/6/13
<i>Ramboll approved:</i>	Roy Emberton		26/6/13
<i>SRB Civil Engineering approval:</i>	John Duggan		26/6/13

Revision Record					
<i>Rev.</i>	<i>Date</i>	<i>By</i>	<i>Summary of Changes</i>	<i>Chkd</i>	<i>Aprvd</i>
02	Feb 12	DB	Incorporate Hyder and SBB comments	JRE	JRE
03	May 12	AT	Update to reflect the progression of works	RE	RE
04	Nov 12	AT	Incorporate Hyder and SRB comments and audit findings	DB	JRE
05	June 13	DB	General update	DB	JRE



16454/EN033-03

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

C O N T E N T S

	Page
1. INTRODUCTION.....	1
2. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN	3
3. ENVIRONMENTAL POLICY	6
4. SUSTAINABILITY	7
5. CEMP REVIEW SCHEDULE.....	8
6. ORGANOGRAM	8
7. ROLES AND RESPONSIBILITIES	10
8. REGISTER OF ENVIRONMENTAL LEGISLATION.....	13
9. CONSENTS, LICENCES AND PERMISSIONS	14
10. PROCEDURES AND METHOD STATEMENTS.....	15
11. ENVIRONMENTAL PROGRAMME	16
12. ENVIRONMENTAL TRAINING	17
13. COMMUNICATION AND REPORTING	18
14. ENVIRONMENTAL MONITORING	20
15. ENVIRONMENTAL COMMITMENTS	21
16. EMP DRAWINGS	21

APPENDICES

Appendix A – SRB Environmental and Sustainability Policy and Considerate Behaviour Policy

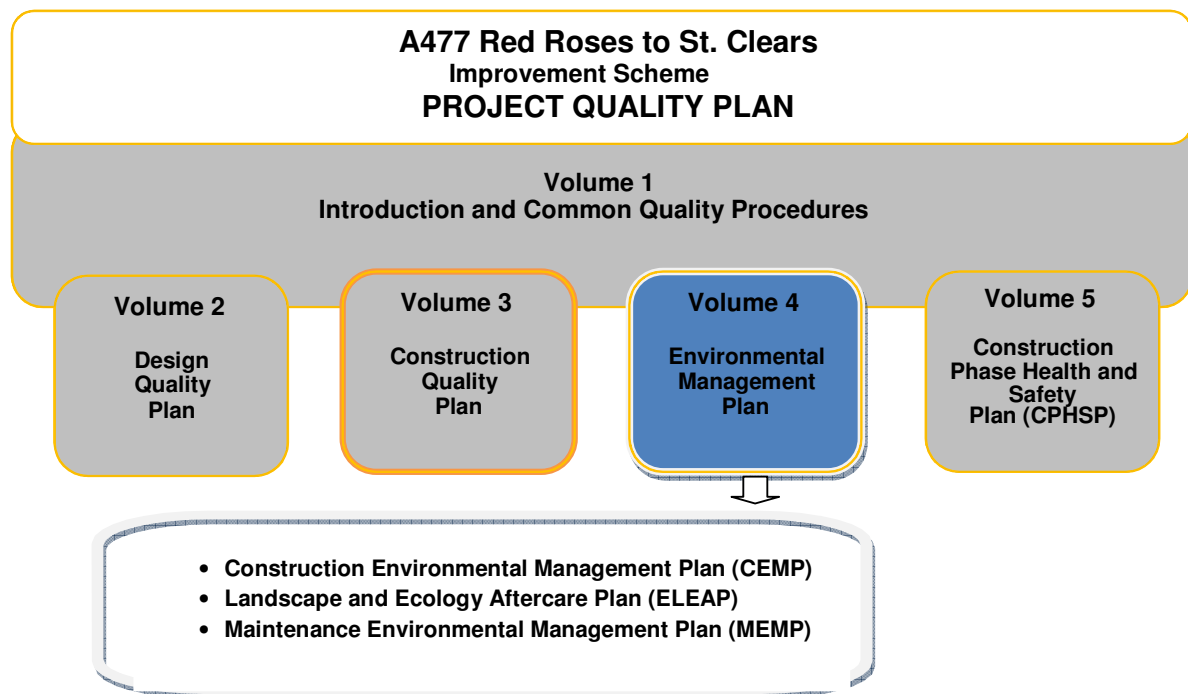
Appendix B – Surface Water Quality Management Plan
Appendix C – Flood/Hydrodynamics Management Plan
Appendix D – Site Waste Management Plan
Appendix E – Traffic Management Plan
Appendix F – Air Quality Management Plan
Appendix G – Acoustics Management Plan
Appendix H – Archaeology Management Plan
Appendix I – Protected Species Management Plan
Appendix J – Invasive Species Management Plan
Appendix K – Unexpected Contaminated Land Management Plan
Appendix L – Pollution Control and Contingency Plan
Appendix M – Soil Management Plan
Appendix N – Dormouse Management Plan
Appendix O- Unexpected Species Management Plan
Appendix P – Specific Method Statements for Species Licenses
Appendix Q - Environmental Masterplan Drawings
Appendix R –Environmental Risk Assessment Template
Appendix S – Site Monitoring and Auditing Database (not used)
Appendix T – Monthly Environmental Audit Form
Appendix U– Environmental Site Inspection Form
Appendix V – Agriculture Management Plan

1. INTRODUCTION

1.1 Background

- 1.1.1 The Welsh Government (WG) proposes to improve the A477 between St Clears and Red Roses. This scheme is known as the St Clears to Red Roses A477 Improvement Project (the Project).
- 1.1.2 The construction of this Project commenced in January 2012, and is proposed for completion in March 2014. SRB Civil Engineering (SRB) are responsible for the construction of the Project.
- 1.1.3 This document comprises the Construction Environmental Management Plan (CEMP) and has been prepared to support the management of construction of the Project. This CEMP has been prepared by the Contractor (SRB) and their design and environmental consultants (Ramboll) to meet the requirements of the Works Information Contract and the Environmental Statement.

1.2 Volume 4: Environmental Management Plan



- 1.2.1 The Environmental Management Plan (EMP) provides a framework in which the Project will be constructed and operated.
- 1.2.2 The EMP is comprised of the CEMP, Landscape and Ecology Aftercare Plan (ELEAP) and the Maintenance Environmental Management Plan (MEMP). This document is the CEMP.

- 1.2.3 It should be noted that the CEMP is an integral component of the Project Management system and should be read in conjunction with SRB's Quality Management System as shown above.
- 1.2.4 During the development and application of this plan, no statutory requirements or current guidelines shall be prejudiced.
- 1.2.5 This CEMP will be a live document and will be reviewed and developed in accordance with the review schedule provided at Section 5.0. This states that this document will be updated on a regular basis and where necessary as specific environmental requirements are highlighted as the contract progresses.

2. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

2.1 Purpose of the CEMP

2.1.1 The purpose of this CEMP is to set out how statutory and contractual environmental requirements will be demonstrated, controlled, assured and managed throughout the construction of the Project.

2.1.2 The purpose of the CEMP is to provide the following:

- i A means of identifying environmental commitments and constraints; and environmental targets and objectives, including the Project Environmental Policy (Appendix A);
- ii A framework within which SRB is aware of their environmental responsibilities;
- iii A means of establishing a mechanism for checking commitments have been applied at the construction stage;
- iv Detail on how environmentally sensitive issues will or have been dealt with;
- v Assistance with ensuring the integration of the requirements of environment legislation, policies and guidance; and of environmental regulators and third parties, into the detailed design and construction process;
- vi A description of how the proposals will ensure the environmental functions and elements drawn from targets and objectives will be, are being or have been achieved during the construction period, and potentially beyond;
- vii A mechanism for the audit and evaluation of the way environmental issues have been handled within the design, construction and construction maintenance stages.

2.1.3 The aims of a CEMP are to:

- i Identify the extant minimum legislative requirements that need to be met;
- ii Identify other commitments that relate to the Project which require to be met;
- iii Set out procedures to manage potential environmental impacts;
- iv Set out emergency and contingency plans; and
- v Identify the organisation which will be set up to manage environmental issues for the project, and a co-ordination/management hierarchy for the delivery of the CEMP.

2.1.4 This CEMP has been based on the requirements of the International Standards Organisation (ISO) 14001 system (ISO14001) and where practicable the Environmental Management Appraisal System scheme (EMAS), and will record and ensure compliance with the requirements of that standard/system throughout Project construction.

2.1.5 This CEMP summarises the environmental commitments of the construction project, and the measures to ensure compliance with legislation, the requirements of statutory bodies etc. The commitments/constraints described in this CEMP provide a broad summary of the environmental commitment aspects included within the Environmental Statement published in November 2010.

2.1.6 This CEMP (with the ELEAP and MEMP) will assure the satisfactory delivery and long term environmental performance of the Project in accordance with The WG's commitment to maintaining and enhancing biodiversity of the trunk road estate as well as compliance with environmental legislation and commitments made in the Environmental Statement.

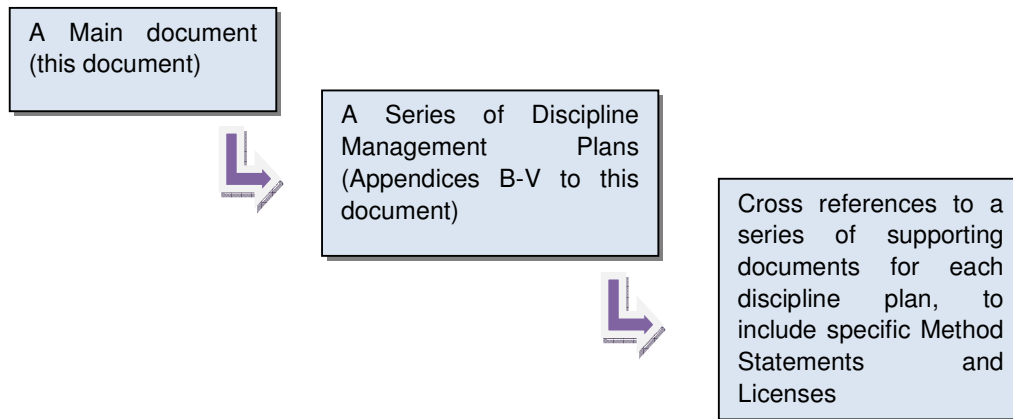
2.1.7 In addition to these Objectives, the key SRB targets for this project are as follows:

Description	Target
"Moderate" to "significant" environmental incidents during the Project	Zero
Prosecutions or Cautions during the Project	Zero
Score on monthly Internal Environmental Audits of the site	95% as minimum
CEEQUAL	Maintaining of the "excellent" interim score achieved through to Whole Project Award
Scoring for Considerate Constructors Scheme	Excellent
ISO14001:2004 Certification	Maintain
Reduce Water Consumption	Reduce 2012 water consumption by 20%.
Excellence in Construction	Incorporation of the Project into the Constructing Excellence in Wales Programme

2.2 CEMP Structure

2.2.1 This CEMP forms a specific element of the management of environmental issues concentrating on the construction phase.

2.2.2 The structure of the CEMP is:



2.2.3 The discipline plans are designed to reflect the requirements specified within the mitigation and enhancement sections of the Environmental Statement and relevant legislation that has been prepared in support of the Project, commitments made during the Public Local Inquiry stage, and requirements imposed by any other means. The Discipline Plans comprise:

- i Surface Water Quality Monitoring Plan (Appendix B);
- ii Flood / Hydrodynamics Management Plan (Appendix C);
- iii Site Waste Management Plan (Appendix D);;
- iv Traffic Management Plan (Appendix E);
- v Air Quality Management Plan (Appendix F);
- vi Acoustics Management Plan(Appendix G);
- vii Archaeology Management Plan (Appendix H);
- viii Protected Species Management Plan (Appendix I);
- ix Unexpected Contaminated Land Management Plan (Appendix K);
- x Pollution Control and Contingency Plan (Appendix L);
- xi Soil Management Plan (Appendix M);
- xii Unexpected Species Management Plan (Appendix O) and
- xiii Agricultural Land Management Plan (Appendix V).

2.2.4 The plans which include specific Method statements comprise:

- i. Ecology Licenses- Method statements for Bats, Badgers, Otter, Goshawk and Reptiles (Appendix P);
- ii. Dormouse Management Plan- method statement for Dormouse (Appendix N); and
- iii. Invasive Weeds – method statement for invasive species (Appendix J).

3. ENVIRONMENTAL POLICY

- 3.1.1 The Project Team has prepared an Environmental Policy for the Project. This is presented in Appendix A. The policy is a high level document which covers all activities carried out by SRB/Ramboll on this project, including additions to the scope of works which may be agreed between the WG and SRB.
- 3.1.2 The policy states a commitment to continual improvement in environmental performance over the project period.
- 3.1.3 The policy is achievable and realistic, and covers the main site specific issues related to the project.
- 3.1.4 The environmental policy will be used as a benchmark for the design and construction of the project. The policy is seen as a live document, and will be reviewed in light of:
 - i. Changes in the project specification and scope;
 - ii. Changes in legislation;
 - iii. New or updated information;
 - iv. Requirements which come out of the Public Inquiry Process; and
 - v. Commitments and agreements made with third parties.
- 3.1.5 All project policies are controlled documents.
- 3.1.6 A project specific Considerate Behaviour Policy has also been developed and is to be read in conjunction with the Environment Policy. This policy is included in Appendix A..
- 3.1.7 The Policies will be used, with other project requirements, to develop environmental objectives for the scheme and use these to monitor environmental performance over the construction period.
- 3.1.8 The policies will be included in all training undertaken by SRB/Ramboll on the project during the construction phase. The Policy will be available to third parties throughout Key Stage 6 activities, and will be posted on the Project website.
- 3.1.9 All staff working on the construction of the Project, including those in the procurement and site teams, all suppliers and sub-contractors, will be made aware of the Environmental and Considerate Behaviour Policy and its contents during site induction.
- 3.1.10 The Environment Policy should be read in conjunction with the SRB Integrated Management System Policy that also references sustainability objectives.

4. SUSTAINABILITY

- 4.1.1 The WG has, under Section 121 of the Government of Wales Act 1998, a legal responsibility to promote sustainable development. Contractors working for the WG are required to support the core values of sustainable development.
- 4.1.2 SRB has therefore produced a Sustainable Construction Plan (16454/EN008, Ramboll, 2010), and is available in Buzzsaw. This document sets out their approach to construction to ensure this Project supports the WG's core values for sustainable development. SRB will design the Project and develop, practice and maintain working methods that implement best sustainable construction procedures as set out in the Sustainable Construction Plan. This will ensure that the WG's sustainable development objectives are achieved.
- 4.1.3 The Sustainable Construction Plan describes the measures and procedures to be taken during the works, to meet sustainable construction objectives, including:
- i. **Design** – to avoid, reduce, minimise or remedy adverse effects on the environment, the use of non-renewable natural resources, energy and the production of waste.
 - ii. **Whole life value** – design and construction to optimise the whole life costs of the Project and its long term maintenance.
 - iii. **Conserving resources** – minimising waste and its disposal by recycling materials on site, using recycled products and improving disposal routes for waste.
 - iv. **Protecting and conserving non-renewable resources** – avoiding damage or disturbance to biodiversity, landscape, cultural, water and other resources, which are of local, national or international importance.
 - v. **Promoting and enhancing** the landscape and ecological biodiversity where appropriate.
 - vi. **Use of recycled materials** – avoiding the use of timber, aggregates, peat or other materials that are produced from non-renewable or vulnerable sources and optimising the use of recycled materials.
 - vii. **Avoiding pollution to water, air and land.**
 - viii. **Reduce impact upon local residents.**
 - ix. **Minimise effects upon road users.**
- 4.1.4 The Environmental Co-ordinator (ECO) is responsible for monitoring of the Sustainable Construction Plan and reporting evidence of compliance (and report with evidence of compliance) on a monthly basis. This will also be captured in the CEEQUAL assessment which will be undertaken for the Whole Project throughout its design and construction.
- 4.1.5 A Sustainability Forum will be set up and meet at key milestones to discuss progress against the Sustainable Construction Plan, review progress on the CEEQUAL assessment and allow new ideas to be promoted.

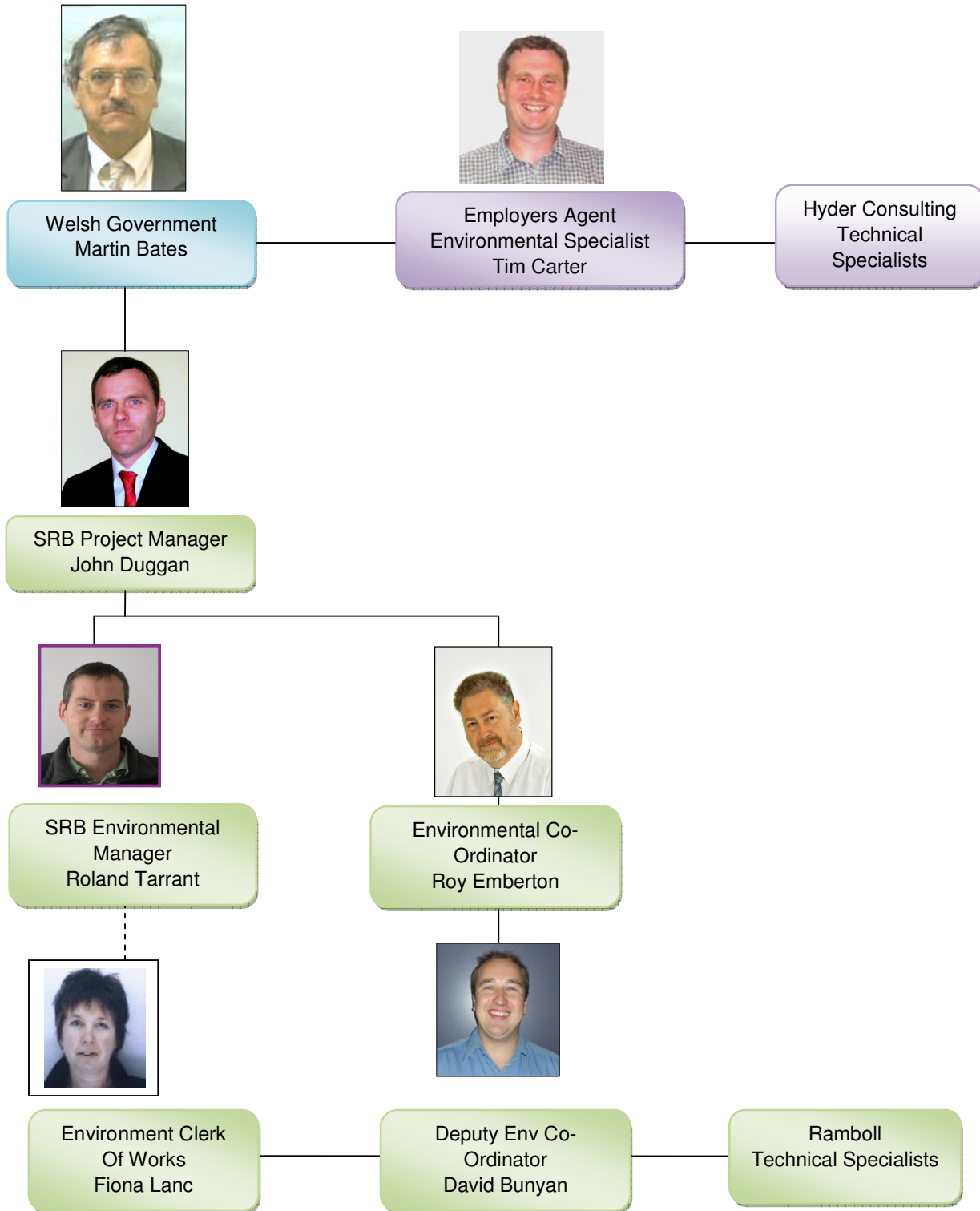
5. CEMP REVIEW SCHEDULE

5.1.1 It will be necessary to regularly review and update the CEMP as required, both as a result of changes in design, construction methodology or further environmental information becoming available, and as a regular process of updating. In addition, the CEMP shall be updated outside this schedule should significant changes to methods of work be required, or changes of staff/structure occur.

Proposed Review Period	Due Date of Review	Actual Date of Review	Sections Amended	CEMP Revision Issue	Site Manager	Environmental Co-ordinator
Ministerial Decision and Pre-start on site	18 December 2011	December 2011	New Organogram added. Discipline Plans added, addition to roles and responsibilities, general revision of text.	1	John Duggan	Roy Emberton
Start on Site	06 February 2012	13 th February	Address Hyder comments	2	John Duggan	Roy Emberton
3 Months After Start of Construction- (end of site clearance and before main earthworks)	May 2012	18 th May	CEMP updated to reflect the progression of works.	3	John Duggan	Roy Emberton
6 Months After previous revision- (end of detailed design_	November 2012	November 2013	CEMP updated to reflect changes on site, in methods of work or in licensing and result of audit findings	4	John Duggan	Roy Emberton
12 Months After Start of Construction	End March 2013	June 2013	General update of CEMP to reflect construction progress.	5	John Duggan	Roy Emberton
18 Months After Start of Construction	End August 2013			6		
completion of Construction – completion of construction – links into MEMP	Early March 2014			7		

6. ORGANOGRAM

6.1.1 The Site Management Organogram is provided below. Please refer to Section 7.0 for an outline of key roles and responsibilities.



7. ROLES AND RESPONSIBILITIES

7.1.1 SRB recognises the need for accountability and responsibility for environmental issues at all levels in the organisation. This includes the site staff and operatives, who are a key determinant of environmental performance, and the senior management staff who ensure that the works are undertaken in accordance with this plan. Staff, operatives and subcontractors have the authority and responsibility to protect the environment at all times during execution of the construction works. Responsibilities will be highlighted during the site inductions and are outlined below.

7.2 Contractors On-Site Project Manager

7.2.1 The SRB Project Manager has overall responsibility for the implementation and development of this CEMP. In liaison with the **Environmental Clerk of Works (ECW)**, he has responsibility for carrying out agreed duties such as environmental monitoring and recording.

7.3 Environmental Manager (EM) – Roland Tarrant

7.3.1 The SRB Environmental Manager shall act as the interface between the ECO, ECW and the construction team. This will include interpreting the information provided and inputting the impact of the information into the construction programme and risk register.

The EM will also have the following responsibilities:

- i Provide direct environmental advice to the SRB Project Manager when requested;
- ii Implementing and reviewing the CEMP;
- iii Provide, with the assistance of the ECW, environmental training on site;
- iv Provide environmental communication tools such as posters;
- v Review method statements and ensure environmental commitments have been included;
- vi Manage the environmental audit programme;
- vii Collate evidence for the CEEQUAL assessment;
- viii Promote the Considerate Contractor Scheme;
- ix Attend progress meetings;
- x Investigate incidents of potential, actual or significant, environmental damage;
- xi Ensure that Environmental matters are taken into account when considering Subcontractors; and
- xii To participate in the Environmental Liaison Group (ELG) meetings.

The EM is supported by a team of Quality and Environment Engineers.

7.4 Environmental Co-ordinator (ECO) – Roy Emberton

7.4.1 The ECO has the following responsibilities and will be supported by his ECW:

- i To develop the EMP document and systems and maintain it as a working document, undertaking reviews and updates as and when required;
- ii To ensure commitments made in the Project Commitments Register are included in the EMP;
- iii Update and manage the commitments register to ensure each commitment is discharged To ensure environmental quality standards are adhered to and monitor compliance during the detailed design and construction phases of the Project; and

- iv Periodically to provide review reports, including monitoring data where appropriate, to consultees. These reports will indicate compliance and non-compliance with the EMP and will provide assurance that a high standard of environmental protection is being maintained, as well as identifying the implications of failure to meet standards of mitigation, the reasons for this and remedial actions to be taken.

7.5 Environmental Clerk of Works (ECW) – Fiona Lanc

- 7.5.1 The ECW has responsibility for ensuring that environmental quality standards are adhered to throughout the construction phase assisting and reporting to the ECO.
- 7.5.2 The ECW will oversee the environmental aspects of the Project including the review and implementation of the CEMP. The ECW will report directly to the ECO. The ECW will ensure that all relevant consents and permissions are in place and assist in the preparation of method statements, risk assessments and co-ordinate environmental monitoring on site.

7.6 Off Site Support

- 7.6.1 The ECO will be supported by a number of specialists as and when required as listed below.

Project Landscape Architect – Phil Roden/Andrew Martin

- 7.6.2 The Project Landscape Architect will be responsible for the detailed design, implementation of the landscaping proposals and maintenance. The Project Landscape Architect is assisted as necessary in the survey of existing vegetation to be retained or removed, in the landscape design, preparation of specifications and supervision of planting.

Project Ecologist – Malcolm Robertson

- 7.6.3 The Project Ecologist will be responsible for overseeing and implementing ecological mitigation and enhancement. In addition, he will co-ordinate all ecological license and design issues during construction. The Project Ecologist will direct a small team of specialist ecologists as needed to undertake surveys and implement mitigation and protected species license conditions.

Project Archaeologist – Andy Buckley

- 7.6.4 The Project Archaeologist will be responsible for the management of archaeological investigation works required in advance of the construction works and subsequent archaeological mitigation. The Project Archaeologist will direct a small team of specialist field archaeologists as need to undertake investigation and mitigation.

Arboriculturalist – Hyder Consulting

- 7.6.5 Hyder Consulting Arboriculturalist will be present on site during tree felling that is relevant and will advise on clearance lines prior to felling and clearance requirements post tree felling to ensure retained vegetation does not pose health and safety concerns.

Public Liaison Officer (PLO) Arwyn Davies

- 7.6.6 The PLO will be responsible for managing external communications such as keeping local residents informed of the works, tracking enquiries and responding to complaints (see Section 13.0 for further details on the PLO's duties).

Other Specialists

- 7.6.7 Other specialists shall be supplied, as required, to the on-site project team. These shall include both Ramboll and external specialists. They will comprise specialists in subjects such as hydrodynamics, agriculture, and contaminated land.

Specific Roles from Appendices

- 7.6.8 There are specific roles that are required as a result of the procedures included in the CEMP in the Appendices. These are very specific and detailed and are included in the relevant appendices.

8. REGISTER OF ENVIRONMENTAL LEGISLATION

Use of serviced web alerts for notification of updates to legislation

- 8.1.1 It is the responsibility of SRB to identify the need to obtain relevant statutory consents, licences, approvals and notifications in relation to the project and to consult and comply with those organisations detailed in the Contract, Environmental Statement (ES), and Employer's Requirements regarding environmental matters.
- 8.1.2 Reference has been made through this plan to the ES for guidance on the consents and licences that may be required during construction, together with key legislative requirements.
- 8.1.3 SRB maintains a web-based register of environmental registration, the Environmental Manager and his team have access to this register. All users receive email notifications of changes to pertinent legislation. The online register also contains a self evaluation questionnaire of each piece of legislation, so the Client can be assured that SRB are compliant with current best practice. The module includes legislation from England and Wales.
- 8.1.4 The Web address is included below:

www.PegasusLegalRegister.com.

9. CONSENTS, LICENCES AND PERMISSIONS

- 9.1.1 The consents, licences and permissions required for this Project have been identified and are monitored on a separate spread sheet. The spread sheet is located on Buzzsaw. Due to the varying nature of the consents, licences and permissions different members of the SRB team will be responsible for following up their requirement. The consents, licences and permissions will be reviewed on a monthly basis as part of the progress report to ensure that the programme is being achieved and new consents are identified as early as possible. The key consents have been included in the construction programme.
- 9.1.2 A project Directory is available that holds contact names and numbers for all project staff and key consultees. This will be maintained and updated when required by SRB.

10. PROCEDURES AND METHOD STATEMENTS

10.1 Procedures

- 10.1.1 Environmental risks have been evaluated based on the contents of the Environmental Statement, Environmental Commitments Register (Section 15.0) and schedule of consents, permissions and licences (Section 9.0). Specific plans will be drawn up to mitigate such risks. Each of these plans are provided as Appendices to this CEMP.

10.2 Method Statements

- 10.2.1 As the contract develops, and construction activities on site change, detailed method statements will be developed for each work activity. These will cover environmental aspects of each task.
- 10.2.2 As part of each method statement an environmental risk assessment will be undertaken. A template is provided in Appendix R. This will be completed by the author of the method statement and reviewed by the EM.
- 10.2.3 Method Statements are uploaded on Buzzsaw and can be accessed via the following links:

<https://projectpoint.buzzsaw.com/client/srb/A477%20St%20Clears%20to%20Red%20Roses/01%20KS6%20%28Design%20and%20Construction%29/02%20SRB%20Site%20Server/07.0%20Method%20Statements>

[https://projectpoint.buzzsaw.com/client/srb/A477 St Clears to Red Roses/01 KS6 \(Design and Construction\)/03 SHARED Site Server/1.0 Method Statements](https://projectpoint.buzzsaw.com/client/srb/A477%20St%20Clears%20to%20Red%20Roses/01%20KS6%20%28Design%20and%20Construction%29/03%20SHARED%20Site%20Server/1.0%20Method%20Statements)

11. ENVIRONMENTAL PROGRAMME

- 11.1.1 It is important that Environmental Management is embedded into the construction team and hence all environmental mitigation and consent applications are included in the main construction programme.
- 11.1.2 The EM is responsible for ensuring environmental matters are included in the main construction programme, which is updated on a monthly basis.
- 11.1.3 The EM will also produce an environmental programme of audits against the CEMP.

12. ENVIRONMENTAL TRAINING

12.1.1 To ensure that environmental issues are communicated and properly addressed and controlled during the construction works the CEMP and its contents will be communicated to all site personnel, including management staff and operatives, using the following methods.

- i. Training module management;
- ii. Posters;
- iii. Environmental issue summary per area;
- iv. Toolbox talks; and
- v. Induction and induction leaflet.

12.2 Training Module Management

12.2.1 A module entitled 'Oil Spill Training' will be provided to key personnel and sub-consultants on site to ensure it is targeted.

12.2.2 These are to be held on site as required.

12.3 Posters

12.3.1 Posters on various environmental controls will be prepared by the environment team and will be provided in the compound on relevant notice boards. Posters on environmental opportunities and initiatives, such as "Bee Friendly" will be prepared and displayed in the site notice boards.

12.3.2 In compliance with the Flood and Hydrodynamics Management Plan (Appendix C), the flood risk will be displayed on the Reception Noticeboard each day and sent to the Construction Manager when there is a high likelihood of flooding or severe weather event.

12.4 Toolbox Talks

12.4.1 Environmental toolbox talks will be provided to all site teams and sub-consultants as required. These will be targeted at particularly sensitive environmental issues such as:

- i Works close to Dol Garn;
- ii Works on Pont Newydd;
- iii Works close to sensitive watercourses; and
- iv Works affecting protected species and habitats.

12.5 Induction Process

12.5.1 Environmental management will be included in the induction presentation and as part of the induction leaflet. This will detail key controls required to comply with the CEMP.

13. COMMUNICATION AND REPORTING

13.1 External Communication

Environmental Liaison Group

13.1.1 The WG and the project team have established an Environmental Liaison Group (ELG) to consult with during all stages of the Project. It is intended that the group meets throughout the construction phase of the Project. The group comprises the following organisations:

- i Welsh Government;
- ii Carmarthenshire County Council;
- iii Natural Resources Wales(formerly EAW and CCW)
- iv Cadw;
- v SRB;
- vi Ramboll UK; and
- vii Hyder Consulting.

13.1.2 ELG meetings will also be attended by the ECO, ECW and SRB's Project Manager or Environmental Manager. In addition specialist team members (e.g. the Project Ecologist) will attend ELG meetings as required.

13.1.3 It is intended that the group meets on a regular basis to discuss issues associated with construction.

Public Liaison Officer

13.1.4 Communications with the public and media will be managed by the PLO. He will be responsible for the following:

- i. Management of environmental complaints (as outlined below);
- ii. Liaison with the media (such as local newspapers and radio);
- iii. Provision of regular updates for local residents (through production of a newsletter – which will give advance notification of works); and
- iv. Provision of regular updates for The WG and Project websites.

13.1.5 The number of complaints received in respect of environmental factors during the construction and maintenance stages are considered to be an important Key Performance Indicator for the project and a method of measuring performance and identifying process improvements under ISO 14001.

13.1.6 In order to manage complaints, a database will be set up to record complaints, review and mitigation/correction processes, time to response/close out action (including targets) and appropriate review and monitoring both of the management system and work on site.

13.1.7 The PLO will prepare a monthly report on activities which will be presented as part of the monthly progress report to Welsh Government..

13.2 Internal Communication

Regular Team Meeting

- 13.2.1 A regular meeting will be held with core environmental team members and members of the delivery team as appropriate. These meetings will be held monthly. This meeting will include a review of the environmental and construction programme, consents database and any reports of non-compliance (and corrective actions that were put in place).

13.3 Reporting

- 13.3.1 The ECO (supported by the ECW) will produce a quarterly report on environmental performance against the requirements of this CEMP. This will include the following:
- i. Summary of environmental incidents including any notifications of statutory intervention and remedial action taken to prevent recurrence;
 - ii. Consent submissions to external agencies;
 - iii. Unresolved environmental issues; and
 - iv. Review of waste management (amounts of waste disposed of off-site).
- 13.3.2 All environmental incidents will be investigated and processes will be put in place to ensure corrective action has been undertaken appropriately. All incidents will be reported to the SRB Environmental Manager and the ECO. See Environmental Monitoring in Section 14.0 below.

14. ENVIRONMENTAL MONITORING

14.1 Monitoring

14.1.1 SRB will operate an internal and sub-contractor / supplier Audit, and Corrective Action Programme. Inspections will also be undertaken in line with this procedure.

14.2 Audits

The following audits will occur on site:

- 6 monthly EMS audits by ECO
- 2 monthly audits by independent consultant organised by SRB
- 2 monthly audits by SRB QSHE Manager and provide score for KPI
- Audits required by certification bodies as part of ISO 14001 accreditation.

14.2.1 Environmental site audits will be undertaken by the ECO or Deputy ECO. The audits will occur at least on a six monthly basis.

14.2.2 However, the scope and frequency of audits will be controlled by the scope and nature of the works, sensitivity of the environment to the works and previous performance of that section or sub-contractor but is likely to include the following:

- i. Overall compliance with the EMP, CEMP (including accompanying plans and method statements);
- ii. Compliance with environmental legislation;
- iii. Pollution prevention;
- iv. Minimisation of environmental risks;
- v. Appropriate monitoring, measuring, recording and communication of environmental performance; and
- vi. Compliance with the 14001 Standard.

14.2.3 Audit findings will be provided in an audit report, non-compliances identified and corrective action highlighted. A register of non-compliances will be maintained and reviewed monthly by the ECO and SRB EM . These will be recorded in an Environmental Site Monitoring and Auditing database (see template at Appendix S).

14.2.4 Monthly audits will be undertaken by the SRB QSHE Manager and he will allocate a score for use in the KPIs. The monthly and 2 monthly audits will be undertaken following environmental incidents, or during sensitive activities as agreed by the ECO or as otherwise agreed.

14.3 Weekly Inspections

14.3.1 Weekly inspections of the site will be conducted by the ECW or SRB staff. A standard pro-forma will be prepared to log details of the inspection and will be kept in the CEMP. These inspections will summarise observations of both good and poor environmental practice and will identify remedial actions where necessary. They will be recorded in an Environmental Site Inspections Form (see template in Appendix U).

15. ENVIRONMENTAL COMMITMENTS

- 15.1.1 A Commitments Register has been prepared and is available as a separate document, as it is constantly being revised and is available on Buzzsaw, see 16454/ENV/00032. All environmental commitments from the ES, made during the PLI process and meetings with stakeholders have been included in this document.
- 15.1.2 Each commitment has a team leader identified to ensure that commitment is discharged. The ECO will manage the register and provide updates and ensure team leaders are meeting commitments to programme.
- 15.1.3 Where a commitment is met by the production of the CEMP it has been discharged from the register and it will be the CEMP that delivers the action of that commitment. This will avoid duplication of actions across the documents.

16. EMP DRAWINGS

- 16.1.1 The latest Environmental Masterplan drawings are included in Appendix Q. These are live drawings and will be updated as and when required and should be accessed via Buzzsaw to ensure the latest version is being used.

APPENDIX A

Environmental Policy and Considerate Behaviour Policy



A477 St Clears to Red Roses Improvement

Project Environmental Policy

October 2012

SRB Civil Engineering Ltd (a Joint Venture between Roadbridge and John Sisk & Son Ltd), and its principle Design Team of Ramboll and Axis PED aims to provide excellent quality services throughout the A477 St Clears to Red Roses Improvement Project. We will provide a high quality design capable of exemplary environmental performance and provide a best value total asset solution for the Project. Environmental matters on the Project are managed through the environmental management system (EMS) which is compliant to the International Standard for Environmental Management BS EN ISO 14001.

Specific Aims are to:

- Comply with all relevant UK and European Environmental Legislation as a minimum;
- Seek to integrate the Welsh Government's environmental objectives and policies on climate change, environmental performance, waste management and sustainability into the design and construction of the Project;
- Integrate the Scheme Specific Environmental Objectives, as given in Appendix G/2 of Volume 2a of the Works Information, into the Project design and construction;
- Consult with environmental regulatory bodies throughout the Project and take into account their comments and requirements;
- Utilise best practice in the minimisation and management of wastes produced during the project;
- Commit to the adoption of techniques to prevent pollution as per clause 4.2(f) of BS EN ISO 14001;
- Take steps to reduce energy use, vehicle mileage and associated emissions;
- Ensure that all employees on the Project are trained in environmental matters and that they ensure that environmental issues are part of all employee's responsibilities;

- Set targets for environmental performance, monitor against these targets and environmental objectives and employ a process of continuous improvement throughout the Project;
- Develop and implement a Sustainable Construction Plan and to monitor against the specific objectives in this plan;
- Commit to monitor our performance throughout the life of the contract using the Civil Engineering Environmental and Quality (CEEQUAL) assessment tool and maintain an excellent score.
- Commit to continuously improve our environmental performance over the Project period;
- Act as a good neighbour to the local community and other third parties who have an interest in the project; and to register the site for the Considerate Constructors Scheme;
- Communicate our environmental performance to our staff, Welsh Government and other appropriate stakeholders in the process; and
- To promote best practice in terms of sustainability initiatives and community engagement, as operated on the scheme, within the construction industry by registering the scheme in the Exemplar Programme as operated by Constructing Excellence in Wales.

This environmental policy shall be communicated to all Project employees and will be available to all stakeholders in the Project.

Signed



John Duggan
Project Manager

Steve Chewins
Design Director

Roy Emberton
Environmental Co-ordinator



CONSIDERATE BEHAVIOUR POLICY

A477 St Clears to Red Roses Improvement

It is the Policy of this Project and SRB Civil Engineering in general that our site adheres to the following principles at all times:

Enhancing the **Appearance** - *ensure sites appear professional and well managed.*

- Ensuring that the external appearance of sites enhances the image of the industry.
- Being organised, clean and tidy.
- Enhancing the appearance of facilities, stored materials, vehicles and plant.
- Raising the image of the workforce by their appearance.

Respecting the **Community** - *give utmost consideration to their impact on neighbours and the public.*

- Informing, respecting and showing courtesy to those affected by the work.
- Minimising the impact of deliveries, parking and work on the public highway.
- Contributing to and supporting the local community and economy.
- Working to create a positive and enduring impression, and promoting the Code.

Protecting the **Environment** - *protect and enhance the environment.*

- Identifying, managing and promoting environmental issues.
- Seeking sustainable solutions, and minimising waste, the carbon footprint and resources.
- Minimising the impact of vibration, and air, light and noise pollution.
- Protecting the ecology, the landscape, wildlife, vegetation and water courses.

Securing everyone's **Safety** - *attain the highest levels of safety performance.*

- Having systems that care for the safety of the public, visitors and the workforce.
- Minimising security risks to neighbours.
- Having initiatives for continuous safety improvement.
- Embedding attitudes and behaviours that enhance safety performance.

Caring for the **Workforce** - *provide a supportive and caring working environment.*

- Providing a workplace where everyone is respected, treated fairly, encouraged and supported.
- Identifying personal development needs and promoting training.
- Caring for the health and wellbeing of the workforce.
- Providing and maintaining high standards of welfare.

This policy shall be communicated to all Project employees and will be available to all stakeholders in the Project

Signed

A handwritten signature in black ink that reads 'John Duggan'. The signature is written in a cursive style and is positioned above a horizontal line.

John Duggan
SRB Civil Engineering Project Manager

Date: June 2013

Rev 1

APPENDIX B

Surface Water Quality Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX B
SURFACE WATER QUALITY MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan.

This Surface Water Quality Management Plan (SWQMP) describes and presents the management process, procedures, controls and feedback mechanisms that will be employed to control, mitigate and monitor potential for contamination of surface water and groundwater during the construction phase of the Project.

This plan should be read in association with the Flood and Hydrodynamics Management Plan.

2. POTENTIAL IMPACTS

The Afon Taf forms part of the Carmarthen Bay SAC, the water environment surrounding the Project is considered a sensitive receptor and the principal potential pathway for impact is considered to be run-off and road drainage from the project both during construction and operation.

The desk based assessment and walkover study identified a number of potential risks to the water environment as a result of construction activities. These comprised:

- Pollution of surface waters by chemicals and associated ecological impact;
- Changes in hydrological regime of watercourse;
- Sediment production and run-off into watercourses and associated ecological impact;
- Removal of flood storage capacity;
- Increase in flood risk;
- Pollution of groundwater by chemicals; and
- Changes in hydrogeological regime.

3. PROCEDURES

The SWQMP shall be adhered to throughout the construction phase to include preventive and precautionary methods of working and if necessary a mechanism through which abnormal or emergency situations are managed and addressed. The plan shall be enacted on all occasions, whatever the source of information. However, the main mechanisms for identifying issues pertaining to the water environment e.g. potential pollution incidents are as follows:

- The Environmental Clerk of Works shall undertake a site walkover on a weekly basis and make notes based on guidance in Appendix U. These notes shall form the primary source of environmental checks of the works;
- Water quality monitoring to alert of any detrimental effects particular construction activities may be having on water quality and provide evidence of the effectiveness of management procedures on site;

- All site workers shall be given tool-box talks to enable them to understand the mechanism for reporting environmental incidents, including spillages, and how to respond to emergency or abnormal situation with regards to the water environment; and
- Site Supervisors shall be encouraged to identify potential pollution or hydrological problems or concerns and report them to the Environmental Clerk of Works.

Where monitoring shows an abnormal situation which is beyond the thresholds agreed prior to the mainline earthworks due to start in May 2012, a complaint received from the public or polluted water observed, and is not directly attributable to an external source, the management actions in Figure 1 will be initiated. The Pollution Incident Response Plan will also be consulted as this contains procedures to contain, limit and mitigate the effects of a pollution incident.

Should the source of the pollution be attributable to a construction activity associated with the Works then measures will be undertaken immediately to mitigate the release of pollutants or the activity will cease until this can be achieved.

The root cause of any pollution incident will be investigated and measures or corrective actions put in place in order to prevent its reoccurrence.

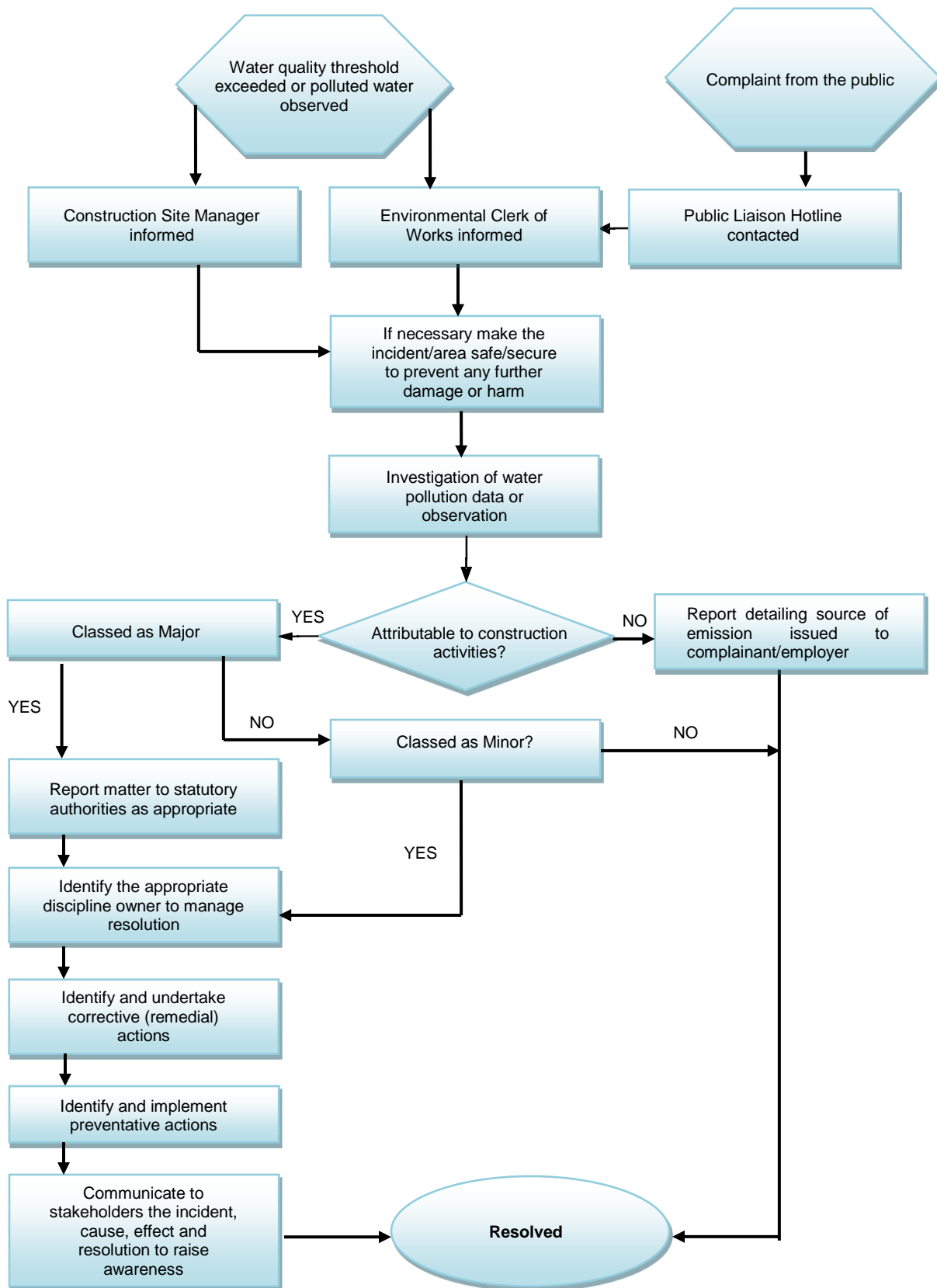


Figure 1: Flow diagram for dealing with a water pollution incident

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Table 1: Staff Role and Responsibilities

Activity	Primary Role	Review Role	Authorisation Role
Identification of potentially polluting practices, activities or abnormal events	All on site	--	--
Initial visit- record of proposed actions	Environmental Clerk of works	Environmental co-ordinator with input from Project Water Quality Specialist. Environment Manager.	Site Manager
Undertake corrective action/mitigation (remedial works and procedural changes if required)	Environmental Clerk of works	Environmental co-ordinator. Environment Manager.	Site Manager
Follow up visit record – has corrective action (mitigation) been successful	Project Water Quality Specialist	Environmental co-ordinator. Environment Manager.	Site Manager
Liaising with relevant enforcement bodies and stakeholders where necessary e.g. EAW	Environmental co-ordinator	Environment Manager.	Site Manager
Feedback reason for incident and corrective actions to operatives and relevant project team members providing additional training etc if required preventing reoccurrence.	Environmental Clerk of works	Environmental co-ordinator. Environment Manager.	Site Manager
Regular Site audit notes	Environmental Clerk of works	Environmental co-ordinator. Environment Manager.	Site Manager

5. LICENSES , CONSENTS AND GUIDANCE

Discharge consents

SRB will obtain the necessary consents for discharge under the Water Resources Act 1991 of surface water run-off from the construction site to; watercourses, surface water sewers, foul sewers or soakaways.

The Environment Agency (now Natural Resources Wales) have confirmed in an email dated 27th February 2012 that no discharge licenses are required for the A477 if there are measures in place for the minimisation of pollution (e.g. in the form of balancing ponds and a pollution interceptor containing a filtering system).

Environment Agency Flood Defence Consent

SRB will obtain a Flood Defence Consent under Section 109 of the Water Resources Act 1991, for works in, under or over the channel of a main river.

Guidance

Design and work procedures will take account of requirements and advice in relevant Pollution Prevention Guidelines (PPG) and CIRIA publications (including C532, C648, C649, and C698).

SRB will comply with BS 6031 Code of Practice for Earthworks with regard to the general control of site drainage, including, for example, all washings, dewatering, abstractions and surface water run-off.

Whilst not transposed in Welsh legislation SRB will comply with the Control of Pollution (Oil Storage) (England) Regulations 2001 which apply in relation to storage of any oil-based materials including petrol and diesel.

6. MITIGATION MEASURES

This SWQMP details construction activities and undertakings necessary to avoid or mitigate associated impact on the surrounding water environment. Details of the mitigation measures developed in response to the construction risks identified in the Environmental Statement and in response to requirements of the NRW are provided below in Table 2.

Table 2: Specified Mitigation Measures

Aspect	Impact	Mitigation Measure
Surface Water and Ecology	Pollution of surface waters by chemicals. Associated ecological impact	<ul style="list-style-type: none">• Careful pre-mobilisation planning of working methods to minimise risk• Not use equipment or vehicles in watercourses without written agreement from the NRW• Watercourses should only be crossed at designated crossing points.• Production and management of cement-based products away from watercourses• Wheel-wash facilities to be based away from

Aspect	Impact	Mitigation Measure
		<p>watercourses.</p> <ul style="list-style-type: none"> • Appropriate disposal of effluent. • Visual inspections of watercourses during periods of nearby work • Fuel and chemical storage on bunded impermeable areas with spillage kits and appropriate labelling (in line with PPG 5) • All fuels, chemicals or other potentially polluting materials to be stored outside of areas identified as being susceptible to flooding incidents. • Ensure that fuel delivery systems fitted to mobile fuel bowsers and static fuel tanks have appropriate shut off system controls which shall be locked when not in use, ensure machinery are filled away from watercourses with a drip tray in place. • Secure fuel bowsers and stores against vandalism when not in use • Dispose of all waste water collected from bunded areas and drip trays in the proper manner in accordance with legislative requirements and relevant best practice guidance • Location of storage of fuel and chemicals away from watercourses • Procedures for immediate handling of spillages and removal of contaminated soil for appropriate disposal or treatment • Avoid in-stream work where possible. Clean machinery used where cannot avoid. Bund working areas to prevent migration into watercourse should a spillage or leaks occur. • Construction of contractor compounds remote from watercourses where possible. • Foul drainage from all contractor sites to be contained and disposed of in appropriate manner to prevent pollution of watercourses • Temporary stream diversions will be constructed in isolation from the main channel until connection is required to the stream, in order to minimise sediment production and mobilisation into the watercourse. • Ensure that all tanks, pipework, valves and bunds are designed, constructed and maintained in accordance with relevant published best practice guidance and standards. • Regularly inspect all areas where potentially polluting liquids and water soluble materials are stored plus mobile fuel bowsers and after

Aspect	Impact	Mitigation Measure
		<p>prolonged periods of heavy precipitation. Maintain written records of these inspections.</p> <ul style="list-style-type: none"> • Management of surface drainage from hardstanding in order to comply with discharge consents where applicable • Development of Emergency Response Plan (including contact mechanisms) for the case of a major incident <ul style="list-style-type: none"> • Ensure staff competence by training for the safe effective use of spill kits and disposal in line with relevant waste legislation.
Hydrological Regime	Changes in hydrological regime of watercourses	<ul style="list-style-type: none"> • Utilisation of appropriate piping and culverting to minimise interruption of water flow in watercourses where construction is occurring over a watercourse, in agreement with NRW. • Ensure that dewatering, where required for construction, is carried out in such a way as to limit the area of influence and reduce as far as practicable any longer term disturbance of groundwater flow. • Minimise physical interference with flow of water in saturated strata • Undertake all works to method statements agreed with NRW if deemed required.
Surface Water Quality	Sediment production and run-off into watercourses. Associated ecological impact	<ul style="list-style-type: none"> • Installation of the attenuation ponds early in construction for use in controlling runoff during construction; • Clearance of existing drainage ditches identified in the design as surface water discharge points early in the construction phase; • Installation of temporary or permanent drainage ditches to intercept runoff and divert it into the attenuation ponds at an early stage of construction; • Sediment control measures such as cut-off ditches in areas of construction where sediment production is likely • Topsoil and seed earthworks batters (excluding rock areas) as soon as possible following their completion to minimise loss of material due to water erosion (including rainfall, rain runoff, and scour) between earthworks seasons • Embankments to be constructed that meet the required specification of series 3000.

Aspect	Impact	Mitigation Measure
Flood Storage	Removal of flood storage capacity	<ul style="list-style-type: none"> Minimise contractor activities in floodplain and undertake only in agreement with NRW
Flood Storage	Increase in flood risk	<ul style="list-style-type: none"> Refrain from activities that may lead to blockages or reductions in flow capacity of any watercourse; Early construction of the new flood relief culvert at Pont Newydd; Clearing out the existing culverts early in the construction stage, and ensuring they do not become blocked, or partially blocked, during construction; Ensure the temporary bridge over the Afon Hydfron has sufficient clearance for flood flows to pass underneath; Avoiding storing of soils or felled vegetation within the Afon Taf floodplain. As a minimum no storage of soils or felled vegetation within 20m of river banks; and Refrain from activities that may lead to blockages or reductions in flow capacity of any watercourse.
Groundwater	Pollution of groundwater by chemicals	<ul style="list-style-type: none"> All mitigation measures as listed for protection of surface water from chemicals

The Flood and Hydrodynamics Management Plan (Appendix C) should be read in conjunction with this management plan.

Measures described above will also be included in relevant method statements such as Earthworks and Drainage works to ensure they become a hold point so that the measures are in place before works can commence.

7. MONITORING SAMPLING AND ANALYSIS

Baseline Monitoring and Thresholds

Baseline water quality monitoring is scheduled to be completed in early 2012. Using this data, thresholds will be set to establish what constitutes abnormal conditions. During the construction phase, monitoring of water quality will continue to enable any pollution incidents to be identified and the effectiveness of pollution mitigation measures to be evaluated.

A summary of the baseline results will be inserted here in revision 3 of the CEMP before the mainline earthworks due to start in May 2012.

Consultation will continue with EAW regarding the water quality monitoring to be undertaken for watercourses that will be affected by construction works or discharge of surface water run-off. The parameters tested, frequency of sampling and locations have been agreed with NRW.

Construction Phase Monitoring

Monitoring will continue during the construction period in order to:

- Alert the contractor to any detrimental effects that particular construction activities may be having on water quality (based on the baseline thresholds set) in order that appropriate remedial action can be taken as quickly as possible; and
- Provide evidence that management procedures on site (for example sediment run-off control) are working correctly.

The construction phase monitoring regime is described in Table 3:

Table 3 Surface Water Monitoring Regime

Aspect	Scope
Frequency	Construction phase – quarterly
Locations	See Figures 8.3a to 8.3c of the Environmental Statement (ES)
Parameters monitoring –	<ul style="list-style-type: none"> • Visual monitoring of surface waters indicated in Figures 8.3a to 8.3c crossed by the Project, at a point upstream and downstream, for colouration, oil sheens, and flow. Measurement of pH, temperature, conductivity and turbidity (NTU) (other parameters may be included depending on activities and circumstances). Downstream monitoring will be undertaken at a location that allows sufficient mixing of discharge waters and receiving waters; • Regular visual inspections of water discharge at all outfalls or watercourses whilst high risk activities are occurring along the associated chainage. Such activities would include earthworks and drainage works; • Regular visual inspection of surface water courses and ponds adjacent to any compounds; and • Recording of pH and suspended solids in discharges where limits have been posed by EAW/NRW for water used for dust control.
Parameters analysis -	<ul style="list-style-type: none"> • Sampling and analysis of surface water downstream of construction discharges in the event of a pollution incident, to a scope agreed with EAW/NRW at that time. Analytical determinants will be decided on the basis of a particular incident, but are likely to include pH, suspended solids, Biochemical Oxygen Demand (BOD), metals and hydrocarbons.

Some of the monitoring points defined in Table 3 and Figures 8.3a to 8.3c of the ES are sited on private property. It will be necessary to get the correct permissions from the relevant landowner to undertake monitoring in these locations.

The results of the water quality and groundwater level monitoring will be updated, interpreted and made available within one week of each collection. A short update report will be written and made available on a quarterly basis by the Environmental Clerk of Works.

Baseline threshold levels will be determined upon completion of the baseline monitoring, added to this management plan and communicated to all relevant personnel.

8. REPORTING AND RECORDING

Construction Period Reporting

The results of the water quality monitoring will be routinely reported to the parties in the Management Plan, unless baseline threshold levels are breached where immediate contact and/or meetings with the statutory bodies would be required.

Exceedences of Baseline Threshold Values Reporting

Where any exceedences of defined baseline threshold values occur, this will be reported as soon as reasonably practicable. At this point, the actions proposed will also be notified to parties affected.

All reports shall be reviewed and signed off by the Project Water Quality Specialist and Environmental co-ordinator.

A477 RED ROSES TO ST. CLEARS ROAD IMPROVEMENT SCHEME

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

APPENDIX B1 - SURFACE WATER QUALITY MANAGEMENT PLAN ENVIRONMENTAL CONTROL MEASURES – SURFACE WATER

Scope

The purpose of this document is to provide a methodology for the on-site management of individual catchment and drainage areas with the overall purpose of achieving the aims and objectives of the Surface Water Quality Management Plan. This document will sit as Section 1 within Appendix B of the CEMP.

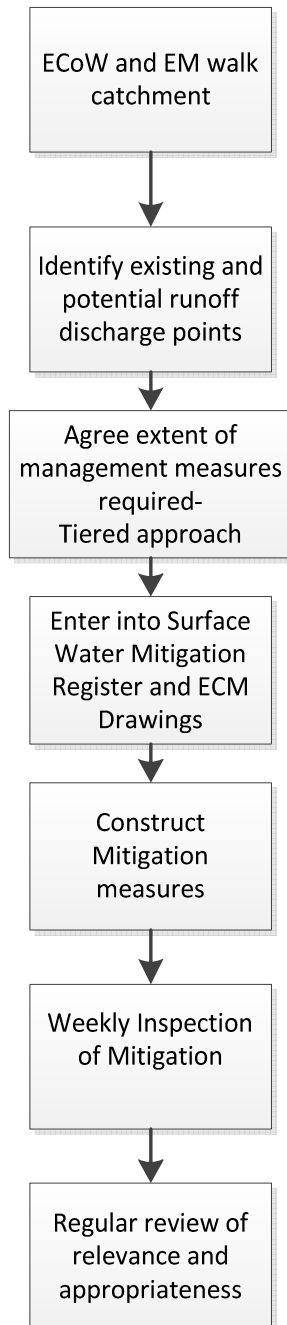
Section A : Methodology

In advance of topsoil stripping / earthworks commencing within individual catchment areas of the site, the following activities are carried out:

- Environmental Clerk of Works (ECoW) walks the catchment with the SRB Representative (Environmental Manager (EM) or his assistant)
- Existing and potential surface water runoff discharge points are identified through:
 - Visual assessment of existing watercourses and drainage path
 - Desktop study of the ES and other related catchment historical data
 - Evaluation of the methodology and phased nature of the topsoil stripping operations
- The ECoW and the EM agree the extent of the management measures required in order to mitigate against contaminated surface runoff entering watercourses adjacent to the works. A range of these measures is contained within Section B. They are tiered according to the hierarchy of control as follows:
 - Eliminate
 - Reduce the source of runoff
 - Reduce the effect of the runoff
- Where design input is required e.g. attenuation ponds, the ECoW will liaise with the Design Site Representative and Ramboll Drainage Team Leader to ensure that measures are proportionate.
- Once agreed, these measures and their location are entered into the Surface Water Mitigation register along with location and a Code for identification.
- They are also entered onto the Environmental Control Measures Drawings which are live drawings that record locations of the measures as well as the watercourses close to the scheme (See attached).
- The mitigation measures are then constructed prior to the topsoil stripping/earthworks commencing
- Inspection of these mitigation measures is then included as part of the Weekly Inspection carried out by the ECoW. Where deficiencies or remedial works are required, these are noted along with the necessary identification number on Form SRB SWM001 (See attached).
- This Form is then transmitted with the Completed Inspection Report to RAMBOLL Environmental Team Leader and SRB Management.

- The Form is passed to the Safety and Environmental Crew who then carry out the necessary remedial works.
- The mitigation provided is assessed at the relevant follow-on stages of the project e.g. drainage to ensure that it remains appropriate and proportionate to the works that are taking place.

Methodology for Surface Water Management Measures



Section B : Environmental Surface Water Control Measures

Any excavated materials or imported materials are potential sources of sediment that can be picked up in rain water as it moves across the site. This silt contaminated surface water run-

off can then travel into surface waters and may negatively impact on them or the designated environments they feed into.

The primary mechanism of silt control will be sediment management. Standard silt control systems are sufficient for removing the majority of sediment from this source and will be installed on site. The measures detailed below will reduce the silt load of this water and thereby reduce the impact it has on the receiving waters. The specific arrangement of mitigation measures used will be detailed in the construction Method Statements but may need to be increased/decreased dependant on the nature of the works, weather conditions etc.

There is a hierarchical system for the management of surface water run-off. This includes:

Tier 1 - Mechanisms for reducing the volume of water to be managed.

This primarily involves the installation of interceptor drains.

Interceptor Drains or Land Runoff Ditches – Drainage placed around the site footprint to intercept any surface water prior to it entering site and diverting off into drains unaffected by the works.

Interceptor drains can be simple excavated drainage channels or stoned and lined V-drains (as seen). Excavated channels are normally suitable on road scheme projects.



It was agreed with the Client that these Land Runoff Ditches would be installed as soon as practicable during the topsoil strip in order to minimise the amount of surface water runoff that would enter onto the spread, become contaminated with silt thereby greatly increasing the need for treatment and mitigation measures.

At appropriate points in the existing ground profile, these ditches would cross, where necessary to maintain gravity falls, under the earthworks profile to the other side of the highway and onwards to the outlet point. This would have the effect of keeping the relatively clean surface water runoff separate from the exposed surface of the stripped areas and reduce the potential for scour.

Details of these Land Runoff Ditch locations are contained in DWG 16454/H/501/10 Sheets 10-15.

Tier 2 - Mechanisms for reducing the volume of silt available for transfer to surface waters.

The main mechanism of control here is segregation. Silt is segregated from surface water run-off to reduce, in so far as is practicable, the volume of silt transferred to water. Segregation can include the weathering off or covering up of any stockpiled material and/or the placement of silt fence around a stockpile.

Weathering off - Any stockpiled soil will be weathered off or covered to prevent exposure, reducing the volumes of sediment available to surface-water run-off.



Silt fences - are vertical fences of supported filter fabric. The fabric retains sediment on the construction site and allows relatively sediment-free water to pass through. Terrastop Premium Silt Fence removes up to 86% of suspended solids in surface water runoff. Terrastop premium is the finest silt mesh size that is practical to use while still maintaining practical flow rates



Hydro-units - This industry leading technology, more commonly used in the water and effluent treatment industries, uses a Hydro Cell to give an electrode dosage to develop electro-based coagulation.



This process adds a positive charge to the molecules. When the net charge is zero, the molecules clump together and settle to the bottom of the tank. This results in clean water being dispersed from the outlet of the unit. The settled silt can then be removed from the tank via a de-sludger.



A number of units are deployed on site ranging from 10-14m³/hr and there is a further order for a 40m³/hr unit for the Avon Hydfron location to be delivered on the 20th September.

This is the first application of this type of technology on a linear highway construction project in the UK and the results to date are very encouraging (At trials carried out on the Avon Hydfron in mid-august, suspended solids on surface water runoff were reduced from 116mg/l to 26mg/l using the hydro-unit)



Dirtbag - The standard size of the Dirtbag is 1.5m² giving a filtration area of 4.5m² allowing a flow rate well in excess of 4600 l/min or the pumping capacity of a 6" pump. The dirtbag utilised on site are the 100 micron filter sizes.

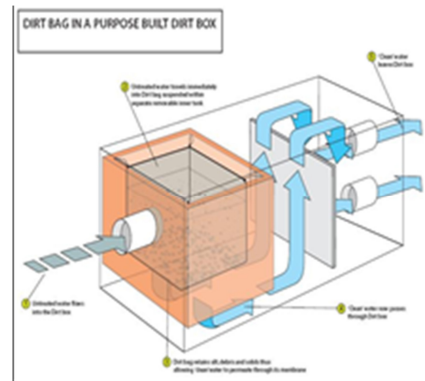


Utility Bag -The utility bag was purpose made for small mobile works where there isn't enough footprint available for siltbusters or attenuation runoff. During trials carried out at Red Roses suspended solids on surface water runoff were reduced from 64mg/l to 24mg/l using the 100 micro filter size utility bag.



Dirtbox - The dirtbox is a purpose built tank that houses the Dirtbag and allows a much easier, safer and more controlled environment for collecting solids through the water transfer process.

The Dirtbox will handle flow rates up to 280m³ per hour (1000 gallons per minute) which basically equates to a 6" pump working at full capacity See sketch below



Tier 3 - Mechanisms for reducing the flow of sediment rich water

This primarily involves increasing the retention of water as it passes through the construction site drainage channels, allowing it to settle out naturally. Examples of potential mitigation methods include:

- Discharge to Vegetation
- Weirs
- Filter Fabrics
- Straw Bales
- Pea Shingle Beds

Weirs - Designed to create pockets of retention on site and reduce the speed at which surface water moves across the site. The reduced speed and increased retention will allow particulate material to settle out.



Straw Bales - can if used correctly filter out silt and coarser solids. The filtration can be improved by the addition of filter fabrics around the straw bales

The use of straw bale dikes is not recommended as a primary sediment control device. Straw bale dikes clog and deteriorate rapidly and require frequent maintenance.



Pea Shingle Beds - as with straw bale barriers the pea shingle beds create an area of reduced flow that allows sediment to settle out.



Filter fabrics - these are designed to retain sediment particles larger than a certain size and allow water to pass through. Filter fabrics can be used in silt fences (see below) or erosion control mats. **Erosion control mats** protect soil and seed from erosion and can be



designed to allow vegetation to grow through the material.

Sand Bags/Berms – are used in a similar way to weirs, straw bales, pea shingle beds, silt fences and filter fabrics.



Tier 4 - Mechanisms for retaining sediment rich water

This requires the inclusion of systems that allow sediment to settle out naturally. Examples of potential mitigation methods include Settlement lagoons or Settlement Systems

Settlement Lagoons / Balancing Ponds – construction at ground level or created by excavation to retain or detain runoff to allow excessive sediment to settle out during construction. The settlement ponds lagoons to be maintained to ensure peak performance. Details of these Balancing Pond Locations are contained in DWG 16454/H/501/10 Sheets 10-15.



These balancing ponds are to be programmed to be constructed at the earliest stage of the works, prior to major earthworks taking place within the catchment area of the pond. This activity is to be carried out concurrently with the construction of the land runoff ditches and the land runoff carrier drain, in order to provide comprehensive runoff prevention and mitigation measures.

Silt traps and Silt flocculants – It is not proposed at this stage to use chemical flocculating agents on the scheme as these are not generally widely accepted in fisheries quality watercourse

Choice of response

The implementation of a tiered response will depend on a number of factors, including but not limited to:

- The quantities of water involved
- The degree of contamination of the water
- The physical characteristics of the sediment
- Discharge limits, imposed by the regulatory authorities
- The footprint of the site – capacity to hold treatment systems.

The choice of environmental control measure may involve a number of Tiered treatments being used in train e.g. interceptor drain (Tier 1) followed by settlement / attenuation (Tier 4) followed by straw bale / filter fabrics (Tier 3)

Section C : Area Specific Environmental Surface Water Control Measures

In certain areas, there are particular site conditions that will require detailed logical progression of the works to be presented prior to works taking place in these areas. This may

be due to existing service locations, ground topography (steep gradients), Public Inquiry commitments, large catchments etc.

One such area is the location around Tavernspite Road at CH6500 and in the catchment of Cut 6 and Fill 6. At this area, there is a large gradient proposed for the temporary diversion route and the escarpment embankment through the Taf valley, a carrier pipe required to cross the existing carriageway which must be kept open and various environmental consents and existing services. All of these factors combine to require a relatively complex programming and engineering solution in order to carry out the necessary Surface Water Management Measures.

To this end, and for other similarly complex situations, a specific method statement will be developed in order to ensure that appropriate risk assessments are carried out and that the works are logically programmed. These method statements will be developed on a case by case basis to be determined through consultation with the Designer and Employer Teams.

PERMIT TO PUMP

In order to minimise the potential for the discharge of silt laden surface runoff to receiving waters, SRB will implement a “Permit to Pump” system for all ponded / impounded / surface water within the site. Wherever water is required to be pumped, a permit will be required to be authorised by the Environmental Foreman. A template of the permit is attached overleaf.

The Environmental Team will ensure that appropriate mitigation is in place, prior to the activity commencing. As a permit is issued, the pump to which the permit applies will have a tag attached to identify it as being permitted.

The Permit details:

- Location, Chainage, Section
- Reason for the operation
- Method and Equipment
- Discharge Location
- Pollution control Measures
- A Sketch of Location and discharge arrangements

The surface water management system will require regular updates dealing with various situations as they arise taken into account the weather conditions and other variables.

Surface Water Management Mitigation Measures Inspection Form

Date: _____

Time: _____

Location: _____

Location ID: _____

Weather Conditions:

Weather Conditions (Previous 24 hours):

Where is water being discharged to (Circle as appropriate):

Bare Ground

Grass

Road Drain

Dry Ditch

Wet Ditch

Stream

Mitigation measure:

Attenuation pond

Filter ditch with weir type arrangement

Filter ditch with no weir

None

If "none", what other measures are being taken to stop the silt:

Hay Bales

Terram

Silt Fence

Pea

Gravel

Other

Is the water being discharged clear? YES NO

If to a watercourse – is it running clear? YES NO

If no, was it clear upstream? YES NO

Is there scouring or rising of silt at point of discharge? YES NO













Is there erosion of the bank due to discharge? YES NO

Checked By: _____ Position _____

Signed: _____

Form SRB SWM 001 Rev 1 March 2012

PERMIT TO PUMP / DISCHARGE

Date and Time issued: (completed by Pump Supervisor)	Planned pumping duration: (completed by Pump Supervisor)	Pump Tag Ref:
Location of operation: (completed by Pump Supervisor and Environmental Monitor) Chainage: Section: True Left / Right: Closest Spill Kit:	Purpose of pumping operations: (completed by Pump Supervisor) Overpump watercourse/stream Trench water Wellpoint dewatering Other: (Specify)	
Discharge Location: (agreed with Env Team) Holding Lagoon Tanker Field	Pollution Control Measures: (agreed with Env Team - notify construction supervisor to action) Straw Bales and Terram Lagoon Settling Tanks Silt buster Other (specify) Hydro Unit	
Sketch of agreed discharge location and set-up. (agreed with Env Monitor)		symbols  pump  dug lagoon  straw bale lagoon  silt buster  terram  silt fence  settlement tank  Hydro Unit reference features  tree  stream, ditch, water  hedge  fence
PUMP SUPERVISOR signature	ENVIRONMENTAL DEPARTMENT signature	
Pump Removed / Closed Out signature	Date	

PERMIT TO PUMP / DISCHARGE - PROCEDURE

Recommended Controls (delete if not appropriate)

- 1) Pump is Mounted on a good firm base?
 Yes No Initials.....
- 2) Suitable lifting eyes have been provided on the pump?
 Yes No Initials.....
- 3) Spill Kits are available nearby or Located beside the pump. Location of nearest Spill Kit?
 Yes No Initials.....
- 4) Filter Head Provided at Head of Suction Hose?
 Yes No Initials.....
- 5) The pump is regularly serviced in accordance with makers instructions?
 Yes No Initials.....
- 6) The pump is safely accesible for maintenance purposes?
 Yes No Initials.....
- 7) Super silent pumps or similar are used when required (eg. Night time working, working near residential properties)?
 Yes No Initials.....
- 8) Drip Trays have been placed under all pumps?
 Yes No Initials.....
- 9) Pump internal bund intact and properly sealed?
 Yes No Initials.....

APPENDIX C
Flood/Hydrodynamics Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX C
FLOOD AND HYDRODYNAMICS MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Quality Management Plan.

This plan provides procedures for the management of hydrodynamics and flood risks to the construction works, and the avoidance of enhancing flood risk to local residents during construction.

This plan should be read in association with the Surface Water Quality Management Plan.

2. POTENTIAL IMPACTS

The Environmental Impact Assessment for the Project identified a range of potential impacts and applied a series of mitigation works prior to identifying the potential residual impacts. The assessment work included the use of a 2D hydraulic model which was used to test the effects on flooding of a range of design options and mitigation measures. Based on this work the design was refined, and a single large new flood relief culvert is proposed under the road near Pont Newydd. The existing adjacent flood relief culverts will be cleaned and extended to ensure they remain operational throughout the construction and operational phases.

The Environmental Impact assessment identified that the preferred design option would ensure that flooding in Llanddowror will not be exacerbated.

3. PROCEDURES

3.1 Hydrodynamics

The maintenance of Hydrodynamics within and immediately adjacent to the project site is a key element in ensuring the management of flood risk to construction workers, local residents and land users adjacent to the Project. SRB will implement the following actions to ensure that flood risk is mitigated as far as possible during construction:

1. Installation of the attenuation ponds early in construction for use in controlling runoff during construction;
2. Clearance of existing drainage ditches identified in the design as surface water discharge points early in the construction phase;
3. Early construction of the new flood relief culvert at Pont Newydd;
4. Clearing out the existing culverts early in the construction stage, and ensuring they do not become blocked, or partially blocked, during construction;
5. Ensuring the temporary bridge over the Afon Hydfron has sufficient clearance for flood flows to pass underneath;
6. Installation of temporary or permanent drainage ditches to intercept runoff and divert it into the attenuation ponds at an early stage of construction;

7. Avoiding storing of soils or felled vegetation within the Afon Taf floodplain. As a minimum no storage of soils or felled vegetation within 10m of river banks; and
8. Refrain from activities that may lead to blockages or reductions in flow capacity of any watercourse.

3.2 Flood Management Plan

SRB shall implement this Flood Management Plan for the construction phase. It shall cover all Temporary and Permanent areas of works, but will concentrate on those most susceptible to flooding and areas where strong overland flows are known during intense rainfall events.

1. SRB Health and Safety Advisor shall provide training to all works personnel in flood management via a series of toolbox talks. These will include awareness raising of the procedures available on site in the event of a flood occurring.
2. SRB Office Manager will register the site with the Environment Agency Wales Floodline Warnings Direct Scheme and provide a contact number to receive their flood warnings issued.
3. SRB shall display on the site notice board a flood warning code. The codes used are displayed below.



No action on flooding by site staff necessary.



Flooding of low lying land and roads is expected . Site staff are to take care and seek instructions from site supervisors.



Flooding is expected. Overland flows of incident rainfall likely at designated points. Relevant instructions shall be issued by SRB Management and site Supervisors. All works in site flood areas is suspended.



Severe flooding is expected. There is extreme danger to life and property. All work on site is suspended and subject to review. All site construction staff will abide by site instructions issued by site management. Visitors will be advised to rebook their appointments for another day. Deliveries to site will only occur with the permission of site management and using designated flood free routes.

4. In the event that a flood warning is received after crews have moved to work areas SRB shall use on site methods of communication (mobile phones and site radios) to communicate flood warnings received at the main compound to each Site

supervisor. The actions needed to be undertaken shall be discussed and thereafter implemented by each site supervisor.

5. SRB shall display, in a prominent place, a flood warning sign in offices and comfort facilities, where these are located in areas subject to flooding, the following sign:

Flood Warning Notice

This office is located in a low lying area at risk of tidal flooding. Flooding may occur when certain bad weather conditions and/or high tides coincide. This is more likely during the winter months but could occur at any time of the year.

The current flood warning status issued by the Environment Agency (link via Natural Resources Wales website at <http://naturalresourceswales.gov.uk/alerts/flood-warnings/floodline-warnings>) is:

(SRB will insert the appropriate code here)

Up to date flood warning information and advice can be gained by calling Floodline on **0845 988 1188** (24 hours a day, calls charged at local rate).

6. In the event that a flash flood occurs, then site staff shall evacuate site and assemble at safe assembly points which will be identified in on-site training and displayed on maps shown in the crew rooms and facilities in flood risk areas. It is likely that the only location this is likely to occur is from the Afon Hydfron, which is flashy and subject to rapid rises (and falls) in water levels following local rainfall episodes. The signage used for assembly points shall be agreed between SRB and Welsh Government.

3.3 Flood Management to Local Residents

It is understood that the local residents are in the process of developing a flood management plan for the village of Llanddowror. In addition SWTRA, NRW and CCC are considering ways of reducing flood risk, or the adverse effects of flooding on the residents of Llanddowror.

SRB shall ensure they are aware of the details of the Llanddowror Village Flood Management Plan, when it becomes available. The proposed works will not exacerbate flooding in Llanddowror, and so are unlikely to be incompatible with the plan. In the extremely unlikely event that works proposed are incompatible with the Llanddowror Village Flood Management Plan SRB through the Public Liaison Officer (PLO) will discuss with the organisers of the plan any mitigation required.

SRB shall, through the PLO and by use of newsletters and the project website, keep residents up to date on construction progress so they may take this information into account in the event of flooding.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Daily Flood Warning Notices	H&S Advisor	n/a	Site Manager
Flood Evacuation	H&S Advisor	Site Supervisor	Site Manager
Maintenance of river channels during construction	Site supervisors Env Manager	Environmental Clerk of Works	Site Manager
Weekly Environmental walkover audit	Environmental Clerk of Works	Environmental Co-Ordinator	Site Manager
Public Liaison and knowledge transfer	PLO	Site Manager	Site Manager

5. MONITORING SAMPLING AND ANALYSIS

A weekly audit of site activities shall be undertaken by the Environmental Clerk of Works and recorded on the form in Appendix U. This will include checks for:

- Inappropriate storage of materials in the flood plains;
- Actual or potential blockage of water courses, flood relief culverts, temporary and permanent structures over the Afon Hydfron or in stream within the project area, ditches or areas of overland flow; and
- Signs of ground or surface water ponding behind construction works.

Following the inspection, the results will be discussed with the site manager and appropriate remedial actions agreed. The implementation of these actions shall be recorded by site supervisors and copied to the Environmental Clerk of Works for filing.

6. RECORDING

Actual incidents of flooding within the project area shall be recorded as part of the project. Photographs shall be taken. Instances of evacuation or restriction in site working shall be recorded by the site manager.

APPENDIX D
Site Waste Management Plan

A477 St Clears to Red Roses Improvement Scheme



Table of Contents

1. INTRODUCTION	4
Corporate Waste Targets	4
Benefits	4
2. WASTE HIERARCHY	5
3. STRATEGY:	6
4. WASTE MANAGEMENT TECHNIQUES	7
Elimination Techniques	7
Reduction Techniques	7
Re-Use Techniques	8
Recycling Techniques	8
Actions	8
5. SITE WASTE MANAGEMENT PLAN (SWMP)	11
Requirements of a Project SWMP	11
Key Performance Indicators	11
Waste Targets	11
Waste Forecasting	11
Waste Actions	12
Waste Monitor	12
Recording Waste Arisings	12
SWMP Review	13
SWMP Template	13
6. WASTE – TYPES & DEFINITIONS	14
Legal Definition Of Waste	14
Waste Arising On Site	14
Non-Hazardous Waste:	14

Special Waste (Hazardous Waste As Defined By Article 1(4) Of The Hazardous Waste Directive	15
Wastewater	17
7. WASTE LICENCES/REGISTRATION	17
8. DOCUMENT CONTROL	18
Records	18
9. TRAINING & AWARENESS	18
10. WASTE AUDITING	19
References	25

1. INTRODUCTION

The purpose of the SRB Civil Engineering Limited A477 SCRR Waste Management Plan is to identify the practices to be adopted to ensure that waste is controlled, minimised and where necessary, removed from site in a manner that is not detrimental to the sustainability of our environment.

The plan will detail our strategy for minimising waste, introducing segregation at source and maximising reuse and recycling opportunities. The plan will furthermore detail the responsibilities of the site team, the subcontractors and waste management contractor in addition to raising our profile in the local community and the embedding of our corporate and social responsibility.

To achieve this target we shall work to the following standards, for which we require all staff and subcontractors to support:

- a) Develop the project SWMP in accordance with this procedure;
- b) Set project specific targets for waste reduction to meet or exceed SRB Civil Engineering Limited's corporate KPI's;
- c) Report and review the SWMP regularly to ensure best practice is achieved.

Corporate Waste Targets

As a minimum, the following minimum standards will require to be achieved throughout our operations through the year (2012-2013) and on-going improvements thereafter:

Target

Recovery of construction material	80%
Recovery of demolition and strip out material	90%

Benefits

The benefits realised as a result of this Site Waste Management Plan will be:

- A reduction in waste being sent to landfill with benefits to the environment
- A reduction in material purchase, disposal, and landfill costs
- A reduction in the vehicle movements and in the local area on site
- Improved sustainability BREEAM and CEEQUAL scores for our sites
- The introduction of 'best environmental practice' across all sites reducing the impact on local communities.

2. WASTE HIERARCHY

Minimising waste is the responsibility of all staff and contractors to ensure that materials no longer required are managed according to the following hierarchy of options:



Eliminate	Waste will be avoided through considered design and sustainable procurement
Reduce	Waste will be reduced through design and site good practice
Re-use	Surplus materials will be re-used by identifying site opportunities
Recycle	Materials will be segregated for recycling thereby reducing landfill cost
Disposal	Remaining materials will be disposed of in a sustainable manner

The actions at each stage are detailed further in the Site Waste Management Plan



3. STRATEGY:

The SRB waste management strategy will be underpinned by awareness training provided in the site induction and reinforced through training, toolbox talks and poster campaigns. A culture of site husbandry will be encouraged to minimise the risk of waste pollution either via blown litter or cross contamination of waste streams.

The strategy will be to maximise the reuse of materials on site, thus reducing the amount of new material orders required and reducing the volume of material to landfill whilst increasing the recycling of material by volume/type from site, as far as practical. This will be achieved through:

- Changing the working practices from traditional 'builder skips' as the main source of all waste containment and disposal to a more progressive policy of segregation of material and maximisation of clearly identified and labelled containers, for recycling;
- Contractually obliging sub-contractors to co-operate in waste minimisation as part of their tender;
- Utilising the tools a free support provided by agencies such as WRAP to introduce and refine good practices
- Communicate regularly with all sub-contractors at progress meetings;
- Engage all site operatives with site inductions and canteen awareness campaigns (environmental newsletter);
- Partner with a waste management contractor to maximise recycling and reduce disposal costs;
- Where possible, engage with the supply chain, partnering with manufacturers and suppliers who take back and recycle their own packaging and pallets etc;
- Where possible, design to reduce waste – this needs to be considered from the outset, for example using prefabrication where components are manufactured with no waste in the process;
- Identify and segregate waste streams;
- Compact waste and load skips carefully to reduce waste volume;
- Re-use and recycle waste where possible, in line with quality issues;
- Ensure that there is suitable storage for all materials, accessible areas for waste skips and similar good housekeeping;
- Plan for high volumes of waste in the final construction stages;
- Compare performance with other sites in the region; and
- The introduction of paper recycling bins into the office.

All unauthorised waste disposal is considered to be an environmental incident and the Environmental Emergency Response Procedure and the Environmental Incident reporting procedure will be implemented.

Under no circumstances should any waste material be burned or buried.

The following items will be reused as opposed to being disposed of where-ever possible:

- Fence posts & temporary fencing materials
- Wire

- Aggregates
- Concrete

4. WASTE MANAGEMENT TECHNIQUES

Elimination Techniques

In the first instance the project team must look to avoid creation of waste and typically this is undertaken at the design stage. Any action taken at this point will significantly reduce the waste arisings to be managed at site level.

- Sustainable procurement
- Use 'designing out waste' tools developed by wrap.
- Promote off-site construction where possible where surplus materials can be managed more efficiently.
- Optimisation of materials in design to standardise components.
- Specification of materials at design phase with low wastage rates.
- Consideration of material life-cycle – are products specified difficult to dispose of at deconstruction?

Reduction Techniques

The following techniques will be used to reduce the type and amount of waste generate on this project:

- Effective design control to reduce the risk of late change in design leading to rework.
- Measurement and ordering of materials with no waste factor to reduce the risk of over-ordering of materials.
- Order materials in standard sizes, ie can materials be cut to size off site to minimise on site cutting?
- Organising materials to be delivered on a just-in-time basis to reduce the amount of time materials are stored on site.
- Careful and appropriate storage of materials on site to protect against accidental damage or adverse weather conditions.
- Good inventory control to avoid re-ordering of materials already delivered or loosing materials
- Good communication with tradesmen to avoid rework and to ensure quality.
- Engaging with suppliers to reduce the amount of packaging included with deliveries.
- Employ professional security companies to reduce risk of vandalism or theft from site.
- Include in sub-contract orders – the requirement to employ waste reduction techniques with their own materials (ie inclusion of penalties for excessive waste).
- Promote the concept to all involved in the project that waste produced will be measured and compared against challenging waste key performance indicators.
- Ensure through the procurement process that suppliers have take-back options for packaging and surplus materials

Re-Use Techniques

Once all practical measures have been used to reduce the amount of waste produced, then the following techniques will be used to identify opportunities for re-use of surplus material and further reduce the amount of material turning into waste:

- Brick, concrete and rubble can be re-used as backfill, temporary haul roads, up fill, etc.
- Re-use of subsoil in landscaping areas.
- Re-use of timber off-cuts for forming, temporary formwork, framing, etc.
- Re-use of plasterboard off cuts for bulkheads, small areas, etc.
- Pallets can be re-used or can be returned to the supplier.
- Purchase materials that have a recycled content or are reclaimed.
- Procuring materials from sustainable sources.
- Excess/damaged facing brick can be used in sub-structure brickwork.

Recycling Techniques

If the reduction and re-use techniques have been used, but waste material has still been generated, we still have the opportunity to turn some of this material into something useful by segregating it into different waste streams that can be RECYCLED thereby reducing cost of disposal to landfill.

Segregation can be carried out in two ways, Source Segregation on site or Segregation by our Waste Contractor off site.

Within the compound, separate designated areas and skips will be provided for the following materials:

- Plastics
- Timber
- Steel
- General Waste
- Dry Recyclables
- Waste Oil Tank
- Oily Rag Bins
- Used Battery Bins (commercial batteries and consumer batteries)
- Aerosol Canisters
- Steel and Plastic hydraulic and oil containers
- Printer cartridges

Actions

To deliver the above strategy, the following actions will be undertaken:

SRB Site Actions

1. Complete the appended project SWMP
2. Where spoil material is to be reused within the Works, a specific Method Statement will be submitted for approval to the Employer's Representative (i.e. Earthworks Method Statement). This Method Statement will outline the procedures for storing, handling, placing and compacting the reused material as well as addressing any Legislative concerns.
3. SRB will consider opportunities and implement measures in the design and construction of the Project to reuse waste or surplus materials, as appropriate.
4. SRB will have regard to the A477 SCRR Sustainable Construction Plan when considering the reuse of materials within the works.
5. SRB will provide recycling points at site offices and compounds and arrange for the appropriate disposal of waste to recycling stations.
6. SRB will manage the disposal of waste material to maximise the environmental and development benefits from the use of surplus material and to reduce the adverse environmental effects and risks associated with disposal off-site.
7. All waste material will be appropriately transported and disposed of by the contractor at licensed tips or designated sites. SRB will comply with relevant legislation including the Control of Pollution Act 1974, Section 34 of the Environmental Protection Act 1990 and the Waste Management, The Duty of Care, A Code of Practice guidance in this regard.
8. Prior to disposal, SRB will assess soils in line with Environment Agency Technical Guidance WM2 to determine whether they are hazardous or nonhazardous.
9. SRB will handle, store and manage waste to contain and limit impacts and avoid nuisance arising from dust and odour in accordance with local authority requirements and agreements made with Carmarthenshire County Council and the Environment Agency Wales (EAW). The handling and disposal of waste water will also comply with EAW requirements for collection and disposal.
10. Waste disposal routes will comply with any restrictions on access routes for construction traffic.
11. SRB will obtain any necessary waste management licenses or apply to EAW for registration of any relevant exemption from waste licensing necessary during construction works.

Suppliers

1. Where possible procure materials from sustainable sources.
2. Supply materials with minimal packaging and protection.
3. Clearly identify the location the delivered product.
4. Operate a take back policy for excess materials
5. Operate a take back policy for pallets.
6. Suggest alternative products made with recycled material.
7. Provide materials to site specific sizes to reduce the amount of on site cutting.

Designers

1. Implementing contractual requirements on designers to investigate and specify viable products which have recycled content
2. Use 'Designing out Waste' guidance to specify materials with low wastage rates and/or high re-use potential.

3. Take responsibility for developing the SWMP and waste forecasts in the first instance.

Contractors

1. Require contractors to investigate and implement waste reduction practices for their work package.
2. Require contractors to adhere to the project source segregation policy set out above.
3. Contractors to ensure that materials are delivered in a Just in Time basis.
4. Contractors to store materials to reduce risk of damage.
5. Contractors to store material suitable for re-use on site appropriately, and not skip.
6. Contractors to contribute and supply information as required to complete the SWMP.
7. If necessary penalising contractors who contaminate segregated skips.

5. SITE WASTE MANAGEMENT PLAN (SWMP)

Requirements of a Project SWMP

The SWMP should:

- Identify and forecast the different types of waste that will be produced by the project, and note any changes in the design and materials specification that seek to minimise this waste;
- Consider how to re-use, recycle or recover the different wastes produced by the project;
- Require the construction company to demonstrate that it is complying with the duty of care regime; and
- Record the quantities of waste produced.

Key Performance Indicators

Under the commitment SRB have made to reduce the amount of construction, demolition and excavation waste sent to landfill SRB will report progress annually onto the WRAP reporting portal using the following KPIs:

- m³ of waste per £100k project value*;
- m³ of waste to landfill per £100k construction value; and
- % of waste diverted from landfill
- % of recycled content by value

**Project value is the price in the accepted tender or, if there is no tender, the cost of labour, plant and materials, overheads and profit.*

As this reflects on company performance in the wider industry it is imperative that works are delivered in accordance with the SWMP and that the waste data collected is accurately recorded.

Waste Targets

SRB will aim to achieve the following targets:

- 100% of oil waste to be treated and recycled
- 100% of earthworks excavated materials to be reused on site
- 100% of batteries to be sent for recycling
- 90% of Dry recyclable waste to be sent for recycling
- 100% of timber to be either reused on site or sent for recycling

Waste Forecasting

Principal to the SWMP should be the forecasting of waste arisings. Ideally this should be undertaken by the designer in the first instance, however where no designer is engaged the team will be required to forecast and record in the SWMP arisings.

The Net Waste Tool developed by WRAP (and available free at www.wrap.org.uk/construction/tools_and_guidance/net_waste_tool/) can be used to forecast expected waste and opportunities to reduce, re-use and recycle.

The tool utilises a format similar to a bill of quantities and is based on current market tested wastage rates for construction materials thereby giving an accurate forecast of waste generation, skip requirements and waste reduction opportunities

Waste Actions

Where appropriate the SWMP will record the project specific actions as set out in Section 3 above for the team to Eliminate, Reduce, Re-use, Recycle and Dispose.

Waste Monitor

SRB. shall be responsible for implementing the Waste Management System on site to which all subcontractors shall comply.

The Waste Monitor (the person responsible for the site waste) for this project is the Assistant Environmental Manager, Nick Morrissey.

The waste monitor's duties include:

- Checking that waste is being deposited in the correct skip.
- Monitoring and removing any objects deposited in the skips for re-use.
- Ensuring that all skips are well packed.
- Moving waste into the correct skip if not already done so.
- Alerting the site manager of any significant amount of waste material deposited in the incorrect skip – allocating the action to a trade or contractor.
- Alerting the site manager that the skip requires to be exchanged or removed.
- Checking the skip (consignment) note that the correct classification box has been ticked and signing the note.
- Returning the skip note to the site manager.
- Engaging with all personnel on site about waste reduction, re-use and recycling techniques.

Recording Waste Arisings

Waste materials generated on site during the works will be recorded on the Waste Management Register that will be placed on the SRB Site Server with access provided to Ramboll. Copies shall also be available to the Client as required. This register will form part of the SWMP and will be used to compare against the forecast arisings.

This Register will be regularly updated by the Environmental Manager and his assistant to provide the following information:

- Location Waste Material generated from
- Eventual waste or recycling stream that waste is deposited

- All approvals or testing, as required
- Mitigation measures incorporated to reduce the amount of waste sent off site including:
- Site discussions, meeting records

System for tracking and recording the movement of all contaminated material and waste within the site.

A system to enable tracking of all materials excavated from the works and its final placement shall be developed.

Tracking sheets similar to the one below will be used to keep daily records of mass-haul of excavated contaminated material. These shall be compiled so that final figures for each class of material can be determined. These shall be maintained on the SRB Site Server and will be of sufficient details to ensure that accurate figures are recorded. Regular audits will be carried out to ensure that proper records are being logged.

The SWMP must contain details of the arisings next to the forecast.

SWMP Review

Once the SWMP is implemented, it is important that it is regularly reviewed to ensure that it is being adhered to, that it is practical and appropriate.

The SWMP will be reviewed on a monthly basis, with the Project Manager and audited by the SRB Environmental Manager.

Appropriate feedback should be given to the Client, Project Team, Suppliers, Contractors and Operatives. This will be done via various propaganda methods, including memos, meetings, statistical analysis, etc.

SWMP Template

Refer to appended SWMP file in **Appendix A** for completion

6. WASTE – TYPES & DEFINITIONS

Legal Definition Of Waste

Waste:

Any substance or object belonging to a category of waste specified in Annex I of the Waste Framework Directive or included in the European Waste Catalogue, which the holder discards or intends or is required to discard and anything which is discarded or otherwise dealt with as if it were waste shall be presumed to be waste until the contrary is proved.

Hazardous waste: (Special Waste)

Waste which can have a harmful effect on the environment and on human health as they exhibit ignitability, reactivity, corrosivity and/or toxicity and/or are listed as hazardous by the European Waste Catalogue and Special Waste Regulations (1996)

Construction and Demolition Waste:

Materials resulting from the construction, remodelling, repair, or demolition of buildings, bridges, pavements, and other structures.

Waste Arising On Site

It is the responsibility of the Environmental Manager or their designate to ensure that all waste generated on site (hazardous and non-hazardous) is stored in an appropriately labelled designated container. Skips will be covered as necessary to prevent ingress of water and the blowing waste from the skip; special waste, general waste and food waste will be covered as mandatory. These containers must be fit for purpose to prevent leaks or spills. Waste streams must not be combined for disposal.

Waste will be managed in a designated waste compound on-site. The compound will be sign posted so that the content of each skip is easily identifiable (See below)



**Each Skip shall be properly signed
with the EWC Code and the Waste
Description**

Non-Hazardous Waste:

The materials detailed below shall be collected into designated containers, which are transported by the non-hazardous waste contractor(s) for recycling or disposal. A waste docket (contractors or

on-site waste docket) must accompany each waste shipment. Only personnel from the Environmental Department or their designate is authorised to sign-off on waste shipments.

A waste docket must accompany each shipment and must be signed off by an authorised person at the point of disposal. The docket shall then be returned to the site (together with the relevant weighbridge docket in the case of solid waste). The Environmental Department shall ensure all dockets are returned by the various disposal companies.

All associated documentation and receipts detailing disposal are maintained and filed by the Environmental Department and recorded in the waste manifest.

Waste	Disposal Method	Waste carrier
Timber Waste	Place in designated skip for recycling	CRES
Scrap Metal	Place in designated skip for recycling	SIMS Metal Management
Plastic	Place in designated container for recycling or disposal	CRES
Paper/Cardboard	Place in designated container for recycling or disposal	CRES
Canteen Waste	Place in designated containers for disposal	CRES Thomas Brothers TBS (some initially)
Litter	Place in designated skip for disposal	CRES
Vehicle wash and street cleaning residues	There are no chemical additives used and the runoff water is stored in a temporary lagoon. Arisings are then sent to CRES	

Special Waste (Hazardous Waste As Defined By Article 1(4) Of The Hazardous Waste Directive

All hazardous waste must be stored in designated, secure and hazard signed areas with adequate bunding and emergency response materials for use in the event of a spill.

SRB will follow the guidance document “Hazardous Waste: Interpretation of the definition and classification of hazardous waste” (EAW, April 2011) when assessing Special waste for removal.

It is the responsibility of the producer of a waste to ensure that the site has the correct arrangements to handle the waste that will be produced. The waste producer should discuss with the site Environmental manager to ensure that the correct waste skips and arrangements are in place PRIOR to the waste being generated on site so that storage and disposal may be arranged. The table below outlines the types of hazardous waste anticipated to be generated on site along with the disposal instructions.

Waste	Disposal Method	Waste carrier
Asbestos Materials	Double bagged and place in container for disposal	Envirosavers
Adhesives and Sealants	Placed in marked container for disposal	CRES
Aerosols	Placed in marked container for disposal	Thomas Brothers
Batteries	Placed in marked container for disposal	Small Quantities –

Waste	Disposal Method	Waste carrier
		brought to Local Waste Recycling Centre
Chemicals	Stored in sealed container and labelled. Disposal to appropriately licensed facility	None to date
Hydraulic hoses/mechanical parts	Placed in marked container for disposal	Matter for sub-contractors
Oil	Containers palletated and cling wrapped for collection. Transfer of waste oil to bunded container, recycling may be possible	Eco Oil
Oil Contaminated material	Contain in drum and label. Disposal to appropriately licensed facility	Eco Oil
Grease Cartridges	Contain in drum and label. Disposal to appropriately licensed facility	Eco Oil
Paints and Thinners	Contain in drum and label. Disposal to appropriately licensed facility	None to date
Printer Supplies	Placed in marked containers for recycling	Small Quantities – make contact with charitable org for recycling
Waste Electrical and Electronic equipment	Stored for eventual disposal with an appropriately licensed facility	Small Quantities – brought to Local Waste Recycling Centre
Waste Water	Stored in a holding tank and transported off site to a waste water treatment plant	ACR

It is the responsibility of the Environmental Department or designated personnel to ensure that all materials are appropriately stored prior to collection (by a registered carrier) and disposal at an appropriately licensed facility. The Environmental Department or designated personnel must be present to supervise waste loading and transport and to ensure barrels, skips or containers have been labelled correctly.

Additional documentation is generated in the disposal of hazardous waste. The specific document is dependent on the disposal route.

- Disposal outside UK – Transfer Frontier Shipment (TFS) form
- Disposal within UK – C1 forms.

All documentation TFS, C1 forms and receipts detailing disposal shall be maintained and filed by the Environmental Department with the waste manifest.

All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). The SWCN consists of five different coloured, self carbonising pages, each with five sections, which refer to a different aspect of the waste transfer.

Wastewater

Where required, portaloos will be used to service the site at a ratio of one portaloos per 25 heads.

Portaloos will be located at the work front and relocated as required. The portaloos supplier will empty and service the units in accordance with an agreed schedule.

The construction compound will include two toilet blocks and two canteens, all of which will generate wastewater requiring treatment. The contractor managing the Portaloos will also empty the holding tank(s) on site. This will initially be 1 to two times a week but may vary depending on circumstances.

7. WASTE LICENCES/REGISTRATION

All waste will be collected by an appropriately registered waste haulier and treated/disposed of at an appropriately licensed facility. Copies of all relevant waste disposal licences will be maintained in the Environmental Office.

The collection permit numbers of all named waste contractors are detailed in **Appendix A**

All waste, hazardous & non-hazardous, leaving site must have an associated waste docket, either the waste hauliers or a completed site docket (**Appendix C**). All dockets should be copied to the environmental department for logging in the waste manifest and filing for reference.

Infrastructure and management of the waste contractors

The Environmental Manager shall have overall control for the management of the waste contractor. Skips shall be inspected at regular intervals to ensure that they do not become overfull and waste is not piled alongside. Once skips are estimated at 85% capacity during regular inspection of the waste management area, the Environmental Office shall contact the carrier to arrange collection. This normally takes one to two days from time of call to delivery.

On-site, someone from the Environmental Office will sign for collection of the Skips or load and will ensure that the Sheet / consignment notes, including EWC codes are filled out correctly and signed.

Licensed Disposal Sites are listed in **Appendix A**.

Waste Disposal Routes will comply with the restrictions on access routes for construction traffic.

8. DOCUMENT CONTROL

Records

The following records will be kept at the site office:

- Waste Management Plan
- Copies of all relevant permits/licences
- Audit reports
- Waste docket (site or Contractor), detailing
 - The waste carrier(s) used and contact details
 - Permit No. and Vehicle Registration
 - Waste description and quantity and consignment route number
 - The disposal site(s) name, License Ref. and contact details
- Recycling Receipts (Non-hazardous waste)
- C1 forms (Hazardous waste)
- Trans-frontier shipment documents (Hazardous waste)
- Waste Costs to be maintained

Copies of waste management audits and non-compliances will be kept for the statutory minimum period. The Project Manager will be informed of inspections by Statutory Bodies, or breach of the Duty of Care by any party involved with the transfer of site waste.

The Environmental Department will keep full records of every movement of waste from the site.

Records shall include details of the locations from which material has been excavated and its final placement.

9. TRAINING & AWARENESS

Copies of the Site Waste Management Plan will be displayed in the site offices for referral by site operatives. Environmental issues, site rules and waste management arrangements will be discussed as part of the Site Induction, which all site personnel must attend. Training will be provided to site personnel dealing with waste management and Tool Box Talks will also be held periodically to inform employees of their responsibilities under the plan and current waste management legislation.

Waste management themed posters will be displayed in Site Offices and Site Canteens for referral by site operatives.

Summary m3	Topsoil				Unsuit				Suitable				Blaes				2,820											
Total No. of Loads	449	208	83	21	266	11	345	110	287	43	183	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Volume of Load (m3)	15	15	15	15	15	15	15	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume (m3)	6,735	3,120	1,245	315	3,990	165	5,175	1,650	4,305	645	2,745	855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Volvo A30D R Mc Allister VT311				Bell B25 T McKinnon BT237				CAT 730 C Finlay CT317				Blank Blank Blank				Blank Blank Blank				Blank Blank Blank							
	T	U	S	B	T	U	S	B	T	U	S	B	T	U	S	B	T	U	S	B	T	U	S	B	T	U	S	B
Wednesday, 07/09/2011																												
Thursday, 08/09/2011																												
Friday, 09/09/2011																												
Saturday, 10/09/2011																												
Sunday, 11/09/2011																												
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Monday, 12/09/2011																												
Tuesday, 13/09/2011																												
Wednesday, 14/09/2011																												
Thursday, 15/09/2011																												
Friday, 16/09/2011																												
Saturday, 17/09/2011																												
Sunday, 18/09/2011																												
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Monday, 19/09/2011																												
Tuesday, 20/09/2011																												
Wednesday, 21/09/2011																												
Thursday, 22/09/2011																												
Friday, 23/09/2011																												
Saturday, 24/09/2011																												
Sunday, 25/09/2011																												
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Monday, 26/09/2011																												
Tuesday, 27/09/2011																												
Wednesday, 28/09/2011																												
Thursday, 29/09/2011	71				70				62																			
Friday, 30/09/2011	28	46			30	45			50																			
Saturday, 01/10/2011																												
Sunday, 02/10/2011																												
Total	99	0	46	0	100	0	45	0	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Monday, 03/10/2011	31		2					92		25		1																
Tuesday, 04/10/2011	11							88		8		3																
Wednesday, 05/10/2011	33	2						8	53	30			1															
Thursday, 06/10/2011								26																				
Friday, 07/10/2011	36	14			55				8			30	18															
Saturday, 08/10/2011																												
Sunday, 09/10/2011																												
Total	75	38	16	0	55	0	214	61	63	30	22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Monday, 10/10/2011	22	5	19		41																							
Tuesday, 11/10/2011	14				11					41		19																
Wednesday, 12/10/2011										28		33																
Thursday, 13/10/2011	4	77																										
Friday, 14/10/2011		58		8			31					38																

10. WASTE AUDITING

The Environmental Manager shall arrange for full details of all arising, movements and treatment of waste to be recorded. Each consignment of waste taken from the site will be subject to documentation, which will conform to the waste manifest attached and ensure full traceability of the material to its final destination.

The amount, nature and composition of the waste generated on the site, will be logged in the waste manifest. This information can then be used to examine the manner in which the waste is produced and provide a commentary highlighting how management policies and practices may inherently contribute to the production or reduction in production of waste.

APPENDIX A: Site Waste Management Plan (SWMP)

A477 St Clears to Red Roses Improvement Construction Environmental Management Plan Appendix D Site Waste Management Plan

Project information

Project name	A477 St Clears to Red Roses Improvement		
Project Location	St Clears to Red Roses		
Project cost (estimated)*	Over 500K		
Size	Approx 9.3km		
Project start date - Construction	Date	13	Month
			February
			Year
			2012
Project end date - Handover	Date	13	Month
			February
			Year
			2014
Site location description	<p>The proposed Improvement would involve the provision of 9.3km of off-line and online improvements from west of Red Roses on the A477 to St Clears roundabout on the A40 in South West Wales. It would diverge from the existing trunk road in a north easterly direction and would pass under the B4314 before passing under the two rows of existing overhead power lines. The proposed Improvement would continue eastwards alongside the overhead power lines close to and necessitating the diversion of a section of the Tavernspite Road before entering a 23 metre deep cutting to the north west of Llanddowror. It would then descend on a 20metre high embankment on the edge of the Afon Taf floodplain, crossing the Afon Hydfron before rejoining the existing trunk road to the west of Pont Newydd. From here the existing road would be improved up to St Clears roundabout.</p>		
Client	Welsh Government		
Principal Contractor	Sisk Roadbridge (SRB)		

Version Number and Date	Rev 0 Date: 13/2/12
-------------------------	---------------------

** The cost should be the price of the accepted tender, if there is no tender then it should be the estimated cost of labour, plant, materials, overhead and profit but exclude VAT.*

Preparing your plan

1. Responsibilities

	Name	Company	Company Type (e.g. Client, Designer, Principal Contractor)	Contact details
Who is responsible for drafting the SWMP?	Roland Tarrant	SRB	Principal Contractor	roland.tarrant@roadbridge.ie
	with support from David Bunyan	Ramboll	Designer	david.bunyan@ramboll.co.uk
Who is responsible for implementing the SWMP?	Steve Salvin	SRB	Principal Contractor	stephen.salvin@roadbridge.ie
Who is the waste champion?	Fiona Lanc	Ramboll	Designer	fiona@habitatmatters.co.uk
Who is the person in charge of the project?	Michael Gallagher	SRB	Principal Contractor	michael.gallagher@roadbridge.ie

Where will this SWMP be kept? (a copy should be on site)

Electronic based document

Buzzsaw

Paper based document

Held by Project Manager

Declaration statement: We agree that the 'Client' and the 'Principal contractor' will take reasonable steps to ensure waste duty of care is complied with, materials are handled efficiently and waste is managed appropriately.

Signature

Print name

Date

Preparing your plan

2. Waste minimisation

Use the table below to record decisions taken before the plan was drafted on the nature of the project, design, construction methods and materials to plan waste minimisation i.e. reducing the amount of waste produced

Type/ Process	Waste Minimisation decision taken	By whom	Intended results
Use recycled materials or material that can be recycled	Where available, all materials are to be no worse than a B-rating in the Green Guide to Specification.	Designer	Increase in use of recycled materials and materials that can be used on decommissioning
Reduce materials used	Reduce material use by “lean” design	Designer	Reduction in raw materials and hence waste outputs
Durability and Maintenance	Materials should be appropriate to the operational lifespan of the facilities they are intended to serve e.g. through use of finishes that don’t need to be painted, or self-cleaning glass.	Designer	Reduction in waste output during maintenance phase
Adaptability and flexibility	Structure at Afon Hydfron will be of concrete deck to minimise maintenance compared to steel structure and associated painting.	Designer	Reduce future work packages and hence waste
Earthworks	Balance in cut fill balance to be achieved for the project	Designer	Avoid sending earthworks to landfill
Efficiency in manufacturing	Use of prefab modular cabins prepared off site in “factory” conditions	Designer/ Contractor	Minimise waste in the supply chain

Preparing your plan

3. Forecast

Estimate the types and amounts of waste you expect to generate on this project.

Work Package (if known)	Subcontractor (if known)	Type of waste (as a minimum this should be inert, non-hazardous)	Estimate amount (m ³ or tonnes)
Construction	To be appointed	C and D wastes	100 tonnes
		Earthworks	943,000m ³
		Hazardous waste from the bitumen based pavement	Negligible
		Hazardous waste (tarmac) and inert waste (sub-grade) from the re-alignment of the Tavernspite road, from exiting access roads, and from the unclassified road at Cnwce and the B4314.	Negligible
		Hazardous waste from the excavation of the pavement locally at the Project tie-ins namely at Red Roses and at St Clears	Negligible
		Japanese Knotweed and Himalayan Balsam excavation	500 to 1000m ³
		Asbestos roof of demolished barns	Negligible
		Cardboard and Packaging (inert)	100 m ³
		Paper (inert)	100 m ³
		Batteries (hazardous)	negligible

		PPE (non – hazardous)	negligible
		Fluorescent Tubes (hazardous)	1 m ³
		Glass (inert)	2m ³
		WEEE (hazardous)	2m ³
		Metals	100m3

If you do not know then you can use benchmarks to predict you waste; which are available on <http://www.smartwaste.co.uk/page.jsp?id=37>

Preparing your plan

4. Waste Management options

For each waste type identify what waste management action is proposed and if you have set any targets.

- As a minimum this information should be split into inert, hazardous and non-hazardous waste (to comply with the SWMP Regulations)
- appropriate
- For SMARTWaste Plan waste needs to be recorded in the following categories Bricks, Tiles and Ceramics Concrete, Inert, Insulation, Metals, Packaging, Gypsum, Binders, Plastics, Timber, Floor coverings (soft), Electrical and electronic equipment, Furniture, Canteen/office/adhoc, Liquids, Oils, Soils, Asphalt and tar, Mixed, Hazardous & Other
- Reduction = reducing the quantity of the waste; reuse = reuse of materials/products for same process; recycle = processing of material ; recover =composting, energy recovery, remedial treatment of soil, physical sorting of waste (when one or more components of the waste is recovered)

Waste type	Reduce (%)	Reuse (%)	Recover (%)	Recycle (%)	Dispose (%)	Container/ Equipment required	Waste Management contractor	Any relevant exemptions/ licenses
Earthworks		100			0	Storage	SRB	No
Japanese Knotweed and Himalayan Balsam excavation		100			0	Storage	SRB	Yes to bury on site
Cardboard and Packaging (inert)				100	0	Separate bins		
Metals				100	0	Separate bins		

Overall target								

Sections 1 -4 should be completed before construction work commences onsite; the client is responsible for the SWMP before construction work commences

Implementing your plan

5. Duty of care

It is mandatory to include Duty of Care in your SWMP. The client and principal contractor must take reasonable steps to ensure waste duty of care and materials are handled efficiently, and waste is managed appropriately.

Please use the table to log relevant details:

Waste Management Contractor Name	Waste Management Contractor Address	Waste carrier license number; date of issue and expiry	Waste management license number, date of issue and expiry	Waste Transfer notes storage location

Have you registered with the Environment Agency as a hazardous waste producer?

Yes

No

If yes, please provide your hazardous waste registration number; date of issue and expiry

If further assistance is needed to find local waste management contractors use BRE's free online tool at www.bremap.co.uk

For more information on Duty of Care and Hazardous Waste go to: www.netregs.gov.uk

Implementing your plan

6. Waste Records

It is mandatory to record the identity of the person removing the waste (i.e. waste management contractor), types of waste removed and where the waste is being taken to and if it has a waste management license or exemption and the waste carrier registration number. Links or references should be provided to waste transfer notes and hazardous waste consignment notes

Please use the table to log relevant details:

Date waste removed	Type of waste	Who removed the waste	Site the waste has gone to	Does the site have a license or an exemption?	Waste Carrier License Number	Evidence e.g. waste transfer note location/reference

Implementing your plan

8. Training / communication

Training

Everyone on site should receive relevant training which should include:

- The SWMP
- Roles and responsibilities
- Waste procedures on site
- Hazardous waste
- Duty of care / responsibilities
- Materials storage
- Roles and responsibilities

What forms of training are you using on site? *(please tick all that apply)*

Induction
Tool box talks
Work shops
Other (please state)

Do you have a training log? Yes No If no, please use the attached table to create a training log

If yes where is it kept?

Communication

How are you communicating the SWMP on site? *(Please tick all that apply)*

Meetings
Posters
Feedback from staff
Other (Please state)

Reviewing your plan

11. Completion review

This section must be filled in within 3 months of the work being completed on this project (i.e. project finish) :

We confirm that the plan has been monitored on a regular basis to ensure that work was progressing to the plan and the plan was updated

Signature

Print name

Date

This stage is designed to help you evaluate the success of your SWMP, and to identify key 'lessons learnt' to use on your future projects, it is helping you strive for continual improvement.

Please explain any deviation from the original plan:

Reviewing your plan

11. Completion review continued

Please review how successful you believe the implementation of the SWMP was:

If project value in excess of £500,000 estimate of cost savings achieved:

£

Actions planned for next project:

Sections 10 – 11 should be completed within 3 months of the project finishing, this is the responsibility of the principal contractor

This plan should be kept at either the principal contractor's place of business or at the site of the project for 2 years

Waste Management

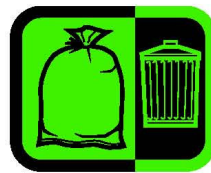
Non-Hazardous Waste

Waste should always be disposed of correctly

Where possible
Recycle ➔



Otherwise
bag and/or
bin



- Recycle as follows:
 - **Plastic Bottles and Cans**, in the correctly labelled container in the Compound Areas
 - **Paper**, in correctly labelled receptacles in each site office and public area
 - **Cardboard**, in the correctly labelled skip in the Waste Compound (bagged or flattened)
 - **Used Timber** is to be put in the correctly labelled skip in the Waste Compound
- All other non-hazardous waste (residual) are to be disposed of in the correctly labelled skip in the Waste Area



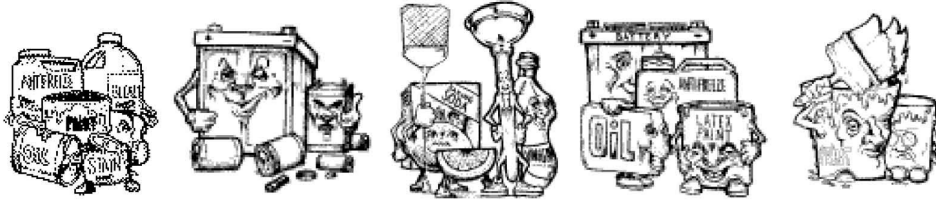
If unsure as to the correct method of disposal contact the Environmental Officer

Waste Management

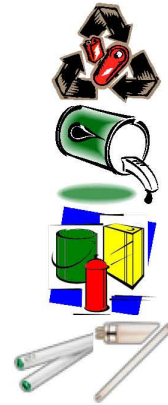
Hazardous Waste



Waste should always be disposed of correctly.



- The following hazardous wastes are collected :
 - **Batteries**, in the correctly labelled bin in the Printer Room.
 - **Oil and oil contaminated material**, in the correctly labelled bin in the Hazardous Waste Compound.
 - **Chemical Waste**, Adhesives, sealants, paints, thinners and Aerosols - in the correctly labelled bin in the Hazardous Waste Compound.
 - **Fluorescent Light Bulbs**, to be handed in to the Environmental Office.



Note:

- When handling any hazardous material for disposal ensure that you are wearing the appropriate PPE.
- Where possible keep the material in it's original container. If this is not possible store the material in an appropriately labelled container.
- Report spills or the incorrect storage of hazardous materials to your Supervisor or to the Environmental Officer.



If unsure as to the correct method of disposal contact the Environmental Officer



Rev 2 March 2012

Waste Management

House Keeping

Proper storage and housekeeping on site is everyone's responsibility.

- **Housekeeping**

- Keep the site tidy and clean
- Store all materials neatly and orderly in the appropriate areas.
- If materials are stored incorrectly they may be treated as waste and removed for disposal.

- **Litter**

- Litter is anything that should be recycled or put in a bin but instead ends up on site.
- It ranges from sweet wrappers and drinks bottles to cigarette butts and discarded works materials

Remember:

Where possible
Recycle →



Otherwise
bag and/or
bin



- **Waste Compound**

- A compound has been provided where waste can be segregated into recyclables, hazardous and non-hazardous waste.
- Skips and drums are provided for the proper disposal of waste materials within the compound.
- Clear waste from the site into the containers provided.

- **Why Keep the site Tidy?**

- Environmental Reasons:
 - Reduced risk of pollution / contract requirement
 - Improved waste management
 - Wildlife safety – litter can pose a health risk if local wildlife eat or get caught in it.
- Health & Safety
 - Reduced risk of rodent activity
 - Slips, Trips and Falls
- Business
 - Lost, damaged or misplaced materials cost money to be replaced



Rev 2 March 2012

APPENDIX C: WASTE MANAGEMENT FORMS

Duty of Care - Waste Transfer Note

Section A – Description of waste	
<i>(Please write as clearly as possible)</i>	
A1 Please describe the waste being transferred	A2 How is the waste contained?
<input type="text"/>	<input type="checkbox"/> Loose <input type="checkbox"/> Sacks <input type="checkbox"/> Skip <input type="checkbox"/> Drum
List of Waste Regulations code(s)	<input type="checkbox"/> Other <input type="text"/>
<input type="text"/>	A3 How much waste? For example, number of sacks, weight
<input type="text"/>	<input type="text"/>
Section B – Current holder of the waste – Transferor	
B1 Full name	<input type="checkbox"/> The holder of a pollution prevention and control permit?
<input type="text"/>	Permit number <input type="text"/>
Company name and address	Issued by <input type="text"/>
<input type="text"/>	<input type="checkbox"/> Exempt from requirement to have a waste disposal or waste management licence?
<input type="text"/>	Details, including registration number <input type="text"/>
Postcode <input type="text"/>	<input type="checkbox"/> A registered waste carrier?
B2 Are you:	Registration number <input type="text"/>
<input type="checkbox"/> The producer of the waste? <input type="checkbox"/> The importer of the waste?	Issued by <input type="text"/>
<input type="checkbox"/> The waste collection authority? <input type="checkbox"/> The waste disposal authority (Scotland only)?	<input type="checkbox"/> Exempt from requirement to register?
<input type="checkbox"/> The holder of a waste disposal or waste management licence?	Please give details <input type="text"/>
Licence number <input type="text"/>	B3 Name of your unitary authority or council
Issued by <input type="text"/>	<input type="text"/>
Section C – Person collecting the waste – Transferee	
C1 Full name	<input type="checkbox"/> The holder of a pollution prevention and control permit?
<input type="text"/>	Permit number <input type="text"/>
Company name and address	Issued by <input type="text"/>
<input type="text"/>	<input type="checkbox"/> Exempt from requirement to have a waste disposal or waste management licence?
<input type="text"/>	Details, including registration number <input type="text"/>
Postcode <input type="text"/>	<input type="checkbox"/> A registered waste carrier?
C2 Are you:	Registration number <input type="text"/>
<input type="checkbox"/> The waste collection authority? <input type="checkbox"/> The waste disposal authority (Scotland only)?	Issued by <input type="text"/>
<input type="checkbox"/> Authorised for transport purposes? Please give details	<input type="checkbox"/> Exempt from requirement to register? Please give details
<input type="text"/>	<input type="text"/>
<input type="checkbox"/> The holder of a waste disposal or waste management licence?	
Licence number <input type="text"/>	
Issued by <input type="text"/>	
Section D – The transfer	
D1 Address of transfer or collection point	D2 Broker who arranged this transfer (if applicable)
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
Postcode <input type="text"/>	Postcode <input type="text"/>
Date of transfer <input type="text"/> (DD MM YYYY) Time(s) <input type="text"/>	
Transferor's signature <input type="text"/>	Transferee's signature <input type="text"/>
Name <input type="text"/> Representing <input type="text"/>	Name <input type="text"/> Representing <input type="text"/>

References

- Asbestos: Exposure limits and measurement of airborne dust concentrations, Guidance Note EH 10 1988, Health and Safety Executive
- Asbestos: Medical Guidance Note Guideline Note MS13 Asbestos 2005, Health and Safety Executive
- BS 5228: 2009 Noise and Vibration Control on Construction and Open Sites, British Standards Institution
- BS 5930:1999 Code of practice for site investigations, British Standards Institution
- BS 8485:2007 Code of practice for the characterization and remediation from ground gas in affected developments, British Standards Institution
- BS 10175:2001 Investigation of potentially contaminated sites, British Standards Institution
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings (revised), 2007
- CIRIA Special Publication 32 Construction Over Abandoned Mine Workings, 1984
- Control of Asbestos at Work Regulations 2002
- Environmental Protection Act 1990, as amended
- □ Health and Safety Commission Approved Code of Practice and Guidance:
- Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulating
- Board
- Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, National Groundwater and Contaminated Land Centre Report NC/99/77, 2001
- Planning Advice Note 33 [PAN 33]: Development of contaminated land
- Planning Advice Note 50 [PAN 50] Annex D 'The Control of Blasting at Surface Mineral Workings'
- Protection of Workers and the General Public During the Development of Contaminated Land, Health and Safety Executive, 1991
- Site Investigation Steering Group: Guidelines for the safe investigation by drilling of landfills and contaminated land, 1994
- The Confined Spaces Regulations 1997
- The Control of Substances Hazardous to Health Regulations 2002, as amended
- Control of Pollution Act 1974
- Control of Pollution (Special Waste) Regulations 1980, as amended
- Environmental Protection Act 1990, as amended
- Food and Environment Protection Act 1985
- Land Remediation and Waste Management Guidelines, EAW
- Scottish Planning Policy 10 [SPP10]: Planning for Waste Management
- Site Waste Management Plans: Guidance for Construction contractors and Clients, Department of Trade and Industry, 2004
- Technical Guidance WM2, Interpretation of the definition and classification of Hazardous Waste, Environment Agency, 2008
- The Control of Substances Hazardous to Health Regulations 2002, as amended
- The Special Waste Regulations 1996, as amended
- The Special Waste (England and Wales) Regulations 1997, as amended

- The Waste Management Licensing (England and Wales) Regulations 1996, as amended Waste Management, The Duty of Care, A Code of Practice, Department for Environment, Food and Rural Affairs, 2009
- DEFRA *Code of Practice for the Sustainable Use of Soil 2009*

APPENDIX E
Traffic Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX E
TRAFFIC MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan.

This plan provides procedures for the management Traffic during Construction.

2. POTENTIAL IMPACTS

A robust series of assessments on potential traffic impact were undertaken during the preparation of the Reference Design, and were examined in the Public Local Inquiry.

A computerised traffic model was developed to represent traffic movements in the A477 corridor and then to forecast the effects of providing the new route. This model used the diversion curve technique described in the Design Manual for Roads and Bridges (DMRB) Volume 12, Section 1, Part 1, Chapter 9.

The assessments concluded that upon completion, there would be substantial relief to villages and settlements along the bypassed section of the A477.

3. PLANS AND PROCEDURES

3.1 Access Locations

There will be two main site access (**MSA**) points for the proposed Improvement. **MSA.1** would be located at the western end at Red Roses, off the B4314. **MSA.2** would be located at the eastern end at Llanddowror, off the existing A477. These are shown on Figure 3 in the Appendix to this plan

Additional Secondary Site Access (**SSA**) points would also be required at four other locations as also shown on Figure 3 in the Appendix to this plan. **SSA.1** to **SSA.3** would be used by vehicles primarily for access to the site during the site establishment phase, until the internal haul roads are fully developed. **SSA.4** would be used throughout the construction period to access t the off-line section of the improvement, west of Pont Newydd.

All access points would be clearly signed on the exisiting road network. Deliveries to site would occur daily throughout the construction period. Deliveries would range from packages delivered by courier to lorries bringing various materials for construction. **MSA.1** and **MSA.2** would be used

for delivery of bulk elements such as bridge beams, concrete, pipework, steel, aggregates and bituminous material

3.2 Main Compound and Haul Routes

3.2.1 Main Compound

The main site compound will be located on land owned by the Welsh Government to the north of the proposed Improvement near Pentrehowell Farm, between approximate Ch.5+600 and Ch.5+750. This is shown on Figure 2 in the Appendix to this plan. The existing access from the Tavernspite Road will be used to gain access to this compound.

The site has been selected as the best location for the Site Compound for the following reasons:

1. It is located on land owned by the Welsh Government.
2. It is not close to any major residential areas.
3. It is centrally located within the proposed Improvement.
4. There would be direct access onto the site from the Site Compound without the need to use the public highway.
5. The location has a low environmental impact.

The compound will include offices (height c. 4m), plant, storage, maintenance facilities, materials testing laboratory and car parking. The tallest items within the compound are likely to be aggregate storage mounds (potentially up to 10 to 12m in height) and a possible batching plant. The compound will be fenced with a typical security fence (height c.2.4m). Security lighting, 3-6m high, would be used during hours of darkness and controlled by a timer system.

The Site Compound will be established at the commencement of the Works and will be removed at the end of the construction phase. Topsoil, stockpiled following the initial topsoil strip of the area, will be used to construct temporary mitigation screen bunding around the compound inside the boundary hedge line. The topsoil will also be used to reinstate this land when the Works are complete.

3.2.2 Haul Roads

A series of internal haul roads will be developed to enable deliveries reach their final destination within the site. These access points would be developed as early activities within the construction programme in order to limit the interface between site traffic and the public traffic.

Through the establishment and maintenance of good internal site haul roads, site traffic interface with the public would be limited. At existing road interfaces with the site, suitable plant crossings would be provided. Plant crossings would be controlled with temporary traffic lights or a stop-go system using flag men to minimise any traffic queues. Crossing points would be kept clean at all times and priority would be given to the travelling public. All traffic management would be installed and maintained in accordance with '*Chapter 8 of the Traffic Signs Manual*' .

The main materials that would be transported onto site in bulk have been estimated following several preliminary design iterations. These design iterations have been successful in reducing the total number of road haulage trips required during construction of the proposed Improvement. The following is a summary of these bulk quantities;

- | | | |
|--------------------|---------------|---------------|
| 1. Drainage Stone- | 49,000 tonnes | (2,700 loads) |
|--------------------|---------------|---------------|

2. Concrete-	7,000 m3	(1,000 loads)
3. Granular Material	156,000 tonnes	(8,700 loads)
4. Bituminous Surfacing	101,000 tonnes	(5,600 loads)

These preliminary quantities result in an estimated 18,000 lorry loads delivering to the site, i.e. 36,000 vehicle movements (18,000 full and 18,000 empty.) The majority of these lorry movements would be over the 18 month period between April 2012 and September 2013.

The sources of imported fill material have not been specifically identified, but potentially would come from existing quarries located close to the route. Prior to obtaining material from any borrow pit or quarry, it is proposed that checks would be made with the relevant planning authority to ensure no enforcement measures are in being. Deliveries would be along major roads in the area to avoid impacts on local minor roads.

3.3 Temporary Traffic Diversions

The existing A477 is one of the main links from the M4 into Pembrokeshire which provides access to the tourist centres of Saundersfoot and Tenby. It is also part of the Trans European Road Network linking mainland Europe and the UK with Ireland via the ferry services at Pembroke Dock.

Apart from short lengths dictated by the construction sequence, the overall philosophy is to keep through traffic on the existing A477 until the majority of the proposed Improvement was complete. The proposed Improvement is primarily off-line and so will minimise the interface with the existing A477.

Throughout the construction phase all local and trunk roads will remain open (either on their present route or via temporary/permanent diversions). Access to properties would be maintained at all times. Existing access routes that will conflict with the proposed Improvement will be maintained on their present route until a viable alternative has been provided.

Traffic Diversions will be required at various locations along the proposed Improvement. Some of these require additional land on a temporary basis for their construction. This additional land has been included in the '*draft Compulsory Purchase Order*' and will be reinstated and handed back once the diversion was removed. These diversions are outlined in Table 1 below. They are also indicated on Figure 4a-c in the Appendix to this plan.

ID	LOCATION	PURPOSE	APPROX. DURATION
TD.1	B4314 North West of Red Roses	To construct Overbridge ST02	8 months
TD.2	C3230 Tavernspite Road between Vaynor Farm and the Forestry Track (Ch.5+470 to Ch.6+600)	To construct Overbridges ST09 and ST10.	14 months
TD.3	Existing A477 East of Llanddowror (Ch.7+400 to Ch.8+000)	To construct mainline cross-over with existing A477.	6 months
TD.4	Existing A477 West of Pont Newydd (Ch.8+500 to Ch.8+700)	To construct New Afon Taf Flood Culvert ST15 and mainline tie-in.	4 months

Table 1: Proposed Temporary Diversions

In addition to the diversions listed in Table 1, other diversions would also be required which would not require additional land. They would be contained within the footprint of the mainline alignment. They include a diversion at the Forestry Track and Pilgrims Way to construct the new Structures ST11 and ST14, as well as various other field accesses.

For reasons of safety, restrictions to speed limits would be imposed through all traffic management installations.

The proposed Improvement includes on-line works to the existing A477 between Pont Newydd and St Clears Roundabout which include minor carriageway realignment, re-surfacing and footway works. On-line works will also be required for surfacing at the western tie in, west of Red Roses.

During these works one way working will be required for a limited period, controlled with temporary traffic lights or a stop-go system to minimise any traffic queues. Access to properties would be maintained at all times. One-way working of traffic on the existing A477 Trunk Road would not take place during the following periods, except in exceptional circumstances:

1. Friday afternoons before Monday Bank Holidays.
2. Christmas/New Year holiday period.
3. Easter holiday weekend.

In general, traffic levels on the existing A477 between 7.00am and 9.30am and again between 3.30pm and 5.00pm are such that unacceptable traffic delays could occur if one-way working is imposed during these periods. Any work planned during these periods would be agreed at the Traffic Liaison Group Meetings.

A Traffic Liaison Group will be established involving South Wales Trunk Road Agency (SWTRA), the Police, Emergency Services and Carmarthenshire County Council. Regular meetings will be established where traffic management proposals would be discussed in detail. An appropriate

communication strategy would be established to ensure that the public are kept informed of current road layouts and any upcoming changes that are proposed. See Section 4.8 above.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Traffic Management Liaison Group	Site Manager	Site Manager	Site Manager
Communications with Public	PLO	Site Manager	Site Manager

5. MONITORING SURVEY AND ACTIONS

5.1 Coverage

The Plan covers all areas of temporary and permanent works.

5.2 Monitoring and Verification

A programme of monitoring of traffic incidents in the project area shall be undertaken throughout the construction period. This shall comprise:

Check	Frequency	Responsibility	Verification of Completion
Incidents reported	Daily	Site Supervisors	Site Manager

6. RECORDING

6.1 Reporting

All traffic incident reports shall be reviewed and signed off by the Site Manager or design Manager.

**A477 ST CLEARNS TO RED ROSES
IMPROVEMENT**

**Appendix
To
Proof of Evidence
Construction**

Document WAG03/A

By

**John Duggan
BE CEng MIEI MCIHT**

May 2011

LIST OF FIGURES

Figure 1 Indicative Earthworks Layout

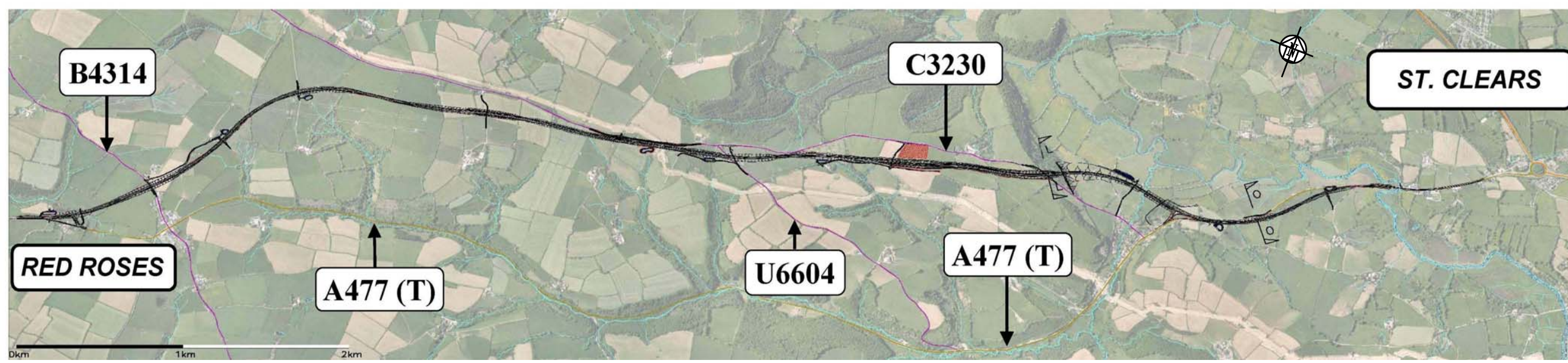
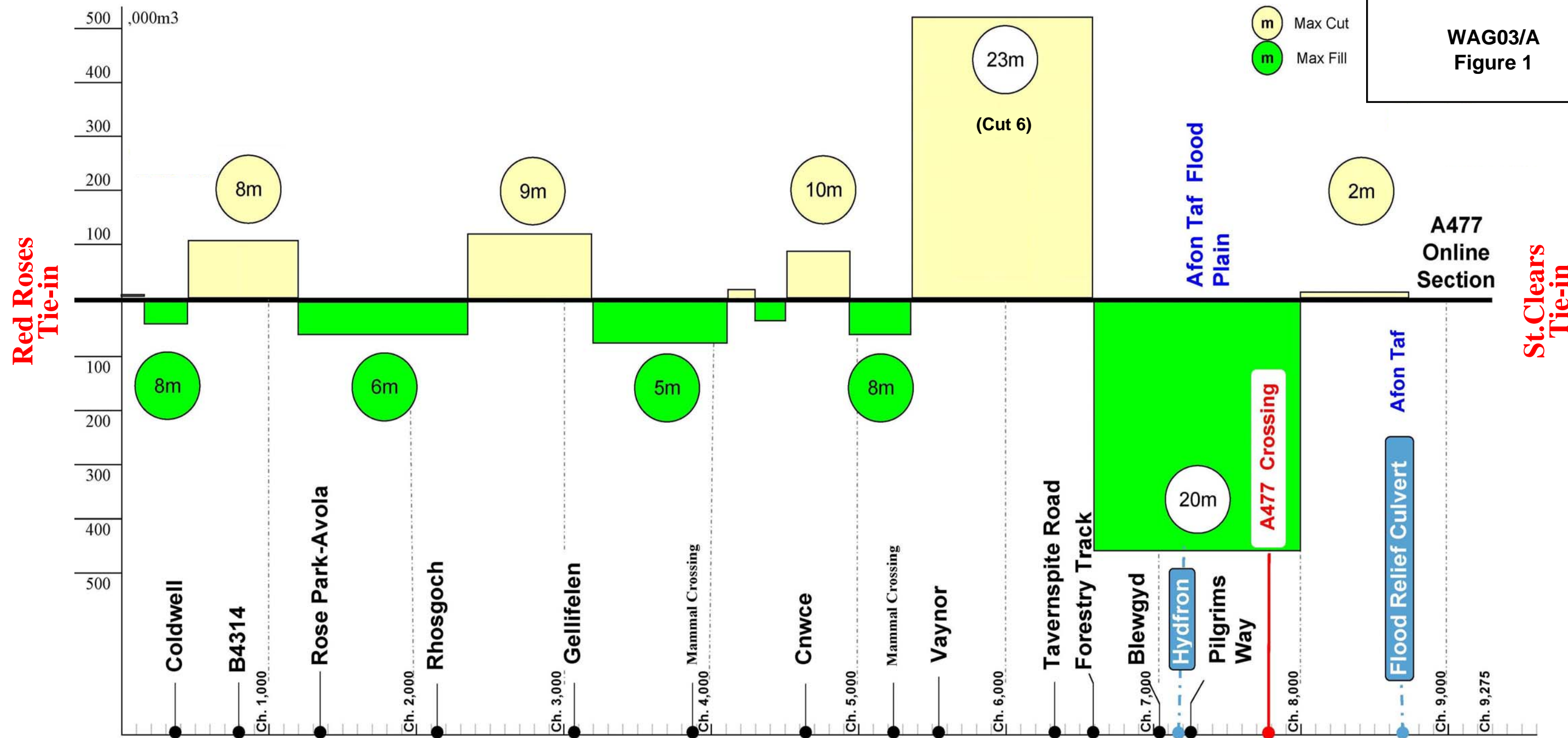
Figure 2 Main Site Compound

Figure 3 Site Access Points

Figure 4a Indicative Traffic Management Proposals (Sheet 1 of 3)

Figure 4b Indicative Traffic Management Proposals (Sheet 2 of 3)

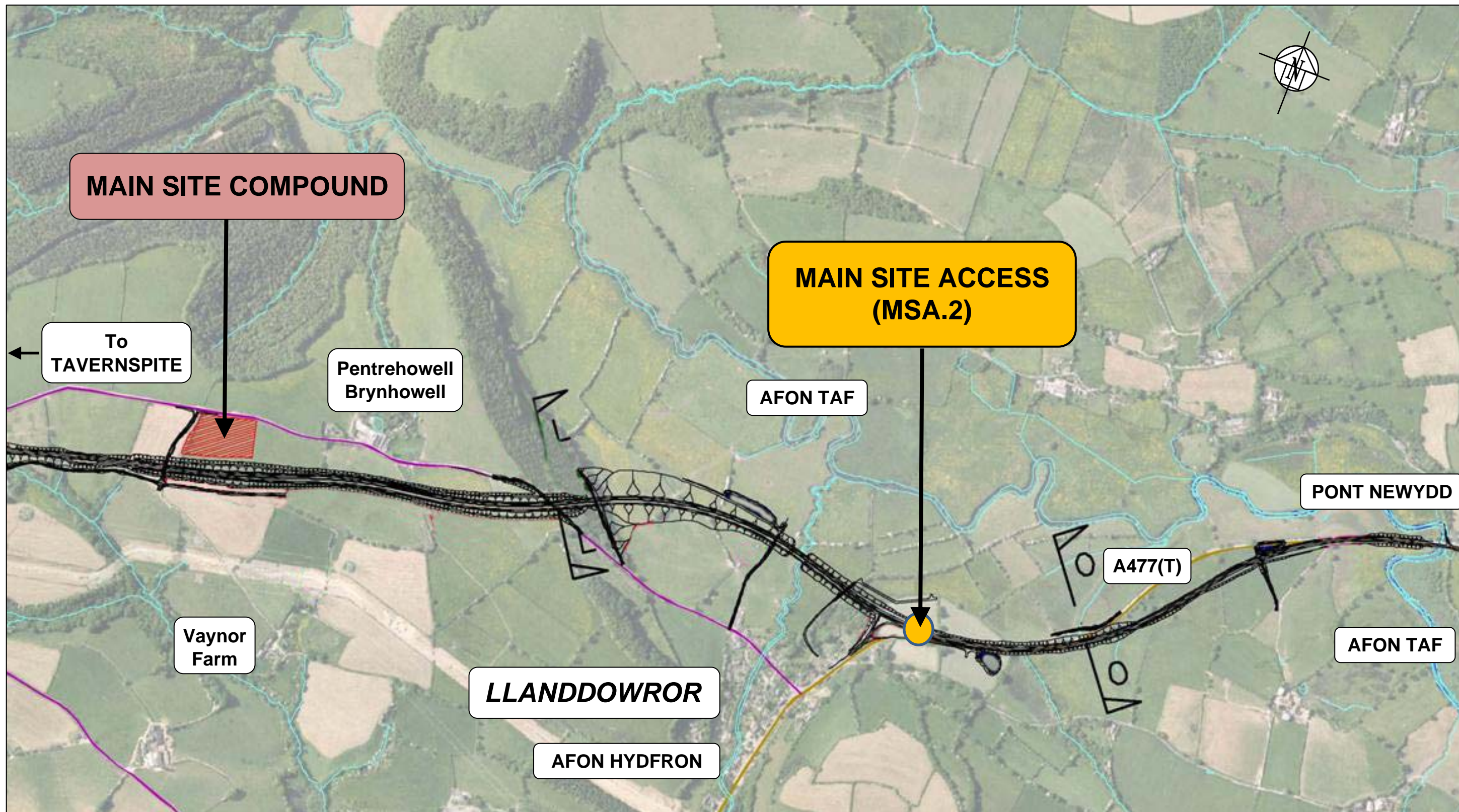
Figure 4c Indicative Traffic Management Proposals (Sheet 3 of 3)



A477 ST. CLEARS TO RED ROSES IMPROVEMENT



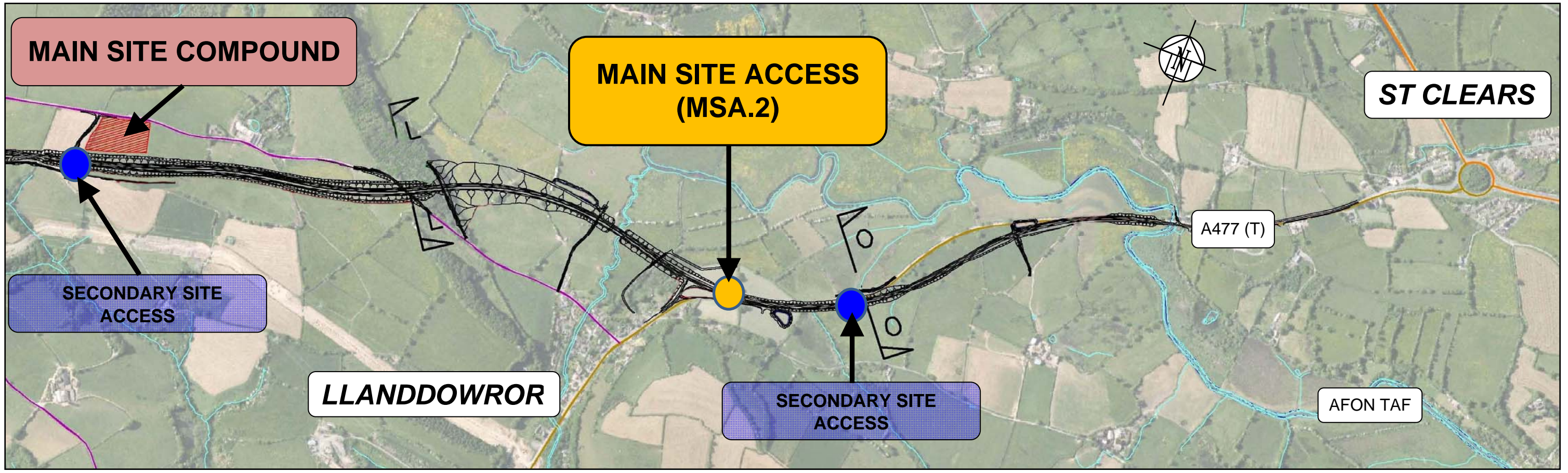
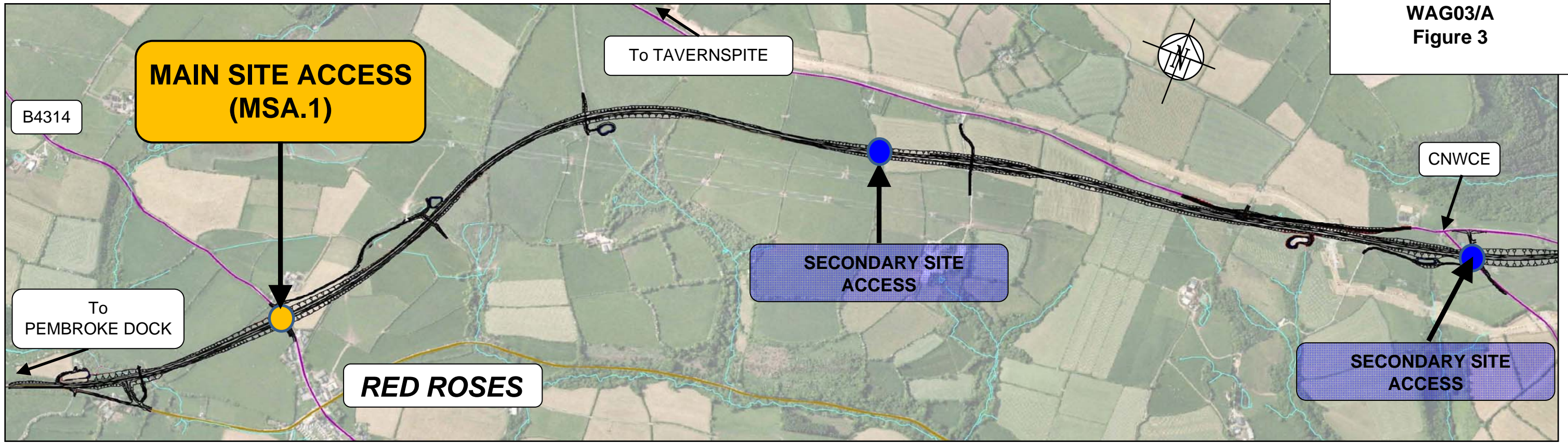
INDICATIVE EARTHWORKS LAYOUT

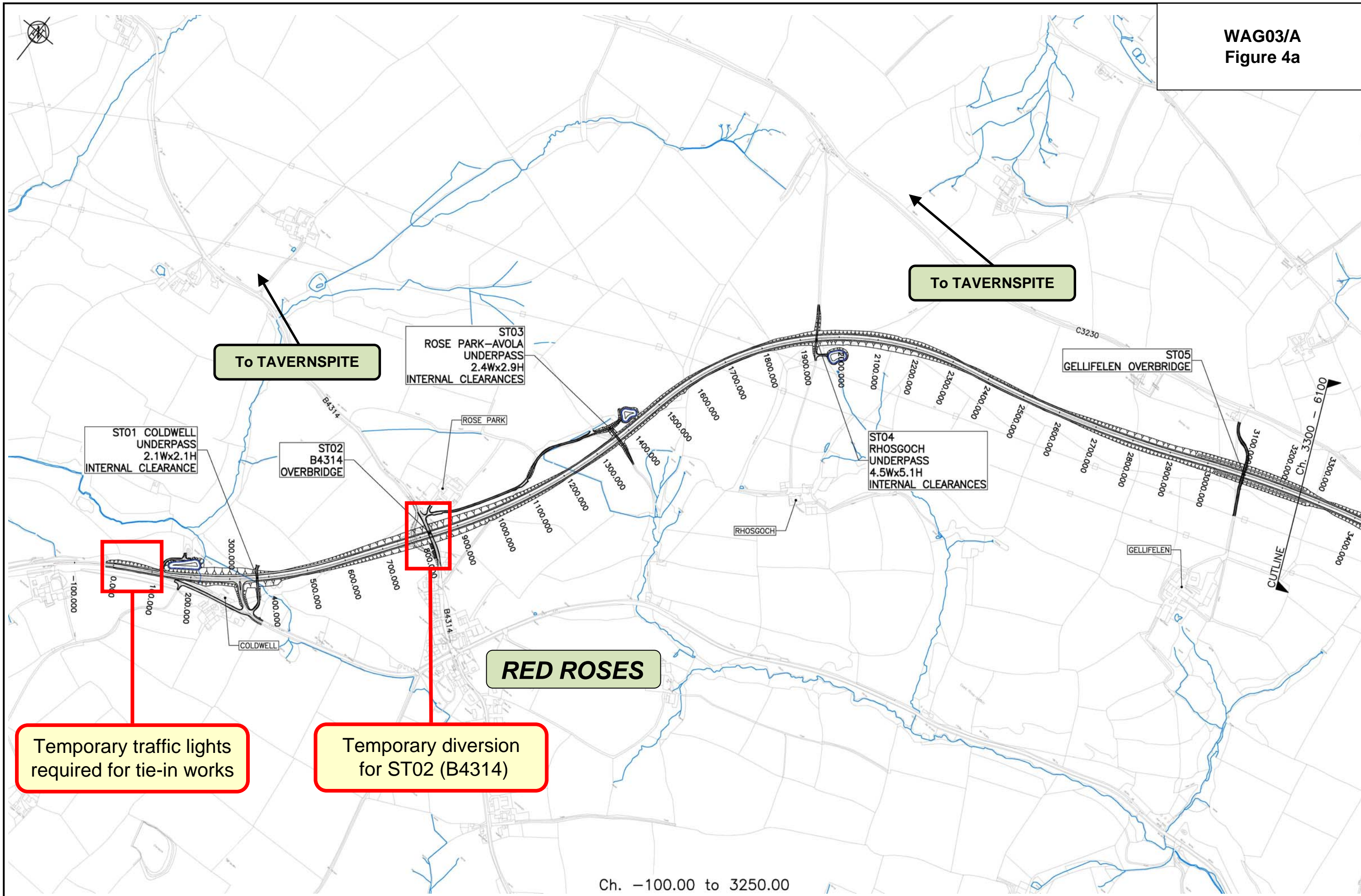


A477 ST. CLEARS
TO RED ROSES
IMPROVEMENT



MAIN SITE COMPOUND





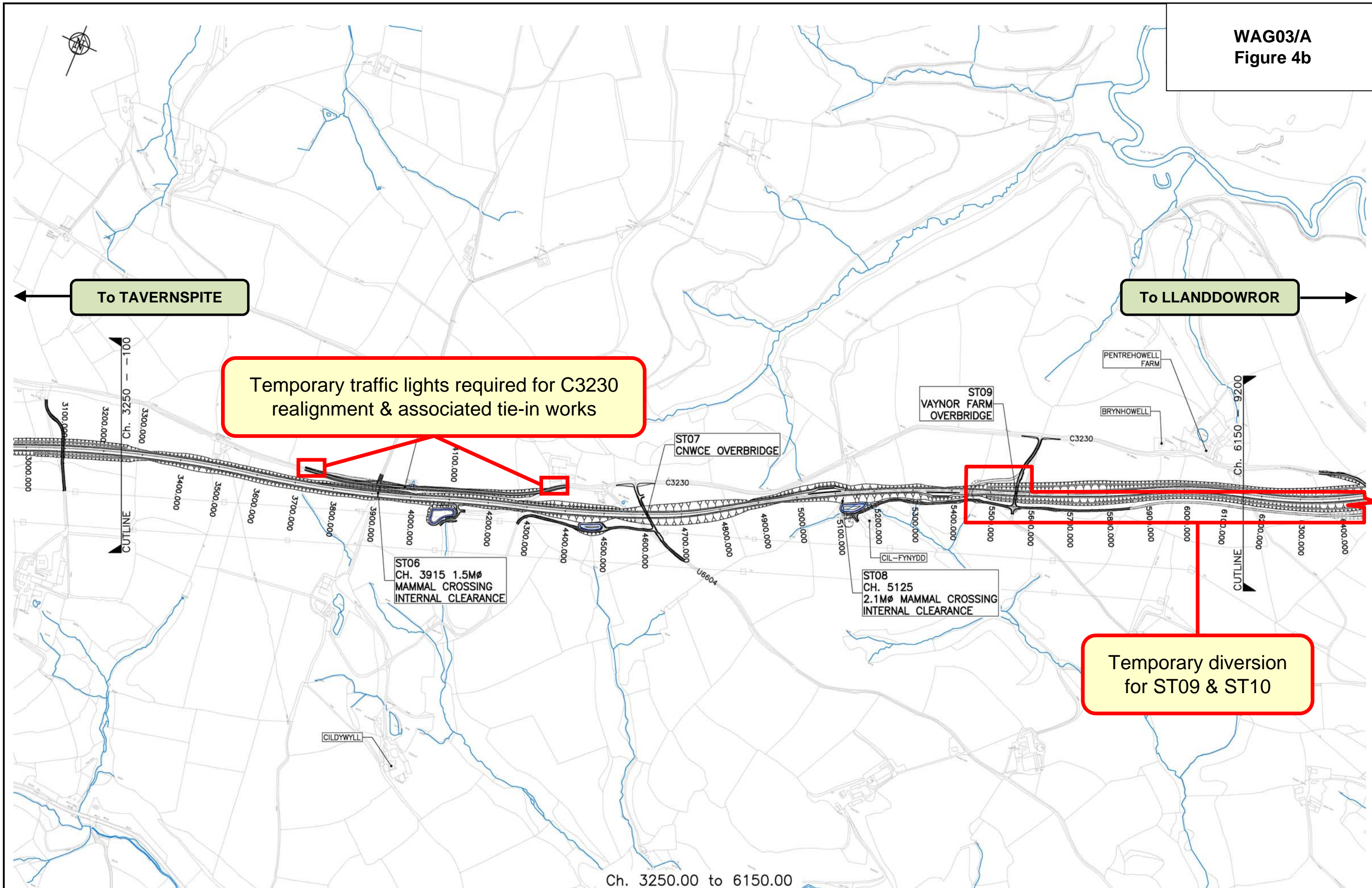
Ch. -100.00 to 3250.00



A477 ST. CLEARS
TO RED ROSES
IMPROVEMENT



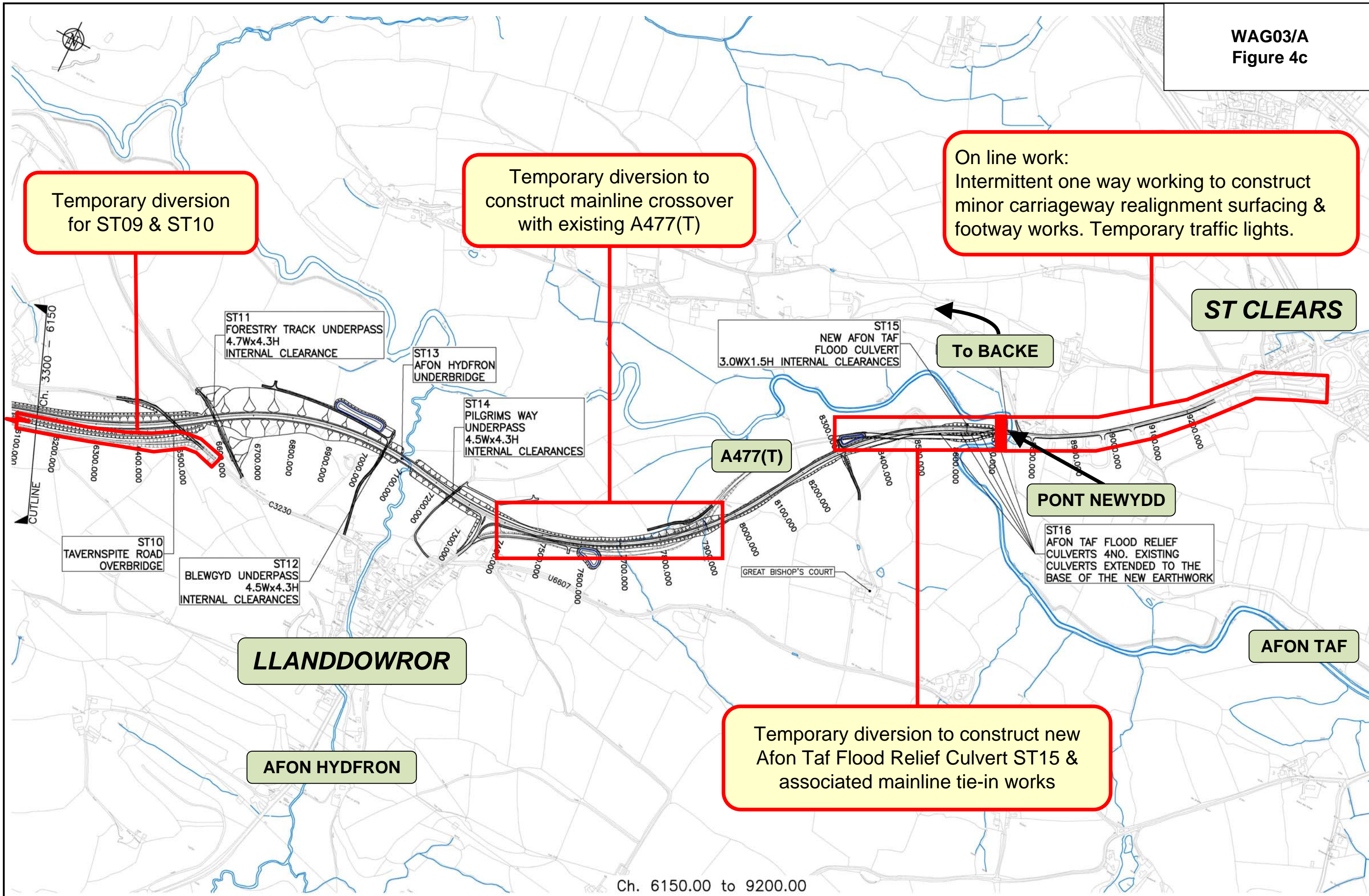
**INDICATIVE TRAFFIC
MANAGEMENT PROPOSALS**
(Sheet 1 of 3)



A477 ST. CLEARS
TO RED ROSES
IMPROVEMENT



**INDICATIVE TRAFFIC
MANAGEMENT PROPOSALS**
(Sheet 2 of 3)



Temporary diversion for ST09 & ST10

Temporary diversion to construct mainline crossover with existing A477(T)

On line work: Intermittent one way working to construct minor carriageway realignment surfacing & footway works. Temporary traffic lights.

ST CLEARS

To BACKE

PONT NEWYDD

LLANDDOWROR

AFON HYDFRON

A477(T)

AFON TAF

Temporary diversion to construct new Afon Taf Flood Relief Culvert ST15 & associated mainline tie-in works

Ch. 6150.00 to 9200.00



A477 ST. CLEARS TO RED ROSES IMPROVEMENT



INDICATIVE TRAFFIC MANAGEMENT PROPOSALS
(Sheet 3 of 3)

APPENDIX F
Air Quality Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX F
AIR QUALITY MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan.

This Air Quality Management Plan (AQMP) describes the management process, procedures and measures that will be employed to control, mitigate and monitor air quality emissions during the construction phase.

2. POTENTIAL IMPACTS

Sensitive Receptors

Sensitive receptors within 200m of the Project alignment include 48 properties which are predominantly residential. None of these properties are considered of the type that are most sensitive to dust nuisance e.g. hospitals and clinics; retirement homes; high tech industries; painting and furnishing; and food processing.

Four ecologically sensitive receptors were also identified within 200m of the Project alignment including areas of woodland, marshy grassland and the Carmarthen Bay and Estuaries Special Area of Conservation (SAC).

Potential Impacts

The air quality assessment identified a number of potential construction activities which have the potential to impact nearby sensitive receptors as detailed above. These comprised:

- Haulage routes, vehicles and construction plant;
- Materials handling, storage, stockpiling, spillage and disposal;
- Earthmoving, excavation, site preparation and restoration after completion; and
- Activities in the construction compound such as concrete batching plant, materials processing and use of a small waste quarantine area.

Dust impacts would be greatest in dry weather following long periods without rain and with the wind blowing towards sensitive receptors.

The significance of impact on NO₂ and PM₁₀ concentrations due to construction traffic was assessed and considered to be neutral requiring no mitigation.

3. PROCEDURES

The AQMP shall be adhered to throughout the construction phase to include preventive and precautionary methods of working and if necessary a mechanism through which abnormal or emergency situations are managed and addressed. The plan shall be enacted on all occasions,

whatever the source of information. However, the main mechanisms for identifying issues pertaining to air quality are as follows:

- The Environmental Clerk of Works shall undertake a site walkover on a weekly basis and make notes on Appendix U. These notes shall form the primary source of environmental auditing of the works;
- Visual inspections made as part of the weekly site walkovers and dust monitoring (requirement for which (if any) to be agreed with CCC) to alert of any detrimental effects particular construction activities may be having on nearby sensitive receptors and provide evidence of the effectiveness of management procedures on site;
- All site workers shall be given tool-box talks to enable them to understand the mechanism for reporting environmental incidents, and how to respond to emergency or abnormal situation with regards to air quality; and
- Site Supervisors shall be encouraged to identify potential pollution problems or concerns and report them to the Environmental Clerk of Works.

SRB will endeavour to implement the following hierarchy of control regarding emissions to air:

Step 1 Eliminate the Source – Construct the element using alternative means or methods of work to eliminate the potential for air pollution

Step 2 Mitigate and Reduce the Source – Reduce the emissions to air from source through plant selection and methods of work

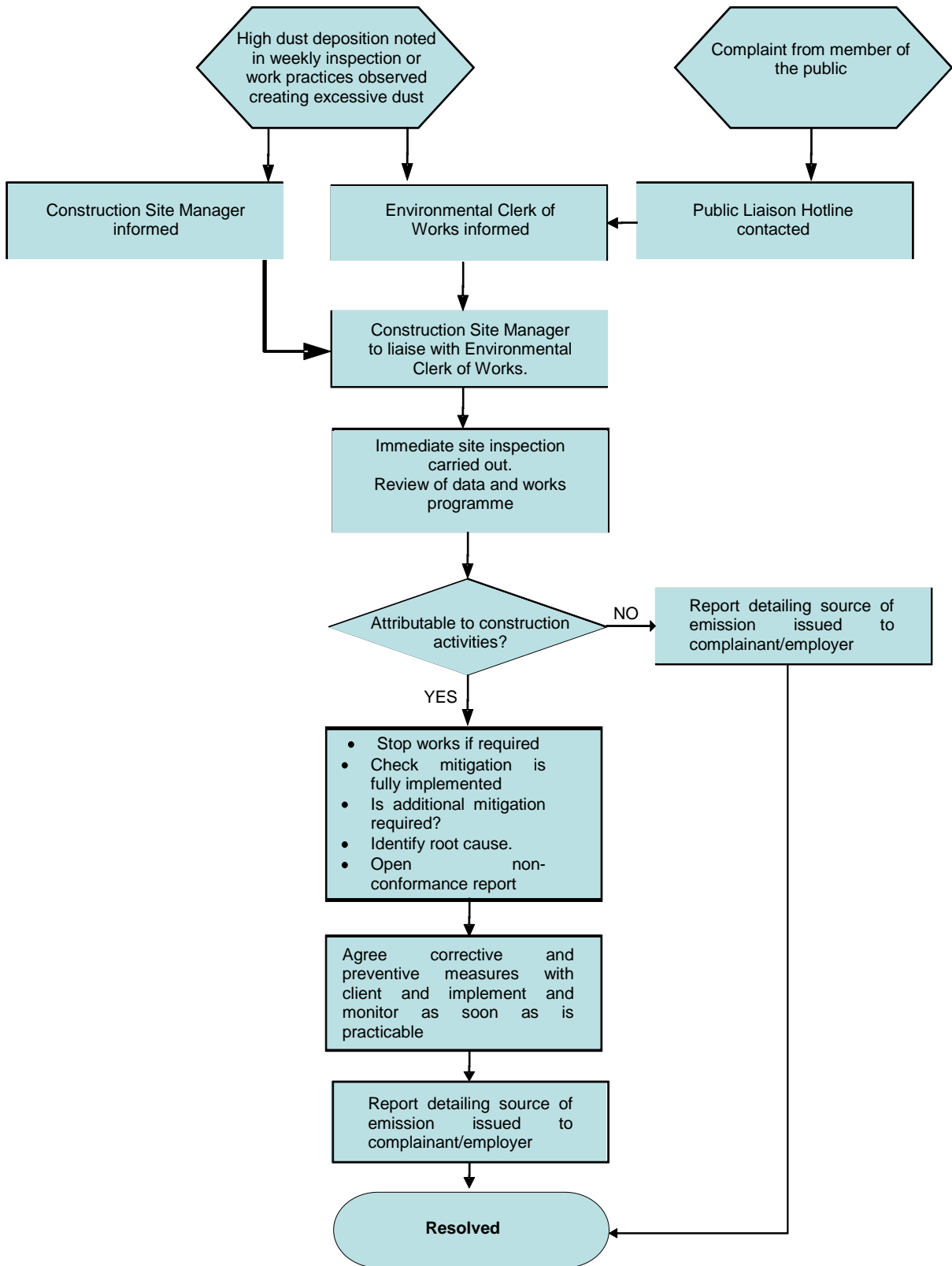
Step 3 Mitigate and Reduce the Source and/or the Receptor – Reduce the effect on the surrounding community.

Where monitoring (visual inspection) shows an abnormal situation i.e. a high level of dust deposition, a complaint is received from the public or working practices causing excessive dust are observed, and is not directly attributable to an external source, the management actions in Figure 1 will be initiated.

Should the source of the air pollution be attributable to a construction activity associated with the Works then measures will be undertaken immediately to mitigate the release of pollutants or the activity will cease until this can be achieved.

The root cause of any air pollution incident will be investigated and measures or corrective actions put in place in order to prevent its reoccurrence.

Figure 1: Flow diagram for dealing with an air quality pollution incident



4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Table 1: Staff Role and Responsibilities

Activity	Primary Role	Review Role	Authorisation Role
Identification of potentially polluting practices, activities or abnormal events	All on site	Env Manager	--
Initial visit- record of proposed actions	Environmental Clerk of works/ Env Manager	Environmental co-ordinator with input from Project Air Quality Specialist	Site Manager
Undertake corrective action/mitigation	Env Manager	Environmental co-ordinator	Site Manager
Follow up visit record – has corrective action (mitigation) been successful	Project Air Quality Specialist	Environmental co-ordinator	Site Manager
Liaising with relevant enforcement bodies and stakeholders where necessary e.g. CCC	Env Manager	Environmental co-ordinator	Site Manager
Feedback reason for incident and corrective actions to operatives and relevant project team members providing additional training etc if required preventing reoccurrence.	Env Manager	Environmental co-ordinator	Site Manager
Regular Site Inspection notes	Environmental Clerk of works	Environmental co-ordinator	Site Manager
Decide if formal monitoring is required and undertake	Env Manager	Environmental co-ordinator with input from Project Air Quality Specialist	Site Manager

5. LICENSES AND CONSENTS

The concrete batching plant has received authorisation by the local authority under the Environmental Permitting Regulations and subsequent monitoring of operations to ensure that the equipment is managed appropriately to reduce dust emissions.

If a screener or crusher is used on site they will be checked to ensure they have a mobile license issued to them from their local authority body.

6. MITIGATION MEASURES

Construction best practice will be used to minimise, as far as is appropriate dust generation to which nearby sensitive receptors will be exposed. This AQMP details construction activities and undertakings necessary to avoid or mitigate associated impact on surrounding sensitive receptors.

Details of the mitigation measures developed in response to the construction risks identified in the Environmental Statement are provided below in Table 2.

Table 2: Specified Mitigation Measures

Construction Risk	Mitigation Measure
Site planning	<ul style="list-style-type: none">• No bonfires or unauthorised burning of material anywhere on the site receptors• Maintain the haul roads
Construction traffic	<ul style="list-style-type: none">• Construction traffic and plant will be maintained in good working order and not left running when not in use.• Measures to mitigate site run off of water or mud• Wheel washing and water spraying will be used routinely to clean vehicles leaving the construction site and keep dust emissions low• Haul roads will be regularly cleaned and watered• An appropriate speed limit will be imposed on the site• Regular inspection of local highways and site boundaries will be undertaken, and cleaning of highways if necessary.
Site activities	<ul style="list-style-type: none">• Minimise dust generating activities• Use water as a dust suppressant where appropriate• Keep stockpiles for the shortest possible time and minimise their surface area.• Completed earthworks will be seeded to enable vegetation to establish as soon as is practicable• Ensure relevant authorisations are gained e.g. for concrete batching plant.

7. MONITORING SAMPLING AND ANALYSIS

Construction Phase Monitoring

Regular observations during the construction phase will:

- Alert the contractor to any detrimental effects that particular construction activities may be having on sensitive receptors in order that appropriate remedial action can be taken as quickly as possible; and
- Provide evidence that management procedures on site (for example dust suppression measures are working correctly).

The requirement for monitoring (and associated reporting) for specific activities with the potential to generate significant dust emissions will, if required following consultation with CCC be confirmed by the next scheduled review date as detailed in the CEMP (May 2012).

If dust starts to become a regular nuisance the Env Manager will review the need for formal monitoring. Dust monitoring can be carried out monthly during construction using Bergerhoff Dust Deposition Monitors, located at the closest sensitive receptors to the project. SRB propose to utilise the TA Luft limit of 350mg/m²/day over the existing background dust deposition rate as determined by baseline monitoring in the ES. Monitors will be collected monthly and sent to an appropriate laboratory for analysis.

8. REPORTING AND RECORDING

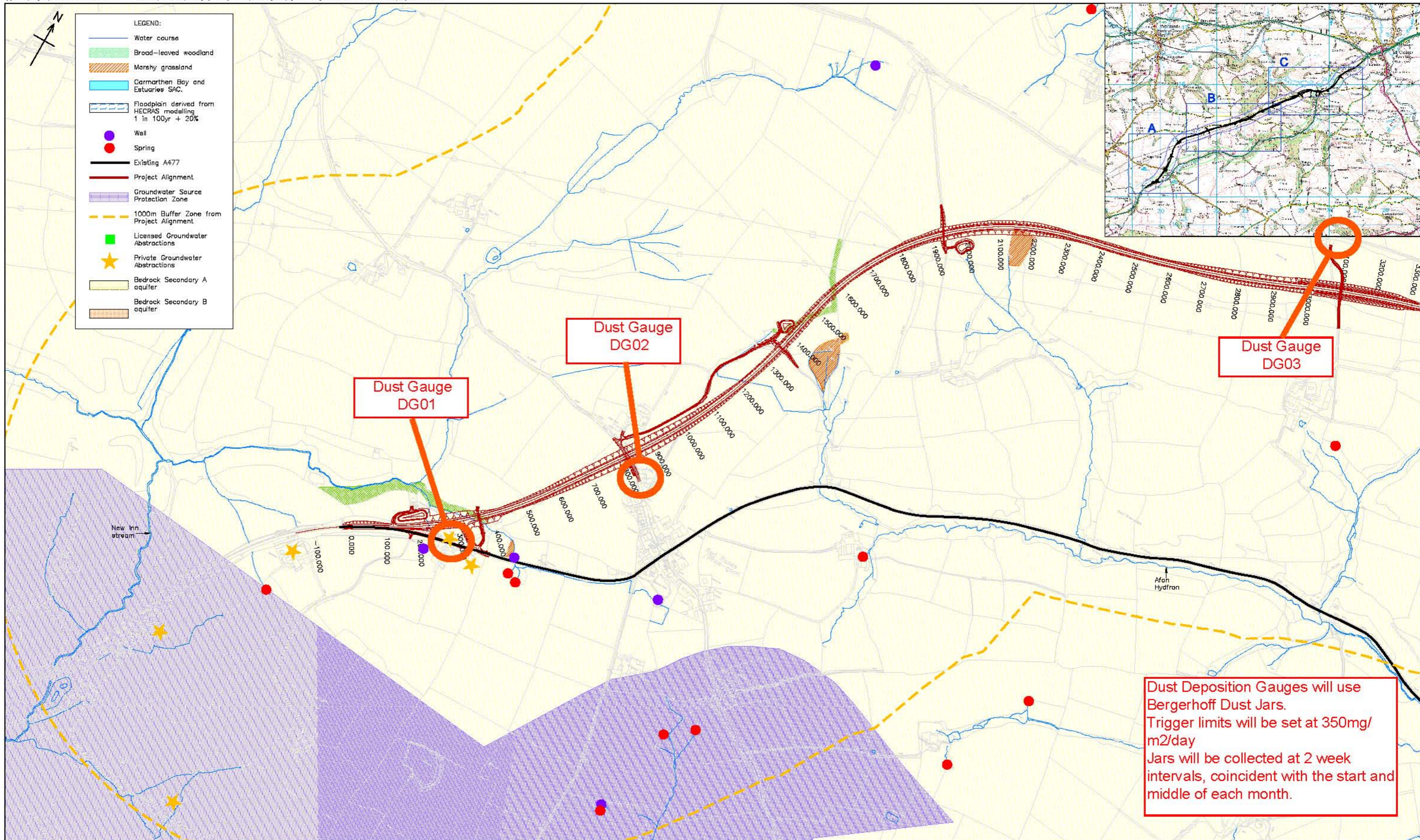
Construction Period Reporting

The results of the dust deposition observations will be routinely recorded and reported, unless the Environmental Clerk of Works deems emissions to be significant where immediate contact and/or meetings with the statutory bodies would be required.

Environmental Incident Reporting

Where high levels of dust deposition are noted during weekly inspections, construction practices generating excessive dust are observed or a complaint from the public received, this will be reported as soon as reasonably practicable. At this point, the actions proposed will also be notified to parties affected.

All reports shall be reviewed and signed off by the Project Air Quality Specialist and Environmental co-ordinator.



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right [2010]. All rights reserved. Welsh Assembly Government. Licence number 100017916.

Allgynhychwyd gan caniatâd yr Arolwg Ordnans ar ran Rheolwr Llyfrfa El Mawrhydl, © Hawlfraint y Goron a hawl gronfa ddata 2010. Cedwir pob hawl. Llywodraeth Cynulliad Cymru. Rhif trwydded 100017916.

Project

A477 St Clears to Red Roses Improvement

Client



Llywodraeth Cynulliad Cymru
Welsh Assembly Government





Hyder

Gifford

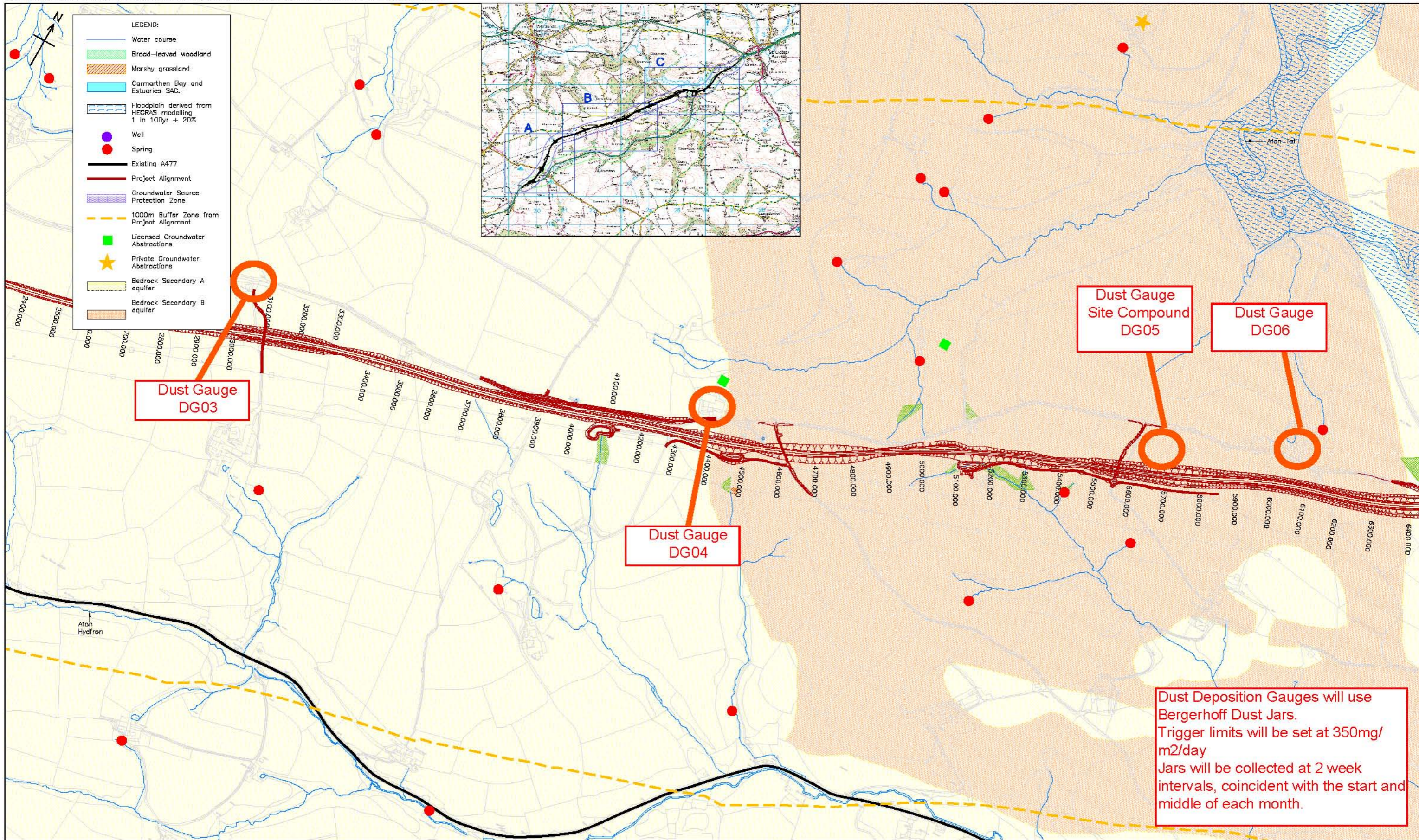
Design Office:

20 Nicholas Street
Chester
CH1 2NX

Tel : 01244 311855
Fax : 01244 314560

www.gifford.uk.com
mail@gifford.uk.com

Report Number: 16454-010	Report Title: Environmental Statement		
Figure Number: SK DGL 001	Figure Title: DUST GAUGE LOCATIONS		
Scale (Paper Size - A3): 1:10000	Project Number: 16454	Prepared By: RLH	Date: OCT 2010
		Revision: 1 -	



Dust Deposition Gauges will use Bergerhoff Dust Jars.
 Trigger limits will be set at 350mg/m²/day
 Jars will be collected at 2 week intervals, coincident with the start and middle of each month.

Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right [2010]. All rights reserved. Welsh Assembly Government. Licence number 100017916.

Allgynhychwyd gan caniatâd yr Arolwg Ordans ar ran Rheolwr Llyfrfa El Mawrhydl, © Hawlfraint y Goron â hawl gronfa ddata 2010. Cedwir pob hawl. Llywodraeth Cynulliad Cymru. Rhif trwydded 100017916.

Project

A477 St Clears to Red Roses Improvement

Client



Llywodraeth Cynulliad Cymru
Welsh Assembly Government






Gifford

Design Office:

20 Nicholas Street
Chester
CH1 2NX

Tel : 01244 311855
Fax : 01244 314560

www.gifford.uk.com
mail@gifford.uk.com

Report Number:
16454-010

Figure Number:
SK DGL 002

Scale (Paper Size - A3):
1:10000

Project Number:
16454

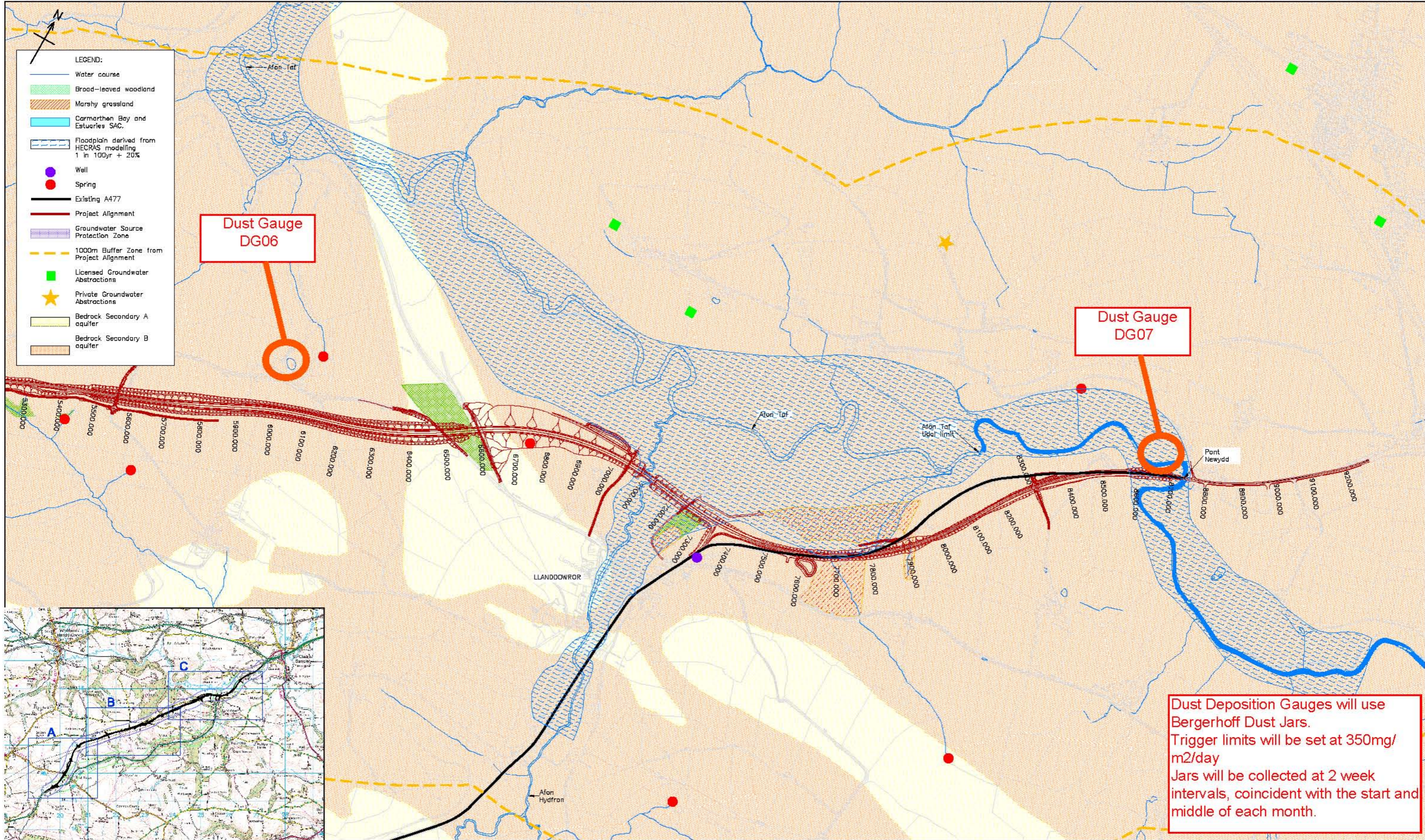
Report Title:
Environmental Statement

Figure Title:
DUST GAUGE LOCATIONS

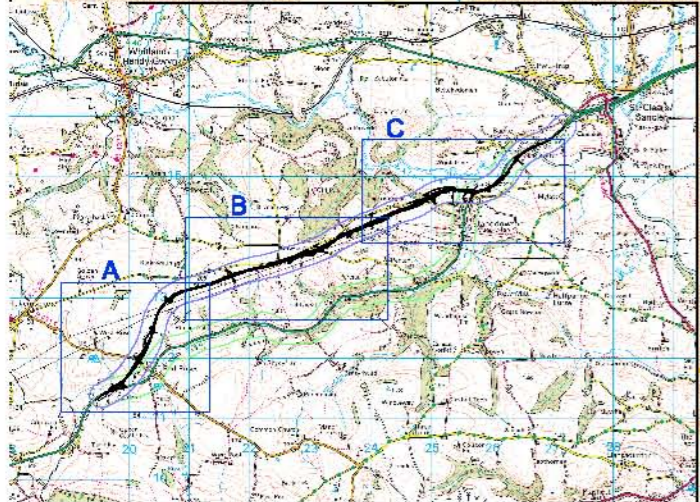
Prepared By: RLH

Date: OCT 2010

Revision: 1 -



Dust Deposition Gauges will use Bergerhoff Dust Jars.
 Trigger limits will be set at 350mg/m²/day
 Jars will be collected at 2 week intervals, coincident with the start and middle of each month.



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right [2010]. All rights reserved. Welsh Assembly Government. Licence number 100017916.
 Allgynhyrchwyd gan caniatâd yr Arolwg Ordnans ar ran Rheolwr Llyfrfa El Mawrhydl, © Hawlfraint y Goron a hawl gronfa ddata 2010. Cedwir pob hawl. Llywodraeth Cynulliad Cymru. Rhif trwydded 100017916.

Project
A477 St Clears to Red Roses Improvement

Client

 Llywodraeth Cynulliad Cymru
 Welsh Assembly Government

SRB Civil Engineering Limited
  
 ROADBRIDGE CIVIL ENGINEERING & BUILDING CONTRACTORS
 Gifford

Design Office:
 20 Nicholas Street
 Chester
 CH1 2NX
 Tel : 01244 311855
 Fax : 01244 314560
 www.gifford.uk.com
 mail@gifford.uk.com

Report Number:
 16454-010
Figure Number:
 SK DGL 003
Scale (Paper Size - A3):
 1:10000
Project Number:
 16454

Report Title:
 Environmental Statement
Figure Title:
 DUST GAUGE LOCATIONS
Prepared By: RLH
Date: OCT 2010
Revision: 1 -

APPENDIX G
Acoustics Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX G
NOISE AND VIBRATION MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan.

This Noise and Vibration Management Plan (NVMP) describes the management process, procedures and measures that will be employed to control, mitigate and monitor noise & vibration emissions during the construction phase. This plan should also be read together with the Blasting Management Plan/ method statement which will be available prior to blasting works commencing.

2. POTENTIAL IMPACTS

Sensitive Receptors

Sensitive receptors identified in the environmental assessment were predominantly residential. Non residential receptors include Llanddowror Church, cafés and public houses. The nearest properties to the project alignment considered as sensitive receptors which have potential to be impacted by construction activities are detailed below along with their distance from the new road alignment.

Property	Distance from New Road (m)
Derlwyn Taf	36
Coldwell	42
Cnwce	51
The Cedars	60
Kiribass	82
Rose Park	83
Rose End	84
Cilfynydd	86
Bryn Hyfryd	86
Bryntaf	87
2 Rose End	99

Ecological sensitive receptors were also identified. Potential goshawk nesting areas have been identified within 500m of the proposed alignment. The species has nested and is likely to nest in the vicinity of the Project (at Coed Old Pale) and therefore construction works (which will include use of mechanical plant in rock excavation and piling for bridge construction) may disturb the species.

A clear span bridge is proposed over the Afon Hydfon. Construction works at this location may result in disturbance to the species using the river e.g. Lamprey spawning impacted through vibration from piling.

Potential Impacts

The noise and vibration assessment identified a number of potential construction activities which have the potential to impact nearby sensitive receptors as detailed above. These comprised:

- Blasting;
- Mechanical excavation;
- Piling;
- Ripping; and
- Earthworks.

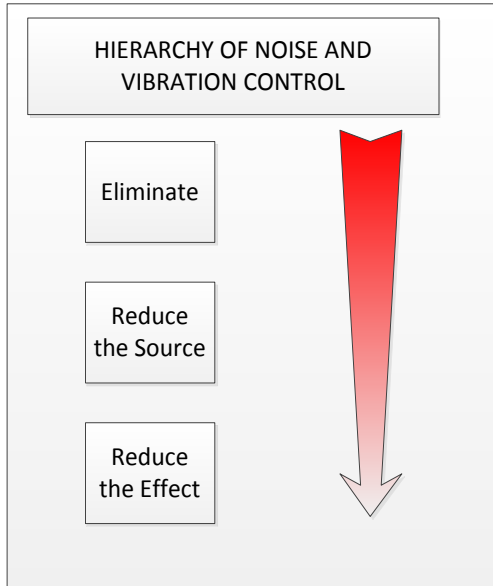
Further potentially significant noise and vibration impacts were identified associated with the proposed construction compound.

3. PROCEDURES

This NVMP shall be adhered to throughout the construction phase and includes preventive and precautionary methods of working and a mechanism through which abnormal or emergency situations are managed and addressed. The plan shall be enacted on all occasions, whatever the source of information. However, the main mechanisms for identifying issues pertaining to noise and vibration are as follows:

- The Environmental Clerk of Works shall undertake a site walkover on a weekly basis and make notes based on guidance in Appendix U. These notes shall form the primary source of environmental auditing of the works;
- Noise and vibration monitoring will identify any detrimental effects particular construction activities may be having on nearby sensitive receptors and provide evidence of the effectiveness of management procedures on site;
- All site workers shall be given tool-box talks to enable them to understand the mechanism for reporting environmental incidents, and how to respond to emergency or abnormal situation with regards to noise and vibration; and
- Site Supervisors shall be encouraged to identify potential pollution problems or concerns and report them to the Environmental Clerk of Works.

SRB will implement Best Practicable Means as defined in the Control of Pollution Act 1974 to control the noise and vibration nuisance from construction activities. The following hierarchy of control regarding noise and vibration will be implemented:



Step 1 Eliminate the Source – Construct the element using alternative means or methods of work to eliminate the potential for noise and vibration pollution

Step 2 Mitigate and Reduce the Source – Reduce the noise and vibration from source through plant selection, screening, enclosed machinery and methods of work

Step 3 Mitigate the noise and vibration levels at the Source and/or at the Receptor – Reduce the effect on the surrounding community through suitable hours of work and phasing or acceleration of localised works to minimise duration of noisy or high vibration activities likely to cause an impact.

When noise or vibration pollution is attributable to a construction activity associated with the Works then measures will be undertaken immediately to mitigate the noise or vibration or if this is not possible the activity will cease until this can be achieved.

Where noise or vibration monitoring shows an abnormal situation which is beyond the thresholds established prior to construction, a complaint received from the public or excessively noisy working practices observed, and is not directly attributable to an external source, the management actions in Figure 1 will be initiated.

The root cause of any noise pollution incident will be investigated and measures or corrective actions put in place in order to prevent its reoccurrence.

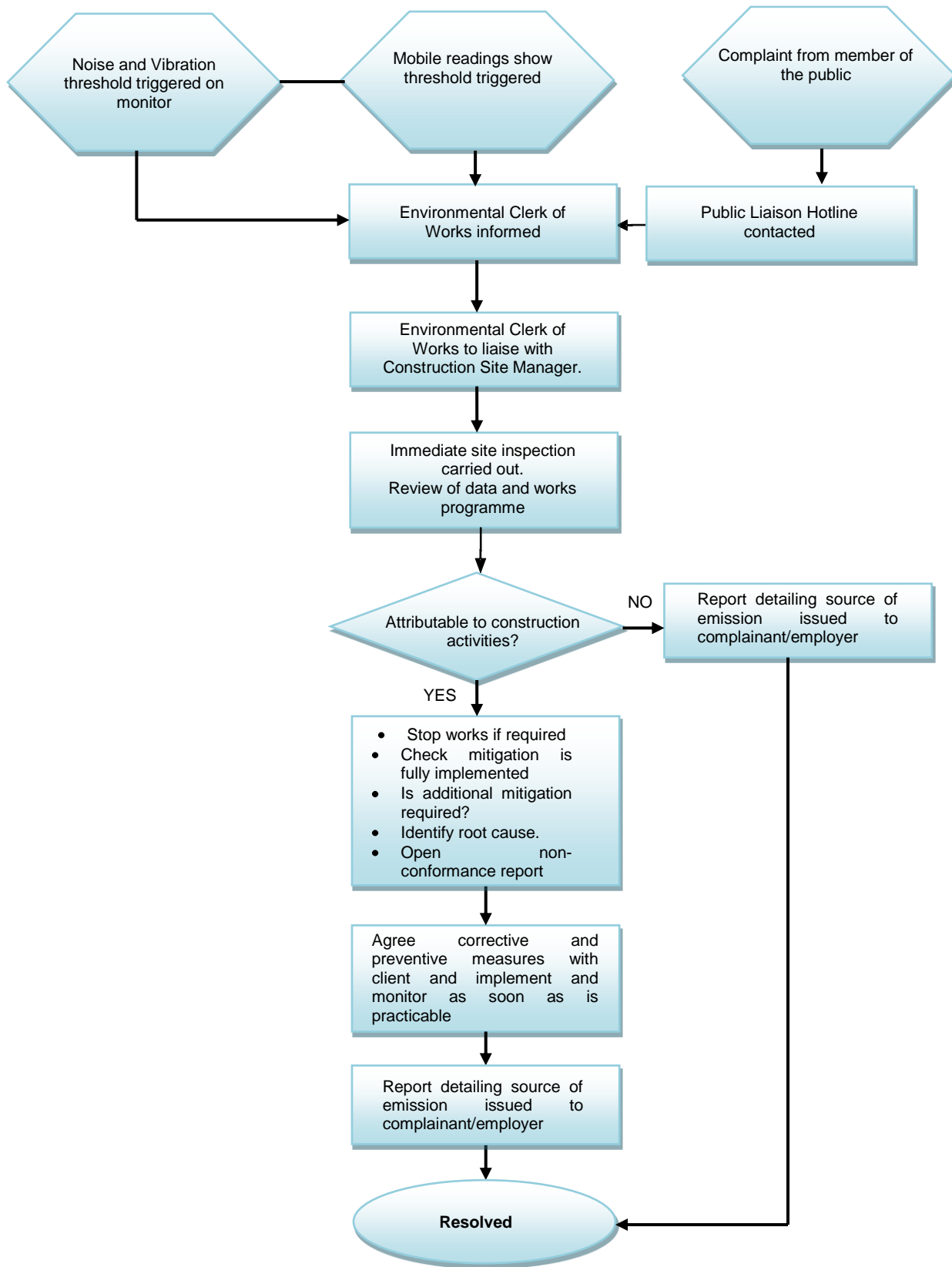


Figure 1: Flow diagram for dealing with a noise and/or vibration pollution incident

4. ROLES AND RESPONSIBILITIES

The following details the staff roles and responsibilities for works under this plan:

Table 1: Staff Role and Responsibilities

Activity	Primary Role	Review Role	Authorisation Role
Identification of potentially noisy practices, activities or abnormal events	All on site	--	--
Initial visit- record of proposed actions	Environmental Clerk of works/ Env Manager	Environmental co-ordinator with input from Project Noise and Vibration Specialist	Site Manager
Baseline Monitoring	Env Manager	Environmental co-ordinator with input from Project Noise and Vibration Specialist	-
Undertake corrective action/mitigation	Env Manager	Environmental co-ordinator	Site Manager
Follow up visit record – has corrective action (mitigation) been successful	Environmental Clerk of works with input from Project Noise and Vibration Specialist	Environmental co-ordinator	Site Manager
Liaising with relevant enforcement bodies and stakeholders where necessary e.g. CCC	Environmental co-ordinator/ Env Manager	--	Site Manager
Feedback reason for incident and corrective actions to operatives and relevant project team members providing additional training etc if required preventing reoccurrence.	Env Manager	Environmental co-ordinator	Site Manager
Regular Site inspection notes	Environmental Clerk of works	Environmental co-ordinator	Site Manager

5. LICENSES AND CONSENTS

No prior consent licenses are required for the control of noise and vibration. Carmarthenshire County Council have been consulted and they do not require any section 61 agreement at this

stage. Should a section 61 agreement be required in the future then the following section sets out the process.

Section 61 Consent

The Control of Pollution Act 1974 Section 61 sets out procedures for those undertaking works to obtain 'Prior Consent' for construction works within agreed noise limits.

A Section 61 is a formal agreement between a contractor undertaking noisy construction activities and the local authority. Applications for such consent are made to the relevant local authority and should contain a method statement of the works and the steps to be taken to minimise noise.

Under Section 60 of the Act, the local authority has powers to attach conditions to any consent, limit or qualify any consent to allow for changes and limit the duration of any consents. It should be noted that although it is generally for those undertaking the works to decide whether or not to seek such consent, this is also dependent on the custom and practice of the local authority. Some local authorities request demonstration of best practicable means rather than formal "Prior Consent" applications. Carmarthenshire County Council (CCC) have expressed that they would prefer informal arrangements.

Should it be required in future the application for the Section 61 is made at least 28 days prior to work commencing and allows the contractor and Local Authority to agree noise limits and hours of work for a project operating near to sensitive receptors. If the Local Authority agrees to the Section 61 consent and the work is undertaken in a manner that complies with the agreed terms, the contractor will be protected from Local Authority action under Section 60 of the Control of Pollution Act 1974 or Section 80 of the Environmental Protection Act 1990.

Compliance with the Section 61 Agreement is usually demonstrated via direct noise measurements at representative noise sensitive receptors or proxy locations during the course of the noise generating activities for which the consent is granted.

6. MITIGATION MEASURES

Current best practice will be used to minimise, as far as is appropriate, the level of noise to which operators and other Noise-Sensitive Premises (NSP) in the neighbourhood of site operations will be exposed. This NVMP details construction activities and undertakings necessary to avoid or mitigate associated impact on surrounding sensitive receptors.

Construction activities will employ the principle of 'Best Practicable Means' (BPM) as defined in the Control of Pollution Act 1974 and adhere to the requirements of British Standard BS 5228-1:2009.

Details of the mitigation measures developed in response to the construction risks identified in the Environmental Statement are provided below in Table2.

Table 2: Specific Mitigation Measures

Aspect	Impact	Mitigation Measure
Sensitive Receptors	Impact of construction activities on Residential and non residential properties	<ul style="list-style-type: none"> • Restrict noisy activities to less sensitive hours of the day (09.00 – 19.00 hrs) • Site work continuing throughout 24 hours of a day will be programmed, when appropriate to minimise the potential for haulage vehicles to arrive at or leave the site between 1900hrs and 0700hrs. • Where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant and application of economy and speed of operations. • Avoid unnecessary revving of engines and switch off equipment when not required. • Keep internal haul routes well maintained and avoid steep gradients. • Temporary noise barriers and placement of spoil and material heaps to form barriers. • Acoustic enclosures around equipment where feasible e.g. pumps , generators. • Minimise drop height of materials. • Audible reversing warning systems on mobile plant and vehicles should be of a type which, whilst ensuring that they give proper warning, has a minimum noise impact on persons outside the construction sites. • Piling will be allowed using only recognised noise reducing systems and only during standard working hours (0900hrs to 1900 hrs) • Keep noisy plant as far away as possible from sensitive receptors. • Haul routes will where possible be located away from sensitive receptors. • Where reasonably practicable, low vibration working methods will be employed. • Vibration will be controlled at source and the spread of vibration will be limited as far a reasonably practicable. • Where processes could potentially give rise to significant levels of vibration, on-site vibration levels will be monitored regularly by a suitably qualified person appointed specifically for the purpose. • Construction plant will be listed and BS 5228 specified or appropriate alternative data should be referenced for the sound power levels of the plant. In addition, construction equipment details will be confirmed to meet the relevant EC Directive

Aspect	Impact	Mitigation Measure
Sensitive Receptors	Impact of construction activities on Potential goshawk nesting sites	The work will be phased to avoid disturbance impacts which could result in failed breeding. Construction activities being carried out within 500m of potential goshawk nesting areas (i.e. chainages 4000-6100) will begin by the middle of February. These activities will have noise characteristics typical of those that will be experienced in the works in the period February to July and work will be planned so that there is a continuous level of activity/noise throughout this period. This ongoing noise from before the start of the breeding season will mean that goshawks will either choose to nest within 500m of the Project in the prevailing conditions or choose to nest elsewhere outside this disturbance zone.
Sensitive Receptors	Impact of construction activities River ecosystem e.g. lamprey	The piles for the bridge will be installed in the river bank using vibratory hammers and rotary drilling and therefore the work avoids the need to use percussion piling. The vibro piling will be of short duration over no more than two days and as a result works are not predicted to have a significant effect on fish spawning or fish populations. Legislative requirements would be met by the proposed approach.
Construction workers	Noise from construction activities	On those parts of a site where high levels of noise or vibration are likely to be a hazard to persons working on the site, prominent warning notices should be displayed and, where necessary, ear protectors should be provided. When potential noise problems have been identified, or when problems have already occurred, consideration should be given to the implementation of practicable measures to avoid or minimize those problems.

Noise from blasting operations is a special case and can under some circumstances give rise to concern or even alarm to persons unaccustomed to it. Noise and vibration abatement measures during blasting will comply with the recommendations of BS5228 and European regulations. The adoption of good blasting practices will reduce the inherent and associated impulsive noise: prior warning to members of the public, individually if necessary, is important. Blasting can be an emotive issue for residents around the site. Full details of management of blasting operations will be provided by a specific plan prior to these works commencing. The following mitigation measures will be undertaken:

- i Good liaison between operator and residents to prevent unnecessary anxiety.
- ii Wherever possible, the operator should inform each resident of the proposed times of blasting and of any deviation from this programme in advance of the operations.
- iii On each day that blasting takes place it should be restricted as far as practicable to regular periods.
- iv Blast-hole drilling can cause excessive noise emissions, particularly when carried out at or near ground level and close to the site boundary.

v The choice of appropriate drilling rigs, such as down-the-hole hammers or hydraulic drifters as opposed to compressed air drifters, will reduce the impact of noise emissions from this activity.

vi Each blast will be carefully designed to maximize its efficiency and reduce the transmission of noise. Particular attention will be paid to the initiation when using detonating fuse on the surface which can cause problems associated with air overpressure. On-site noise levels will be monitored regularly, particularly if changes in machinery or Project designs are introduced, by a suitably qualified person appointed specifically for the purpose.

7. MONITORING SAMPLING AND ANALYSIS

Baseline Monitoring and Thresholds

Prior to construction, noise monitoring will be required to establish baseline levels. Some baseline data is available in the ES and this should be confirmed prior to works starting. Using these data and giving appropriate regard for relevant guidance e.g. B5228-1:2009, thresholds will be set to establish what constitutes abnormal conditions. During the construction phase, monitoring of noise and vibration will continue to enable any pollution incidents or abnormal events to be identified and the effectiveness of pollution mitigation measures to be evaluated.

Consultation will continue with CCC regarding the noise and vibration monitoring to be undertaken for sensitive receptors that will be affected by construction or associated works. The frequency of sampling, thresholds, locations and timescales for reporting will be agreed with CCC.

Construction Phase Monitoring

Throughout the contract the supervision of the works will include ensuring compliance with the suggested noise limits using the methods described in BS5228.

Monitoring will continue during the construction period in order to:

- Alert the contractor to any detrimental effects that particular construction activities may be having on sensitive receptors (based on the thresholds adopted) in order that appropriate remedial action can be taken as quickly as possible; and
- Provide evidence that management procedures on site (for example temporary noise barriers are working correctly).

The construction phase monitoring regime was agreed with CCC and is minuted as:

Noise and vibration monitoring as appropriate would be undertaken using mobile monitors at sensitive properties during significant phases of the works.

Table 3 provides the currently agreed noise limits with CCC for construction activities.

Table 3: Construction Noise Limits

Assessment Category and Threshold Value Period (L_{Aeq})	Threshold Value - in decibels (dB)		
	Category A see (a) below	Category B see (b) below	Category C see (c) below
Night-time (2300 to 0700hrs)	45	50	55
Evenings and weekends D)	55	60	65
Daytime (0700 to 1900 hrs) and Saturdays (0700 1300hrs)	65	70	75

Note1: A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

Note 2: If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3 dB due to construction activity.

Note 3: Applied to residential receptors only.

- (a) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- (b) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values.
- (c) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.
- (d) 1900 to 2300hrs weekdays, 1300 to 2300hrs Saturdays and 0700 to 2300hrs Sundays.

There are currently no British Standards that provide a methodology to predict levels of vibration from construction activities, other than those contained within BS5228, which relates to percussive or vibratory piling only. Consequently, the impact of vibration will be reduced by the use of Best Practicable Means such as those detailed in Table 2.

8. REPORTING AND RECORDING

Pre-Construction Reporting

Some limited baseline noise data has been collated in the period leading up to the construction of the Project in the form of measurements surveys and modelled data. Further baseline monitoring will be undertaken. This information has informed the mitigation and provides a baseline against which the effects of construction and success of the mitigation implemented will be measured.

Construction Period Reporting

The results of the noise and vibration monitoring will be routinely reported, unless trigger levels are breached where immediate contact and/or meetings with the statutory bodies would be required.

Exceedence of Trigger Values Reporting

Where any exceedence of defined trigger values occurs, this will be reported as soon as reasonably practicable. At this point, the actions proposed will also be notified to parties affected.

All reports shall be reviewed and signed off by the Project Noise and Vibration Specialist and Environmental co-ordinator.

APPENDIX H
Archaeology Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX H
ARCHAEOLOGY MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement (Project).

These plans shall be implemented throughout the construction phase of the works for the Project. They form part of the site management procedures as defined in the Project Quality Plan.

This plan provides procedures for the management of archaeology and cultural heritage during Construction.

2. POTENTIAL IMPACTS

A robust series of assessments were undertaken during the preparation of the Environmental Statement and Reference Design to identify and understand the potential impact of proposed works on both the archaeological and cultural heritage resource. These were examined at the Public Local Inquiry. The assessment works undertaken included, but were not limited to, a walkover survey, targeted geophysical surveys and examination of third party data (e.g. the local Historic Environment Record, data held by Cadw, historic maps and aerial photographs).

The assessment was reported in Chapter 6 of the Environmental Statement and identified that the Project would result in:

- The loss of part of one Scheduled Monument at Dol Garn;
- Potential changes to the structure / character of Pont Newydd Grade II Listed Bridge;
- Potential impacts on complex prehistoric / early Roman remains in the area of the Project to the north of Vaynor Farm;
- Impacts on potential archaeology dating to the medieval in the location of Llanddowror Castell;
- Loss of two early 20th century animal sheds;
- Impacts within the area of thirteen known or potential receptors (combined together in seven groups).
- The potential for palaeo-environmental evidence and palaeo-channels in the Afon Taf floodplain and localised patches of waterlogged / boggy areas across the Project [Unknown Archaeological Potential]; and
- A low to negligible potential for the recovery of low complexity agricultural remains along the line of the scheme [Unknown Archaeological Potential].

3. PLANS AND PROCEDURES

3.1 Known Archaeology / Cultural Heritage Receptors

Dol Garn

Dol Garn is a Scheduled Monument; the southern side of which will be lost during road construction. Geophysics has indicated that the extent of archaeological remains may be less on the southern side of the scheduled area/road than on the north. It is proposed that an archaeological investigation is undertaken at this site, under the supervision of the Project archaeologist and in accordance with Scheduled Monument Consent gained from Cadw. A detailed plan of investigation, reporting and restoration of the site will be included in the Scheduled Monument Consent.

Pont Newydd

Pont Newydd is a Grade II Listed bridge crossing the Afon Taf to the west of St. Clears. As part of consultation discussions with the local authority conservation officer it was identified that the proposed works may result in impacts on the character / structure of the bridge. It was also confirmed that it would be necessary to submit a Listed Building Consent Application, part of which would require the progression of investigation works, undertaken in line with agreements to be made with the local authority and under the supervision of the Project archaeologist.

Works to the North of Vaynor Farm (including Main Compound)

Geophysical surveys have indicated that a range of features, potentially dating to the prehistoric period, may be present to the north of Vaynor Farm, including in the location of the compound site; these could potentially be associated with activity around the nearby Neolithic Henge at Vaynor Farm. It is proposed that a programme of archaeological evaluation trenches be progressed prior to construction works, under the supervision of the Project archaeologist, to understand and define the archaeological resource in this area. This may be followed by a mitigation strategy of archaeological led topsoil strip, map and sample works during construction works. The reports of this work will be interpreted and discussed with Cadw and the Carmarthenshire County Council Archaeological Advisor. Where necessary, protection measures will be put in place prior to use of the site as a compound and the management plan shall be updated at that time.

Llanddowror Castell motte

Geophysical surveys in and around Llanddowror Castell at the motte showed little activity believed to be of archaeological significance. Based on discussions with the Carmarthenshire County Council Archaeological Advisor it was decided that, within the footprint of proposed works around the 'motte' of Llanddowror Castell, archaeological evaluation trenching would be implemented. This will be progressed under the supervision of the Project archaeologist, enabling a determination of the survival and significance of archaeological remains in this area prior to construction works. The results will be discussed with the Carmarthenshire County Council Archaeological Advisor, to determine whether mitigation works are required and, if mitigation works are necessary, this management plan shall be updated at that time.

Animal Sheds

In the central section of the Project are two brick built animal sheds with concave corrugated metal roofs. The structures are Nissen Huts, which were prefabricated steel structures made from a half-cylindrical skin of corrugated steel. Patented in 1916 they were constructed on-masse during World War I and, while their popularity declined during the inter-war period there was a similar boom in production from 1939 throughout World War II. These structures have some limited historic value and the Environmental Statement recommended basic building recording of the structure prior to demolition.

Thirteen Other Archaeological Sites (grouped into seven)

In addition to the sites mentioned above a number of additional sites containing known / potential archaeology were identified in the Environmental Statement. It was proposed that these areas initially be subject to geophysical survey, under the supervision of the Project archaeologist, This will enable an understanding of the survival, form, extent and significance of below ground archaeological deposits, with the results being used to define a suitable mitigation strategy, in consultation with the Carmarthenshire County Council Archaeological Advisor. If necessary, this management plan shall be updated at that time.

3.2 Unknown Archaeological Potential

Despite the volume of work undertaken in the Environmental Statement, there are still gaps in the understanding of the below ground archaeological resource of the area, particularly with respect to the upland off-line section of the road between Llanddowror and Red Roses, as well as the utilisation of the floodplain of the Afon Taf and the edges of this area. This is evidenced by the discovery of a previously unknown Neolithic henge during recent pipeline works to the south of the Project in the area of Vaynor Farm.

The Environmental Statement concluded that there remained a low to negligible potential for the recovery of localised areas of previously unknown archaeological deposits. While such remains are most likely to be low complexity, associated with the post-medieval agricultural activity in the wider area, there still exists the possibility that previously unknown remains of a higher significance may be disturbed during construction works. Such disturbance is most likely to occur during initial site clearance and earthworks.

To manage the potential discovery of unknown archaeology during construction works, in areas outside of those discussed above, a controlled archaeological watching brief shall be implemented along the line of the Project alignment, during topsoil strip, outside areas of modern disturbance, to ensure that unknown archaeological remains are identified and not destroyed without record. Where remains of significance are identified this would require ring-fencing of the area to provide sufficient time for the mitigation of impacts (including, where necessary, full excavation of remains).

In addition, the Environmental Statement identified an unknown potential for the recovery of Palaeo-environmental evidence and Palaeo-channels in the Afon Taf floodplain and localised patches of waterlogged / boggy areas across the Project. To mitigate potential impacts on such evidence it is recommended, where intrusive works are planned in the Afon Taf floodplain and at a natural hollow to the east of Cilfynydd Farm, that a number of 2m x 2m test pits be opened in advance of any new groundworks in such areas (outside of existing development), to establish whether such evidence survives and to guide the

development of a mitigation strategy, in consultation with the Carmarthenshire County Council Archaeological Advisor.

The above procedures shall be managed by the Project Archaeologist.

Where suspected archaeological deposits are unexpectedly identified outside of the scope of the above works they shall be subject to the procedure for dealing with unexpected archaeology as documented in Annex 2.

3.3 Actual archaeology Found

Since starting earthworks at the site, the entire route of the project alignment has been subject to archaeological investigation, comprising additional geophysics surveys, controlled watching brief, general watching brief and detailed strip map and sample at several locations. A large volume of archaeological resources were discovered, including a Bronze Age burial complex of national significance.

Samples have been removed for archaeological examination, analysis, and recording. These works will be undertaken in agreement with the Welsh Government and under the management of the Project Archaeologist.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Archaeological Works at Dol Garn Scheduled Monument and Gaining Scheduled Monument Consent	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Historic Building Recording Works at Pont Newydd Bridge and Granting of Listed Building Consent	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Archaeological Works at Main Compound / Vaynor Farm	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Archaeological Works around Llanddowror Castell	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Historic Building Recording of Animal Sheds	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Geophysical Survey of known and potential archaeological sites	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Scheme Wide Archaeological Watching Brief	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager
Sign off areas for construction	Archaeological	Project	Curator

	Contractor	Archaeologist	
Ensure no works commence in areas not signed off or without license	Env Manager	Environmental Clerk of Works	Environmental Coordinator
Post Excavation analysis	Archaeological Contractor	Project Archaeologist	Environmental Coordinator/Site Manager

5. MONITORING SURVEY AND ACTIONS

5.1 Coverage

The Plan covers all areas of temporary and permanent works.

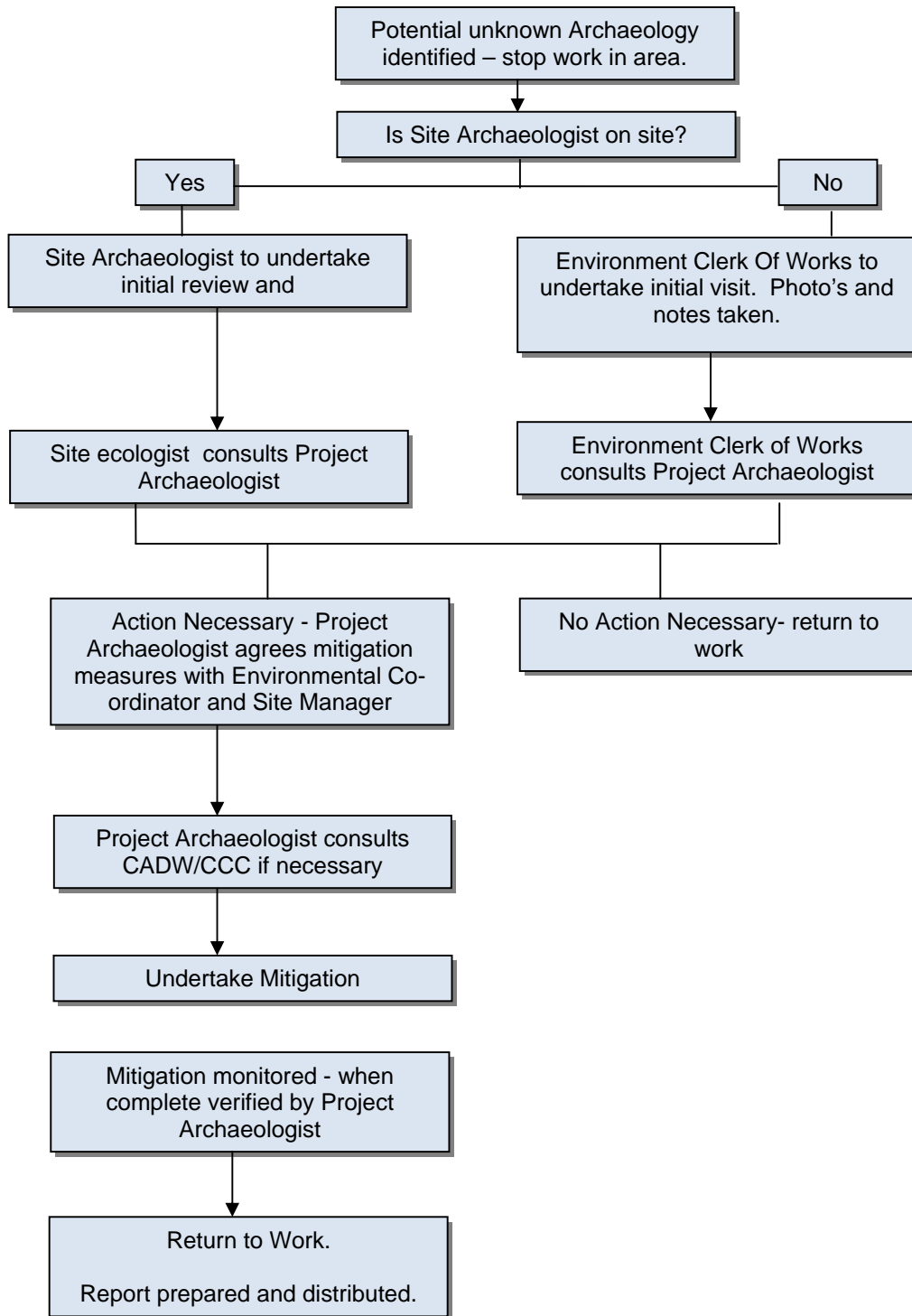
6. RECORDING

6.1 Reporting

All archaeology reports shall be reviewed and signed off by the Project Archaeologist and the Site Manager.

As areas of work are signed off and become available for construction the form in Appendix H will be used as a record.

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX H ANNEX 1
ARCHAEOLOGY MANAGEMENT PLAN
UNKNOWN ARCHAEOLOGY PROCEDURE**





**A477 ST CLEARS TO RED ROSES IMPROVEMENT
Construction Environmental Management Plan
Archaeological and Ecological Sign Off**

Location (Chainage, from-to).	Ecology/Archaeology Sign Off
Description of Works	
Summary of any Mitigation Undertaken and Overview of Results	Map of signed off area attached (delete one)
	Yes / No
	Confirm no outstanding issues (delete one)
	Yes / No
	Sign off agreed with relevant regulatory authority (delete one)
	Yes / No
	SRB Ramboll Signature (below)
	Ramboll:
	SRB:

Signed off as clear for construction by relevant regulatory authority (please define)

Name.....

Role / Organisation.....

Date.....

APPENDIX I
Protected Species Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX I
PROTECTED SPECIES MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement. (Project)

These plans shall be implemented throughout the construction phase of the works for the Project. They form part of the site management procedures as defined in the Project Quality Plan.

This plan provides procedures for the management of protected species within the permanent or temporary works areas during construction. This plan does not cover invasive species as separate plans cover these elements. A separate plan is also provided for unexpected protected or rare species.

2. POTENTIAL IMPACTS

The Environmental Statement (ES) and Statement to Inform Appropriate Assessment (SIAA) for the Project included a detailed assessment of existing third party information on the ecology of the area. It also contained significant surveys for specific protected and rare species over a multi-year period. These surveys continued in 2011 and 2012.

As part of the ES and the SIAA the potential impact on protected species was identified. This included:

- Loss of two Badger main setts and closure of a number of outlier setts. Severance of badger foraging areas.
- Loss of two bat roost trees and severance to foraging areas (NB following publication of the ES one of the two bat roost trees was removed by a third party);
- Loss of reptile habitat;
- Effects on otter; and
- Potential effects on nesting Goshawk.

Surveys in advance of site clearance have identified the presence of dormouse on the site.

Mitigation is being provided for badgers (for which a licence application to close setts will be made), dormouse and bats (European Protected Species Licenses have been applied for to permit impacts on dormouse and the remaining bat roost). A method statement has been prepared to cover reptile capture and relocation. Method statements have been provided to minimise impacts on otter and goshawk.

The location of all protected species have been shown on the Site Clearance drawings (16454-H-200-01 to 015)) which show (for instance) the location of badger setts and bat roosts within the Permanent and temporary works areas. In addition, the Existing Vegetation Design (16454-H-3000-01 to 015) shows some of these features.

3. PROCEDURES

The appendices to this plan found in Appendix P contain the following:

1. A copy of the Badger license (to be appended when received);
2. A Badger Method statement;
3. A copy of the dormouse license (to be appended when received);
4. A dormouse Method statement;
5. A copy of the Bat License (to be appended when received);
6. The bat method statement;
7. The otter method statement;
8. The Goshawk method statement; and
9. The reptile method statement.

The main procedures for the avoidance of impacts on, and protection of protected species are contained within each of the method statements. Each method statement shall be enacted on site as, and when, required. Most notably this will be during site clearance, erection of boundary fencing, erection of the temporary crossing of the Afon Hydfron, construction of the embankment across the Afon Taf and Afon Hydfron floodplains and construction of the new flood alleviation culvert. The roles and responsibilities for the implementation of the protected species method statements are given below.

As part of the main landscape and ecological design, the ES identified a range of ecological mitigation to be implemented to reduce impacts on the site ecology, and to enhance the ecological value of the final design. This included:

- Creation of landscape and ecological mitigation areas in isolated plots of land adjacent to the main alignment;
- Creation of new habitat alongside the main alignment;
- Movement of existing lichen and bryophyte habitat;
- Translocation of 1200m of important hedgerows;
- Construction of two artificial badger setts
- Construction of two artificial otter holts;
- Erection of bat and bird boxes (including in/on new structures);
- Erection of "deadwood";
- Erection of artificial refugia and log piles.

The Environmental Co-Ordinator shall ensure that mitigation identified in the Commitments register (from the ES and SIAA) is included in the detailed design and implemented/constructed on site. As part of the detailed design, the Project ecologist shall identify the ecological objectives for the landscape planting scheme and will document these, along with a timeline showing when these objectives are likely to be achieved.

The Environmental Clerk of Works and the Environmental Co-Ordinator shall ensure that temporary mitigation is included in the detailed design and implemented and maintained on site during construction.

As a summary Appendix I1 provides programming information in relation to protected species present in the project footprint or vicinity.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Implementation of Protected Species Management Plan and attendant Method Statements	Env Manager / Ecological sub-consultant	Environmental co-ordinator	Site Manager
Landscape and Ecology Design	Environmental co-ordinator	Design Manager	Project Manager
Installation and maintenance of temporary ecological mitigation such as bat fencing/wires	Project ecologist Env Manager	Environmental co-ordinator	Site Manager
Erection of artificial setts, refugia, logpiles, holts, deadwood, bat boxes and bird boxes.	Environmental Clerk of works Env Manager	Environmental co-ordinator	Site Manager
Translocation of hedgerow	Environmental Clerk of works Env Manager	Environmental co-ordinator	Site Manager
Lichen and Bryophyte habitat	Project Ecologist	Site Supervisor	Site Manager
Site clearance-implementation of method statements	Environmental Clerk of works	Environmental co-ordinator	Site Manager
Weekly checks of protected species fencing during construction	Site Construction supervisors	Environment Clerk of Works	Site Manager
Maintenance of ecological/audit records	Environmental Clerk of works	Environmental co-ordinator	Site Manager
Preparation of ecological reports	Project ecologist	Environmental co-ordinator	Site Manager
Auditing of planting undertaken	Environmental Clerk of works	Environmental co-ordinator	Site Manager
Post Construction monitoring	Project ecologist	Environmental co-ordinator	Site Manager

5. MONITORING SURVEY AND ACTIONS

5.1 Coverage

The Plan covers all areas of temporary and permanent works. The Plan covers known protected species (bats, dormouse, badger, goshawk, otter and reptiles) at known locations. Should these

species be identified elsewhere within the permanent or temporary works during construction, the Environmental Clerk of Works will instigate the unexpected species plan and undertake an initial review. Thereafter, the method statements attached to this plan and the EMP drawings will be updated and a suitable action plan prepared by the Environment Clerk of Works with advice from the Project Ecologist.

Should protected species not identified in this plan, and for which no method statement is currently available, is detected, the Unexpected Protected or Rare Species Management Plan shall be implemented (Appendix O).

Should protected or rare species be seen in the immediate area of the works, but off site, this information should be passed to the Environmental Clerk of works who will define any actions thought to be required. In most instances this will only comprise recording of the information (the boundary protected species fences should minimise access to the site by protected and rare species.

5.2 Identification of Protected and Rare Species

All Employees shall be given tool box talks. The talks will revolve around a series of simple to remember actions:

1. If any employee on site identifies a plant or animal they believe to be protected or rare, and they are not marked on the environmental management plans, they are to report this to the Environment Clerk of works immediately;
2. The site supervisor should be informed and he will stop works in the area the species is located;
3. Under no circumstances should suspected protected or rare species be picked up, moved or disturbed by site employees, even where they appear to be injured or in trouble.
4. The Environmental Clerk of Works will visit the location of the find as soon as possible and inform site staff of the appropriate measures required.

5.3 Initial Site Visit and Review

Please refer to the Unexpected Protected or Rare Species Plan (Appendix O).

5.4 Action Plans

Please refer to the Unexpected Protected or Rare Species Plan.

5.5 Monitoring and Verification

A programme of monitoring of mitigation measures for Protected species shall be undertaken throughout the construction period. This shall comprise:

Check	Frequency	Responsibility	Verification of Completion
Ecological mitigation during site clearance	Daily during site clearance	Environmental Clerk of Works	Environmental Co-Ordinator

Translocation of hedgerows	During site clearance	Environmental Clerk of Works	Environmental Co-Ordinator
Translocation of root-bowls and lichen and bryophyte habitat from Ancient woodland	During site clearance	Project ecologist	Environmental Co-Ordinator
Ecological mitigation-protected species fence checks	Weekly	Environmental Clerk of Works	Environmental Co-Ordinator
Construction of ecological mitigation	Throughout construction	Environmental Clerk of Works	Environmental Co-Ordinator
Restoration of Afon Hydfron at crossing points	Upon completion of works	Environmental Clerk of Works	Environmental Co-Ordinator
Investigate reports of protected species	As required	Environmental Clerk of Works	Environmental Co-Ordinator
Audit installed landscape planting	Upon completion of works	Environmental Clerk of Works	Environmental Co-Ordinator

6. RECORDING

6.1 Reporting

All ecological reports shall be reviewed and signed off by the Project ecologist and Environmental co-ordinator. All ecological reports shall be reviewed and agreed with the Project Manager and the Welsh Governments Project Manager (or his appointee) prior to issue to third parties.

As areas of ecological mitigation are completed and released for construction works, the form in appendix I will be used to record the “sign off.”

Location Chainage	Description	Seasonal constraint	Consents methods that apply	J	F	M	A	M	J	J	A	S	O	N	D	Respons-ibility
1180-1360	Hedgerows to be cleared under dormouse precautionary method	Y	Dormouse precautionary method													Dormouse licensed ecologist
1200, 1350-1400	Hedgerows to be translocated – to be cleared under dormouse precautionary method	Y	Dormouse precautionary method/ hedgerow translocation method													Dormouse licensed ecologist
1240 (ch. 435 Picking Gate)	Badger sett- exclusion zone where groundworks only as directed by the Ecologist applies until mitigation is complete (under licence as necessary)	Y	Badger Method Statement / Licence – sett closure in period July to November													Badger licensed ecologist
1350-1950	Screens required to direct bat flight paths.	Y	Screens to be in place April onwards													ECOW
1380-1620	Woodland around stream/sunken lane contains evidence of Dormouse and will be cleared according to the Dormouse Method Statement, under licence.	Y	No works until dormouse licence is obtained. Work under dormouse licence in two phases (*tree clearance under ecological supervision)		Tree clearance*				Ground clearance							Dormouse licensed ecologist
1400-1550	Series of badger setts – exclusion zone where groundworks only as directed by the Ecologist applies until mitigation is complete (under licence as necessary)	Y – sett closure required at 1400	Badger Method Statement / Licence – sett closure in period July to November							Sett closure under licence and following badgers' adoption of artificial sett at 1100-1200 (north)						Badger licensed ecologist
1500	Up to three trees with potential for bats to be present, to be felled under Bat Precautionary Method.	Y	Felling as defined in Bat licence for trees affected													Bat licensed ecologist
1900	Reptile Area – suitable habitat for reptiles present	Y	Reptile Method Statement.													Ecologist
1950	Hedgerow to be cleared under dormouse precautionary method	Y	Dormouse precautionary method													Dormouse licensed ecologist
2140-2220	Hedgerow to be cleared under dormouse precautionary method	Y	Dormouse precautionary method													Dormouse licensed ecologist

Location Chainage	Description	Seasonal constraint	Consents methods that apply	J	F	M	A	M	J	J	A	S	O	N	D	Respons-ibility
5100	Existing Bat Crossing 8 temporary screens required during construction to direct bat flight paths	Y	Screens to be in place April onwards													ECOW
5100-5300	Hedgerow / woodland to be cleared under dormouse precautionary method	Y	Dormouse precautionary method													Dormouse licensed ecologist
5120	Bat boxes to be installed on retained trees.	Y	Bat licence method applies													Bat licensed ecologist
5280	Hedgerow to be translocated – to be cleared under dormouse precautionary method	Y	Dormouse precautionary method/ hedgerow translocation method													Dormouse licensed ecologist
5270-5310	Sensitive working practices required around retained, off site trees with potential for roosting bats under bat licence.	Y	Careful working as defined in the bat licence													ECOW
5220	Japanese knotweed present in woodland.	Y (for herbicide use)	Invasive Weed method statement													ECOW
5300	Badger sett in adjacent woodland, exclusion zone where groundworks only as directed by the Ecologist applies until licenced mitigation is complete.	Y	Badger Method Statement / Licence – sett closure in period July to November							Sett licence						Badger licensed ecologist
5530-6500	Screens required to direct bat flight paths.	Y	Screens to be in place May onwards													ECOW
5550	Existing Bat Crossing 9 temporary screens required during construction to direct bat flight paths	Y	Screens to be in place April onwards													ECOW
5560	Hedgerow to be cleared under dormouse precautionary method	N	Dormouse precautionary method													Dormouse licensed ecologist
5560-5690	Hedgerow to be translocated – to be cleared under dormouse precautionary method	Y	Dormouse precautionary method/ hedgerow translocation method													Dormouse licensed ecologist
5770	Badger sett exclusion zone where groundworks only as directed by the Ecologist applies until licenced mitigation is complete.	Y	Badger Method Statement / Licence – sett closure in period July to November							Sett licence						Badger licensed ecologist

Location Chainage	Description	Seasonal constraint	Consents or methods that apply	J	F	M	A	M	J	J	A	S	O	N	D	Responsibility
5890	Tree with bat potential to be felled under Bat Precautionary Method if affected by works.	Y	Felling as defined in Bat licence for trees affected													Bat licensed ecologist
6320-6550	Vegetation south of Tavernspite Road to be cleared under dormouse precautionary method	Y (and see 6520, 6530)	Dormouse precautionary method													Dormouse licensed ecologist
6500-6600	Old Pale Ancient Woodland. Badger setts; exclusion zone where vegetation removal and groundworks only as directed by the Ecologist applies until licensed mitigation is complete.	Y	No works until dormouse licence is obtained. Badger Method Statement / Licence – sett closure in period July to November		Closure of disused holes if possible						Sett closure licence					Badger licensed ecologist
6500-6600	Woodland contains evidence of Dormouse and will be cleared according to the Dormouse Method Statement, under licence and with reference to the constraints posed by the badger sett present.	Y	No works until dormouse licence is obtained. Work under dormouse licence in two phases (*tree clearance under ecological supervision)		Tree clearance*											Dormouse licensed ecologist
6500-6600	Trees with bat potential to be felled under Bat Precautionary Method when dormouse licence is obtained and according to badger method statement / licence.	Y	No works until dormouse licence is obtained. Bat licence precautionary method applies (check and watching brief)								Ground clearance					ECOW
6500-6600	Invasive weed present (VVA section of Invasive Weed Method statement to be followed).	Y (for herbicide use)	Invasive Weed Method Statement													Bat licensed ecologist
6500-6600	Features of the woodland are to be retained for use in new woodland planting plots at 6540-6670.	N, but reliant on site clearance	Refer to Ecology Design		Retain logs/trunks						Retain stumps rocks and soil					ECOW
6520	Tavernspite Road - Badger sett exclusion zone where vegetation removal and groundworks only as directed by the Ecologist applies until licensed mitigation is complete.	Y	Badger Method Statement / Licence – sett closure most likely in period July to November													Badger licensed ecologist



**A477 ST CLEARS TO RED ROSES IMPROVEMENT
Construction Environmental Management Plan
Archaeological and Ecological Sign Off**

Location (Chainage, from-to).	Ecology/Archaeology Sign Off
Description of Works	
Summary of any Mitigation Undertaken and Overview of Results	Map of signed off area attached (delete one)
	Yes / No
	Confirm no outstanding issues (delete one)
	Yes / No
	Sign off agreed with relevant regulatory authority (delete one)
	Yes / No
	SRB Ramboll Signature (below)
	Ramboll:
SRB:	

Signed off as clear for construction by relevant regulatory authority (please define)

Name.....

Role / Organisation.....

Date.....

APPENDIX J

Invasive Species Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTALMANAGEMENT PLAN
APPENDIX J
Specific Method Statements for Invasive Species**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Plan.

This plan provides procedures for the management of invasive flora on the Project.

A method statement has been prepared ref SRB/MS/005 detailing the management of site clearance in areas of invasive species throughout construction. An overall method statement for the management of all invasive flora is also provided ref 16454-EN00026. The method statements can be found on Buzzsaw.

APPENDIX K

Unexpected Contaminated Land Management Procedure

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX K
UNEXPECTED CONTAMINATION MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Management Plan.

This plan provides procedures for the unexpected discovery of contaminated land along the route.

2. POTENTIAL IMPACTS

The Environmental assessment for the Project comprised a Phase 1 desk based assessment allied to a walkover survey of the project corridor/study area by a specialist environmental scientist experienced in Contaminated Land assessment and management. These works included discussions with both Carmarthenshire County Council (CCC) and Natural Resources Wales (formerly the Environment Agency). The desk based assessment and walkover study did not identify any known locations of contaminated land and identified that there was no significant risks for contaminated land to be present.

The Project area is predominantly through agricultural land which has a low potential for contamination to be present. However, there were a number of potential sources of contamination present. These comprised:

- Agricultural land Use, including a former sheep dip. There is also the outside potential for bone pits, slurry pits and small deposits of agrochemicals to be present.
- Petrol Stations. The Project passes close to the Ivy Fuel Station at St Clears Roundabout. The underground fuel tanks lie between the A477 alignment and station buildings. A number of former fuel stations lie in the area, but are outside the construction works;
- Oil Pipeline. This passes through the area. There are no records of rupture or spillage;
- Sewage Treatment Works are located near to the Project. There is the potential for sewage sludge and chemicals to be present on site;
- Old Quarries/infilled ponds. There is one former quarry at and a number of infilled ponds in the area. It is not anticipated that these have been filled with waste materials.

3. PROCEDURES

The Unexpected Contaminated Land Management Plan shall be enacted whenever suspected contaminated land or groundwater are encountered during construction. The plan shall be enacted on all occasions, whatever the source of information. However, the main mechanisms for identifying potentially contaminated material are:

- The Environmental Clerk of Works shall undertake a site walkover on a weekly basis and make notes on the form included in Appendix U. These notes shall form the primary source of environmental inspection of the works.

- All site workers shall be given tool-box talks to enable them to understand the mechanism for reporting environmental incidents, including contaminated land, and how to identify suspect materials;
- Site Supervisors shall be encouraged to identify suspect materials and report them to the Environmental Clerk of Works.

The Unexpected Contaminated Land Management Plan is shown in diagrammatic form in figure 1.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Identification of Potentially contaminated land or suspect materials	All on site	Env Manager	--
Initial visit- record of proposed actions	Environmental Clerk of works/ Env Manager	Environmental co-ordinator	Site Manager
Agreed Analysis and testing suite	Project contaminated Land Specialist	Environmental co-ordinator	Site Manager
Review of Analysis and remediation proposals	Project contaminated Land Specialist	Environmental co-ordinator/ Env Manager	Site Manager
Verification of Remediation	Project contaminated Land Specialist	Environmental co-ordinator	Site Manager
Regular Site inspection notes	Environmental Clerk of works	Environmental co-ordinator	Site Manager

5. MONITORING SAMPLING AND ANALYSIS

Monitoring for contaminated land and groundwater shall only be undertaken if, and when, actual examples of such contamination are discovered during construction. In such cases, individual monitoring plans will be prepared for each occurrence where needed.

The plan begins with an initial visit to the site of the contamination by the Environment Clerk of works. If this visit confirms the presence of suspect materials, a sampling and analysis plan will be developed which is specific to that deposit.

Should the initial review indicate that sampling and analysis will be required, then the sampling shall utilise a standard suite of determinants agreed with the Ramboll specialist.

All analysis shall be undertaken according to the sampling and analysis protocol given in Appendix K1. Any deviations from this shall be authorised by the Project Contaminated Land specialist and Project Manager prior to sampling.

All analysis shall be undertaken by a UKAS and MCERTS accredited Laboratory.

6. MATERIAL MOVEMENT

6.1 Movement to Quarantine

The default position is to leave all materials in situ wherever possible. Where this is not possible, for instance for environmental protection, safety or operational reasons, movement will occur according to the procedure identified in Appendix K1.

6.2 Removal from Site

Where material is identified which cannot be reused on site, then off-site treatment or disposal will be undertaken. The proposed removal of material shall use licensed contractors for both transportation and disposal in full accordance with the Duty of Care Regulations and the Waste Classification Regulations.

The transfer of such materials shall be documented in the Site Waste Management Plan.

7. RECORDING

7.1 Consultation

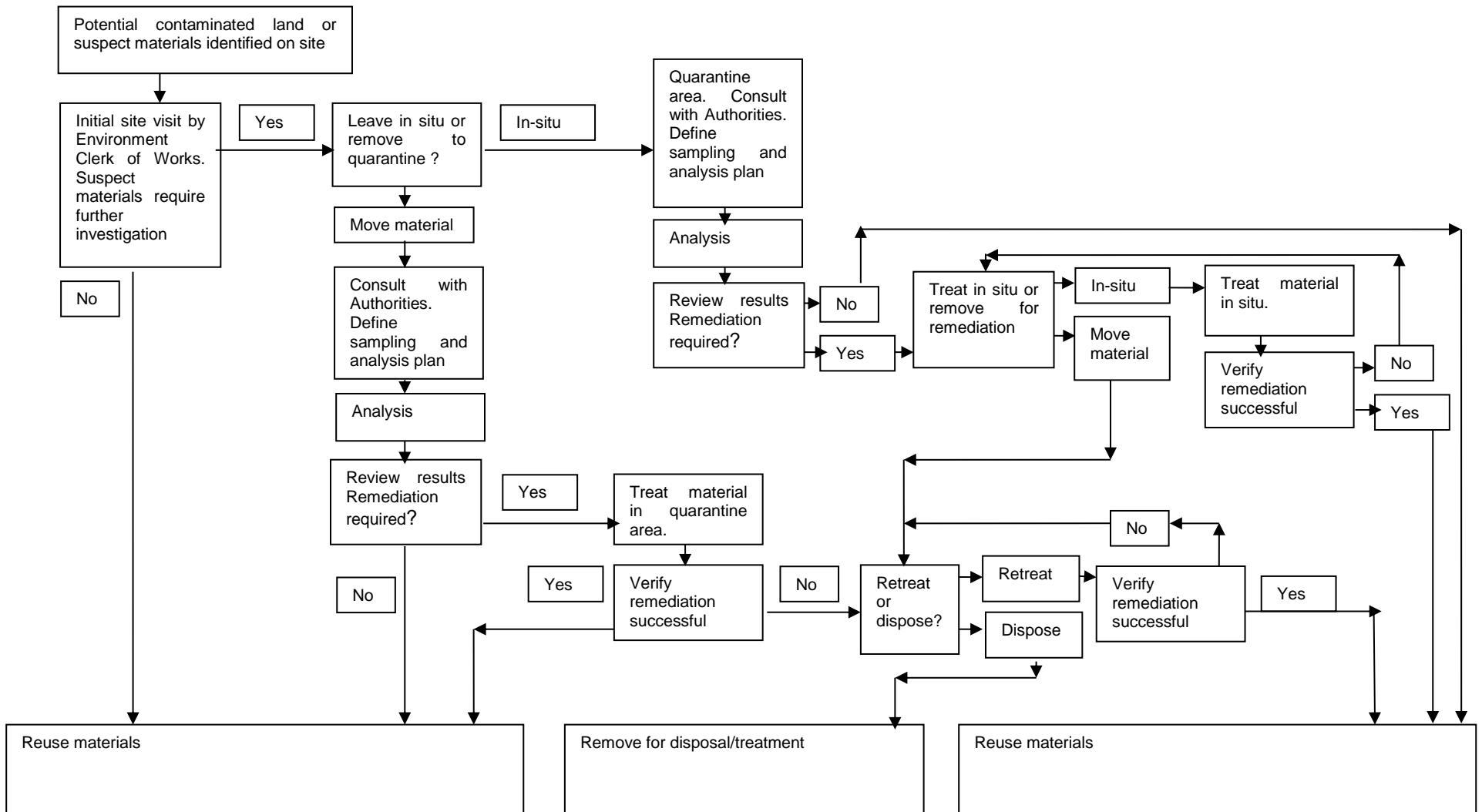
The development of the sampling and analysis plan, and remediation plans will be undertaken following consultation with the appropriate authorities. This will include Natural resources Wales and Carmarthenshire County Council. Contact details for both are included in the Project Directory.

7.2 Reporting

All reports shall be reviewed and signed off by the Project Contaminated Land specialist and Environmental co-ordinator. All contaminated Land Reports shall be reviewed and agreed with the Project Manager and the Welsh Governments Project Director (or his appointee) prior to issue to third parties.

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
UNEXPECTED CONTAMINATION MANAGEMENT PLAN**

Figure 1



**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
UNEXPECTED CONTAMINATION MANAGEMENT PLAN
APPENDIX K1**

1. PREAMBLE

The following text provides the procedures for sampling soil and groundwaters during the investigation of suspect or potentially contaminated materials arising during construction of the A477 St Clears to Red Roses Improvement.

2. SAMPLING PROTOCOL

2.1 Samples for Chemical Analysis

The sampling and analysis regime for each incidence of the identification of suspect materials will be agreed between the Project Contaminated Land Specialist, Environmental Coordinator and the Project Manager, following consultation with statutory bodies as appropriate.

Samples for contamination testing will be recovered from strata/phases identified as being potentially contaminated, and where defined in the sampling and analysis plan, adjacent strata. Sampling frequency shall be 1 per 500m³ (where material removed to quarantine area). At least one sample shall be taken from each strata/phase of material present.

Samples will be representative of the materials and/or contamination encountered.

On all occasions, if the initial visit by the Environment Clerk of Works confirms the suspect nature of the material, either by visual or olfactory means, samples of individual areas of contamination shall be recovered. Sample containers shall be available from the main compound and will comprise the following:

- plastic tub (minimum 500 ml volume)
- amber glass jar (minimum 500 ml volume)
- VOC vial

Soil samples for contamination and waste acceptance criteria testing (WAC) testing shall comprise 1kg tub/jar, 1 500ml amber jar and 1 VOC vial.

2.2 Preservation of Samples

Sample containers for contaminated materials will be provided with necessary preservatives by the laboratory to undertake the analysis. The sample containers and preservatives shall reflect the anticipated contamination and determinants.

2.3 Storage of Samples

Samples for analysis of contamination shall be stored as follows:

Immediately after sampling all samples of made ground, contaminated or potentially contaminated materials will be labelled and stored in temperature controlled facilities at 4°C +/- 2°C in the dark.

All samples will be stored at 4°C +/- 2°C in the dark at all stages of intermediate transport to the laboratory and all stages of storage. The use of cool boxes is anticipated.

The contaminated land laboratory commissioned for the analysis will provide storage facilities for the samples (generally cool boxes and cool packs). The samples shall be packed in the cool boxes with a minimum of three ice packs, all frozen. Any remaining void shall be filled with insulating material to be agreed with the Environmental Clerk of works.

Samples will be transported to the contaminated land laboratory within 24 hours of sampling. Delivery of samples to the contaminated land laboratory will be the responsibility of the Contractor.

If it is necessary to store samples on site beyond the end of the working day then this shall only be undertaken using temperature controlled facilities capable of maintaining a temperature of 4°C +/- 2°C for extended periods.

Storage on site beyond the end of the working day using cool boxes is not acceptable. In any event, all samples shall reach the contaminated land laboratory within 24 hours of sampling.

In accordance with BS10175:2001, the Environmental Clerk of Works will prepare a sample report for each sample. Copies of the sample reports shall be maintained on site, a copy of all sample reports shall be stored at the end of each working day.

2.4 Chain of Custody Forms

All samples shall be accompanied by Chain of Custody forms copies of which shall be stored on site. Chain of custody forms will be forwarded to the Project Contaminated Land Specialist within 24 hours of sampling both paper and excel versions.

2.5 Recovery of Groundwater Samples

Collection of any water samples will be undertaken in accordance with the requirements of BS10175:2001 and BS6068.

Samples shall be contained in suitable containers provided by the analytical laboratory with a **minimum volume of 2 litres and a vial** for volatile organic compounds as instructed by the Engineer. Unless otherwise instructed, sample containers shall be completely filled without overflowing such that no air space remains. Overflowing from the sample container shall be minimised to prevent loss of any light non-aqueous phase contaminants that may be present. Samples vials for volatile organic compounds shall not be provided with an air gap.

Fixatives suitable for the analytical requirements specified by the project contaminated land specialist shall be included in sample jars as appropriate.

A record of sampling shall be completed for each sampling location and passed on the Project Contaminated Land Specialist

3. ANALYSIS.

The analysis to be undertaken on each subject material shall be defined in the Sampling and Analysis Plan. However, the following list provides a general screening suite of analysis which is likely to be used in most circumstances. The Environmental Co-ordinator or Project Contaminated Land Specialist can define additional determinands following a review of the nature of the material and consultation with the relevant statutory authorities. All sampling and analysis plans

will be authorised by the project Manager (or his appointed representative) prior to sampling being undertaken.

Ramboll Default Soil Suite	Ramboll Default Water Suite
Metals (arsenic, cadmium, chromium (III and VI), copper, inorganic mercury, lead, nickel, boron, barium, beryllium, selenium, vanadium, zinc)	Metals (arsenic, cadmium, chromium (III and VI), copper, inorganic mercury, lead, nickel, boron, barium, beryllium, selenium, vanadium, zinc)
Speciated US EPA 16 Polyaromatic Hydrocarbons (PAHs)	Speciated US EPA 16 PAHs
TPH CWG (C5-35) Aliphatic/Aromatic Split (with banding)	Water soluble sulphate
Water soluble sulphate	Monohydric Phenols
Monohydric Phenols	Total Cyanide
Total Cyanide	pH
pH	Total organic carbon
Fraction/Total organic carbon	Hardness
	Ammoniacal Nitrogen
	Electrical conductivity
	TPH CWG (C5-35) Aliphatic/Aromatic Split (with banding)

4. MATERIAL TRANSPORT

Potentially contaminated material could be transferred from its site of origin to a quarantine area at the main site compound (or a temporary storage area). The default, preferred option is to retain the material in situ until the nature of the material is fully understood. However, it is recognised that materials may require transportation to minimise environmental impacts, for safety or operational reasons.

4.1 Soils

Soils should be carefully excavated to ensure complete removal of suspect material but avoiding the removal of uncontaminated material. The excavation will be undertaken under the supervision of the Environmental Clerk of Works, Project Contamination specialist or other designated and experienced staff.

Material will be transported:

- In sheeted lorries;
- Along the designated haul roads and not on public roads;
- Separate areas of suspect material shall be excavated, transported and stored separately.

Following Transport:

- Both the excavator bucket and transport lorry shall be cleaned and the cleaning water retained in the quarantine area.

Storage

- Temporary storage shall be in designated areas of the main compound or in temporary works areas. Appropriate measures shall be taken to avoid cross contamination or leakage of the materials into nearby water bodies, drainage ditches, strata or other materials. This could include the use of bunds or low permeability areas as appropriate.
- Storage shall be undertaken for the minimum time required.
- The potential for the release of odours or contaminated dusts shall be considered and appropriate mitigation used as required.

APPENDIX L

Pollution Control and Contingency Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX L
POLLUTION CONTROL AND EMERGENCY PLAN**

1. INTRODUCTION

- 1.1.1 This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.
- 1.1.2 These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan.
- 1.1.3 This plan provides procedures for Emergency Response to environmental incidents. Under normal operating circumstances, the Pollution control actions listed in the Surface Water Management plan shall be implemented.

2. EMERGENCY PROCEDURE- PRE PLANNING

- 2.1.1 The key to emergency management lies in pre-planning. The following activities will be undertaken as part of the pre-planning of construction activities;
- All method statements will be accompanied by an environmental risk assessment carried out by the leader/planner of the activity. The risk assessment will identify all areas of potential risk to the environment, control and mitigation measures to be put into place and pollution control activities to be available. All staff working on the activity will be made aware of these arrangements;
 - Where the assessment demonstrates the potential for significant environmental impacts, acceptable and implementable mitigation shall be put into place. Where this is not possible, activity managers shall consider alternative construction methods. Where this is not possible, the activity managers shall agree with the Environmental Co-ordinator the way forward prior to engaging with environmental regulators (if necessary).
 - All staff will report all incidents of pollution to the Environmental Clerk of Works. This will allow an ongoing review of incidents to be undertaken, and lessons learnt from this review to be used to update on-site procedures and activities;

3. EMERGENCY/INCIDENT PROCEDURE

3.1 Emergency Procedure

- 3.1.1 The emergency procedure is initiated on reporting of an incident, and is shown in Annex 1 to this plan.

- 3.1.2 All emergencies and environmental incidents shall be immediately reported to the Site Manager and Environmental Clerk of Works.
- 3.1.3 SRB shall adopt a Prevent-Control-Mitigate approach to incident response. Mitigation for environmental incidents shall be set out in the method statement or attached environmental risk assessment. It is important that such actions occur immediately where there is an ongoing risk of the pollution continuing. Such actions shall be initiated by the relevant site supervisor and agreed with the Environment Clerk of Works as soon as possible.

3.2 Emergency equipment

- 3.2.1 A full emergency kit will be maintained at the main compound for use in emergency situations. In addition, emergency equipment related to each specific activity shall be located at each works area.
- 3.2.2 The full emergency kit will include:
- Absorbent material/granules/oil spill kit;
 - Absorbent booms;
 - Absorbent mats;
 - Hose wraps;
 - Drainage gully seals;
 - Portable plastic sealed bund;
 - Plastic sheeting;
 - Heavy duty plastic sacks and drums;
 - Warning signs;
 - Wheel chocks (x2);
 - Chemical test kit;
 - Fire extinguishers;
 - PPE including protective gloves, masks, eye protection and Tyvek suits;
 - First aid kit including eye-wash equipment;
 - Environmentally friendly cleaning materials, and
 - Bottled Water for cleaning.
- 3.2.3 The emergency kits at each specific works location will comprise equipment specific to the activities being undertaken.
- 3.2.4 Relevant personnel shall be trained in the use of the equipment in the emergency kit.

3.3 Emergency Call-Out

- 3.3.1 The Site Manager shall ensure that suitable emergency call-out services, for vacuum tankers, booms etc, are established and in-place by the commencement of construction activities.

3.4 Emergency Contacts

Contact	Telephone Number
Police/Fire/Ambulance	999
Site Manager (Steve Salvin)	07760 880675
Environment Clerk of Works (Fiona Lanc)	07791 697791
Natural Resources Wales (Kim Elkin Wood)	01554 713639
Natural Resources Wales (Stewart Rowden)	01792 326450
CADW (Polly Groom)	01443 336000
Carmarthenshire County Council (Alun Rees/ Steve Welchman)	01267 224971

3.5 Incident Reporting

- 3.5.1 All environmental incidents shall be recorded in an incident log and in a non-conformance report. NCR's will include details of the incident, remedial actions taken, corrective actions identified and taken, and any follow-on activities (e.g. with environmental authorities or land-owners). This will ensure lessons are learnt and similar incidents are avoided in the future.
- 3.5.2 The Environmental Co-ordinator and Environmental Clerk of Works shall be the main points of contact with Environmental Regulators and will maintain records of telephone conversations and meetings relating to environmental incidents.

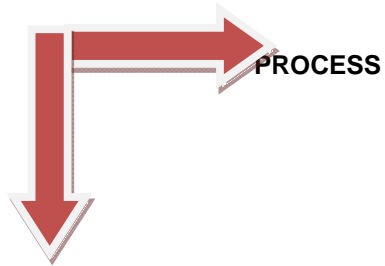
4. NON CONFORMITY PROCEDURE

- 4.1.1 The non-conformity Procedure included in the project Quality Plan shall be utilised for all instances of environmental non-conformity.

5. UNEXPECTED CONTAMINATION

- 5.1.1 The Unexpected Contaminated Land Management Plan shall be enacted whenever suspected contaminated land or groundwater is encountered during construction. This Plan is provide in Appendix K

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX L ANNEX 1
POLLUTION CONTROL AND EMERGENCY PROCEDURE**



TIME

Witness	Immediate Response	Incident Rectification	Post Incident Activities	Reporting
<p>Witness Incident</p> <p>Report Incident to Supervisor</p> <p>Supervisor Reports to Site Manager (SM) and Environmental Clerk of Works (ECOW)</p>	<p>Supervisor(SS) makes site safe and enacts initial measures to prevent further harm/damage</p> <p>ECOW undertakes initial site visit and assesses possible corrective actions</p>	<p>ECOW/SS identifies root causes of incident.</p> <p>ECOW discusses and agrees corrective actions with Environmental Co-ordinator (ECO) and site manager</p>	<p>-----></p> <p>-----></p>	<p>Initial report from SS/ECO Add to Incident Database Make relevant staff aware of incident</p> <p>Prepare corrective actions report/note</p>

		<p>Determine if incident minor or major (i.e. requiring input/reporting to environmental authorities)</p> <p>ECO contacts authorities if relevant. Discussions and agreements with environmental authorities.</p> <p>ECO/SM/SS and ECOW implement agreed corrective actions.</p> <p>ECOW monitors corrective actions and assesses if they are effective.</p> <p>ECO/ECOW/SM agree when incident over and corrective actions complete.</p>	<p>-----></p> <p>-----></p> <p>ECO/SM Undertake review of incident. Identify preventative actions necessary to avoid future issues. Review incident trends to assess if existing procedures adequate.</p> <p>-----></p> <p>ECOW/ECO Modify procedures/plans -----></p> <p>ECO to continue co-ordination with relevant authorities and conclude actions with them. -----></p>	<p>Record of all communication with relevant authorities (telecom/meetings/written)</p> <p>Site surveillance/monitoring report</p> <p>Update incident database</p> <p>Incident report</p> <p>Procedures modified</p> <p>Record all correspondence and communication with relevant authorities.</p> <p>Close out report</p>
--	--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Project Title:
**A477 RED ROSES TO
 ST.CLEAR ROAD
 IMPROVEMENT**

Project
 Number:
 1610

Contractor:
 SRB CE LTD

Date:

EOR. No

**ENVIRONMENTAL
 MANAGEMENT
 SYSTEM**

ENVIRONMENTAL MANAGEMENT REPORT – Rev 3

Summary of Finding(s):

Signature Date
 SRB / RAMBOLL / Clients' Rep (Delete as approp.)

Category of Observation:

Observation of wildlife Observation of good practice Observation of bad practice

Wildlife

- Badger
- Otter
- Kingfisher
- Deer
- Salmon
- Trout
- Freshwater Crayfish
- Other

Surface water

- Silt fences
- Water spraying to damp down dust
- Water extraction from stream
- Pumping – silt control
- Water run-off
- Site drainage
- Sedimentation pond

Oil/Chemical

- Re-fuelling
- Oil/Chemical spill
- Spill Kits

Waste

- Waste segregation
- Waste disposal
- Litter

Air Quality

- Dust
- Water spraying to damp down dust

Noise

- Machine exhaust
- Late/Early work
- Working very close to neighbours

Vibration

- Vibration of ground that neighbours might feel

Energy

- Plant powered down when not in use
- Lights turned off at night

Corrective Action:

WHAT ACTION DID YOU TAKE?

- | | |
|-------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Stop the activity | <input type="checkbox"/> Change the work equipment |
| <input type="checkbox"/> Tidy up the area | <input type="checkbox"/> Call Supervisor |
| <input type="checkbox"/> Coach the operatives | <input type="checkbox"/> Praise the operative |
| <input type="checkbox"/> Change the work method | <input type="checkbox"/> Other (Specify) |

Description:

Signature Date
For SRB

Description of Preventative Action to prevent recurrence of EOR:

Preventative Action Form Number (If applicable): _____ *NA* _____
Preventative Action Close out Date (If applicable): _____ *NA* _____

Signature Date
For SRB

EOR Closed

Works have been inspected and completed as described above.

Signature Date
Project Manager

APPENDIX M
Soil Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX M
SOIL MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan

This plan provides procedures for the management of soils during construction.

2. POTENTIAL IMPACTS

Soil is a living dynamic media and incorrect storage, handling and replacement can degrade its quality. This can have several impacts on the restoration of the site during construction.

3. PLANS AND PROCEDURES

3.1 General

Care will be taken to ensure that damage to soil is minimised during the construction works and measures will be implemented based on the guidance contained in the DEFRA "Code of Good Agricultural Practice for the Protection of Soils". Specific requirements for the A477 SCRR Project are summarised below:

- Vegetation higher than 150mm will be strimmed or mulched on site and spread across the area prior to stripping of topsoil. Where possible mulch will be segregated and stockpiled separately for later use in planting areas, or to protect exposed soil slopes prior to planting.
- Topsoil will be stripped from all temporary working areas to a depth of between 150mm and 300mm, and stored on site in accordance with the storage procedures given below.
- Soil should not be stripped following heavy rain, frost or snow. Soil should be within its plastic limit during any handling activity to ensure that soil structure is maintained.
- Soil will be handled in accordance with good practice and in suitable weather conditions to prevent damage to soil structure and avoid problems with mud or dust. Trafficking or working of the soil under wet conditions will be avoided.
- Topsoil will be stockpiled to a maximum height of 3m. Stockpiles will be located close to the origin of the topsoil and in designated topsoil storage areas, away from watercourses.
- The location of cuttings is shown on the Environmental Management Plans and 1 in 1000 Scheme Layout Plans. In the cuttings, or other locations where excavation is required into the subsoil, this will be carefully removed and stored in stockpiles to a maximum height of 5m. Stockpiles will be located close to the origin of the subsoil and will be stored

in designated areas where the topsoil has been removed ie. directly over subsoil. Topsoils and subsoil shall not be mixed during storage.

- Soil will be reinstated as close to the origin location as possible to prevent the spread of animal diseases and soil borne plant pests as recommended in the DEFRA publication "Preventing the spread of plant and animal diseases".
- Where subsoil remains in-situ in temporary construction areas, it will be protected using a geotextile membrane e.g. Terram. Trafficking across these areas shall be minimised..
- Haulage across agricultural fields will be avoided as far as possible. Where this is unavoidable, dump truck tyre ruts will be removed and ground loosened on a continuous basis.
- Soil will be reinstated to the required depths using low ground pressure equipment and loosened as required to provide up to a maximum total depth of 1.2 m of soil that is relatively free from compaction, subject to engineering requirements.
- Land drainage will be installed where required to assist with restoration and to intercept any existing drainage schemes cut by the works.
- On temporary works areas, the land will be reinstated to an end use agreed with the land owner and as previously used prior to construction starting. As a default value, a crop with a good fibrous root system will be established following reinstatement of disturbed soils e.g. grass or winter cereals. The crop will be given adequate fertiliser for establishment and any deficiency in lime corrected before planting.
- Where required herbicide will be applied to stockpiles prior to reuse to remove weeds

3.2 Requirements for Storage, Handling and Reinstatement of Soils

3.2.1 The requirements for storage, handling and reinstatement of soils are provided in MCHW Series 600, Earthworks and the following specification appendixes:

- Appendix 6/1 Requirements for acceptability and testing of earthworks materials
- Appendix 6/2 Requirements for dealing with class U1B and Class U2 Unacceptable Materials
- Appendix 6/3 Requirements for excavation, deposition, compaction (other than dynamic compaction)
- Appendix 6/4 Requirements for Class 3 material
- Appendix 6/5 Geotextiles used to separate earthworks materials
- Appendix 6/8 Topsoiling, grass seeding and turfing
- Appendix 6/9 Earthwork Environmental Bunds, Landscape areas and Strengthened Embankments
- Series 3000 Landscape and Ecology

3.2.2 Specific Project requirements on soils storage are:

- In accordance with the Flood and Hydrodynamics Management Plan (Appendix C), no stockpiles of topsoils or sub-soil shall be created within 15m of a main watercourse, or in the Afon Taf/Hydfron floodplain.
- No soil stockpiles shall be placed on the areas identified for the relocation of reptiles, or the construction of artificial badger setts or otter holts.
- No soils containing invasive species shall be stockpiled in areas currently free from such species, unless these are designated treatment/segregation areas and invasive weed treatment/management is being undertaken.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Soil storage	Env Manager	Environment Clerk of Works	Site Manager
Mulch storage	Env Manager	Environment Clerk of Works	Site Manager
Inspection of Soil storage	Environmental Clerk of Works	Environmental Coordinator	Site Manager

5. MONITORING SURVEY AND ACTIONS

5.1 Coverage

The Plan covers all areas of temporary and permanent works. .

5.2 Monitoring and Verification

As part of the weekly environmental inspections, stockpiles will be checked to ensure they are in approved locations and do not exceed the height limit. Monitoring and verification shall comprise:

Check	Frequency	Responsibility	Verification of Completion
Soil storage	weekly	Environment Clerk of Works	Environmental Co-Ordinator

6. RECORDING

6.1 Reporting

Any inspection and/ or audit findings against this procedure shall be reviewed and signed off by the Environmental Co-ordinator.

APPENDIX N
Dormouse Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTALMANAGEMENT PLAN
APPENDIX N
Dormouse Management Plan - Method Statement 16454-EN0029**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Plan.

This plan provides procedures for the management of dormouse if found on site during construction.

The method statement that has been prepared as part of the licence application for Dormice (which includes detail of methods for precautionary works) can be found on Buzzsaw and comprises of the following:

Dormouse Method Statement Background Information Part 1 Section A to F RevB
Dormouse Method Statement Background Information Part 1 Sections G1 to G3
Dormouse Method Statement Background Information Part 2 RevB

These need to be referred to when working in areas of ecological value and detailed in Appendix I and O.

2. POTENTIAL IMPACTS

The Environmental assessment for the Project included a detailed assessment of existing third party information on the presence of Dormouse in the area. It also contained significant surveys for dormouse over a multi-year period. These surveys continued in 2011 and have been used to prepare this plan.

None of the surveys carried out within the area of permanent or Temporary works have found any evidence of Dormouse being present.

The nearest third party data collected as part of the ES was 900m to the Northwest of the Project. Subsequent information from third parties has identified a live dormouse 6.3km to the west of the Project and unconfirmed reports of Dormouse within 1km of the Project.

The Project area contains areas of habitat suitable for Dormouse and in January 2012 hazelnuts showing the characteristic marks indicating they had been opened by a dormouse were recorded in the west of the Project area (Coldwell at chainage 200). Subsequently a dormouse nest was recorded in ancient woodland in the east of the Project area (Allt y Ciliau at chainage 6500) in February 2012 and an additional nut likely to have been opened by a dormouse was found in a woodland belt in the west of the Project area (chainage 1370). As a result potential impacts including damage or destruction to a place of shelter or killing or injury to dormouse in the absence of mitigation were predicted.

3. PROCEDURES

Because of the presence of records of dormouse and suitable habitat, it has been agreed that a precautionary method statement shall be implemented during site clearance in suitable habitat within 1km of dormouse records and that work in suitable habitat in the three locations where dormouse evidence has been recorded will be carried out under a European Protected Species Licence (EPSL) for dormouse. The method statement is attached at Annex 1 and the dormouse licence will be appended in the same location when it is received.

No intrusive or clearance work will be carried out in the areas subject to the dormouse EPSL until the licence is received, and then only under the terms of the licence and under the supervision of the dormouse ecologist until the Archaeology and Ecology Sign Off form is completed.

The Precautionary Method Statement only relates to areas of suitable habitat in the vicinity of previous potential dormouse records as defined on the Site Clearance Drawings (16454/H/200/1 to 15) although in practice it may be adopted for all hedgerow and tree clearance works.

Should any Dormouse be found during the site clearance (either in areas under the precautionary method of work or other areas not subject to the dormouse EPSL), work will stop in the area and NRW and WG/Hyder will be consulted. It is most likely that an amendment to the European protected Species License (see Annex 1) will be required in this event and if so, the revised documentation shall be submitted to WG/NRW for approval. This shall include all details required in terms of mitigation.

On approval, the licensed works shall be undertaken under the supervision of the licensed dormouse ecologist according to the licence method statement. A verification report of works undertaken shall be prepared and submitted to Welsh Government and NRW.

In the highly unlikely event of any potential Dormouse being identified on site after site clearance, then the Unexpected Species Plan (Appendix O) shall be initiated.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Identification of Potentially protected or rare species	All on site	--	--
Site clearance-Precautionary Method of Works	Project Ecologist / ecological subconsultant	Environmental co-ordinator	Site Manager
Site clearance – dormouse licence areas	Project Ecologist / licensed ecological subconsultant	Environmental co-ordinator	Site Manager
Unexpected discovery post clearance and during construction	Environmental Clerk of works	Environmental co-ordinator	Site Manager

5. MONITORING SURVEY AND ACTIONS

The Plan covers all areas of temporary and permanent works. Should suspected protected or rare species be seen in the immediate area off site, this information should be passed to the Environmental Clerk of works who will define any actions thought to be required. In most instances this will only comprise recording of the information (the boundary protected species fences or lack of suitable habitat should minimise access to the site by protected and rare species).

5.1 Identification of potential Protected and Rare Species

All Employees shall be given tool box talks. The talks will revolve around a series of simple to remember actions:

1. If any employee on site identifies an animal they believe to be a dormouse, they are to report this to the Environment Clerk of works immediately;
2. The site supervisor should be informed and he will stop works in the area the species is located;
3. On no occasion should suspected Dormouse be picked up, moved or disturbed by site employees, even where they appear to be injured or in trouble.
4. The Environmental Clerk of Works will visit the location of the find as soon as possible and inform site staff of the appropriate action to be taken.

6. RECORDING

The development of the management plan, and remedial actions will be undertaken following consultation with the appropriate authorities. This will include NRW and Carmarthenshire County Council. Contact details for all are included in the CEMP.

6.1 Reporting

All reports shall be reviewed and signed off by the Project ecologist and Environmental Co-ordinator. All ecological reports shall be reviewed and agreed with the Project Manager and the Welsh Governments Project Director (or his appointee) prior to issue to third parties.

APPENDIX O

Unexpected Species Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTALMANAGEMENT PLAN
APPENDIX O
UNEXPECTED SPECIES MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Plan.

This plan provides procedures for the unexpected discovery of protected or rare species within the permanent or temporary works areas during construction.

2. POTENTIAL IMPACTS

The Environmental assessment for the Project included a detailed assessment of existing third party information on the ecology of the area. It also contained significant surveys for specific protected and rare species over a multi-year period. These surveys have continued and have been used to prepare the following:

1. A Protected Species Management Plan;
2. An Invasive Species Management Plan; and
3. A Precautionary method of works for Dormouse.

Despite this volume of work, there remains the potential for protected or rare species to be present within the permanent or temporary works areas which have not been identified previously. For this reason, this unexpected species management plan has been prepared.

3. PROCEDURES

The Unexpected Species Management Plan shall be enacted whenever suspected protected or rare species are encountered during construction. The plan shall be enacted on all occasions, whatever the source of sighting/information. However, the main mechanisms for identifying the implications and course of action for unexpected ecological issues are:

- The Environmental Clerk of Works shall undertake a site walkover on a weekly basis and make notes on form shown in Appendix U. These notes shall form the primary source of environmental inspection of the works.
- All site workers shall be given tool-box talks to enable them to understand the mechanism for reporting suspected protected and rare species, and how to identify suspect species;
- Site Supervisors shall be encouraged to identify suspect species and report them to the Environmental Clerk of Works.

The Unexpected Species Management Plan is shown in diagrammatic form in Figure 1.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Identification of Potentially protected or rare species	All on site	Env Manager	--
Initial visit- record of proposed actions	Environmental Clerk of works Env Manager	Environmental co-ordinator	Site Manager
Agreed survey procedures	Project ecologist	Environmental co-ordinator/ Manager	Site Manager
Review survey data and define actions / agree with statutory consultees	Project ecologist	Environmental co-ordinator/ Manager	Site Manager
Verification clearance and availability of site for construction	Project ecologist	Environmental co-ordinator / Manager	Site Manager
Regular Site inspection notes	Environmental Clerk of works	Environmental co-ordinator	Site Manager

5. MONITORING SURVEY AND ACTIONS

The Plan covers all areas of temporary and permanent works. Should suspected protected or rare species be seen in the immediate area off site, this information should be passed to the Environmental Clerk of works who will define any actions thought to be required. In most instances this will only comprise recording of the information (the boundary protected species fences should minimise access to the site by protected and rare species).

5.1 Identification of potential Protected and Rare Species

All Employees shall be given tool box talks at induction. The talks will revolve around a series of simple to remember actions:

1. If any employee on site identifies a plant or animal they believe to be protected or rare, and they are not marked on the environmental management plans, they are to report this to the Environment Clerk of works immediately;
2. The site supervisor should be informed and he will stop works in the area the species is located;
3. On no occasion should suspected protected or rare species be picked up, moved or disturbed by site employees, even where they appear to be injured or in trouble.
4. The Environmental Clerk of Works will visit the location of the find as soon as possible and inform site staff of the appropriate.

5.2 Initial Site Visit and Review

Following receipt of a suspected protected or rare species, the Environmental Clerk of Works will visit the location of the sighting. This initial visit will include viewing of the animal or plant in question and a discussion with those involved with the sighting. Photographs of the species shall be taken if it is still present.

Should the environmental clerk of works confirm the suspicion of a protected or rare species being present, they will contact the Project Ecologist and Environmental co-ordinator to agree an initial action plan. When the Environment Clerk of Works decides in the initial review that the suspicions are unfounded, then they will record the decision and this will be kept on file.

5.3 Action Plans

Two action plans shall be prepared, an initial action plan to provide immediate protection for the unexpected species and a mechanism to confirm identification, and a full action plan which will include remedial actions, method statements and details of consultation.

The initial action plan shall be defined to protect any suspect species from activities on site. It will consider if work has to stop, or can continue using different methodologies or on nearby land. The initial review will agree the immediate next steps (including consultation with Welsh Government, Hyder Consulting, and statutory consultees such as NRW). A mechanism for confirming identification of the species will be agreed with the project ecologist and enacted.

The full action plan shall be prepared following a review by the Project Ecologist, Project Manager and Environmental Co-ordinator. This review will identify the implications for the Project, and the need for further licenses and assessment (which may on occasion include survey). The action plan shall include responsibilities and a programme of actions.

5.4 Monitoring and Verification

A programme of monitoring shall be defined and included in the action plan. This monitoring shall aim to verify that the actions proposed have been successful and there remains no outstanding risk to the project.

All actions, where necessary and identified as such by the project ecologist, environmental Clerk of Works or the Environmental Co-ordinator, shall be undertaken by professional and appropriately experienced/licensed ecologists.

All monitoring and verification reports will be reviewed and signed off by the project ecologist.

6. RECORDING

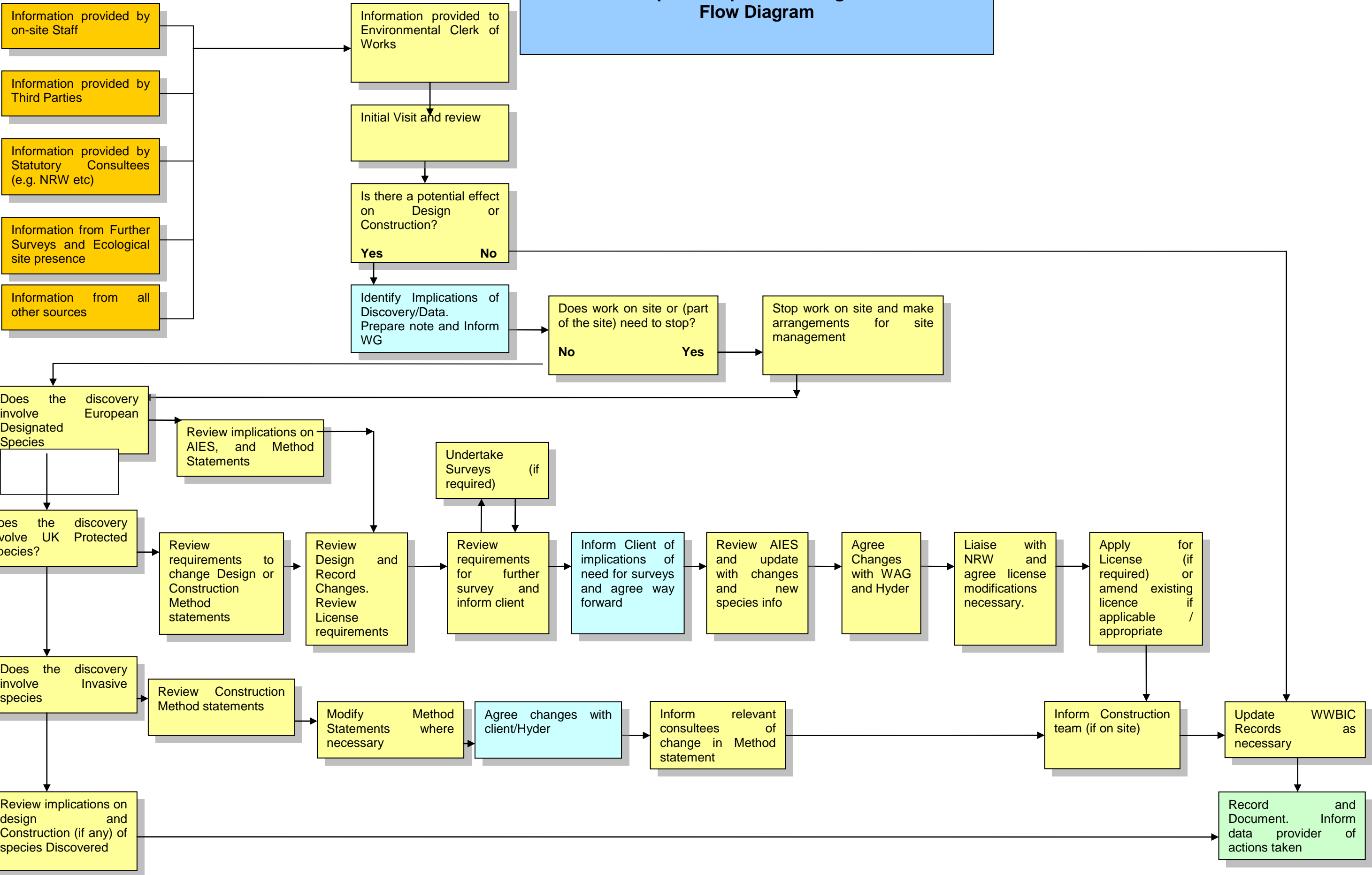
6.1 Consultation

The development of the survey and action plan, and remedial actions will be undertaken following consultation with the appropriate authorities. This will include NRW and Carmarthenshire County Council. Contact details for all are included in the CEMP.

6.2 Reporting

All reports shall be reviewed and signed off by the Project ecologist and Environmental co-ordinator. All ecological reports shall be reviewed and agreed with the Project Manager and the Welsh Governments Project Director (or his appointee) prior to issue to third parties.

Figure 1
A477 St Clears to red Roses Improvement.
KS 6 Unexpected Species Management Plan.
Flow Diagram



APPENDIX P

Species Specific Method Statements

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX P
Specific Method Statements for Species Licenses**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Plan.

This plan outlines all specific ecology method statements and licenses, including a method statement for invasive flora, protected species licenses and method statements that have been prepared as part of these license applications. These documents can be found on Buzzsaw and have been listed in Table 1.

Table 1. Specific method statements and species licenses

Document name	Document ref.
Badger License	Licence no: 38147:OTH:BD:2012
Method Statement with respect to Badger	16454-EN0021
Bat License ¹	Licence no: BAT/2464/WG/IND
Method Statement with Respect to Bats	16454-EN0022
Method Statement with Respect to Otter	16454-EN0024
Method Statement for Reptiles	16454-EN0025
Method Statement for Invasive Species (refer to Appendix J)	16454-EN0026
Method Statement for Goshawk	16454-EN0027
Dormouse License (refer to Appendix N)	Licence no.: DOR/2486/WG/IND
Method Statement for Dormouse (refer to Appendix N)	16454-EN0029

¹ The bat licence is to be surrendered as the tree it was issued for did not require to be felled.

These need to be referred to when working in areas of ecological value as detailed in Appendices I and O.

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTALMANAGEMENT PLAN
APPENDIX Q
Environmental Master Plan Drawings**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in Project Quality Plan.

This plan provides the environmental constraints of the Project as a drawing.

The EMP drawings can be found on Buzzsaw using the drawing numbers below:

16454-GE-300 to 331

APPENDIX R

Environmental Risk Assessment Template

→Increasing likelihood of estimated potential consequence occurring (Probability)→

APPENDIX 2 – ENV RISK ASSESSMENTS

Environmental Risk Assessment Matrix

		Never Heard of in Industry (Highly Unlikely)	Heard of in Industry (Unlikely)	Incidents Occurred in Comparable E & P Company (Occasional)	Happens Several Times per year in a Comparable E & P Company (Likely)	Happens Several Times per Year at Location (Certain)
Environmental Effect (Consequence)		0	1	2	3	4
Zero Effect	0	Low	Low	Low	Low	Low
<u>Slight effect</u> : local environmental damage within fence line	1	Low	Low	Low	Low	Low
<u>Minor effect</u> : contamination single complaint, short term localised impact, no permanent effect.	2	Low	Low	Low	Medium	Medium
<u>Local Effect</u> : limited loss of discharges of known toxicity, beyond fence. Reversible over short/medium term	3	Low	Low	Medium	Medium	High
<u>Major Effect</u> : severe environmental damage incident of local importance. Not reversible in the	4	Low	Medium	Medium	High	High



**A477 St Clears to Red Roses
Improvement
Method Statement**

DOCUMENT REFERENCE: SRB/MS/053

medium term.						
<u>Massive Effect:</u> persistent severe environmental damage. Incident of national importance	5	Medium	Medium	High	High	High



A477 St Clears to Red Roses Improvement Method Statement

PAGE 18 OF 22

DOCUMENT REFERENCE: SRB/MS/053

Environmental Risk Assessment

ACTIVITY DESCRIPTION : Construction of Balance Ponds	ARA Prepared By: Fiona Lanc	Date: 11/09/2012
-------------------------------------------------------------	------------------------------------	-------------------------

	HAZARD	INITIAL RISK			CONTROLS	RESIDUAL RISK		
		Probability	Consequence	Risk Rating		Probability	Consequence	Risk Rating
MEDIUM	Hazard Description and Effect				List all Controls Required			
<i>Dust</i>	Dust pollution may arise from machinery movements	3	3	9	<ul style="list-style-type: none"> • Vehicle speed on-site will be restricted to reduce dust lift • Roads/working area will be dampened down to reduce dust lift if required • Water drawn from the Culverts to wet haul roads. 	3	2	6
<i>Waste</i>	Waste generated incorrectly managed	2	2	4	<ul style="list-style-type: none"> • Any waste material generated in the process of works must be returned to the site compound for appropriate disposal by a licensed waste contractor as per Waste Management Plan 	2	1	2
<i>Traffic and plant</i>	Disturbance to Local Community from Traffic/Plant activities	4	3	12	<ul style="list-style-type: none"> • All drivers will receive a Drivers Safety Induction • All construction traffic will adhere to the project Traffic Management Plan 	4	2	8
<i>Noise generated by traffic movement or whilst carrying out the works</i>	Noise pollution causing a nuisance to local residents and disturbing local fauna.	3	1	3	<ul style="list-style-type: none"> • Work will normally be restricted to daylight hours (0700-1900 Mon-Fri, 0700-1600 Sat) • All plant is regularly serviced and maintained to work optimally • Works are at a distance from the nearest noise sensitive receptor site. 	2	1	2



A477 St Clears to Red Roses Improvement Method Statement

PAGE 19 OF 22

DOCUMENT REFERENCE: SRB/MS/053

	HAZARD	INITIAL RISK			CONTROLS	RESIDUAL RISK		
		Probability	Consequence	Risk Rating		Probability	Consequence	Risk Rating
MEDIUM	Hazard Description and Effect				List all Controls Required			
<i>Water/Land</i>	Risk of minor leaks of oil/diesel from equipment.	2	3	6	<ul style="list-style-type: none"> • <i>Comply with best practice guidelines for fuel storage and refuelling</i> • <i>Machinery and plant will be serviced and thoroughly checked for potential leaks prior to being taken on site</i> • <i>Refuelling of plant and equipment will be restricted to hard stand areas where practicable. Refuelling will be done in accordance with the Pollution Control Plan</i> • <i>In the event of an oil/diesel spill the Emergency Response Procedure will be initiated</i> • <i>Oil spill Kits will be stationed on site for management of any spill events</i> • <i>Regular training will be given to construction personnel to ensure that in the event of a spill they know how to react</i> 	1	3	3
<i>Runoff</i>	Risk of silt contaminating water courses	3	4	12	<ul style="list-style-type: none"> • <i>Ensure a permit to Pump / Discharge is in place before and pump / discharge activities commence</i> • <i>Ensure that sufficient mitigation measures are in place, and agreed with the Environmental Management team.</i> • <i>Where possible, utilise a dirtbox, silt sock or a combination of both to catch silt.</i> • <i>Where possible utilise a Hydro Unit to clear silt from water and discharge clean water.</i> 	3	1	3

**Appendix S
Not Used**

Appendix T
Monthly Audit Template

**Environmental Audit Report – Physical
A477 St. Clears to Red Roses**



EMS 008 Rev 1

Site Ref No:	A477 St. Clears to Red Roses Road Improvement Scheme	
Date & Location:		
Audited By:		Signature:
Issued to:		Signature:

ENVIRONMENTAL ASPECT	%
1.0 FUEL / OIL / CHEMICAL MANAGEMENT	
2.0 POLLUTION OF WATER COURSES	
3.0 WASTE MANAGEMENT	
4.0 HOUSEKEEPING	
5.0 USE OF MATERIALS / NATURAL RESOURCES	
6.0 EMERGENCY RESOURCES	
7.0 NOISE / VIBRATION	
8.0 DUST / AIR POLLUTION	
9.0 WATER CONSUMPTION	
10.0 FLORA & FAUNA	
SUMMARY PERCENTAGE	

Environmental Audit Report – Physical A477 St. Clears to Red Roses



EMS 008

RELEVANT ENVIRONMENTAL LEGISLATION & OTHER REQUIREMENTS:	
<p>1.0 FUEL / OIL / CHEMICAL MANAGEMENT</p> <ul style="list-style-type: none"> ➤ REACH Regulation 1907/2006/EC ➤ Special Waste Regulations 1996 and amendment Regulations 1996 and 1997, Special Waste Regulations 1997 and Amendment Regulations 2004 ➤ Water Environment (Oil Storage) Regulations 2006 	
<p>2.0 POLLUTION OF WATER COURSES</p> <ul style="list-style-type: none"> ➤ Water Environment (Controlled Activities) Regulations 2011 and Water Environment (Diffuse Pollution) Regulations 2008 ➤ Water Environment (Groundwater and Priority Substances) Regulations 2009 ➤ Control of Pollution (Amendment) Act 1989 ➤ Water Quality Regulations 2010 	
<p>3.0 WASTE MANAGEMENT</p> <ul style="list-style-type: none"> ➤ Control of Pollution (Amendment) Act 1989 ➤ Environmental Protection (Duty of Care) Regulations 1991 ➤ Controlled Waste Regulations 1992 and (Amendment) Regulations 1993 ➤ Waste Regulations 2011 	
<p>4.0 HOUSEKEEPING</p> <ul style="list-style-type: none"> ➤ CDM Regulations 	
<p>5.0 USE OF MATERIALS / NATURAL RESOURCES</p> <ul style="list-style-type: none"> ➤ Environmental Statement ➤ Contract Documents 	
<p>6.0 EMERGENCY RESOURCES</p> <ul style="list-style-type: none"> ➤ Control of Major Accident Hazards Regulations 1999 and (Amendment) Regulations 2005, 2008, 2009 (COMAH) ➤ Dangerous Substances and Explosive Atmosphere (DSEAR) Regulations 2002 	

Environmental Audit Report – Physical *A477 St. Clears to Red Roses*



EMS 008

7.0 NOISE / VIBRATION

- Control of Noise at Work Regulations 2005
- Control of Vibration at Work Regulations 2005
- Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations 1988 and Amendment Regulations 1992 and 1995
- Environmental Noise Regulations 2006
- Control of Noise (Codes of Practice for Construction and Open Sites) Order 2002

8.0 DUST / AIR POLLUTION

- Environmental Protection Act 1990 (EPA)
- Air Quality Standards Regulations 2010

9.0 WATER CONSUMPTION

- European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989
- Water Environment and Water Services Act 2003 (WEWS), Water Environment (Consequential Provisions) Order 2006, Water Environment (Consequential and Savings Provisions) Order 2006, Water Environment (Groundwater & Priority Substances) Regulations 2009

10.0 FLORA & FAUNA

- Conservation (Natural Habitats, &c.) Regulations 1994, (Amendment) Regulations 1997, 2004, 2007, 2009, 2011 and Conservation of Habitats and Species Regulations 2010 and (Amendment) Regulations 2011
- Wildlife and Countryside Act 1981 (WCA), (Amendment) Act 1985, 1991, and Wildlife and Countryside (Service of Notices) Act 1985, Wildlife and Natural Environment Act 2011
- Nature Conservation Act 2002
- Protection of Wild Mammals Act 2002

Environmental Audit Report – Physical

A477 St. Clears to Red Roses



EMS 008

	Area	Yes/ No	80 to 100	60 to 79	40 to 59	20 to 39	0 to 19	Comments
1.	FUEL/OIL/CHEMICAL MANAGEMENT Hydrocarbons: Are fuel/oils stored on site White Diesel Re-fuelling area provided Are spill kits available in the immediate area Fuel nozzles locked Drip Trays under static plant Are there signs of an oil/fuel spills Have these events been reported Are spill management signs posted Chemicals: Are chemicals being stored on site							
Additional Points •								
2.	POLLUTION OF WATER COURSES Surface Water: Is surface water mitigation in place Are there any signs of suspended solids Are there any signs of impeded flows Are there any signs of pollution Fuels, oils or solvents stored near water courses Is excavated materials stored > 10m from water courses Is monitoring being carried out Aquifers: Have all aquifers adjacent to works been located & protected							
Additional Points •								
3.	WASTE MANAGEMENT Is there a designated waste compound: Is paper/cardboard recycled Are plastics recycled Are waste timbers recycled Is waste steel segregated							

Environmental Audit Report – Physical

A477 St. Clears to Red Roses



EMS 008

Area	Yes/ No	80 to 100	60 to 79	40 to 59	20 to 39	0 to 19	Comments
<p>Are signs in place on skips</p> <p>Waste oil & oil contaminated material:</p> <p>Are empty oil drums stored correctly</p> <p>Are oil contaminated material correctly disposed of</p> <p>Are waste oil & oil contaminated material drums labelled correctly</p> <p>Is there a container for waste hazardous materials:</p> <p>Have all waste chemical been properly disposed of</p> <p>Are MSDS sheets available for the contents</p> <p>Is the waste manifest up to date</p> <p>Are waste disposal signs posted</p>							
<p>Additional Points</p> <p>•</p>							
<p>4. HOUSEKEEPING</p> <p>Haul Road/Work area/ route</p> <p>Skip areas</p> <p>Site Compound & Offices</p> <p>Materials storage area</p> <p>Re-fuelling Areas</p>							
<p>Additional Points:</p> <p>•</p>							
<p>5. USE OF MATERIALS / NATURAL RESOURCES</p> <p>Materials stored to avoid damage</p> <p>Re-cycled materials being used</p> <p>Powder / Perishable materials stored under cover</p> <p>Surplus materials returned to store</p>							
<p>Additional Points</p> <p>•</p>							
<p>6. EMERGENCY RESOURCES</p> <p>Adequate spill kits available onsite</p> <p>Emergency numbers displayed in offices/canteens</p> <p>Spill kit training received</p> <p>Adequate fire points near re-fuelling areas</p>							
<p>Additional Points</p>							

Environmental Audit Report – Physical

A477 St. Clears to Red Roses



EMS 008

	Area	Yes/ No	80 to 100	60 to 79	40 to 59	20 to 39	0 to 19	Comments
•								
7.	NOISE / VIBRATION Noise: Are machines maintained Machines switched off when not in use Noise barriers in place Vibration: Vibration monitoring in place							
Additional Points •								
8.	DUST / AIR POLLUTION Dust: Dust suppression by bowser Any evidence of increased dust levels Dust monitoring in place Air Pollution: Machines maintained & turned off when not in use Odours: Odours from stagnant water flow Fumes from plant							
Additional Points •								
9	WATER CONSUMPTION Running water in site toilets Mains water used in bowsers Are bowsers pumping directly from watercourses Taps on all hoses switched off when not in use							
Additional Points •								
10	FLORA & FAUNA Have all badger sets been located and marked Are bat boxes in place Is Otter protection in place Has all flora to be maintained cordoned off and signs erected Dormouse Boxes in place							

Environmental Audit Report – Physical
A477 St. Clears to Red Roses



EMS 008

No:	Notes:	Actioned By:	Date:
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Appendix U
Environmental Site Inspection Form

A477 St Clears to Red Roses Improvement Scheme

WEEKLY INSPECTION SHEET Rev:

Inspection By:		Date:		Score:		Item		Comment	
Section:		Yes/No	Score	Action Code		Item		Comment	
Scoring: 0 = Poor, 5 = Good									
Weather: Mixed with some very heavy showers									
Site access Points	Are site access points free from debris and mud?								
	Any Evidence of Pollution in attenuation ponds?								
Water	Any Evidence of pollution/particulates entering receiving waters								
	Is there evidence of flooding on site?								

NB: Full comments are given on Action List

Is there evidence of runoff entering adjacent land?														
Is temp works runoff control working?														
Are drip trays/bunds in place?														
Are pollution and spill control kits in place/complete?														
Is wheel wash effective?														
Is there evidence of dust release from works														
Is dust suppression effective?														
Is wheel wash effective/working?														
Is any site equipment emitting black smoke?														
Are any Odours noticeable?														
Are any fires on site/emissions of black smoke (non equipment)?														
Are blasting mitigation measures effective?														
Air														

Noise and Vibration	Are temporary noise barriers in place and effective?					
	Are there any Vibration issues noticeable/monitored?					
	Are blasting mitigation measures effective?					
Archaeology	Are archaeological sites protected from works/fenced off?					
	Are archaeological warning signs in place?					
	Is there evidence of unexpected archaeology present?					
Waste	Is waste stored appropriately in compounds?					
	Is waste stored appropriately in works areas?					
	Is hazardous waste stored in quarantine?					
	Is runoff control to quarantine area effective?					

	Is there evidence of litter on site?					
Soil Management	Soil storage appropriate and in compliance with CEMP?					
	Evidence of erosion present?					
Ecology/Landscape	Is Protected Species Fencing intact?					
	Is Vegetation Protection fencing intact?					
	Is invasive species fencing intact?					
	Is signage present on fencing?					
	Is there equipment works within 30m of badger sett?					
	Are ecological mitigation areas (Reptiles/setts/holts etc) protected and intact?					
	Any evidence of unexpected/protected species on site?					
Contaminated Land	Are Translocated hedges protected?					
	Are planted areas protected from vehicles?					
	Is there Visual or Olfactory evidence of contaminated land present?					

Oil / Chemicals	Are there any oil and chemical spills or leakages evident through site walkover						
Spill Kits	Are spill kits present at locations						
Other	Was any part of the site inaccessible to audit?						
Lighting	Is there Light Pollution						
Bridle Ways & Public Right of Ways	Is there adequate signage at these locations						
Road Verges	Are the road verges along the scheme in an acceptable condition						
Reptilian Areas	Are logs for this area being taken / stolen						



**SRB Civil Engineering
Environmental Audit Report**

Contract	A477 St Clears to Red Roses	No	1610	Date	22/08/12
-----------------	------------------------------------	-----------	-------------	-------------	-----------------

General Comments
Mainly dry but some heavy showers.

Action Code:	A = Same Day	B = Within 24hrs	C = Within 3 Days	D = Within 7 Days	Obs = Observation	SP = Strong Point
Item Code	Observations / Strong Points	Action Required	Action Taken	Closed out by		
1						
2						
3						
4						
5						

THE ACTIONS AND CLOSE OUT ARE TO BE RECORDED ON THE REPORT WHICH IS TO BE HELD IN THE SITE FILE. WHERE ANY TIMESCALES ARE GIVEN IN EXCESS OF 7 DAYS, DETAILS OF PROGRESS ARE TO BE INCLUDED IN THE ACTIONS COLUMN.



**SRB Civil Engineering
Environmental Audit Report**

THE PERSON SIGNING THE REPORT IS RESPONSIBLE TO ENSURE ACTIONS ARE CLOSED OUT AS PER THE AGREED TIMESCALES. THE CONTRACT MANAGER IS RESPONSIBLE TO ENSURE THIS IS CARRIED OUT, AND SIGN ACCORDINGLY. A COPY OF THIS REPORT IS TO BE COMPLETED WITH ALL DETAILS OF ACTIONS TAKEN AND RECORDED CLOSE OUT, SCANNED* AND SENT BY EMAIL TO THE PROJECT DIRECTOR AND ORIGINATOR OF THE REPORT 7 DAYS AFTER THE DATE RECEIVED.

*The report can be faxed or posted if a scanner is not available.

Report by: Position: Date:	Received by: Position: Date:
Construction Manager and Structures Manager to sign to confirm all actions have been closed out satisfactorily.	



Appendix V
Agriculture Management Plan

**A477 ST CLEARS TO RED ROSES IMPROVEMENT
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
APPENDIX V
AGRICULTURE MANAGEMENT PLAN**

1. INTRODUCTION

This plan forms one of a series of discipline plans which, collectively, form the Construction Environmental Management Plan (CEMP) for the A477 St Clears to Red Roses Improvement.

These plans shall be implemented throughout the construction phase of the works for the above project. They form part of the site management procedures as defined in the Project Quality Plan

This plan provides procedures to carry out works in such a way to protect good quality agricultural land from damage and to contain and limit adverse effects on agricultural resources as far as reasonably practical.

2. POTENTIAL IMPACTS AND DESIGN

The potential impact of the Project on agricultural businesses was estimated in the Environmental Statement and discussed in public at the Public Local Inquiry. Of the fourteen agricultural enterprises that have land taken for the proposed Improvement, eight will experience only minor adverse impacts. That is because either the relative land take (and consequent effect on workability and economics) is small, or because the enterprises are not full-time enterprises. Of these:

Table 1: Farms with minor adverse impact and new access provision

Farm Name and Holding Number	Hectares	Type	Loss due to scheme	New Access	Existing Water Provision
Brynhyfrd (1)	70	Diary	0.2 ha (0.3%)	PMA 1/1	Piped
Avola (40)	55	Beef and Sheep	2 ha (4%)	PMA 1/8 and 1/10 Proposed underpass Provision of a PMA (PMA04) to allow access by large farm machinery to severed land north of the Project and the provision of a livestock / small machinery underpass at Chainage 1350 (ST03/PMA04 - Rose Park – Avola Underpass) to allow access between the two severed blocks of farmland	Livestock drink from the watercourses on the northern part of the farm.
Gellifelen (47)	84	Diary	5 ha (6%)	Overbridge PMA 3/1 Provision of an overbridge at Chainage 3100 (ST05 – Gellifelen Overbridge) to allow continued use of the	Piped

				farm track which is severed by the Project	
Penlan (59, 76, 230 and 231)	140	Beef and Diary	5 ha (4%)	Proposed side road and PMA serving untis 76. 78 and 101. Provision of an overbridge at Chainage 5600 (ST09 – Vaynor Farm Overbridge) to allow continued use of the existing farm access track (Unit 76) and the provision of an underpass at Chainage 7250 (ST14 – Pilgrims Way Underpass) to allow the continued use of the access track to Plot 231	Livestock drink from a spring in the middle of the holding and the Afon Taf.
Cilfynydd (78)	8.5	Equine and Sheep	3 ha (35%)	Provision of a PMA (PMA08) to allow access into the severed part of the holding;	Piped
Pentrehowell (101 and 178)	35	Grazing	8 ha	Provision of a PMA (PMA09) to allow access into the severed part of the holding;	Piped
Glan-yr-afon (100)	3.5	Grazing		Tavernspite Road	Piped
Pentrehowell (101a and b)	36	Beef	0.5 ha	Tavernspite Road	Piped

For two businesses the significance of the impact assessed is between minor and moderate. In these cases the impact was judged to be between limited and significant, but overall workability and economic viability were not considered significantly affected. The farms are affected are as follows:

Table 2: Farms with minor to moderate adverse impact and new access provision

Farm Name and Holding Number	Hectares	Type	Loss due to scheme	Access	Water Supply
Coldwell (5 and 6)	48	Beef and Sheep	4 ha (8%)	PMA 1/6 Provision of a livestock underpass at Chainage 350 (ST01 – Coldwell Underpass) and PMA (PMA 03) to enable access from the farm buildings to land north of the existing A477 and north of the Project;	Livestock drink from the ditches / watercourses on the northern part of the farm.
Cildwyll (57)	200	Diary	6 ha (3%)	Provision of a PMA (PMA07) to allow access onto the existing farm track which is to be severed by the Project	Piped

For four businesses the estimate the impact identified in the ES was considered to be of moderate significance. There will be a significant impact on workability and a consequent economic impact, but a workable and potentially viable holding will remain post construction. The effects are as follows:

Table 3: Farms with moderate adverse impact and new access provision

Farm Name	Hectares	Type	Loss due to scheme	New Access	Water Supply
Rose Park (10)	38	Diary		New access PMA 1/8 and 1/10 Provision of a new access into the farm and the provision of a livestock / small machinery underpass at Chainage 1350 (ST03/PMA04 – Rose Park – Avola Underpass) to allow access between the two severed blocks of farmland	Piped
Rhosgoch (44)	111	Beef and sheep	5%	New access PMA 2/2 Provision of an underpass at Chainage 1950 (ST04 – Rhosgoch Underpass) to allow continued use of the farm track which is severed by the Project	Piped
Great Bishops Court Farm (142 and 143)	75	Diary, Beef and Sheep	7 ha	PMA 6/1 Flood Relief Culvert at Afon Taf Provision of an underpass at Chainage 7250 (ST14 - Pilgrims Way Underpass) and a PMA (PMA12) to allow access to severed parcels of land, the use of the redundant carriageway for access purposes (PMA 13) and the provision of a new farm access (PMA14) to link in with the severed farm track	Livestock drink from the Afon Taf.
Blewgyd (207 and 214)	117	Beef	6 ha (16%)	Underpass PMA 5/2 Afon Hydfron Bridge PMA 5/5 Provision of an underpass at Chainage 7050 (ST12 – Blewgyd Underpass) to allow access into the severed parts of the holding (207) and provision of an underpass at Chainage 7250 (ST14 – Pilgrims Way Underpass) to allow the continued use of the access track to plot 214	Livestock drink from a spring in the middle of the holding and the Afon Taf.

In all cases, however, workable units capable of beneficial agricultural use will remain.

Two sets of buildings, a pair of open barns at approximate chainage 3500 and three agricultural outbuildings at Cnwce (approximate chainage 4550) will be lost. It has been assessed that the loss of these buildings is of no agricultural significance.

3. PLANS AND PROCEDURES

3.1 General

SRB will appoint a Public Liaisons Officer (PLO) to carry out liaisons with affected landowners, occupiers and agents, as appropriate. The PLO will be supported by the Construction Manager and Contracts Manager.

The PLO will advise landowners, occupiers and agents, as appropriate, regarding the intended commencement of construction works in areas of the site adjacent to agricultural holdings and the provision of accommodation works and access routes to be used. Any works that require land entry will be organised through the PLO who will inform the landowner of the requirement to enter the farmers land. Once the haul road is constructed this requirement will be less frequent

SRB will develop the construction programme to reduce disturbance on agricultural businesses in so far as is reasonably practicable. The programme will be communicated to the local farmers to plan season to manage grassland areas.

The soils along the Project are representative of soils in the district as a whole, and so there is no opportunity to find an alternative route on poorer quality agricultural land. The area of land that would be permanently acquired is the minimum necessary to construct and operate the Project.

The impacts of severance during construction would be mitigated by either:

- i Providing the new underbridges / overbridges and PMAs as described in the tables 1 to 3 above
- ii Maintaining access across the working width during the construction period for livestock and machinery until such time as the new access provisions can be provided.

SRB will implement procedures in relation to the stripping, handling, storage and replacement of agricultural soils to mitigate risks associated with soil degradation. (See Appendix M Soil Management) .

On completion, the construction compound and other construction facilities (haul roads etc) will be top soiled, seeded and returned to an agricultural use SRB will take precautions in relation to storage of agricultural soils, including the following, as appropriate:

- a) Handling and storing different soils separately, particularly top soils and sub soil where it is present;
- b) Taking appropriate measures to prevent contamination of soils with chemicals or other materials; and
- c) Undertaking turf cutting in dry weather and ground conditions, where reasonably practicable to avoid damaging the soil through compaction or loss of soil by erosion.

None of the affected land is known to have had new drainage works carried out in recent years; however there may be some areas where historic clay drains are severed. Much of the land drains freely in watercourses. Any severed drains will be tied in to existing drains to ensure continued flow. The effects of impeded drainage outside the Project would be monitored during construction to ensure that remedial action is taken where appropriate.

SRB will take appropriate measures to prevent the spread of invasive and alien species (see Ecological Management Plan).

SRB will comply with the legal requirements to avoid, as far as possible, the spread of soil borne, crop and animal diseases. This will include phasing clearance from TB clean sites first and then entering TB dirty sites. The contractor will implement appropriate measures to control run-off to reduce any risks associated with disease transmission. Prior to entry SRB will notify the Agricultural and Rural Affairs Department about bio security measurements in place.

During the development of the ES the team have taken reasonable precautions to identify locations of carcass burial sites within the construction site to mitigate risks associated with the existence of any unrecorded sites. The CEMP contains an unexpected contaminated land plan which shall be implemented as, and if, contaminated land, including bone pits, are found.

SRB will liaise with landowners, occupiers and agents, as appropriate, to establish requirements and measures to be implemented to maintain livestock water supplies which may be affected due to construction works. For temporary works this may include the use of a water bowser.

The private water borehole at ch 1050 will be closed as it is in the footprint of the works. An alternative supply will be provided prior to the closure of the borehole.

4. ROLES AND RESPONSIBILITIES

The following staff have roles and responsibilities for works under this plan:

Activity	Primary Role	Review Role	Authorisation Role
Soil storage	Site Supervisors	Environment Clerk of Works	Site Manager
Communication with local landowners	PLO	Environment Clerk of Works	Site Manager
Survey of land prior to entry	Surveyors	Site Manager	-
Organise land access entry	PLO	-	-
Notify the Agricultural and Rural Affairs Department about bio security measurements in place	Env Manager	Environment Clerk of Works	-
Auditing of Soil storage	Environmental Clerk of Works	Environmental Coordinator	Site Manager
Maintain private water supplies	PLO	Env Manager	Site Manager

5. MONITORING SURVEY AND ACTIONS

5.1 Coverage

The Plan covers all areas of temporary and permanent works. .

5.2 Monitoring and Verification

As part of the weekly environmental inspections, stockpiles will be checked to ensure they are in approved locations and do not exceed the height limit. Monitoring and verification shall comprise:

Check	Frequency	Responsibility	Verification of Completion
Soil storage	weekly	Environment Clerk of Works	Environmental Co-Ordinator

6. RECORDING

6.1 Reporting

Any inspection and/ or audit findings against this procedure shall be reviewed and signed off by the Environmental Co-ordinator.