

KNIGHTS BROWN ENVIRONMENTAL MANAGEMENT PLAN

W000150 - Cardiff Coastal Defence Scheme

Environmental Management Plan

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Amendment List

Rev	Date	By	Site	Client	Description of Modification
14	08.10.24	SH		CCC	Temporary access across the saltmarsh has yet to be designed from a temporary works loading point of view (the programme for the area of works that cross the saltmarsh is not until next Summer) but will be aluminium trackway. Plant that will likely utilise this temporary access will be items such as (but not limited to): • Articulated Dump trucks up to 30T • Dumpers up to 9T • Rollers up to 26T • Tracked excavators up to 50T. • Dozer (D8/D6/D4) • 8-wheeler tipper lorries • Telehandler up to 20T • Site vehicles, such as transit tippers, 4x4 pick-up trucks The site speed limit is 10mph.
13	13.09.24	SH		CCC	Added ECOW adjacent to site managers responsibility in table 2 Footer amended from Outline CEMP to CEMP Added further to ECoW roles and responsibilities section 14.7 Added original programme to app P and referred to file section for latest programme to avoid having to revise CEMP at every programme revision.
12	03.09.24	SH		CCC	Added Appendix T: Updated NVC report. Table 2 item 3 actions updated with wording "The updated NVC Report is

					appended to this CEMP (Appendix T)" Table 2 item 3 actions updated with wording "The Shrill Carder Bee results are appended to this CEMP (Appendix S)
11	22.08.24	SH		CCC	Table 2 item 3 updated with findings from shrill carder bee survey. Added Appendix S: Shrill Carder Bee Survey Report.
10	21.08.24	SH		CCC	Updated appendix M to include compound 12 East layout
9	20.08.24	SH		CCC	Added Appendix R content (missed from previous update). Amended Wording from Method statement to Risk Assessment in table 2 item 1. <i>Develop Pollution Prevention Risk assessment to outlining general preventative measures that are to be used throughout the works.</i> Amended ECOW roles and responsibilities in line with NRW comments. Amended wording within table 2 section 3 relating to invertebrate habitat requiring protection.
8	01.07.24	SH		CCC	Added working hours for Noise in appendix B. section 3.1 Added reference to appendix R to item 11.1 pollution prevention measures and added RA to Appendix R. P58 environmental emergency plan item 6 wording added – "As described on previous page in the pollution incident flowchart any major spills must be reported to NRW." P59 in reporting section wording added – "If a major spill then site management must also report to NRW as described in incident flow chart" Added ECOW roles and responsibilities table to 14.7 Added red line boundary showing

					extent of the work into section 3.
7	23.04.24	SH		CCC	Amended table 2 objective 9 wording and added sketch to appendix Q.
6	18.04.24	SH		CCC	Insert ES document list into App J Table 2 objective 9 saltmarsh – removed soil strip for access across saltmarsh and replaced with track mats.
5	12.04.24	SH		CCC	P25 Concrete - paragraph 3 wording amended stating concrete will not be used in an area that could cause pollution. Added to table 2 section 1 material storage and fuel storage not in tidal zones.
4	05.04.24	SH		CCC	Wording amended to align spill response procedure name with contract. Updated responsible person within the procedure. P25 item 2 concrete – wording amended in line with good practice, reference to concrete mix that doesn't cause pollution has been removed. Removed wording "if necessary" from pollution response flow chart p55 Added Appendix P - Programme
3	16.02.24	SH		CCC	App C table 1 added reference to contaminated sediment use and linked to App D control 9 which refers back to sediment management plan for controls Added that any sediment removed from site will be controlled by waste management protocols. Table 1 format altered Added note that compounds are all off road so no drainage to protect in table 2 action number 1 Added to table 2 environmental management plan saltmarsh habitat control relating to vehicle access routes across saltmarsh (item 9). Also added to table 1 (item 20 the potential

					impact of vehicle routes. Line 14.7 added relating to EcoW role in the project and independent inspection of environmental matters on site. Bio risk assessment (Knotweed management and marine invasive species risk assessment) added to Appendices. Added to table 1 impacts item 21 and table 2 management plan item 12 relating to disturbance of otters and over wintering birds.
2	19.12.23	SH		CCC	Table 2 – environmental management section 3(f) actions wording amended relating to washing of wheels when leaving identified knotweed areas rather than going into areas. P59 – reference to helical piling preferred removed. Addition of reference to both Sediment management plan and the saltmarsh habitat plan and appendices added for each document.
1	02.11.23	SH		CCC	Outline CEMP deleted and appendices list updated to match appendices after review from JBA.
0		EA		CCC	First Draft

LIST OF APPENDICES

Appendix A: Knights Brown Environmental Policy Statement

Appendix B: Environmental Components of General Method Statement

Appendix C: Assessment of Environmental Impacts

Appendix D: Environmental Management Plan

Appendix E: Emergency Pollution Response Plan (EPRP)

Appendix F: Mitigation of Environmental Interventions

Appendix G: Site Waste Management Plan

Appendix H: Pollution Prevention Measures

Appendix J: Project Environmental Statement

Appendix K: Sediment Management Plan

Appendix L: Saltmarsh Habitat plan

Appendix M: Example compound layouts

Appendix N: Biodiversity risk assessment and knotweed management plan.

Appendix P: Programme

Appendix Q: construction interface with Saltmarsh

Appendix R: Pollution prevention RA (for every site RAMS)

Appendix S: Shrill Carder Bee Survey Report

Appendix T: Update NVC Saltmarsh Survey report

1 Scope of the Construction Environmental Management Plan

- 1.1 The scope of the Construction Environmental Management Plan (CEMP) covers the activities and operations under the control of Knights Brown or subcontractors during the works.
- 1.2 The CEMP forms one component of the Project Management Plan and should be read in conjunction with the Site Project Phase and Quality Plans. The requirements of this plan apply to the whole project team, including all contractors and sub-contractors involved in the works under the control of Knights Brown.
- 1.3 The CEMP is supported by the Knights Brown, Information Management System (IMS).

2 Scheme Environmental Policy

Policy

- 2.1 The Knights Brown Environmental Policy Statement will be applicable and applied through this Construction Environmental Management Plan. Knights Brown's Environmental Policy Statement is delivered through its integrated Occupational Health and Safety Management System (OHSAS).
- 2.2 This current policy statement is also provided in Appendix A.

Aims

- 2.3 The overall aim of the Construction Environmental Management Plan (CEMP) is to ensure adequate management resource is provided to minimise the detrimental environmental impact of the works to ensure the smooth delivery of this project, taking cognisance of the environmental sensitivities of the location.
- 2.4 A key issue is that appropriate training is given and adequate resources are available to ensure that environmental responsibilities are discharged. Employees are required to take reasonable care of the environment in addition to their health, safety and welfare and that of others who may be affected by their acts.
- 2.5 All personnel are required to understand and implement the requirements of the CEMP. The aims, policies and procedures described in this plan will regularly be reviewed and revised as necessary.

3 Project Description

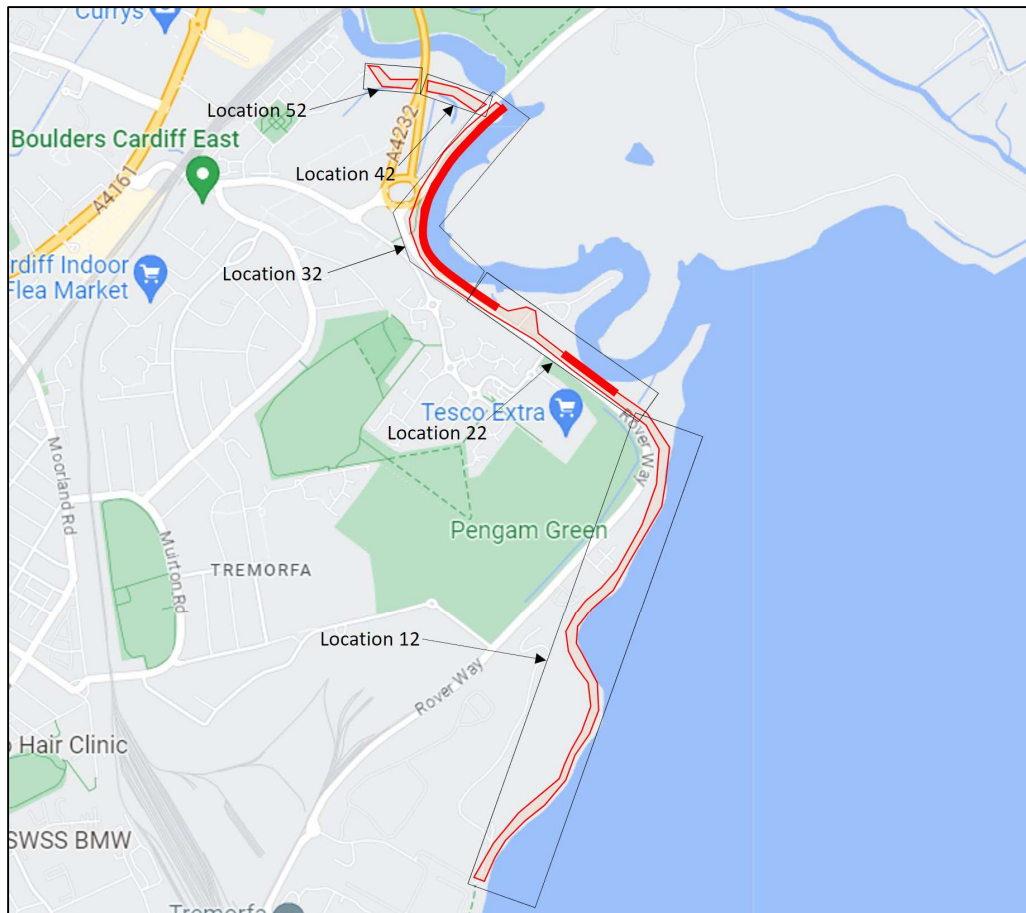
General Description of the Works

This project involves the reinforcement of banks near to the mouth of the river Rhymney and into the Severn estuary. The aims of this project are to reduce the erosion of the coast, as well as maintain the relevant aquatic ecosystems.

The extent of the works (geographically) covered by this document are identified in the drawing below indicated by the red line.



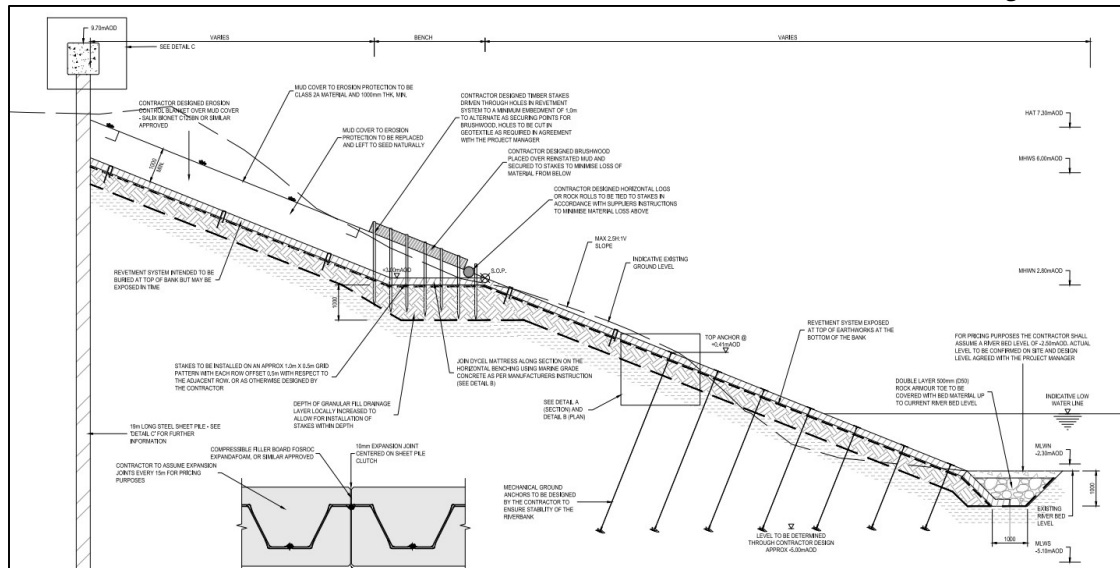
The works have been isolated into 5 sections: 12, 22, 32, 42, and 52. As highlighted below.



Anticipated commencement date: [16/10/2023](#)

Duration: [110 weeks](#)

The overall works programme is included in Appendix P



Location 42 – Construction of an earth embankment between the A4232 and Lamb Way roads to reduce flood risk. Installation will involve the initial benching of existing ground material with the subsequent installation of geotextile and compacted earth to the designed dimensions. Topsoil will be installed, compacted, and cultivated with local plant matter to incorporate the development to the surrounding landscape.

Location 52 – Construction of an earth embankment following the same method as used in Location 42.

4 Contractor Requirements in relation to Planning Conditions

The Works Information Specification states:-

Appendix 1/70: Environmental Management System

- 1 The Construction Environmental Management Plan shall be submitted to the Overseeing Organisation for its acceptance not later than 28 days after award of the Contract.
- 2 The Construction Environmental Management Plan shall include details of the following as a minimum.
 - (i) Names, roles, responsibilities and authority of principals and key personnel including:
 - (a) An Environmental Clerk of Works (ECoW)
 - (b) A Public Liaison Officer (PLO)
 - (ii) Specific actions to be undertaken in the case of the following environmental incidents:
 - (a) Any environmental incidents should be reported to the ECoW and *Project Manager*. For any significant pollution incidents (where there is a risk to the environment of serious environmental damage) the Emergency Pollution Response Plan will be followed – see below.

- (iii) Description of how the required environmental mitigation measures as identified in the Environmental Statement will be implemented (see Appendix 30/70 for further information).
- (iv) An Emergency Pollution Response Plan (EPRP) meeting the following requirements:
- (a) The *Contractor* shall consult with the relevant statutory bodies including the HSE, Fire Authority, Natural Resources Wales, and the Local Authority (Emergency Planning) when preparing the EPRP. This plan shall cover the procedures to be followed to limit the spread of pollution in the event of an incident. The *Contractor* shall incorporate the EPRP into the Method Statements.
 - (b) The *Contractor* shall prepare the specific sections of the EPRP for discussion with the relevant statutory authorities and approval where required by legislation.
 - (c) The *Contractor* shall ensure that the EPRP complements and is consistent with the relevant Emergency Preparedness Plans, as required by Health and Safety legislation, other environmental management and health and safety procedures and guidance (e.g. as set out within NetRegs GGP5 'Works and maintenance in or near water').
 - (d) The EPRP will contain, but not necessarily be restricted to:
 - a full and up-to-date list of all substances stored on site, including comprehensive data on the behaviour and toxicity of the stored substances in the water environment, together with location (which must be away from watercourses)
 - a full drainage plan for the site and its compounds
 - guidance on the storage and use of hazardous materials with the aim of preventing and containing spills and releases details of emergency equipment available on and off site
 - a breakdown of staff responsibilities
 - procedures for notifying appropriate emergency services, authorities, and personnel
 - provision of site access information to the emergency services
 - procedures for the removal of materials in the event of a flood warning
 - (e) The EPRP shall be easily accessible, and a copy kept away from the main site accommodation. A notice at the entrance to each site shall be posted, indicating the location of relevant emergency instructions. Copies of the EPRP shall be supplied to the emergency services, Natural Resources Wales, and other relevant Statutory Authorities. The *Contractor* shall obtain and store on site all the necessary equipment which may be required to alleviate a pollution spillage.

5 Significant Environmental Impacts

- Water Environment – Damage to watercourse and marine habitats
- Biodiversity and Nature Conservation – Maintain current biodiverse conditions and ecosystems within the site
- Landscape and Visual – Avoid degradation of the visual aspects of the site
- Historic Environment – Maintain the current historical value of the site.

The site area includes:

- Severn Estuary SSSI (461)
- Severn Estuary (Wales) Ramsar site (UK11081)
- Severn Estuary (Wales) Special Area of Conservation (UK0013030)
- Severn Estuary (Wales) Special Protection Area (UK9015022)

Works in these areas will be controlled to limit the impact of the project to protected lands, although the areas specified (location 12-22) involve minimal intrusive works and aim to reduce flood risk and erosion by strengthening the river/estuary bank. Which may further protect the site.

6 Structure and Responsibilities

Management Structure

- 6.1 The following appointments have been made in accordance with The Construction (Design and Management) Regulations 2015 and this Construction Environmental Management Plan:

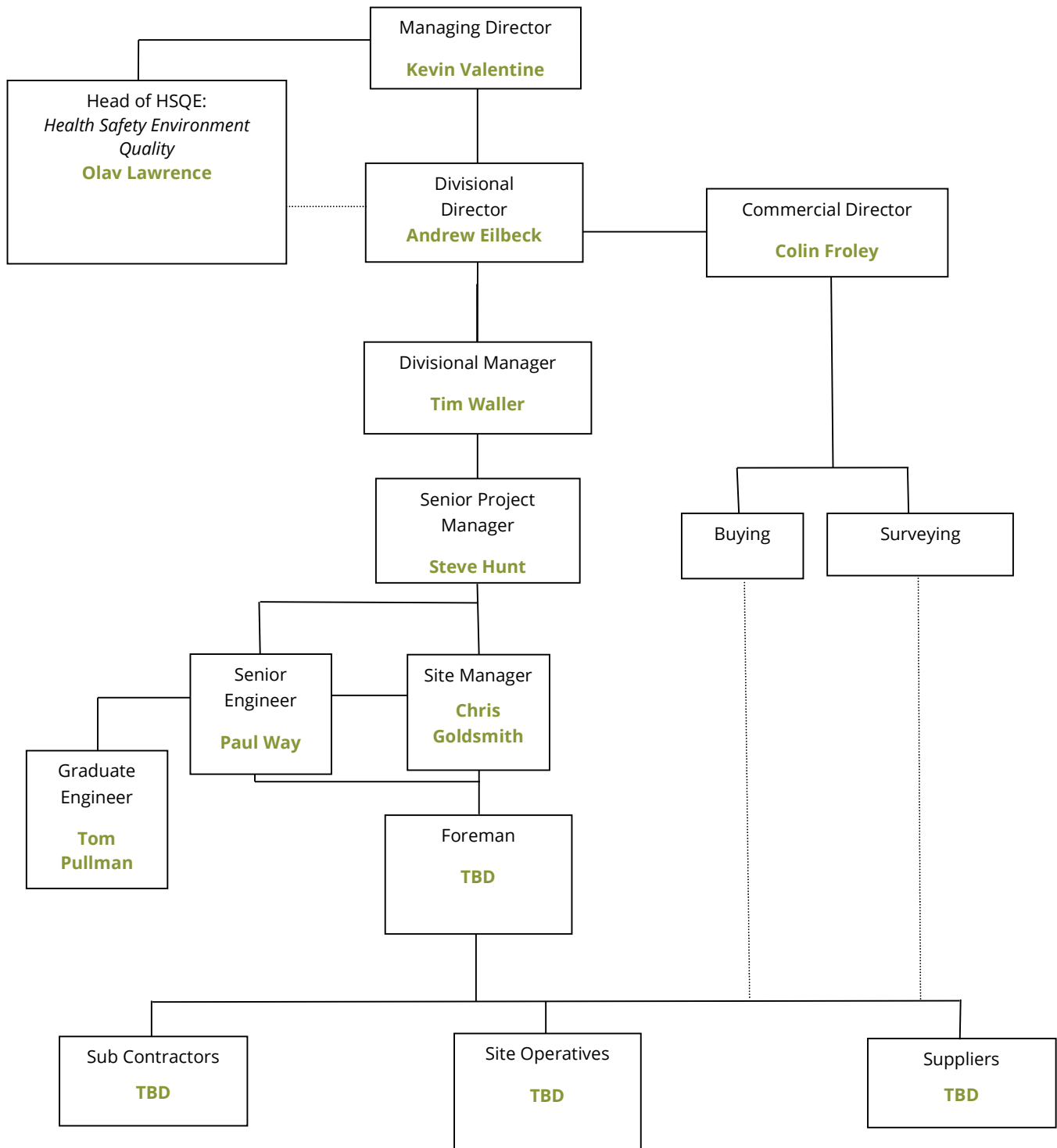
Contracts Manager:	Tim Waller
Senior Project Manager:	Steve Hunt
Site Manager	Chris Goldsmith
Senior Engineer	Paul Way
Graduate Engineer	Tom Pullman
Principal Contractor:	Knights Brown

- 6.2 As Principal Contractor, Knights Brown. will apply its own management framework to undertake the proposed works, reporting directly to the Site Manager.

- 6.3 Responsibility for all environmental issues relating to the proposed development falls to the Knights Brown Site Manager. Individual responsibilities will be allocated throughout the Knights Brown management team relating to inspection, sampling or reporting. Individual responsibilities are outlined below.

Typical Contract Organisation Chart

6.4 The following chart illustrates how the project team will be organised.



Individual Responsibilities

- 6.5 The duties of the Site Manager and other personnel are as detailed below.
- 6.5.1 The Site Manager reports directly to Knights Brown Project Management and is responsible for:
- the establishment and implementation of the Construction Environmental Management Plan
 - identifying all environmental effects associated to the project
 - setting environmental objectives and targets
 - environmental works programming
 - legal and contractual compliance by ensuring the appropriate licenses, certificates and procedures are in place
 - ensuring Knights Brown staff and sub-contractors receive training on project specific environmental issues

Other Specialists

- 6.6 Relevant specialists will be employed if necessary, during the project to undertake watching briefs or undertake surveys and advise the construction staff. CVs of all specialist staff proposed would be submitted for approval.

All Staff

- 6.7 All staff working on the contract would have responsibility for complying with the provisions of the EMP and any subsequent environmental control measure. This responsibility shall be communicated during the general site induction.

7. Environmental Action Plan

- 7.1 An Environmental Action Plan has been developed to outline the key management actions, responsibilities and timescales necessary for the achievement of the objectives and targets.
- 7.2 The complete Environmental Action Plan can be found in Appendix D. The action plan is referenced as an appendix to this plan to aid revision and adjustment as the project progresses.

8 Training

- 8.1 A training regime will be implemented to ensure that all members of the construction team, including client personnel, staff and employees, sub-contractor's personnel and major suppliers, receive focused environmental training to ensure their competence in carrying out their duties on the project.
- 8.2 Any environmental training shall be extra to the training requirements of the Knights Brown Occupational Health and Safety Management System.

Environmental Induction

- 8.3 A general environmental induction shall be developed to introduce all site personnel to the environmental issues connected with the project, important environmental controls associated with the day to day operation of the project e.g. water pollution, boundary control, waste management, drip trays etc, and the general emergency procedures. A full register of induction attendance shall be maintained on site, in accordance with data protection regulations.

Toolbox talks and method statement briefings

- 8.4 Toolbox talks and method statement briefings will be given as the work proceeds and will cover the environmental controls related to specific activities undertaken during the works for example refuelling. A full register of toolbox talk or method statement briefing attendance shall be maintained on site.

Emergency Procedures and Incident Response

- 8.5 General procedures for addressing spillage and ecological or archaeological incidents will be included in the general site induction; specific toolbox talks however will be delivered to ensure operatives are aware of any extra emergency procedures. For example, work on some areas could require the use of booms or sedi-mats to control a possible incident. The procedures for deploying such measures will be affected by the local conditions and may require location specific training.

Specialist Training

- 8.6 Specialist training relating to certain environmental aspects will be developed and delivered to key members of the site team as required throughout the project. These talks are likely to cover topics including managing ecological incidents, spill control and assessment and site water flow.

Training Records

- 8.7 All training records will be maintained and filed on site. The records shall include the content of the courses (induction and toolbox training), record of attendance and schedule of review.

9 Communication

Written Correspondence

- 9.1 All correspondence between members of the project team relating to environmental issues shall be written/emailed/confirmed on CVI.

Progress Meetings

- 9.2 To ensure all members of the protect team are kept informed of the construction work, there will be an environmental component in the monthly progress reports and meetings. Performance against the environmental objectives and targets can be reviewed at these meetings.

On site communication

- 9.3 A full contact list containing names, job titles and contact numbers shall be produced and maintained. On site communication, will be provided by mobile telephone.

External communication

- 9.4 External connections shall be established and maintained for the works.

10 External Reporting and Community Relations

Statutory Authorities and Interested Parties

- 10.1 The Site Manager will be responsible for the liaison on environmental matters with statutory and non-statutory authorities.

Complaints

- 10.2 On site, the manager in charge or designated community liaison is responsible for handling and resolving complaints.
- 10.3 Those received by offices should be directed either to the divisional marketing & communications manager or the head of marketing & communications.
- 10.4 A Complaints log shall be maintained and reviewed regularly to identify any changes to management procedures or operational controls to mitigate causes of complaints wherever possible. All complaints will be recorded in the Considerate Constructor Site file.

11 Operational Control and Incident Response

Pollution Prevention

- 11.1 A statement on general pollution prevention will be added to each method statement outlining the generic pollution prevention measures to be applied throughout the works. This method statement will relate to the following issues

- Provision and Selection of plant
- Fuel storage and refuelling procedures
- Operation of plant and equipment
- Dust mitigation
- Noise mitigation
- Special mitigation measures related to protected areas across the site.

The risk assessment that will be added to all Method statements on the scheme is appended to this document in Appendix R.

Pollution Incident Response

11.2 Pollution Incident Response Plans shall be prepared wherever necessary, to cover the potential pollution risks generated from the construction activities. Each pollution incident response plan shall include:

- Step by step procedure for assessing and containing the spillage
- A list of equipment and its location
- Responsibilities and reporting Protocols
- Emergency contact numbers and reporting procedures, including the relevant NRW, and NE contact numbers.
- Post incident Review and further preventative measures.

11.3 General procedural templates shall be used for the formation of these plans, however, at certain locations throughout the site extra precautions will need to be taken and the standard pollution procedures will be varied accordingly. The standard and site incident response procedures are available in Appendix E.

11.4 The Knights Brown HSQE Advisor will inspect the implementation of pollution response plans. Failures in implementation will be reported in the Safety and Environmental Report Log.

11.5 All pollution incidents shall be logged and reported to the Site Manager who shall be responsible for reporting to Knights Brown Senior Management, Regional Safety and Environmental Advisor and the Environmental Officer.

11.6 The construction activities could generate interactions with existing ecological and land use resources.

11.7 Method statements will outline the main operational controls applied at each location or activity to control possible detrimental impacts in accordance with the Environmental Action Plan. Specific operational controls will be communicated to the workforce through method statement briefings or toolbox talks.

11.8 Knights Brown will maintain watching briefs during any 'high risk' construction works.

Land use and Disruption

- 11.9 A works boundary will be maintained at all times. Permission for any temporary land take outside the footprint of the permanent works will be obtained in writing from the client prior to works commencing.

12 Procurement and Control of Sub-contractors and Suppliers

- 12.1 All subcontractors will be required to undertake site work in accordance with this CEMP and its supporting documents. All site operatives will be required to attend an induction which will include a section on the environmental aspect of the project.

Procurement

- 12.2 The procurement of sub-contractors and suppliers is controlled by Knights Brown Integrated Management System procedures (sub-contractor procurement) and Supplier database. The following information in this section summarizes procedural requirements for the purposes of the reader. IMS procedures will take precedence over this section of the CEMP.
- 12.3 The questionnaire would be reviewed as part of the subcontract or order evaluation procedure and the Knights Brown buyer will determine whether the subcontractor or supplier's environmental commitment, awareness and performance is adequate for the requirements of this project.
- 12.4 A pre-let meeting shall be held between the subcontractor or supplier and the Knights Brown Site Manager prior to contract award. Site-specific environmental issues and the proposed control measures will be discussed and reviewed during this meeting. The minutes to pre-let meetings shall be filed in accordance with the Project Filing Index.

Performance Monitoring

- 12.5 The Site Manager will monitor the performance of subcontractors or suppliers. Any significant underperformance or re-occurring breaches of controls will be reported immediately to the Knights Brown board that will take appropriate action.

13 Document Control and Records

- 13.1 Documents relating to the CEMP, their issue, revision, storage and archiving would be in accordance with the Project Quality Plan.
- 13.2 The following environmental records shall be maintained on site:
- Contract documents
 - Consultation with statutory authorities
 - Relevant consents, licenses, or authorizations
 - Minutes of meetings
 - Survey or monitoring records
 - Incident reports and corrective actions
 - Induction records and corrective actions
 - Complaints log
 - Waste management documentation
 - Audit and inspection reports
 - Pollution incident equipment checklists

14 Audit and Inspection

- 14.1 An auditing and inspection regime shall be defined and maintained to ensure the continued compliance of the construction works with policy, the contract conditions and relevant legal requirements.
- 14.2 The results of environmental inspections and audits shall be reported to the Site management team and Knights Brown board. The results can be made available to the Client's Project Manager.

Site Inspection

- 14.3 Weekly inspections of the works shall be undertaken by a nominated member of the site staff to ensure the continued compliance of site operations with the provisions of this plan and control measures outlined in relevant method statements.
- 14.4 Audits will be carried out on a regular basis to ensure sub-contractors and site operatives are operating in compliance with this plan and are aware of incident response procedures.

Internal Inspection

- 14.5 Periodic inspections by a Knights Brown Safety and Environmental Advisor shall be carried out. The scope of environmental inspections will cover the compliance of site-based operations with the requirements of this plan, the contract, the law, Knights Brown minimum standards and progress against any corrective actions. Any non-conformities and actions arising from monthly inspections will be raised in the Safety and Environmental Report Book, which is maintained by the Site Manager.
- 14.6 Senior Knights Brown Management checks the Safety and Environmental Report Book regularly.
- 14.7 In addition to internal Audits there will be an independent Ecology Clerk of Works present on site supervising the construction works and ensuring compliance with the items within the environmental statement which has also driven the content of this CEMP. The Environmental and Ecological Clerk of works will be present on site 2 days a week and will report directly to NRW to ensure that independence is maintained. The role will be carried out by Jonathan Harrison BSc MSc MCIEEM, Jonathan has a comprehensive knowledge of the site and has skill set suitable for the site's particular environmental sensitivities.

Ecology Clerk of Works roles and responsibilities:

Task	Activities	Deliverable
Site Attendance	Attendance at a site start up meeting with the contractor to agree visit process etc. Site attendance at the project site to undertake both planned and unplanned inspections. ECoW to be present to oversee the pre-commencement surveys, overseeing the set-up of track routes and all activities that could negatively impact environment. Provide advice to contractor and highlight any action required to the project team on remedial works are required as a result of inspections.	Site attendance report to be provided to the wider project team. Template of report to be agreed. Attendance register to be developed and updated after each visit. Required remedial works report
Reporting	Site attendance reports. Monthly progress reports. Remedial works report.	Site attendance report to be provided to the wider project team. Template of report to be agreed. Attendance register to be developed and updated after each visit.

		Required remedial works report.
Remedial Works Support	Advise of remedial works required. Review contractors proposed remedial works and method statement. Provide Support to contractors whilst remedial works being undertaken.	Required remedial works report. Post remedial works review report.
Photos	Regular photographs during site inspections.	Photos.
Contractor Report Review	Review of contractor's monthly progress reports.	Comments on progress reviews.
Stakeholder Site Attendance	Attendance at the project site during stakeholder site visits.	Attendance.

As well as supervising the construction works and ensuring compliance with the Environmental Statement throughout the project programme, the ECoW will carry out the following activities at the specific phases of the project. The programme, included in the CEMP as Appendix P was submitted with CEMP Rev 7 in May 2024. The programme, along with the CEMP, are live documents that are updated throughout the project. The Schedule and Phasing Plans have been submitted as part of Condition 4 which has been discharged.

Pre-Construction Phase

- Conduct pre-construction ecological surveys to identify habitats, species, and ecological features present on the site.
- Assess potential impacts of the construction activities
- Review the Contractors Environmental Management Plans with reference to the ES.
- Coordinate with project managers, engineers, and construction teams to integrate ecological considerations into project planning and scheduling.
- Oversee the demarcation of sensitive habitats (to include areas on or adjacent to compound areas and access tracks) prior to any vegetation clearance or construction works.

Construction Phase

- Conduct regular site inspections to monitor compliance with ecological mitigation measures and environmental regulations.
- Record and report any ecological incidents, breaches of mitigation measures, or non-compliance issues.
- Implement corrective actions and provide guidance to construction teams to address ecological issues promptly.
- Supervise construction activities to ensure they are carried out in accordance with ecological best practices and mitigation plans.
- Oversee the protection of sensitive habitats, species, and ecological features, including the installation and maintenance of protective measures
- Liaise with subcontractors and workers to ensure understanding and adherence to ecological requirements.
- Ensure compliance with identified protection and pollution control measures.

Post-Construction Phase

- Oversee the restoration of habitats and ecological features disturbed during construction.
- Conduct post-construction ecological monitoring to assess the success of mitigation and restoration efforts.

Environmental Audit

- 14.8 A trained competent auditor would carry out an environmental audit of this plan within 6 months of acceptance. Environmental audits will focus on the compliance with the CEMP throughout project management, which will include performance against the environmental objectives and targets, legal and contractual compliance and continued effectiveness of the CEMP.
- 14.9 The audit report would be reviewed in accordance with the audit procedure contained in the Project Quality Plan. The review would determine if procedural changes are required and the objectives and targets in the Plan are being met.

Procedures in the event of failure to comply with requirements of CEMP

- 14.10 If an audit shows that the requirements of the CEMP are not being met, the Auditor would raise a Corrective Action Request (CAR), for procedures to be put in place to deal with the system non-conformance.
- 14.11 The root cause for the non-compliance would be identified and the procedures modified to remove this underlying cause. There shall be a determined effort to cure the problem and not superficially treat the symptoms.
- 14.12 If the procedures are adequate but have not been implemented such that there is a potential risk of pollution etc. a Non-conformance Report (part of the Integrated Management Systems) shall be raised and only closed out with the agreement of the auditor. An NCR can be raised by an auditor, or Safety and Environmental Advisor. NCRs will be recorded in the site Safety and Environmental Report Book.

15 Reviews and Close Out Report

- 15.1 A review of the overall effectiveness of this Plan would be carried out at least every 3 months by the Site Manager and procedural revisions changed accordingly. Any change to this plan will be submitted to the Project Manager for authorisation.

- 15.2 Information for the review will be gathered from the results of the inspection regime, regular progress meetings and environmental audit results.

Closeout Report

- 15.3 A closeout report would be compiled by the Environmental Officer upon completion of the construction phase of the project.

Appendix A

Knights Brown Environmental Policy Statement



ENVIRONMENTAL POLICY STATEMENT

While believing that our construction projects will ultimately enhance the built environment, Knights Brown recognises that the activities associated with these projects have the potential to affect the natural environment.

We will, therefore:

- Ensure our processes continue to meet the certification requirements of ISO 14001:2015.
- Keep up-to-date and comply with all environmental legislation, codes of practice, technical advances and customers' requirements.
- Support our customers and designers to improve the whole-life environmental performance of the construction projects that we are involved with.
- Adopt appropriate best practice examples from our customers, suppliers, regulators and industry sector in our aim of continual improvement.
- Set ourselves objectives and targets including where practicable, quantitative targets, to demonstrate continual improvement in our environmental performance.
- Ensure at least one of our objectives meets the UK government target of carbon net zero by 2050 delivered by our "Goal 13" programme; supporting the UN sustainable development goal for climate action.
- Each year, achieve and continually improve the environmental objectives and targets we have set.
- Provide training for employees and information to subcontractors and suppliers so they can help us achieve our environmental objectives and targets.

This policy statement is brought to the attention of all employees and other interested parties. It is reviewed not less than annually or more often as required.

KEVIN VALENTINE | MANAGING DIRECTOR
JUNE 2023

Appendix B

Environmental Components of Method Statements

Environmental Components for Method Statements

The following considers the main parameters of the natural environment that could potentially be impacted by the construction works together with a summary of the methods that will be used in mitigation of any impacts caused by the planned construction. However for specific identified environmental risks and methods of risk reduction / mitigation see Appendix C Environmental Action Plan and Appendix D Environmental Management Plan

These measures will be implemented and maintained throughout construction methodology as a matter of standard. If variations are required these shall be defined in the particular method statement and in consultation with the Site Manager and (where applicable) the Client's natural environment supervisor.

NRW should be informed of when the project is to start and is completed so that inspections can be arranged as the work proceeds. The NRW will be provided with a copy of this CEMP, and with the main works programme, including any major changes as work progresses.

1. Water

1.1. Fuel and Lubricants, and other chemicals

- Fuel and Lubricant use and storage – All fuel and lubricants on site will be stored in double-bunded containers, either at the Construction Compound, or through use of a mobile bunded bowser for refuelling on site. Wherever recommended and accepted by the plant manufactures, biodegradable lubricants will be used. Spill kits will be available and re-stocked as necessary at each storage point and with the refuelling bowser. Any fuel or lubricant waste arising from normal operations and/or any spills will similarly be stored in a special waste container and held on site until being disposed of through a licensed waste handler.
- Refuelling will be from a bunded bowser with both plant and bowser in the same area to minimise penetration or spread of any spill. Only trained operatives will be permitted to carry out refuelling. Spill kits will be available with the bowser. The bowser will be equipped with a non-locking trigger nozzle to prevent dangers of overflow. Any spills occurring will immediately be reported to the Senior Site Manager and further action taken as directed in the Site Pollution Incident Response Plan (Appendix E). Under no circumstances should the mobile bowser to enter within the tidal range of the river.
- Plant servicing will take place in the compound, with the appropriate use of drip trays and spill kits as necessary. Waste product and materials will be stored on site in a special waste container at the Construction Compound or removed from site by sub-contractors carrying out the servicing for responsible disposal. Plant servicing personnel will have to enter the site and be inducted in the normal way at their initial visit to the site.

2. Concrete

- Concrete will be batched offsite and transported to site in standard concrete wagons. Washout will occur on site, using a large skip or alternatively a proprietary concrete wash out system. Once cured the concrete wash out will be tipped out and disposed of to a suitably licensed tip along with other solid waste from site.
- Any surplus or waste concrete will be tipped on site in the site compound area (not adjacent to any watercourses), allowed to cure, and then disposed of to a suitably licensed tip.
- Concrete will be placed in tidal areas when dry, and the mix design will be engineered for a quick curing period, so that it cures before being submerged. Concrete will not be used in areas that are in an area where there is insufficient time out of the water for concrete to cure sufficiently, the design will be reviewed and amended for these locations.

3. Air

3.1. Noise and vibration

- Operating plant noise will be kept within the standards and time periods dictated for the different parts of the site. Any non-complying plant will be stopped and stood down until it can be rectified or removed from site.
- All pneumatic tools will be fitted with silencers or mufflers, where practicable.
- All plant and equipment will be checked daily and maintained correctly to limit noise.
- Noise monitoring stations will be established early in the scheme to ensure the noise levels from operating plant are maintained within the contractually specified limits.
- Vibration monitoring will be undertaken at any properties that have the potential to be impacted by works.
- Monitoring will be undertaken as specified in the contract with works ceasing if any vibration is detected above the contract prescribed limits.
- No noise audible outside the site boundary adjacent to the curtilage of residential property shall be created by construction activities in respect of the implementation of this consent outside the hours of 0800-1800 hours Mondays to Fridays and 0800 - 1300 hours on Saturdays or at any time on Sunday or public holidays.

3.2. Dust

- Haul route surfaces may generate dust under plant movement and in dry weather. If this proves to be the case, water from an appropriate source will be sprayed onto the surfaces to limit dust generation.
- Vehicles transporting materials to and from site will be sheeted.
- Speed on site will be limited to 10mph.
- Road sweepers will be used at access points if necessary.

3.3. Exhaust gases

- Plant and vehicles on site will be maintained to the standards dictated for the site. Any non-compliant plant will be stopped and stood down until it can be rectified or removed from site.

4. Wildlife and Vegetation

- Initial investigation completed in this area have shown a large quantity of Japanese knotweed within the site, predominately along rover way and Lamby way, where excavations will be required. This will be completed along a specified risk assessment and method statement to prevent the spread of the plant.
- Protected species have been identified across the site including fish and bird species, therefore works in these areas will be limited during nesting/spawning seasons. Details will be specified in relevant RAMS to minimise the impact of these species as well as the influence of works on the surrounding SSSI, Ramsar area, SAC and SPA.
- Ecological Toolbox Talks will be provided to the construction workforce to advise on the ecological risks, responsibilities, and emergency reporting requirements.
- Pre-construction checks for reptiles will be undertaken in any suitable habitat in compound and storage area locations. Two stage strimming for clearance of ground vegetation may be required to safely disperse reptiles.
- To avoid impacting the designated habitats surrounding the works being undertaken, all site personnel and vehicles/ plant will be strictly confined to the pre-agreed boundaries. The works area will be strictly defined and fenced, and the vehicles and materials will be kept within this area.
- Periodic check of the site to be undertaken by the project manager during construction, with all actions and updates listed in detail in the CEMP.

5. Landscape

5.1. Waste

- Construction waste will be cleared by means within the site compound. Skips will be closed, or netted to prevent waste being blown out on this exposed site, and to deter the attraction of birds and vermin. Skips will be emptied and maintained as necessary by a licensed waste handling contractor.
- Surplus spoil will be removed from site via a licensed waste handling contractor to a licensed disposal point for recycling where feasible.
- Personal waste will be kept to a minimum through creating awareness of landscape values, the local residents' quality of life, and the prevention of pest and disease build up. Skips will be used, and small containers made available in the offices, and in the welfare facilities used on site. The Site Manager will ensure that these containers are emptied regularly as needed.
- Sewage will be disposed via the tanker collection although a connection to a mains supply should be sought if possible.

6. Biodiversity

- The objective of the Plan is to protect, conserve and enhance the natural habitats/species of the site and the aim of mitigation is to ensure there is no overall decline in the biodiversity and ecological value of the site.
- The site sits within a SSSI, Ramsar area, SAC, and SPA. Therefore, all works will be done in accordance with relevant environmental risk assessments to minimise the risk to the biodiversity within these areas.

7. Cultural Heritage

- Preconstruction investigation has highlighted 5 locations throughout the site which are considered to be of archaeological interest. Works in 4 of these locations will require an archaeological watching brief for any intrusive works.
- Prior to commencing work Knights Brown will appoint a qualified Archaeological consultant, who will be registered with the ClfA. Their role will be to assist KB in fulfilling the Archaeological mitigation recommendations for the site, and to identify any further items of interest that may become evident during construction of the works.
- If any features that are of potential archaeological interest are encountered, the works must cease within the vicinity of the find, and the appointed archaeological contractor will be informed who in turn will then assess the potential asset and inform the archaeological consultant.

Appendix C

Assessment of Environmental Impacts

Identification and Assessment of Environmental Impacts

Assessment Process

In assessing each activity the following has been considered:

- potential impacts on flora, fauna, existing habitats, and vegetation.
- potential impacts groundwater quality, availability, and flow.
- potential impacts on the landscape quality and character, including views.
- potential impacts on local cultural heritage, including archaeological features.
- potential changes in air quality, including CO₂, NO_x SO_x emissions.
- potential nuisances for local people such as noise, dust, and dirt on roads.
- potential impacts on traffic and transport and impacts of site vehicle traffic.
- waste management, including disposal, minimisation and off site works.
- site security and storage of materials, especially hazardous materials.

Assessment of Significance of Impacts

To evaluate the significance of the impacts, a consideration is made of the importance to the environment and business, together with the probability of the consequences occurring. The importance of an impact and the probability of its occurrence are evaluated below in terms of a combined Importance/probability matrix (see overleaf). This matrix assigns a value to the combined effect of Importance and Probability. These rankings would be taken into account when determining the control measures required.

TABLE A: IMPORTANCE

VALUE	IMPORTANCE	
5	Very High	Immediate and/or long-term catastrophic harm/severe breach of legislation or policy/catastrophic business loss.
4	High	Immediate and / or long term severe harm/breach of legislation or policy/severe business loss.
3	Moderate	Short Term harm/ temporary or occasional breach of legislation or policy/ moderate business loss.
2	Slight	Limited short-term harm/ minor breach of legislation or policy/minor business loss.
1	Negligible	No or trivial harm/ no or trivial breach of legislation/ no or trivial business loss

TABLE B: PROBABILITY

VALUE	PROBABILITY
5	Almost Certain
4	Likely
3	Occasional Chance
2	Unlikely
1	Improbable

TABLE C: IMPORTANCE - PROBABILITY MATRIX (to give Priority Rating)

IMPORTANCE	Very High	5	10	15	20	25
	High	4	8	12	16	20
	Moderate	3	6	9	12	15
	Slight	2	4	6	8	10
	Negligible	1	2	3	4	5
		Improbable	Unlikely	Occasional Chance	Likely	Almost Certain
PROBABILITY						

Note – When assessing the priority rating; the higher the number, the higher the priority the potential impact on the environment is to be given.

TABLE 1: ENVIRONMENTAL IMPACTS

Impact Ref. No.	Potential Impact	Construction Phase	Sensitive Receptor	Importance Score	Probability Score	Priority Rating	Objective Ref.
1	Water quality / Marine habitats: Sedimentation of watercourse from surface runoff	All phases (surface run-off) - Material movements - Concrete pours - Operation of compound areas	All watercourses, sensitive saltmarsh habitats, notable/rare plant species	3	3	9	1
2	Air quality: Dust	All phases - Excavation - Movement of materials	Construction staff, Landowners, wildlife	2	5	10	2
3	Air quality: Exhaust emissions	All phases - Site plant and equipment - Associated road traffic, delivery vehicles and staff vehicles	Construction staff, wildlife and local residents	2	5	10	2
4	Ecology: Permanent habitat loss	- Severn Estuary SSSI, Ramsar area, SAC, SPA. - Construction of hard standings / roads and structures	Habitats and wildlife (including invertebrates, birds, mammals)	5	3	15	3

5	Ecology: Damage to existing habitats, flora or fauna	All phases - Excavation works - Piling	Habitats and wildlife	5	3	15	3
6	Ecology: Damage to protected fauna within works boundaries	All phases - Removal of Topsoil and Trees - Piling	Trees	4	3	12	3
7	Archaeology: Discovery of unrecorded archaeological interest	Phases of project involving excavation	Buried archaeological features	5	2	10	4
8	Land use: Physical presence of works	All phases	Landowners	3	5	15	6
9	Construction Noise and vibration	All Phases - Increases during: - Vehicle movements - Excavation - Earthworks - Piling	Landowners, wildlife	3	5	15	6

Impact Ref. No.	Potential Impact	Construction Phase	Sensitive Receptor	Importance Score	Probability Score	Priority Rating	Objective Ref.
10	Waste: General waste Cleared material and debris. Removal of excess material off site	All Phases for general and construction waste	Disposal site receptors – at construction compound and satellite skips	2	5	10	11
11	Visual impact: Temporary impact of construction works	All Phases	Loss of visual amenity, company reputation	4	4	16	5
12	Visual Impact: Change in character and quality of landscape	All Phases	Residential properties	2	5	10	5
13	Resource Use: Aggregates	All Phases	Use of natural resources	2	5	10	9
14	Resource Use: Water	All Phases	Water sources away from site	1	5	5	9

Impact Ref. No.	Potential Impact	Construction Phase	Sensitive Receptor	Importance Score	Probability Score	Priority Rating	Objective Ref.
15	Resource Use: Energy	All Phases - Operation of plant and equipment - Operation of offices - Provision of welfare	Use of non-renewable natural resources	1	5	5	9
16	Traffic Movements and Deliveries	All Phases - Material deliveries, waste collection - Staff transport	Local residents	4	4	16	7
17	Ecology: Damage to SSSI and Saltmarsh habitat	All construction works in or around the SSSI.	Protected land	4	3	12	3
18	Ecology: Spread of non-native invasive species.	Excavation and machine tracking past invasive species.	Habitats and wildlife, Company reputation	4	3	12	3
19	Contaminated Sediment Use	Removal of existing river bank containing sediment deposits. (drying for re-use as useable material on site)	Habitat and wildlife, members of the public.	4	3	12	9
20	Vehicle Access routes	Throughout the duration of the works	Sensitive habitat, wildlife.	3	3	9	9

21	Ecology: Potential for the disturbance of otters and over wintering birds in the area.	Throughout the duration of the works	Sensitive habitat, wildlife.	3	3	9	9
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Appendix D

Environmental Management Plan

TABLE 2 ENVIRONMENTAL MANAGEMENT PLAN

Document owner: HSQE Manager

Ref: F504 Issue 1.1
(September 2018)

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Objective	Target	Impact Ref. No.	Actions	Responsibility	Timescale
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T: 01425 472241
E: info@knightsbrown.co.uk
W: knightsbrown.co.uk

160 Christchurch Road,
Ringwood, Hampshire
BH24 3AR



1	To prevent pollution of watercourses	1	No significant deterioration in water quality during construction	1	Develop Pollution Prevention Risk assessment to outlining general preventative measures that are to be used throughout the works Ensure all Method Statements relating to work in, over or close to the sea outline pollution prevention measures and reference Pollution Prevention Risk Assessment. Maintain regular inspection of work sites to ensure control measures are implemented and remain effective Prepare and implement Method Statements for the construction of the works No construction of the defenses will take place either above tidal areas. No material will be stored on the foreshore. As much work as possible will be non-tidal (i.e. undertaken above the Mean High Water Springs (MHWS) level or during periods that allow for dry working) Materials and spoil will not be stored within the tidal area, but returned to the compound locations. Fuel storage will be as described in P24 section 1.1. compound layouts are described in appendix H.	Site Manager/ECOW Site Manager/ECOW Site Engineer /ECOW Site Manager/ECOW Site Manager/ECOW Site Manager/ECOW Site Manager/ECOW	Before ground work initiated Continuous Continuous Before ground work initiated Continuous Continuous Continuous
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		No enforcement action by statutory agencies during construction works		Agree format for statutory agency visits during relevant periods/works	Site Manager/ECOW	Continuous
				Establish requirements for any further statutory agency consents during project	Site Manager/ECOW	Before ground work initiated
				Ensure requirements of any consents/conditions are maintained throughout relevant works	Site Manager / Site Engineer /ECOW	Continuous
		No water pollution incidents during construction works		Develop and implement adequate Pollution Incident Response Plans throughout the works	Site Manager/ECOW	Continuous
				Develop and maintain consultation with the statutory agencies over construction methods for sensitive phases of the project	Site Manager/ECOW	Continuous
				Arrange specialist incident response cover via emergency contractor to be used in case of major spillage.	Site Manager/ECOW	Before ground work initiated
				All compounds are off road and away from any drainage. Run off will be controlled with silt fencing	Site manager/ECOW	Continuous
		No corrective actions each audit relating to the implementation of Pollution Incident Response Plans		Inspect pollution incident response equipment regularly	Site Manager / Site Engineer/ECOW	Continuous
				Ensure regular tool box talks are given on pollution incident response equipment use	Site Engineer/ECOW	Continuous

2	To reduce or eliminate the release of airborne pollutants	2	No dust pollution incidents during construction (<i>a dust pollution incident shall be defined as warranted complaint arising as a result of construction activities</i>)	2,3	Develop general Pollution Prevention Method Statement outlining dust control measures to be used throughout the works.	Site Manager/ECOW	Before ground work initiated
					Ensure relevant method statements include dust mitigation measures. Reference Pollution Prevention Method Statement	Site Manager/ECOW	Continuous
					Arrange road sweeper to be used as necessary to control mud/dust on public access roads used by site traffic	Site Manager/ECOW	Continuous
					Maintain visual inspection over works for dust emissions and implement control measures as required	General Foreman/ECOW	Continuous
			All vehicles and plant to be well maintained		Maintain plant maintenance schedule for all plant and equipment directly operated by Knights Brown.	General Foreman/ECOW	Continuous
					Complete inspection checks on all plant and equipment directly operated by Knights Brown.	General / Section Foreman/ECOW	Continuous
					Ensure sub-contractors can produce maintenance schedule and checks if required	Site Manager/ECOW r	Pre-let meeting
					Remove poor or faulty plant and equipment from site	General Foreman/ECOW	As required
			No complaints related to exhaust emissions from site based plant or equipment		Maintain regular visual inspections of exhaust emissions from plant and equipment.	Site Manager /General Foreman/ECOW	Weekly inspection

Objective		Target		Impact Ref. No.	Actions	Responsibility	Timescale
3	To minimise the impact on existing ecological features	3	No unauthorised removal or damage to protected grasses or flowers during construction works	4,5,6	Develop and maintain continued consultation with statutory bodies and local authorities to ensure interested parties are kept informed of proposed working methods and control measures.	Site Manager/ECOW	Continuous
			No unauthorised injury, damage or destruction of protected wildlife or vegetation during construction works – no enforcement action under Wildlife and Countryside Act or Habitats Regulations		Saltmarsh management plan will be produced which will identify the actions necessary to protect the saltmarsh during the construction period. The updated NVC Report is appended to this CEMP (Appendix T)	ECOW	Pre-commencement
					Prepare and implement a response	Site	As required

				plan to address potential discovery of protected fauna during works.	Manager/ECOW	
				Invertebrate surveys carried out between April and August 2024 found no evidence of Shrill Carder Bee, however higher value habitat was identified outside of the work area and this will be protected from accidental damage during adjacent construction activities. This location/information is captured within the invertebrate survey (held within the saltmarsh management plan). The Shrill Carder Bee results are appended to this CEMP (Appendix S)	ECOW	Pre-commencement
				Ensure works boundaries are clearly defined and maintained at all times	Site Manager / General Foreman/ECOW	Continuous
			Avoid disturbance to ground nesting and over wintering birds.	Ensure strict compliance to Method Statement of working adjacent to ecological sites.	Site Manager / general Foreman/ECOW	Weekly inspections
				Develop and deliver tool box talk to section engineers and foremen outlining what to do in case of ecological	Site Manager / general Foreman/ECOW	weekly
			Avoid disturbance to marine	Any habitat lost as a result of the defense footprint and coastal	Site Manager/ECOW	Continuous

			mammals and fish		squeeze will be replaced with compensatory habitat.discovery		
					Demarcate areas of any sensitive habitat and/or notable/rare plant species and exclusion of any activity within these areas	Site Manager/ECOW	Continuous
					Works in the vicinity of bird roost areas are avoided over winter whenever possible. Any works with the potential to cause disturbance to overwintering birds are restricted to avoid 2 hours either side of high tide.	Site Manager/ECOW	Continuous
					All piling works to be undertaken above Highest Astronomical Tide (HAT)	Site Manager/ECOW	All Piling Works
			No damage to the environment resulting from poor waste management		Vibration piling should be the preferred method of piling. Percussive piling should only be undertaken when vibration piling is not possible	Site Manager/ECOW	All Piling Works
			Avoid the spread of non-native invasive species		If percussive piling is required, piling within 30m above HAT conducted between October-March (inclusive) can occur without tidal restrictions; percussive piling within 30m above HAT conducted between June-September (inclusive) can only occur on the ebb tide to protect upstream migrating Atlantic salmon and sea trout; No percussive piling within 30m	Site Manager/ECOW	All Piling Works



					above HAT is to be conducted during April-May.		
					Site Waste Management plan is prepared, which gives consideration to the sustainable disposal of waste with reference to the principles of the waste hierarchy.	Site Manager/ECOW	Continuous
					Measures to control the use and storage of potentially contaminating materials and litter will be undertaken	Site Manager/ECOW	Continuous
			No unauthorized temporary land take outside of works boundary		Wheel cleaning facilities should be used by the contractor to clean wheels of vehicles leaving highlighted invasive species areas across the site to ensure that biosecurity risk associated with transferring non-native invasive plants to other areas of the site is minimized. Biosecurity methods should be in line with the principles of Check, Clean and Dry protocols. Should any Japanese Knotweed be found during construction management requirements will be followed as outlined in the knotweed management plan.	Site Manager/ECOW	Continuous
					Ensure works boundaries are clearly defined	Site Manager / General Foreman/ECOW	Continuous
					Obtain written authorisation for any temporary land take outside the	Site Manager/ECOW	Seven days before

Objective		Target		Impact Ref. No.	Actions	Responsibility	Timescale
					footprint of the completed works from Landowner in advance. Maintain regular inspections for works areas	Site Manager / General Foreman/ECOW	required land take Weekly inspections
4	To minimise impact on archaeological features	4	No damage or destruction of known archaeological resources (none)	7	Compare construction program against locations of existing archaeological resources and highlight potential interactions	Site Manager / Environmental Officer	Before ground work initiated
			No damage to unrecorded archaeological finds which may be discovered during works		Develop and implement strict control measures to ensure protection of existing archaeological features during periods of potential interaction. Obtain archaeological specialist to maintain watching brief over ground works if unrecorded archaeology uncovered. Accurately record any features of archaeological interest	Site Manager / General foreman / Field Archaeologist Field Archaeologist	Continuous Continuous As required

Objective		Target		Impact Ref. No.	Actions	Responsibility	Timescale
5	To minimise the visual impact of construction works	5	Complete the works as per the program No complaints from Landowner, statutory bodies or other interested parties relating to construction Reduce the negative impact of vegetation removal during and post works. Avoid disruption arising from construction traffic and deliveries	11,12	All phases of project, including material delivery and storage are planned Ensure works completed as per Method Statements. Ensure compound/materials storage is tidy Trees and vegetation lost in this area during the works will be replaced with new planting designed to integrate with the species that remain. Traffic management plan is prepared to limit interaction between site vehicles and public roads	Site Manager	Continuous
6	To minimise disturbance to Landowner, local residents, and wildlife	6	Zero prosecutions or enforcement actions related to noise disturbance Respond to any noise complaints within 48hrs of receipt No corrective action each audit relating to the maintenance of works boundaries	8,11,12	Prepare a Noise Management plan as part of the Pollution Prevention Plan outlining proposed control measures Ensure complaints and consultation log is maintained	Site Manager/ECOW	Before ground work initiated

Objective		Target		Impact Ref. No.	Actions	Responsibility	Timescale
7	To minimise impact of works related traffic upon local residents and roads	7	No complaints, each week, relating to works traffic using incorrect routes to site	6,9,16	Develop traffic management plan, include site access routes Ensure highways controlled traffic routes are communicated to all sub-contractors and suppliers, include site access points Review traffic control measures monthly and respond to complaints	Site Manager	Before ground work initiated
8	Sediment management measures	8(a)	Refer to the sediment management testing results and subsequent management plan appended to this documents (appendix K)	1,10	Compliance with the guidance provided within the appended document. Any material unsuitable for re-use will be disposed of in line with Waste management protocols.	Site Manager/ECOW	Construction period

9	Saltmarsh and intertidal habitat management.	9	To reduce the impact on Saltmarsh habitat and intertidal habitat within the construction area.	4,5,6	Comply with the controls identified with the appended Saltmarsh management Plan (appendix L) Vehicle access routes will be restricted to single routes, clearly fenced off to stop multiple routes that will impact on the Saltmarsh. Any access routes across any identified saltmarsh will be formed using track mats placed on top of the existing ground. We can confirm that there is only one area where we may need to track across the Saltmarsh, this is in location 42/52 and is shown on the plan in Appendix Q. All other saltmarsh locations impacted by the works are within the footprint of the permanent works. These are also shown on the plan in Appendix Q. Temporary access across the saltmarsh has yet to be designed from a temporary works loading point of view (the programme for the area of works that cross the saltmarsh is not until next Summer) but will be aluminium trackway.	Site Manager/ECOW	Construction period
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Objective		Target		Impact Ref. No.	Actions	Responsibility	Timescale
					Plant that will likely utilise this temporary access will be items such as (but not limited to): • Articulated Dump trucks up to 30T • Dumpers up to 9T • Rollers up to 26T • Tracked excavators up to 50T. • Dozer (D8/D6/D4) • 8-wheeler tipper lorries • Telehandler up to 20T • Site vehicles, such as transit tippers, 4x4 pick-up trucks The site speed limit is 10mph.		

Objective		Target		Impact Ref No.	Actions	Responsibility (tbc)	Timescale (tbc)
10	To minimise the consumption of energy and water	10	No corrective actions each audit relating to water consumption	13,14,15	Ensure that only approved water sources are used for all needs, and conservative water use practices in place Display energy awareness posters wherever required	Site Manager	Continuous
11	To minimise the impact of waste disposal	11	Promote the re-use and recycling of materials No prosecutions by statutory bodies related to waste disposal	10	Develop and implement Waste Management Plan Investigate viable re-use or recycling options for waste materials leaving site Ensure correct 'duty of care' documentation is collected from waste contractors and tips	Site Manager	Before ground work initiated

12	To minimise impact on wildlife within or close to the work areas: <u>Otters</u> Whilst the site has been identified as possible habitat for otters, surveys of the area have identified that from the ES section 5.5.8: <i>The Rhymney River is designated as a SINC for a range of migratory fish, Otter and bankside habitats. Sites suitable for resting Otter were not identified during site surveys and impacts to the species will be limited to disturbance impacts throughout the construction.</i> Section 5.5.26 and 5.5.27 goes on to explain: <i>It is likely that Otter will pass through the works area. Scrub and reedbed habitat set</i> CCD-JBAU-00-00-RP-EN-0002-S3-P04-Environmental_Statement Without Appendices 112 <i>back from the Rhymney River and within Parc Tredelerch have the potential to provide resting sites and holt sites for Otter.</i> <i>These habitats will not be impacted upon by the works and therefore, impacts are considered to be</i>	12	Complete the works in line with controls identified within the Environmental statement. No prosecutions relating to disturbance of wildlife on the site	21,17,6	<u>Mitigation of disturbance to Otters</u> Construction works will not be carried out between sunset and sunrise. During these times, all construction plant will be removed from the river bank. Any site lighting required will be positioned so that no light falls onto the adjacent river bank. The installation of protective fencing around the site compound areas will be undertaken to prevent Negligible adverse CCD-JBAU-00-00-RP-EN-0002-S3-P04-Environmental_Statement Without Appendices 123 Ecological feature Potential Impact Effect without mitigation Mitigation Significance of residual effect otter from accessing these areas. All excavations will be backfilled on the same day to avoid the risk of otter falling in, or all open excavations over 600mm in depth will be covered at night. If this is not possible, a means of escape for small animals will be provided. Monitoring for signs of otters during works. Should an otter be encountered on site during the works, all works will cease immediately Bats Potential severance of commuting routes, from direct damage to commuting, foraging and roosting habitats from vegetation clearance	Site manager, ECoW.	Continuous
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	<i>limited to the temporary disturbance of Otter during the construction period. The banks of the River Rhymney are unlikely to provide suitable habitat for resting sites or holts.</i> <u>Overwintering Birds</u> Disturbance to overwintering and migratory bird species				The permanent removal of plantation woodland could adversely impact upon woodland foraging species. Temporary negative effect at local scale to foraging and commuting habitat. <u>Mitigation for disturbance of overwintering birds</u> Sensitive areas adjacent to the Rhymney and Severn Estuaries have been identified and will be subject to a 2 hour tidal restriction either side of high tide to avoid impacts on birds utilising these habitats at high tide. This will be monitored by an ECoW.	Site manager, ECoW.	continuous
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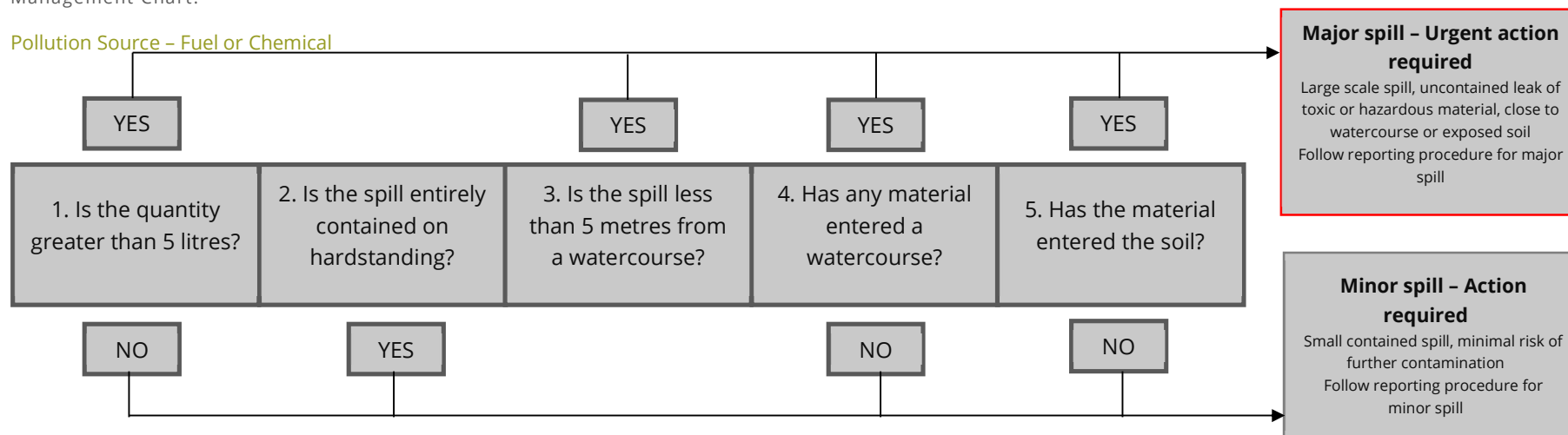
Appendix E

Emergency Pollution Response Plan (EPRP)

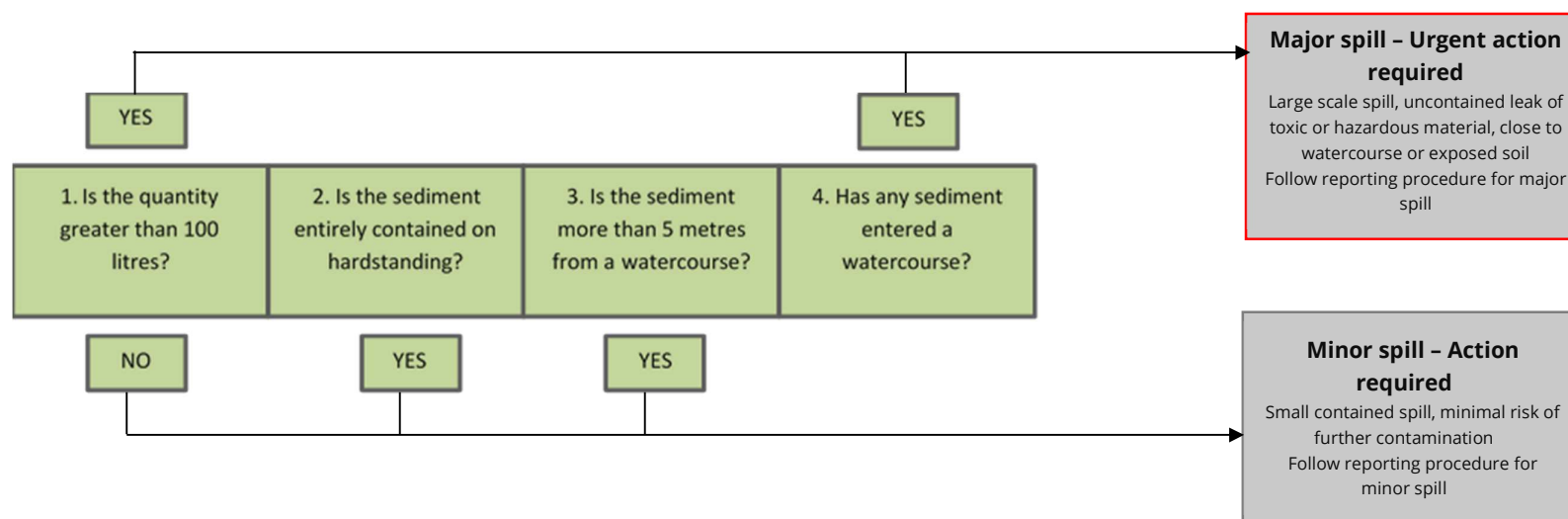
Pollution Incident Assessment

If you observe polluting materials being spilled or leaking, follow the decision tree below to determine the correct course of action on the Pollution Incident Management Chart.

Pollution Source – Fuel or Chemical

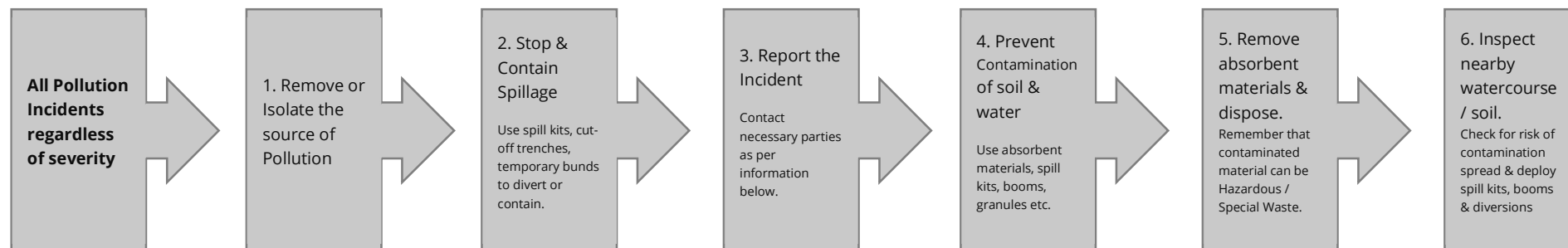


Pollution Source – Sedimented water or concrete

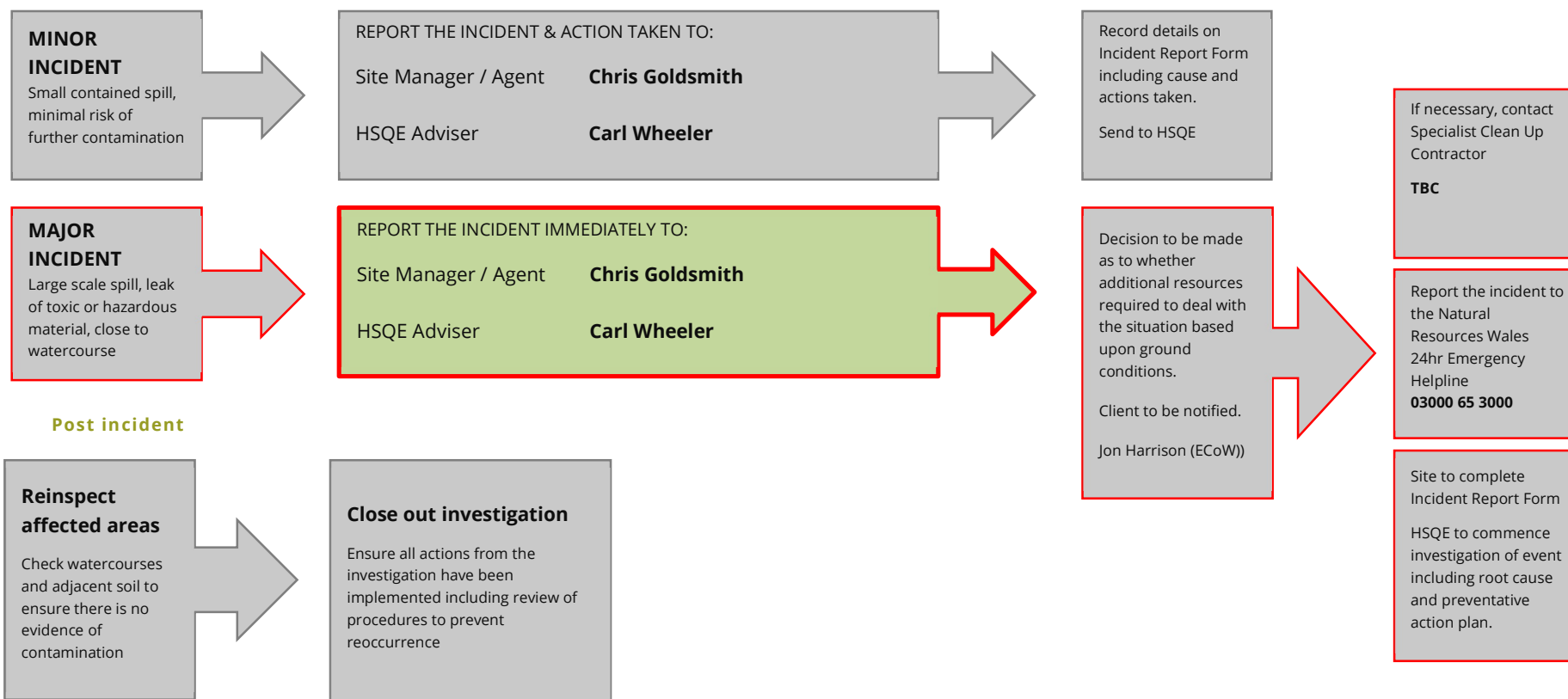


Pollution Incident Management

Action to take in the event of a pollution incident



Reporting of an incident - in accordance with the site emergency plan



Environmental Emergency Plan

Person responsible for taking charge at the scene: Chris Goldsmith

1.	In case of spillage of Oils and Chemicals, report immediately to your Manager/Supervisor, who should report the incident to: Knights Brown Health and Safety Advisors Olav Lawrence – 07733 367862 Claire Bithrey – 07827 278877 Carl Wheeler – 07581 014240
2.	Try to Identify the Source of Pollution and Stop the Flow Immediately; Switch off any source of Ignition
3.	Avoid the spill Spreading: • Check the site drainage – Where will the Spillage go? • Stop the flow if possible; • Dam the flow with earth / sand / polythene; • Divert from Drains / Watercourses where possible.
4.	Get a Spill Kit: • Use absorbent materials if appropriate; • Place a Boom across watercourse as a precaution.
5.	Use sand or absorbent pads to mop the spillage up. • Do not Wash Spillage into the Drainage system – it only makes things worse; • Never use Detergents.
6.	If the spill has already entered the Drains, block off the entrance to the drains to prevent any more from entering. As described on previous page in the pollution incident flowchart any major spills must be reported to NRW.
7.	Any Contaminated material (Special Waste) must be disposed of appropriately, including materials used for mopping up.
8.	Replenish Emergency Spill Incident Equipment

Controlling a Spillage – What You Should Do

WHAT TO CONTROL

If you spill or discover any of the following materials spilt, then they must be controlled immediately.

- Diesel or fuel oil
- Hydraulic oil
- Shutter oil
- Chemicals
- Curing agents
- Cleaning agents

Any other chemical materials.

ASSESS IT

Has anyone been injured?
Is spillage safe to approach?
Have you got the correct PPE?
Where is the spillage coming from?



Always Remember - Safety First



CONTAIN IT

Stop spillage at source, if possible.

- Stop spillage entering drains or open water - use absorbent materials to protect drainage.
- Use absorbent material to contain spillage - put absorbent material down at edges of spill first

REPORT IT

All spills or leaks must be reported to site management. If a major spill then site management must also report to NRW as described in incident flow chart.

Things to report:

- Source and reason of spillage
- The material involved
- Any escape to drains or into open water
- Action taken so far

CLEAN IT UP

Appendix F

Mitigation of Environmental Intervention

Protecting the Environment – Water Courses, Landscape, Plants and Wildlife

1. Which construction activities are involved?

All construction modifies the Environment, but especially:

- Removing topsoil
- Clearing new road / track line
- Diverting water
- Carrying out any action that cause siltation into watercourse, or modify natural flow
- Carrying out any actions away from the site area demarcation
- Cutting trees
- Any potential polluting situations – refuelling, maintenance, leaving lubes/fuels/oils or other construction materials on site, exposed or unattended.

**2. What is Important?**

- The landscape and groundcover vegetation
- Burns, streams, and periodic watercourses
- Trees – significant vegetation features
- Fixed wildlife features such as burrows, setts, hole in the ground of any reasonable size, nests, drays, eggs and chicks – on the ground, in trees or in bushes
- Mammals – Protected species such as Otters, Badgers, Red Squirrels, Bats
- Snakes
- Amphibious creatures – such as frogs, toads, newts
- Fish
- Birds
- Other wildlife evidence – dead animal remains, bats in enclosed spaces
- Livestock

3. Before works starts on site (e.g. starting a new culvert, new track or other site clearance)

- Relevant permissions to be in place – NRW permits, MMO Licences, planning permissions
- Refer to pre-construction ecological survey and ensure any requirements or controls are observed

4. During work on site

- Prevent materials from entering or disturbing the flow of water especially sediment, dust, spoil from road, fuels and oils or other construction materials.
- Make adequate use of alternative drainage, sedimats, drip trays, plant nappies, Teram filters and silt bags etc.
- Ensure spill kits are suitably placed and well stocked.
- Ensure any spills are reported as per the Site Emergency Plan and in accordance with the Pollution Incident Assessment and Management Plan.
- On discovery of trapped / static animals, snakes, amphibian, fish, bird, nest with or without eggs / chicks, livestock, significant burrow or standing tree stop work if to continue would cause disturbance to the fauna or flora.
- Report findings to on site supervisor and await decision as to how to proceed
- Where possible encourage mobile animals to move off site of their own accord
- Do not attempt to move or disturb snakes – adder bites can be fatal, although some GP practices / hospitals hold antivenom
- Ensure that any open excavations have ramped access to allow animals to escape should they enter / fall in
- Be aware of stored materials that have stood for some time – animals may have set up home within
- Observe exclusion zones set up to prevent disturbance of protected species / trees
- Familiarise yourself with potential invasive plant species that may be present on site and the action to take upon discovery.

**5. Completion of site**

- Ensure all materials and waste are removed
- Finishing works to include reinstatement, landscaping and repair as appropriate

IF YOU ARE UNCERTAIN OF THE SIGNIFICANCE OF ANY INCIDENT / DISCOVERY INFORM(HSQE ADVISER)
ON IMMEDIATELY TO PREVENT UNNECESSARY DELAYS TO CONSTRUCTION.

Appendix G

Site Waste Management Plan

SITE WASTE MANAGEMENT PLANS

1. APPROACH

Site Waste Management Plans (SWMP) are no longer required by legislation. SWMP's do provide a framework to encourage waste minimization, resource efficiency and contribute to the company environmental objectives. A SWMP is required for any contract of more than 30 days duration or 500 manhours and is to be appended to the construction phase plan. This process includes a forecast of the amount and type of waste produced, identification of how waste be reduced, reused, recycled or disposed of, record the actual management of waste and a review of the completed plan.

2. RESPONSIBILITIES

It shall be the responsibility of the Estimating Department to identify waste streams, quantities and proposed action during the estimating process.

The Contract the Site Manager shall be responsible for developing the draft SWMP in to a formal SWMP.

The Site Manager shall be responsible for ensuring it is kept up to date throughout the construction period and accurately reflects the construction program and activities.

The HSQE team are to be consulted for advice on the development of the SWMP as appropriate.

3. RELATED DOCUMENTS

Forms [Site Waste Management Plan incorporating:-](#)

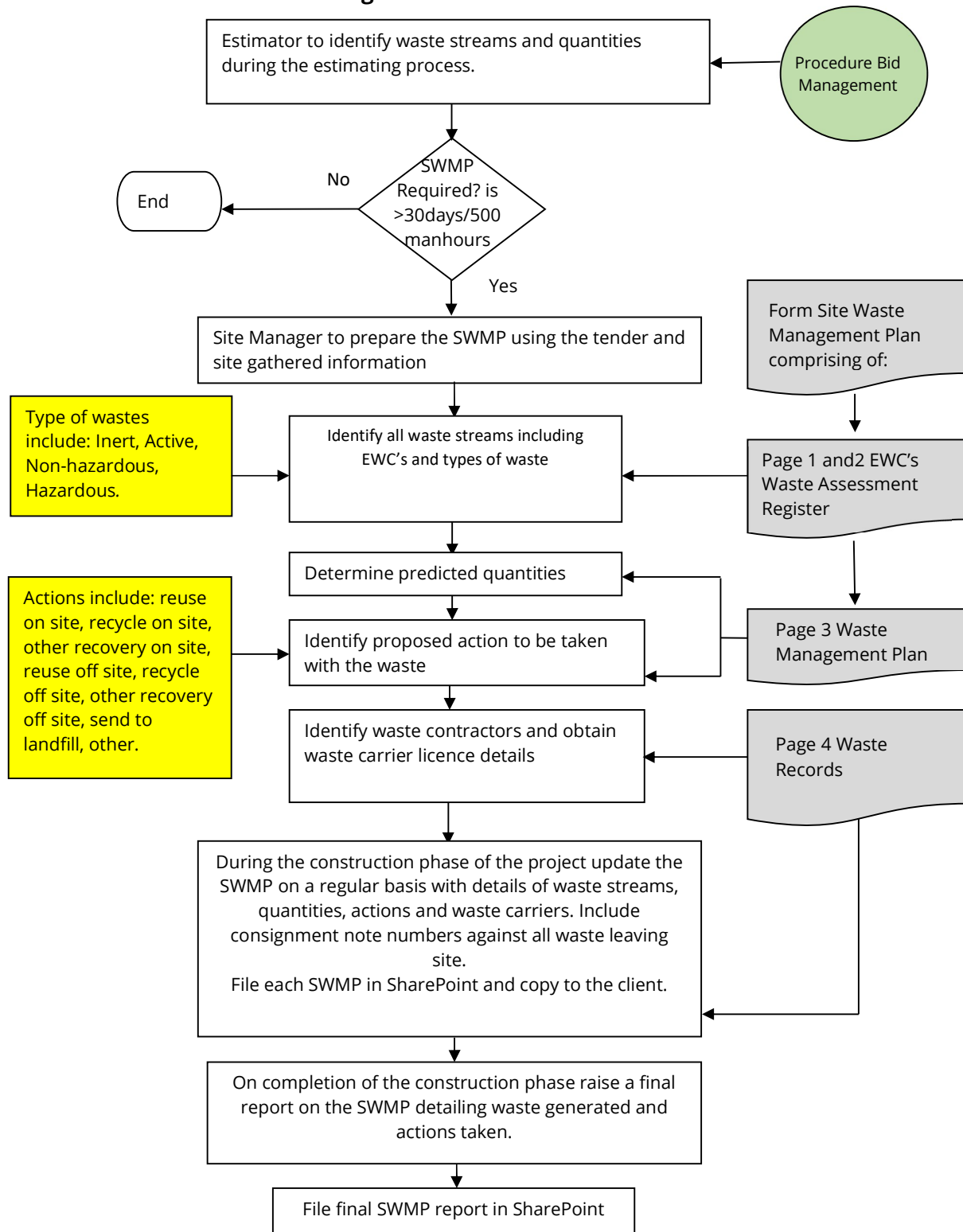
Page 1 European Waste Catalogue (common types)
Page 2 Waste Assessment Register
Page 3 Waste Management Plan
Page 4 Waste Records

Procedures [Bid Management](#)

Guidance [Waste SIC and EWC Codes](#)

4. METHOD

See attached flow chart

Flow Chart Site Waste Management Plans

Appendix H

Pollution Prevention Measures

Environmental Aspect	Potential Environmental Impact	Prevention Measure	Emergency Action and Response
Emissions/Dust from materials	Air pollution	• Site environmental briefing delivered • Daily monitoring by site manager • All volatile materials will be stored appropriately in sealed, labelled containers and kept cool in secure containers • Burning of materials on site will be prohibited • Dust Suppression will be used if required • Keep surfaces swept and damp down with water at regular intervals • Minimise drop heights into haulage vehicles and into conveyors • Ensure cutting and grinding operations are adequately shielded or wetted • Sheet lorries carrying dry materials off site • Keep to site speed limits to minimise dust generation • Use the wheelwash for appropriate vehicles, if one is provided on site • Stockpiles will be dampened down as required • All skips with dust or any other material must be covered to prevent the dust to be blown out of the skip by wind	Cease operation immediately, make work area safe and inform the GAL Project Manager / RESPONSE Team
Controlled wastes arising from construction works	Waste generation Pollution from incorrectly stored materials	• Produce a Site Waste Management Plan • Excavated soils reused on site to form environmental bunds • Where possible segregate waste prior to removal from site, robust waste audit trail • Obtain EA U1 Exemption and follow protocol • Reduce, reuse, recycle • Minimal storage of materials onsite	Cease operation immediately, make work area safe and inform the GAL Project Manager

On site storage and site use of substances, materials, plant and equipment associated with the construction works	Land/water contamination	• COSSH procedures form part of our Integrated Management System • Segregated and secure storage • Environmental info prominently displayed on a site safety noticeboard • Site environmental briefing delivered to all staff • All materials will be stored appropriately in sealed, labelled containers and kept cool in secure, covered storage areas, away from drains and watercourses • Segregated and secure storage • Use appropriate areas for stockpiles and inspect daily • Refuelling will take place in a designated area • Return oil and fuels to storage areas after use • Potential pollutants (fuels, oils, lubricants, etc.) are to be stored a safe distance from potential receptors i.e. drains and watercourse. • Fuel tanks will be double-bunded to 110% volume and oils/lubricants stored within/on bunded secure facilities. • Ensure bunds are free from cracks and leaks • Check hoses and valves regularly for signs of wear • All drains and gullies will be identified and protected where applicable to avoid possible contamination routes. • Good access to site • Spill kits will be strategically positioned and instruction given to the workforce in their use. • Emergency Response Plan in place • When not in use, plant will be parked at least 10 metres away from surface water body or drain • Discharge wastewater from temporary staff toilets and washing facilities to sealed containment systems and dispose of on a weekly basis via a licensed contractor ensuring the correct duty of care. • Undertake regular visual assessments for oil and silt • Use timber from renewable sources (if required) • Use drip trays on all static plant, and ensure spill kit is adjacent to work face in event of emergency • Supervise all fuel deliveries • Lock oil stores when not in use • Check barges for any cracks	Use emergency spill kit Inform Site Manager
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Environmental Aspect	Potential Environmental Impact	Prevention Measure	Emergency Action and Response
		- Concrete mixing and washing areas should be 10 meters away from the watercourse, drains and gullies - Settlement and re-circulation systems to be in place for water reuse - Establish designated area for washing out and cleaning of concrete batching plant or ready mix lorries	
Discovery of previously unidentified contamination, explosive ordnance or underground structures during construction	Land contamination	- Emergency response plan in place - Site induction and environmental awareness briefing delivered - An Explosive Ordnance Threat Assessment has been provided by GAL. - Site Manager to understand the assessment and be aware of potential hazards.	Cease operation immediately, make work area safe and inform GAL Project Manager
Increased levels of noise and light disturbance	Noise and light disturbance to the built environment	- Vibration piling should be the preferred method of piling. Percussive piling should only be undertaken when vibration piling is not possible. - Where possible use Silencers on machines - Deliveries to be planned - ensure that vehicles use correct routes to site. - Noise and lighting monitoring - Acoustic doors and hoods on plant to be closed - Use local screening where necessary	Cease operation immediately and inform the GAL Project Manager
Emissions from plant, vehicles and equipment	Air pollution	- Energy and Fuel consumption monitored - Inspect plant and equipment daily and ensure it is well serviced - Company car fleet offer a higher fuel efficiency and lower emissions - When not in use, plant and vehicle engines will be switched off - Plant and vehicle fleet is Euro 5/6 compliant - Generators, pumps etc. will be well sited, away from water courses/properties	Cease operation immediately until plant repaired or replaced
Fire Spillage	Air pollution Land/water contamination Waste to Landfill Creation of hazardous material	- Fire Risk Assessment - Site Fire and Emergency Plan - Training in Emergency Procedures	Call 999 or 112

Environmental Aspect	Potential Environmental Impact	Prevention Measure	Emergency Action and Response
Silt from bored arisings and other silty water contaminating watercourse	Water pollution	• Silty water to be discharged only into designated settlement systems • Check site drainage and settlement systems • Any problems during pumping to be reported to site manager and pumping to be stopped immediately • Ensure all hardstanding areas are kept clean • Pumping to be done using re-usable Sediment Dewatering Filter • Collect run-off in lagoons and allow suspended solids to settle before disposal • Use silt fences at the toe of the slope, made from geotextiles, to reduce silt transport • Plant and wheel washing to be done in a designated hardstanding area at least 10 meters away from any watercourse or surface water drain • Run-off to be collected, water recycled and reused where possible	Stop silty water from entering the watercourse by diverting it away, i.e. using sand bags

Appendix J

Project Environmental Statement

Environmental Statement

Environmental Statement (including Appendices C & D)	CCD-JBAU-00-00-RP-EN-0002 P04
Non-Technical Summary	CCD-JBAU-00-00-RP-EN-0003 P01
ES - Appendices E,F,G,H and J	CCD-JBAU-00-00-RP-EN-0002 P04
ES - Appendix I & K - GGAT Archaeological desk-based assessment and site walkover	CCD-JBAU-00-00-RP-EN-0002 P04
ES - Appendix L - Ground Investigation Report	CCD-JBAU-ZZ-00-RP-GT-0001-GIR
ES - Appendix L-1 - Contaminated Land Review	CD-JBAU-ZZ-00-RP-GT-0002 P01

Appendix K

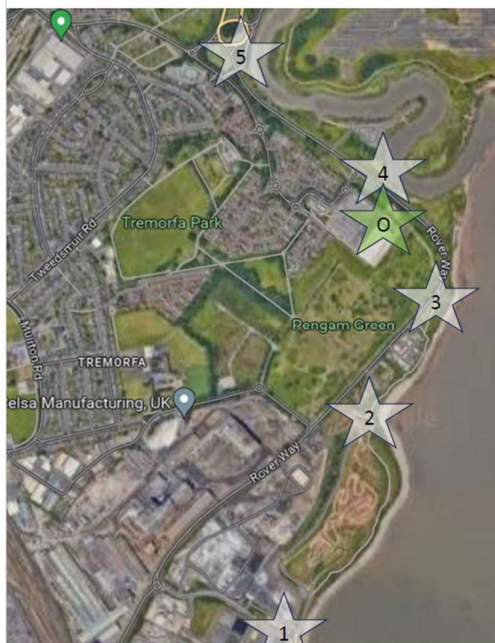
Sediment Sampling Plan

Appendix L

Saltmarsh Management Plan

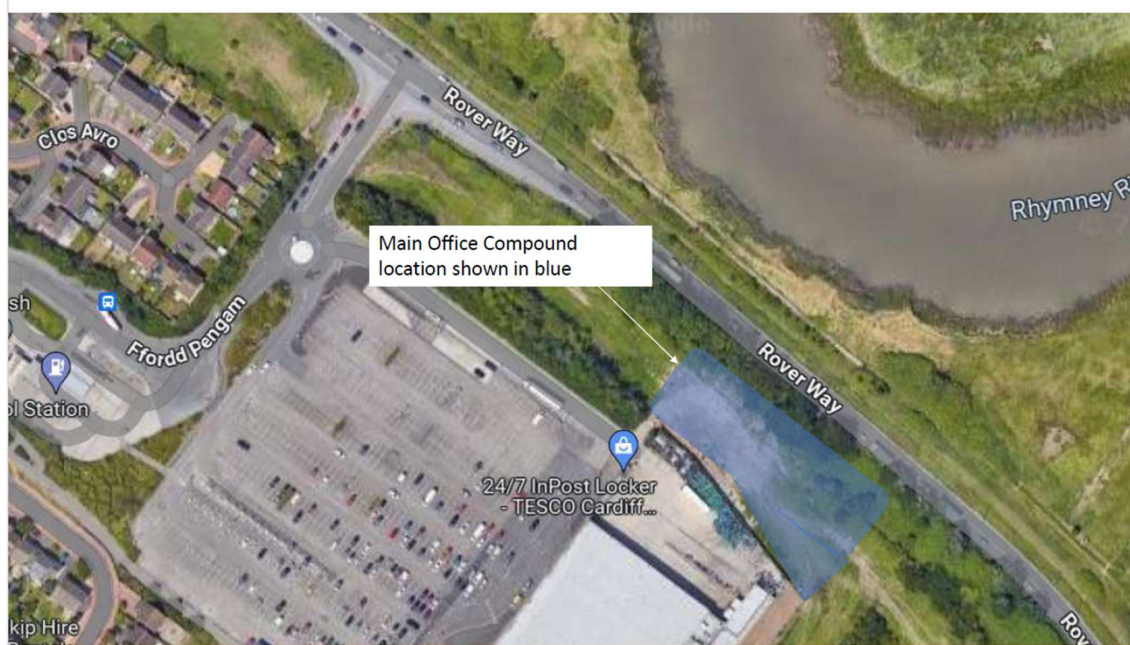
Appendix M

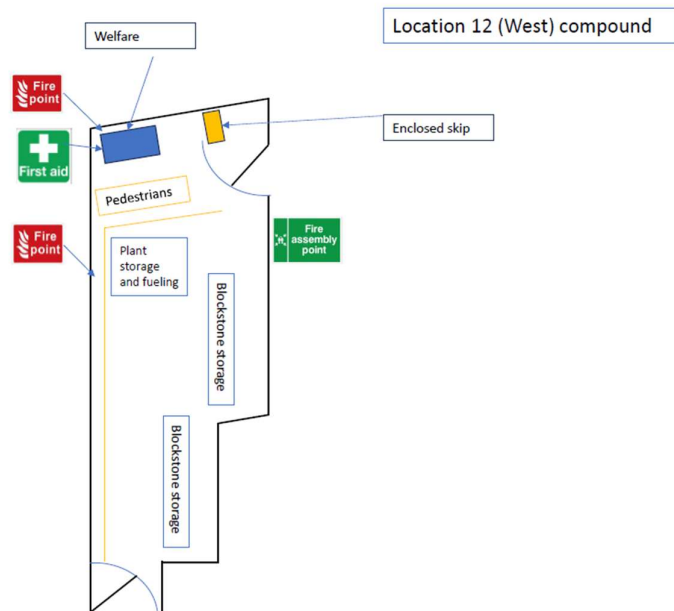
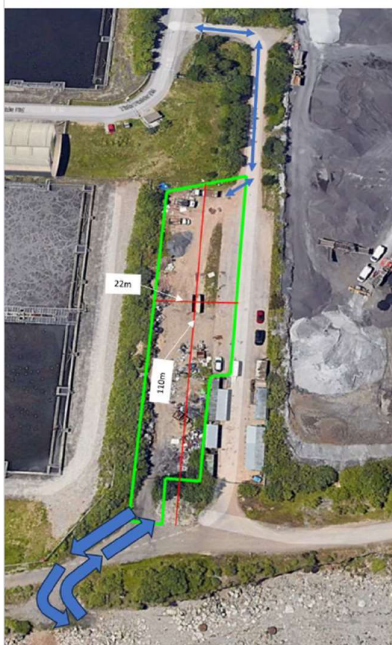
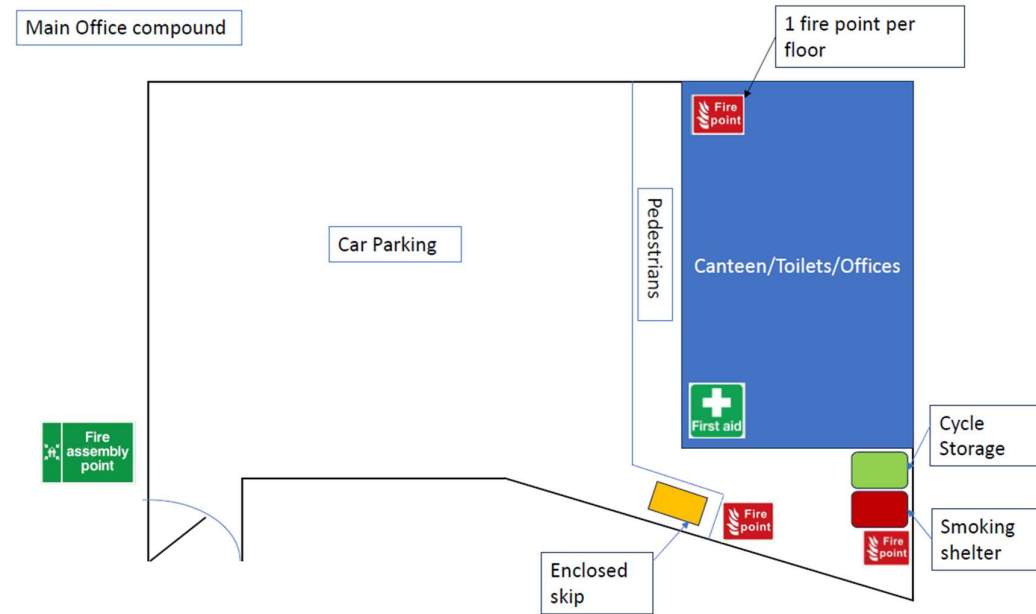
Example Compound Layouts



Overview of compound locations

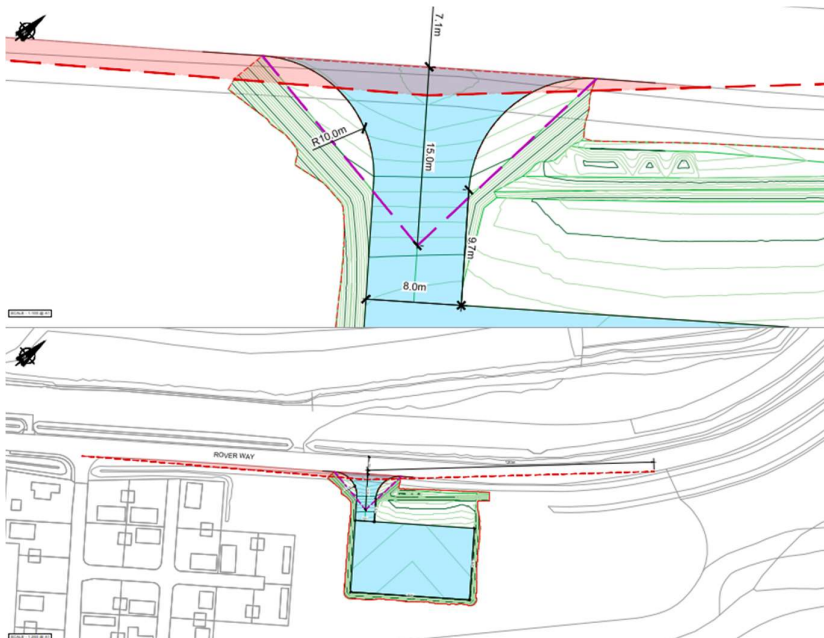
1. Location 12 (West)
2. Location 12 (Central)
3. Location 12 (East) – not drawn yet
4. Location 22 – including temporary boat club access
5. Location 32
- O. Office Compound



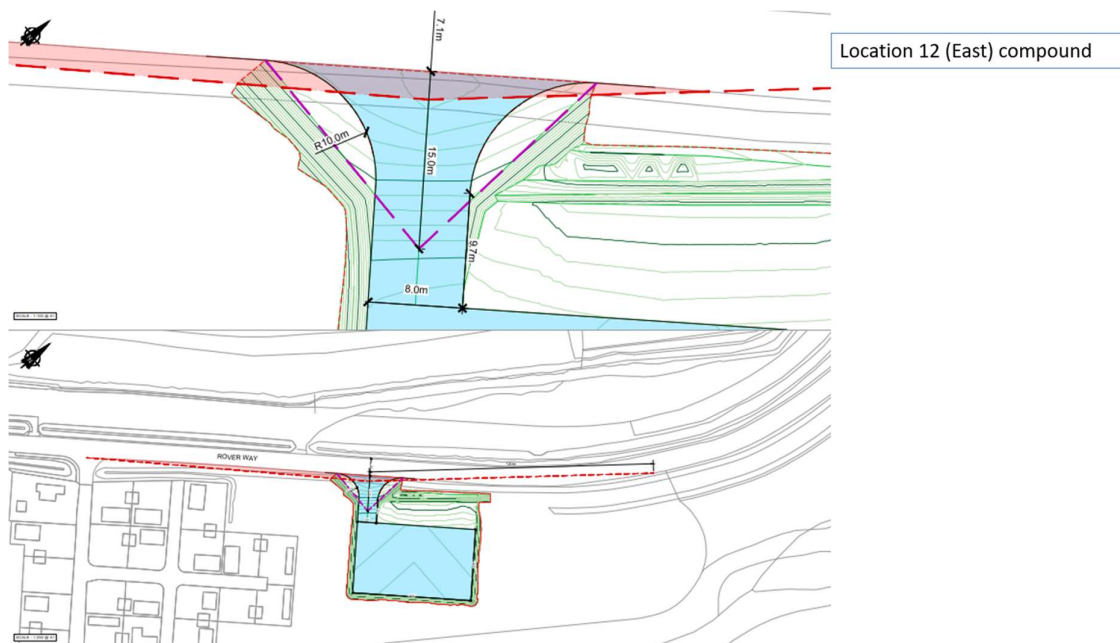


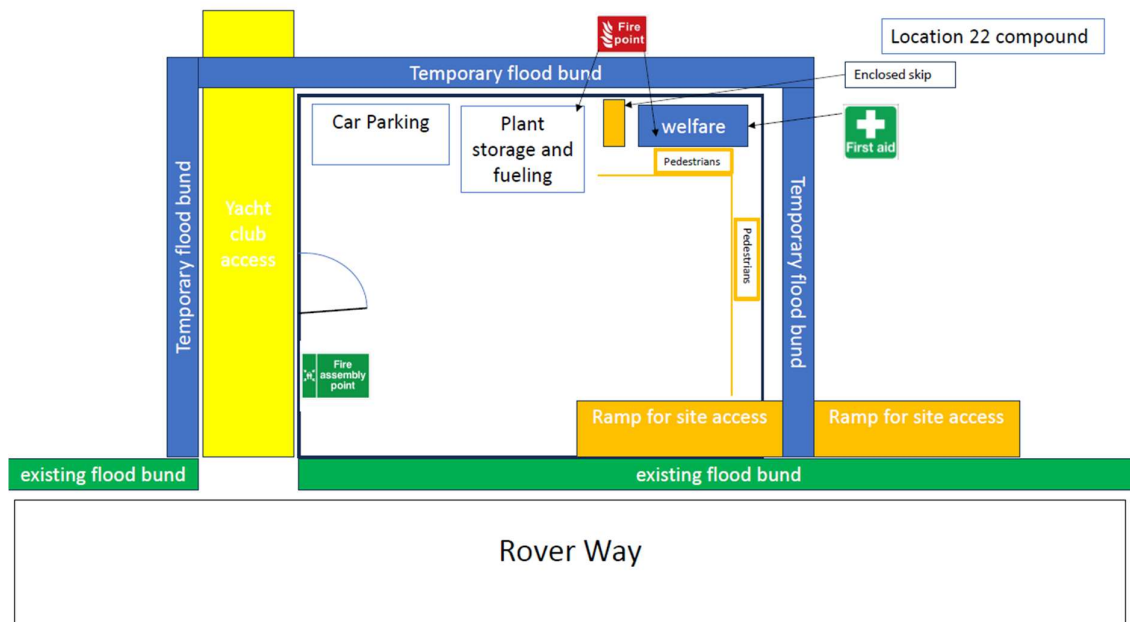


Location 12 (Central) compound



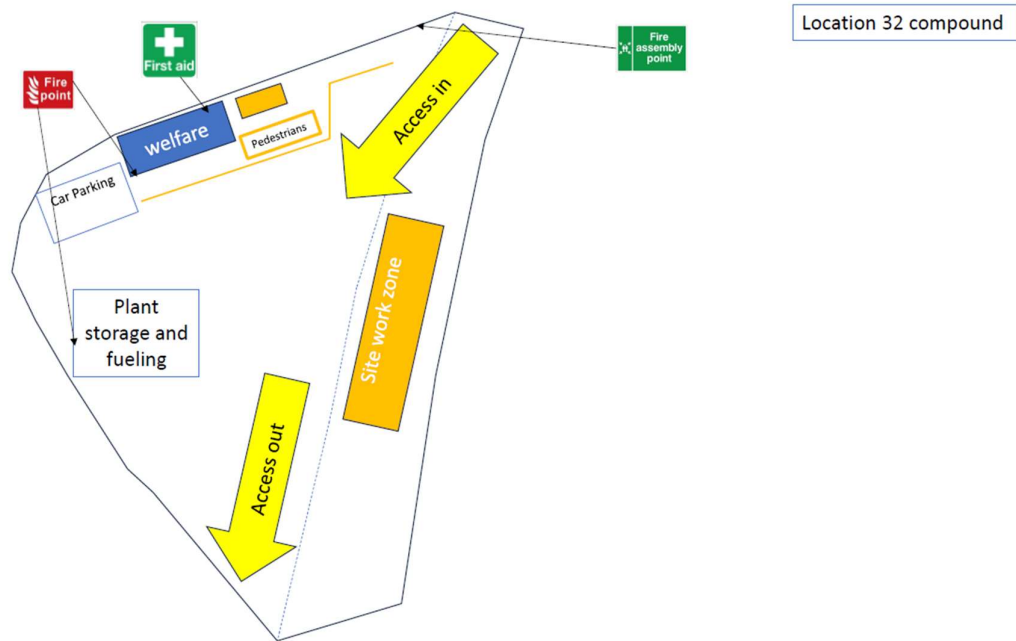
Location 12 (East) compound





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Appendix N

Biodiversity risk assessment and knotweed Management Plan



Method statement for Japanese Knotweed control

MS10-10007

River Rhymney

Rover Way

Cardiff

Written by Robert Mitchell

Certificated Surveyor in Japanese Knotweed

Member of Property Care Association Invasive Weed Group

16th February 2024

Method statement for Japanese Knotweed along River Rhymney
Rover Way Cardiff

Prepared by	Robert Mitchell
On behalf of	Knights Brown
Written by	Robert Mitchell
Issue Status	Final
Signed	
Date	16 th February 2024
Additional project documents	MS10-10005 with Appendix 1

Project: Control of Japanese Knotweed to support work to be carried out along the River Ryhmney Rover Way Cardiff.**What is the issue?**

There is Japanese Knotweed present, in various locations, within the area of proposed ground works to be carried out along the River Ryhmney, Rover Way, Cardiff.

The purpose of this document is to supply a method of working and associated protocols to enable the ground works to be carried out without causing additional spread of the already established areas of Japanese Knotweed.

Supporting narrative.

This method statement is to provide protocols for an appropriate mitigation strategy, to make it 'safe', in terms of preventing the spread of the Japanese Knotweed, for the required ground works to be carried out and to prevent the spread of Japanese Knotweed already present within the project area, during the duration of this project.

This is not a method statement for a control programme for the Japanese Knotweed.

This method statement provides protocols to ensure that the situation is a net zero sum; the area of Japanese Knotweed already present will remain the same and will not be spread beyond where it is already present.

What is the legislation relevant to the task?

Wildlife and Countryside Act (1981)

Japanese Knotweed is one of the 40 plants listed within Schedule 9 Part 2 of the Wildlife and Countryside Act (1981).

Within the Wildlife and Countryside Act (1981) it is an offence to plant, or otherwise cause to grow (including allowing to spread) any plant species listed within Schedule 9 Part 2 in the 'wild'.

And, if transported off site, there is a duty of care regarding the disposal of any part of the plant that may result in the establishment of the plant within the wild and cause environmental harm.

Environmental Protection Act 1990

Any waste containing Japanese Knotweed is classified as controlled waste and consequently there is a legal requirement to observe the appropriate duty of care for its proper handling, under the Environmental Protection Act 1990.

Treatment and disposal of invasive non-native plants in Wales: RD 58

Outlines requirements within Wales that individuals/companies must adhere to, if disposing of invasive non – native plant material and the material it is contained within.

Summary

Vegetation containing Japanese Knotweed is considered controlled waste and consequently has to be handled as controlled waste.

Timing of the project.

All the vegetation in location 12, 22 and 32 will be stripped before the end of February 2024 due to entering bird nesting season. Any de-veg after 1st March will be supervised by an ecologist to check for nesting birds. However Location 42 and 52 will be cleared next winter as works are not planned until next year in these 2 areas – please refer to appended phasing drawing for construction work dates

The duration and monitoring of the stored excavated material containing Japanese Knotweed will be in line with the submitted phasing drawing.

Each area of stored material will be under monitoring until each area is reinstated.

First task; mapping of the Japanese Knotweed locations.

To locate and map the areas of Japanese Knotweed.

This document will be used to assist the overseeing of the vegetation clearance and excavation of the Japanese Knotweed, that falls within the known ground work areas, to be stored within agreed exclusion zones, to enable the ground works to proceed without spreading the Japanese Knotweed material.

Second task; clearance of the vegetation.

To be carried out under the supervision of a Property Care Association (PCA) Certificated Japanese Knotweed Surveyor(CSJK).

The machinery used will be 13 to 14 ton 360 excavators with a flail attachment.

The exclusion zones will be established by using Heras fencing with appropriate signage indicating that this is an area of Japanese Knotweed and is a restricted access zone.

The mulch zones are contained within each area of Japanese Knotweed. The areas of Japanese Knotweed have already been mapped and recorded [see first task] and by definition of this, all zones are equally known and mapped.

Tool box talk on day 1 will be carried out by the PCA CSJK to;

1. brief the contractors the protocols for Japanese Knotweed,
2. showing the already identified areas of the Japanese Knotweed within the document from Task 1 and explaining the correct buffer zones,

Clearing the vegetation.

3. PCA CSJK to confirm each area of vegetation without any Japanese Knotweed.
4. Once the non Japanese Knotweed areas have been cleared this will provide clear working area for the winter stems of the Japanese Knotweed , which are inert and non-viable, to be cut 10cm above ground level to avoid spreading the Japanese Knotweed crown, rhizome and/or propagules. The cutting of the stems at 10cm ensures that all the cut is only the inert winter stems and there is no viable material inadvertently collected.
5. As work progresses to currently inaccessible areas, the PCA CSJK to initially establish each area of vegetation not containing Japanese Knotweed and, as above, for this to be cleared first.
6. Once the second phase areas of vegetation not containing Japanese Knotweed have been cleared, then the PCA CSJK to oversee clearance of the areas containing Japanese Knotweed.
7. The cut Japanese Knotweed stems to be cleared and mulched down stored on site and allowed to compost down, using 13 to 14 ton excavators with flail attachment.

Third task; Excavation of the Japanese Knotweed material, relevant to the ground works, for storage and monitoring.

To be carried out under the supervision of a Property Care Association Certificated Japanese Knotweed Surveyor.

The machinery used will be 13 to 14 ton 360 caterpillar tracked excavators and 9 ton dumper trucks (wheeled).

Note: The majority (approximately 80 to 85%) of the Japanese Knotweed crown and rhizome is found in the first 500mm.

Process of excavation.

1. There will be an initial scrape of 500mm across the area.
2. The PCA CSJK will then identify remaining Japanese Knotweed rhizome that may require further excavation in order to facilitate the required depth for the ground works to take place in such a way as to not result in any spread of the Japanese Knotweed material.
3. The dumper trucks used to transport the material will be $\frac{3}{4}$ filled to prevent material falling out.
4. The excavated Japanese Knotweed material to be stored within the area already containing Japanese Knotweed, with the topsoil being stored separately to the sub soil.
5. The stored material to be profiled to ensure stability and integrity of the stored material.
6. Exclusion zones to be set up around these storage areas using Heras Fencing and appropriate signage, for ongoing monitoring during the re-engineering process.
7. The signage will indicate that it is stored Japanese Knotweed material and that it is a restricted access area.
8. The storage zones will be mapped and recorded.
9. This excavated material, both the top soil and sub soil to be re-used within identified Japanese Knotweed areas only.
10. The summary is that all excavated material, containing Japanese Knotweed crown and rhizome, will stay within known, identified, Japanese Knotweed zones.

These storage areas to be subject to regular monitoring by a Property Care Association Certificated Japanese Knotweed Surveyor.

Bio-security protocols.

All exclusion areas, containing the stored excavated Japanese Knotweed material, to be fenced with Heras Fencing and appropriate signage warning of the presence of Japanese Knotweed material and restricted access.

These storage areas to be 10m from a watercourse.

All vehicles involved with the excavation and transport of the Japanese Knotweed, will be inspected for any Japanese Knotweed material by the PCA CSJK and the wheels, tracks and buckets to be cleaned, using spades and brushes before being allowed to exit the area.

All cleaning to be carried out within the Japanese Knotweed zone.

Jet washes are not to be used as this creates a 'slop' that can not be correctly contained or controlled and gives rise to a potential spread of the Japanese Knotweed material.

Risk Assessment concerning the Japanese Knotweed.

What are the hazards with Japanese Knotweed?	EXISTING CONTROL MEASURES	Severity	Likelihood	Existing Risk High/Medium / Low	FURTHER ACTIONS REQUIRED (Yes/No)
1 Japanese Knotweed is listed on Schedule 9 Part 2 of the Wildlife and Countryside Act (1981). This means all viable or live propagules are controlled waste.	A full briefing to be given on day 1 explaining that all Japanese Knotweed crown and rhizome is potentially viable live propagule and has to be handled as controlled waste. All areas of Japanese Knotweed, within the area of the project, to be mapped and recorded to ensure there is full knowledge of the Japanese Knotweed zones. This information to be used to identify known likely pathways of infestation and spread to inform the decisions regarding appropriate routes of access for plant and machinery and which areas of Japanese Knotweed will require the agreed mitigation contained within the method statement.	3	1	Low	no

2 In handling a moving Japanese Knotweed material there is a risk of spreading the current infestation.	Full briefing concerning this risk given before work begins and informing of the established biosecurity protocols concerning not loading any dumper to more than $\frac{3}{4}$ full and cleaning of machinery. Any transport of material containing Japanese Knotweed to only take place along agreed haulage routes and for these haulage routes to be monitored for any dropped material and to be checked once the transport has been completed. All work concerning Japanese Knotweed material to be supervised by a PCA CSJK.	3	1	Low	no
3. Inappropriate storage of Japanese Knotweed material can lead to uncontrolled spread of the material and lead to new infestations.	All material containing Japanese Knotweed to be stored within restricted access areas using Heras Fencing and signage indicating the presence of Japanese Knotweed material and restricted access.	3	1	Low	no

Client: Knights Brown3 Charnwood Park,
Waterton,

Bridgend CF31 3PL
Steve Hunt

DD: 07970 798655 email : steve.hunt@knightsbrown.co.uk

Site: River Rhymney, Rovers Way, Cardiff

Date of works: To Be Confirmed

Supervision and personnel

- Mr Robert Mitchell (Conservation Land Services Ltd) - 07518 456090

Training

All operatives are adequately trained to carry out required tasks.

Robert Mitchell holds a current certification and has the following training:

- Certificated Japanese Knotweed Surveyor (PCA) and examiner.

Knotweed Plan areas

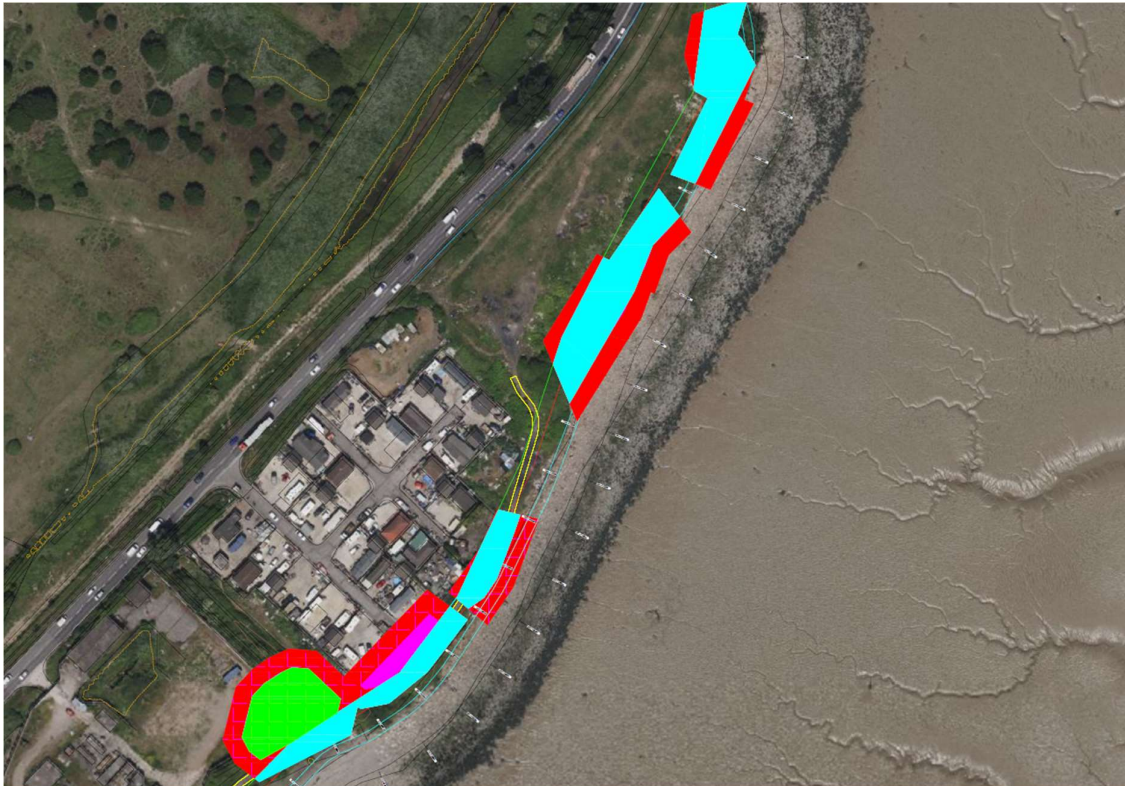
Pink – Areas of known knotweed

Red – 7m exclusion zone

Blue – Areas of knotweed for removal within work area

Green – Potential sites for storage of removed knotweed.

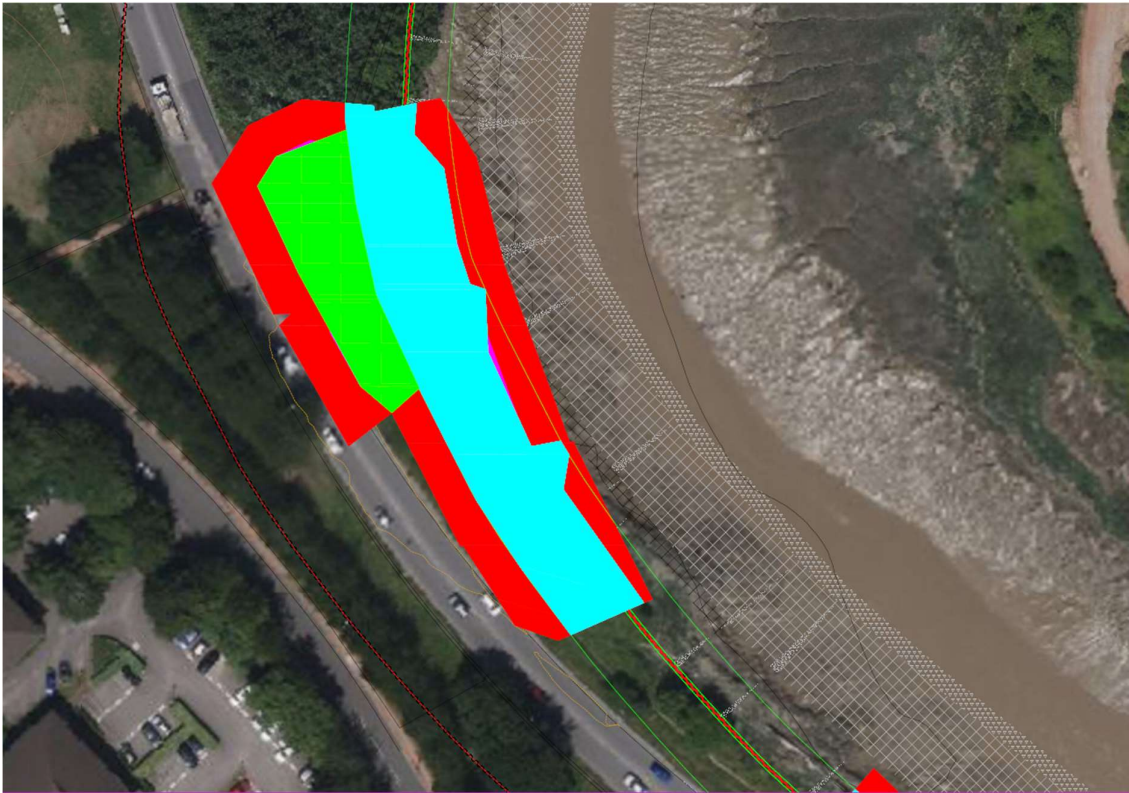
Location 12



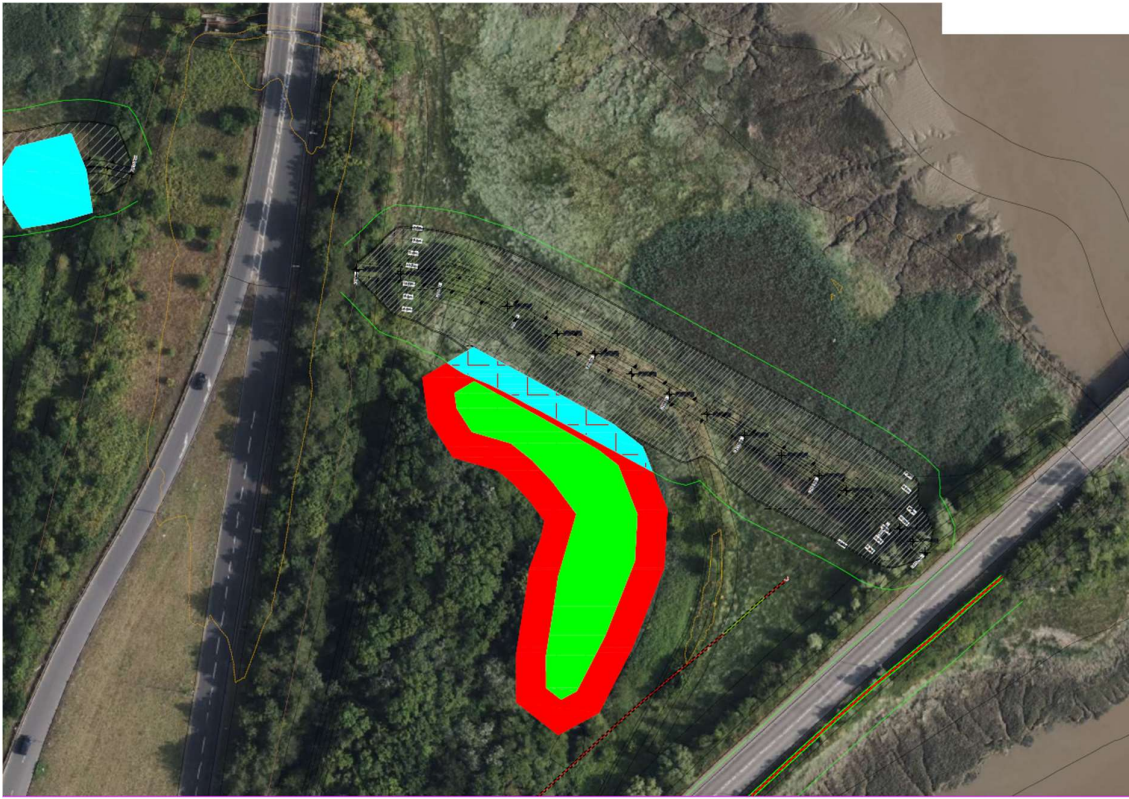
Location 22



Location 32



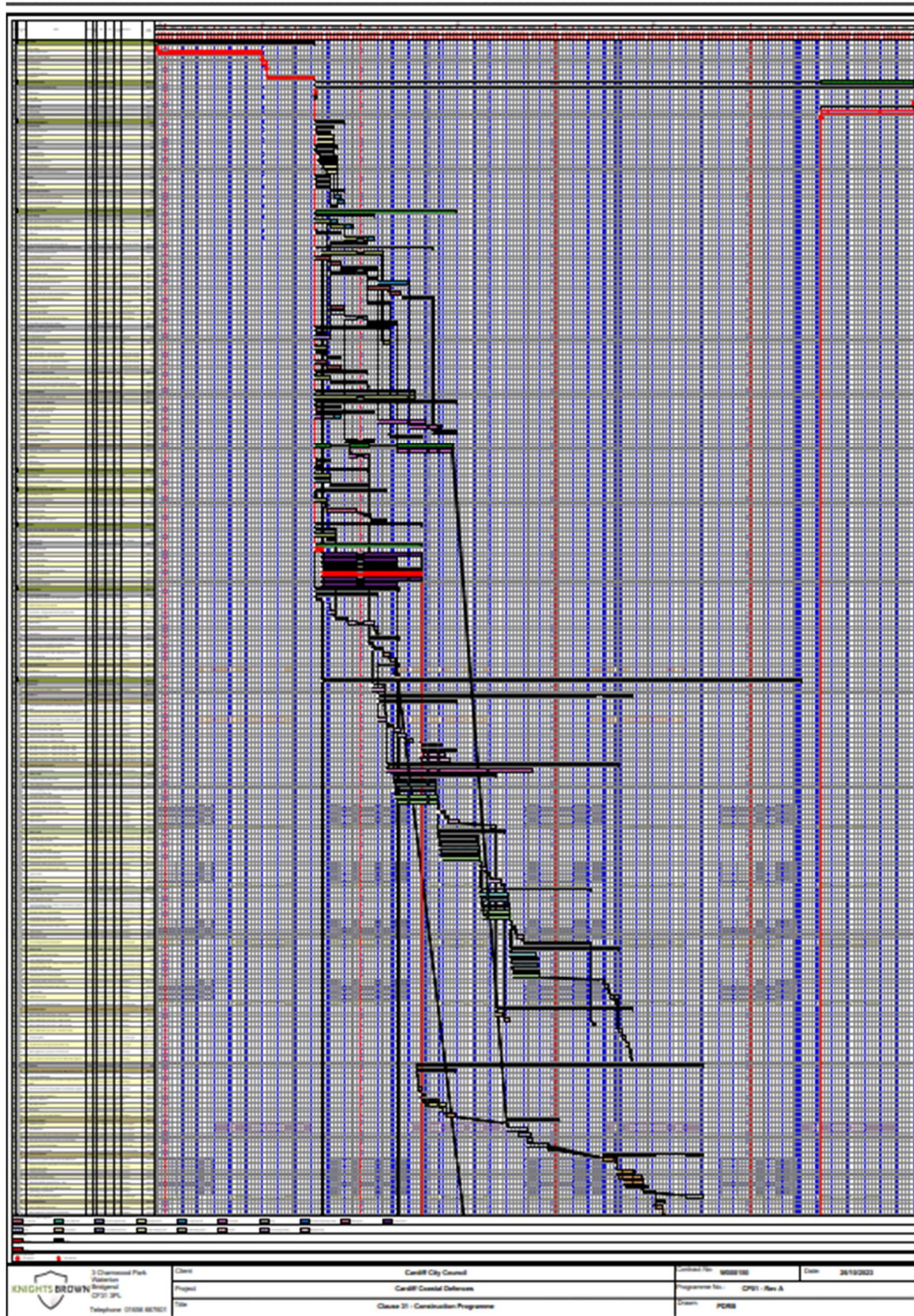
Location 42

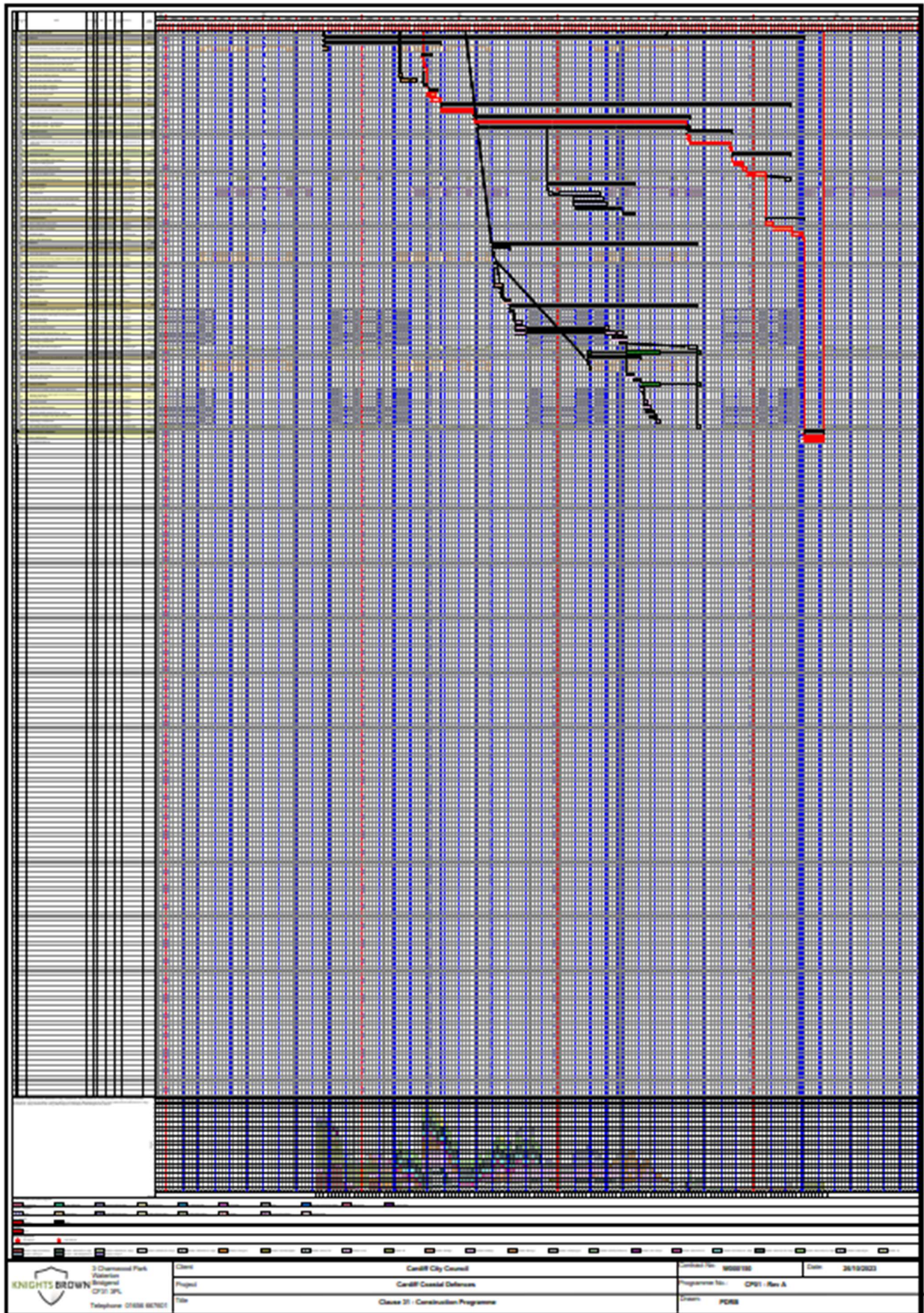


Appendix P

Programme

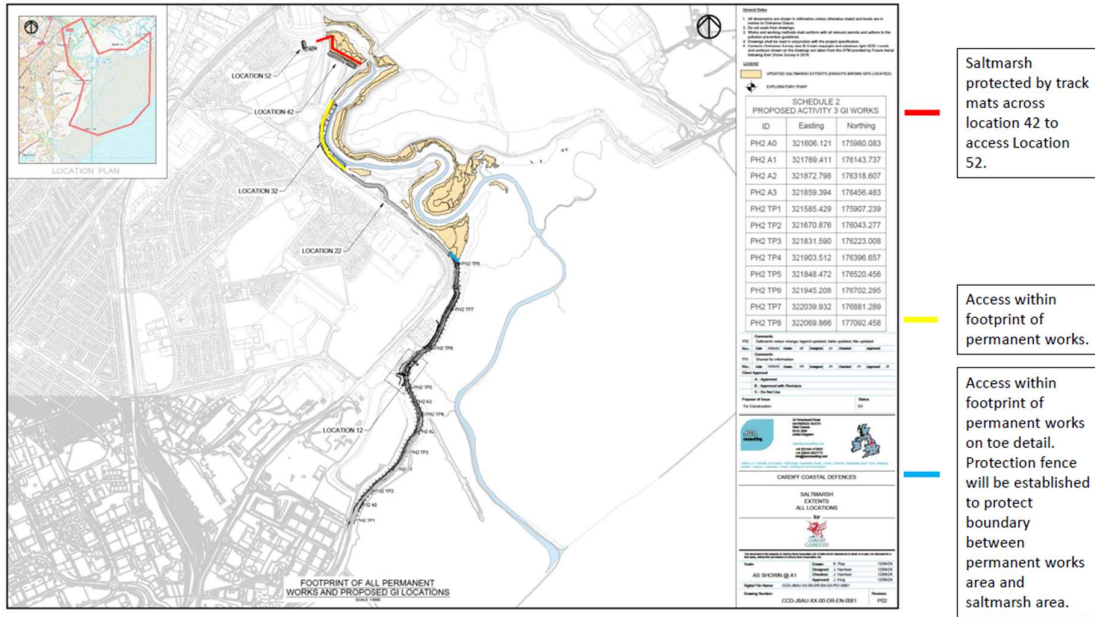
Original Contract Programme (for the latest impacted programme, please refer to the KB site files 05.01)





Appendix Q

Construction Interface with Saltmarsh



Appendix R

Pollution prevention RA (for every site RAMS)

Document owner: Head of HSQE

Ref: F504 Issue 1.2
(December 2021)

Page 107 of 141



Project Filing Reference 12.5

Document Owner: HSQE Manager		HEALTH SAFETY AND ENVIRONMENT RISK ASSESSMENT				F546 Issue 1.3 (March 2018) Procedure P520; Filing reference 13.5																																																																																																																																																																				
Project Number/Name:		Cardiff Coastal Defense - W000150				Assessment No: Pollution Control 001																																																																																																																																																																				
Operation:		Pollution Control				Date: 09/04/2024																																																																																																																																																																				
Location:		Site Wide				Review Date: 09/10/2024																																																																																																																																																																				
Notes: reviewed: 20.08.24 (SH) next review due 20.02.25		Prepared By:		Chris Goldsmith		<table border="1"> <tr> <td rowspan="5">Likelihood</td> <td>5 Almost Certain</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> </tr> <tr> <td>4 Likely</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> </tr> <tr> <td>3 Possible</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>15</td> </tr> <tr> <td>2 Unlikely</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>1 Rare</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"> <table border="1"> <tr> <td>1 Negligible</td> <td>2 Minor</td> <td>3 Moderate</td> <td>4 Major</td> <td>5 Extreme</td> </tr> <tr> <td colspan="5">Severity</td> </tr> </table> </td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Job Title:</td> <td colspan="2">Pollution Control</td> <td colspan="2"></td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Signature:</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Reviewed:</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Persons exposed: (Yes / No)</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>Direct employees</td> <td>Yes</td> <td>Other workers</td> <td>Yes</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>Young person(s)</td> <td>No</td> <td>Public/visitors</td> <td>Yes</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="4"> Hazards with potential for harm <table border="0"> <tr> <td>Work at Height ☐</td> <td>Laser ☐</td> <td>Train/Road Rail Vehicles ☐</td> <td>Surface slip/uneven ☐</td> </tr> <tr> <td>Mobile plant/vehicles ☐</td> <td>Asbestos ☐</td> <td>Fire/explosion ☐</td> <td>Work on or near water ☐</td> </tr> <tr> <td>Excavation/Earthwork ☐</td> <td>Dust / Silica ☐</td> <td>Flying particles ☐</td> <td>Darkness ☐</td> </tr> <tr> <td>Underground services ☐</td> <td>Noise ☐</td> <td>Structural collapse ☐</td> <td>Flood ☐</td> </tr> <tr> <td>Overhead cables ☐</td> <td>Vibration ☐</td> <td>Contaminated material ☐</td> <td>Adverse Weather ☐</td> </tr> <tr> <td>Other o/h obstruction ☐</td> <td>Fumes/gas ☐</td> <td>Disease ☐</td> <td>Lightning ☐</td> </tr> <tr> <td>Falls of material ☐</td> <td>Lifting operations ☐</td> <td>Unstable / soft ground ☐</td> <td>Temperature ☐</td> </tr> <tr> <td>Electricity ☐</td> <td>Demolition ☐</td> <td>Confined spaces ☐</td> <td>Pressure ☐</td> </tr> <tr> <td>Lead Material ☐</td> <td>Machinery parts ☐</td> <td>Manual Handling ☐</td> <td>Excessive glare /dazzle ☐</td> </tr> <tr> <td>Radioactive isotope ☐</td> <td>Animals ☐</td> <td>Sharp edges ☐</td> <td>Airside Ops ☐</td> </tr> <tr> <td>Young Persons ☐</td> <td>Ecology (Specify) ☐</td> <td>Pollution (Specify) ☐</td> <td>Other (Specify) ☐</td> </tr> </table> </td> <td colspan="2"> GUIDANCE: Likelihood of harm: High = 5 (almost certain); Low = 1 (rare) Severity of harm: = 5 (Extreme) Death / Lasting Env harm = 4 (Major) Hospitalised / Env harm = 3 (Moderate) Loss time / Loss shift = 2 (Minor) First Aid only / Min harm = 1 (Negligible) Negligible injury / harm Consider method of work and describe the full control measures as appropriate to the activity Where residual risk is 15 to 25 the HSQE team should be consulted </td> </tr> <tr> <td colspan="4"> Hazardous substances excluding Asbestos, whole Lead or Silica dust require a separate COSHH Assessment Other Hazard(s) (specify) (The above list is intended as a guide and is not exhaustive) The site is based within a SSSI. 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Project Filing Reference 12.5

Project Number/Name:			Cardiff Coastal Defense - W000150			Assessment No:		Pollution Control 001	
Hazard	Factors of harm See notes		Risk See Notes	Describe Risk & Required Control Measures			Factors of harm See notes		Residual risk See notes
(List items ticked on header sheet)	Likelihood	severity		reference method statement if necessary			Likelihood	severity	
Asbestos	3	4	12	Should any asbestos be found on site the work activity is to cease immediately. Operatives are to leave the contaminated area without further disturbing the asbestos. The contaminated area will be protected with fencing and warning signs. A specialist asbestos removal contractor will be engaged to remove the asbestos from site and transport it to a licenced tip for disposal.			1	4	4
Refueling Plant	3	4	12	Fuel stored on site is to be contained in bunded bowsters with the capacity of the bund at least 110% more than the capacity of the bowser tank. The bowser is to be equipped with an automatic cut off delivery nozzle. Refueling of plant to take place in a designated refueling area positioned at least 10 metres from any water course. The surface of the refueling area is to be impermeable and where possible fall away from the water course. Spill kits will be available at all refueling areas. Drip trays to be placed under plant when refuelling.			1	4	4
Fluid Leaks from Plant and Equipment.	3	4	12	All plant to be thoroughly cleaned and inspected for leaks before delivery to site. Daily prestart inspections to be carried out to identify any developing leaks. Plant will not be used if daily inspection identifies a leak until the leak has been repaired. Should an item of plant develop a leak while in use it should be moved away from any watercourse to a distance of at least 10 metres and shut down. Any spilled fluids should be cleaned up immediately. The leak should be repaired as soon as possible. The item of plant can not be used until the leak is repaired. All items of plant to carry a spill kit. All fluids used to be bio degradable where possible.			1	4	4
Plant and Equipment submerged by rising tidal water.	3	4	12	All operatives to be made aware of tide conditions in the daily briefing. Static equipment to be located away from tidal areas if possible and removed to an area above the high tide level if working in a tidal area before they are submerged by rising water levels. Mobile plant working in tidal areas to be withdrawn when the water level reaches the top of the tracks of the tracked excavators. Plant recovery vehicles to be put on standby should an item of plant break down in a tidal area and not be able to be repaired until it is submerged by the rising tide.			1	4	4
Excavated Materials	2	3	9	Excavated materials to be stored in designated stock piles or removed from site. Stock piles to located outside tidal areas. Stock piles to be sealed. Areas of excavated formation to be sealed.			1	4	4
Invasive Plant Species - Japanese Knotweed	3	4	12	Japanese Knotweed specialist to be employed to advise on and monitor the treatment of the knotweed. Specialist to formulate a plan to deal with the knotweed. Plan to be followed. Areas of knotweed to be identified, marked and fenced off with heras type fencing. Fenced knotweed area to have warning signs identifying the area as containing knotweed. Any item of plant that needs to enter a knotweed area should be thoroughly checked and cleaned before leaving the area. Material excavated in a knotweed area should be stored inside the same area where possible, stock piled and sealed. If there is insufficient space to store the material inside the same area the material should be moved to a different knotweed area with sufficient space and stored there. When transporting excavated material containing knotweed from one area to another the skip of the transporting dumper should be filled to no more than 75% capacity.			1	4	4



Project Filing Reference 12.5

Project Number/Name: Cardiff Coastal Defense - W000150				Assessment No:	Pollution Control 001		
Hazard	Factors of harm See notes		Risk See Notes	Describe Risk & Required Control Measures	Factors of harm See notes		Residual risk See notes
Salt Marsh	3	4	12	Salt Marsh area to be identified by ecologist. Salt Marsh area to be fenced off. No plant to enter fenced off Salt Marsh area. Site operatives to be briefed on the Salt Marsh being a no go area. Any access within saltmarsh areas will be undertaken as agreed with NRW. This will be an agreed detail utilising aluminium track mats to cross saltmarsh. Wherever possible access shall be within the footprint of the permanent works to minimise any impact on saltmarsh by construction plant movement.	1	4	4
Silt	3	4	12	Avoid carrying out earth works in excessively wet conditions. If earth work start to create silt operation to stop until conditions are more suitable. Only remove vegetation from areas that need to be exposed. Seed or cover stock piles. Divert running water away from work areas. Install bunds or silt netting to divert silt away from water courses.	1	4	4
Dust	3	4	12	Plant and vehicles to travel at reduced speed on Haul roads if dust is being generated in dry conditions. Haul roads and unmade roads to be dampened down if dust is being generated with towed water bowser. Positive dust suppression to be employed on mechanical cutting or breaking activities, either by water or by vacuum.	1	4	4
Concrete Spillage	3	4	12	Concrete wagon wash out areas to be established at least 10 metres from water course. Concrete wash out areas to be established on impermeable ground. Concrete wash out to be into a steel watertight skip. Wash out water to be either discharged into a local foul drain, with water authority permission or tankered off site for authorised disposal. Under no circumstance should wet concrete or concrete wash out water be allowed to enter any waterway.	1	4	4
Pollution Reaching Watercourse	3	4	12	Floating pollution control booms will be available for deployment by the safety boat should any pollution escape on any waterway. The booms will be deployed downstream of any spillage. Water flow to be checked before deployment as water runs both up and down stream with the tidal conditions. Specialist contractor Spill Response Wales to be contacted on 01550721301 who will attend site within one and a half hours to clean up and remove any spilled pollution.	1	4	4
Waste Material	2	2	4	All waste materials generated on site will be sorted and deposited in dedicated skips for recycling or disposal off site. Dedicated skips will be provided for wood, metals and plastic. The waste will be removed from site by a registered and authorised waste disposal company. A waste transfer note will be produced for each load of waste being removed from site. The waste transfer note will give a full description of the load. Office/Canteen waste will be segregated for recycling.	1	2	2

Document owner: Head of HSQE

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(December 2021)

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Project Filing Reference 12.5

Project Number/Name: Cardiff Coastal Defense - W000150				Assessment No:		Pollution Control 001	
Hazard	Factors of harm See notes		Risk See Notes	Describe Risk & Required Control Measures	Factors of harm See notes		Residual risk See notes
COSHH	3	4	12	Any materials considered hazardous to health will be stored in a locked container in the site compound. A COSHH sheet will be produced for any substance used on site. Any unused materials will always be returned to the COSHH store when not in use.	1	4	4
Incidence Response	2	3	6	Any environmental incidents should be reported to the Pollution Incidence Hotline On 0300065300 option 1 for 24 hour service.	1	3	3

Appendix S

Shrill Carder Bee Survey Report

TECHNICAL NOTE

Project Name	Cardiff Flood Alleviation Scheme
Client	Cardiff County Council
Author	Hannah Webster
Reviewer / Sign-off	Jonathan Harrison
Subject	Shrill Carder Bee Survey Results

1 Overview

Planning permission for a Flood Alleviation Scheme in Cardiff along the western bank of the Rumney River and Severn Estuary was granted in 2023. A baseline invertebrate survey of the saltmarsh was conditioned as being required prior to works taking place. This has been expanded to include suitable areas of habitat within and adjacent to the whole scheme area. The species given particular attention was the Shrill Carder Bee *Bombus sylvarum*.

JBA Consulting were commissioned by Cardiff City Council (CCC) to complete an invertebrate survey to act as a baseline for future improvement measures. The survey was conducted to include all pollinator species that could be observed during a transect or quadrat survey. This note to file details the methodology and the results of the Shrill Carder Bee presence survey only that can be included in the Construction Environmental Management Plan.

1.1 Site Location and Description

The proposed scheme comprises of new fluvial and coastal flood defences along the western bank of the River Rhymney on the outskirts of Cardiff from where the A4232 crosses the river down to the confluence between the river and the Severn Estuary. The defences will then extend along the Severn Estuary coastline, west from the River Rhymney as out lined in **Error! Reference source not found.** below.

The proposed scheme is to improve and extend coastal and fluvial defences along the coastline. It is anticipated that the project will prevent breaches of the existing defences, reducing erosion and flooding of critical transport, waste management, and energy infrastructure located immediately landward of the scheme, and of extensive residential and commercial areas in the surrounding hinterland. The works required will be varied and will consist of: the construction of rock revetment; construction of new earth embankments, and the raising of existing structures; construction of new sheet piles; and the construction of protection mats.

TECHNICAL NOTE

Project Name	Cardiff Flood Alleviation Scheme
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Figure 1 Scheme Boundary and Survey Area

TECHNICAL NOTE

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2 Shrill Carder Bee in South Wales

The Shrill Carder Bee was once relatively widespread throughout southern England and lowland Wales, favouring flower-rich habitats such as sand dunes, well-established grasslands and heathlands.

The reasons for its decline are thought to be the loss of flower-rich grasslands as a result of the intensification of agriculture. The bee constructs nests out of grass and plant fibres at or just below ground level, each of which supports a relatively small colony of worker bees dominated by a single queen and worker bees from May until September. Only the queen survives the winter, establishing a new nest and fresh colony of workers from her eggs in the following spring.

Studies have identified some of the key pollen and nectar sources as Red Bartsia *Odontites vernus*, Red Clover *Trifolium pratense*, Common Bird's-foot-trefoil *Lotus corniculatus*, Black Knapweed *Centaurea nigra* agg. and Viper's Bugloss *Echium vulgare*.

Shrill Carder Bee is found widely on the Gwent Levels, the eastern extent of which is located approximately 1.5km to the east of the scheme. In this habitat individuals have been recorded foraging on a wide range of plants, including ruderal plants, especially stands of Creeping Thistle *Cirsium arvense*.

Shrill Carder Bee Surveys have been undertaken on Nash & Goldcliff SSSI and Rumney & Peterstone SSSI in 2012 (Smith 2013). The survey found this area of the Gwent Levels recorded 305 bee individuals with important forage plants included Black Knapweed, Narrow-leaved Everlasting-pea *Lathyrus sylvestris*, Common Bird's-foot-trefoil, Red Clover, Tufted Vetch *Vicia cracca* and Sunflower *Helianthus annuus*.

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Hannah Webster
Jonathan Harrison
Shrill Carder Bee Survey Results

3 Methodology

Suitable survey areas were identified within the scheme footprint by identifying potential food plants or nesting areas. This included all areas of saltmarsh but also areas of ruderal vegetation. A precautionary approach was taken and any areas with flowering plants were included in the survey, however, the only plants that have been identified as important food sourced for the bee within the survey area were small patches of Creeping Thistle and occasional Red Clover located just outside the proposed scheme area.

- Within each survey area a 'look and see' approach was taken. This allowed flexibility that enabled suitable foraging areas to be located more quickly, maximising survey effort.
- Four official surveys were undertaken in May, June, July and August. However, the same surveyor was on site frequently throughout this period and carried out surveys each time.
- Where suitable foraging/nesting areas were located, timed counts along survey routes were undertaken and a proforma completed for each section.
- All observations were recorded as a centroid point using GPS and / or positions marked on to aerial image at an appropriate suitable resolution, from which OSGR were later be taken.
- The survey primarily focussed on locating Shrill Carder Bee, but all other Bombus species were also noted.

TECHNICAL NOTE

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Cardiff County Council
Hannah Webster
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Shrill Carder Bee Survey Results

4 Results

Shrill Carder Bee was not recorded during any of the surveys. Plants previously identified as important food plants for the species were not recorded in large numbers across any of the site and areas impacted by the works are not considered of high value for the species. Terrestrial habitats that will be directly impacted by the works (temporarily and permanently) consisted predominantly of dense scrub, largely dense stands of Bramble or Japanese Knotweed. Smaller areas of ruderal vegetation were identified, however, large numbers of pollinator species utilising these areas were not recorded.

Details of further *Bombus* species and other important pollinators are detailed in the full invertebrate report, however, it should be noted that high numbers were not recorded anywhere within the scheme boundary. Larger numbers of invertebrates were recorded in ruderal vegetation located outside of the scheme boundary and these areas will be protected throughout the scheme.

Appendix T

Updated NVC Saltmarsh Survey

Cardiff Coastal Defences - Updated NVC Saltmarsh Survey

August 2024

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Prepared for:
Cardiff Council





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This report describes work commissioned by Cardiff Council. Jonathan Harrison and Hannah Webster of JBA Consulting carried out this work.

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Abbreviations

CCC	Cardiff City Council
CEMP	Construction Environmental Management Plan
EIA	Environmental Impact Assessment
NVC	Nation Vegetation Classification
SAC	Special Area of Conservation
SMP	Saltmarsh Management Plan
SSSI	Site of Special Scientific Interest
NRW	Natural Resources Wales



1 Introduction

1.1 Background

JBA Consulting was commissioned by Cardiff City Council (CCC) to complete an updated NVC survey to assess the extent of saltmarsh habitat within the footprint of the Coastal Design scheme. This report presents the results of the NVC survey and highlights any changes to the saltmarsh extents within the schemes footprint as previously recorded in the initial NVC botanical survey completed in 2019.

Whilst not usually part of an NVC survey this report provides a description of the potential impacts arising from the works for each vegetation community with the aim of avoiding confusion in subsequent documents where this survey will be referred to.

1.2 Site Location and Description

The proposed scheme comprises of new fluvial and coastal flood defences along the western bank of the River Rhymney on the outskirts of Cardiff from where the A4232 crosses the river down to the confluence between the river and the Severn Estuary. The defences will then extend along the Severn Estuary coastline, west from the River Rhymney as out lined in Figure 1-1 below.

The proposed scheme is to improve and extend coastal and fluvial defences along the coastline. It is anticipated that the project will prevent breaches of the existing defences, reducing erosion and flooding of critical transport, waste management, and energy infrastructure located immediately landward of the scheme, and of extensive residential and commercial areas in the surrounding hinterland. The works required will be varied and will consist of: the construction of rock revetment; construction of new earth embankments, and the raising of existing structures; construction of new sheet piles; and the construction of protection mats.

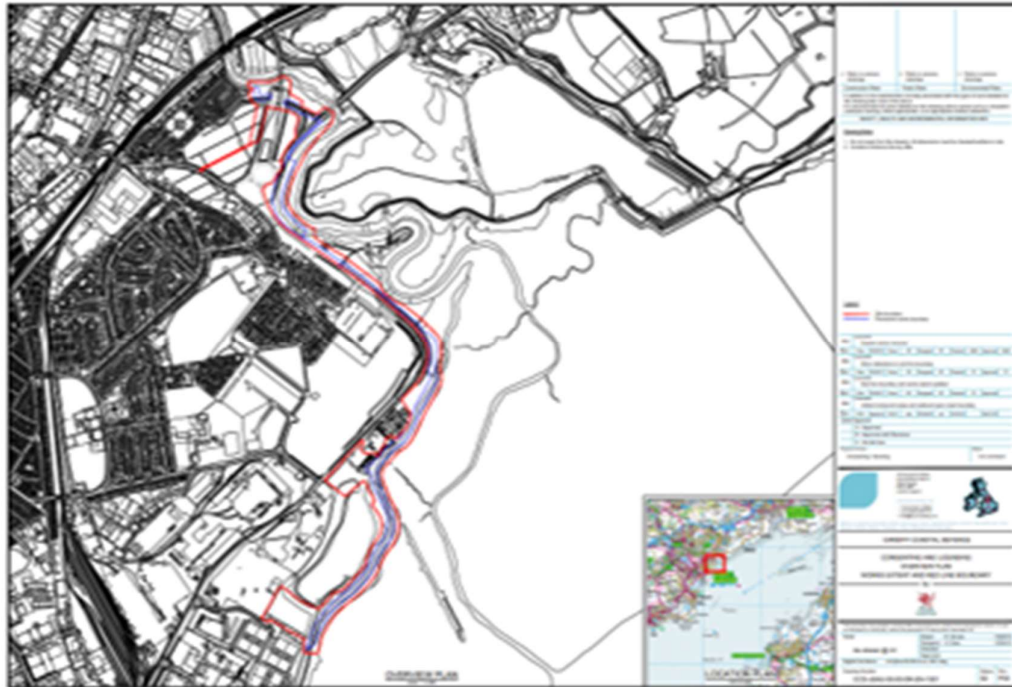


Figure 1-1. Site location and scheme boundary.

Figure 2-2 shows the full extent of the saltmarsh along the Rumney and indicates where permanent works and temporary haul routes will be constructed.

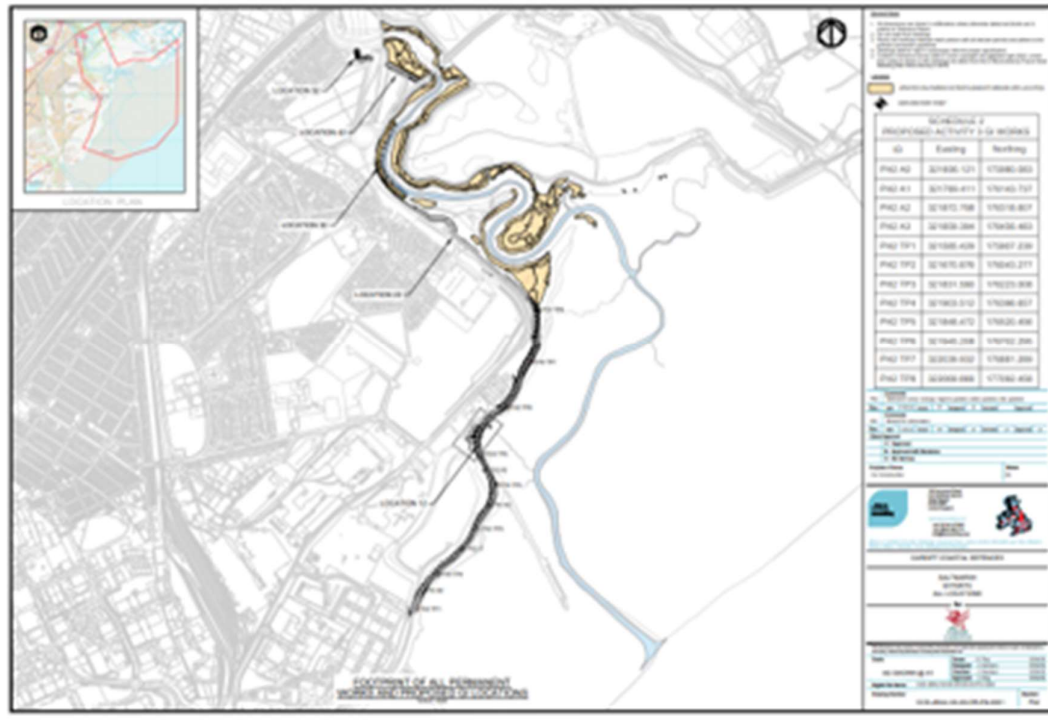


Figure 1-2. Full extent of saltmarsh with details of the proposed works

2 National Vegetation Classification (NVC) Survey

The National Vegetation Classification (NVC) is a phytosociological scheme developed to provide a comprehensive system to classify vegetation throughout Wales, Scotland and England. The final scheme was published in the five British Plant Communities volumes (Rodwell 1991a; 1991b; 1992; 1995; 2000). The system has been in widespread use since it was developed in the late 1980s. Since the publication of the original volumes much has been written to develop the classification further, including the Users' Handbook (Rodwell 2006) and a review of proposed additions (Mountford 2011).

The NVC is not designed as a hierarchical scheme, unlike much European phytosociology. However, the vegetation communities were split into groups based on the broad habitat type, with open vegetation being used as a catch-all for a diverse group of vegetation types at the end. The group codes are shown in Table 2-1.

Table 2-1. NVC categories

NVC Prefix	Category	No. comms	Notes for saltmarsh survey
A	Aquatic	24	Sometimes found in coastal water bodies but generally not mapped in this survey
CG	Calcareous grassland	14	Not generally found on saltmarsh.
H	Heaths	22	Not generally found on saltmarsh.
M	Mire	38	Includes some of the mires that develop from saltmarsh cut off from tidal inundation but that retain a freshwater supply.
MC	Maritime cliff	12	Coastal grassland influenced by salt, most commonly on coastal cliffs, and includes some vegetation occasionally found on strand lines and shingle.
MG	Mesotrophic grassland	13	Often found on damper or more enriched soils in upper saltmarsh and the transitions beyond the tidal limit.
OV	Open vegetation	42	Includes communities of disturbed ground and tall herb vegetation that are sometimes found on saltmarsh.
S	Swamp and tall-herb fen	28	Includes vegetation that develop from saltmarsh cut off from tidal inundation but that retain a freshwater supply.
SD	Sand dune	19	The main vegetation of sand dunes, and often found in close association with saltmarsh.
SM	Saltmarsh	28	The main group of communities of saltmarsh
U	Calcareous grassland	21	Not generally found on saltmarsh.
W	Woodland	25	Woodland and scrub communities including many found around the margins of saltmarsh.

2.1 NVC codes and naming conventions

The NVC volumes introduced a specific way of naming each community, a convention which is followed throughout this report. The community is assigned a letter (Table 2-1) with a sequential number, following which are listed one to three prominent species from the community, then a word or two describing the vegetation type for example as follows:

- SM16 *Festuca rubra* salt-marsh community
- S21 *Scirpus maritimus* swamp

Where these communities include sub-communities, these are described in the NVC volumes by a number (typically two) of their characteristic species, or rarely another defining features (e.g., typical sub-community, or species-poor sub-community). Examples for SM16, which includes six sub-communities, are:

- *Puccinellia maritima* sub-community
- *Juncus gerardii* sub-community
- *Festuca rubra*-*Glaux maritima* sub-community
- *Festuca rubra* sub-community
- *Leontodon autumnalis* sub-community
- *Carex flacca* sub-community

When using shorthand codes these communities are assigned a letter based on the order in which they are described in the volumes (a, b, c...). The same applies where these sub-communities are split further, referred to as 'variants' in the NVC volumes. These are similarly named using prominent species and assigned a roman numeral for the purposes of mapping (i, ii, iii...). The full name of a community (given at least at the first mention in each report would then look something like this: SM16b *Festuca rubra* salt-marsh community, *Juncus gerardii* sub-community. This is subsequently referred to in the text as simply SM16b.

3 Methodology

3.1 Field Surveys

The field surveys were completed in July 2024 by Jonathan Harrison and Hannah Webster, a further survey was undertaken in August 2024.

3.2 Quadrat Samples

Quadrat samples were recorded for each sub-community and further samples were collected wherever difficulties with the NVC placement were encountered or for large or variable stands.

A quadrat size of 2m x 2m (or equivalent area on restricted, e.g., narrow, vegetation stands) was used.

Within quadrats the cover of every taxon of vascular plant, bryophyte and lichen were recorded using the Domin scale, with cover assessed by eye as a vertical projection on the ground of the live, above ground parts of the plants in the quadrat.

The Domin scale is the standard measure of cover used in NVC surveys (Rodwell 2006). The cover is based on projected cover, separated by layer where vegetation has a complex structure. The projected cover range and corresponding Domin value are shown in Table 3-1.

Table 3-1. The Domin scale

Cover	Domin
<4%, few individuals	1
<4%, several individuals	2
<4%, many individuals	3
4-10%	4
11-25%	5
26-33%	6
34-50%	7
51-75%	8
76-90%	9
91-100%	10

A record was made of the total cover and mean height excluding flowering stems of the layers together with the cover of any bare sand, soil, litter, rock or open water. A record was also made of grazing level and grazing animal, as well as other obvious management interventions.

3.3 Notable Species

The location of rare, scarce, uncommon or notable vascular and non-vascular plant species were noted during the survey. Notable species included those listed on the designated site citations, species listed under one of the threatened categories on the Welsh or British Red



Lists, species listed on Section 7 of the Environment (Wales) Act 2016, and Nationally Rare and Scarce species. However, no systematic search was made for such species, and the records collected here should be viewed as incidental findings.

3.4 Mapping

The field maps were digitised in QGIS 3.22 (QGIS.org 2022) and aligned to the Ordnance Survey Master map, with features identified from NRW and ESRI aerial images).

3.5 Limitations

Some areas of the saltmarsh on the right bank within the survey area are heavily grazed by horses and as a result some of the vegetation is grazed very short meaning species might be overlooked. However, the classification of the habitat relies primarily on the main species present, and these could be identified satisfactorily.

The survey was conducted at a good time of year for botanical surveys. However, vascular plant species have varied phenology, and it is possible that some early-flowering or late-flowering species may have been overlooked. This is not considered to be a significant constraint to the assessment which is based on communities rather than individual species.

4 Results

4.1 NVC Survey

In total seven NVC communities were identified within the scheme boundary. As described in the original NVC report conducted in 2019 and outlined in the Saltmarsh Management Plan, Saltmarsh vegetation is present along the upper banks of the Rhymney River and several plateaus where the Rhymney River meets the Severn Estuary. The vegetation becomes fragmented along the banks of the river where they have begun to erode.

The spatial layout of vegetation communities is shown in Appendix A, which maps NVC communities and subcommunities across the site.

4.1.1 NVC Communities and potential impacts

SM12a Rayed Aster *tripolium* on salt-marshes

This saltmarsh community forms a fringe on the upper banks of the Rhymney River channel below the level of the plateaus supporting stable saltmarsh vegetation and is present on both the left and right banks. Sea Aster *Aster tripolium* is dominant with Sea Lavender *Limonium vulgare* and Greater Sea-spurrey *Spergularia media* also present. Glasswort *Salicornia* sp. was also recorded at the water's edge.



Figure 4-1. SM12a Rayed Aster *tripolium* on salt-marshes located on eroded land that has fallen into the river



This vegetation community will be permanently impacted by the works in area 32 where flood defences will be constructed in the river channel. This impact was quantified during the planning process and an engineering solution that seeks to recreate conditions for this habitat to reestablish was developed.

No temporary haul routes, set down areas, or material storage will be required within this habitat and no further temporary impacts are expected to this community assuming mitigation measures to avoid indirect impacts from pollution incidents or sedimentation detailed in the CEMP are implemented.

Floristic Table

Sample	Q01	Q02
Sub-community	a	a
<i>Puccinellia maritima</i>	7	8
<i>Tripolium pannonicum</i>	7	7
<i>Suaeda maritima</i>	3	1
<i>Atriplex prostrata</i>	-	4
<i>Plantago maritima</i>	2	-
<i>Salicornia</i> agg.	-	1

SM13 *Puccinellia maritima* saltmarsh community**SM13a *Puccinellia maritima* salt-marsh community, sub-community with *Puccinellia maritima* dominant:**

The saltmarsh community SM13a is present in narrow bands around the seaward edge of the main saltmarsh plateau on the left bank and stretches of the right bank between the Lamby Way and northwest of A4232 road bridges. The vegetation in these areas is dominated by Common Saltmarsh-grass *Puccinellia maritima* with Sea Aster *Aster tripolium* and Spear-leaved Orache *Atriplex prostrata* occasionally present in low abundance.

Floristic Table

Sample	Q03	Q04	Q05	Q06
Sub-community	a	a	c	c
<i>Puccinellia maritima</i>	8	8	6	4
<i>Elymus athericus</i>	3	2	-	-
<i>Tripolium pannonicum</i>	5	-	-	-
<i>Limonium vulgare</i>			3	4
<i>Suaeda maritima</i>	4	-	2	2
<i>Triglochin maritima</i>	-	3	-	-
<i>Atriplex prostrata</i>	-	-	-	-
<i>Plantago maritima</i>	4	-	-	-
<i>Lysimachia maritima</i>	2	-	-	-
<i>Spergularia media</i>	2	-	-	-
<i>Juncus gerardii</i>	-	-	-	-
<i>Salicornia europaea</i> agg.	-	-	2	1
<i>Tripleurospermum maritimum</i>	4	-	-	-
<i>Aster tripolium</i>			1	3
<i>Spergularia marina</i>	-	1	-	-

SM13c *Puccinellia maritima* salt-marsh community, *Limonium vulgare*-*Armeria maritima* sub-community:

On the right bank plateaus closest to where the Rhymney River joins the Severn Estuary there are large stands of the SM13c saltmarsh community. The vegetation forms open sward of Common Saltmarsh-grass *Puccinellia maritima* and frequent Sea Lavender *Limonium vulgare*, with Sea Aster *Aster tripolium*, Glassworts *Salicornia* sp. and Seablite *Suaeda maritima* also recorded.



Figure 4-2. Largest area of SM13c *Puccinellia maritima* salt-marsh community on the right bank plateau

No areas of SM13 saltmarsh will be directly impacted by the works either permanently or temporarily. This area of the saltmarsh will be demarcated and no works will be permitted including haul roads, lay down areas, temporary storage areas or compounds.

SM16c *Festuca rubra* salt-marsh community; *Festuca rubra* - *Glaux maritima* sub-community

An area of the saltmarsh community SM16c is present on the plateau of the right bank where the ground becomes slightly raised and has continued to be heavily grazed by horses. Deposition (or dumping) of material has resulted in a reduction in this community from the original survey and the slightly raised areas have become further dominated by grass species and tend towards traditional MG10 grassland communities. In the remaining SM16 the vegetation has a grassy sward and is dominated by Red Fescue *Festuca rubra*. Associated species include Sea Aster *Aster tripolium*, Sea Lavender *Limonium vulgare* and Spear-leaved Orache *Atriplex prostrata* however they are in low abundance. As the vegetation transitions towards the road Yorkshire Fog *Holcus lanatus* and White Clover *Trifolium repens* also become present.



Figure 4-3. SM16c *Festuca rubra* salt-marsh community grading to more terrestrial grassland communities

No areas of SM16 saltmarsh will be directly impacted by the works either permanently or temporarily. This area of the saltmarsh will be demarcated and no works will be permitted including haul roads, lay down areas, temporary storage areas or compounds.

Floristic Table

Sample	Q07	Q08
Sub-community	SM16c	c
<i>Atriplex prostrata</i>	2	2
<i>Elymus athericus</i>	1	-
<i>Festuca rubra</i>	7	8
<i>Holcus lanatus</i>	3	3
<i>Plantago maritima</i>	1	1
<i>Aster tripolium</i>	2	1
<i>Trifolium repens</i>	1	-
<i>Limonium vulgare</i>	1	1

SM24 *Elymus pycnanthus* salt-marsh community

The saltmarsh community SM24 is dominant over large stretches of the survey area where vegetation is low enough to be occasionally inundated. The vegetation is typically species poor and is dominated by Sea Couch *Elytrigia atherica*. On the plateaus other species present include Sea Aster *Aster tripolium* and Spear-leaved Orache *Atriplex prostrata*. In the areas to the north of Lamby Way road bridge and northwest of A4232 road bridge the vegetation is species poor with terrestrial grassland species and bare ground present.

Since the original survey it appears that grazing pressure from horses has increased, and bare ground is predominant throughout most of the community.



Figure 4-4. Typical overgrazed SM24 *Elymus pycnanthus* salt-marsh community

A temporary access route will be laid down through this area of the saltmarsh under the A4232 road bridge.

Sample	Q09	Q10
Sub-community	SM24	SM24
<i>Elytrigia atherica</i>	6	7
<i>Aster tripolium</i>	3	2
<i>Atriplex prostrata</i>	1	1
<i>Festuca rubra</i>	1	
Bare Ground	3	4
<i>Pulicaria dysenterica</i>	-	2
<i>Holcus lanatus</i>		2
<i>Apium graveolens</i>	1	-

S21 *Bolboschoenus maritimus* swamp

In the area of vegetation located on the right bank between the Lamby Way road bridge and northwest of A4232 road bridge there are stands of the NVC community S21. These stands are dominated by dense Sea Club-rush *Bolboschoenus maritimus* with only a few other associates, such as Creeping Bent *Agrostis stolonifera* and Couch grass *Elytrigia repens*.

S4 *Phragmites australis* swamp and reed-beds



There are several places where Common Reed *Phragmites australis* forms dense stands with few associates. These areas include a large area northwest of the A4232 road bridge on the left bank, a dense patch on the right bank north of the Lamby Way road bridge.



5 Conclusions

For the most part the saltmarsh along the river Rumney was found to have changed little since the original NVC survey was undertaken in 2019. The extent of SM16 has slightly reduced at the highest extent of the saltmarsh on the right bank at the lower reaches of the Rumney. No further species of interest were identified outside those recorded in the quadrats.

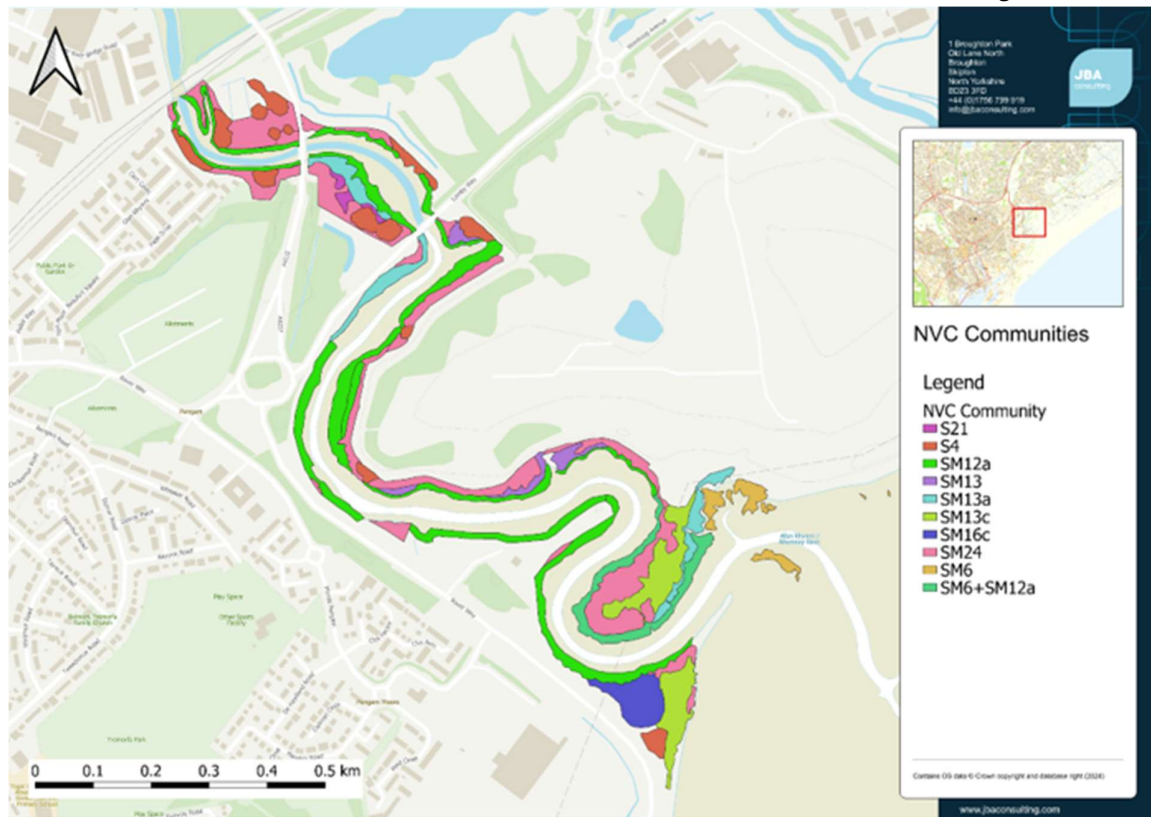
The condition of the species poor area of SM24 has further declined, likely due to the continued pressure of horse grazing as well as rubbish dumping in some areas.

NVC communities that be directly impacted by the works are limited to the area of SM12a where the flood defence will be constructed on the right bank of the Rumney and the are of SM24 beneath the A4232 road bridge where temporary haul routes will be required. The area of SM24 that will be impacted by the temporary works is already species poor and consists of large areas of bare ground as shown in figure 4-4. There is therefore, the potential to significantly improve this area following the completion of the works, this should be agreed with CCC and NRW and management of the area following the completion of the works will need to be agreed. It is likely that the removal of horses during the works will have a positive impact in this area where haul routes are not placed.



A Appendix A

A.1 NVC Communities Map





References

European Commission (2013) Interpretation Manual of European Union Habitats. EUR28 April 2013. Brussels: European Commission and DG Environment.

Rodwell, J.S. (1992). *British Plant Communities 3: Grasslands and Montane Communities*. Cambridge University Press, Cambridge.

Rodwell, J.S. (2000). *British Plant Communities 5: Maritime Communities and Vegetation of Open Habitats*. Cambridge University Press, Cambridge.

Stace, C.A. (2010). *A New Flora of the British Isles, 3rd edition*. Cambridge University Press, Cambridge.



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