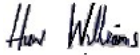


Method Statement

Note: This method statement must be read in conjunction with any developed task statements.

Method Statement Title:		Scheme Title: Trebanos WwTW Outfall		
Trebanos WwTW Outfall Construction		RA/MS Number 1W7000Z4 / 6038/Rev A		
		Start Date: May 2024		
Approved by:	Job title:	Signed (S/C):	Date (S/C):	
Huw Williams	Site Agent (Morgan Sindall)		01.05.2024	
Accepted for use by:	Job title:	Signed:	Date:	
Mark Thomas	Project Manager (Morgan Sindall)		7/5/2024	
Accepted for use by:	Job title:	Signed:	Date:	
Mike Sellers	SHE Manager (Morgan Sindall)			
Issued by:	Job title:	Issue:	Status	Issue Date:
	SHEQ Coordinator	First Issue	Approved for use	
Review Process (This method statement accepted as current working document).	Name (Print)	Signed:	Status	1 st Review Date:
	Name (Print)	Signed:	Status	2nd Review Date:
Issued to:	Job title:	Please acknowledge receipt of your copy of this MS by signing and returning the transmittal note.		Transmittal date:
Mark Thomas	Project Manager	Morgan Sindall		
Andrew Good	Site Agent	Morgan Sindall		
Huw Williams	Site Agent	Morgan Sindall		

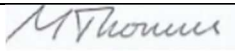
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Method Statement

Control sheet:

Risk Assessment / Method statement – Tracking Sheet

Name	Job title	Signature	Status	Comments
Huw Williams	Site Agent		A	
Mark Thomas	Project Manager		A	
Mike Sellers	SHE Manager			

Review process

No	Prompt List	Yes	No	In Part	N/A
1.	Unique project specific number and title identified for the document?	x			
2.	Does the method statement / risk assessment include suitable arrangements if sub-contractors are involved?	x			
3.	Authorisation and distribution personnel identified?	x			
4.	Brief overview including location and duration of the works described?	x			
5.	Specific Risk Assessment † attached and satisfactory? Are all the hazards/environmental impacts identified? Have all the risks been evaluated and controls identified?	x			
6.	High risk/safety critical / COSHH activities identified / controls specified? (Controls eg – Statutory permits/ licences, Security, Testing / commissioning / special training)	x			
7.	Scope of works identifying / listing all activities? Philosophy identified? Are all parameters identified / listed?	x			
8.	Temporary Works schemes identified? Philosophy identified? Temporary work drawings listed including relevant calculations?	X			

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	Permits required? Interfaces identified?	x			
9.	Names / titles / contact details of key personnel / supervisors responsible?	x			
10.	Resources identified e.g. personnel, supervision, equipment, plant, materials? Craneage – lifting plan in place? Lifting equipment – plan / certificates in place? Access / scaffolding requirements clearly set out?	x			
11.	Induction / training / permit requirements identified? Permit issue authorisation regime identified? Daily briefing and toolbox talk regime identified?	x			
12.	General site requirements identifying access / egress / traffic measures? Details of services / works isolation? PPE / evacuation requirements identified? Welfare / first aid facilities identified?	x			
13.	Monitoring & compliance Monitoring by whom Enforcement – how by whom- equipment (meters / sampling)	x			
14.	Interfaces / security of the client / public / other contractors identified?	x			
15.	Environmental controls / Waste Controller / ECCoP identified?	x			
16.	QC monitoring and inspection / testing regime identified? I&T Plans refs	x			
17.	Contingency plan e.g. emergency / fire / rescue / spill response identified?	x			
18.	Any special conditions identified e.g.	x			
19.	Management of Change – process in place to identify change requirements	x			
20.	Review date as required	x			
21.	Approvals statement incorporated?	x			
22.	Confirmation of Operatives briefing / Operatives induction sheet incorporated?	x			
23.	Any other (specify)?				
† Any Risk Assessment shall be amended / confirmed as site specific. * Status A Work can proceed as described B Work can proceed when comments are incorporated C Resubmit and agree before work can proceed					

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Comments

Note

Clearance to proceed with this Method Statement does not relieve the Subcontractor of their contractual obligations, including safety, structural integrity or any implications to permanent works arising from these proposals.

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Method Statement

Contract Title	Trebanos WwTW Outfall
Contractor	Morgan Sindall
MS No	6038/Rev A

This method statement has been developed further to the completion of the following references risk assessments:

Risk Assessment Number	Title
6038/RevA	Trebanos WwTW Outfall

Section 1 – General Details

Scope of Works:

Arup and Morgan Sindall have been commissioned by Welsh Water to review Trebanos WwTW to ensure compliance with key IMP5 drivers of quality, growth, and maintenance. The scheme has the direct aim of reducing spills to the environment so that there is no impact on the health of the river.

Trebanos, currently has a population equivalent of 16,645 (2021). This is expected to increase to 19,012 by the 2040 design horizon. The PFF at this site will remain at 146 l/s and there are no planned changes to the discharge consent. The purpose of the scheme is to install and construct a PFET side stream, which shall reduce the volume of untreated storm water going into the river Tawe.

The site is at National Grid Reference 271088, 202180 to the south-east of the village of Trebanos. Trebanos WwTW is located in Trebanos, Pontardawe, Swansea, South Wales, SA8 4BR. The site is located off the B4603 near Trebanos Rugby pitch.

The site is bounded by the Swansea Canal to the north and the River Tawe to the south. The site is relatively flat and located within the flood plain of the River Tawe, bounded by the Swansea Valley hills to the northwest and southeast. Online topographical mapping shows the site's elevation to be at around 24mAOD. Proposals include upgrading the current WwTW infrastructure and extending the Works to the west. This area of the site is currently used as farmland for livestock. A summary of the key proposals is listed below:

- New outfall.
- Associated pipework, manholes, distribution, and collection chambers.

Part of the scope comprises the construction of a concrete outfall headwall and pipeline just upstream of the existing outfall. To construct the new outfall headwall structure, it shall be necessary to install a temporary works system that will support the embankment while also providing a suitable access to the working area for the plant and machinery required. It is also envisaged that the temporary works system will also act as temporary flood mitigation while a section of the flood protection bund is removed during construction.

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The flood protection will be formed in two parts. Initial protection “in normal flows” will be created utilizing the sheet piles in the river course to form an primary barrier. Secondary “high level” protection will be provided by forming a temp works designed bund/working platform at ground level to match in with the level of the existing bund. The temporary works designed bund is still in design but may be in the form of a bespoke in situ material with geo textile or in the form of tonne bags/jersey barriers once again wrapped in an geo textile.

The current proposal is to install interlocking sheet piles along the front and sides of the proposed outfall headwall, using a Movax (Excavator with specialist piling attachment), which should be able to install the sheet piles from the bank without the need for entering the river. In order to minimize any detriment to the river during the sheet pile installation, mitigation is to be provided as proposed:

- Installing 2T pre-filled AquaRock Bags, 2 or 3 units high (depending on the water levels) in the river, just in front of where the temporary dam is located. This shall be lifted into position using the onsite excavator using suitable lifting equipment and shall provide/form the primary barrier.
- Installing SiltMat over the AquaRock Bags, which shall provide silt capture and additional filtration.
- Finally, a bubble curtain would wrap the works to provide a barrier to silts and aerate the water. A double bubble line has been recommended/proposed to provide a dense bubble barrier for silt control.

Once the above mitigation has been installed and proved to be working satisfactorily, the sheet pile installation would then commence.

AquaRockBag dimensions

Rock Bag XL	Rock Sizes	Height (m)	Diameter (m)	Volume (m³)	Weight (Tonne)	Lifting height till ring (m)	Flow velocity (single bag)	Flow velocity (stacked bags)
2 ton	40-80 mm	0.55	2.1	1.25	1.86	2.2	3.1 m/s	4.7 m/s
2 ton	56-120 mm	0.6	2.15	1.25	1.92	2.4	3.1 m/s	4.7 m/s
2 ton	75-200 mm	0.6	2.15	1.25	1.92	2.4	3.5 m/s	5.3 m/s
4 ton	40-80 mm	0.67	2.6	2.5	3.74	3.13	3.1 m/s	4.7 m/s
4 ton	56-120 mm	0.7	2.7	2.5	3.86	3	3.1 m/s	4.7 m/s
4 ton	75-200 mm	0.7	2.7	2.5	3.86	3	3.5 m/s	5.3 m/s

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Morgan Sindall have been instructed by DCWW to complete the works in accordance with the relevant design and specifications. A FRAP application will be submitted and approved by NRW for these works:

Permit reference: **TBC**

Scheme: Trebanos WwTW Outfall

Location: N Trebanos WWTW, Off Swansea Road, Trebanos, Pontardawe,
Swansea, Wales, SA8 4BR

The main parameters affecting the scheme and principal environmental considerations are:

- Working compliantly to the conditions set in the FRAP, Planning Consent and Protected Species Licences.
- Working within and adjacent to a watercourse (River Tawe) and the potential associated risks.
- Working in an area where European Protected Species are present – otters, dormice, bats, fish etc.
- Working compliantly to the consents, assents, permissions and permit for the project.
- Contamination of the watercourse and flood plain from silts, fuel, stored materials, and plant etc in the working area within the flood plain. It is imperative that these risks are briefed out to all Site Staff and Visitors. Any breaches must be reported to the Site Supervisor and Environmental Advisor immediately.

Location of the Works (Use sketch boxes if required):

Please refer to additional drawings included with document.

Prepared by: Huw Williams

Position held: Site Agent

Signed:

Huw Williams

Date:

01.05.2024

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Review date:

Work Supervisor(s);

Huw Williams (Site Agent), Ed Williams (Section Engineer), Justin Owens (Senior General Foreman), John Foley (Senior Works Manager)

Refer to Method Statement Tracking and Content Sheet

Section 2 – Programme of Operations

Start date / time:

June 2024

Works within the River July 2024

Preceding Works to be Completed:

Site Establishment

Duration:

5 Months (Approximately) – Full scheme

Permit required:

Permit to Work (General)

☐

Permit to Enter (Confined Spaces)

☐

Permit to Dig

☒

Hot Work Permit

☐

Out of Hours Work Permit

☐

Other (specify)

☒

Lift

All required Permits will be issued by the Morgan Sindall designated person prior to the works commencing

Section 3 – Personnel

Include details of all personnel involved in the task and any special training, skills or qualifications required

Name	Role	Competence Details
Huw Williams	Site Agent	CITB - Site Management Safety Training Scheme, Appointed Person (Lifting Operations), Confined Space, Temporary Works Coordinator.
Justin Owens	Senior General Foreman	CITB - Site Management Safety Training Scheme, Crane Supervisor (Lifting Operations), Confined Space, Temporary Works

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		Supervisor, First Aid at Work. Genny & Cat Training.
TBC	Ganger	CITB - Site Supervisor Safety Training Scheme, Vehicle Plant Banksman, CPCS - Forward Tipping Dumper, Wheeled, CPCS - Ride on Roller, CPCS Slinger/Signaller, New Roads and Streetworks (Operative), First Aid at Work.
TBC	Skilled Operative	New Roads and Streetworks (Operative), First Aid at Work, CAT & Genny Training, CPCS - Forward Tipping Dumper – Wheeled, CPCS - Ride on Roller, CPCS - Slinger/Signaller, Vehicle Plant Banksman
TBC	Skilled Operative	New Roads and Streetworks (Operative), First Aid at Work, CAT & Genny Training, CPCS - Forward Tipping Dumper – Wheeled, CPCS - Ride on Roller, CPCS - Slinger/Signaller, Vehicle Plant Banksman

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Method Statement

Section 4 – Safe System of Work to be Adopted.

4.0 Introduction

- 4.0.1 This method statement (MS) outlines initial proposals for this activity. Where it is identified that there is a need to change the method of work due to unforeseen circumstances for example, then revision, authorisation and issue will follow the same procedure as the original. This method statement is only valid when the person who has prepared it and the person who has authorised it have signed the front sheet accordingly.
- 4.0.2 Task Statements (TS) will be developed for specific tasks required to carry out the works, as and when required. The MS and TS should be read in conjunction with the site-specific plan and the construction programme. The MS and TS are “live” documents and will be updated as required, with newly identified risks.
- 4.0.3 The Responsible Person must be in possession of an approved method statement and task statement for the works. The Agent and Foreman / Supervisor shall ensure that the works proceed according to this approved method statement and subsequently developed task statements.

4.1 Risk Assessment

- 4.1.1 Template displayed in Appendix A.

4.2 Induction / Training

- 4.2.1 All site personnel will be familiarised with the site and made aware of any hazards, by way of a site-specific induction carried out by Morgan Sindall who are the Principal Contractor on this scheme.
- 4.2.2 All operatives working on the tasks described in this method statement, risk assessment and any associated task statement must be briefed on its contents. Operatives must sign the attached briefing attendance sheet to confirm that they have been briefed and understood the contents.

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- 4.2.3 Daily briefings shall be given to the operatives prior to work commencing. Toolbox talks will be planned monthly and given to all operatives on a weekly basis. The Morgan Sindall designated person must be in possession of an approved MS and TS before issuing any permits. All operatives must be briefed on the requirements of the permit before work commences.

**Safety Helmets, Safety Footwear,
High Visibility Clothing, Safety Gloves
and Eye Protection MUST be worn
at all times on this site**

4.3 General Site Requirements

4.3.1 Access and Egress

The site is located within Trebanos WWTW, and sections of the works will have been Transferred over to Morgan Sindall via the DCWW TAC procedure.

All site vehicles will abide by a 10mph speed limit on entering, exiting and whilst within the works. The Site Address is:

Trebanos WWTW, Off Swansea Road, Trebanos, Pontardawe, Swansea, Wales, SA8 4BR.

Access to the site is off the B4603 Swansea Road Via Colliers Arms and then follow the route past the rugby field to the working area shown highlighted in **Figure 1**.

All Visitors or operatives will enter the main compound and use the designated carpark.

All deliveries will report to the main office on arrival to site. Those who have not been on this site previously shall be given an induction prior to them being allowed onto site. Plant and material deliveries will be coordinated by the General Foreman to avoid congestion on site. Any large loads leaving the site may need a Banksman to control any traffic on the adjoining road and ensure that the area is clear of pedestrians.



No reversing without banks man

**Observe the speed limit as specified
on this site**

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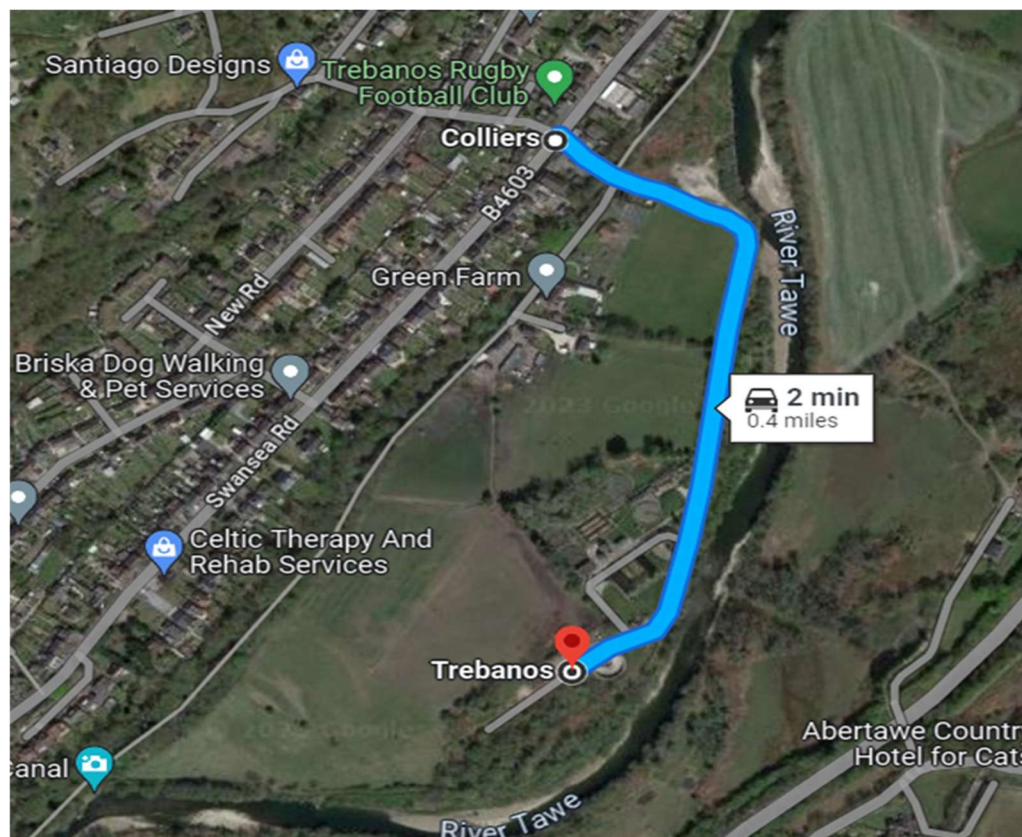
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Figure 1: The proposed works is located at the top end of Trebanos WwTW, which is accessed from Swansea Road down a single carriageway road past the rugby field to WwTW entrance gates.

The site working hours will be between 07:30 and 17:30 Monday to Friday. Weekend work is not envisaged but if weather condition and programme accrue, this will be agreed and authorised between the DCWW Project Manager and Morgan Sindall's Senior Contracts Manager.

4.3.2 Safety Works or Isolation Measures

Working areas will be protected by suitable fencing / barriers. Protection from the public/other contractors on site will be provided by Morgan Sindall as necessary. The fencing will be maintained by Morgan Sindall to prevent access during non - working hours. All excavations will be suitably protected at all times and secured out of hours. Edge protection will be in place at all times when work is being undertaken as per the requirements as set out on the following page. **With immediate effect Splayed feet barriers are no longer to be used as edge protection.**

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The below **figure 2** photo show a correctly installed barrier system.

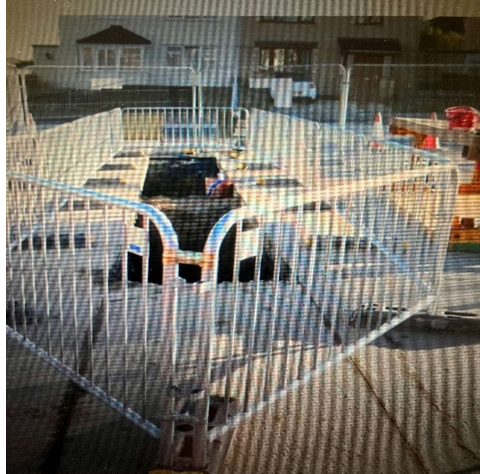


Figure 2 – Safety Fencing

- No free-standing barriers, whether galvanised or plastic are to be used for edge protection, these are for segregation purposes only.
- Single leg barriers, connected as standard, plus 2 x Heras fence clips and placed in Heras type rubber feet, must be used at all times where the reduced dig is taking place and if the proprietary edge protection is not the best fit for the excavation once the temporary works are in place.
- All leading edges at the front and rear must be protected.
- **Where barriers at the leading edge of the excavation must be removed for the excavator to complete the dig, barriers fitted as mentioned above, must continue to the side of the excavator as a minimum and placed so access is not possible.** When the excavator needs to move away from the excavation, for however long, these barriers are pulled together and double clipped.

Remember, if you can freely walk into an unprotected area at any time, then the edge protection is not good enough.

4.3.3 Site office, welfare and first aid facilities

Full welfare facilities will be provided by Morgan Sindall within the designated site compound area. This will include a canteen, office, drying room, and toilet unit. First aid boxes will be kept within the site office, canteen and site vehicles. Eye wash stations will also be available within the welfare unit.

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4.4 Interface Issues

- 4.4.1 The work location is based within Trebanos WwTW. Good communication will be maintained between the Morgan Sindall site team and the DCWW operational team. During working hours, the entire works shall be transferred over to Morgan Sindall via the DCWW Transfer of Access (TAC1 and TAC2 form).
- 4.4.2 There will be interface with existing process equipment and pipework throughout the scheme – these elements of work will be carried out under the methodology described within the Business Continuity Plan (BCP) approved for use by DCWW management.

The site entrance/exit joins on to the B4603 Swansea Road Via Colliers Arms, therefore when pulling out of the site entrance drivers should be aware of the presence of other road users, children and pedestrians. Where required, delivery wagons shall be directed out of the compound by a designated Vehicle Banksman.

It is also acknowledged that where the construction work will take place for the headwall there is a widely used footpath that runs alongside the riverbank. Although this is not officially designated as a Public Right of Way advanced notice will be given to the local council, angling society and pedestrians of its temporary closure.



Danger
Construction site hazardous area



Children must not play on this site



No reversing without banks man

**Observe the speed limit as specified
on this site**

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4.5 Methodology

If any of the methodology or construction sequence detail below should change, STOP works immediately, make safe and report to the site supervision.

4.5.1 Preliminary Instructions

- Prior to Any Excavation work being undertaken A full CAT and Genny survey utilising the STAT plans supplied by ARUP will be undertaken to identify any services located in the area and then a permit to excavate will be issued and authorised by the appropriate persons prior to any excavation. If required trial holes will be undertaken to find the location of any services.
- Main lifting on the project will primarily be undertaken by the on-site excavator/Movax (placing of sheet piles, reinforcement, formwork, concrete, precast sections). A valid lift plan will be compiled and approved by authorised CPCS Appointed Person for each lifting appliance complete with a schedule of lifts. All slinging of equipment will be undertaken by a CPCS certified Slinger/Signaller. The excavator driver must also hold a valid CPCS card and be competent in the proposed works to be undertaken.
- All lifting chains and equipment will have current test certificates and shall display the current colour coded lifting tag. A copy of the test certificates will be held in the site file.
- A Delivery Lifting Plan & Lorry Loader Checking Form must be completed prior to any delivery offloading on site and the supplier must also have a safe system of work for off-loading.
- The majority of the excavation work will be completed by mechanical means in the form of a 360-degree excavator. No mechanical excavation or sharp pointed tools will be permitted within 0.5 meters of any known service. If any services are discovered that were previously unforeseen or lay undetected, excavation will cease whilst further trial hole investigations are carried out. Any services uncovered will be assumed to be LIVE until written confirmation has been received from the service provider that can confirm otherwise.
- All movements by any machine will be carried out under the supervision of nominated and trained Vehicle Banksman. All operators of plant will be certified, competent and trained with CPCS qualification.
- All working areas will be segregated from pedestrians and vehicular traffic movements at all times. This will be by means of erecting signing and physical guarding in the form of pedestrian barriers/Heras fencing. Clear warning signs will be attached to the barriers to warn people of the inherent dangers within the work area.

4.5.2 Off loading / loading of Vehicles / Plant

- All Drivers to Stop and Report to Site Security.
- All Drivers to Stop and Report to Site Supervisor to confirm suitable location to offloadplant/materials.
- No Standing on the back of open vehicles.
- All plant will operate flashing warning lights while on site.
- No reversing without a Vehicle Banksman in attendance.
- Speed limit on site is Max 5mph.
- Drivers must wear the minimum PPE requirements while outside of the cab.
- Lorries will be sent to site with handrails fixed to the bed of the lorry to act as edge

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protection whilst operatives are accessing the bed of the trailer.

- A short-footed ladder will be used by operatives to gain access to the rear of the lorry.
- Prior to any Hi-ab loading / off-loading being undertaken a Lorry Loader Morgan Sindall check form shall be completed. Morgan Sindall Supervisor to check certs of chains and HIAB before allowing the lift to commence.
- Once all plant has been off loaded/ loaded, the lorry shall then leave the site, taking care when pulling out of the compound and on to the main road.

**Safety Helmets, Safety Footwear,
High Visibility Clothing, Safety Gloves
and Eye Protection MUST be worn
at all times on this site**



- To construct the outfall headwall structure, a 25T tracked excavator with a selection of buckets and attachments is required. A Vehicle Banksman shall direct the delivery driver into the designated area where the excavator shall be offloaded by the delivery driver. Upon delivery all necessary checks shall be completed by the operator to ensure that the equipment is suitable and safe to use. Any issues to be reported to the site supervisor.
- A 13T tracked excavator may also be used during the construction of the outfall, and the same checks will be undertaken prior to use.
- A permit to lift will be completed by the CPCS Appointed Person (AP) prior to any lifting being carried out. All lifting will be controlled by a competent Slinger/Signaller (CPCS qualified), using currently certified and checked lifting equipment. All lifting will be undertaken on firm and level ground.

4.5.3 People Plant Interface

- The only safe zone when working near an excavator is when you are in a position such that you cannot be struck by the machine boom/arm of the excavator whilst it is extended at full reach.
- Furthermore, the safe zone should also consider if the machine is being used for lifting. In this instance the safe zone should be outside the maximum operating radius of the machine plus the length of any lifting accessories.
- If materials are being lifted into an excavation, due to the restricted nature of these excavations, the only safe zone is to be outside the trench/excavation.

the only document to be outside the trench, excavation.

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- Wherever possible these “safe zones” will be physically demarcated using suitable barriers. When lifting at ground level physical barriers maybe in the form of crowd barriers. When lifting into and out of excavations the physical barriers should be in the form of standalone barriers, double clipped and fixed into individual Heras fencing feet, as they are used for edge protection.
- During lifting the CPCS slingers/signaller is to only move outside of the safe zone to either attach the load prior to it being lifted or detach the load after it has been lifted. All other persons, not involved with the lifting operations, should always remain within the safe zone.
- Heras fencing gates should be positioned at the side or in front of the excavator to stop operatives accessing from behind the excavator and to allow the operator to have a clear view of operatives entering and exiting the working area.

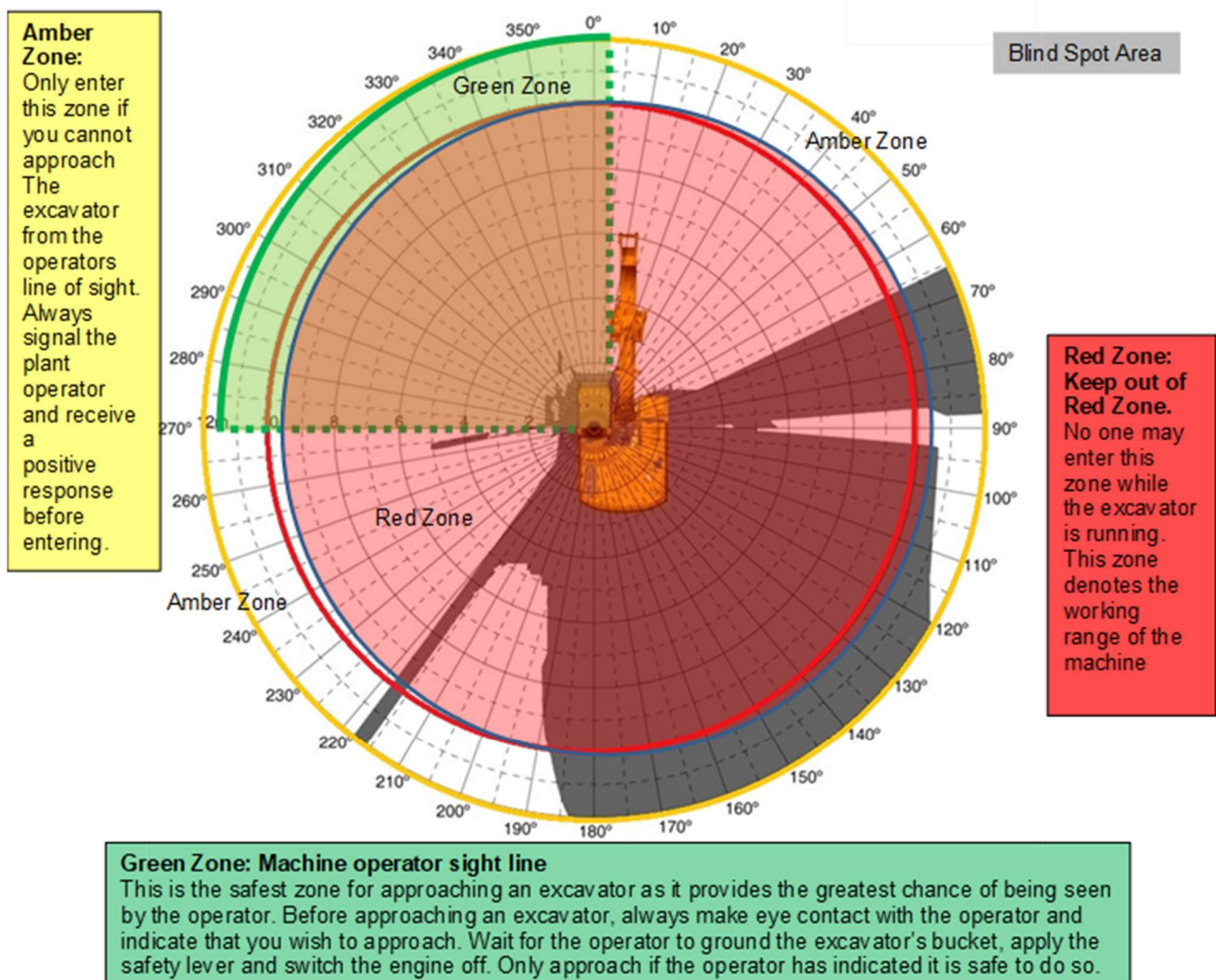


Figure 3 – Danger Zone with 360 Excavator

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4.5.4 Construction of the Outfall Headwall

The purpose of this Method Statement is to detail the safe working procedures and methodology for construction of the outfall/headwall associated with the Trebanos WwTW Storm Outfall Scheme. It will be necessary to carefully sequence the construction of the outfall to ensure that there is no detrimental disturbance to the Rive Tawe.

Commence June 2024 Pending DCWW and NRW Approval

- Site establishment/Setup Welfare.
- Construct temporary access road to working area and temporary works ground level bund
- Install Mitigation Works to minimise detriment to river while undertaking piling works. This shall involve:
 - Installing 2T pre-filled AquaRock Bags, 2 or 3 units high (depending on the water levels) in the river, just in front of where the piling operation shall take place. This shall be lifted into position using the onsite excavator using suitable lifting equipment and shall provide/form the primary barrier.
 - Install SiltMat over the AquaRock Bags, which shall provide silt capture and additional filtration.
 - Finally, a bubble curtain would wrap the works to provide a barrier to silts and aerate the water. A double bubble line is recommended/proposed to provide a dense bubble barrier for silt control.
- Install working area/hardstanding for storage of equipment.
- Installation of any temporary access scaffold platform required to provide safe access to river.
- Installation of sheet piled cofferdam that is proposed to support the embankment during excavation works and also act as temporary mitigation to prevent flooding while section of the existing flood protection bund is removed.
- Install access ramp and piling mat within the sheet piled cofferdam on a 1:10 gradient to allow the piling rig access to undertake the installation of 4No 600mm diameter CFA piles. This shall involve excavating/removal of a section of the flood protection bund.
- Install 4No CFA piles as per Arup design.
- Reduce piling mat to formation level & crop piles to design cut off level.
- Pour concrete blinding to headwall base.
- Construct main headwall structure as per Arup design (Reinforced concrete base, precast concrete wall panels).
- Backfill around outfall structure.
- Install access ladder, handrails, penstock, and safety grill.
- Remove sheeted cofferdam.
- Remove silt mitigation materials from river.
- Reinststate riverbank as per Arup design.

Prior to any work commencing on site, all personnel must have received a site induction from Morgan Sindall which will include a comprehensive section on the environment, any protected species, conditions of the FRAP and Environmental Permit. Pollution prevention and controlling and monitoring of silty surface water from excavations and controlling sediment run off will also be covered.

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Confirmation shall also be obtained that the rescue plan for river working has been arranged and the relevant RAMS have been approved by MS prior to the works commencing.

Before any site works commence, the Site Supervisor will ensure that they have signed upto receive alerts from NRW for Flood Warning alerts and display on site the Meteorological offices 5 Day Weather Forecast to monitor the flood risk for the site that week, and to ensure perishable materials, fuels and chemicals and plant are moved to higher ground.

4.5.5 Mitigation Works – AquaRock/SiltMat/Bubble Curtain

- Before any sheet piling activities can take place adjacent to the riverbank, the mitigation measures described previously need to be installed to minimise the chances of causing a silt issue resulting in a potential pollution incident.
- It is acknowledged that to construct the head wall the existing flood bund will need to be removed. Initial flood protection will be in the form of the sheet piles as described later in the document. However to provide the same level of protection that is currently present an additional temporary works designed flood bund will be formed in the main outfall working area to the same height as the existing – see attached drawing. To gain access over/through the flood bund to construct the outfall works either a ramp will be formed over it or a section taken away when access is required and reinstated at the end of every shift whilst proactively monitoring weather forecast.
- Using a suitably sized excavator and lifting equipment, 2T prefilled AquaRock Bags with dedicated D shackle lifting attachments shall be lifted and lowered one at a time into the watercourse as directed by the site engineer. The excavator should be able to install these bags from the riverbank, however If this is not possible then the excavator may need to install the AquaRock Bags from within the river as long as flows and depths allow.
- This process shall be repeated until the required length and height has been achieved along the section of riverbank that is to be protected during the sheet piling install. Depending on the river levels the bags may need to be 2 or 3 units high. This first stage shall form the Primary Barrier.
- All operatives entering the river to install the silt protection will wear full leg waders with life jacket as well as mandatory PPE specified in this document.
- SiltMat™ would then be placed over the AquaRockBags to provide silt capture and additional filtration. This shall be either lowered using the excavator and suitable lifting equipment or carried by the operatives.
- Finally, a bubble curtain would wrap the works to provide a barrier to silts and aerate the water. A double bubble line has been recommended to provide a dense bubble barrier for silt control. The bubble line will have a wire loop connection at either end of the ballast in the bubble diffuser. It is recommended that the bubble line is attached to the bank to prevent loss of the asset, reduce the risk of any force being transferred through the feeder lines to the compressor and therefore protecting the connections along the line as well as assisting with the retrieval and redeployment of the bubble curtain. Whilst the lines are weighted additional D shackles can be added to provide further connection for buoys/anchor points if required. The bubble line weighs 1.5kg/m, this will be

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supplied fully assembled so that it can be connected directly to a tool compressor using a claw coupling and whip check. The optimum airflow for a bubble curtain is between 0.3 and 0.4 cfm/ft (30-40 cfm for a 40m line), the PSI must not exceed 10.5Bar. A standard single or twin tool air compressor should provide the required airflow.



Figure 4 – Potential proposed setup to be adopted at Trebanos WwTW

- As mentioned previously, if the excavator/Movax requires access into the river to install the sheet piles, then the mitigation described above by installing the temporary dam shall allow this.
- When the excavator is not working, barriers shall be erected to ensure any leading edges are protected, with a minimum upstand of 1000mm. This will be provided by appropriate fencing/barriers, as detailed in section 4.3.2.
- A full C.A.T and Genny survey utilising the supplied service plans provided by ARUP / DCWW will be undertaken to identify any services above and below ground located in the area and then a Permit to BreakGround will be Issued and Authorised by the Appropriate Persons prior to any excavation. If required and services are present trial holes will be undertaken to find the location of any services dug by hand.
- The excavator shall then provide a stable platform at the top of the embankment in preparation for the Movax unit that shall be used to install the sheet piles. If the excavator is required to setup in the watercourse, then the excavator shall reduce the material to construct the required access ramp in accordance with the temporary works drawing. All excavated material shall be stockpiled on site for reuse for reinstating the ramp, with any unsuitable material segregated and stockpiled which shall be taken off site to a licensed tip for disposal, accompanied with a coded waste transfer

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note.

- Access to the work area for operatives shall be via an access scaffold platform / steps/ramp, which shall be installed by a scaffolding company arranged by Morgan Sindall working under their own approved RAMS.
- Temporary pumps for dewatering the “lagoon” created as shown in Figure 4 shall be set up, and water will be pumped through a Siltbuster filtration system, then returned to the River Tawe. A visual inspection will be undertaken to confirm if there are any fish or river species trapped within the “lagoon”. Due to the small extent this is not envisaged, however if required then a fish rescue will be undertaken by the appointed ecologist subcontractor APEM. An FR2 license application will be applied for in advance.

4.5.5 Temporary Works Sheet Pile Installation

- Wherever possible, the sheet piles shall be installed out of the river using the Movax equipment. However, if this is not possible and the equipment needs to work within the watercourse then prior to proceeding the Site Supervisor will review the Meteorological Office’s 5 Day Weather Forecast to monitor the flood risk for the site that week. Work shall only take place when the river levels are low/normal, and all operatives working within the vicinity of the river will be supplied with life jackets. A lifebuoy rescue ring shall also be provided to assist with a rescue should an operative fall into the river.
- If required, a suitably sized excavator will be used to lift the TW sheeting materials / equipment into the watercourse (A lift plan provided by a CPCS Appointed Person will be completed for approval ahead of all lifting operations). All lifts using the 25T excavator will be under the control of a qualified CPCS Lift Supervisor.
- The sheet piles are to be placed individually using specialist equipment such as a Movax side grip vibratory hammer fitted to a suitably sized tracked excavator. The piling sheets shall be directed into position by the Piling Hand and the operation repeated until the sheets have been installed as per the temporary works design.

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Figure 5 – Movax SG-50 Side Grip Vibratory Hammer on 23T Tracked Excavator.

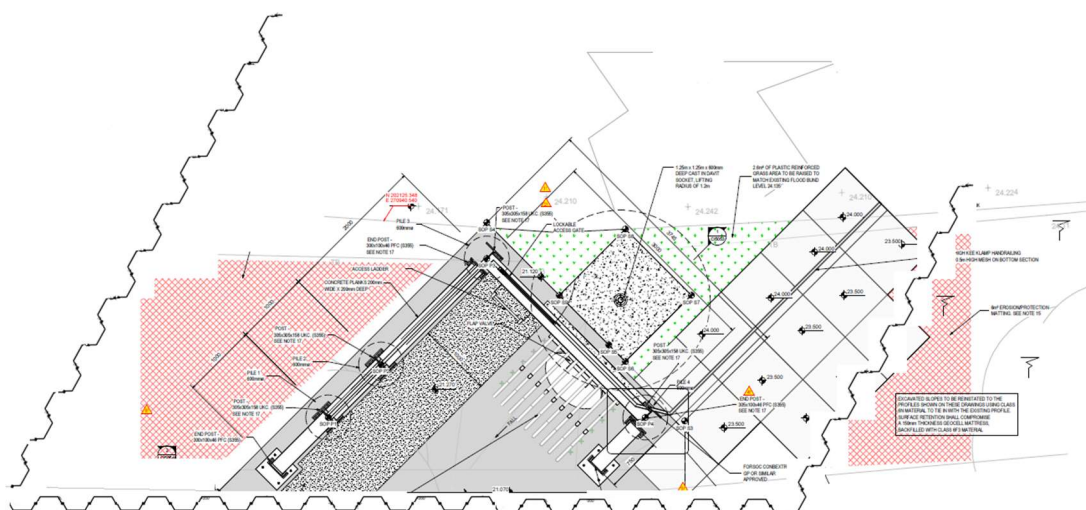


Figure 6 – Indicative Layout of Sheet Piled Bund.

- The sheet piles will form a U shape, similar to what is shown in Figure 6. The purpose of the sheet piles is to provide ground support during the excavation of the outfall headwall and to prevent water ingress to the area whilst excavation is proceeding. The size of the sheet pile “bund” will be large

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enough to accommodate a piling rig to work in to install the 4No CFA piles and construct the headwall itself.

- The current proposal is to have the sheets installed acting as a cantilever, meaning no supporting struts will be required within the excavation. All works shall be installed in accordance with the approved temporary works design.

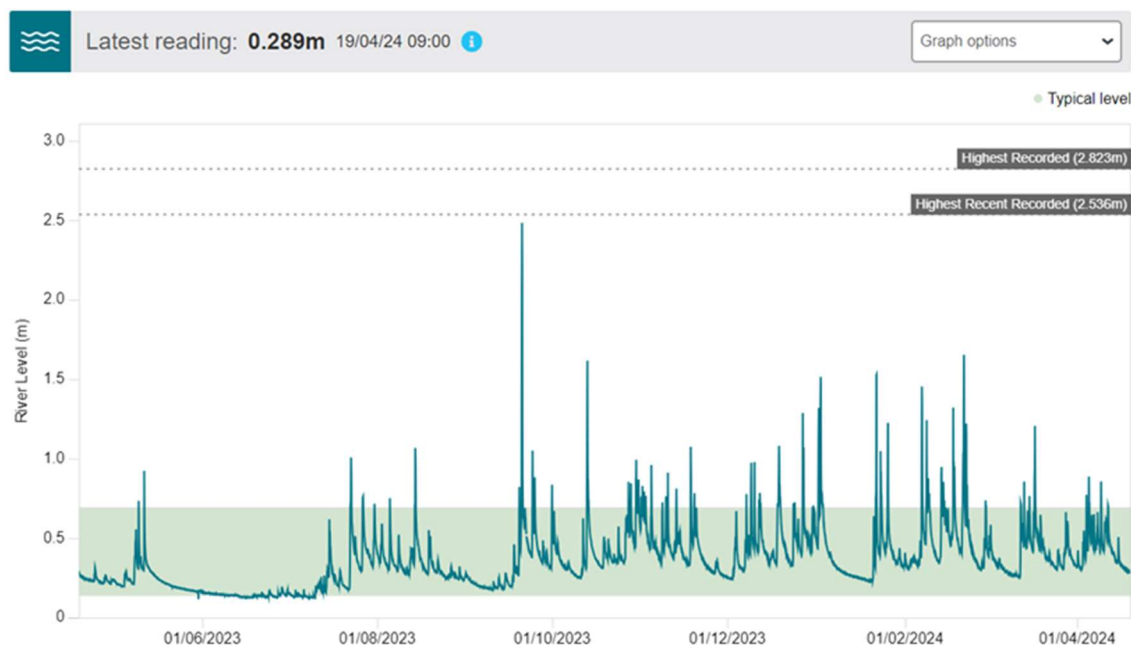


Figure 7 – Graph from Pontardawe gauging station showing last 12 months, recent highest level, highest recorded and typical level (green), some 0.75m.

- A 100-year flood event will have a Maximum Water Level of 23.720mAOD.
- A 1000-year flood event will have a Maximum Water Level of 24.090mAOD.
- Design Level of Outfall Headwall Slab is 21.070mAOD.
- A Typical water level is around 0.75m in depth, with the highest recent recording of 2.536m.
- It is proposed that the sheet piles running along the face of the river embankment shall be kept lower than the rest of the sheet piles (which will form the initial temporary flood bund mitigation), however the design will allow an amount of freeboard to consider the risk of the river levels rising during construction works. In the event of a serious flood, the construction works would stop and the excavation abandoned until the river levels had dropped back to an acceptable level before works could continue. The temporary works would need to be inspected by the Temporary Works Supervisor prior to recommencing works after such an incident.

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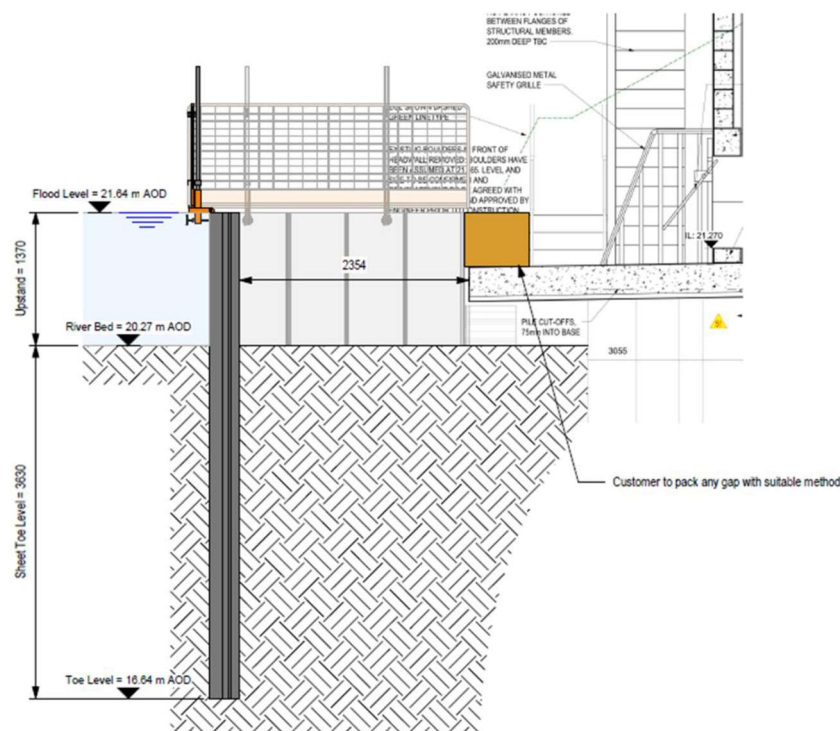


Figure 8 – Section through works showing a proposed top of sheet pile level for the row of sheets to be installed along the river embankment.



Figure 9 - Movex low vibration sheet piling excavator attachment.

- Once all sheet piles have been installed as per the Approved temporary works design, a suitably sized excavator shall then excavate the material inside the sheet piles to construct an access ramp and level platform for the piling rig.

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- A local sump will be dug within the working area, set up with a groundwater pump to deal with any groundwater and minor seepage infiltration, where it shall be discharged outside the working area through the Siltbuster filtration system and then returned to the Rive Tawe. A 3mm sieve shall be placed on the end of the bagging to prevent solids being sucked up. Clay bund material is not to be used to create the sump due to the potential of causing discolouration to the water.
- At this stage the main flow of the river will have been diverted and there should only be minimal percolation through the riverbed to the excavation area of where the outfall is to be installed.

4.5.6 Reduce Bund Formation and Install Piling Mat

- The next stage of work requires the suitably sized excavator to setup on the high-level river embankment and reduce the existing ground level to construct the access ramp and piling rig platform. The piling rig proposed is a Llamada PK85TT, and the temporary works design has been based on this size rig. The platform and ramp depth are to be 300mm thick, with a layer of geogrid required and installed in accordance with the manufacturer's guidance. The ramp gradient should not exceed 1V:10H. Base course material is to be Type 1 granular fill material laid in accordance with MCDHW, SHW, Series 800. The platform is to be regularly checked and inspected for signs of deterioration, including rutting, ponding of water and damage. Where these are identified, the platform is to be repaired.

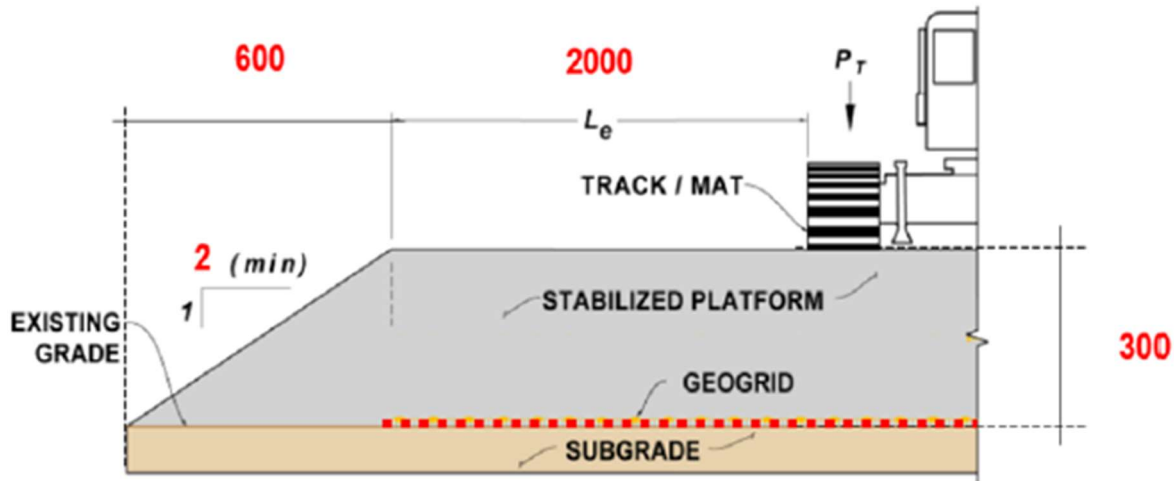


Figure 10 – Pile Platform/Ramp Detail

- Works on the embankment shall only proceed when the river levels are low enough and a good weather window has been forecast. Weather reports are to be monitored daily to assess the likelihood of rising river levels, which shall prevent work from taking place. This is the reason for targeting a start date of June/July 2024.
- All excavated material shall be stockpiled in a designated area and once dried out sent to a licensed waste facility if not suitable as backfill material. A Slinger/Signaler shall be in continuous

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contact with the excavator operator and use 2-way radios if visual contact cannot be maintained. Operatives not directly required for this operation shall move to a safe area out of the working radius of the excavator.

- Even with the silt control measures described previously being in place, continuous monitoring of the River Tawe is necessary during this operation to ensure that no silt water contained within the works area enters the main water course. If the River Tawe shows any sign of silt runoff from the works, then all work Must Stop immediately, and the Supervisor must be informed.
- Once the piling platform area has been cleared and all the material removed, an inspection shall be undertaken to examine the condition of the existing formation, ensuring it meets the requirements of the temporary works design. Engineering control shall then be provided to set out the extent of the piling platform.
- Upon completion of the platform/ramp excavation, the TW platform shall be installed as shown in Figure 10. Imported Stone will be placed in suitable layers to conform with the chosen compaction equipment (either 120 ride on roller, Rammax Remote Control twin drum compactor, or Heavy-duty remote-control Wacker Plate). Where necessary the equipment shall be lifted into the cofferdam by the excavator using suitable and certificated lifting equipment. A valid lift plan will be compiled and completed by an authorised CPCS Appointed Person complete with a schedule of lifts. All slinging of equipment will be undertaken by a CPCS certified Slinger/Signaller.
- Once the piling platform and access ramp have been installed; plate load tests shall be undertaken to confirm that the platform meets the temporary works design requirements. This shall be covered by the subcontractors own method statement/risk assessments.
- Once the platform has been certified as satisfactory, a Permit to Load shall be completed by the Temporary Works Coordinator.
- The centerline position of the 4No 600mm diameter CFA piles shall be marked out by the site engineer using the coordinates supplied by the designer.

4.5.7 Piling of 4No 600mm Diameter CFA Piles (Cover under separate RAMS) Example below:

- On arrival to site the Piling Rig shall be checked over by a qualified Morgan Sindall service engineer prior to any work starting.
- A Permit To Work shall be issued by Morgan Sindall, authorizing the piling activity to commence.
- The piling rig shall travel to the working area using the newly constructed access road and down the ramp and onto the working platform.
- The piling rig shall setup on firm level ground in accordance with their approved safe system of work.
- The progression of the piling shall be determined on site by the Piling Foreman to a planned sequence designed to avoiding damage to newly constructed piles and any existing constructed works.
- The piling rig will be set up so that the tip of the lead auger hangs centrally over the pile position.
- A purpose made disposable 'bung' will be fitted to the auger stem exit.
- Prior to starting each bore the rig driver shall check the correct function of the automated monitoring system.
- The position of the initial bore will be checked and reworked as necessary.

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- The bore will be advanced maximizing penetration for each revolution of the auger consistent with the operating parameters of the equipment.
- Any excess flighting of spoil will be recorded.
- Initially the rate of concrete over-supply shall be set at 15%. The Piling Foreman shall review this quantity and make any appropriate adjustments as the works proceed.
- Ready mixed concrete will be pumped through the hollow stem of the auger string. At commencement, the auger string will be raised by approximately 100mm to allow the bung to be displaced. The pile will be re-bored in excess of this amount before auger extraction.
- The auger string will be slowly rotated clockwise and progressively withdrawn as pumping continues. Augers will be cleared of spoil as the auger string is withdrawn.
- Should the rig driver suspect for any reason that the level of the concrete is below either the tip of the auger or the standing water level, whichever is higher, he shall then re-bore the pile 0.5m deeper than the suspected anomaly. The zone of re-boring will be recorded.
- Where pile depth exceeds the depth limit of the Cfa auger string, short-length extension augers are permitted.
- If used, extension augers are removed during concreting, the level of the concrete within the auger stem will be checked as each section is removed to ensure that the level of the concrete remains higher than the standing water level established for the relevant part of the site.
- The pile will be concreted to pile mat ground level with a surplus of material placed so as to avoid contamination with spoil. This surplus will subsequently be scraped away to leave a clean profile of fresh concrete.
- The King Posts (305mm x 305mm x 158mm UKC S355) shall be inserted after concreting taking care not to contaminate the concrete with spoil. Measures shall be put in place to support the posts and keep them vertical until the fresh concrete has set. This shall be covered by a separate temporary works design brief.
- Upon completion the pump and all equipment and hoses will be washed out in a suitable location on site away from the watercourse.
- Once complete the piling rig shall derig in accordance with their approved safe system of work and demobilize from site.
- The area shall be handed back to Morgan Sindall to commence with the outfall headwall construction.

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4.5.8 Outfall Base - Removal of Piling Platform/Concrete Blinding/Pile Trimming

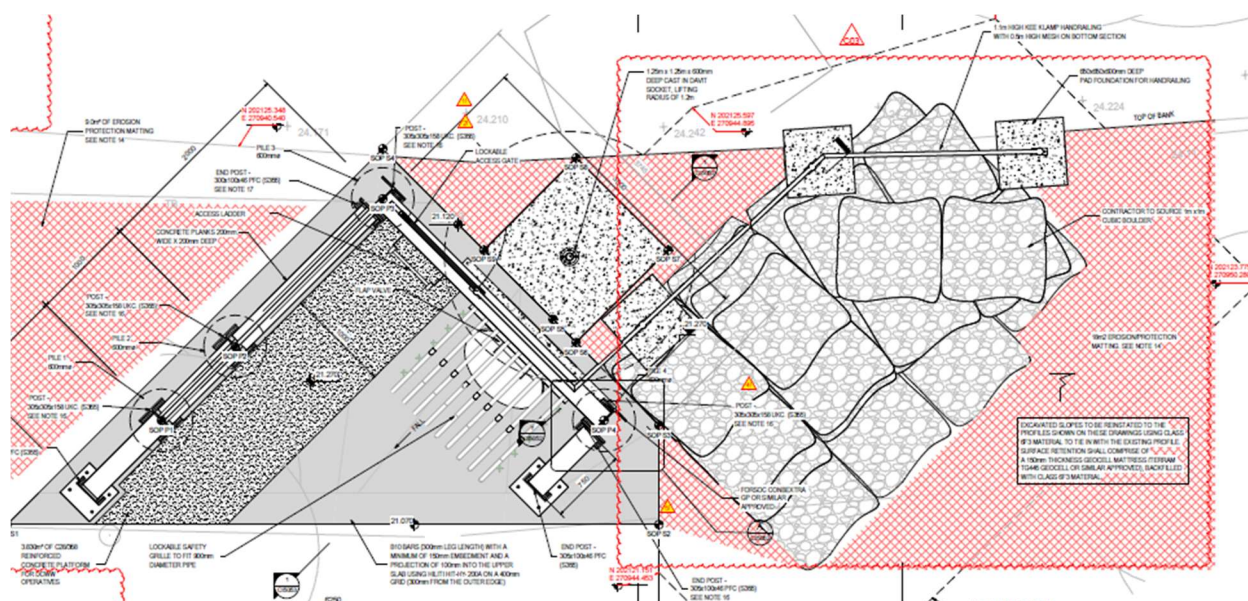


Figure 11 – Proposed Outfall Headwall (Plan View)

- The site engineer shall set out the extremities of the works area using the design information supplied (See Figure 11).
- The works area shall be fenced off and double clipped with 1No Access/Egress point for plant.
- The engineer shall set up the rotating laser so that the piling platform can be removed, and the excavation taken down to the design formation level of the headwall base.
- Piling Platform Level = TBC, Pile Cut Off Level = 20.795m AOD, Formation Level = 20.670m AOD. Dig depth = TBC.
- A suitably sized excavator shall start to excavate the area down to formation level.
- The arisings of the piling platform contain GSB Type 1 material and is to be reused elsewhere on site to backfill pipeline trenches etc.
- The excavated material will be loaded into 6T and 9T dumpers and transported to a designated stockpile area.
- Where required, the sides of the excavation will be stepped to make safe, although it is envisaged that the works shall be contained within the sheet piled cofferdam.

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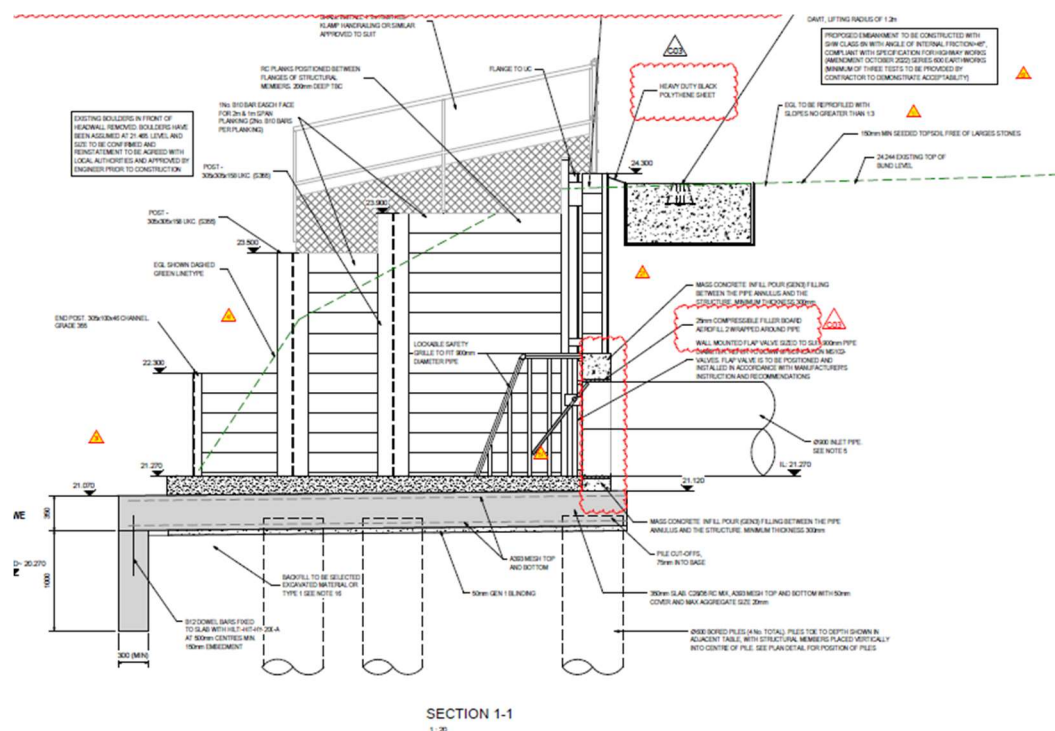


Figure 12 – Proposed Outfall Headwall (Section View)

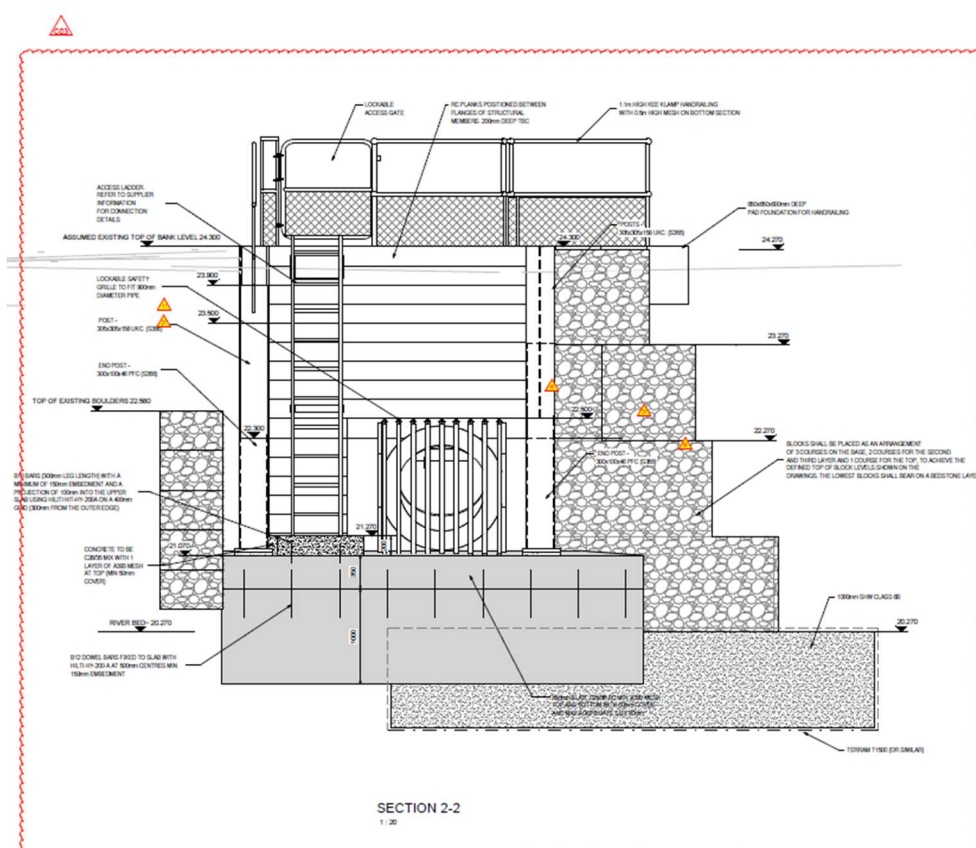


Figure 13 – Proposed Outfall Headwall (Front View)

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Headwall Toe/Concrete Blinding:

- There is a requirement for a 300mm wide x 1m high x 6.250m long mass concrete toe to be constructed, to prevent the structure from sliding. It is proposed that this shall be excavated and concreted the same time the concrete blinding is poured. B12 Dowel Bars shall be inserted into the pour at 500mm centers to connect the toe with the main slab.
- Screed levels shall be placed and levelled in by the site engineer so that the concrete blinding can be set to the required fall.
- Concrete will be delivered to site on ready mixed wagons and placed in the excavation with the machine bucket / concrete skip/concrete pump.
- Skilled operatives shall guide the concrete with concrete rakes and finish it with a tamped finish.
- Concrete will be specified for safe use in the river environment and will be procured appropriately.
- Upon completion the concrete wagon, pump (if used) and all equipment and hoses will be washed out in a suitable location on site away from the watercourse.

Cutting of Piles:

- Once the concrete has been left over night to harden, the pile cutting can commence the following shift.
- The laser level will be set up for pile cut off level by the site engineer, and a wax crayon/spray paint will be used to mark the pile.
- A 12inch petrol cut off saw c/w dust suppression & diamond blade will be used to score the circumference of the piles at the exact cut off level. The cutting will be circa 30mm deep.
- A hydraulic attachment (Pile Cropper) shall be fitted to the excavator, ensuring it is suitable for trimming a CFA pile with Kingpost cast into it.



Figure 14 – Example of Pile Cropper

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- The cropper will work its way down each pile cropping until it reaches the scored pile cut off level leaving the steel Kingpost intact/undamaged.
- Alternatively, if a pile cropper is not suitable due to the King Post being positioned centrally inside the pile, then the piles shall be trimmed by Skilled Operatives using handheld breakers. HAV monitors shall be worn by the operatives operating the equipment and the work shared out to minimize the risk of Hand Arm Vibration Syndrome.
- Once all piles have been trimmed to the design level, The broken concrete shall be loaded up into the bucket of the excavator for storage/disposal.
- The area shall be swept clean, so that the construction of the outfall headwall base slab can commence.

4.5.9 Outfall Base and Walls

Outfall Base

- The site engineer will set out the position of the headwall base slab on the concrete blinding.
- Shuttering and A393 mesh (base slab reinforcement) shall be transported by dumper using the access ramp or lowered into the excavation using the excavator and lifting equipment.
- A carpenter shall erect shutters suitable for a 350mm thick concrete slab.
- A393 mesh reinforcement shall then be placed top and bottom of the proposed slab with reinforcement chairs provided to support the top layer of mesh.
- The site engineer shall undertake a Pre-Pour Concrete Inspection and check the reinforcement and formwork has been installed as per design drawings.
- Pour concrete using the excavator bucket / 0.5m3 skip or concrete pump.
- If used, the skip will be banked into position from the walkway. All personnel involved with the pour will be situated away from the slew of the machine. Once the skip is in approximately the correct position the banksman will give the OK to approach and discharge the skip. Personnel will then move away and allow the skip to be returned to the concrete delivery vehicle. The skip will be set down and refilled under the control of the banksman. Operation then repeated until concrete placement is complete.
- Concrete shall be poured to the level and gradient shown on the drawings and set by the site engineer.
- A Trowel Finish shall be applied to the surface of the base slab.
- Where a construction joint is required, a retarder shall be applied so that the cement paste can be jet washed off to expose the aggregate.
- The concrete shall receive adequate curing time prior to the removal of any formwork.
- A Post Pour Concrete Inspection shall be carried out by the site engineer and any defects shall be make good if required.

Outfall Walls

- The site engineer shall mark out the position of the 900mm diameter outfall pipe where it enters the structure.
- The retarder shall be jet washed along the base in the location of the 900mm diameter pipe, to expose the aggregate, providing a sound key.
- Once dried, a waterbar shall be applied along the construction joint.
- The 900mm diameter stub pipe shall be lowered into the excavation using the excavator and lifting

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equipment onto the headwall base slab.

- A carpenter shall strut the pipe and install Waterbar around its circumference and then erect shutters incorporating the pipe.
- Any reinforcement detailed around the outfall pipe shall be installed.
- The site engineer shall undertake a Pre-Pour Concrete Inspection and check the reinforcement and formwork has been installed as per design drawings.
- Concrete shall be poured using concrete pump/skip, using the principles described previously.
- Concrete shall be poured a minimum of 300mm above the crown of the 900mm diameter inlet pipe.
- A steel trowel finish shall be applied to the top of the wall to provide a smooth, level surface for the precast concrete planks to be placed upon.
- The concrete shall receive adequate curing time prior to the removal of any formwork.
- A Post Pour Concrete Inspection shall be carried out by the site engineer and any defects shall be made good if required.
- A suitably sized excavator and lifting equipment shall then be used to lift the reinforced concrete planks into position between the flanges of the 305mm x 305mm x 158mm UKC structural members as per the design. (A lift plan completed by a CPCS Appointed Person will be completed for approval ahead of all lifting operations). All lifts using the excavator will be under the control of a qualified CPCS Lift Supervisor.

Reinstatement Works

- Upon completion of the outfall headwall structure, it shall be necessary to reinstate the existing embankment.
- The sheet piled cofferdam shall be extracted using the Movax equipment in accordance with their safe system of work.
- The excavated slopes shall be reinstated to the profiles shown on the design drawing. Surface retention shall comprise a 150mm thickness geocell mattress, backfilled with class 6F3 material. The material shall be compacted in suitable layers to conform with the chosen compaction equipment.
- The surrounding wing walls will also be completed/reinstated by installing pre seeded coir matting bags to ensure the riverbank fully establishes and no erosion takes place.
- The design details Blockstone to be installed as part of the embankment reinstatement and shall be installed in accordance with the designer's standard detail (including foundations required).
- Once the foundations have been constructed and the concrete cured, using the excavator, selected pieces of blockstone shall then be lifted from the storage area and transported to the working area under supervision of the Slinger/Signaller. From here the blockstone shall be placed onto the foundation. During the lifting operation the operative working with the blockstone is to stand clear/exit the works to prevent lifting above their head.
- The block stone wall shall be brought up to the level specified on the design drawings and backfilled with no fines concrete, which will allow the water to percolate through the ground and prevent water pressure building up behind the wall). See Figure 15.

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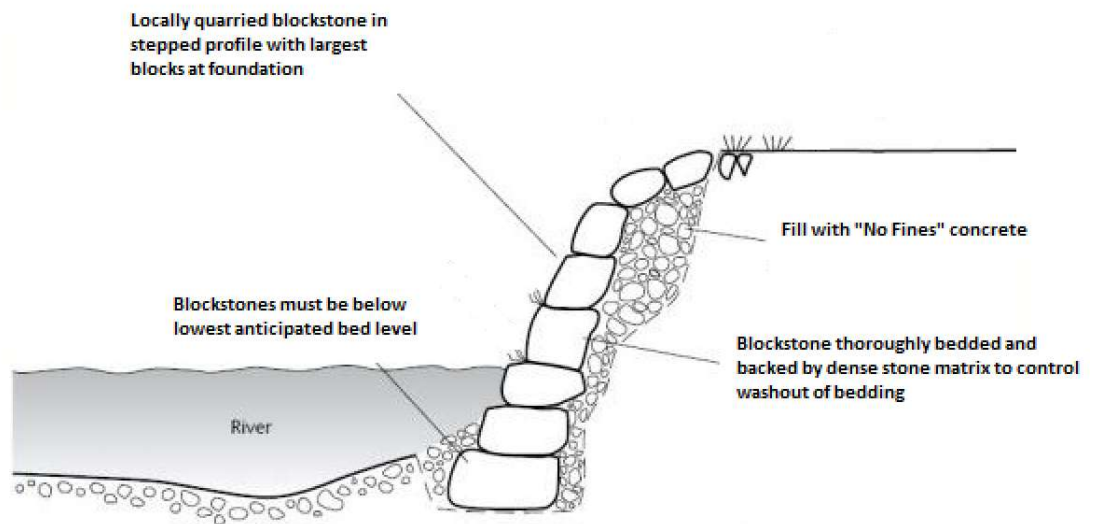


Figure 15 – Section Through a Typical Blockstone Embankment

- On completion of the embankment reinstatement, the flood protection bund shall be reinstated in accordance with the detail provided by the designer, which has not yet been confirmed.
- At this stage the access ladder, handrails, penstock with safety grill can be installed. (Cover under separate RAMS).
- The temporary works sheet piles shall then be removed by the approved specialist subcontractor in accordance with their safe system of work.
- Finally, the silt control measures shall be removed from the river, which may require the use of a suitable mobile crane. The crane shall be setup on a designed pile pad and shall lift the materials out of the river and into a designated storage area.
- Any material deemed as unsuitable for reuse on site shall be taken from site to a licensed tip for disposal, accompanied with a coded waste transfer note.

Section 5 – Plant, Equipment

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Match plant and equipment to qualified personnel and include any specific PPE details.

- The following plant and equipment will be used at various times during this operation:-Plant, equipment and lifting equipment will only be used by operators who are authorised, trained and have CPCS certification.
- The operator must inspect all plant and equipment before use and if any damage is found, then it shall be removed from service and the Foreman / Supervisor must be informed.

Plant and Equipment

Equipment description	Test Certificates in date (matched to equipment)	Operator details
360 Excavator(s) – 25T / 13T	12-month thorough examination inclusive of quick hitch.	CPCS trained including lifting with excavators.
Pile Cropper 4 Jaw in-situ pile cutter	12 monthly, lifting accessories at 6 monthly.	CPCS trained.
10T Tracked Dumper	12 monthly, lifting accessories at 6 monthly.	CPCS trained.
Hiab Delivery Lorries	12 monthly, lifting accessories at 6 monthly.	CPCS trained
Temporary Works Sheets	12 monthly, lifting accessories at 6 monthly	
Silt Traps (Sedi mat), Aquarock and Bubble Curtain		
Lifting Equipment	12 monthly, lifting accessories at 6 monthly.	
Survey Equipment (EDM, Auto Level, Pipe Laser)	At 6 monthly	

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Personal Protective Equipment (PPE)

Equipment description	Specification (e.g. type, grade)	Training required
Fluorescent jackets or waistcoats	(to BS EN 471 Class 2) (Class 3 on high speed roads))	
Safety glasses or goggles	(to BS EN 166-F for general site work)	
Safety helmets	(to BS EN3 97)	
Steel toe capped boots with steel midsole		
Gloves (appropriate for task)		
Harness and Lanyard. Buoyancy Aids on site		
Waders		

Section 6 – How Environmental Matters are Controlled

6.1 FRAP Conditions

- There shall be no stock piling or storing of materials in the floodplain unless in broken heaps parallel to the direction of flood flow.
- Spill kits must be kept on site and be readily available for use.
- Spillages must not be washed away but must be remediated with suitably absorbent material (e.g. booms, sand etc.) and disposed off-site to a permitted waste facility.
- The agreed method of working must be complied with at all times to avoid discolouration / sedimentation or pollution of the watercourse. Should any discolouration/sedimentation or pollution of the watercourse occur; work must stop immediately, and Natural Resources Wales notified on **0300 065 3000** to review working practices before work recommences.
- All plant, machinery, tools, and excavations must be kept in such a manner as to prevent mammals from becoming trapped, particularly during periods where the site is unsupervised.

Specific Environmental controls will be planned and implemented to include the following measures.

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- Appropriate task lighting – directed toward the work location only, so as not to create nuisance outside the working area. (Works planned during daylight hours).
- Appropriate site communication for workers within the excavation and outside (banksman & hand signals).
- Bunded fuel containers to be located at the main compound, i.e away from any watercourse, and to prevent any contamination risk of the ground.
- **Excavators and plant involved with the operations must have biodegradable oil that is not harmful to the environment. All plant must be of excellent working order.**
- Construction plant to refuel at the designated fuelling points at the site compound.
- All plant to be maintained in good condition and regularly inspected, checked and tested in accordance with PPM Planned Preventative Maintenance schedules and best practice.
- Noise alleviation measures to reduce any exposure to excessive noise – plant to be supplied with correctly maintained and fitted exhausts.
- Fire prevention equipment to be provided at working locations in addition to site compounds.

The following ecological recommendations are made to ensure compliance with current environmental legislation and to protect existing habitats and species:

- A pre-construction check will be undertaken of suitable habitats within 30m of the site to confirm the absence of otter and badger, prior to any vegetation clearance and construction works commencing.
- Vegetation clearance works within the breeding bird season (March-August inclusive) will be avoided. However, if this is not possible, potentially suitable nesting habitat should be checked by a suitably experienced ecologist immediately prior to its removal. If nests are found, further work should be delayed until young have fledged and left the nest, and the nest is no longer in use.
- To ensure legal compliance, the clearance of vegetation which is suitable for supporting reptiles should be undertaken following a two staged approach. The first stage should comprise the clearance of vegetation down to 200mm, and the second stage clearing the remaining vegetation at least 24 hours later. Hand tools will be used, and the task will be undertaken under supervision by a suitably experienced ecologist.
- To mitigate for potential impacts on foraging and commuting bats during works, works should ideally not be carried out outside daylight hours. In addition, night-time and operational lighting should be absent where possible, and where it is necessary it should be minimised, and directed away from features with the greatest potential for use by nocturnal species.
- Any open excavations on site are to be covered/protected at night or an appropriate escape for mammals provided.
- If any protected species are encountered during the works, all work in the vicinity is to stop immediately and a suitably experienced ecologist contacted for advice on how to proceed.
- Invasive species management will be outlined within the CEMP document. All affected areas will have pre-treatment, during and post to minimise the growth of the knotweed. Minimum exclusion zone of 7m from affected areas. All plant to be washed and cleaned prior to being removed from the affected area.
- Works have been targeted to avoid the spawning period of May to October as well as Autumn/Winter flows when traditionally wet weather and high river flows are present.

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- 4.6.2 In the event of a spill on site no matter how minor, site personnel must firstly find the source of the spill and **Stop** it, then **Contain** it by using the equipment available in the Spill Response Kit. Then **Notify** the Agent, Foreman or Engineer of the details of the incident. The Site Supervisor will then take control to implement the Incident Notification Procedure and alert any third parties and emergency services as applicable.

Spill Response kits will be provided and maintained at the work locations, in addition to the site compound.

General site –wide controls will be described in the Site-Specific Plan/ Site Specific Induction.

4.7 Contingency Plans

- 4.7.1 In the event of any serious incident requiring the attention of the emergency services or environmental agencies they will be notified immediately and directed to the work location, via the general site entrance off Swansea Road, Trebanos, Pontardawe, Swansea, Wales, SA8 4BR.

- 4.7.2 First Aid kits are available in the Site cabins and are also kept by appointed First Aiders.

- 4.7.3 Damage to any statutory undertakers apparatus and incidents requiring notification to third parties should be notified to relevant people using the following contact numbers:-

Statutory Undertaker / Emergency Service Provider	Additional Info.	Number
Openreach (BT)	Urgent repairs and defective apparatus.	0800 023 2023
WPD	Emergency	0800 052 0400
Wales and West	Emergency	0800 111 999
DCWW Pollution Helpline	Sewerage	08000 853968
DCWW Control Room	General Enquiries	08000 520130
Natural Resource Wales	Contact nr.	0300 065 3000
Police/Ambulance/Fire Service	Emergency	999

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Sketch box 1

Sketch box 2

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I confirm that I have read and understand the requirements of this method statement and associated risk assessments and will ensure their communication to operatives under my control and to those who may be affected by its requirements

Signed		Date	
Print name		Supervisor	

[illegible]

1. If you have any doubt about any information given or contained in this Method Statement – ASK FOR CLARIFICATION.

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Safety, Health and Environment risk assessment

Project title and contract no.		Trebanos WwTW		Risk assessment no.		6038		Risk Factor				
Activity		Outfall		Location		Trebanos WwTW		Risk Quantity Almost no probability A small probability A high probability Almost certain No injury, damage or environment impact Minor injury, damage or environment impact Major injury, damage or environment impact Fatality, building loss, catastrophic environment				
Person conducting assessment		Huw Williams		Date		03.05.24						
Person supervising work		Justin Owens		Date		May 2024						
Persons exposed												
Employees	x	Other workers	x	Public/ visitors	x	Young persons						
New / expectant mothers				Disabled								
Estimated total number of persons at risk				6								
Hazards (what might cause harm?)				S	H	E			S	H	E	
1	Adverse weather conditions				27	Structure	x		x	x		
2	Cold				28	Temporary Works*	x		x	x		
3	Electricity				29	Vehicle / mobile equipment	x		x	x		
4	Excavation	x	x	x	30	Working hours / fatigue*						
5	Fire / flammable atmosphere				31	Workstation design						
6	Floor / ground conditions	x	x	x	32	Work at height	x		x			
7	Flying particle / dust	x	x	x	33	Archaeology						
8	Hand or power tool	x	x		34	Concrete washout						
9	Hazardous substance*				35	Consents, permits and planning	x		x			
10	Heat / hot work				36	Contaminated land						
11	Lack of experience	x	x	x	37	Designated protected areas e.g.						
12	Lack of training	x	x	x	38	Dewatering	x		x			
13	Lack of / too much oxygen				39	Energy and carbon reductions						
14	Access	x	x	x	40	Fuel – deliveries, storage, bunds,						
15	Lifting equipment appliances	x	x	x	41	Invasive species						
16	Lighting	x	x		42	Nuisance (dust, mud, noise, light,						
17	Lone working*				43	Protected species						
18	Loading / unloading	x	x		44	Protection of watercourses	x		x			
19	Live services				45	Public rights of way, easements etc.						
20	Materials				46	Silt generation						
21	Moving parts of machinery	x	x	x	47	Site drainage – interceptors, drains,						
22	Proximity to water	x	x	x	48	Spillage (controls / response)						
23	Scaffold				49	Trees and hedgerows						
24	Sharp objects				50	Waste disposal and documentation						
25	Stairs / steps				51	Waste generation, storage and						
26	Static equipment / machinery	x	x	x	52	Other	x		x			
Risk Level Insignificant Acceptable Unacceptable Action No action required and no documentary records need to be kept. No further preventative action. Consideration shall be given to more cost effective solutions or improvements that impose no additional cost burden. Monitoring required to ensure that controls in place are properly maintained. Work shall not be started or continued until the risk level has been reduced to an acceptable risk level. While the control measures selected shall be cost-effective, legally there is an absolute duty to reduce the risk, this means that if it is not possible to reduce the risk even with unlimited resources, then												
Notes: 1. Physical Hazards are the nature of issues that may cause harm. Tick box for hazard 2. Preventative / Control Measures are the actions that will stop it going wrong 3. Control measures are to ensure that residual risks are reduced to a minimum. Where controls fail to reduce the risk to a acceptable level then refer assessment to your line manager 4. If the operations are likely to affect the public or the safe operation of a public infrastructure or transport system, the control measures must reduce the likelihood of significant harm to the level that existed before our work commenced 5. Where young persons or expectant mothers are involved in the activity, ensure that any additional controls are put in place in accordance with local procedures 6. In addition to the above, consideration must be given to other individuals' susceptibility due to pre-existing health conditions, e.g. bad back, poor hearing. Additional 'human factors' such as ergonomics, workplace design, etc. should also be considered 7. Where a hazard is identified that is not listed in the Physical Hazards list, enter the hazard description followed by other in brackets i.e. (Other) 8. * indicated a separate specific Risk assessment must be carried out.												

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Safety, Health and Environment risk assessment

Hazard no. (from page 1)	Nature of risk (What might go wrong?)	Risk before controls U / A	Control measures (How do you stop it going wrong?)	Control measure implemented by (name)	Risk after controls U / A
1/22 /44/35/38	Excavation near water course Contamination of the river flows causing damage or kill aquatic life – this may be through silt pollution or chemical contamination. Injury to persons working within the river course Removal of Flood Bund	U	- Works will proceed after the weather forecast has been checked and there is no heavy rain expected. River flows expected to be 300mm to 600mm depth. - Silt Mitigation to be installed as described in document to ensure any silt or debris is captured prior to it progressing through the river course. - A temporary dam will be created using specialist equipment (Sheet Piles) adjacent to the water's edge to divert the flow of water away from the outfall excavation. - Excess water within temporary dam will be over pumped to filtration system and returned to River Tawe. - Permit to pump from Morgan Sindall management systems to be authorised prior to use. - A spill kit will be on the excavator at all times and the excavator will be checked before and after the operation and on a daily basis for leaks and faults. No refuelling will	Site Supervisor and operatives	A

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			take place at the worksite. Refuelling will take place in the designated area within the site compound. • All plant and machinery to use biodegradable oil in that is working within vicinity of the river course. • All operatives to be briefed on the contents of this document and sign to confirm they have understood the requirements. All operatives to have a toolbox talk of working within river courses and the potential impacts • Approval to be obtained via NRW for FRAP prior to works commencing. • Pre inspection of working and during for signs of ecological and environmental issues that may need to get addressed. • Designated ecologist/ECOW to be on site periodically during works to inspect. • All operatives working on or near the water course to wear life jackets		
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			and appropriate wet gear i.e. waders etc. • Watchmen to be present on the bank side supervising works whilst underway. • Ground Level temporary works Bund to be designed and constructed that will provide same level of protection to the river bank as the current one does		
32	Working at height	H	• All work at height to be minimised and where possible all work to be carried out at ground level. • Edge protection must be in place where there is an open edge. • Where scaffold is required, it is to be erected and altered only by advanced scaffolder trained and certified. • Scaffold to be inspected prior to use and have current ladder tag in place. Operatives are to use designated access at all times. • All scaffold to have handrails and toe boards at all times. • Ladder access to be tied at all times and all ops who are working at	Site Supervisor and operatives	A

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			height must be trained and competent.		
15/18//21/29	Lifting operations	H	- All lifting activities are to be carried out in accordance with the lift plan – produced by the Morgan Sindall appointed person. This will be briefed to all operatives to ensure its contents are understood. - All lifting equipment to be checked prior to each lift by trained and competent person. - Any item of lifting equipment deemed faulty will be removed from service and labelled. Site management will be immediately informed. - All lifting equipment will be thoroughly examined at no more than six monthly intervals.	Site Supervisor and operatives	A

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			Certification of which will be held in site offices by Morgan Sindall. • All lifts to be controlled by trained and certified slinger / signaller. Plant operators to be trained and competent with CPCS certification. • All items of plant and materials are to be lifted in accordance with the manufacturer's instructions. No ops are to walk under or near load when it is being lifted, this will be controlled by on site slinger / signaller.		
14	Unauthorised personnel gaining access to work area	M	• The work area is to be enclosed by a double clipped heras fencing. Fencing will display warning signs highlighting the dangers of entering the work area.	Site Supervisor and operatives	A

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6	Slips; trips and falls	H	Slips, trips, falls / falls of material - Good level of housekeeping to be maintained by all site operatives and monitored by site supervisors. - Excavations to have edge protection of minimum 950mm high. - All work areas are to be kept clear of obstacles and debris - Cables are to be kept clear of walkways and positioned as not to cause tripping hazard. - Any loose materials removed from open edges.	Site Supervisor and operatives	A
7/8	Plant and small tools	M	- All plant operators will be trained to CPCS standard. - Ear protection to be worn when using power tools. Operatives to be occupational health screened at regular intervals - All power tools and small plant to have daily and weekly checks and records kept on file. - Dust masks to be worn when appropriate	Site Supervisor and operatives	A

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			- No equipment to be used if the guard has been removed. - Any damaged or defective item of plant will be removed from use and a supervisor informed.		
4	Excavation works - Striking buried services - Possible death by electric shock/disconnection of services to surrounding properties - Striking Overheads	U	- All excavations will be covered by a permit to excavate. - Prior to issue of the permit all service drawings are to be studied and a thorough C.A.T scan performed. - All services known and found to be marked on site. - All operatives to wear full ARC resistant PPE for excavation and backfill operations. - Excavation to be carried out by hand when 500mm or less from a known service. - Trench dig to be supervised by a competent trained and experienced person - If unknown service is found, stop and report it to the site management team. - Existing services to be diverted by statutory owner.	Site management team, work supervisor, services coordinator	A

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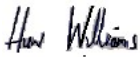
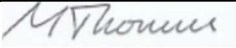
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Safety, Health and Environment risk assessment

Asbestos		Lead		Radiation		Temporary Works	x	Hearing		Specialist Clothing	Flame Retardant	x	High Impact Eye protection	x	Others Specify	
						Name			Signature				Date			
Person completing the assessment:						Huw Williams							03/05/24			
Person reviewing the assessment:						Mark Thomas							3/5/2024			
Date to be reviewed:																