

Plan

Environmental Management Plan (EMP) – PEP Part 3

CONSTRUCTION PHASE

Environmental Management

Morgan Sindall business unit / region:	Wales & South West		
Project name:	Swansea Bay Technology Centre		
Project no.:	TM 26X004		
Customer:	Neath Port Talbot CBC		
Location:	Central Avenue, Port Talbot, SA12 7AX		
Revision no.:	(0)	Date:	30 March 2020

For full revision schedule see section one Project Execution Plan (PEP) (Part 1).

Environment Management Plan (EMP) - Overview

This document defines how specific environmental management elements of the contract are being delivered.

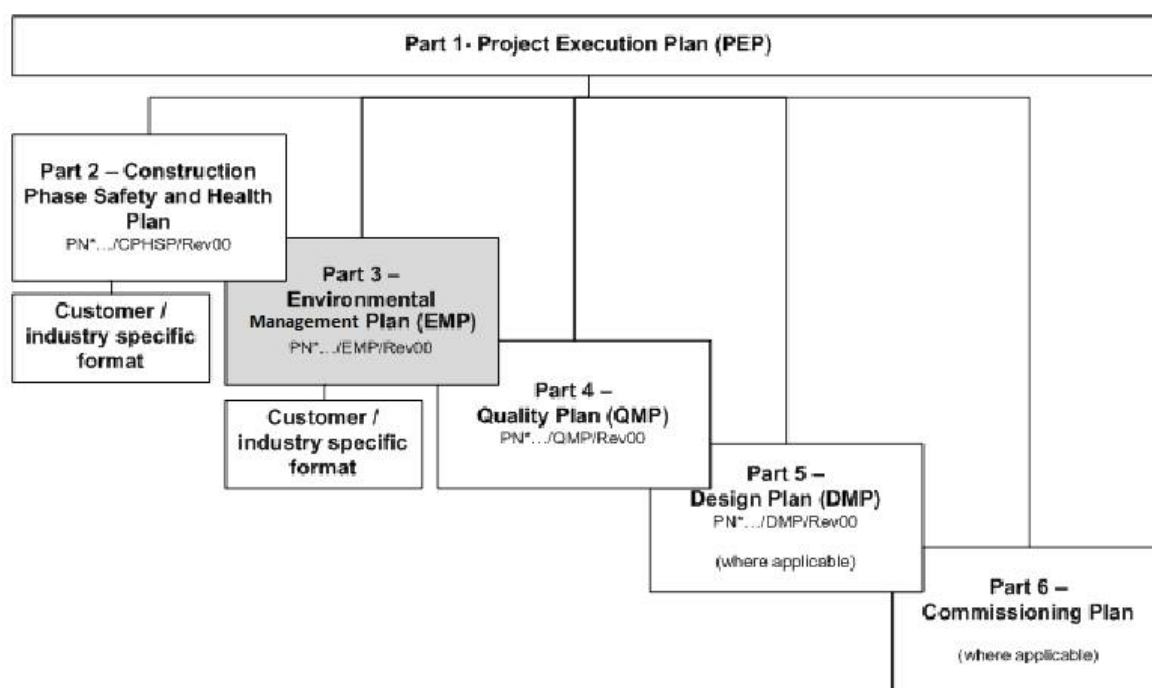
Each box represents the sections of the whole PEP. Only in exceptional circumstances will a PEP consist of less than four documents.

* PN = Contract or project no.

(Update revision nos. as required)

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1. Introduction

1.1. Pre-amble

The following information is contained within PEP Part 1

- Pre-construction information
- Project directory
- Contract organisation and staff responsibilities
- Communications
- Risk management
- Knowledge transfer – good practice / lessons learnt.

1.2. Contract environmental plan

This EMP describes how environmental aspects of the contract are to be managed. It is a live document that is to be reviewed at regular intervals by the project manager to reflect progress of the works and changes in environmental requirements. At least three monthly.

It conforms to Morgan Sindall's SHE and responsibly business policies which will be clearly displayed in site offices.

It identifies those aspects of site activities with potentially significant effects on the environment and the controls in place to mitigate those effects. Subcontract works supervised by Morgan Sindall's project team are also subject to this EMP.

Morgan Sindall is certified to ISO 14001: 2015 & 45001: 2018.

1.3. Authorisation

This EMP is authorised when the preparation, approval, authorisation and distribution section on the front cover of the PEP – Part 1 is completed.

2. Environmental Management

Morgan Sindall has a series of standards and guidance that supplement this EMP. Please visit the IMS, available through Digest.

2.1. Environmental aspects and effects

The project manager in line with the contract environmental advisor is to ensure that the register of environmental effects (SE FRM 1), specific to the project is completed before works begin and updated as circumstances occur, such as a change in scope, or a change in Morgan Sindall customer or legislative requirements. Note any legislative requirements in the register. The input of designers at pre-handover meetings will also be considered in developing the register.

It may be necessary to complete pre-start environmental surveys and record the details (SE FRM10).

Legislative requirements should be assessed with reference to specific site conditions and requirements. The project environmental advisor is to advise on specific legal provisions. Additional checks can be made against the technical index, business environmental updates or in consultation with Head of Environment. A record of the assessment shall be maintained (SE FRM 6).

2.2. Objectives and targets

Morgan Sindall will develop contract specific objectives and targets that take into account:

- Morgan Sindall's Responsible Business and SHE functional strategies
- Customer Key Performance Indicators (KPIs) and other requirements.

(Company objectives and targets are referenced in Section 5).

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The contract manager is to ensure that monitoring against the objectives and targets takes place and that the contract's senior management team in consultation with the contract environmental adviser reviews them periodically, generally not less than annually.

2.3. Roles and responsibilities

Good environmental practice will be achieved through the appointment of an environmental advisor for the contract. Specific environmental roles and responsibilities are described in other parts of this plan as well as in job descriptions.

2.4. Training

Training is to be given in accordance with the company's personnel development and training processes, operated at corporate level by HR. Further training will be given as identified in the contract specific training plan. Requests for training personnel on the contract will be coordinated by the project management team. Typically,

- All project operatives and supervisory staff will receive a contract induction that covers environmental issues and their roles and responsibilities including environment
- More detailed training, such as that required for waste management plans, will be given to staff as identified in the contract training plan
- Training on specific environmental topics will be given by suitably qualified personnel. This may be the contract environmental adviser.

Site supervisors and engineers will give tool box talks to operatives on key issues such as spill response and waste management, drawing upon the full site of Toolbox Talk's (TBT's) (SE GUID11) as relevant to the project condition.

2.5. Communication

Environmental information will be delivered to contract personnel in the following way:

- Including environmental issues as an agenda item on project progress meetings
- Inductions, topic-specific training, tool box talks
- Posting information on notice boards
- Monthly cascade briefings
- Morgan Sindall magazine
- Morgan Sindall intranet.

Additionally, within the contract, information will be communicated through:

- SHEQ meetings
- Supply chain meetings
- Other meetings e.g., design team meeting, progress meetings

Where contact is made with any regulatory authorities, the SHEQ department will be informed and records will be entered onto SHEQ Tracker.

In line with the Morgan Sindall responsible business requirements, all contracts are to be registered with the Considerate Constructors Scheme (CCS), subject to permitted exception.

Complaints and compliments will also be recorded on SHEQ Tracker and resolved particularly when from regulators, the public and customers.

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2.6. Environmental incident and emergency controls

Control measures to prevent and control environmental incidents and emergencies on sites are referenced in the register of environmental effects, and detailed in site emergency plans.

Generally, pollution prevention will be achieved by adequate training, by the provision of containment measures such as drip trays, absorbent mats or materials, drain covers for preventing impact on sewers or watercourses and by complying with safe working methods.

Adequate and appropriately placed spill kits will be provided for rapid incident response when and where prevention fails. Incidents and emergencies will be reported in accordance with Morgan Sindall's and the customer's procedures.

Regular drills (either practical or desk top) shall be conducted and recorded to maintain competency levels of site personnel and adequacy of response plans.

An environmental emergency drill and record of same will be completed, within the first three months of a project and repeated at least annually thereafter.

2.7. Auditing

Audits will be carried out to check compliance with requirements and to ensure good site practices are in place. They may include

- Customer
- External – third party assessors to Morgan Sindall, British Standards Institute (BSi)
- Internal

Internal audits may be conducted by the contract environmental adviser or by competent personnel from other Morgan Sindall business units / regions. In line with any audit programme and plans, system compliance audits will be conducted or as directed by the Head of Internal Audit, the Head of Environment, and the SHEQ Assurance and Development Manager. The contract manager is responsible for ensuring that any non-conformances arising are closed out as soon as is practicable within the time frame specified. Close out will confirmed by the auditor.

2.8. Monitoring

The contract environmental adviser will be responsible for environmental inspections at site level to record on the company's Intranet database SHEQ Tracker. Inspections may be carried out by the contract health and safety advisor.

Environmental performance at site level will be regularly monitored during weekly inspections carried out by delegated site personnel.

All monitoring equipment should undergo periodic maintenance checks to ensure efficient and accurate monitoring. This process should be included in the Planned Preventative Maintenance Scheme.

2.9. Records

Environmental records will include

- Inspections
- Site visit records (by others)
- Internal and external audit reports
- Waste management records and plans
- Sub-project waste management plans
- Minutes of progress meetings

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- Correspondence including complaints and regulatory units
- Incident and investigation reports
- Permits, licences and consents
- Environmental data e.g. recycled aggregates, sustainable timber, etc.

2.10. Carbon accounting

Requirements of the legal Carbon Reduction Commitment (CRC) necessitate the recording of energy consumption specifically gas and electricity consumption. Nonetheless, as a minimum the following fuel uses will be recorded (where appropriate to do so and where information is available and/or not recorded elsewhere):

- Electricity (direct purchase) kWh
- Electricity (customer supply) kWh
- Diesel consumption (generators) litre
- Diesel consumption (all other uses) litre
- Gas consumption kWh
- Other power sources if needed e.g. renewable.

In line with general requirements of Morgan Sindall, measures such as delivery miles, commuting mileage, car-share mileage, etc. will also be recorded.

2.11. Water management

The quantity of potable water supplied to the project shall be monitored and recorded (in SHEQ Tracker). Where practicable and appropriate, water conservation devices and practices shall be put in place. Any water pumped from excavations will be passed through a filtration unit, e.g. Siltbuster, before discharge into the Communication Passage.

3. Operational and project specific controls

The following sections describe minimum controls. Site specific controls to be implemented by the site team will be detailed in the register of environmental effects and supporting method statements and risk assessments.

3.1. Site set up

Selection and establishment of site compounds shall be undertaken mindful of site sensitivity, security, neighbours, storage and handling of chemicals (spill prevention), materials storage needs, drainage, vehicle access including employee commuting needs and nuisance potential, planning constraints, etc.

Site compounds, storage and construction areas will be fenced or have barriers to delimit areas of operation and separate them from other occupied work sites. Where appropriate, sub-project site plans will show site establishment and the locations of environmental facilities such as fuel tanks, spill kits and waste bins.

3.2. Housekeeping - litter

Adequate waste bins will be placed in work areas, storage areas and temporary site compounds for the depositing of work related waste and mixed welfare wastes.

Regular inspections will be carried out to monitor housekeeping and initiate action to clear litter and debris.

Personnel are encouraged to avoid littering and to clear litter where it occurs within site boundaries.

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3.3. Traffic management plan

A traffic management plan shall be developed for the project detailing deliveries, including abnormal loads, regular commuting, public transport options, parking, restrictions detailed in any local planning agreement or Section 61 consent, out of hours working and with the view to minimising local congestion and impact on local roads (CPHSP Appendix F).

3.4. Mud and dust control

Wind-blown dust, generated from dry, exposed ground or soil and wastes stockpiles, will be prevented generally with the use of water sprays. Surfaces and stockpiles will be damped down to minimise dust as necessary.

In wetter conditions, deposits of mud on roads, pavements and areas of hard standing may need to be cleared. Installation of wheel washing devices may be required, preferably with water recycling equipment. Small occurrences will be cleared manually with a broom and shovel; elsewhere road sweepers will be called upon. The need to control mud and dust is covered in site inductions and in relevant task risk assessments, method statements and briefings.

The nearest occupied residential dwellings are c200m north west of the site.

3.5. Noise control

Site works located in residential and other locations can create noise nuisance to neighbours and the public, as well as posing an occupational risk. The presence of sensitive receptors will be identified and recorded on the register of environmental effects and the necessary control measures implemented.

In some instances, ambient baseline noise surveys will be carried out for comparison with noise levels during the works. If increases in noise are considered excessive, control measures will be adopted. Where possible noisy operations must be programmed for times when the least perceived nuisance will occur.

Contact will be made with neighbours likely to be affected by construction works informing them about the works and what mitigation measures have been implemented to reduce nuisance and disruption as much as practically feasible. Negotiation with local authorities may be required to establish and manage Control of Pollution Act Notices (S60 / S61).

With respect to the occupants of the adjacent Baglan Bay Innovation Centre, the nearest noise affected façade, the key issues with the piling operation will be:

- Noise
- Vibration

The noise generated by the pile driving is assessed as 78 dB at its peak against the façade of the existing building, when the centre of the rig is at circa 20-m away on the eastern most line of foundations; the calculations below was made using the methods detailed in BS5228-1.

The calculations are as follows:

Assuming 8-hours working time (i.e. 80% on-time during a 10hour working day) and no screening of the rig, the results of the BS 5228 LAeq10h calculations are:

- 78 dB @ 20m
- 74 dB @ 30m
- 72 dB @ 40m

We have assumed a 30dB estimated reduction through closed windows for approximate noise level inside the office; 45-50dB is considered the norm for quiet offices, open plan arrangements range from 60-65db.

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The noise data for a typical rig has been taken from an independent acoustic report

As the rig moves to the west there will be a gradual reduction in the noise levels on the existing building's façade

Following the commissioning of an intrusive site investigation and from industry engagement regarding other buildings in the immediate locality a pre-cast concrete driven pile solution was selected

Using a 250 x 250mm driven pre-cast concrete pile solution avoids the need to deal with contaminated arisings from an augured/replacement system and eliminates the requirement for handling and subsequent removing this material to an approved landfill site

The nearest structure is also piled, so our operations will not affect the foundations

A condition survey of the adjacent building prior to commencing construction operations will be undertaken; 'Tell-tales' may be fitted after reviewing the survey's findings

We have reviewed BS5228-2:2009 in respect of likely impact of vibrations on the occupants of Baglan Bay Innovation Centre and the fabric

A vibration monitor will be installed inside the building to provide a definitive set of readings

There will be some localised vibration during pile driving

3.6. Plant emission control

Where feasible, electric plant will be used in preference to diesel or petrol-powered units.

No plant will be allowed to idle when not in use. Plant operators are encouraged to switch off as soon as practically sensible.

Evidence of poor plant maintenance, such as black exhaust fumes, will be monitored by supervisory staff on a continuing basis. Plant with unacceptable performance is prohibited from work until rectified or replaced. Plant will be routinely inspected in line with prescribed requirements including emissions as well as leaks and drops.

3.7. Water management plan

Where there is risk of impact on controlled waters, a water management plan shall be developed setting out project specific controls for the management of any controlled or other waters during construction phase.

The plan shall include detail of regular inspection, sampling and contingency in the event of equipment failure, fire or any other emergency.

Any water pumped from excavations will be passed through a filtration unit, e.g. 'Siltbuster', before discharge into the Communication Passage, water will be inspected before pumping for any oily sheen or odours, in this case sampling will occur before pumping commences.

3.8. Site drainage

Drainage systems can act as rapid pathways for the spread of pollutants. Small quantities of pollutants such as oil can spread over large areas and cause significant harm.

Both storm and foul drainage systems should be identified and shown on plans. It is good practice to colour code drain covers; surface water – blue, foul water - red and combined – red.

Interceptors and cut-off valves, and other pollution control equipment must be maintained, inspected and clearly identified.

3.9. Pumping from excavations

Greater or lesser quantities of surface and ground waters that occasionally require to be cleared from excavations and exposed surfaces will be discharged to sewer, to land or to controlled waters either

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directly or indirectly via minor drainage systems. The need for approvals or consents will be determined on a case-by-case basis. Priorities will be to prevent

- i. Ingress of surface waters
- ii. As far as is practical, disturbance to clean waters needing to be cleared from excavations and exposed surfaces.

Generally, discharges to sewers will require the consent of the relevant statutory undertaker. If necessary, silty water will be passed through a settlement tank of appropriate capacity before discharge to the receiving medium.

Water known to be contaminated with hydrocarbons or other hazardous substances will be handled in accordance with specific risk assessments and method statements (RAMS).

Pumping operations and working in waters lead to the largest number of environmental incidents for the construction industry. Control measures must include detailed requirements being set out in risk assessments and method statements as well as use of the “permit to pump” system.

3.10. Storage of fuels, oils and COSHH materials

Fuels, oils, paints, solvents and other Control of Substances Hazardous to Health (COSHH) materials will be kept in lockable containers, with controlled access to keys, and in line with legal requirements e.g. oil storage regulations, 110% bunding, use of drip trays, etc.

Fuelling operations will be planned to minimise the risk of spillage and environmental risk. This may be the subject of a specific plan for high-risk operations and sensitive areas.

3.11. Resource and energy management

In line with Morgan Sindall strategy, the contract will plan and carry out operations with due regard to energy (CO₂e emissions), as well as resource efficiency, e.g. efficiency using WRAP or Cl:aire protocols, storage of materials, delivery management, etc.

3.12. Contaminated land

Contaminated land identified prior to or during the contract will be managed in line with Morgan Sindall standards and guidance.

A contaminated land checklist is available for use on the forms section of the IMS (SE FRM 4).

3.13. Waste management

Waste services may be provided by several licensed carriers or brokers, transferring wastes to a variety of receiving sites. The selection of services will depend on location, nature of the wastes and the availability of receiving sites. In all cases, the priority is to avoid disposal to landfill wherever possible. The waste hierarchy ‘Prevention – reduce – reuse – recover – dispose’ must always be implemented (legal requirement).

The validity of waste licences and permits held by carriers and sites of disposal will be checked by reference to the Environment Agency’s / Scottish Environment Protection Agency public register.

Hazardous wastes will be either transported by road to the waste hub or disposed of in accordance with waste regulations and approved contractors.

Where sites produce hazardous waste, they will be registered with the Environment Agency. Without a hazardous waste premises number, waste carriers may refuse to remove the waste.

All skips and bins will be closed or sheeted where required to prevent the escape of wind-blown debris.

Duty of care records will be maintained and filed in archives on completion.

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A site waste management plan will be maintained and recorded. All projects are required to have a SWMP in place irrespective of scale or value. A Morgan Sindall form (SE FRM3) is available to use where other systems such as BRE Smart Waste or WRAP, or customer specific versions are not being used. Details of waste, carriers and disposal sites will be recorded, including evidence of checks made on licences, permits and inspections.

3.14. Wastes from road sweepers

The volumes of sweeper wastes are small and deemed to be inert. Wastes will either be taken to the operator's normal discharge location, for which there is a valid waste management licence or an exemption or discharged at a location designated by site management.

3.15. Ecology and biodiversity

Protection and enhancement of biodiversity and ecology is a legal requirement. Plans should be developed, if not already in place at tender stage, to conduct pre-construction surveys, and during construction phase to continue monitoring for protected and/or invasive species.

Specific ecological and biodiversity risk assessments will be completed as part of normal completion of the Register of Environmental Effects, and where mitigation measures are required; they shall be detailed either below or in site-specific plans.

It is expected that projects of over £1m in value will complete the risk assessment (Register of effects) with specific focus on biodiversity and ecology, record its completion on Tracker and establish mitigation and control plans where required. (Smaller projects should focus on biodiversity and ecology where there is a direct project need.)

Project specific issues

Biodiversity and ecological sensitive areas have been identified in Wildwood Ecology Report No. WWE16124.PEA.2 January 2017

The site itself contains or has the potential to contain – Nesting birds

The potential effects upon the existing biodiversity on this project are –

- Removal of grassland
- Removal of scrub
- Removal of hedgerow

To minimise the effects of this construction project or to mitigate for unavoidable effects upon the local biodiversity the project team will consider all opportunities to improve biodiversity. These may include:

- Improving the immediate habitat through landscaping and planting of native trees and shrubs
- Include bat & bird boxes

Responsibilities

The Project Manager is responsible for the implementation of this Biodiversity Plan. The PM/SM shall communicate all management techniques to relevant subcontractors during site specific inductions.

If protected species are encountered during the project, the sighting should be recorded and forwarded on to the local Biodiversity Records Centre.

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3.16. Subcontractors

Subcontractors and suppliers are required to comply with the EMP in its entirety. Site inductions, toolbox talks, training and task briefings will be given to all site personnel with relevant information from the EMP.

This EMP will be provided to subcontractors, along with the contract specific environmental details, where their works package can have a potential detrimental impact on the environment. Subcontractors will be required to develop their own environmental plans specific to work packages where appropriate and to comply with the content and direction of this and other applicable supporting documentation.

3.17. Incidents and emergencies

Actions in response to environmental incidents and emergencies will be communicated at inductions and task briefings. Spill response posters will be displayed on office and welfare facility notice boards.

Site plans showing the locations of spill kits and waste facilities, in addition to the locations of health and safety facilities, will be available on the site office and welfare cabin notice boards. Plans will include the names of personnel with specific environmental responsibilities, and actions to be taken. Cross reference will be made to contingency planning requirements.

3.18. Incident reporting and investigation

Incidents are to be reported through the management hierarchy as soon as practically possible after they have been identified. Site management will assess the significance of the incident and determine the level of investigation. All incidents must be reported to the SHEQ department and entered onto SHEQ Tracker.

3.19. BREEAM & CCS

The project will be registered with BRE Environmental Assessment Method (BREEAM) with the process completed in a timely manner and responsibility allocated to a project individual and specialised consultant to manage the relevant processes, registrations, filing, document collection, etc. and to facilitate audits and site inspections where required.

The project will, under the terms of the company Associate Membership register with the CCS.

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4. Register of environmental effects

Office / depot / site:		Prepared by:		Date	
Assisted by:					
		Reviewed by:		Date	
NOTES					

In the table below, under Environmental Impacts, assess levels of impact significance for each Development Activity and Aspect, as L, M or H, in accordance with following risk matrix. Mitigation measures are required where significance of impact is assessed as M or H.

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Assessment of Significance

Likelihood of Activity resulting in impact.	Severity of Subsequent Impact				
	Low (1)	Moderate (2)	Moderate (3)	High (4)	High (5)
Negligible (1)	Low (1)	Low (2)	Low (3)	Low (4)	Low (5)
Unlikely (2)	Low (2)	Low (4)	Moderate (6)	Moderate (8)	Moderate (10)
Unlikely (3)	Low (3)	Moderate (6)	Moderate (9)	Moderate (12)	Moderate (15)
Likely (4)	Low (4)	Moderate (8)	Moderate (12)	High (16)	High (20)
Likely (5)	Low (5)	Moderate (10)	Moderate (15)	High (20)	High (25)
Certain (6)	Moderate (6)	Moderate (12)	High (18)	High (24)	High (30)

Definitions:

Activity: generic definition relating to works being completed and medium that may be impacted

Aspect: element of an activity that can interact with the environment

Impact: any change to the environment, whether adverse or beneficial, wholly or partially resulting from an aspect

Likelihood: the chance or probability of an event occurring. Negligible – rare, occurs less than 0.1% of the time/case through to Certain – almost inevitable, 99.9% chance of occurrence

Severity: the impact that an event might have on the environment. Low – minor in inconsequential impact with no or short-term duration through to High - major impact or destruction to the environment with potential long-term consequence.

Significance: the product of likelihood and severity according to the above table.

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Guidance

Likelihood of an Environmental Impact Occurring

Likelihood	Description	L Score
Certain	Occurs repeatedly / event 'only to be expected'	6
Likely	'No surprise' / will occur several times	5
Likely	Could occur sometimes	4
Unlikely	Unlikely, though conceivable	3
Unlikely	So unlikely that probability is close to zero	2
Negligible	Not going to occur	1

Environmental Consequences of an Impact Occurring

Consequence	Description of environmental impact	C Score
High	Major damage on & off site, national reputation damage, prosecution inevitable	5
High	Considerable environmental damage, prosecution and national reputation damage likely	4
Moderate	Moderate impact, contamination or damage recoverable, local reputation damage, prosecution possible	3
Moderate	Slight impact, small scale event contained on site, possible local media interest, prosecution unlikely	2
Low	No measurable environmental consequence, no reputation damage, zero likelihood of prosecution	1

Risk Rating Categories

Risk Rating	Action to be taken
High (16-30)	Work can only continue if control measures reduce the risk rating to an acceptable level
Moderate (6-15)	Introduce control measures to reduce risk as low as reasonably practicable
Low (1-5)	Risk broadly acceptable, but situation needs to be monitored for changes and action to reduce risk

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
Works associated with office operations	Operation of air conditioning and refrigerant units containing ozone depleting substances	Escape of gases and impact associated with ozone layer and climate change.					
Works affecting Water resources	Abstraction of surface or groundwater	Deterioration in water resource quantity and quality	1	1	1		
	Dewatering of surface or groundwater	Deterioration in water resource quantity and quality	1	1	1		
	Impoundment of watercourses	Deterioration in water resource quantity and quality					
	Discharge of effluent	Deterioration in water resource quality	1	1	1		
	Discharge of site drainage	Deterioration in water resource quality	1	1	1		
	Discharge of foul drainage	Deterioration in water resource quality	1	1	1		
	Physical (temp and perm) works to watercourses and Rivers	Deterioration in water resource quality	1	1	1		
	Physical (temp and perm) works to watercourses and Rivers	Change in flow regime					

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
	Physical (temp and perm) works to watercourses and Rivers	Loss of Biodiversity					
	Physical (temp and perm) works to flood defence works	Deterioration in water resource quantity and quality					
	Physical (temp and perm) works to estuaries	Deterioration in water resource quantity and quality					
	Spillages of hazardous substances	Deterioration in water resource quantity and quality	2	2	4	Spill kit, work on hard standing with a bund	
	Use and Storage of Construction Hazardous substances including Oils/ Diesels and Petroleum	Deterioration in water resource quality	2	2	4	Spill kit, work on hard standing with a bund	
	Use and Storage of Process Commissioning Hazardous substances	Deterioration in water resource quality	2	2	4	Spill kit, work on hard standing with a bund	
	Concrete Washout	Deterioration in water resource quality	2	2	4	Discharge into skip	
	Use of potable water	Deterioration in water resource quality	1	1	1		

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
Works affecting Ecological Habitat and Species <i>(Note: completing this risk assessment and including mitigation measures and controls within the project environmental plan (PEP) will address the Planet target on biodiversity.)</i>	Works affecting Ecological Important Habitat	Loss of biodiversity	1	1	1	Biodiversity and ecological controls as detailed in PEP	
	Works removing Ecological Important Habitat	Loss of biodiversity	1	1	1	Biodiversity and ecological controls as detailed in PEP	
	Works affecting ecological protected species	Loss of biodiversity	1	1	1	Biodiversity and ecological controls as detailed in PEP	
	Works removing ecological protected species	Loss of biodiversity	1	1	1	Biodiversity and ecological controls as detailed in PEP	
	Works affecting invasive plants	Land contamination by non-native species	1	1	1	Biodiversity and ecological	
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			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
						<i>controls as detailed in PEP</i>	
	Works removing invasive plants	Land contamination by non-native species	1	1	1	<i>Biodiversity and ecological controls as detailed in PEP</i>	
Works affecting historic (e.g. listed) or archaeological important sites and structures	Direct impact	Loss of historic/archaeological value					
	Near area	Loss of historic/archaeological value Subsidence vibration					
	Adjacent to area	Encroachment					
Working on and disturbance of contaminated land	Physical disturbance	Potential spread of contaminated land and pollution	2	2	4	Waste tested to ensure correct disposal process	
	Disposal	Potential spread of contaminated land and pollution	2	2	4	Waste tested to ensure correct	

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			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
						disposal process	
General construction activities that may lead to Nuisance	Mud on road	Nuisance to local population	2	2	4	All vehicles checked before leaving site, regular road sweeper visits	
	Atmospheric emissions	Nuisance to local population	2	2	4	Best practice, no idling plant	
	Construction dust	Nuisance to local population	2	2	4	Suppression measures employed as necessary	
	Batching dust and silo emissions	Nuisance to local population					
	Process atmospheric emissions	Nuisance to local population					
	Noise emissions	Nuisance to local population	2	2	4	Best practice, no idling plant	

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
	Light emissions	Nuisance to local population	2	2	4	Minimal silent hours lighting, site is away from populated areas	
	Vibration	Nuisance to local population	2	2	4	Best practice, site is away from populated areas	
	Odour emissions	Nuisance to local population	2	2	4	Best practice, site is away from populated areas	
	Road congestion	Nuisance to local population	2	2	4	Minimal impact	
	Other public rights of way	Loss of amenity value Disruption	2	2	4	Minimal impact, signed pedestrian routes in place when necessary	

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			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
	Visual amenity	Loss of amenity value	2	2	4	Best practice, site is away from populated areas	
	Unsociable working hours	Nuisance to local population	2	2	4	Best practice, site is away from populated areas	
Works requiring the consumption of Energy and/or fossil fuels	Energy consumption/carbon management - Construction works	Direct: cost Indirect: atmospheric emissions Resource depletion				Best practice	
	Energy consumption/carbon management - Site accommodation	Direct: cost Indirect: atmospheric emissions Resource depletion				Best practice	
	Energy consumption/carbon management - Transport and logistics	Direct: cost Indirect: atmospheric emissions Resource depletion				Best practice	

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
	Energy consumption/carbon management - Material selection (embodied energy)	Direct: cost Indirect: atmospheric emissions Resource depletion	2	2	4	Working to Best Practice and BREEAM credits	
	Energy consumption / carbon management – generation of on-site power	Direct: cost Indirect: atmospheric emissions Resource depletion					
	Delivery and handling (transfer) of fuels (liquid or gas)	Direct pollution through spills, etc. Waste of resource and cost	2	2	4	Spill kits and trigger controlled hose transfer	
Works leading to the generation of Waste	Material storage and damage	Direct: cost Indirect: reduced sustainability	2	2	4	Best practice and just in time deliveries	
	Creation of litter	Nuisance	2	2	4	Adequate disposal points, regularly emptied	

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Activity	Aspect	Impact	Impact Significance			Control and Mitigation	Residual Impact Significance
			Likelihood	Severity	Resulting Significance		
			1 - Negligible 2-3 - Unlikely 4-5 - Likely 6 - Certain	1-2 - Low 2-3 - Moderate 4-5 - High	1-5 - Low 6-15 - Moderate 16-30 - High		
	Waste disposal (duty of care) Construction waste Sewage M&E decommissioning waste, etc.	Contamination Nuisance Pollution Legal compliance	2	2	4	WRAP & use of specialist contractors	
	Surplus excavation/aggregate disposal	Increased cost Reduced sustainability	2	2	4	Minimised quantity by repositioning building floor level and changing construction of external works	
	Packaging waste	Increased cost of disposal Depletion of resources					
Works in sensitive location or where abnormal operating conditions arise e.g. Emergency response	Abnormal operating conditions e.g. pumping, filtration, water treatment, etc.	Pollution of environment Legal sanction					
	Unplanned event (Incidents e.g. spill, fire, etc.)	Pollution of environment Legal sanction					

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5. Company objectives and targets

Project specific environmental objectives and targets.

Morgan Sindall plc Total Commitments			
Area	Objective	Target and/or measure	Site Action & Status
Protecting People	Continue to drive down the accident frequency rate and number of RIDDORs across the Group. Providing a safe working environment – to avoid notices, regulatory action and impact on the environment through pollution or accident, etc.	Short-term target = 0.15 Medium-term target = 0.1 (from 2017 – lost time injury rate) Horizon ambition = Zero incidents Measure: Accident frequency rate recorded on Tracker	
Developing People	Number of training days per employee		
	Voluntary staff turnover	Short-term target = 16% Medium-term target = Below 12% Horizon Ambition = 10%	

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Improving the Environment	Group carbon emissions (absolute)	Short-term target = 5% carbon reduction Medium-term Target = 5% year-on-year carbon reduction Horizon Ambition = 65% carbon reduction from 2010 baseline Measures: fuel , electricity and gas consumption	
	Waste diverted from landfill	Short-term target = 92% Medium-term target = 94% Horizon Ambition = 100% Measure: waste diversion as recorded on Tracker	

Working together with our Supply Chain	Total spend covered by Group-wide agreements	Short-term target = 75% Medium-term target = 78% Horizon Ambition = 80%	
	Number of suppliers and subcontractors participating in Supply Chain Sustainability School	Short-term target = 1,400 Medium-term target = 1,700 Horizon Ambition = 2,000 Measure: number of suppliers and subcontractors participating in SCSS	

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Enhancing Communities	Number of qualifying projects using LM3 tool	Short-term target = 15% of qualifying projects Medium-term target = 80% of qualifying projects Horizon Ambition = Total positive impact of £1.5bn to UK economy	
	Considerate Constructor Scheme (CCS) average score	Short-term target = 40 Medium-term target = 2 points above Associates' average score Horizon Ambition = 3 points above Associates' average score Measure: average CCS score	

PROJECT SPECIFIC	PROJECT OR CUSTOMER SPECIFIC OBJECTIVES TO BE ADDED IN
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