The Moors at Arne Coastal Change Project

Construction Environmental Management Plan
EACDF023-KIER-ENV-PLN-0001 Rev 1.0

Infrastructure
Regional Civils
Business Unit

DOCUMENT CONTROL

Contract Title	The Moors at Arne Coastal Change Project
Report Title	Construction Environmental Management Plan
Revision	1.0
Status	FIRST ISSUE
Control Date	24/04/23

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
0.1	DRAFT	J. Feltham	15/02/23	L. Mackenzie-Harvey	15/02/23	M. Philips	15/02/23
0.2	DRAFT	J. Feltham	11/04/23	L. Mackenzie-Harvey	11/04/23	M. Philips	11/04/23
1.0	1st ISSUE	J. Feltham	24/04/23	L. Mackenzie-Harvey	24/04/23	M. Philips	24/04/23

Distribution

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Contents

1 Introduction

1.1 Planning Condition 7 & 18 Compliance

This Construction Environmental Management Plan details adherence to planning condition 7 and 18 of the planning permission granted by Dorset Council. Table 1 below details which section of this document meets the requirements highlighted in the condition wording:

Table 1: Planning Condition Adherence

No.	Detail from condition wording	Document Section
Condition 7		
1	Risk assessment of potentially damaging construction activities.	Appendix 3
2	Identification of "biodiversity protection zones".	4.9.2 & Appendix 5
3	A timetabled protected species mitigation strategy to cover habitat translocation and pre-commencement habitat mitigation establishment/ enhancement.	4.9.1 & Appendix 6
4	Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction, including lighting, noise, vibration and visual impacts (may be provided as a set of method statements).	4. Risk Management
5	The location and timing of sensitive works to avoid harm to biodiversity features.	Detailed throughout 4.9
6	Responsible persons and lines of communication.	Table 5
7	Use of protective fences, exclusion barriers and warning signs.	Detailed throughout 4.9
8	Storage of construction materials/chemicals and equipment.	4.2
9	Dust suppression.	4.6
10	Chemical and/or fuel run-off from construction.	4.11
11	Method of construction of the jetty to reduce contamination risks to the Harbour.	*No longer applicable to the project*
12	Visual screening (for SPA birds).	4.9.3
13	The times/activities during construction when specialist ecologists need to be present on site to oversee works, including the details and remit of the Ecological Clerk of Works on site during construction activities.	Timings / activities detailed throughout 4.9, Remit Table 5

14	Contingency plan for unforeseen events.	3.3.4, 4.11.2, 4.11.5
15	Site management contact details during construction.	2.3.3
Condition 18		
1	Site security.	4.11.4.1
2	Fuel oil storage, bunding, delivery and use.	4.11.1.3
3	How both minor and major spillage will be dealt with.	4.11.5
4	Containment of silt/soil contaminated run-off.	4.11.3.2 & 4.11.1.2
5	Disposal of contaminated drainage, including water pumped from excavations.	4.11.3.2
6	Site induction for workforce highlighting pollution prevention and awareness.	3.2.3.1
7	Invitation for tenders for sub-contracted works must include a requirement for details of how the above will be implemented.	3.2.2

1.2 Purpose & Scope

The purpose of this Construction Environmental Management Plan (CEMP) is to provide all the information required to enable appropriate management and mitigation of the environmental aspects and impacts associated with development of the Arne Moors Coastal Change Project. This CEMP will also establish actions to support delivery of good and best practice and, improve sustainability outcomes of the project.

The Moors at Arne Coastal Change Project will establish new intertidal habitat at the site to replace that that will be lost as a result of rising sea levels and the decision by the Environment Agency to take a 'hold the line' approach to flood defence in and around Poole Harbour. This combination results in Coastal Squeeze and the loss of the existing intertidal habitat. This CEMP covers the enabling and construction phase of works, the post construction phase will be covered by the Habitat Creation and Management and Monitoring Plan (HCMMP).

1.3 Context

This document has been developed in line with requirements of the KIER Environmental Management System which meets the requirements of ISO14001 (2015), and aligns with KIER's Sustainability and Environmental Policies available in Appendix 1.

The project's specific environmental commitments, obligations, and requirements have been set out in the *Environmental Action Plan (EAP)*. The plan was produced by the Environment Agency and is issued to KIER as a contract obligation. A version of the EAP was submitted with the Planning Application (ref. DC/22/05149) to Dorset Council.

Project specific ecology requirements are detailed in the *Ecology Implementation Plan (EIP)*. It details the actions required to adhere to commitments made in the planning application, in support of the planning conditions and in Natural England Protected Species Licence applications.

Both the EAP and EIP are live documents and will be updated as additional information becomes available. Any deviation must be agreed with the Environment Agency Project Manager and will be subject to a review against compliance to the Environmental Statement that supported the planning application, planning condition submissions and Natural England Licence agreed methods, as detailed in Design & Environmental Statement Compliance.

The live versions of both the EAP and EIP will be available to Environment Agency and KIER teams through the DEFRA SharePoint service. Items from both documents that are relevant to a management level are detailed in this CEMP. Operation specific items will be reflected in Method Statements produced by KIER for each specific operation. The drafting of any Method Statements by KIER will require a review of the EAP and EIP to ensure all obligations are captured.

All environmental documentation, including this CEMP, Risk Assessments and Method Statements (RAMS) are also required to align with the Environment Agency's' document: 'Constructing a Better Environment' Safety, Health, Environment and Wellbeing Code of Practice (SHEW CoP) January 2023.

1.4 Supporting documents

This CEMP will support implementation of several key documents, if required, including (see also **Table 3**):

- Construction Phase Plan
- Site Waste Management Plan – provided via SMARTWaste Application
- Contaminated Land Documentation – Site Investigation, Site Remediation Strategy and Verification Report
- Materials Management Plan
- Access Facilitation Tree Plan (Tree Protection Statement) (cond. 3)
- Construction Method Statement (cond. 5)
- Construction Traffic Management Plan (cond. 6)
- Habitat Creation Management and Monitoring Plan (cond. 12)
- Sand Lizard Method Statement (cond. 22)
- Botany Method Statement
- Complaints Tracker
- Carbon Report
- Communication Management Plan

The project document register will advise of the document number for each of the above and detail the most up to date revision.

1.5 Review and updates

This CEMP will be reviewed on an initial 6 monthly basis, with revisions made only when required. As the project matures the review window will change to yearly. It maybe be reviewed and revised at any time under the following conditions:

- Where revised management controls are required in the event of a significant environmental incident.
- Where unexpected conditions require additional management/ mitigation measures to be put in place.
- Following legal updates of material significance to the project.
- Following updates of the KIER Environmental Management System (EMS) of material significance to the project e.g., Sustainability and Environmental Standards.
- Following identification of non-conformance through internal or external audits where root cause is associated with the project EMS.
- Following updates to industry best practice where there are opportunities for delivery on site
- Following updates to KIER or client environmental sustainability targets/required actions as appropriate.

2 The Development

2.1 Works elements

The Development comprises a number of key elements:

- Enabling works:
    - ecological mitigation: 2023 – 2025 (dependent on species)
    - site access, compound, haul road construction and drainage management: Spring 2023 – Autumn 2023,
    - archaeological investigation: Summer 2023 and Summer 2024.
- Construction works:
    - new embankments to establish the extent of tidal inundation and provide 2 no. lagoons: Summer – Autumn 2024,
    - flow control structures within embankments and toe ditches along the new embankments: Summer – Autumn 2024,
    - excavation of foreshore proto channels: Summer 2025,
    - install impermeable cementitious barrier in new embankments: Summer 2025,
    - breach existing tidal embankment in three places: Autumn 2025,
    - construct public access infrastructure: Summer – Autumn 2025.

2.2 Location

The project is located on the western side of Poole Harbour in the County of Dorset, southeast of the market town of Wareham, adjacent to the eastern boundary of the village of Ridge, to the north of the Arne Road. The location is shown on Figure 1 below:

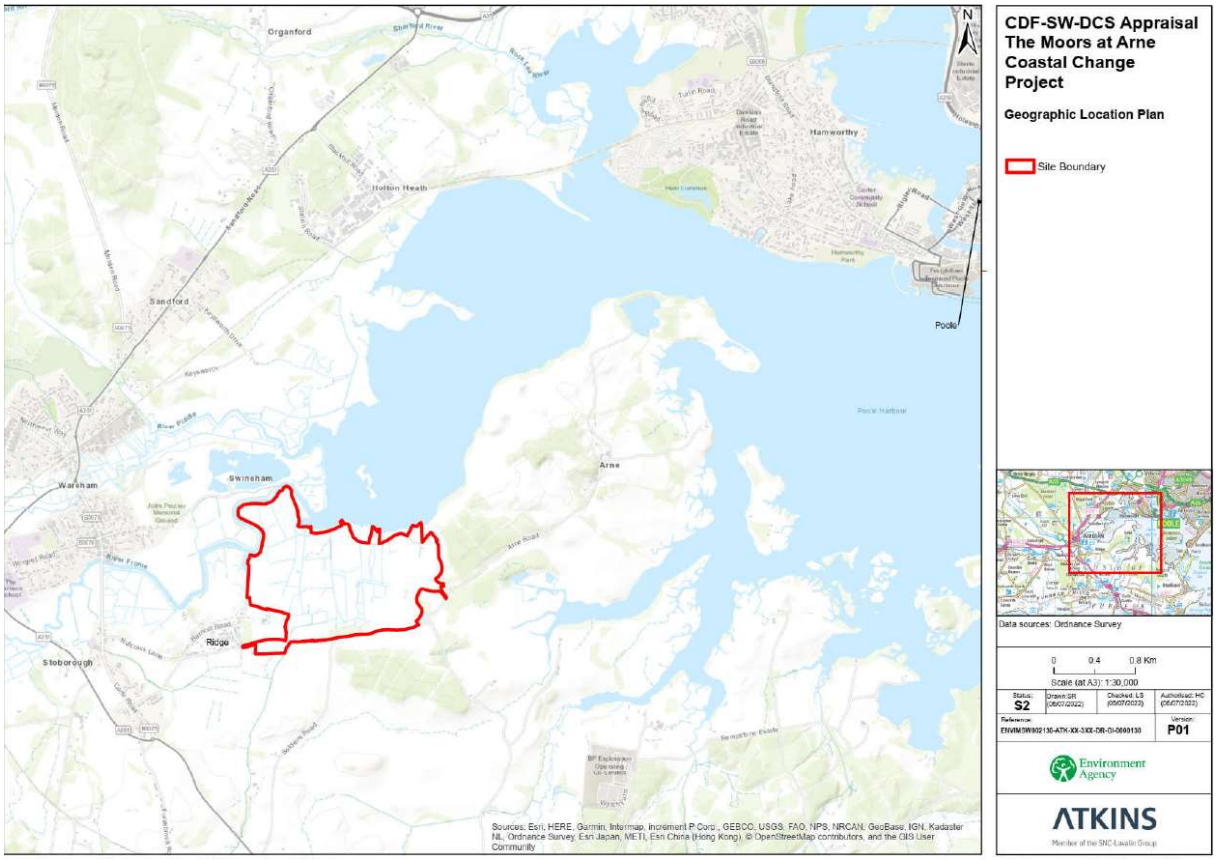


Figure 1: Project Location

It consitutes the low ground between the Arne road and the exisiting Frome tidal embankment that runs the length of the northern boundary of the site up against Poole Harbour. The existing embankments were constructed to reclaim the land from the sea and make use of it as pasture.

2.2.1 Local Residential Receptors

Table 2 below identifies adjacent residents near to the works areas.

Table 2 – Local Residential Receptors.

Receptor	Sensitivity/value
Construction noise and vibration (human response)	
Residential properties at: ▪ The Bank Gate Cottages to the east of the site ▪ The village of Ridge to the west of the site	High
Commercial buildings (i.e. offices, retail, restaurants and pubs) at: ▪ Ridge Farm which borders the site in the southwest corner and includes Ridge Farm campsite. ▪ Ridge wharf which occupies a strip of land over the western tidal embankment allowing access for marine craft onto the Frome.	High

2.3 Construction Management

2.3.1 Access

A compound with offices from which to deliver the site works will be established on the south boundary of the site, just to the north of the Arne Road. Two vehicular access points will be installed off the Arne Road into the compound. The western access will serve HGVs and the eastern access will be for smaller vehicles. This will allow the western portion of the compound to be dedicated to construction operations, separate from drivers of smaller vehicles accessing the office. The HGV access portion of the compound will have facilities to check vehicles upon arrival and then unload / load them or direct them onto site as required.

When constructed the HGV access will be manned by a Traffic Marshall who will ensure use of the correct access points by different vehicles.

Passage to the site by all vehicles for the project will make use of designated routes rather than following local roads. The arrangements for this will be set out the project Construction Traffic Management Plan.

Advanced works prior to the setup of the compound will be serviced by a static welfare unit.

[EA SHEW COP 2.8] It is anticipated that no flights will be required by project personnel, but if this is unavoidable then dispensation from the Environment Agency will be sought.

2.3.2 Site Hours

Normal Operation
Subject to condition 8 of the planning permission for the project, no operations with the potential to generate audible noise beyond the site boundary are permitted outside the hours of:

- Monday – Saturday 07:00 – 19:00

No works with the potential to generate audible noise beyond the site boundary will take place on a public or bank holiday or on a Sunday.

Ridge Farm Summer Restriction
A restriction in relation to the Ridge Farm Campsite operation is also applied as part of planning condition 8 which limits works, except with hand tools, in July and August in any year within 100m of Ridge Farm to:

- Monday – Friday 08:00 – 18:00
- Saturday – 08:00 – 13:00

Alteration
Any requirement to operate beyond the hours stated above will require:
- Written agreement from the Local Planning Authority
- Two weeks prior written notice to adjoining neighbours

Winter Operational Limitation
To mitigate impacts to overwintering birds the following additional restrictions are in place:

- No works 31st October – 1st April, except tree and vegetation clearance.

- Between August and March inclusive works must cease two hours either side of high tide within 300m of a roost site.

2.3.3 Site Contact

All contact should be through the dedicated project mailbox, at email address:

Arne@kier.co.uk

The following KIER team members have access to the mailbox and will ensure queries are responded to within two working days.

KIER Public Liaison Officer – Kate Sampson
KIER Project Manager – Luke Mackenzie-Harvey
KIER Environment Manager – Justin Feltham

3 Environmental Management System

The Environmental Management System (EMS) is effectively constructed around four main tiers of documentation as follows. It is based on the KIER Group EMS and supporting KIER Infrastructure Forms. These documents set out the principal means by which environmental aspects will be managed on this project. This CEMP and Environmental Sub plans are informed by reports provided by the Client and include, for example, the Environmental Statement and Associated Appendices.

Table 3 – EMS Documentation

<table>
<tr><th>Tier</th><th colspan="2">Plans
*Note: KIER document register should be consulted for document numbers and latest revision</th><td rowspan="11">Environmental Management System</td></tr>
<tr><td>1</td><td colspan="2">Construction Environmental Management Plan

To deliver on project obligations:
• Planning Permission DC2022/05149
• Environment Action Plan
• Ecology Implementation Plan
And company obligations:
• Legal Register</td></tr>
<tr><td rowspan="6">2</td><td colspan="2">Environmental Sub-Plans</td></tr>
<tr><td>Contaminated land Site Investigation and Remediation Strategy</td><td>CL:AIRE Materials Management Plan</td></tr>
<tr><td>Tree Protection Statement</td><td>Site Waste Management Plan (available online on SMARTWaste webapp)</td></tr>
<tr><td>Botany Method Statement</td><td>Habitat Creation Management and Monitoring Plan</td></tr>
<tr><td>Written Scheme of Archaeological Investigation</td><td>Sand Lizard Method Statement</td></tr>
<tr><td>Protected Species Licences</td><td>Precautionary Methods of Working</td></tr>
<tr><td colspan="2">*Note – the SMP establishes requirements for strip, storage and reuse of soils rather than establishing mechanism for use of excavated soils as a material rather than waste under the DoWCoP (CL:AIRE MMP)</td></tr>
<tr><td rowspan="3">3</td><td colspan="2">Environmental Registers & Reporting Templates</td></tr>
<tr><td>Novade Site Safety Inspections (SSI) Used by the SHE team to record SHE Inspections</td><td>Novade Operational safety Inspections Used by the site/ ops team to record SHE inspections</td></tr>
<tr><td>Novade Incident Log To record all incidents and near misses on site</td><td>Permit to Pump and Discharge (SHEMS-FOR-GR-252)</td></tr>
</table>

	Permits, Licences & Consents Register (SHEMS-FOR-INF-244)	All other environmental registers & reporting templates can be found **here.**	
4	**KIER Standards & Guidance**		
	KIER standards – links provided below provide access to all KIER Standards and associated Guidance, Minimum Standards and training resources Pollution Prevention Sustainable Procurement Net Zero Carbon Zero Avoidable Waste Biosphere Protection Environmental Site Set Up Checklist	**Supporting information & resources** Training Resources Environmental Compliance ARCI Chart Environmental Permits & Authorisations – England & Wales KIER Spill Products Brochure KIER Spill Training Brochure	

Documents covered by Tiers 1-3 are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

3.1.1 Design & Environmental Statement Compliance

Where changes to the design of the project or the construction method as detailed in the Environmental Statement are necessary a review must be undertaken to consider whether the change is material. The conclusion of the review must be acceptable to the Environment Agency Project Manager.

Where the review concludes that changes are material, an assessment of environmental significance must be undertaken to determine if the level of environmental impact arising from the change is significantly different to that assessed in the Environmental Statement.

Should significantly different impacts be assessed to result from the change then consultation with Dorset Council will be required to ascertain if the change requires planning permission and therefore either a variation to the existing planning permission or a new planning application.

The management of change must follow the collaborative approach detailed in the *EA SHEW COP [2.18]*.

3.1.2 Environmental Aspects & Impacts

A copy of the environmental Aspects & Impacts Assessment is included in Appendix 3. This will be reviewed in line with the CEMP review and, where necessary, relevant sections of the CEMP will be updated.

The full version of the Aspect and Impacts assessment is available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

3.1.3 Objectives, Targets & KPIs

3.1.3.1 KIER Objectives, Targets & KPIs

The Sustainability Action Plan (SAP) in Table 4 below, supports delivery of the KIER Sustainability Framework KPIs , KIER Infrastructure's Sustainability Plan, Building Better and IS014001:2015 requirements. This SAP template will be updated periodically to reflect changes to KIER Group and Infrastructure targets

Targets identified in this plan are mandatory. It is the responsibility of the Project Manager to ensure that client targets and associated actions (either by client or KIER team) to deliver these targets are also identified and included. Additional, project specific targets, may be added at the discretion of the Project Manager.

Guidance Notes are identified in red and can be found below this table

Table 4 – Sustainability Action Plan

Pollution Prevention					
Objective	**Targets** (Enter client targets as applicable)	**Action**	**Action Owner**	**By When**	**Status**
Improve quality and use of incident and near miss information to support ongoing improvement of the Environmental Management System	Ensure 100% data allocation for incidents and incident cost at Business Stream, Business Unit and Project level There are no data gaps	From the start of FY22/23 all Infrastructure projects, including JVs, to report all enforcement actions, incidents and near misses on Novade and undertake cost analysis (1) Provide a quarterly report (as a minimum) via the Building for a Sustainable World KPI tracker (2)	*JF*	Quarterly	TBC
Embed into 'business as usual' pollution prevention principles to prevent pollution impacts on land air and water	Provide additional focused SSI (SHE Site Inspection) and OSI (Operations Site Inspection) training on a 6 monthly basis	Project Managers to establish training requirement within their teams and provide list of names on request (3)	*LMH*	Start on Site	TBC
	Increased uptake of spill response training by projects with elevated risk of impacts	Project Managers to schedule spill response training with SHE team or arrange delivery through supplier (4)	*LMH*	Start on Site	TBC
Sustainable Procurement					
Improve awareness of suppliers and products providing improved sustainability outcomes	Double the number of products and suppliers listed within the KIER Infrastructure Directory of Sustainable Suppliers (5) within the next two years	Infrastructure team to support development through supplier / product recommendations	*JF / SK*	Procurement	TBC

Net Zero Carbon					
Improve carbon Scope 1 and 2 data collection	Ensure 100% data allocation for Scope 1 & 2 Carbon (6) at Business Stream, Business Unit and Project level	All projects use KIER preferred suppliers (7) for fuel and electricity or notify data@energise.com	*JF / SK*	Procurement	TBC
Increased confidence in accuracy of scope 3 carbon reporting	Improve Scope 3 (8) data collections tools and implement across projects	Projects assign key point of contact for reporting support	*JF*	Start on Site	TBC
Develop Infrastructure capacity to reduce scope 3 carbon through materials choices and help meet future customer expectations	From start of FY21/22 all new projects with value > £1m will investigate and *implement low carbon concrete solution(s) *Where practicable and commercially viable	All projects of value > £1m to be able to demonstrate investigation of low carbon concrete solutions for temporary or permanent applications (9) Where practicable or commercially viable, low carbon concrete solutions to be implemented and a case study to share information developed (SHEQ Solutions)	*JF*	Structures sub-contract let	TBC
Implement actions within Carbon Action Plan to reduce carbon scope 1 and 2 costs and emissions	For all NEW projects which are connected to grid (and under KIER control): • allocate 10% of staff parking spaces to EV charge points • allocate 10% of site vehicle parking spaces to EV charge points • plan for 5% increase year on year For all EXISTING projects which are connected to grid (and under KIER control): • retrofit on projects with >2 years to run	Implement roll out of EV charging infrastructure on site either with local installers or using KIER provider. Contact Drew.Kirby@KIER.co.uk	*LMH*	Compound Design	TBC
	All projects to implement hierarchy of site power provision: • Connect to grid	Prior to mains connection or where mains connection will not be made, Battery Storage Units (11) shall be used alongside generators of >40kVA unless assessment shows this is not commercially viable	*JF / LMH*	Compound Design	TBC

	• Renewables / hybrid power and/ or • HVO for all generators (10) where accepted by the client				
Zero Avoidable Waste					
Improve waste data collection	Ensure 100% data allocation for waste (12) at Business Stream and Business Unit level on a quarterly basis. There are no data gaps	All Infrastructure projects, including JVs, continue to report all direct waste costs and volumes Provide a quarterly report (as a minimum) via the Building for a Sustainable World KPI tracker Projects should also start recording indirect waste volumes (from subcontractors) on SMARTWaste	*JF*	Start on Site	TBC
		By end of Q2 22/23 all projects of value over £1m to be set up on and use SMARTWaste to record waste volumes By end of Q4 22/23 all projects of value over £500k to be set up on and use SMARTWaste to record waste volumes	*JF*	Start on Site	TBC
Reduce Volume and cost of PPE waste	From FY22/23, we will achieve 100% diversion of PPE (13) from landfill with all PPE either recycled or reused on or off-site Zero PPE to be discarded as general waste for landfill	Implement waste hierarchy for PPE: • **Reduce** volume of PPE issued e.g. shared PPE resource for office staff • **Reuse** PPE where possible e.g. commercial washing services • **Recycle** - dispose of via specialist contractors e.g. KIER Hard Hat Recycling scheme (14) Sites to establish separate PPE waste collection to support delivery of target	*JF*	Start on Site	TBC

Zero Avoidable Waste by 2035	Single use plastics free by 2030	Take measures to exclude and reduce use of specified single use plastics in line with recommendations established within the waste action plan (to be developed)	*JF*	Start on Site	TBC
Biosphere Protection					
Improve water data collection	Ensure 100% data allocation for water (15) in line with revised Group standard on data collection at Business Stream and Business Unit and Project level There are no data gaps	All Infrastructure projects, including JVs, continue to report all direct water costs and volumes Provide a quarterly report (as a minimum) via the Building for a Sustainable World KPI tracker (2)	*JF*	Start on Site	TBC
Protecting Human Rights					
Improve support for vulnerable / disadvantaged communities in proximity to projects	Annual increase in social value provided to vulnerable and disadvantaged communities as measured through Thrive	Project Managers / Directors / Ops Directors assign responsibility for developing and reporting on engagement activities	*LMH*	Start on Site	TBC
Employee Wellbeing and Retention					
Provide all staff with an opportunity to discuss work, performance, opportunities	100% Employees have completed a Perform Review within annual timeframe (minimum 90% compliance)	Line managers carry out Perform Reviews and upload to Oracle in line with KIER Group Perform Review process	*LMH*	End of Year 1	TBC
Building for Tomorrow					
Improve social value outcomes in communities in which we work	Achieve an annual Social Value Return on Investment (SVROI) of 30p for every £1 of project value	All Infrastructure projects of value >£500K to actively use the KIER Social Value Calculator, Thrive (16)	*KS*	End of Year 1	TBC

Diversity, Inclusion and Respect					
Improve awareness of diversity inclusion and respect through training and communications	DIR information to be included in all induction material	Induction material to be provided by HR team. PMs to ensure that information is included within all project induction packs	*LMH*	Start on Site	TBC

Guidance Notes

(1) Costs should be calculated using the online cost calculator here.
(2) The KPI tracker can be found here.
(3) Online training consisting of three modules of 45min each will be provided. The current modules can be found here.
(4) The Darcy spill training brochure is available from the Pollution Prevention pages here.
(5) The Directory can be found on the Infrastructure Environment SharePoint site here. The directory can be used as a reference tool to identify materials/ services offering improved sustainability outcomes. Only suppliers that have been used by KIER or a JV partner will be included, however inclusion does not constitute any guarantees of service, cost etc.
(6) Scope 1 & 2 carbon covers DIRECT fuel and electricity costs (paid for by KIER directly) and KIER business mileage (all mileage claims made through Oracle).
(7) Projects to use KIER preferred suppliers for fuel and electricity or notify data@energise.com. KPI reporting will be carried out by Energise as long as these requirements are met.
(8) Scope 3 carbon is essentially the carbon footprint of our supply chain e.g. carbon embodied within materials or carbon arising from fuel use by our subcontractors.
(9) Concrete has one of the highest carbon footprints of any material we purchase. Design mixes should be reviewed and lowest carbon concrete used where practical. See example from Par Flood Alleviation Schemes.
(10) Contact Jonathan.Wilmore@KIER.co.uk, fuel procurement lead
(11) Battery Storage Units – changes to generators on site. Please see further information here or contact Claire.tester@KIER.co.uk
(12) Direct cost of waste refers to waste that KIER pays directly for i.e. direct contract with waste carriers and disposal sites. Indirect waste costs are those incurred within a subcontractor package e.g. demolition or drainage works
(13) PPE refers only to 5-point PPE i.e. helmets, glasses, gloves jackets / top and trousers. Face masks or other specialist items are not included.
(14) Stay Safe PPE Ltd provides a commercial PPE washing service with a policy of zero waste to landfill. Case study from A13 trial here. Further information on the Hard Hat Recycling Scheme can be found here.
(15) Water consumption and associated cost refers to all mains, bulk and abstracted potable water for use within our own estate and temporary / project facilities. The following is included within our reporting scope: Mains water: metered and paid for by KIER, Mains water: un-metered and paid for by KIER (where volumes can be derived from bills or other means), Bulk water: delivered to site / premises and paid for by KIER, Bulk water: used by subcontractors working on behalf of KIER and Abstracted water.
(16) For large projects, the Thrive co-ordination role may sit with the Community Manager / Stakeholder Manager . For smaller projects, ownership may be split across staff who naturally 'own' data sets as part of their job e.g. SME spend, training hours

3.1.3.2 Environment Agency Objectives, Targets & KPIs

[EA SHW COP 1.1] The Environment Agencies relevant metrics are taken from their 'eMission2030' campaign and are as follows:

1. to be Net Zero by 2030. Over 50% of the EA's 2020 emissions (273,000tCO_2e) came from construction (148,000 tCO_2e). eMission2030 aims to reduce this to 81,400tCO_2e).
2. Environmental Net Gain – Improving the natural environment through our operations and regulatory work with priority given to nature-based solutions and environment net gain.
3. Optimising use of resources – Reducing our consumption of resources and only purchasing products and materials that are the most socially and environmentally responsible throughout their life cycle.

Other stated Agency objectives include:

4. [EA SHEW COP 2.1] register with the Considerate Contractors Scheme.
5. [EA SHEW COP 2.3] Sign up to the Supply Chain Sustainability School.
6. [EA SHEW COP 2.24] All new timber is provided from legal and sustainable sources – complete with FSC, PEFC or CSI certification.

3.1.4 Risk & Method Statements

On each package of works the lead Engineer and Construction Manager will take responsibility for ensuring that all personnel, including subcontractors, are made aware of any environmental risks and control measures. Risks and measures will be as detailed in this CEMP or communicated by the Environment Manager. Communication of environmental information will be through the following:

- Within the RAMS
- Point of Work Risk Assessment
- Daily pre-start briefing
- Task Specific Briefing
- Toolbox Talks

All staff engaged on a task will sign to clarify that they accept and understand the risks and mitigation measures identified in the RAMS and briefings and they will act in accordance with requirements.

Where works are required to deviate from a RAMS, the lead engineer shall first be informed and, where required, the RAMs updated and briefed to the site team.

Supporting forms/templates:

Risk Assessment Template (SHEMS-FOR-GR-070)

Point of Work Risk Assessment (SHEMS-FOR-GR-071)

Risk Assessment & Method Statement Review Form (SHEMS-FOR-GR-073)

When submitted documents are reviewed, they are given a category A, B, or C as follows:

- Category A: Work can proceed and the method statement and risk assessment are satisfactory
- Category B: There are comments but work can proceed if the comments clearly articulate what must happen and should be resubmitted incorporating the comments unless the activity itself would be complete before submission could be reasonably be processed.
- Category C: The documents do not meet the required standards and work cannot commence until it has been amended and the changes accepted.

It is essential that environmental risks and appropriate mitigation/actions relevant to the task being undertaken are identified in RAMS & Point of Work Risk Assessment.

3.1.5 Permits, Licences & Consents (PLCs)

It is the responsibility of the whole management team to identify works potentially requiring either a Permit, Licence or Consent and the resources required to make an application in sufficient time. The KIER PLC Guidance Document SHEMS-GUI-GR-300a provides further information on consent requirements and timelines for application.

A full list of permits, licences, authorisations and/or consents associated with the Project will be recorded and managed within the **Permits Licences and Consents Register** SHEMS-FOR-INF-244, maintained as a live document by the Environmental Manager, available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

Ownership of PLCs and the conditions therein shall be agreed with the Project Manager to ensure that ownership sits with individuals who have responsibility and authority for delivering the relevant works.

Special note should be made of the following either through consent guidance or upon receipt of the consent, and a process put in place to deliver these requirements:

- Consent conditions e.g. monitoring & reporting
- Close out requirements e.g. lines of evidence
- Administrative details i.e. details to be changed if named personnel leave the project

3.2 Implementation & Operation

3.2.1 Roles & Responsibilities

It is the responsibility of everyone on-site to ensure the environment is protected for the duration of the development.

Table 5 details key roles and responsibilities in relation to construction phase delivery. Additional roles and responsibilities relating to specific tasks will also be captured in this CEMP and or RAMS and communicated directly to personnel through site inductions, training sessions & toolbox talks and RAMS briefing sessions.

Table 5 – Key roles and responsibilities

Roles	Responsibilities
Environment Agency Project Manager	Identifying and approving the environmental competence of all principal contractors and sub-contractors that directly report to the client that are employed for the delivery of the Development. Reviewing and approving the final CEMP and identifying the need for any improvements. Reviewing and approving construction method statements with regard to environmental aspects prior to works commencing.
Environment Agency - National Environmental Assessment and Sustainability Team (NEAS) Environmental Project Manager (EPM)	Review Management Plans, RAMS and Reports issued by the contractor for comment. Seek input from other Environment Agency specialisms as required. Audit the projects adherence to the Environmental Action Plan.
Environment Agency – Environmental Clerk of Works (ECW)	Reporting to the NEAS EPM, undertake onsite inspections to monitor adherence to the Environmental Action Plan.
Environment Agency – Ecological Clerk of Works (ECW)	Reporting to the NEAS EPM, undertake onsite inspections to monitor adherence on ecological matters.
Environment Agency – Project Ecologists (ATKINS)	Apply for, hold and oversee the implementation of Natural England Protected Species Licenses. Liaison with the KIER Environment Manager, via Environment Agency Project Manager, regarding implementation of the Licenses. Liaise with KIER's Project Ecologists.
KIER Project Manager	Overarching responsibility for the implementation of environmental requirements associated with the design and construction of the Development. Ensuring the project adheres to KIER Environmental Policy and Sustainability Policy. Identifying and approving the environmental competence of all contractors and sub-contractors that directly report to KIER that are employed for the delivery of the Development. Review and comment on the Construction Environmental Management Plan (CEMP), construction method statements, work instructions and other procedures. Monitoring the implementation of the CEMP throughout the construction of the Development. Issue environmental reports, social value reports and the complaints log to the Environment Agency Project Manager. Supporting the Environment Manager in the investigation of any Environmental Incidents and implementation of any corrective actions. Identifying the competencies of all staff and ensuring delivery of training (including environmental training) to the team.
KIER Environment Manager	Drafting, reviewing and revising the Construction Environment Management Plan. Maintaining conformance to the KIER Environmental Management System. Reviewing and improving method statements for environmental aspects prior to works starting.

Roles	Responsibilities
	Inspection of, providing advice to and liaising with construction teams to ensure that environmental risks are identified, appropriate controls developed and are in place on-site. Raising and investigating environmental incidents, making findings where necessary and developing and overseeing implementation of corrective actions. Assisting Public Liaison Officer in responding to complaints where they relate to environmental management. Assisting Public Liaison Officer with Social Value report. Producing environmental reports and KPI reports as detailed in this document. Applying for overseeing adherence to Environmental consents, permits and licenses. Liaison with the Environment Agencies Project Ecologists and management of KIER's Project Ecologists. Deliver induction material, training, briefings and toolbox talks to ensure the whole of the KIER team are aware of environmental obligations and mitigation measures.
Public Liaison Officer	Single point of contact for members of the public. Maintain a complaints log. Communicate complaints log to the Environment Agency project manager. Ensure all complaints are responded to. Manage Social Value reporting.
KIER Project Ecologists (TBC)	Provide advice to the Project Manager, Construction Manager and Environment Manager on the need for and scale of measures to avoid harm to ecology during the site works. Oversee works to ensure that no ecology is harmed. Stop works and report to the Project Manager, Construction Manager and Environment Manager should there be risk of harm to ecology. Work with the Environment Agencies' Project Ecologists to see through the successful adherence to Natural England Protected Species Licenses. Accept transfer of Licenses from the Environment Agency Project Ecologists to become license holder. *It is envisioned that a minimum of two full time Ecological Watching Brief's will be available to the project to carry out the numerous tasks detailed in section 4 below. Named species specialists will also be available for specific advice and tasks. An Ecology Project Manager role will be in place to coordinate all the information from the different species across the whole site.*
Construction Manager	Responsible for on-site implementation and supervision of environmental requirements associated with the construction of the Development. Implementation and operation of environmental controls on-site. Respond to environmental incidents. Briefing site personnel and subcontractors on the latest environmental and sustainability issues. Maintain records of deliveries and waste movements including tickets and delivery notes. Maintain COSHH and waste facilities on site.

Roles	Responsibilities
	Inspect deliveries for compliance to project standards e.g. timber certification, plastic reduction and maintain an inventory of materials brought onto site, used in the construction operations and discarded / taken off site. Ensure vehicles operate to the biosecurity protocol including deliveries. Ensure appropriate storage of materials on site to avoid unnecessary wastage.
Key subcontractors – SHE Manager	Responsible for managing the implementation of environmental requirements associated with the construction of the Development. Undertaking monthly environment compliance audits. Reporting on environmental performance and compliance (e.g. KPI data) to KIER/AECOM as required Provide necessary training to the subcontracts team Ensure that all staff are fully aware of EMS requirements and relevant standards, guidance etc.
Specific Appointments	The KIER EMS allows for the appointment of members of the team for specific roles such as environmental coordinator or COSHH coordinator. As these roles become relevant to the project specific individuals will be appointed to them.
Site staff and all other construction personnel	Should be suitably qualified and competent for the tasks required. Receiving general environmental awareness training and undertake work in accordance with Method Statement Briefings and toolbox talks. General duty of care towards the environment and an awareness of their responsibilities in accordance with the CEMP and associated plans and policies.

3.2.2 Procurement

Subcontractors and suppliers are assessed, selected and procured in accordance with KIER Supply Chain procedures which include the requirement for each subcontractor to have successfully completed an environmental competence assessment. This includes requests for information on managing environmental risks associated with their package of works and also communication of environmental management requirements. All suppliers and subcontractors will be contractually bound to the requirements of the Construction Environmental Management Plan.

Additionally, all suppliers and subcontractors will be asked (through our online SHE portal - SHEAPS) to sign agreement that they will adhere to KIER SHE Standards and Minimum Standards. For materials, this includes Minimum Standards and Environmental Guidance Notes established in the KIER Sustainable Procurement pages:

Minimum Standards

- Metal Fixtures and Fittings Purchasing (SHEMS-MST-GR-003)
- Metals & Steelwork Purchasing (SHEMS-MST-GR-004)
- Natural Stone Purchasing (SHEMS-MST-GR-005)
- Workwear Purchasing (SHEMS-MST-GR-006)
- Timber Purchasing (SHEMS-MST-GR-007)

Guidance
- Importing Topsoil (SHEMS-GUI-GR-061c)
- Recycled Aggregate (SHEMS-GUI-GR-065n)

Additionally, all fuel and electricity should be purchased via KIER preferred suppliers. Guidance is available through the KIER Carbon Management pages here. This will support automated provision of quarterly KPI data.

The project team is also directed towards the KIER Infrastructure Directory of Sustainable Suppliers which provides details of suppliers and products supporting improved sustainability outcomes and which have been used successfully on previous KIER projects.

A workshop will be held with the procurement team on the low carbon and plastic reduction initiatives specified in the contract by the Environment Agency.

3.2.3 Training, Awareness & Competence

In the first instance the KIER project team has been and shall be selected from experienced staff available for transfer from other projects. Where necessary and as soon after commencement on the contract as possible, staff undertake training in order that required levels of competence are met.

Training shall be tracked using the SHE Training Matrix which is managed as a live document/database by the Project SHE Manager. The SHE Matrix shall be used to identify the following for KIER staff and key subcontractors/ labour:

- Existing staff competencies including key subcontractor personnel
- SHE training to meet required KIER Standards
- SHE training to meet required Environment Agency SHEW COP Standards
- SHE training to meet project specific requirements in relation to identified risks

While subcontractors and labour suppliers are expected to carry out their own training, additional training and awareness will be delivered through the following mechanisms:
- Site induction
- Toolbox Talks
- Posters e.g., Visual Standards
- Email bulletins
- Bespoke training sessions from external providers
- On site ad hoc training by Environment Manager

[SHEW COP 4.36] Evidence must be readily available that operatives have received training in the use of spill kits within the previous six-month period. A mock exercise will be undertaken within 2 weeks of starting on site.

Training records are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

3.2.3.1 Inductions

Everyone intending to work on the contract first attends a site induction. This includes content on key environmental management requirements and relevant environmental risks. At or prior to the induction, attendees are required to provide evidence of appropriate competence; CSCS / CPCS cards etc.

The Environmental slides within the induction will be reviewed on a regular basis and updated in line with changing project phases to reflect any changes in risk or opportunities associated with works. Updates will also include lessons learnt and/or any new approaches to environmental management on site with respect to the works. This might include, for example, updates to KIER Environmental and Sustainability Standards or information from KIER SHE Bulletins relevant to the works.

[EA SHEW COP 4.4] The induction must include:

1 Information regarding the EA Core Values, SHEW Code of Practice, key items from the Environmental Action Plan (EAP) and what this means in respect of individual health, safety and environmental performance and behaviour.
2 A commitment towards value in Equality, Diversity and Inclusion.

3.2.3.2 Toolbox talks

Toolbox talks will be delivered to relevant staff (KIER and subcontractors) in line with the environmental training plan or as required relevant to existing project risks and opportunities.

General toolbox talks (i.e. non-site-specific) are available on Your KIER here.

3.2.3.3 External training provision

All site supervisors must pass either the CITB 5-day site managers safety training project (SMSTS) course or the site supervisor's safety training project (SSSTS). This includes training in risk and COSHH assessments.

3.2.3.4 Posters

Key environmental information will be posted on site briefing boards and on dedicated environmental notice boards located at strategic positions on site e.g. canteen area, briefing zones.

Posters will include relevant KIER Group SHE Bulletins, specific Environmental Alerts, Safety, Health, Environment and Quality Solutions case studies and the KIER Infrastructure Monthly Comms update. Standards and Guidance to cover key environmental management requirements on site e.g. concrete washout, will also be posted on notice boards.

3.2.3.5 KIER Internal Bulletins

To ensure the project remains up to date with legal changes and to share best practice and lessons learnt, KIER Group provides regular updates via 'SHE Bulletins', 'Environmental Alerts' and via a Monthly Sustainability Comms Update.

3.2.3.6 On-site training by KIER Environment Manager

To support site teams and individuals, the Environment Manager will also provide ad-hoc training/ coaching as required. This will include providing specific training with operatives tasked with carrying out environmental management support roles e.g., water quality sampling and waste handling.

3.2.4 Communication

3.2.4.1 Internal Project Communications

Internal communications are considered to be those between KIER and the Environment Agency, as well as wholly within the KIER project team where an open approach will be taken to the communication of any issues.

KIER will operate a Short Interval Control approach meaning that issues raised are either dealt with or elevated to the next management level within an appropriate timeframe.

3.2.4.2 Communications with local businesses and residents

Communications will be managed by the KIER Public Liaison Officer with support provided by the Environment Agency Project Manager and the RSPB as landowner and operator.

Local residents and businesses will be kept informed of upcoming works and any changes to planned works through regular emails, phone calls, the issue of letter drops, at site events and community events.

A regular channel for public liaison will be established such as attending the Parish Council meeting once a site presence has been established.

An email address and contact number will be provided for members of the public to contact the project. All communications will make reference to these contact methods and the project will encourage people to make use of them so that early identification of issues occurs.

3.2.4.3 Complaints & queries

In the event a construction related complaint is received it will be investigated by the KIER Public Liaison Officer alongside the complainant (where requested and practicable), the KIER Environment Manager when relevant and the KIER Project Manager where necessary to ensure that suitable action to address complaints can be taken.

A complaints log shall be maintained by the KIER Public Liaison Officer and updates provided at regular meetings with the Environment Agency. Should regular complaints become an issue the Local Authority Environmental Health officer will be notified with a description of the mitigation measures already undertaken.

3.2.4.4 Communications with other regulatory stakeholders

Key stakeholders with appropriate contacts are provided in *Table* below:

Table 6: Stakeholder Contacts

Name	Position	Contact Number(s)
Naomi Shinkins	Dorset Council Planning Officer	☏: 01202 228 809 ✉:naomi.shinkins@dorestcouncil.gov.uk
EHO	Dorset Council Environmental Health Officer	☏: 01305 221000 ✉:customerservices@dorsetcouncil.gov.uk
Justin Neely	Dorset Council Flood Risk Department	☏: 01305 221 323 ✉:floodriskmanagement@dorsetcouncil.gov.uk
Peter Robertson	RSPB Arne Reserve Manager - Landowner and Operator	☏: 01929 553 360 ✉:peter.robertson@rspb.org.uk
Clare Elcoate	RSPB - Project Development Manager	☏: 07525 679 622 ✉:clare.elcoate@rspb.org.uk
Edwin Macknamara	Arne Parish Council	☏: 07787 082 553 ✉: arneparishcouncil@gmail.com
Daniel Griffin	Environment Agency Flood Risk Area Contact	☏: 02030 259 299 ✉: daniel.griffin@environment-agency.gov.uk
Andrew Nicholson	Natural England Area Contact	☏: ✉:andrew.nicholson@naturalengland.org.uk

3.3 Evaluation of Compliance

3.3.1 Risk and Method Statements

All method statements for activities with environmental risk will require approval by the Environment Manager who will regularly observe works to ensure compliance to environmental mitigation in the RAMS is adhered to.

RAMS will be submitted to the Environment Agency Project Manager for approval who will seek input from the NEAS Support on environmental aspects of the package.

When carrying out site inspections, the Environmental Clerk of Works and or Ecological Clerk of Works will assess compliance with the RAMS on behalf of the Environment Agency.

3.3.2 Inspections

3.3.2.1 Environment Manager Site inspections

Several informal inspections will be undertaken by the Environment Manager each week. Due to the high frequency these inspections will not be documented. Where there are items of good practice or where corrective actions are necessary, these will be logged through KIER's Novade SHE management database and forwarded to the Environment Agency Project Manager for information.

3.3.2.2 Environment Clerk of Works Site inspections

Regular inspections by the Environment Agencies Environmental Clerk of Works will be documented. These inspections will be attended by the Environment Manager with support from the Construction Manager and Project Manager when necessary.

[EA SHEW COP 2.26] Findings will be communicated to those directly involved with the project, with a verbal agreement on key findings and actions on the day. Following peer review, a final report will be issued confirming remedial actions assigned as necessary. Actions must be closed out in accordance with the agreed timescale by the relevant Duty Holder. Where actions are not closed, they will be escalated within the Environment Agency.

3.3.2.3 Weekly KIER SHE Inspections

Weekly SHE Inspections (which include environmental elements) using the Novade Operational Site Inspection (OSI) proforma will be undertaken by KIER Supervisors and Engineers to encourage their awareness and buy in.

3.3.2.4 Monthly KIER Environmental Inspections

A monthly environmental inspection using the Novade Site Safety Inspection (SSI) proforma will be undertaken by the Environment Manager in line with guidance here.

All inspection findings will be logged on the KIER Novade system and actions assigned to relevant individuals. Email reminders will be sent automatically until the action is formally closed on Novade. Guidance and information relating to Novade can be found here.

All inspection output will be made available to the Environment Agency on request.

3.3.2.5 Ad-hoc Inspections

Ad-hoc site visits will also be undertaken, and observations recorded on Novade and / or Observation Cards and/or passed on to site supervisors by email, phone or face-to-face.

In cases where it is deemed necessary anyone from the KIER or Environment Agency teams will have the authority to stop works. In such instances the occurrence must be communicated to the Construction Manager and Project Manager as soon as appropriate.

3.3.3 Audits

An Environmental Management System Audit will be carried out by KIER on a six-monthly basis.

Auditors will have ISO14001 Lead Auditor Qualification.

3.3.3.1 Non-conformity and corrective action

Any non-conformance with the environmental procedures, method statements and consents raised through the audit processes will be recorded by the Auditor on Novade with closeout dates agreed with the auditee and shall reflect the severity of the finding.

Results of all inspections and audits shall be shared with the Environment Agency Project Manager.

3.3.4 Environmental Incidents

Incident reporting and Investigation shall be in accordance with the KIER Standard SHEMS-STD-GR-011.

All incidents will be reported on the KIER Novade system which includes a process for investigation which includes identification of root cause(s)and corrective actions. Corrective actions will be assigned to individuals through the Novade system. Novade issues notifications to a set mailing list when an incident is raised.

Incidents will be logged on Novade by the KIER SHE team or the Environment Manager. Incidents raised on Novade must be closed by a member of the KIER SHE team when they are satisfied all issues are resolved. The seniority of the individual from the SHE team will be proportionate to the severity of the incident.

3.3.4.1 Incident Severity Categorisation

The KIER Novade system sets criteria for the categorisation of environmental incidents as either Level 1, Level 2 or Level 3 where Level 1 is the least severe and Level 3 the most severe.

Categorisation of incidents must always take into account the specific stie context and therefore final categorisation of the incident will be at the discretion of the Environment Manager in consultation with the KIER Project Manager and Environment Agency Project Manager.

[EA SHEW COP Appendix A 4.] Investigation reports will be issued to the Environment Agency Project Manager within 14 days of the date of the incident.

3.3.4.2 Level 1 and Level 2 Incidents

Level 1 incidents, either very minor incidents or Near Misses, and Level 2 Incidents shall all be recorded on the KIER Novade system by the Environment Manager. A repetition of similar Level 1 incidents would result in separate Level 2 incident.

[EA SHEW COP Appendix A.2] Level 2 incidents will be reported to the Environment Agency National Incident Reporting System – Incident Hotline

3.3.4.3 Level 3 Incidents

A Level 3 incident would constitute a Major Incident or where a repetition of Level 2 incidents has the potential to result in a major incident. KIER operate a KIER Major Incident Response Plan which will be initiated on Level 3 incidents.

The investigation will be supported by the KIER Infrastructure Division Environment Manager or, in their absence, by the SHE Manager.

[EA SHEW COP Appendix A.2] Level 3 incidents will be reported to the Environment Agency National Incident Reporting System – Incident Hotline

3.3.4.4 Internal Notification Procedure

To ensure appropriate control of incidents notification is required within KIER and to the Environment Agency Project Manager. The table below names the individuals notified in case of an incident and those responsible for notifying them:

Notification within KIER	**Notification by**
KIER Project Manager – Luke Mackenzie-Harvey	KIER Environment Manager
KIER Senior Project Manager – Matt Philips	KIER Project Manager
KIER Project Director – Philip Ramsay	KIER Senior Project Manager
KIER Infrastructure Environment Manager – Emma Keen	KIER Environment Manager
Notification to Environment Agency	**Notification by**
EA Project Manager – Simon Humphry	KIER Project Manager
EA Deputy Project Manager – Lucy Pendlebury	KIER Project Manager
EA NEAS Support – Kat Harrold	KIER Project Manager
EA Project Director – Neil Watson	KIER Project Manager
Notification to RSPB	**Notification by**
RSPB Project Manager – Clare Elcoate	KIER Project Manager

[EA SHEW COP Appendix B] Formal notification of the incident to the Environment Agency Project Manager will be in writing and will contain as a minimum:

- Date / time of incident
- Incident details

- *For Level 2 or 3 Incidents:* Environment Agency National Incident Reporting System reference number
- Environment aspect impacted
- The person undertaking the investigation with contact details
- Date the investigation will be reported to the Environment Agency Project Manager

3.3.4.5 External Notification Procedure

Notification is required to the following organisations in specific circumstances:

Marine Incident:

Poole Harbour Commissioners – 01202 440 230 / harbourcontrol@phc.co.uk

Marine Management Organisation – 0300 123 1032 / info@marinemanagement.org.uk

Protected Species and Designated Sites:

Natural England - 0300 060 3900 / enforcement@naturalengland.org.uk

Uncontrolled Releases to the Environment:

Environment Agency Incident Hotline – 0800 80 70 60

Notification to these bodies will be undertaken by the Environment Manager to ensure one point of contact in managing the incident.

Where there is a Regulator Intervention the KIER Enforcement Authority Contact Standard (SHEMS-STD-GR-022) shall be followed. All Enforcement Authority Intervention will be recorded on Novade.

3.3.4.6 Incident cost KPI

As per KIER KPI requirements, all near misses, incident and regulator intervention shall be valued using the Incident Cost Calculator available here.

3.3.4.7 Incident Response Awareness

Guidance on Classifying and Recording Environmental Incidents (SHEMS-GUI-GR-301) shall be included in the site induction with additional training provided by the Environment Manager as required.

Guidance shall also be posted on the Environmental Notice Board.

[EA SHEW COP 2.19] A copy of the EA incident and near miss reporting procedures shall be displayed in a prominent position in the site office and in the welfare accommodation (EA SHEW COP Appendix A.1 and A.2).

3.4 Monitoring, Documentation & Record Control

Monitoring relating to specific Environmental Management Aspects (noise, dust etc) is recorded in later relevant sections of this document but will include:

- Ground and Surface Water Monitoring
- Abstraction and Discharge Volume
- Discharge Quality
- Operation of Outfalls

The following other records are to be maintained on site by the Environment Manager.

- KIER Environment Policy
- Construction Environmental Management Plan
- Site Waste Environmental Management Plan
- Environmental Audit Reports
- Environmental Incident Reports
- Monitoring and Measurement Records
- Minutes of Meetings with Local Authorities
- Minutes of Meetings with Statutory Agencies
- Environmental Training Records
- Environmental Site Inspection Proformas
- Environmental data (KPI) Log
- Management Review, Board Reports, Objectives and Targets
- Environmental Management Review
- Innovation/ lessons learnt
- Consents and Compliance Proformas

3.5 Continual Improvement

3.5.1 Management System Revision

All inspections, incidents, complaints and audits will be treated as opportunities to expose inadequacies in the Environment Management System and correct them as far as possible. Review of the Construction Environment Management Plan and the Aspects and Impacts Register contained within will be undertaken as part of the response to any corrective action.

3.5.2 Lessons Learnt and Best Practice

KIER Lessons learnt will be captured though the Novade system as part of incident or non-conformance investigations. Relevant items will be developed for further communication.

Appropriate examples of Best Practice highlighted through inspections will be communicated through the same channels as Lessons Learnt. The SHEQ Solutions Template should be used to capture good practice and innovation at project level. Completed SHEQ Solutions should be sent to the SHE Team and these will then be shared across KIER Infrastructure. Best monthly entries will receive a £25 retail voucher.

Previous examples and the SHEQ solutions template can be found here

[EA SHEW COP 2.27] Items of best practice from across the supply chain can also be submitted to the Environment Agency Construction SHEW Team for consideration of an Exemplar Award.

The Environment Manager will attend the regular Environment Agency Environmental Practitioners Forum to share Lessons Learnt and Best Practice.

4 Risk Management

The following section provides a description of the management processes that will be in operation on the project to reduce the likelihood of harm. It is arranged by environmental aspect and mirrors the Impacts and Aspects Register in Appendix 3 providing more detail. The principles raised here are in line with the KIER Group and KIER Infrastructure Standards, Minimum Standards, Guidance and Targets.

[EA SHEW COP 2.19] KIER will operate to the project's Environmental Action Plan. The plan was developed by the Environment Agency through the consultation and consenting process. It is issued as part of the contract documents as a deliverable.

Changes to the Environmental Action Plan will be agreed with and formally issued by the Environment Agency Project Manager.

4.1 Sustainable Construction

4.1.1 Greenhouse Gas Emissions (Carbon)

[EA SHEW COP 2.22] Reduction in greenhouse gas emissions is a serious consideration for all aspects of construction. Both the Environment Agency and KIER have made commitments to the reduction of carbon from their operations and every opportunity must be taken to demonstrate that this can be achieved through planning, innovation and rigor.

A carbon baseline will be established by the Environment Agency for the project prior to the commencement of construction. It will be communicated in detail to KIER.

KIER will aim to complete the project within this carbon baseline. This will require that carbon emission values from the construction and supporting operations are captured, recorded and reported. KIER will produce a carbon report. Early versions of the report will detail a Construction Carbon Plan where the potential for carbon reduction will be assessed with detail on cost implications.

The Environment Agency will utilise a tool referred to as ERIC to produce the baseline and KIER will utilise the features of this tool to record and report carbon. This will mean the assumptions that are needed for the carbon value of the different construction operations are the same as those used in the baseline. Where possible KIER will attempt to refine the data that is used in carbon estimations to reflect a more accurate representation of actual emissions.

KIER will update the carbon report monthly for review by the Environment Agency.

Key areas of focus will be the fuel consumption of plant, electricity consumption of the compound, embodied emissions in the structures and in particular the impermeable cementitious barrier in the new embankments.

The carbon report will be available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.1.2 Material Sourcing

[EA SHEW COP 2.20] KIER operates a Strategy for Responsible Procurement with the objective of increasing Group spend on sustainable materials and preferred suppliers operating to similar standards.

Of the KIER procurement standards the most applicable to the project will be:

Timber Purchasing (**SHEMS-MST-GR-0007**), which ensures the correct certification of all timber products and the availability of a chain of custody for each product.

Natural Stone Purchasing (**SHEMS-MST-GR-0005**), which seeks certification for stone products under an ethical trading scheme.

The percentage of volumes of material for the project that have to be sourced are relatively low. The bulk of material utilised by the project will be won on site through the excavation of borrow pits for the construction of the new embankments. Other materials will be driven by site constraints and the specialist operations, for example:

- The waterlogged nature of the site will mean that specialist plant which is only available from few suppliers will be required. A local knowledge of conditions to direct selection of plant will also be advantageous.

- To remove the potential that water runoff from imported aggregates could alter the pH of the ditch network only pH neutral aggregates will be utilised. A source of pH neutral primary aggregate suitable for use on site has been established.

- The installation of the impermeable cementitious core of the embankments is a specialised operations for which trials had to be undertaken at concept stage to ensure viability. This has resulted in only one supplier who is able to deliver the package.

Key suppliers will be mapped against their sustainability and responsible sourcing credentials. Local sourcing of suppliers and materials will be a significant consideration, due to the nature of the project as relatively remote, relatively specialist, given the site constraints and with a relatively low volume of the project's materials required to be brought onto site.

KIER standards will be followed in the procurement of gas, electricity and fuel which provided a list of vetted preferred suppliers.

Preference will be given to recycled, standardised and prefabricated materials where a benefit can be demonstrated.

A Plastic Reduction and Use Plan will be initiated with the aim of preventing single use plastic on site and reduce plastics used in construction not specified in the detailed design. The plan will be updated monthly for review by the Environment Agency. Guidance will be sought from the Environment Agency document 'Managing Plastics in Construction'.

4.1.3 Energy Efficiency

KIER will monitor energy consumption through the carbon plan detailed in section 4.1.1 where electricity and fuel consumption will be recorded.

To ensure accurate data is available metering of energy supplies including the mains electricity and the site fuel bowser is essential. Records of consumption will be kept, preferably through smart-meter data access or instead through regular manual recording of meter readings.

Sub metering will be installed where appropriate so that more targeted energy management can be undertaken.

All sub-contractors will submit consumption data monthly including fuel.

High energy consumption will be identified through the monitoring and options for further reduction will be investigated. These will be discussed with the Environment Agency through the monthly issue of the carbon report.

Training will be delivered to all personnel on the project so that good behaviours make the most of the energy reduction measures that are implemented.

The following will be considered as energy reduction measures:

- Use of renewables/hybrid-based power where mains provision is unavailable.
- Provision of mains fed EV charging points for site plant and staff vehicles.
- [EA SHEW COP 2.13] Energy efficient site offices and welfare units.
- Electric plant where application is practical.
- Selection of more efficient plant.
- No idling of plant on site.
- Solar charging stations.
- Selection of energy efficient appliances.

4.1.4 Social Value

KIER will seek to make the most of the opportunity to direct the economic benefits generated from the project into the local community and wider social value causes.

Action in these areas will be the responsibility of the Public Liaison Officer who will utilise the Thrive platform to set specific objectives and monitor performance in areas like:

- Equality, Diversity and Inclusion
- Work experience placements
- Apprentice opportunities
- Ex-offender employment
- Sourcing local staff

There will be minimal detrimental impact on visual amenity as a result of construction operations due to the screening of the site by trees along the Arne Road. The closest operations to any one property will be the construction of the southern section of the western embankment north of Ridge Farm. Mitigations for this operation are detailed in the Air Quality and Noise section of this document.

4.1.5 Potable Water Consumption

Metering and recording of potable water consumption will be undertaken for reporting to KIER Group.

There is a potential for the reduction of water consumption through the reuse of water that is abstracted onsite for non-potable uses such as dust suppression.

Site offices will have water efficient utilities / appliances e.g., automatic tap shut off, air flush urinals, low flush volume toilets. Rainwater harvesting from site offices will be investigated.

4.2 Materials Storage & handling

A tidy and well managed workplace reduces the likelihood of pollution events.

[SHEW COP 4.7] Good materials storage and handling will lead to reduced wastage volumes and costs associated with further material purchase to compensate for damage. Requirements outlined in KIER Minimum Standards will be adopted:

- All materials must be fully secured and stable
- Materials and equipment must be stored in accordance with the manufacturer's/supplier's instructions
- Secure lightweight materials to prevent them becoming airborne
- Storage and use of perishable items (e.g. bags of cement) should follow the "first in first out" rule
- Protection should be used for materials that can be damaged by weather
- Store fuel, flammable or hazardous substances in secure areas and as per COSHH assessments
- Gas cylinders must be stored segregated in secure and clearly identified cages
- Separate fuel cylinders from oxygen cylinders
- Only authorised personnel to enter material storage areas
- Prevent wind-blown dust from stockpiles e.g. tarpaulin / seeding / use dust suppression etc

4.3 Lighting

To minimise impact of light intrusion on local residents and disturbance of wildlife, the following principles shall be adopted:

- Minimise use of lighting to lowest practical levels to enable safe working
- Ensure lighting is directional and low spill (use of shields) and directed inwards to work areas rather than outward facing into connecting habitats or towards residents
- The use of sensors and automatic control systems for lighting to minimise the periods when it is on.

4.4 Historic Environment

A programme to examine the archaeological resources within the site has been agreed as part of the consenting process.

The development of the programme was led by desk-based research and targeted investigation trenches

The programme includes two areas of strip, map and sampling, one to be undertaken in 2023 ahead of the construction of the Furzebrook structure.

The second area will be investigated in 2024 after the site haul roads have been extended up to the required area.

There are also geoarchaeological works required as part of the investigation. One set in can be completed with the 2024 works as the only equipment required are hand operated augers.

The second area requires access for a window sampling rig and will need to make sure that site conditions enable easy access.

Where possible and in consultation with the Environment Agency KIER will seek opportunities to disseminate the results of the evaluation and engage with the local community through social media, press releases, open days if appropriate.

The archaeological investigation will be directed by the Written Scheme of Investigation and delivered by Wessex Archaeology. The Written Scheme of Investigation is available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

With archaeology, there is always a risk of surprises, despite rigorous pre-construction assessment, so this risk will need to be covered by a toolbox for 'surprise archaeological finds', such as flint scatters, which will be part of the site induction pack. Upon discovery of potential finds work is to stop and the location protected until Wessex Archaeology and the ECW and NEAS heritage specialist have been consulted and the correct management of the finds agreed.

4.5 Water Management

4.5.1 Drainage Plan

A drainage plan is provided in Appendix 4, this is a live document that will need to be changed as the water management described above develops.

There are three existing outfalls into Poole Harbour on site.

Ridge Wharf sluice connects the existing toe drain of the Frome embankment and the part of the River Frome estuary home to Ridge Wharf boatyard. It is a dual outfall equipped with flap valves on the wharf side and drains approximately ¼ of the site, primarily the north-western area.

Turner's Cove sluice is the outfall of the Furzebrook, an ordinary water course that transects the site on the western half. A number of drainage ditches across the site and primarily the toe drain on the northern section of the Frome embankment also outfall at Tuner's Cove. It is a single outfall with a flap valve on the harbour side and drains the remainder of the site not served by Ridge Wharf sluice. It will be removed as part of the eastern breach at the end of the project.

Structures within the existing drainage ditches across the site have impeded the flow of water to support the wetland habitat. These structures will be altered to encourage the flow of water away from the intended construction areas.

Care will be taken to ensure that where drainage ditches support protected species the necessary water level will be maintained. A Water Level Management Plan has been produced to manage this impact as part of the project consenting process.

A third discharge point at Bower Point will be brought back into service to encourage the flow of water out of the site boundary and into Poole Harbour at low tide. Bower Point is / will

be equipped with a flap valve on the outfall to Poole Harbour to ensure no inundation of saline water into the site.

The compound will provide an area of segregated drainage where operations that generate runoff can be undertaken. The drainage will allow runoff to be collected and managed appropriately. This area will be used for wheel washing of highway bound vehicles.

The remainder of the compound will drain to the adjacent area.

One area of site is subject to alkaline groundwater. Management of the water in this area will need to ensure appropriate levels are maintained to support the specialist ecosystem that has developed around it. It will need to ensure that higher pH waters are not introduced into other areas of the site in a way that could cause harm.

A section of drainage ditches in the western / southwestern part of the site provide the drainage route for the adjacent property Ridge Farm. Throughout construction operations these routes will need to be maintained to ensure that there is no risk of waterlogging at Ridge Farm.

4.5.2 Water Level Monitoring

A regime to monitor and model the hydrological relationships on site will be undertaken through the regular recording and review of water levels in a series of pre-existing boreholes and depth boards located across the site drainage ditches.

4.5.3 Abstraction and Discharge

The project will obtain an Abstraction Licence from the Environment Agency to permit the abstraction, use and discharge of groundwater and surface water.

The details of the Licence will be maintained on the consents register which is a live document. The consents tracker is available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

Prior to the issuing of the Abstraction Licence and where unforeseen activities not included with the licence arise management of ground and surface water will be undertaken in line with the following:

- Regulation 5 (for **groundwater**) of the Water Abstraction and Impounding (Exemptions) Regulations 2017 available at https://www.legislation.gov.uk/uksi/2017/1044/regulation/5/made. When complied with and given the setting of the project regulation 5 will permit an abstraction of 50m³/d (0.5 l/s for 24 hours) of **groundwater** for six months. Operations will require oversight from a project ecologist to ensure no harm to conservation sites or protected species.

- Regulation 6 (for **surface water**) of the Water Abstraction and Impounding (Exemptions) Regulations 2017 available at https://www.legislation.gov.uk/uksi/2017/1044/regulation/6/made. When complied with and given the setting of the project regulation 6 will permit abstraction of surface water and discharge downstream for 6 months. Operations will require oversite from a project ecologist to ensure no harm to conservation sites or protected species.

- The Regulatory Position Statement on *Temporary dewatering from excavations to surface water* available at: https://www.gov.uk/government/publications/temporary-dewatering-from-excavations-to-surface-water/temporary-dewatering-from-excavations-to-surface-water. This RPS is set to be reviewed at regular intervals by the EA and any changes to it must be applied. Operations will require oversite from a project ecologist to ensure no harm to conservation sites or protected species.

The Licence / Permits will require annual returns of data to the environment agency via https://www.gov.uk/guidance/manage-your-water-abstraction-or-impoundment-licences-online.

Where dewatering or over-pumping is required, this will not be discharged directly into existing ditches or other water bodies unless this can be undertaken without risk of harm to the receptor. Pumped discharge will be directed to adjacent vegetated areas that have been checked by the Ecological Clerk of Works and identified as being free of any constraints. Buffer zones will be established and maintained between working areas, discharge zones and existing ditches. The size of the buffer zone will be defined according to the works being undertaken at specific location by the Environment Manager under the Permit to Pump system detailed in section 4.11.3.1.

4.5.4 Flood Risk Management

The site occupies a section of flood plain for Poole Harbour and the River Frome. Should a significant rainfall event, coincide with certain climatic conditions, high tide and / or the failure of the Frome embankment, extensive flooding of the site could occur.

The KIER project team will sign up to the following flood information services to provide as much forewarning of potential flood risk as possible:

- Environment Agency's Flood Guidance Statement service which will provide daily emails on rainfall and its impact on flood risk.

- Environment Agency's Flood Warning Service 'Flood Line' for 'Poole Harbour at Wareham'. Emails will be sent to all project team members to advise of a flood warning issued by the Environment Agency and when it has been withdrawn. When a site phone has been established this will be set up to receive phones calls and text messages for flood warning.

- Register as a high priority site with the Environment Agency's' Flood Line service and provide suitable contact details. This will make it incumbent upon the Environment Agency to ensure that someone from the project has been informed of impending flood risk.

Should the guidance advise of a high risk then all materials with the potential to result in pollution will be removed from the flood plain. Plant will be move to areas of high ground to the east of site at Hyde's Heath Barn and the south at the site compound. Temporary welfare units located off the high ground would be removed if time allows and if not as a minimum the storage tank drained of diesel.

During the period in winter where operations are limited no plant or consumables with the potential to cause pollution events will be stored in the flood plain. All will be moved to the high ground at Hyde's Heath Barn and the site compound.

4.6 Air Quality Management

[EA SHEW COP 2.12] Most of the operations for the project will be remote with potential poor air quality receptors a significant distance away. However, site conditions are likely to lend themselves to the generation of dust in long periods of dry weather. Regular suppression by dowsing will be necessary with condition for the pathway of water used to ensure it does not cause negative effects to site ecology or water quality.

Further the remote nature of the works means that impacts from exhaust from plant are not likely to accumulate significantly.

Automatic monitoring will be considered if impacts persist, and this document will be updated to reflect the implications.

During the construction phase, dust will be managed in the following ways:

Table 7: Air Quality Management Principles

Risk	Mitigation
Construction Traffic – Vehicle movements on haul roads; vehicle movements on site during dry periods; spillage and loss of load from vehicles carrying loose material; deliveries of aggregates to the project and adjacent farmland/properties	• All construction traffic will follow the Construction Traffic Management Plan. • A low-speed limit is in place on the project e.g. 10mph • All HGVs carry loose materials should use load covers • A wheel wash/jet wash with rumble grid is in place for all vehicles leaving the site to pass through during earthworks operations before they enter the public highway • Sweepers will be used on hard standing, black topped haul routes and public roads to ensure routes remain clear of dust and mud. • Road edges and pathways will be swept and damped down Vehicle/ plant storage areas to be topped e.g., crushed & rolled tarmac
Stockpiles - Excavated soils and bulk deliveries e.g., sand, aggregates	• Manage earthworks and exposed areas/stockpiles to prevent wind whipping using methods such as covering, re-vegetating, or other alternative methods of dust suppression such as hessian fabric or using water suppression. • Location of stockpiles away from any sensitive receptors. • Dust suppression to be used for dust generating loading and unloading activities

Site Activities - On site earth moving operations, site levelling, cut and fill and deep excavations.	• Plan the site layout so that machinery and dust-generating activities are located as far as practicable from nearby sensitive receptors. • Mobile bowsers to be deployed on site at regular intervals. Activity to be increased during dry and windy periods. • Where necessary, use of hoardings to be considered to ensure reduction in dust migration. • All cutting and grinding operations to be conducted in ways to reduce risk of dust migration (wet cutting techniques etc.) • The use of dust extraction equipment when drilling and cutting – cutting bays with integrated dust extraction are available from RVT
Actions identified above are in line with the following Standards & Guidance • Pollution and Nuisance Standard (SHEMS-STD-GR-063).	
Monitoring	
• Ongoing visual monitoring to be undertaken by site personnel during site inspections with findings logged on Novade OSI reports. • Should persistent issues with air quality arise installation of automatic monitoring will be considered with the objective of feeding back to the Construction Manager that further suppression activities are necessary.	

4.7 Noise

Most operations have a very low likelihood for the generation of noise disturbance due to their distance from receptors.

However, the construction of the western embankment and operations within the compound are very close to Ridge Farm and campsite and will require careful management. This is reflected in the inclusion in the planning conditions of condition 8 which requires specific controls around working hours, reflected in section 2.3.2, and condition 9 which requires a specific noise attenuation structure. In addition, where conditions allow, the compound will include shielding of plant and HGV operations to the west to provide attenuation to Ridge Farm.

During the construction phase, noise and vibration will be managed in the following ways:

Table 8: Noise Management Principles

Risk	Mitigation Measures and Monitoring
Significant noise impacts – that will create a disturbance to residences and other local stakeholders This could delay works, impact project programme and affect project reputation	• Key residential receptors and potentially sensitive stakeholders to be identified on the site Environmental Constraints Map. • Ensure regular communications with local residents. • Ensure system for residents to contact the project is established, advertised, monitored and actioned. • As part of the Communication Management Plan works with the potential for significant or new disturbance must be notified to the Public Liaison Officer (PLO) in advance to enable notification to local residents and businesses and, where necessary, Dorset Council. • In line with the noise reduction hierarchy, potentially noisy works should first be mitigated through adoption of appropriate design or construction methods and programming. • Potentially noisy works should be located as far away from boundaries shared with residential or business premises as possible. • All equipment should be maintained in good mechanical order and fitted with appropriate silencers, mufflers or acoustic covers. • Localised use of hoardings and portable barriers as necessary to shield particularly noisy activities. • Switching all audible warning systems to the minimum setting required by the health and safety executive and using banksmen as an alternative to audible alarms wherever practicable. • House static noise emitting equipment operating continuously within suitable acoustic enclosure with enclosure entrance pointing away from or to be screened from receptors.

Actions identified above are in line with the following Standards & Guidance

- Pollution and Nuisance Standard (SHEMS-STD-GR-063)

Monitoring

- Appropriate management of potential noise impacts will be monitored through daily checks by site supervisors and through Novade OSI and SSIs
- If conditions arise where automatic monitoring can play a role in the reduction of noise caused by operations it will be considered.

4.8 Waste Management

[EA SHEW COP 2.21] KIER aim to reduce waste disposal volumes and costs through application of circular economy principles. We will maintain our Duty of Care through appropriate vetting of all waste carriers and disposal sites supported by quality monitoring of all waste documentation

This section of the CEMP details site specific requirements for managing waste on site. It is supported by the Site Waste Management Plan(SWMP) on SMARTWaste which details waste management options for specific material types and provides a log of waste movements since project commencement.

The SWMP located in SMARTWaste will include:

- Names of personnel responsible for the implementation of this plan on site
- A forecast of expected waste streams
- Waste minimisation decisions taken throughout the project
- A record of the production and disposal routes of waste
- Waste carriers and destinations of the waste (including licence details)
- Waste/material specific implementation of circular economy & waste hierarchy principles
- Details of the training that has been carried out on site
- A comparison of the forecasted versus actual waste produced; and
- A review record to identify areas of improvement.

A Contaminated Land: Applications in Real Environments, Code of Practice (CL:AIRE COP) Materials Management Plan will be put in place for the majority of the earthworks being undertaken on site so that material excavated on site from borrow pits can be used for the embankment construction.

Where spoil is required to be removed from site adequate sampling to allow proper classification of the material will be undertaken by KIER with support from the specialist supplier Geotechnics. Having classified the material KIER will source an appropriate disposal point having reviewed the relevant waste management permit. A haulier, registered as a waste carrier will be selected to remove the material to the disposal point. Audits of the waste supply chain will be undertaken to Duty of Care is being undertaken.

All construction and demolition wastes will be managed in the compound area.

During the construction phase, the following waste management principles will be followed:

Table 9: Waste Management Principles

Risks	Mitigation
Reduce generation of waste	• Just-in-time' procurement to minimise the chance of damage to materials. • Storage in appropriately dedicated areas to prevent loss. • Dedicated materials storage areas will be established within the site compound. This will include sheltered storage for those materials subject to damage by weather. • Identify excavated material as non-waste through CLAIRE COP.

	• Request suppliers to offer take back of excess/unused materials including excess packaging. • Utilise off-site manufacturing. • Consider life cycle costs and end of life of materials and products.
Improve reuse and/or recycling off the project	• Consider recycling rates during waste procurement. Zero waste to landfill as objective • Segregated and signed skip area to be established within site compound. • Minimum segregation requirements for construction waste as follows: - WEEE, metals, wood, plastic waste, COSHH waste, mixed non-hazardous construction waste, food, sanitary, dry recyclables and PPE (in a useable state for donation).
Mismanagement of Waste - Environmental and financial costs associated with the generation of waste and the lack of segregation and opportunity for re-use or recycling options. Improper disposal with the potential to pollute the environment and unauthorised disposal and breach of legislation.	• All waste is tracked via SMARTWaste. • All supervisors and those handling to receive training on completion of Waste Transfer and Consignment Notes as well as TBTS targets at specific project waste management requirements • Storage, treatment, usage and disposal of wastes might require Exemptions, Permits or Local Enforcement Positions to be agreed. • Audit of waste suppliers.
In addition to the points above, the following standards and guidance will be followed / forms used as part of the KIER Environmental Management System: • Waste Management Standard (SHEMS-STD-GR-065) • Materials & Waste – characterisation, classification and testing standard (SHEMS-STD-INF-200) • Hazardous Waste Storage Standard (SHEMS-MST-GR-0010)	
Monitoring:	
• The SMARTWaste administrator is responsible for ensuring waste data entry is up to date to enable quarterly KPI reporting • Compliance of waste management on site will be checked and recorded through Novade SSIs and OSIs.	

4.8.1 Waste Carrier Licences and Waste Management Site Permits

Waste carrier licences and FULL waste management licences will be obtained as part of the procurement process (KIER and all subcontractors) and will be checked against the

Environment Agency's database by the Procurement Team/ subcontract lead prior to placing an order.

The Procurement Team and subcontractor leads, with the support of the Environment Manager shall check permit/licence details to ensure disposal site can accept waste types and volumes to be disposed of.

Copies of carrier licences and site permits and/or exemptions shall be provided to the SMARTWaste co-ordinator for upload to SMARTWaste.

No waste movements may take place prior to required checks being made.

4.8.2 Waste Disposal - Non-Hazardous Waste

Skips should be checked prior to leaving site to ensure there is no cross contamination of waste. Where practicable, contaminating materials shall be removed and placed in correct waste provision.

Waste transfer details are completed by the waste carrier and should be checked and signed for by an appropriate person

All completed Waste Transfer Notes are to be recorded. Records will be kept for 2 years post completion of the project.

4.8.3 Waste Disposal – Hazardous Wastes

The Environment Manager shall provide oversight of hazardous waste storage. Appropriate training will be provided to all those involved.

Waste containers with residual material need to be segregated.

All hazardous waste movements will be recorded on a consignment note provided by the Waste Carrier and should be checked and signed for by an appropriate person.

Checks of CNs will be undertaken by the Environment Manager to ensure they contain legally required information. Where necessary, additional training will be provided to personnel signing CNs.

All completed CNs are to be recorded. CNs should be kept for 3 years separately from Waste Transfer Notes.

4.8.4 Additional testing

Ground Investigations and associated testing will be used to determine Waste Classification of excavation arisings. Additional testing will be required in the following circumstances:

- Localised contamination events e.g., arising from oil spills or landfill leachate. Indicators include:
    - Visual e.g., discolouration of soils, oily sheen from water run-off,
    - Smell – e.g., hydrocarbons.

- Excavated areas are outside boundaries of original GI scope or where key gaps are identified

Testing Suites should be appropriate for the waste stream.

Apprioaite assessment of sampling data will be undertaken to determine the final classification of the waste.

All hazardous or potentially hazardous materials should be segregated on an impermeable liner and signed appropriately.

The Environment Manager should be informed as soon as possible in the case of unexpected contamination and additional testing may be necessary. Site teams will be given appropriate training on the identifiation of unexpected contamination. Planing condition 11 (unexpected contamination) will be followed.

4.9 Ecology Management

4.9.1 General

The footprint of the project falls within a number of designations. A full suite of ecological surveys has been undertaken to inform the consenting process.

In essence the first year of works are to create the conditions for which the ecology that is present in the inundation zone can be accommodated behind the new embankments. This will require the creation of new habitat areas which must have time to establish prior to translocation of protected species into it prior to earthworks in Year 2 and inundation in year 3. The primary receptor area where the bulk of translocation will occur will be referred to as the Western Freshwater Area. Two other minor receptor areas will be established and referred to as the Eastern Freshwater Area and the Sunnyside Freshwater Area.

A separate receptor area for reptiles will be established and developed on the northeast boundary of the site Use of this area will only be required prior to inundation.

Once created all receptor areas will be fenced to avoid colonisation by existing species before the intended populations are translocated in.

Management of ecology will involve several organisations linked the project and the site. Each will have a distinct set of responsibilities as follows:

- Environment Agency – the project undertaker and regulator with responsibility for flood risk management.
- KIER – the main works contractor with overall responsibility for actions undertaken on its site
- RSK – an ecological consultant providing direct support to KIER in managing it works on site.
- ATKINS – an ecological consultant with significant site history having supported the client with the planning application. As a result, ATKINS will hold all Natural England Protected Species Licenses and will be responsible for their implementation. This may involve the oversight of other ecologists tasked with relevant activities on site. In all cases ATKINS must be satisfied of compliance to licence commitments.
- RSPB – the landowner and body responsible for the future management of the site. Also, neighbouring landowner to the east of the project. Requisite communication for all relevant aspects of management of the site itself, prior notification of operations as

principal receptor or impacts. As a national ornithological charity expert advice on management of impacts to and mitigation of birds in the exact site context.
- Natural England – regulator with responsibilities to the designated sites impacted by the project. Prior approval of operations will have been sought through planning permission and protected species licences. Any change will require further consultation with Natural England.
- Marine Management Organisation – regulator with responsibility for marine environments seaward of existing embankments. Works will progress within the stipulations of a prior agreed Marine Management Licence.

KIER will encourage a continuous and open approach to communication across all of the parties above.

The following management documents will be in place that will prescribe the operations that can be undertaken and the mitigations that are required to be in place:

- Botany Method Statement
- Habitat Creation, Management and Monitoring Plan
- Sand Lizard Protected Species Licence / Sand Lizard Method Statement
- Water Vole Protected Species Licence
- Botany Protected Species Licence
- Marie Invertebrates Licence
- Vipers Grass Licence

In all cases these documents and up to date surveys must be consulted in planning any works.

Where specific provisions are not prescribed works will be undertaken following a species specific written Precautionary Method of Working (PMW) for clarity on the best way to undertake works in these scenarios.

A comprehensive summary of all actions related to ecology from the consenting process and mitigation commitments have been compiled in the Ecological Implementation Plan which is referenced in the Environment Action Plan and must be adhered to.

Surveys will be undertaken for each species as required throughout the construction programme to provide information on the current distribution and location species for protection, retention and / or translocation. A summary of the ecology present on site and basic mitigation measures are detailed below. A summary ecology programme is provided in appendix 6. This is an indicative programme and will be subject to change as the site conditions change. Surveys and mitigation for ecology will be timed as per the summary calendar presented in Appendix 7, additional detail is included in the following species specific sections.

4.9.2 Habitats

The project will minimise its footprint on the site to the areas required for construction. This will protect the existing habitats on site that are not subject to inundation as far as possible. Areas outside the footprint will be designated as Existing Habitat Protection Zones and is provided in Appendix 5.

Where possible important habitats (M23, M24 and M25 Purple Moor Grass) that are to be subject to inundation will be moved behind the embankments to support the establishment of the new receptor site to be delivered as part of the project. Prior to the receptor sites being ready, the donor habitat will be designated as Donor Habitat Protection Zones and will be protected from construction works. The zones are provided in Appendix 5.

These habitats will only be moved by an experienced translocation contractor, outside of the hottest time of year to ensure they establish in the receptor habitat.

The Cladium Fen habitat located in the southeast of the site is unique due to the influence of base waters and KIER will ensure that the conditions around this habitat are not subject to change as a result of construction operations. The section of the boundary of the Dorset Heaths Special Area of Conservation, which is within the Arne site, in which the Cladium Fen is located, will be designated as the Cladium Fen Protection Zone is provided in Appendix 5.

Stop boards will be installed in the ditch network at the north boundary of the Cladium Fen area to ensure that changes to water levels because of construction operations over the rest of the site do not change water levels in this area. The exact location will be determined on site with support of qualified ecologists and will be installed prior to any works that could affect water levels.

The areas detailed above constitute biodiversity protection zones and are shown in Appendix 5. Access into and any operations that could impact these areas will be tightly controlled via training, signage, fencing, approval of working method statements, pre-emptive mitigation measures and monitoring.

4.9.3 Birds

Although visual screening for birds making use of the new intertidal habitat from pedestrians will be in place at the end of the construction period, no screening will be erected during the construction operations due to the wide area that would have to be covered for it to be effective. Instead the following controls will be in place for works that have the potential to cause disruption to over wintering birds:

- The project will significantly reduce works during the overwintering bird season, as directed by planning condition 23
- Piling operations will enact a soft start procedure of at least 20 minutes.
- No piling to be undertaken either side of high tide between 01 August to 31 March of each year of the marine licence, licensed activities must cease for two hours either side of high tide within 300 metres of roost sites
- Regular monitoring and recording of overwintering bird numbers will be undertaken to establish whether the construction operations are having a detrimental effect on numbers and additional mitigation is required for the works.

Where possible vegetation clearance works will take place ahead of the bird breeding (March to August) season to minimise potential impacts to nesting birds. Where clearance is required within the season it will be undertaken under the direction of a qualified ecologist.

A programme of regular monitoring for breeding birds will be in place throughout the nesting bird season. This will allow new nests to be identified and the progress at existing nests to be followed.

Where nesting birds are located an exclusion zone pertinent to the species and the site context will be set and adhered to until the chicks have fledged. This will be demarcated on site to control the access.

These restrictions will be applied to any of the construction operations undertaken by the project.

4.9.4 Water Voles

De-vegetation, management of water levels, installation of construction haul road culverts, embankment and channel construction and the inundation of the site will all impact water voles and their habitats,

In the first instance, based on up-to-date survey information, works will be located to avoid areas that are providing water vole habitat. This will include a 3m buffer from the top of any ditch known to provide water vole habitat for construction plant.

Where works only require sections of water vole habitat to be impacted 'displacement' will be undertaken. This method allows for water vole to be displaced from an appropriate section of habitat into adjacent sections.

Where large sections of water vole habitat will be lost as a result of embankment construction or inundation then water vole will be trapped and translocated to the receptor area (Western Freshwater Area) that is to be constructed. The suitability of the Wester Freshwater Area to accept translocated water voles will be authorised by the Natural England Protected Species licence holder.

All survey and mitigations work for water vole will follow the calendar provided in Appendix 7 and displacement or trapping only undertaken under licence.

Works to displace or trap and translocate water vole from areas that are subject to construction works will require the Protected Species licence to be in place.

All water vole mitigation must be complete prior to commencement of the relevant construction operation.

The Water Vole Protected Species licence and most up to date survey results will have to be consulted before undertaking any works where there could be impact on water voles. The licence and up to date surveys are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.9.5 Reptiles and Sand Lizards

Habitat will be enhanced in the northeast part of the site on high ground connected to the new embankments and existing Frome Embankment. Prior to the inundation in year 3 reptile trapping will be undertaken across the site with the aim of translocating any captured reptiles to the enhanced habitat.

During any works there is the potential to come across reptiles across the site but especially in areas that have been cleared during the middle of the day in the reptile active season where they are more likely to be basking. Prior dissuasion of reptiles from previously undisturbed work areas will be undertaken by the reduction of vegetation in stages with the oversight on an Ecological Watching Brief. When reptiles are present the ecologist can relocate them to a suitable area. Where sand lizards are present only an ecologist named as working under the sand lizard licence will be able to intervene. Smooth Snakes have not previously been identified on the site but have been recorded on adjacent sites. Only an ecologist named on a Smooth Snake Licence will be able to intervene should one be discovered.

The Sand Lizard Protected Species licence and Sand Lizard Method Statement required by planning condition 22 will have to be consulted before undertaking any works where there could be impact on Sand Lizards. The licence and method statement are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.9.6 Botany

A full site botany survey will be undertaken shortly following the commencement of site operations. This survey will pinpoint the actual locations of species that require mitigations from the construction operations. Each individual will be marked with a flag and appropriate boundary protection placed around it to ensure that no damage occurs before the mitigations can be undertaken. The specific mitigations detailed in the Botany Method Statement are:

Seed collection and deposit in the Kew Millennium Seed Bank

The window to obtain seeds for some species on site is short and begins early in the summer e.g. May – June. Seed collection will be programme to ensure opportunities are not missed.

Once collected and deposited confirmation will be required of the seed's viability by Kew to conclude that the seed collection for that species is complete.

Collection on site will be require a Level 5 Field Identification Skills Certificate (FISC) qualified botanist.

Protection from compaction required where practicable

Areas with protected botany and those habitats designated for translocation will be demarcated on site and set as no go areas for vehicles until such time as they have been mitigated or translocated. If access is required into these areas, measures will be taken to avoid compaction of the soil such as track matting and / or wide tracked machines followed by de-compaction techniques as required.

Hydrological monitoring and adaptive management

Throughout the project management of water levels will be undertaken to enable construction activities. In ditches with protected botany species water levels will need to be maintained at a specific level to ensure continuing viability of the species. This will be achieved with strategically located v-notch depth control boards across the ditch network.

Translocation

Seed will be collected from existing habitats that will be subject to inundation to be sown on the new embankments during May – September. Different species will be collected for the landside and seaward side of the embankments.

The following species are to be protected from construction impacts until such time that they can be translocated to the created freshwater habitat area.

- Arctic bladderwort
- Blunt-leaved pondweed
- Bulbous foxtail
- Dioecious sedge
- Flea sedge
- Green-winged orchid
- Least bur-reed
- Lesser bladderwort
- Lesser tussock-sedge
- Lesser water-plantain
- Opposite-leaved pondweed

- Sharp-leaved pondweed
- Tubular water-dropwort
- Viper's-grass
- Whorled Caraway

One species (Bulbous Foxtail) will be translocated from the proposed location of the lagoons into the area of inundation.

A number of the above species have been previously identified but have not been found in following surveys. Initial checks will be made for these species and translocation will only be undertaken if they are discovered.

Translocation operations will require a sub-contractor with previous experience with oversight from FISC 5+ botanist. Translocation operations will avoid the hottest part of the year to increase the chances that it will be successful.

A Protected Species Licence will be in place for Vipers Grass and the Botany Method Statement must be consulted prior to works commencing in any new area to ensure protections are in place for the relevant Botany Species along with the provisions of the Botany Method Statement. The Licence, plan and method statement are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.9.7 Trees

Tree Protection Plans are being produced for each year of the works to ensure that any tree within close proximity has adequate protection in place. These plans are required for the close out of planning condition 3 and will be adhered to. Installation of the tree protection fencing will be the first operation undertaken on site following the start of the main works to ensure that there are no impacts on trees.

The project site provides significant breed bird habitat. Vegetation clearance undertaken during the bird breeding season (March and August) will be undertaken under direction of an Ecological Watching Brief.

In addition, a register of Trees subject to Tree Preservation Orders will be maintained and those on the delivery route for HGVs will be subject to monitoring and management with consent as required. There are no trees on site subject to Tree Preservation Orders.

Prior to works in close proximity to trees the Tree Protection Plan must be consulted. The plan is available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.9.8 Badgers

There has been previous evidence of badger habitation on site, but it is not believed to be active. Locations of suspected setts will be investigated to confirm if they are in use within the optimum Spring window. If they are, exclusion zones will be put in place around them. If work is required within the exclusion zone, then a Protected Species License will be sought.

4.9.9 Bats

A survey of bat roost potential has been undertaken to inform the consenting process. There are no current clashes between trees with confirmed roost or roosting potential in proximity to the construction operations. Updated surveys will be required as part of the construction operations to ensure there is no change in species distribution. These will be carried out ahead

of main construction works in the Spring window. Works will require specific management of lighting to avoid impacts and the erection of fencing around relevant trees.

Latest and up to date surveys must be consulted before undertaking works. Surveys are available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.9.10 Fish and Eels

Although no specific surveys have been undertaken of fish and eel presence it is safe to assume that they are likely to be present in any water body that the project interacts with. Therefore, the following mitigation actions will be enacted in any interaction with water bodies.

- Any pumps will need to be screened.
- Any excavation of silt will need to be carefully checked for small eels or lamprey.
- Any eels will need to be relocated to a suitable location (as near as possible) and permits for the fish removal will be needed depending on the equipment used.
- Any fish removal should be undertaken by adequately experienced operatives.
- High temperatures can result in damage or mortality in captured fish, relevant works won't be undertaken on days with water temperatures over 19 degrees.
- The fish rescues should be carried out prior to or alongside any drain down, rather than once dewatered.

4.10 Invasive Species

Several non-native invasive plant species were recorded during surveys undertaken to inform the consenting process. Including the following:

- New Zealand pigmy weed was recorded in several locations across the Site within marshy grassland and pond habitats. Thick carpets of New Zealand pigmy weed were recorded across large areas of Field 28 and around Pond 10.
- Invasive waterweed species (Nuttall's waterweed or Canadian water weed) was recorded in several ditches across the site.
- Montbretia was recorded along the edge of the broadleaved woodland and also on the edge of the access track into the Site from Arne Road.
- Nuttall's waterweed was identified and recorded by botanists in Ditch 40 to the south of the existing access track on the east of the site.
- Rhododendron was recorded during botanical surveys.
- Invasives may require removal during vegetation clearance at Passing Places 3, 4 and 9, involving the cutting of three-cornered leek and winter heliotrope.

There is potential for the species listed above to be present in more locations across the Site.

4.10.1 Biosecurity Risk Assessment *[EA SHEW COP 3.4]*

There is widespread presence of invasive species across the site. Therefore, all operations will be undertaken with biosecurity measures in place. The objective of the biosecurity measures will be to stop the spread of invasive species from their current locations on site to the areas of habitat to be retained and created.

A detailed survey of the location of invasive will be required prior to commencement of operations on site apart from early vegetation reduction or the setting up of the compound and access points.

Where invasives are already present in or close to the areas of habitat to be retained or created options for suppression will be investigated.

4.10.2 Biosecurity Measures

Prior to arrival machines must have been washed down so that no detritus is brought onto site attached to the machine. A particular focus must be paid towards the tracks of the machine.

Machines will be designated to specific task rather than moving between different areas.

Invasive species have been recorded with the ditch network. Upon completing works within a ditch detritus must be removed from any machines, individual or tools that were used and returned to the ditch. This may require spraying down of the items. Where vegetation overburden is reduced using flail equipment the flail is to be cleared of remaining vegetation before continuing to a different ditch.

Where material is excavated from ditches it will be side cast adjacent to the ditch and not moved around site.

Bio security kits will be available upon exit from areas of know invasives and on entry into areas of retained and created habitat. A biosecurity kit should contain the following as identified by a Risk Assessment:

- A bucket or container large enough to hold water to clean boots/gaiters/wellingtons
- A receptacle to carry water
- A stiff brush that can be used to clean boots, including the tread/cleats
- A boot pick to get into the hard-to-reach crevices in the boot tread/cleats
- disinfectant if required

All staff shall be trained on biosecurity actions and the identification of key invasive species including at toolbox talks.

4.11 Pollution Prevention and Management (& EAP required Silt Management Plan)

[EA SHEW COP 4.36] The project site is a managed natural landscape with a concentrated and diverse collection of habitats and ecosystems with multiple designations.

Pollution events that could result from the construction phase of the project have the potential to have an immediate, widespread and evident impact to natural resources on and off site.

This section describes the pollution prevention and control measures to be followed by KIER and all subcontractors on this scheme to prevent pollution events.

Although it is the case that the project will only retain some of the existing environment and will lose the remainder to tidal inundation, the whole site will still provide unique and protected habitat after project completion. The objective will be for construction impacts to be confined to those areas designated for the works and not allowed to migrate to the immediate adjacent existing natural environment. The footprint of the construction areas will have been prepared, with mitigation of the existing environment already undertaken and will be restored where necessary.

Requirements set out in this plan are in line with the KIER Pollution Prevention and Nuisance Standard (SHEMS-STD-GR-063).

4.11.1 Primary Pollutant Linkages

The site context and the proposed operations present some clear possibilities for pollution events.

Oil spills from hydraulically operated and liquid fuelled machinery and equipment which should occur within construction areas but dependent on volume and conditions have the potential to migrate to the adjacent natural environment. The objective will be to recover all such fugitive oils, either from the ground without causing additional harm or from ditches without allowing the rapid transit through the site and potentially off site to Poole Harbour.

Silt laden water either accumulated within excavations and pumped out or as runoff generated from disturbance of soils, repeated transit of plant or loss of control of slurries. Suitable pumping arrangements and systems to contain runoff should be in place prior to possible accumulation or generation. Entry of such waters into site ditches would need to be contained.

Operations within ditch profiles have the potential for direct loss of pollutants to the water courses and those connected. Measures to contain them will need to be in place prior to commencement of such operations.

Parts of site particularly in the compound will have systems in place to manage and/or treat pollutants such as oil and silt mentioned above. Any failure of these systems could result in their discharge to the environment, potentially in quantities where recovery or containment is challenging. The proper management of these systems with constant monitoring and regular maintenance will be essential.

4.11.2 Abnormal or Emergency Pollutant Linkages

Operations will be undertaken as part of the project that have the potential for more intense release of pollutants or release in areas where response is challenging. The marine works are such operations as well as the possibility of catastrophic failure of oil or chemical containment systems when there are large volumes being stored. Fire or inundation of the site from failure of the Frome Bank are others. In these circumstances measures will be established prior to the commencement of construction that will ensure proper steps are taken to communicate and control the situation and that third party assistance is available.

4.11.3 Management Controls

Management controls are in place to ensure that there is management input into points of decision making and oversight of systems that can be measured and monitored.

4.11.3.1 Permit to pump system

KIER operate a permit to pump system to ensure that the abstraction and discharge of water on site is overseen at a management level. The permit is to be used as an operational document, prepared by a responsible person who is familiar with the work procedures, the hazards involved and the precautions to be taken. All permits will require the signature of the Environment Manager or others that are authorised by the Environment Manager.

- Each permit will detail the following:
- Brief Description of Pumping/Discharge
- Precaution to be taken prior to
- Mitigation to be undertaken during
- Plan of pumping arrangements
- Name individual responsible for the permit

A permit to pump must be renewed if the operation changes or the pumping is longer than 1 month in duration. Maintenance checks should be carried out on the pump(s), and back up pump(s) available if required. The permit will be available in the KIER Project SharePoint at: 9.07 ENVIRONMENT MANAGEMENT

4.11.3.2 Water Treatment

An area of the compound will be provided with a contained area for the capture of all water generated in that location. This area should be used for operations that are known to generate effluents such as concrete washout and vehicle washdown. A water treatment system will be installed at this location to provide a route for the management of non-compliant effluents on site. The water treatment system will outfall to the drainage ditch to the north of the compound under the appropriate discharge permit.

The Water Treatment System will be designed to reduce the solids content of any effluent, remove any hydrocarbon faction and monitor and reduce pH. A final holding tank for the visual assessment of water quality will be the last stage of the treatment system prior to discharge. Emptying of the tank into the water course will be operated by hand only by an authorised team member. Where water quality in the final holding tank is not acceptable there will be the opportunity to recirculate it through the Water Treatment System.

Where the Water Treatment System is not capable of treating an effluent to the required standard then the effluent should be removed from site by a vacuum tanker and deposited at an appropriately licenced facility.

The water treatment system will have a designated maximum flow rate to ensure that the system is fully effective. The system will be cleaned on a weekly basis as minimum, after the treatment of a sufficiently concentrated effluent or if the necessary discharge quality cannot be obtained.

A large volume water tanker will be available on site to capture effluents from operations across the site and take them to the Water Treatment System where required.

Any discharges of water from not in direct ground contact or areas of hardstanding may take place direct to ground or the surface water drainage network providing there is no sign of contamination. Water containing solids only can be discharged to areas of vegetation to allow dispersal of the solids and the natural drainage of the water. Areas of vegetation must not contain protected species.

All sewage shall be removed by tanker to an appropriately licensed facility. A reed bed sewage discharge system will be considered for the site compound. This system will only be installed in agreement with client, under the required licensing regime and the necessary operational control.

4.11.3.3 Monitor Outfalls

There will be three outfall points that will provide a location to monitor water quality to ensure that effects from construction operations are not causing significant negative impacts.

Two of these will be at the two outfalls to Poole Harbour through the Frome Bank. The first of these is Turners Cove sluice which is the outfall of the ordinary water course the Furzebrook and the primary outfall for the wider site. The other will be Bower Point a secondary outfall which is currently non-operational but will be bought back into operation by the project.

Both outfalls are a significant distance from any of the site compounds and most of the work areas over the duration of the project. Therefore, a system for remote monitoring will be established allowing regular checking and assessment of the extent of any event. The system will be available 24/7.

4.11.3.4 Water Quality Monitoring

Monitoring of water quality will be required at the three Poole Harbour outfalls and the outfall of the Water Treatment System to ensure water is of sufficient quality for discharge and that operations are not having a detrimental effect on the water quality onsite.

Pollutants sampled for will be:

- Suspended solids as mg/l and NTS (turbidity)
- pH
- Hydrocarbons

Sampling will be taken from the existing ditch network on site to establish the background conditions.

In normal circumstances onsite monitoring should be sufficient with a handheld electronic pH monitor and turbidity monitor. Hydrocarbon sampling will be visual from the presence of a sheen on the water surface. In the initial stages samples taken for onsite monitoring will be mirrored by samples sent offsite for analysis to a UKAS certified lab. This will have the effect of confirming the accuracy of onsite monitoring results and provide confidence in them.

4.11.3.5 Fire Service Pre-Engagement

The project faces a risk of fire in the existing habitat (i.e. wildfire). The previous state of the site has predominately been as wetland, but it is the intention of the project to drain the site to make construction operations viable increasing the likelihood of fire. Further, climate change has heightened the risk of wildfire considerably in recent years.

Prior to operations commencing in a time of year that the risk of fire is significant pre-engagement with the fire service will be undertaken and all relevant local stakeholders and installations. It will ensure more rapid support from the emergency services. Although the focus will always be on the safety of people and property the engagement will undertake to make the fire service aware of protected species of flora on site.

Chemicals and oils stored within the site must be stored with areas suitably protected from fire so as not to increase the intensity by an order of magnitude.

4.11.3.6 Training

Evidence must be readily available that operatives have received training in the use of spill kits within the previous six-month period, a mock exercise for each risk will be undertaken. This will be within 2 weeks of starting on site.

Spill response training is available via Darcy as set out in the Darcy/KIER Spill Training Brochure. Or other local / site specific training as can be sourced.

The site induction will introduce all the concepts around pollution prevention detailed in this plan with a focus on the identification of potential causes or pollution and how to avoid them and the immediate necessary response and communication.

Individuals tasked with the management of the Water Treatment System will be trained in its use prior to first operation.

Training shall be organised by the Environment Manager with support of the Project Manager as the target owner.

4.11.4 Operational Controls

Operation controls are best practice behaviours that are instilled in KIERs operatives and subcontractors as the standard way that operations are undertaken.

4.11.4.1 Site Security

The compound area where all chemicals with the potential to cause pollution events will be secured with fencing around the perimeter that will be locked when no personnel are on site. CCTV will be in place to monitor the site 24/7 with a remote response unit in place should anything be picked up on the CCTV that requires investigation.

Access to the site will be via a manned entrance will all individuals required to sign in and out.

All site personnel will need to be inducted onto the project. Access will be available to the site office for members of the public during work hours, but no access will be permitted to the site for un-inducted persons unless they are briefed and accompanied as visitors by an Engineer, Manager or Foreman.

4.11.4.2 Runoff

Constant use of haul roads will be likely to accumulate site debris which during wet conditions could easily become mobilised. The design of the haul road must incorporate a drainage element to move runoff way from areas of possible impact and into areas that it can be filtered through vegetation and allowed to soak away. Regular cleaning will be necessary to stop build-up of debris and sudden release.

Existing and temporary site access tracks will be utilised for access prior to the construction haul road being complete into more remote sections of the site that will be less frequently used. The maintenance of such tracks will be required to reduce the chance of compaction and rutting that could also generated silt laden runoff.

Where excavated materials, including topsoil, are exposed runoff from the exposed area must be directed to a suitable location. Stockpiling of the materials must be away from areas that could be impacted. Short duration stockpiles should be covered. Any material that is to be stored for a long duration should be seeded to reduce runoff. Material excavated from borrow pits will be arranged in bunds to allow the water to drain out separate of the solids.

Where there is risk of silt being mobilised structures will be installed along the length of ditches at risk of direct impact. Regular monitoring and maintenance of these structures will be required to ensure they remain effective.

The water treatment system will be available for any silt laden water where the silt cannot be controlled.

4.11.4.3 Refuelling and Oil & Fuel Storage

Given the remote nature of the project fuel storage will be located inside a barn owned by the RSPB on the eastern boundary of the site accessible along the Arne Road via Bank Gate Cottages access track and along the east west haul road after it has been constructed.

A primary fuel bowser will be located within the barn which will be filled up by fuel deliveries. A smaller mobile bowser will be filled from the primary bowser and towed by a vehicle onto site via the HGV access into the compound. Both bowsers will have a secondary containment system with a capacity of 110% of the bowser volume with an integrated refuelling pump and hose, with automatic cut-off nozzles that cannot be propped open.

Due to the wide area covered by the worksite plant will be fuelled by the mobile bowser at the point of work rather than returning to a compound to be refilled. This will significantly reduce the distance travelled by site vehicles including a reduction in carbon emissions, noise and air quality impacts.

[EA SHEW COP 4.36] The driver of the fuel bowser will oversee that all refuelling operations are undertaken to best practice with appropriate spill containment and response in place. They will be responsible for the safe transit of the fuel with any hoses and hand pumps locked away before movement. The driver will also be responsible for storage of the bowsers which will be locked when not in use, the RSPB barn will also be locked. The keys will be returned to the site office at the end of each day.

Proof of checks and inspections by the supplier for the bowsers shall be obtained prior to delivery. Thereafter, the Construction Manager is responsible for requesting and managing annual service checks. A copy of checks shall be provided to the Environment Manager.

Small volume fuel storage will take place in the compound area within suitably bunded and lockable storage units. Bunding will provide 110% capacity of the largest container or 25% of the total stored volume or whichever is greater. The Construction Manager shall carry out assurance checks on a monthly basis using the Oil and Fuel Storage Checklist and resolve issues with support from the Works Manager. A copy of the checklist shall be provided to the Environment Manager.

The advanced works and initial site setup will require a small volume fuel storage with internal secondary containment to be in the compound field. The container will be lockable and secured with the field.

Volumes of all fuels delivered to site must be provided to the Environment Manager.

4.11.4.4 COSHH Management

All paints and chemicals must be stored in suitable and labelled containers (this includes the paint tins, plastic containers etc. as delivered)

When not in use these containers must be stored in secure, lockable cabinets, rooms or stores, to prevent unauthorised access. Limiting access will help with stock control and wastage.

Ensure paints and chemicals are stored in line with the manufacturer's Material Safety Data Sheet (MSDS) and COSHH requirements.

Paints and chemicals should be recorded in the site or premises' COSHH substances summary sheet.

Storage cabinets, or storage areas, should be bunded so that any spilled paints and chemicals are captured in the bund, therefore reducing the risk of environmental pollution. Alternatively, containers can be stood on suitable drip trays.

Hazardous paints and chemicals should be segregated according to their chemical properties (e.g. flammables segregated from oxidisers).

Any spillages that occur within the storage area must be reported and cleaned up.

A spill kit appropriate to the paint or chemical being stored must be available.

All waste COSHH and packaging (anything with a red hazard symbol) waste should be placed in COSHH waste bins provided on site. When full, the site supervisor shall arrange for these to be returned to the Construction Manager (and swapped out) to be placed in the main haz-waste storage areas.

Waste liquid COSHH (including part full containers) shall be returned directly to the storeman for storage in the hazardous waste storage areas prior to disposal.

If a hazardous/COSHH waste bin is found to be full/nearing capacity, it shall be reported to the Construction Manager who shall arrange for replacement as above.

The Construction Manager will act as the nominated COSHH Coordinator and be responsible for provision of COSHH sheets for COSHH materials issued for use.

COSHH materials should be returned to the stores at the end of the day rather than left out overnight.

Bunds shall be fitted with an oil filter for drainage of contaminated water.

4.11.4.5 Equipment and plant

Subcontractors are responsible for ensuring that all plant and machinery that comes to site is in a state of good repair that those regular checks are undertaken as follows.

- Pre-deployment checks with certificate/proof of checks from the plant.
- Daily pre-start checks undertaken by the plant operator.
- Prescribed maintenance checks based on hours of operation/mileage.

Biodegradable oil shall be used within all hydraulic systems.

All mobile plant shall carry portable spill kits.

Plant shall only be washed down in the designated contained area within the compound.

4.11.4.6 Concrete

Concrete washout will only be undertaken in the contained area of the compound. A tank will be provided for wagons to washout into. An arrangement within the tank will provide for the management of solids, either collection through a filter bag or lining of the tank with polythene to allow the solids to settle and be removed at a separate point. The contents of the tank can then be treated by the site Water Treatment System.

The potential for runoff from concrete works will be considered in the setup of relevant work fronts. Runoff would likely be high in pH and solids and would require capture and transport to the Water Treatment System.

4.11.5 Response

The correct response to any incident is dependent on the context of the site. The Arne Moors scheme is over a large area with potentially many open workfaces at one time and a number of natural receptors that if impacted would be considered a significant incident.

Therefore, the correct initial response to any incident is to **ASSESS** whether it can be dealt with immediately or whether the priority should be to seek additional support from the project team or from third parties.

4.11.5.1 Immediate Response

Most incidents will be able to be dealt with immediately and the following sequence should be followed:

- **ASSESS** is project wide or third-party support required
- **STOP** the source of pollution.
- **CONTAIN** the spread of any pollutant.
- **NOTIFY** the site supervisor will escalate
- **CLEAN UP** after assessing the risk. Any materials used to contain or clean up a fuel /oil spill should be classed as hazardous waste and should be disposed of in hazardous waste

bags provided with the spill kits and then disposed of in the hazardous waste skip in the main compound.

4.11.5.2 Project Wide Support

When an incident could mobilise over a wider area support from the project team may be required. In these cases, the most important action is to **NOTIFY** so that the correct support can be deployed. The project team will consider if the following is necessary:

- **DEPLOY** further support and/or containment measures further upstream of the incident
- **MONITOR** water quality at the outfalls to Poole Harbour
- **ISOLATE** the outfalls to Poole Harbour
- **ALERT** relevant stakeholders
- **REQUEST** support from third parties

4.11.5.3 Third Party Support – Large Spill Clean Up

For clean-up of large-scale spillages, Adler and Allan who are a UK Spill Association accredited contractor who are working in partnership with KIER. They provide 24 hours a day, 7 days a week spill response services and have nationwide coverage.

A three-step incident response service is available for spills that cannot be cleaned up using site teams and equipment:

0800 592 827: quote 1335 – KIER Infrastructure

- For spills where further additional support is required, the Works Manager, Environment Manager or Project Manager should call Adler & Allan.

- Adler & Allan should be provided with the following information:

    - Location (site name & address TBC)
    - Cause
    - Receptor e.g., river, ground, drainage
    - Extent of pollution
    - Substance involved and quantity
    - Support required

4.11.5.4 Third Party Response – Marine Environment

Where response is required in the marine environment support from the Poole Harbour Control service must requested. The service is provided by Poole Harbour Commissioners:

Poole Harbour Control – 01202 440 230 / harbourcontrol@phc.co.uk

4.11.5.5 Spill kits

Whatever the incident the immediate ability to contain the extent of the impact is key and spill kits are the best tool to do so. Each KIER team member will be Empowered, Encouraged and Enabled to grab a spill kit and contain incidents to the best of their ability whilst remaining safe.

It is the responsibility of the Construction Manager to retain an adequate supply of appropriate spill kits for deployment to site and for restocking of used spill kit materials.

It is the responsibility of the site supervisors to ensure that appropriate spill kits (i.e. relevant to the risks) will be strategically placed around all work areas with free access maintained at all times.

Mobile spill kits shall also be carried on all main plant.

Vehicles for transport of personnel will retain surplus spill kit material to enable rapid response to an area where a spill maybe in progress.

Additional stockpiles of spill materials will be contained within each of the compound areas.

Spill kit lids shall be secured with a rip tag.

Used materials should be sealed within the bags provided and disposed of in the hazardous waste skip/bin.

It is the responsibility of the site team to ensure that spill kits are fully restocked after use.

Local marine grade spill kits be stored at the two outfalls into Poole Harbour through the Frome Bank, Turner's Cove and Bower Point. As a minimum the kits will hold oil booms and silt curtains to contain any pollutants mobilised in the water and could be deployed either landside or seaward of the outfalls.

4.11.5.6 Communicate and Investigate

All incidents will be communicated and investigated as per Section 3.3.4 Environmental Incidents.

Appendix 1 – KIER Sustainability Policy

Kier's purpose is to sustainably deliver infrastructure which is vital to the UK. We are a leading provider of infrastructure services, construction and property developments and committed to responsible operations which protect and enhance the environment and contribute to sustainable development.

Statement of Intent

Our sustainability framework, 'Building for a Sustainable World', looks beyond the 'green' trend and focuses on building on the good work that Kier has undertaken in environmental protection and creating social value in the communities we work in.

For Kier, sustainability is a mindset that seeks to create a resilient, purpose driven business by safeguarding three vital features no business can operate successfully without:

A resilient environment

Delivered by:

- making best use of resources and eliminate, reduce, re-use and recycle our waste,
- achieving Net Zero carbon emissions by 2045, aligned to Science Based Targets limiting global warming to 1.5oC,
- encouraging nature on and around our sites and projects,
- adapting our operations and projects to climate change risks,
- reducing our energy and water consumption and progressively using more renewable energy,
- maintaining contemporary management systems to protect and enhance the environment.

A resilient community

We will:

- treat our employees, people, and organisations fairly and with respect,
- value and encourage work/life balance and support agile working practices wherever practicable,
- support health and wellbeing amongst our employees and within local communities,
- train and develop our employees and disadvantaged groups in our communities,
- support charitable causes close to the hearts of our employees and the communities in which we operate.
- help to regenerate and tackle poverty within our local communities,
- develop infrastructure that supports the wider community.

A resilient balance sheet

Enhanced by:

- continually improving the sustainability of the projects we build,
- collaborating with our value chain to deliver innovative sustainable products, services and solutions for Kier and our customers,
- partnering with the Supply Chain Sustainability School to enhance collaboration towards our aim of building sustainability expertise and practices within businesses and our value chains.
- utilising SME's and local supply chains where practicable
- training our staff and contractors in sustainability operations and practices,
- annually reporting and communicating our sustainability performance,
- working in partnership with the GLAA Construction Protocol to end labour abuse across the UK and actively work to help ensure our people aren't at risk of labour abuse.

There are clear linkages between the environmental, community, and our business priorities in this Policy. These are implemented through the Kier Building for a Sustainable World Framework. We commit to transparently report against this strategy, and to ongoing stakeholder sustainability awareness and engagement.

Senior management will review this policy annually, or following a major operational or organisational change, and establish objectives and targets that are consistent with Kier's strategy. This policy will be communicated to all our employees and organisations working on our behalf, displayed at our offices, on our intranet, on our external website, and made available to interested parties.

Kier's purpose is to sustainably deliver infrastructure which is vital to the UK. We are a leading provider of infrastructure services, construction and property developments and committed to responsible operations which protect and enhance the environment and contribute to sustainable development.

Statement of Intent

Supporting our revised operating framework our updated Environmental agenda, combines fresh ambitions for Environmental management, and recognises that sustainable value creation is fundamental to business success.

As laid out in our Sustainability Framework Kier is committed to preventing environmental harm, replenishing our natural systems & renewable resources, and having a positive impact on the communities and environments within which we operate. This commitment is supported by senior management.

Policy Aims

To ensure effective implementation of this policy we will:

- Identify and fulfil our compliance obligations, including legislation, standards, industry codes of practice and voluntary standards, which are relevant, or to which Kier subscribes.
- Assess risks and opportunities and implement effective management controls across the entire lifecycle to deliver environmental enhancement and prevent harm.
- Allocate sufficient resources to achieve our environmental objectives and targets.
- Ensure environmental protection and enhancement through effective communication, provision of staff training and adoption of best available techniques.
- Protect the environments in which we operate through effective design and management of discharges, noise, dust and other nuisances arising from our activities.
- Operate a responsible supply chain, working with suppliers to raise environmental performance standards and ethical practices together.
- Source, purchase and use resources and materials in line with our sustainable principles.
- Achieve Net Zero carbon emissions across our own operations and supply chain by 2045, aligned to Science Based Targets limiting global warming to 1.5oC.
- Mitigate and adapt climate change through the use of innovative design, materials, technology, and nature-based solutions.
- Design out waste and design in circularity for our materials and produce no avoidable waste by 2035.
- Help to maintain a healthy environment for future generations by protecting natural resources and enhancing biodiversity in locations where we hold responsibility or can influence those that do.
- Support our customers' environmental performance by offering sustainable opportunities and reducing the environmental impact during the operational phase of a project.
- Continuously improve environmental performance through proactive leadership, the establishment of clear objectives and targets, regular management review and performance reporting.

Senior management will review this policy annually, or following a major operational or organisational change, and establish objectives and targets that are consistent with Kier's strategy. This policy will be communicated to all our employees and organisations working on our behalf, displayed at our offices, on our intranet, on our external website, and made available to interested parties.

Andrew Davies
Chief Executive
For and on behalf of Kier Group plc
Last Reviewed: November 2022

Appendix 2 – Environment Agency Emission2030

eMission2030

Environment Agency

Our commitment to a thriving environment and communities

We want to leave the natural environment in a better state than we inherited it. This means more than just reducing negative impacts and slowing down the rate of decline. It's about improving environmental quality everywhere and actively creating more and better areas for people and wildlife.

We need to understand the risks and opportunities we face, and the impact we have on the environment and communities through others, such as our suppliers and customers. We will put the environment and communities at the heart of our decision making.

We will achieve this by:

Responding to the climate emergency

- Treating the climate emergency **as an opportunity** to adapt and make a difference;
- **Becoming a net zero organisation by 2030**, taking as much carbon out of the atmosphere as we are putting into it, so that we are no longer contributing to climate change;
- **Ensuring our organisation remains resilient** by adapting our land and buildings to a changing climate.

Benefitting people and communities

- **Ensuring the people we employ and those in our supply chain** have good working conditions and are protected from modern slavery;
- **Understanding the full impact of our highest risk activities and services,** working with suppliers to be resilient and transparent in our purchasing while influencing others to improve their own performance.

Delivering environmental net gain

- **Improving the natural environment** through our operations and regulatory work, with priority given to nature based solutions and environmental net gain.

Optimising our use of resources

- **Reducing our consumption of resources** and only purchasing products and materials that are the most socially and environmentally responsible throughout their life cycle;
- **Working towards buying less, prioritising re-use and eliminating waste from products and materials** by working with partners to design it out.

We will do this by:

- **Growing our skills**, knowledge, capability and confidence in leadership, partnership, and technical topics including sustainability training for all staff and specifics on the climate emergency and environmental net gain;
- **Empowering people to take their own actions and try out innovative ideas** to make both big and small changes and challenge unsustainable decisions and action;
- **Continually improving** our sustainability performance and **ensuring compliance** with legislation, ISO14001 and others;
- **Monitoring, reviewing and learning**, measuring our efficiency to build on positive behaviour, prevent pollution and create a better place for people and wildlife.

James Bevan – Chief Executive

Emma Howard Boyd - Chair

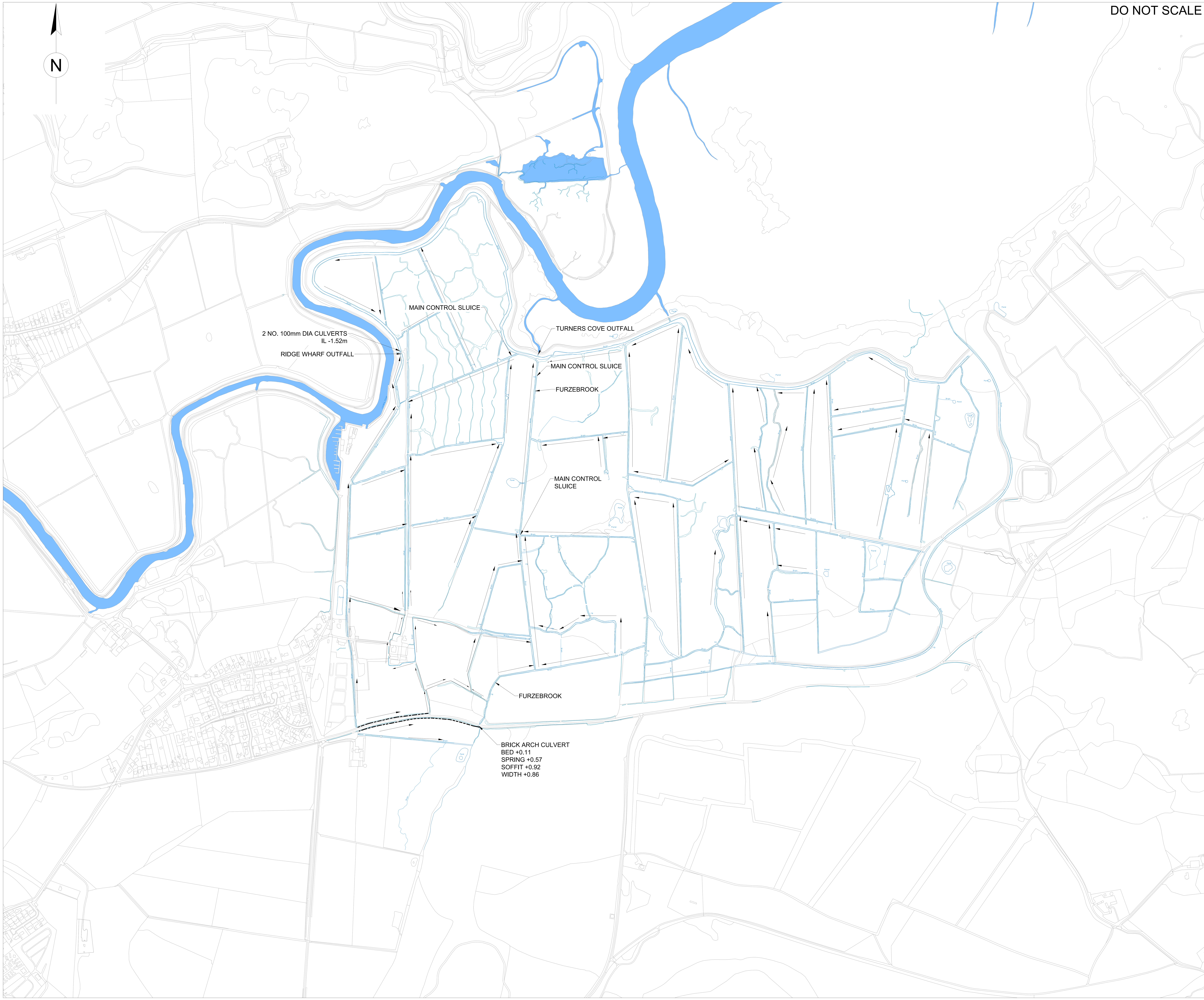
This has been adopted using United Nations Sustainable Development Goals as a framework, the government's 25 Year Environment Plan and EA2025.

Appendix 3 – Project Aspects & Impacts Assessment

					Potential risk prior to controls				Potential risk post-control		
No.	**Aspect**		**Impact**	**Activity**	**Likelihood (1-6)**	**Impact (1-6)**	**Level of Risk (Likelihood X Impact)**	**Project / contract / site-specific control measures**	**Likelihood (1-6)**	**Impact (1-6)**	**Level of Risk (Likelihood X Impact)**
1	Ecology	**General**	**Encroachment of construction activities into areas of protected species**	1. Traversing site with vehicles / plant. 2. Interaction with potential bat roost structures / features. 3. De-vegetation and management of water within ditch network. 4. use of mobile potentially pollution materials within construction works. 5. pH neutral aggregates for long term installations.	6	6	36	1. Inclusion of restrictions within site induction. 2. Regular training. 3. Inclusion of working areas and prohibited areas with RAMS. 4. Highlight restrictions during briefings. 4. Demarcation on site with appropriate signage. 5. Regular inspections of prohibited areas. 6. Regular maintenance of plant. 7. Regular spill response training and exercises.	5	6	30
2	Abstraction and Discharge Management	**Non-permitted discharge or Permitted but non-compliant discharge**	**Pollution to controlled waters or ordinary water course resulting in Non-compliance to Abstraction / Discharge Regulations / Permit and possible degradation to habitat**	1. Plant traversing site / interaction with soils / dewatering excavations / dewatering of drainage ditches - causing silt laden runoff. 2. Loss of containment / separation of concrete washout. 3. Operations within ditch profiles. 4. Use of potentially polluting substances in construction works. 5. Use of hydraulically operated, liquid fuel driven plant. 6. Vehicle / wheel wash down.	6	6	36	1. Operate permit to pump system. 2. Incorporate suitable pollutant isolation measures into the design of the temporary construction assets. 3. Establish regular maintenance activities to clear build up off potential pollutants. 4. Establish suitable concrete washout systems. 5. Establish contained area within the compound for management of washdown. 6. Regular maintenance of plant. 7. Regular spill response training and mock exercises. 8. On site monitoring of discharge quality. 9. Periodic off site sampling of discharge quality. 10. Appropriate treatment of discharge to achieve necessary quality.	5	6	30
3	Ecology	**Invasive Species**	**Spread of invasive species**	1. Handling of top soil. 2. Handling of material from drainage ditches. 3. Individuals and vehicles traversing areas of know invasive species presence. 4. Importation from offsite by vehicles and aggregates.	6	6	36	1. Bio-security risk assessment prior to any field work. 2. Establish and follow bio security protocol. 3. Map and monitor presence of invasive species.	5	6	30
4	Ecology	**Flora specific**	**Degradation of species / soil strata designated for translocation**	1. Translocation of identified species, soils and seed banks.	6	5	30	1. Work to documented translocation method statement. 2. Establish tracking system detailing original location of translocated assets, storage location and proposed final location with unique identification number for each asset. 3. Produce plans of translocated and stored assets. 4. Monitor through site inspection.	5	5	25
5	Ecology	**General**	**Non-compliance to Protected Species Licence**	1. Clearance of areas for construction operations. 2. Creation of receptor areas. 3. Water level management.	5	6	30	1. Oversight of all documentation and site work within licenced parameters by licence holder or named delegated suitably qualified ecologist. 2. Demarcate areas of licenced works as prohibited to any individual not involved within licenced package of work.	4	6	24
6	Nuisance	**Noise**	**Excessive disturbance to neighbouring stakeholders**	1. Activity with heavy plant in proximity to site boundaries. 2. Vibration piling activity designated for ditch clearance, ditch crossings and the Furzebrook structure. 3. Particular operations in proximity to Ridge Farm. 4. Deliveries and personnel transport to site.	5	6	30	1. Prior notification of operations to neighbouring stakeholders. 2. Establish and advertise project contact email address for use by stakeholders to raise items of concern. 3. Hold regular stakeholder liaison groups. 4. Maintain record of all communications received to identify trends. 5. Adhere to working restrictions placed by planning conditions 8 and 9 around Ridge Farm.	4	6	24
7	Nuisance	**AQ**	**Excessive disturbance to neighbouring stakeholders**	1. Stockpiling of excavated material onsite. 2. Plant / vehicles traversing site during long periods of dry weather.	6	4	24	1. Supress areas and activities with potential for generation of dust when weather conditions require. 2. Remove from site potential sources of dust when able. 3. Cover or seed excavated materials with the potential to generate dust. 4. Set a low site speed limit. 5. Cover loads in wagons with potential for dust generation. 6. Dust colletion on handtools. 7. Establish and advertise project contact eamil address for use by stakeholders to raise items of concern.	5	4	20
8	Ecology	**Flora specific**	**Erosion of soils**	1. Discharge of pumped water to ground. 2. Break up of soil structure by traversing of vehicles / plant or excavation operations.	6	4	24	1. Arrangements to dissipate force of water at outfall locations. 2. Utilise appropriate capacity pumping arrangements 3. Operate permit to pump system with authority from Environment Manager or named delegated individuals. 4. Monitor through site inspection.	5	4	20
9	Abstraction and Discharge Management	**Non-permitted or uncontrolled abstraction**	**Non-compliance to Abstraction / Discharge Regulations / Permit**	1. Dewatering drainage ditches (lowering of water table below seasonal level). 2. Dewatering of groundwater through excavations.	6	4	24	1. Operate permit to pump system.	5	4	20
10	Ecology	**Birds**	**Disturbance to nesting individual**	1. Any activity within the immediate proximity to a nesting individual. 2. Activity with the potential to disturb the nesting individual in a wider proximity.	6	4	24	1. All work areas require start of shift nesting bird check from ecologist.	5	4	20
11	Waste Management	**Non-compliance to waste duty of care - <u>hazardous waste</u>**	**Possible harm at disposal point**	1. Generation of hazardous construction and demolition waste and possibility of hazardous excavated material arisings.	4	6	24	1. Maintain site waste management plan (SMARTWaste). 2. Regular checks on carrier licences and permitry of nominated waste suppliers. 3. Ensure accurate classification of waste. 4.Training of those with responsibility for waste. 5. Periodic audit of waste suppliers. 6. Establish and comply with Materials Management Plan for excavated material. 7. Establish specialist Haz waste supplier. 8. Segregation of wastes on site.	3	6	18
12	Ecology	**Flora specific**	**Damage to root cells**	1. Excavation operations or compaction by plant or materials positioning.	5	4	20	1. Demarcation with appropriate signage around root systems within proximity to works. 2. Monitor through site inspection.	4	4	16
13	Waste Management	**Non-compliance to waste duty of care - <u>Construction and Demolition Waste</u>**	**Inappropriate handling / processing of waste materials**	1. Generation of construction and demolition waste.	4	5	20	1. Maintain site waste management plan (SMARTWaste). 2. Regular checks on carrier licences and permitry of nominated waste suppliers. 3. Ensure accurate classification of waste. 4.Training of those with responsibility for waste. 5. Periodic audit of waste suppliers. 6. Establish and comply with Materials Management Plan for excavated material. 7. Establish specialist Haz waste supplier. 8. Segregation of wastes on site.	3	5	15

					Potential risk prior to controls				Potential risk post-control		
No.	**Aspect**		**Impact**	**Activity**	**Likelihood (1-6)**	**Impact (1-6)**	**Level of Risk (Likelihood X Impact)**	**Project / contract / site-specific control measures**	**Likelihood (1-6)**	**Impact (1-6)**	**Level of Risk (Likelihood X Impact)**
14	Abstraction and Discharge Management	**Non-permitted or uncontrolled abstraction**	**Degradation of habitat through reduction in viable water levels**	1. Dewatering drainage ditches (lowering of water table below seasonal level). 2. Dewatering of groundwater through excavations.	6	3	18	1. Operate permit to pump system. 2. Regular monitoring of levels and chemistry in set surface water locations and through existing boreholes.	5	3	15
15	Nuisance	**Noise**	**Significant disruption to fauna**	1. Activity with heavy plant in proximity to site boundaries. 2. Vibration piling activity designated for ditch clearance, ditch crossings and the Furzebrook structure. 3. Particular operations in proximity to Ridge Farm. 4. Deliveries and personnel transport to site.	6	3	18	1. Maintain appropriate distance from identified ecological receptors. 2. Utilise soft start techniques for overtly noisy operations.	5	3	15
16	Ecology	**Birds**	**Disruption during overwintering period**	1. Activities with a potential to cause disruption within wide proximity of overwintering habitat.	6	4	24	1. Reduced project activity during over wintering season.	3	4	12
17	Waste Management	**Non-compliance to waste duty of care - excavation of naturally occurring material**	**Possible contamination at point of disposal.**	1. Excavation operations.	4	4	16	1. Maintain site waste management plan (SMARTWaste). 2. Regular checks on carrier licences and permitry of nominated waste suppliers. 3. Ensure accurate classification of waste. 4.Training of those with responsibility for waste. 5. Periodic audit of waste suppliers. 6. Establish and comply with Materials Management Plan for excavated material. 7. Establish specialist Haz waste supplier. 8. Segregation of wastes on site.	3	4	12
18	Nuisance	**Lighting**	**Significant disruption to fauna**	1. Activity undertaken with support of mobile lighting in proximity to site boundaries. 2. Arrangement of site compounds.	5	3	15	1. Set lighting to minimum required and direct exclusively at task. 2. Survey following set up of compound lighting. 2. Establish and advertise project contact email address for use by stakeholders to raise items of concern.	4	3	12
19	Uncontrolled Inundation	**Uncontrolled Inundation**	**Flooding of property**	1. Re commissioning of bower point outlet structure. 2. Any work within proximity of existing tidal embankment (Frome Bank).	3	6	18	1. Regularly inspect outfalls to ensure adequacy. 2. Prohibit access of plant to Frome Bank except when detailed in RAMS with appropriate controls.	2	6	12
20	Sub Terranean Features	**Archaeology**	**Uncontrolled disturbance to areas / features of archaeological potential**	1. Works within areas of identified archaeological potential.	4	6	24	1. Prohibit access to areas of known archaeological potential prior to investigations being complete. 2. Undertake briefings detailing potential finds and necessary response on discovery.	2	6	12
21	Uncontrolled Inundation	**Uncontrolled Inundation**	**Introduction of saline water to freshwater habitats**	1. Recommissioning of bower point outlet structure. 2. Any work within proximity of existing tidal embankment (Frome Bank). 3. Alerts from EA Flood Forecasting Centre.	3	5	15	1. Regularly inspect outfalls to ensure adequacy. 2. Prohibit access of plant to Frome Bank except when detailed in RAMS with appropriate controls.	2	5	10
22	Sub Terranean Features	**Archaeology**	**Incorrect handling of unexpected archaeological finds**	1. Excavation works across the site.	3	5	15	1. Prohibit access to areas of known archaeological potential prior to investigations being complete. 2. Undertake briefings detailing potential finds and necessary response on discovery.	2	5	10
23	Waste Management	**Non-compliance to waste duty of care - excavation of naturally occurring material**	**Loss of resource with potential for future use (top soil or inclusion in recycled aggregates)**	1. Excavation operations	6	2	12	1. Track excavated materials. 2. Ensure accurate classification of excavated materials. 3.Training of those with responsibility for excavated materials. 4. Establish and comply with Materials Management Plan for excavated material. 5. Segregation of excavated material on site.	5	2	10
24	Consumption	**Unnecessary waste of site materials**	**Additional use of resources**	1. Poor storage of materials. 2. Overordering. 3. Errors in construction method. 4. Demobilisation.	6	2	12	1. Training on suitable storage of materials. 2. Monitor through site inspection.	5	2	10
25	Consumption	**Unnecessary energy consumption or ghg emission**	**Unavoidable additional ghg gas emissions**	1. Handling of plant. 2. Operations of site office and compound. 3. Inappropriate selection of plant. 4. Over design of temporary works. 5. Demobilisation.	6	2	12	1. Specification of site set up. 2. Driver training to reduce idling. 3. Review options for low energy or low emission plant. 4. Review options for low ghg emission design. 5. Baseline carbon footprint of design, record actual carbon consumption and publish monthly report. 6. Flights in support of the porject will require client derogation.	5	2	10
26	Nuisance	**Lighting**	**Excessive disturbance to neighbouring stakeholders**	1. Activity undertaken with support of mobile lighting in proximity to site boundaries. 2. Arrangement of site compounds.	4	3	12	1. Set lighting to minimum required and direct exclusively at task. 2. Survey following set up of compound lighting. 2. Establish and advertise project contact phone number for use by stakeholders to raise items of concern.	3	3	9
27	Abstraction and Discharge Management	**Non-permitted or uncontrolled abstraction**	**Drawing other sources of groundwater into habitats not suited (saline or base waters)**	1. Dewatering drainage ditches (lowering of water table below seasonal level). 2. Dewatering of groundwater through excavations.	3	3	9	1. Operate permit to pump system. 2. Regular monitoring of levels and chemistry in set surface water locations and through existing boreholes.	2	3	6
28	Consumption	**Use of materials without suitable responsible sourcing certification**	**Unquantifiable footprint of materials used on site**	1. Procurement of materials.	4	2	8	1. Hold a workshop to establish procurement principles and train procurement function.	3	2	6
29	Ecology	**General**	**Create conditions for rapid spread of predatory species**	1. Alteration of water levels or de-vegetation.	2	4	8	1. Undertake predatory control programmes.	1	4	4
30	Sub Terranean Features	**Contaminated Land**	**Mobilisation of contamination into control waters, ordinary water courses or habitats.**	1. Excavation works. 2. Management of drainage.	2	4	8	1. Undertake site investigation. 2. Follow remediation strategy produced post site investigation. 3. Undertake briefings on signs of contamination and necessary response.	1	4	4

Appendix 4 – Site Drainage Plan



DO NOT SCALE

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

N/A

MAINTENANCE/CLEANING

N/A

DECOMMISSIONING/DEMOLITION

N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. ALL LEVELS IN METRES ABOVE ORDNANCE DATUM NEWLYN.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERS DRAWINGS AND SPECIFICATIONS.
4. THE POSITION OF ANY EXISITNG PUBLIC OR PRIVATE SERVICES, PLANT OR APARATUS SHOWN ON THIS DRAWING IS BELIEVED TO BE CORRECT, BUT NO WARRANTY TO THIS IS EXPRESSED OR IMPLIED. OTHER SUCH PLANT OR APPARATUS MAY ALSO BE PRESENT BUT NOT SHOWN. THE CONTRACTOR IS TO UNDERTAKE THEIR OWN INVESTIGATIONS AND IDENTIFY AN APPROPRIATE SAFE SYSTEM OF WORK.

Rev.	Date	Description	By	Chk'd	App'd
P01	19/08/20	For Information	CB	CB	CB
P02.01	---		---	---	---

Drawing Status: WORK IN PROGRESS

Suitability: S0

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Client: Environment Agency

Project Title: THE MOORS AT ARNE COASTAL CHANGE

Drawing Title: EXISTING WATERCOURSES

Scale	Drawn	Checked	Reviewed	Authorised
1:5000	---	---	---	---
Original Size	Date	Date	Date	Date
A1	---	---	---	---

Drawing Number: ENVIMSW002130-ATK-LH-3AW-DR-C-000003

Revision: P02.01

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Millimetres 0 10 100

Appendix 5 – Biodiversity Protection Zones

- Existing Habitat Protection Zones
- Donor Habitat Protection Zones
- Cladium Fen Habitat Protection Zone

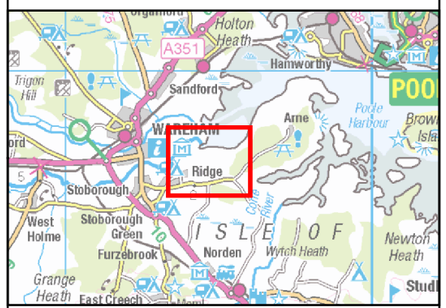
CDF-SW-DCS Appraisal The Moors at Arne Coastal Change Project

Existing Habitat Protection Plan

N

- Site Boundary
- Proposed Embankments
- Proposed Furzebrook Sream Alignment
- Proposed Toe Ditch
- Existing Ditches
- Existing Habitat Protection Area
- Existing Habitat Protection Buffer 3m

* 53 = Field Number



Data sources: Ordnance Survey

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Scale (at A3): 1:8,000

Status:	Drawn:	Checked:	Authorised:
S2	SR 02/12/2022	KT 02/12/2022	LS 02/12/2022

Reference: **ENVIMSW002130-ATK-XX-3XX-DR-EN-000178**

Version: **P01**

Environment Agency

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Project: P:\INBLC\DAC Communications\GIS\074_5193244_CDF_ArneMoors_UK\400-Technical Information\403 Working Drawings and 3D Models\W001_IncomingData_SR\002_WIP\ENVIMSW002130-ATK-XX-3XX-DR-EN-0000178_ExistingHabProtectionplan.mxd

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CDF-SW-DCS Appraisal
The Moors at Arne Coastal Change Project

Botany Method Statement
Donor Habitat Translocation

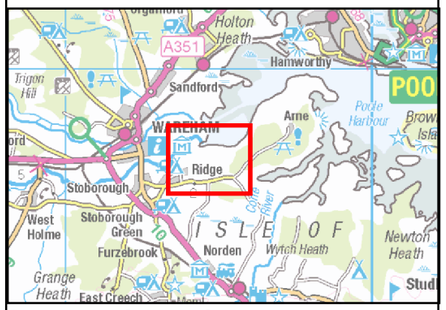
N

Site Boundary
Proposed Embankments
Proposed Toe Ditch
Existing Ditches

Donor Habitat Translocation

Donor areas of M23 Juncion and M24/M25 Molinion mire to be utilised for translocation

* 53 = Field Number
**D32 = Ditch number



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Status:	Drawn:	Checked:	Authorised:
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Reference: **ENVIMSW002130-ATK-XX-3XX-DR-EN-0000176**

Version: **P01**

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Project: P:\INBLC\DAC Communications\GIS\074_5193244_CDF_ArneMoors_UK\400-Technical Information\403 Working Drawings and 3D Models\W001_IncomingData_SR\002_WIP\ENVIMSW002130-ATK-XX-3XX-DR-EN-0000176_DonorHabitatLocationPlan.mxd

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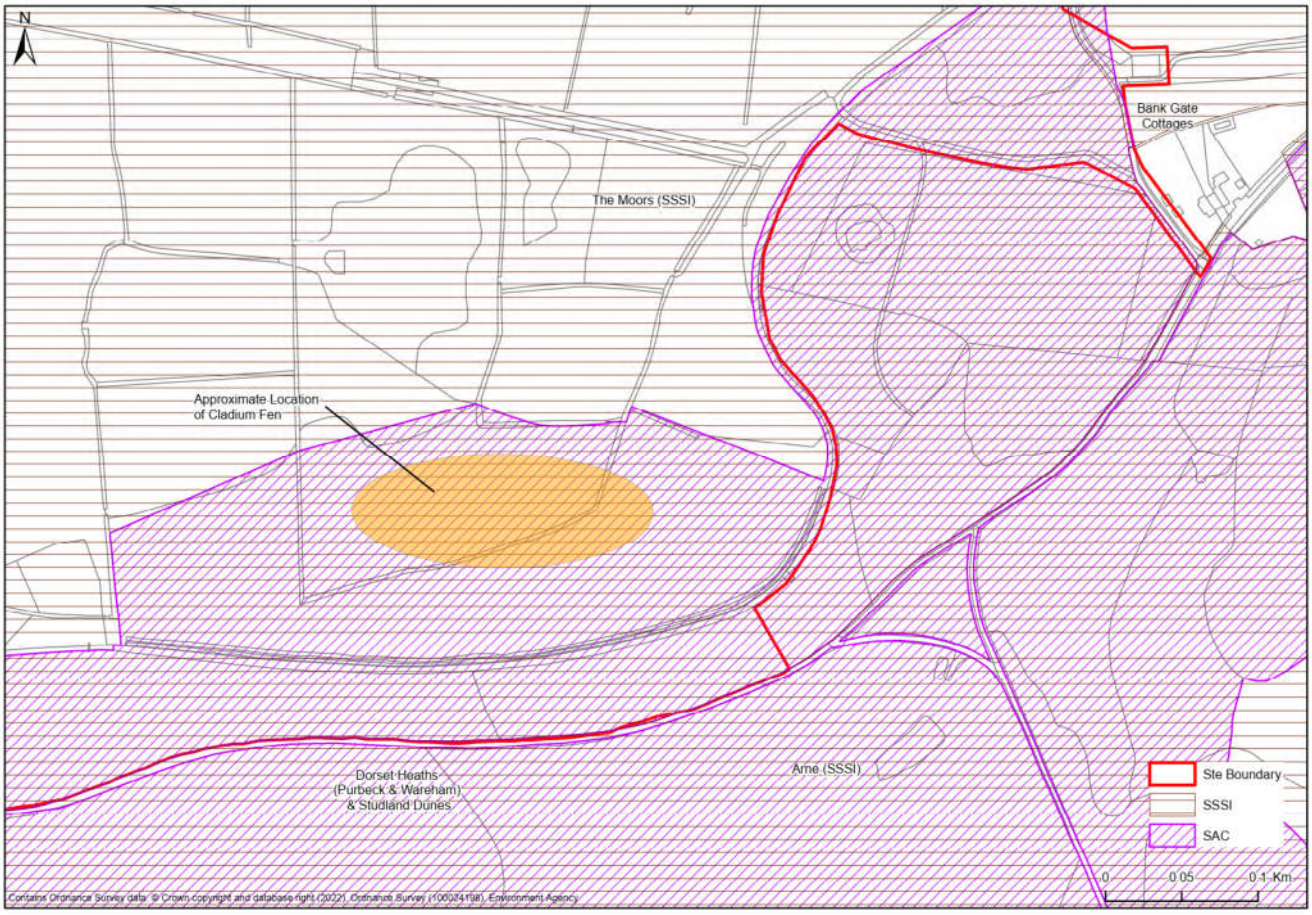
Cladium Fen Habitat - Moors at Arne



Appendix 6 – Ecology Programme

Item No.	Intended Date	Aspect	Action	By Who - Ecology Consultancy, Specialist, Contractor, Volunteer	Driver
2023					
1	Apr-23	Documentation	**Produce all PMW**	Ecology Consultancy	To enable non-licensable works to progress.
2	Apr-23	Water Vole	**Mink Trapping**	Specialist (Pest Control)	The control programme will run between February and August inclusive throughout the construction period (to be completed in Autumn 2025) and for an additional ten years until August 2035.
3	Apr -Aug 23	Birds	**Nesting Bird Surveys Year 1**	Ecology Consultancy	Establish location of active nests and relevant exclusion zones.
4	Apr-23	Water Vole	**Wate Vole Survey 1 Year 1**	Ecology Consultancy	A survey is required by the water vole licence. To enable translocation, should it be necessary, during haul road or water level management. To establish if water vole impacted by the haul road could be translocated.
5	Apr-23	Water Vole	**Early Water Vole Displacement**	Ecology Consultancy	To clear locations of water vole for the three culverts and areas where presence in fields has been noted.
6	Apr - Sep 23	Water Vole	**Fortnightly Water Vole Monitoring Year 1**	Ecology Consultancy	Maintain understanding of condition of retained water vole populations.
7	Apr-23	Badger	**Badger Survey**	Ecology Consultancy	Will advise if NPS licence is needed.
8	May-23	Bat	**Bat Survey**	Ecology Consultancy	Will advise if NPS licence is needed for PPT 6. Will advise is NPS licence is required for any other roost.
9	May-23	Otter	**Otter Survey**	Ecology Consultancy	Pre-commencement otter surveys of all watercourses within the project area will be required to inform any mitigation requirements. Should a licence be required, additional surveys will be carried out to inform the licence application.
10	May - June 23	Botany	**Botany Survey Ditches**	Specialist (FISC 5)	Understand number of individual species for protection and translocations. Advise extent of water draw down. Advise extent of Kew seed collection. Advise extent of translocation.
11	May - June 23	Botany	**Botany Survey Invasives Ditches**	Specialist (FISC 5)	Identification will limit operations until mitigated.
12	May - Sept 23	Botany	**Botany Survey Land**	Specialist (FISC 5)	Advise extent of protective fencing. Advise extent of Kew seed collection. Advise extent of translocation.
13	May - June 23	Invasives	**Botany Survey Invasives Land**	Specialist (FISC 5)	Identification will limit operations until mitigated.
14	May - June 23	Inverts	**Invertebrate Survey**	Ecology Consultancy	Understand number of individual species for protection and translocations. Advise extent of water draw down. Advise extent of translocation 2 (embankment construction) eastern or western freshwater area. Advise extent of translocation 3 (inundation) eastern or western freshwater area.
15	May-23	Turf Translocation	**Fence Habitats for Turf Translocation and Retention**	Specialist (FISC 5)	Identify exact areas for protection and translocation and do not cause any compaction in the mean time.
16	May-23	Botany	**Fence Identified Botany Individuals**	Specialist (FISC 5)	So we know exactly the plants that we will need to protect, collect seed from and translocate and do not damage.
17	May - Sept 23	Botany	**Kew Seed Collection**	Specialist (FISC 5)	Partial mitigation of protected species.
18	May - Sept 23	Sowing Seed	**Embankment Sowing Seed Collection (with brush harvester)**	Specialist (FISC 5)	To seed embankments with seed collected from site.
19	May - Sept 23	Receptor Area	**Construct, seed and fence off Western Freshwater Area Ditches**	Contractor	To enable translocation of water vole from ditches impacted by embankment construction in 2024. To enable translocation of water vole from inundations area in 2025.
20	May - Sept 23	Receptor Area	**Maintain / Enhance Eastern Freshwater Area (stop boards to retain water)**	Contractor	To provide ecology enhancements around the base water area (stop up the canal).
21	May - Sept 23	Receptor Area	**Realign the Furzebrook**	Contractor	To water the freshwater receptor area and provide a naturalised channel.
22	May - Sept 23	Botany	**Early Botany Translocation 1 (including vipers grass)**	Specialist (FISC 5)	Translocate any species out of construction footprint or inundation area to eastern freshwater area.
23	Sep-23	Water Vole	**Water Vole Translocation 1**	Ecology Consultancy	Should it be necessary, during haul road or water level management to eastern freshwater area.
24	Sep-23	Water Vole	**Water Vole survey 2 Year 1**	Ecology Consultancy	To enable translocation ahead of embankment construction of affected ditches.

Item No.	Intended Date	Aspect	Action	By Who - Ecology Consultancy, Specialist, Contractor, Volunteer	Driver
2023 / 2024					
25	Aug 23 - Mar 24	Birds	**Winter Vegetation Clearance Year 1**	Contractor	To dissuade breeding birds in the following year.
26	Nov 23 - Mar 24	Birds	**Overwintering Birds Monitoring Year 1**	Volunteer	To observe impacts of construction on numbers of birds and suggest on mitigation if required.
27	Apr -Aug 24	Birds	**Nesting Bird Surveys Year 2**	Ecology Consultancy	Establish location of active nests and relevant exclusion zones.
2024					
28	Mar-24	Water Vole	**Western Freshwater Area Maturity**	Ecology Consultancy	Prior to translocation of any water vole.
29	Mar - May 24	Water Vole	**Water Vole Translocation 2**	Ecology Consultancy	Translocation from ditches impacted by embankment construction to western freshwater area.
30	Apr-24	Water Vole	**Water Vole Survey 1 Year 2**	Ecology Consultancy	To enable translocation ahead of embankment construction of affected ditches.
31	Apr-24	Turf Translocation	**M24 Early Translocation**	Contractor	Translocate 0.26ha from Field 7 to southwest of compound field.
32	Apr-24	Turf Translocation	**Early M23 / M25 Transition Translocation**	Contractor	approx. 1.5ha to either from field 39 to field 16 or fields 10 and 11.
33	Apr - Sep 24	Water Vole	**Fortnightly Water Vole Monitoring Year 2**	Ecology Consultancy	Maintain understanding of condition of retained water vole populations.
34	Apr - May 24	Inverts	**Stenus Kiesenwetteri Rove Beetles**	Specialist (inverts)	Small section of dry ditch in field 43. Noted on 2020 invert survey. Move them outside the eastern embankments to a new scrape in the same field.
35	Apr - Sep 24	Topsoil	**Strip and store topsoil from borrow pits**	Contractor	For placing as top soil on seaward side of new embankments.
36	Apr - Sep 24	Topsoil	**Strip and store topsoil from northern lagoon**	Contractor	For placing as top soil on of new lagoon embankments.
37	May - Sep 24	Botany	**Main Botany Translocation**	Specialist (FISC 5)	Translocate any species and supporting material and sediment out of construction footprint of inundation area to western freshwater area.
38	Sept - Oct 24	Sowing Seed	**Seed embankments with seed collected from onsite**	Specialist (FISC 5)	Last action in mitigation chain.
39	Sep-24	Water Vole	**Water Vole Survey 2 Year 2**	Ecology Consultancy	To enable translocation ahead of breach.
40	Oct-24	Turf Translocation	**Embankment toe 10m strip M24 translocation**	Contractor	Receptor area 1.79ha. Translocation from F21, F22, F23.
41	45566	Turf Translocation	**South Section of Eastern Embankment toe 10m strip M25 translocation**	Contractor	Receptor Area 0.48ha. Translocation from F33.

Item No.	Intended Date	Aspect	Action	By Who - Ecology Consultancy, Specialist, Contractor, Volunteer	Driver
2024 / 2025					
42	Aug 24 - Mar 25	Birds	**Winter Vegetation Clearance Year 2**	Contractor	To dissuade breeding birds in the following year.
43	Nov 24 - Mar 25	Birds	**Overwintering Birds Monitoring Year 2**	Volunteer	To observe impacts of construction on numbers of birds and suggest on mitigation if required.
44	Apr -Aug 25	Birds	**Nesting Bird Surveys Year 3**	Ecology Consultancy	Establish location of active nests and relevant exclusion zones.
2025					
45	Apr-25	Water Vole	**Water Vole survey 1 Year 3**	Ecology Consultancy	To enable translocation ahead of breach.
46	Apr - Sep 25	Water Vole	**Fortnightly Water Vole Monitoring Year 3**	Ecology Consultancy	Maintain understanding of condition of retained water vole populations.
47	Mar - May 25	Water Vole	**Water Vole Translocation 3**	Ecology Consultancy	Translocation from inundations area to western freshwater area ahead of beach.
48	Apr-25	Turf Translocation	**M23 Main Translocation**	Contractor	Receptor area 1.5ha. Translocate from F32 to F12.
49	Apr-25	Turf Translocation	**M24 Main Translocation**	Contractor	Translocate from F21 (2.31ha), (F22 (3.26ha), F31 (1.34ha) to Western Freshwater Area (4.78ha).
50	Apr-25	Turf Translocation	**M23/25 Final Translocation**	Contractor	Translocate from F39, F40, F43 to north of ridge farm land.
51	May - Jul 25	Lizards	**Undertake enhancements to Roman Hill for Sand Lizards**	Contractor	Only mitigation action for Sand Lizards, required after construction of eastern embankment and before breach.
52	May - Aug 25	Lizards	**Capture and Translocate sand lizards to Roman Hill**	Ecology Consultancy	Prior to breach.
53	May - Sept 25	Receptor Area	**Construct / Enhance Sunnyside Freshwater Area**	Contractor	Enhance to restore M24 and M23 by add scrapes and ditches.
55	Sep-25	Turf Translocation	**M23 Final Translocation**	Contractor	Translocate from F27, F23, F39, F40, 43 to compound field after the compound is removed, ahead of breach.
56	Sep-25	Turf Translocation	**M24 Final Translocation**	Contractor	Translocate from F21, F22, F31 to compound field after the compound is removed, ahead of breach (0.65ha).
57	Oct-25	Turf Translocation	**M25 Main & Final Translocation**	Contractor	Translocate from F33 to compound field after the compound is removed, ahead of breach (1.5ha).
58	Oct-25	Receptor Area	**Plant Trees in Compound Field**	Contractor	Adhere to HCMMP.

Appendix 7 – Ecology Survey and Mitigation Calendar

Environmental Guidance Note

Ecological Surveys - calendar

	Activity	J	F	M	A	M	J	J	A	S	O	N	D
Habitats / Vegetation	Survey	Mosses and lichens. No other detailed plant surveys. Phase 1 potential for basic survey.				Detailed habitat assessment surveys. Phase 1. NVC				Mosses and lichens. No other detailed plant surveys. Phase 1 potential for basic survey.			
	Mitigation	Planting and translocating				No mitigation for majority of species				Planting and translocating			
Birds	Survey	Winter birds		Breeding birds / migratory species		Breeding Birds		Breeding birds / migratory species		Winter Birds			
	Mitigation	Clearance work. Stop if any nesting birds found and contact ecologist				Ideal bird nesting season. No clearance or works unless under Ecologist supervision. Licence required.				Clearance work. Stop if any nesting birds found and contact ecologist			
Badgers	Survey	Surveys can be undertaken - ideal time spring and early autumn											
	Mitigation	No works on active setts				Works on active setts under licence				No works on active setts			
Bats	Survey	Inspection of hibernacula				Surveys possible if bats are active - weather dependant				Inspection of hibernacula			
	Mitigation	Works on maternity roosts under licence				Works on hibernacula under licence provided they are clear				Works on maternity roosts under licence			
Dormice	Survey	Nut searches (sub-optimal). Nest searches (optimal)			Nest searches (sub-optimal)			Cage traps/hair tube surveys. Nut searches from September.			Nut searches (sub-optimal). Nest searches (optimal)		
	Mitigation	No clearance works		Clearance (sub-optimal)		No clearance works		Clearance works		No clearance works			
Otters	Survey	Surveys permitted, restrictions may apply											
	Mitigation	Mitigation permitted, restrictions may apply where breeding / at a holt											
Water voles	Survey	No surveys				Surveys can be undertaken - restrictions are in place dependant on habitat type				No surveys			
	Mitigation	No works in Water vole habitat		Mitigation possible		No works in Water vole habitat		Mitigation possible		No works in Water vole habitat			
Reptiles	Survey	No surveys - Hibernation				Activity surveys can be conducted - restrictions may apply depending on habitat type				No surveys - Hibernation			
	Mitigation	Scrub clearance only				Capture and translocation can be undertaken weather dependant. Scrub clearance under ecologist supervision				Scrub clearance only			
Great crested newts	Survey	No surveys - Hibernation		Pond surveys and terrestrial habitat surveys		Larvae surveys and terrestrial habitat surveys		Terrestrial habitat surveys only		No surveys - Hibernation			
	Mitigation	Pond management only			Trapping and translocation - Aquatic			Trapping and translocation - Terrestrial			Scrub clearance only		
Other amphibians	Survey	No surveys - Hibernation			Surveys of breeding ponds (tadpoles from May). Adult terrestrial search			Terrestrial habitat surveys only			No surveys - Hibernation		
	Mitigation	Pond management only		Trapping of adults - Aquatic		Trapping and translocation of adults - Aquatic and terrestrial, and of tadpoles - Aquatic		Trapping and translocation - Terrestrial		Pond management only			
White-clawed crayfish	Survey	No surveys		Surveys possible		No surveys - breeding		Trapping surveys can be undertaken		No surveys			
	Mitigation	No works in WCC habitat		Exclusion under licence		No works in WCC habitat		Exclusion and translocation optimal		No works in WCC habitat			
Fish	Survey	Surveys possible all year round with some restrictions on migration - liaise with ecologist											
	Mitigation	Mitigation permitted, restrictions may apply when breeding dependant on species - liaise with ecologist											

Key:	Optimal survey	Optimal mitigation
	Restricted or NO surveys	Restricted or NO mitigation