

Morgan Sindall

Menai Shellfish - Shadow Habitats Regulations Assessment

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COMMERCIAL IN CONFIDENCE



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1. Executive Summary

It is understood that Dŵr Cymru Welsh Water (DCWW) have appointed Morgan Sindall in order to undertake a scheme which involves the lining of an existing sewer, filling of an existing chamber for it to be abandoned, the sealing of a number of leaks in an additional chamber and the construction and installation of a new concrete chamber. The proposed works are within 1 km of and have direct hydrological connectivity to Y Fenai a Bae Conwy / Menai Strait and Conwy Bay Special Area of Conservation (SAC) and Traeth Lafan / Lavan Sands, Conwy Bay Special Protection Area (SPA). There are three other SACs, two other SPAs and one Ramsar Site within 10 km of the proposed works. The proposed works therefore have the potential to have adverse effects on the nearby European designated sites.

This Shadow Habitats Regulations Assessment (sHRA) has been prepared to determine whether there will be any 'likely significant effects' (LSE) as a result of the proposed works.

Following a *Stage 1 Screening Assessment*, it is concluded that the proposed works will not have an adverse effect on a European designated site. Due to the overlap in interest features, this conclusion can be extended to all component SSSIs within the SAC and SPA.

2. Introduction

2.1 Background

Morgan Sindall, as appointed by Dŵr Cymru Welsh Water (DCWW), proposes to undertake a scheme which involves the lining of an existing sewer, filling of an existing chamber for it to be abandoned, the sealing of a number of leaks in an additional chamber, and the construction and installation of a new concrete chamber for stormwater attenuation. The proposed works are located at Beach Road, Bangor, Gwynedd (National Grid Reference: SH 58534 73007, nearest postcode: LL57 1DG), hereafter referred to as 'the Site'.

The Site is located within 1 km of Y Fenai a Bae Conwy / Menai Strait and Conwy Bay Special Area of Conservation (SAC) and Traeth Lafan / Lavan Sands, Conway Bay Special Protection Area (SPA).

A number of other European designated sites are located within 10 km of the Site, including:

- Eryi / Snowdonia SAC;
- Liverpool Bay / Bae Lerpwl (Wales) SPA; and
- Coedydd Aber SAC;
- Anglesey Terns / Morwenoliaid Ynys Môn SPA.
- Corsydd Môn a Llyn / Anglesey and Llyn Fens Ramsar Site;
- Corsydd Mon / Anglesey Fens SAC;

The proposed works have the potential to have an adverse effect on the nearby European designated sites. Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') states that if a plan or project is "...likely to have a significant effect on a European site..." then the plan-making authority must "...make an appropriate assessment of the implications for the site in view of that site's conservation objectives" before the plan is given effect. The process by which Regulation 63 is met is known as Habitats Regulations Assessment (HRA). An HRA determines whether there will be any 'likely significant effects' (LSE) on any European site as a result of a plan's implementation (either on its own or 'in combination' with other plans or projects) and, if so, whether these effects will result in any adverse effects on site integrity.

Under Regulation 63 of The Habitats Regulations, it is the responsibility of a competent authority (i.e., the Local Planning Authority or statutory body such as Natural Resources Wales (NRW)) to conduct an HRA. However, these can be completed by the applicant and adopted by the Local Authority or statutory body as a 'shadow' HRA (sHRA) to support any required consenting process.

As a part of the plan preparation process, DCWW appointed APEM Ltd (APEM) to undertake a Stage 1 Screening Assessment that will provide the information needed to enable DCWW and NRW, as the competent authorities under the Habitats Regulations, to carry out an HRA in relation to the proposed works.

2.2 Purpose of Report

The purpose of this HRA is to:

- Describe the project;
- Provide information about the ecological interests and features of the European sites which may be affected by the project;
- Describe the likely nature and scale of the impacts on the European sites from the project or any likely 'in combination' effects with other plans and / or projects; and
- Consider the results to allow NRW, as the competent authority under The Habitats Regulations, to decide whether the project proposals have the potential to significantly affect any European or Ramsar sites.

2.3 Report Structure

This report is set out as follows:

- Section 1: Executive Summary;
- Section 2: Introduction;
- Section 3: Habitats Regulations Assessment – description of the HRA process and methods used;
- Section 4: The Project – description of the proposed works;
- Section 5: Identification of Relevant European Sites;
- Section 6: Supporting Studies;
- Section 7: Screening for Likely Significant Effects (LSE) – identification of sites and potential hazards; consideration is given to other plans which may result in an in-combination effect (if appropriate), thereby establishing whether progression to *Stage 2 Appropriate Assessment* is required; and,
- Section 8: Conclusions.

3. Habitats Regulations Assessment

3.1 Legislation

The Conservation of Habitats and Species Regulations 2017, referred to as the 'Habitats Regulations', transpose the requirements of the European Birds and Habitats Directive¹ into UK legislation.

The Birds Directive aims to protect rare and vulnerable birds and the habitats that they depend upon, and this is achieved in part through the classification of Special Protection Areas (SPAs).

The Habitats Directive aims to protect plants, habitats, and animals other than birds, and this is achieved in part through the creation of Special Areas of Conservation (SACs). Article 6(1) and (2) of the Habitats Directive require that Member States establish management measures for these areas, to avoid deterioration of their ecological interest. SPAs and SACs include European Marine Sites, which are designated sites below Mean High Water.

The UK is also a contracting party to the Ramsar Convention², which seeks to protect wetlands of international importance, especially those wetlands utilised as waterfowl habitat. It is UK Government policy (in Wales this is identified within the Planning Policy Wales Technical Advice Note) that all competent authorities should treat Ramsar sites similarly as if they are fully designated European sites.

Collectively, all formally proposed and fully classified or designated SPAs and SACs, and all formally proposed or listed Ramsar sites form a pan-European Union network of protected areas known as Natura 2000. These are also referred to as European sites³, and this term has been adopted throughout this report.

The legislation transposing the Habitats Directive and Wild Birds Directives has been changed so that they continue to operate effectively from 1st January 2021. The changes are made by

¹ Council Directive on the conservation of natural habitats and of wild fauna and flora of 21st May 1992 (92/43/EEC) and Council Directive on the conservation of wild birds of 2nd April 1979 (70/409/EEC) consolidated by the Birds Directive 2009 (2009/147/EC).

² Convention on wetlands of international importance especially as waterfowl habitat, Ramsar, Iran, 2/2/71 as amended by the Paris protocol of 3/12/92 and the Regina amendments adopted at the extraordinary conference of contracting parties at Regina, Saskatchewan, Canada 28/5 – 3/6/87, most commonly referred to as the 'Ramsar Convention'.

³ Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, September 2013 edition UK: DTA Publications Limited

the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019⁴. The changes made ensure the strict protections afforded to sites, habitats, and species, including wild birds, continue.

Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant. The obligations of a competent authority in the 2017 Regulations for the protection of sites or species do not change.

3.2 Habitats Regulations Assessment Process

Regulation 63 of the Habitats Regulations requires a competent authority to undertake an 'appropriate assessment' of any plan or project (alone or in-combination with other plans and projects) which is likely to have a significant effect on the features of a European site unless the project is directly connected with the management of the site.

It is incumbent on any public body (referred to as a competent authority within the Habitats Regulations) to carry out an HRA where they are proposing to carry out a project, implement a plan or authorise another party to carry out a plan or project. Competent authorities are required to record the process undertaken, ensuring that there will be no adverse effects on the integrity of a European site as a result of a plan or project.

3.3 Assessment Stages

The European Commission has developed guidance in relation to Articles 6(3) and 6(4) of the Habitats Directive⁵, and this recommends a four-stage approach to addressing the requirements of these Articles. Table 1 summarises the four HRA stages.

Table 1 – Stages in the Habitats Regulations Assessment Process

Stage	Description
Stage 1: Screening	Assessment of whether a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on a Natura 2000 site.

⁴ <https://www.legislation.gov.uk/ukdsi/2019/9780111176573>

⁵ European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 site. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Published November 2001.

Stage	Description
Stage 2: Appropriate Assessment	Consider the impacts of the plan on the integrity of a European site, alone or in combination with other plans or projects and with reference to the site's conservation objectives. Consider measures to mitigate the identified impacts. Prepare an Appropriate Assessment Report for consultation with key stakeholders including NRW.
Stage 3: Assessment of alternative solutions	Re-assessing alternatives if effective mitigation proves impossible and develop / select a different alternative that does not harm site integrity. If no such alternatives exist, the process continues to Stage 4.
Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain	At this stage, plans which, after mitigation still have an adverse effect on the site(s) integrity should be dropped. Assessing whether a plan can be passed justified by 'imperative reasons of overriding public interest' (IROPI) or permitted on the grounds of human health, public safety, or primary beneficial consequences for the environment.

3.3.1 Guidance on Procedure and Method

The information has additionally been informed by the following guidance and policy documents:

- National Assembly for Wales Research Service (2017). Research Briefing: The Planning Series: 16 – Habitats Regulations Assessment.
- Planning Policy Wales. Technical Advice Note (TAN) 5, Nature Conservation and Planning. Welsh Government, September 2009. Annex 6: The appraisal of development plans in Wales under the provisions of the Habitats Regulations.
- Tyldesley, D. and Chapman, C. (2020) The Habitats Regulations Assessment Handbook. DTA Publications Limited.

The guidance does not define the method for undertaking or recording Habitats Regulations Assessment but notes that the adopted method must be appropriate to its purpose under the Habitats Directive and Habitats Regulations i.e., an 'appropriate assessment'.

3.4 EU Exit

The legislation transposing the EU Habitats Directive and the Wild Birds Directive has been changed so that they continue to operate effectively from 1st January 2021. This includes the

Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales, and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended). The changes have been made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The changes ensure the strict protections afforded to sites, habitats, and species, including wild birds, continue. Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

4. The Project

4.1 Overview of the Works

DCWW propose to undertake a scheme which involves the lining of an existing sewer, filling of an existing chamber for it to be abandoned, the sealing of leaks in an additional chamber, and the construction and installation of a new concrete chamber.

The carpark east of the Site and slipway will be utilised for vehicle and pump access.

4.2 Location of the Works

The proposed works are located at Menai Shellfish, Beach Road, Bangor, Gwynedd (National Grid Reference: SH 58528 73012, nearest postcode: LL57 1 DG) (see Figure 1 below).



Figure 1 – Site Location

4.3 Project details

4.3.1 Scope of works

A visual summary of the works can be found in Appendix 1.

The methodology for undertaking the mains renewal is as follows:

1) Lining existing 450 sewer between MH 5001 and MH 5902

- Clean sewer using high-pressure water jetting equipment to be situated in the car park East of the beach or on nearby road.
- Set up and test CCTV equipment. Undertake CCTV Survey. During CCTV survey all incoming connection locations are recorded for use when re-opening after lining
- Set up over pumping – sewer flow control and drainage protection. (Where practical, flows will be over pumped using diesel driven pumps, discharging via “layflat” hoses suitably protected and running to the downstream manhole of the section being lined. Where “layflat” hoses cannot be used, flows will be over pumped using a tanker (equipment to be situated in the car park East of the beach or on nearby road).
- The lining rig and liner will be sited in the car park East of the beach.
- The winch and compressor will be located on hardstanding off the beach.
- Work will commence preparing each end of the lining run by Installing a Pulley and Roller system.
- A draw cord is then passed through the pipe. This is passed through using either the CCTV unit or a cobra wheel. The winch wire is attached to the draw cord at the launch end and is then fixed to the winch already established at the reception end.
- The winch is used to feed in the liner in a lay flat form into the manhole.
- The liner must be removed from the transportation packaging and fed in to the launch end of the lining run. A leading edge will be made at the end of the liner; this will enable the winch cable to be securely fastened (The leading edge is formed by simply folding the liner back and securing with a strop to attach the winch). The liner is fed from ground level into the Manhole and winched into pipe. Once in position the winch is disconnected and removed.
- Once the liner has been fed in, the ends will have to be closed using packers (if required the packers will be anchored using Raw bolts and straps). The liner is then inflated to approx. 250-450 mBar (dependent upon the diameter being installed) using compressed air).
- Before the light train is inserted into the liner, a pre-determined test will be undertaken inside the lining vehicle, this will consist of switching on the light cores for approximately 30 seconds this will pre-determine if any of the bulbs/sensors are dis-functional.

- Now the liner has been set up the UVA light core is fed into the liner from the reception end. The light core will be pulled through to visually inspect the inflated liner using its integral camera to ensure correct positioning before curing.
- The light cores must only be switched on once they have been completely inserted in the liner. The light core will then be winched through the liner at the predetermined speed set in accordance with the liner diameter. Winching speeds as per table within the operating manual. For a 150mm /225mm liner, the speed will be set at 0.8 Meters per minute (dependent upon weather/site conditions), data will be recorded at 30-second intervals during liner inflation through to the end of the curing process.
- On completion of the curing works the liner will be allowed to cool for between 15 to 20 mins.
- The lining ends and intermediate MH if applicable are cut and trimmed using air driven tools.
- Carry out post CCTV survey.
- Complete job sheet and survey details and dispatch to office for coding and preparation of reports etc.
- All flow control and by-pass equipment are removed (pumps, hoses, stoppers etc.)
- Carry out a chambers check to ensure they are left clean and free from obstructions. Gas detectors are removed and the covers replaced.
- Remove signing, lighting and guarding taking note of potentially changed traffic conditions.
- Ensure the site is tidy, dispose of any waste and arising's responsibly.

2) Fill and abandon MH 5001

- The chamber will be surveyed in advance and a former made to be fitted inside the chamber.
- Works will be undertaken aligned with the tide on a date to give most dry working time at the beach.
- The small excavator will track onto the beach from the small slipway and track down to the chamber.
- The cover, brickwork and manhole cover slab will be removed by the excavator and loaded into a dumper for removal from the area.
- The former will then be fitted and secured in position and sealed.
- The area above the former will then be filled with concrete by a concrete pump.
- The concrete pump will be located in the car park to the East of the beach.
- The area around the chamber will be covered in Visqueen (non-permeable membrane) to prevent concrete spills onto the beach.
- Once the concrete has been poured to top of ring level the beach will be locally reinstated over the buried and abandoned chamber.
- All plant and materials removed from the beach.

3) Sealing MH 5902 to stop the water ingress

- Jet wash manhole to remove all surface contamination.
- Inspect entire manhole for water ingress.
- Treat all live water leaks by drilling 14mm holes, inserting bore packers and injecting using MC Injekt 2088 foaming polyurethane leak sealing resin.
- The following day remove all bore packers and pump drill holes with Nafufill KM 250.
- Fill joints with the using Nafufill KM 250 concrete repair mortar.
- Form angle fillets to all 90 degree corner details using Nafufill KM 250 concrete repair mortar.
- To a clean, well prepared substrate apply MC-Proof 101 HS (formerly Oxal DS-HS), building in layers and tanking the repaired areas.
- On completion remove all dust and debris.
- Check chamber to ensure that all tools / equipment has been removed.
- Refit MH cover and generally check site for cleanliness and security.

4) Formation of Haul Road / Laydown Area and Piling / Crane Base

- Prior to any excavation work being undertaken a full CAT and Genny survey utilising the supplied STAT plans 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 in accordance with Morgan Sindall RAMS 828 – Excavation of Trial Holes Project Wide.
- MS Engineer will then mark out the extent of the haul road considering the extra footprint required at the extremities of the road. The blue line in Appendix 1 illustrates the outline of the road that is to be installed.
- MS Engineer will then set a formation level on a rotating laser that the haul road will need to be excavated down to.
- The 360-degree tracked excavator will strip the topsoil/turf and load directly into the 9t forward tipping dumper for removal to a temporary stockpile in a designated storage area. All temporary stockpiles will be sealed against weather and to minimise dust.
- Stockpiles will be located away from the tree protection zone in accordance with NJUG Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees Vol 4 Issue 2.

- The haul road will need to eventually service both a crane and piling rig. It is proposed that the access road is to be excavated to the formation level of the access road where a 250mm layer of 6F5 capping stone will be used to form the haul road. The 360-degree tracked excavator will remove spoil and load directly into 20t tipper lorries for removal off site.
- All vehicle movements will be controlled by a banksman at all times and the surface of Beach Road Car Park East / Beach Road will be monitored for mud and debris throughout the operation – A road sweeper will be deployed when necessary to keep the existing carriageways clean.
- Once the haul road has been excavated down to formation level geotextile will then be placed within the footprint of the trench to segregate the layer of capping stone from the sub-strata. This will prevent any mixing of the layers which could impair the integrity of the haul road – any cutting to shape/size will be carried out using a retractable blade ‘safety knife’ – NO FIXED BLADE KNIVES TO BE USED AT ANY TIME.
- For the haul-road a 250mm layer of 6F5 stone will then be installed along the footprint of the access road. 20t tipper lorries will reverse under the guidance of a banksman into the site entrance off Beach Road and tip the imported 6F5 material, forming a road into the site by systematically tipping off the previously spread and levelled load.
- This process will continue until the first of the two 110mm layers has been spread and levelled by the 22t excavator when the compaction will be fully completed as outlined below.
- MS Engineer setup a rotating laser for the stone, which will be installed in two 110mm layers, with each layer receiving the required degree of compaction in line with method compaction outlined in Table 6/4 method 6 of Series 600 of the Specification for Highway Works – 16 passes of a 120 roller (2600Kg or similar) in 110mm layers.
- The above process will then be completed until a circa 250mm thick haul road made up of imported 6F5 capping material has been installed.
- The haul road will be watered down to suppress dust especially in the summer months.

5) Formation of compound and set-up of welfare

- The main site compound will be situated within the recreational field adjacent to Beach Road as shown in Appendix 1. As mentioned, the site team must have had confirmation from DCWW estates that the Notice has come into effect, and we are permitted access.

- Access shall be gained through the existing gated entrance off Beach Road leading to Beach Road East Car Park, where the first delivery shall be a 22ft towable welfare unit followed by the temporary 'Heras' fencing, signs, and barriers to secure the site and prevent any members of the public from parking/walking through the work area.
- If it is necessary to make any entrances bigger than the existing, any furniture shall be removed and stored temporally inside of the compound and replaced upon completion of the scheme.
- Heras fence will be delivered on stillages – these stillages shall be off-loaded by the 20t excavator. Fencing will be erected by a team of two operatives and the excavator, which will carry the stillages to central points along full perimeter of the CDM area. The excavator will also carry the rubberised Heras fence feet blocks and deposit these also at strategic points along the CDM perimeter. From here the operatives will pick up the fencing and feet blocks and carry the fencing to install in accordance with the manufacturer's instructions. Panels will be inserted into the rubber feet and double clipped tight with spanners. A Heras fence panel weighs approximately 16Kg and a rubber foot approximately 20Kg.
- The area to be used as the compound shall be scanned for services using the CAT & Genny. The supplied utility drawings shall also be used to try and identify any services detected. Once the services have been located and identified a permit to excavate shall be issued. If necessary, trial holes will be carried out using hand digging techniques to uncover/expose any services.
- HOLD POINT – No excavation without an authorised Permit to Dig
- The area shall be stripped of topsoil using a 360 excavator and loaded into a Dual View dumper which shall transport it to a designated topsoil stockpile area on site and sealed.
- The stockpile of topsoil shall be reused for reinstatement at the end of the scheme. The excavation shall be taken down to the formation level as directed by the Site Engineer, and geotextile laid followed by spreading and levelling a MOT GSB Type 1 material with the 20t excavator.
- 20t tipper lorries will be reversed off Beach Road into the site access road and compound under the control of a banksman at all times, and will continue to tip into the site area, always staying on the previously tipped and spread material. This will continue until the access road and compound are fully formed with the compacted Type 1 material.
- The stone shall be compacted with a smooth drum roller (Bomag 120 or similar), the compaction shall continue until the ground is solid.

- Relevant site signage and fire-fighting equipment will be distributed around the compound, including the access gates.
 - Any existing services within the compound will be clearly marked.
 - A standalone CCTV tower system shall be deployed by the nominated security company and erected within the compound in a suitable location to provide out of hours site protection. Specific RAMS will be in place to carry out this task. Smaller items of plant that may be required for the site works will be off loaded using the excavator where possible to prevent manual handling issues.
 - A Lift Plan shall have been completed prior to any lifting activity taking place.
 - Off Loading / Loading of Vehicles / Plant
 - All Drivers to Stop and Report to Site Office.
 - 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 while outside of the cab.
 - Lorries will be sent to site with handrails fixed to the bed of the lorry to act as edge 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.
 - Site set up will be laid out as agreed with staff members of the construction team. If a decision is made to double stack any unit e.g., the office or canteen above the drying room, the cabin supplier must fit securing clamps at the corners of the units to prevent them toppling during high winds. A proprietary staircase shall also be supplied and installed for safe access into the building.
- 6) Installation of sheet piles (Estimated 12m sheets) – Site specific RAMS to be completed by specialist subcontractor.
- An Exclusion zone will be required to be set up around the entire working area prior to beginning work.

- Only the banksman will be permitted in the swing area whilst controlling the pile installation – No plant movements will take place unless instructed by the Banksman.
- Extreme caution must be exercised at all times whilst handling & installing the sheet piles due to the surrounding work operations being conducted by others.
- The Rig will be driven to the area to be piled with the base unit tracks in the stowed position of 3 Metres wide, which will then be extended to 4.2m to give a stable working width.
- The mast of the unit will be erected by mechanical means, integrated on the unit.
- Work will involve pitching Interlocking sheet piles using the Rig. These will be driven to the full depth TBC, leaving an up stand of 1.1M to the perimeter of the proposed cofferdam. No mechanical excavation will be permitted within 0.5M of any known services.
- Sheet piling works will begin at the “far end” of the proposed cofferdam, with work progressing systematically, working out of the proposed cofferdam area.
- Each of the sheet piles will be pitched and driven to final level in one operation using a single “gate” at ground level.
- The piles are gripped in the failsafe hydraulic jaws and vibrated to level using a variable moment high frequency vibrator and also the crowd force of the machine.
- The sheet pile will then be driven into the ground, assisted by the vibrating action of the piling hammer.
- Any sheet piles which do not drive to the full depth will be installed with the assistance of an auger to pre-drill the substrata and loosen the soils etc....
- Work will continue round the cofferdam area driving each pile to the required depth or to refusal.
- Once the works are complete the work area will be cleared of any un-used equipment & materials will be loaded onto a waiting vehicle.

7) Dewatering – Site specific RAMS to be completed by specialist subcontractor.

- Preparation
 - Morgan Sindall is to set out each line of wellpoints and to ensure the proposed locations are free of existing buried services. Once it has been established that the wellpoint locations are free from services, a permit to dig will be issued by the main contractor prior to the commencement of any jetting installation.
 - Morgan Sindall should provide suitable access so that the 360° machine can work along the whole length of the wellpoint line.

- A shallow slip trench along the wellpoint line will be excavated prior to our arrival to contain water used during the installation process and prevent the site from flooding. The trench will also help maximise working room beneath the restricted head room.
- Our operatives should not be subject to danger of working at height or on unstable ground. The main contractor is to ensure that any open excavations or edges have suitable edge protection or exclusion zones. Where our wellpoint locations are in the vicinity of existing excavations the edges should be suitable shored or battered as appropriate prior to our arrival.
- Uneven ground in our working area should be levelled and cleared to ensure safe access.
- Pre-Auguring
 - Wellpoints are installed at nominal 0.8m centres and terminate up to a nominal 6.5m below ground level. To penetrate the upper Clay each wellpoint location will be augured through the Clay to penetrate the silty Sands below. The augured hole will allow our jetting tube to flush to bore out prior to wellpoint installation (procedure below).
 - The hydraulic auger is connected to the excavator via single pin hitch and quick-hitch attachment on the excavator. The 3.0m x 8" Ø auger flights will be connected to the auger drive with cutting shoe fixed to the base. The excavator turns the auger flights as the boom is lowered into the ground at each wellpoint location. As the auger advances, the flights will need to be lifted and/or reversed at short intervals to prevent the flight from becoming stuck in the Clay.
- Water Supply for Jetting
 - All wellpoints will be installed using water flush jetting techniques.
 - We will require a water supply for our jetting operations will is to be provided by on site tap. Morgan Sindall should provide suitable sized hoses to ensure the water supply is available to our working location.
 - We anticipate using between 1-2m³ of water per wellpoint installation. Once the first few wellpoints are installed, a small dewatering system will be set up to enable us to generate and abstract groundwater to continue the jetting installation process.
 - The duration and speed of wellpoint installation is governed by the water supply available to us.
 - Jetting Installation using the Placing Tube

- During the installation of the wellpoints the operative should wear waterproof PPE, eye protection and gloves at all times.
- Wellpoints are to be installed using conventional water jetting techniques. A slit trench along the wellpoint line will contain water used during installation. Water will be re-circulated during installation process. Any surplus water will recharge back into the ground.
- The jetting tube will be picked up and supported by a strop or chain linked securely to the excavator via shackle. Jetting hoses will connect the top of the tube to the jetting pump. The tube will be held vertically over each wellpoint location and the jetting pump will be used to pump water down the tube. The excavator will slowly lower the tube allowing it to penetrate the ground under its own weight and the action of the jetting water. To assist penetration, the tube may be intermittently raised and lowered a few centimetres to flush the hole out thoroughly.
- When the tube has penetrated to the required depth below installation level the jetting water will be allowed to continue for a few seconds to flush any loose material out of the bore. The jetting pump valve should then be closed, and the pressure allowed to dissipate to prevent any pressure causing injury upon release of the jetting tube cap.
- During jetting the water will flow up the outside of the jetting tube to form the "boil". To prevent the site flooding the Main Contractor may need to arrange for this water to be collected or pumped away.
- Wellpoint Installation
 - Once the jetting tube has reached required level, the cap of the jetting tube will be removed to enable the wellpoint installation to proceed. A wellpoint riser and with filter will be installed within the jetting tube ensuring that the filter has reached the base of the bore. At this point, if required filter sand will be placed around the filter using the procedure described below.
 - The installation supervisor will instruct the excavator operator to slowly raise the jetting tube while a check is made to ensure that the wellpoint is free and has not become stuck within the tube. The wellpoint supervisor will use hand signals to communicate with the excavator operator. Once satisfied the wellpoints are free, the jetting tube cap will be replaced, and the tube will be removed from the ground and positioned at the next location.
 - The cap of the jetting tube will be removed, and the wellpoint installed inside the tube. The excavator will raise the tube slightly and a check will be made

that the wellpoint is free and has not risen with the tube. The cap will be refitted to the jetting tube.

- Prevention of pumping sediment
 - We will use best available techniques to ensure the wellpoints do not extract fines during pumping including the following:
 - During the jetting process, once the bore has reached full depth the water will be allowed to flush out the fine-grained material for up to 1minute before the water turned off and wellpoint is installed.
 - A 200micron coco filter is installed at the inlet of each wellpoint.
 - Silica filter sand will be placed around the annulus of the wellpoint filter to facilitate drainage and the non-removal of fines.
 - All discharged groundwater will pass through a settlement/inspection tank before final discharge.
 - Filter sand is provided in 25kg bags and correct lifting techniques should be adopted when manually lifting filter sandbags to the jetting tube. A shovel is provided to add the filter sand and divide the weight of the sand if required.
 - The main contractor will be responsible for monitoring any sediment build-up during the pumping phase. Due to the level of filtering used at the wellpoint intake, we anticipate sediment build-up to be negligible throughout the works.
 - Connection of Wellpoint Equipment
 - A 150mm diameter galvanised steel header main will be positioned at ground level and run alongside and parallel with the line of wellpoints. The header main is in various lengths and incorporates steel wellpoint intakes at 0.8m centres. Intakes not required will be 'blanked off' with a tapered rubber bung.
 - Each wellpoint will be connected to the header main by a swing consisting flexible hose with in-line gate valve to enable control of individual wellpoints. The swing is fixed to the wellpoint riser with the use of an adjustable clamp and to the header main intake by galvanised steel QA style fastening – see picture opposite.
 - The wellpoint pump will be positioned at a location central to the head main line while also offering protection from other site activities and allowing access for routine servicing and maintenance throughout the contract. A wire armour suction hose will connect the pump to the header main via QA to bauer adaptor.
 - The main contractor is to ensure protection of the wellpoint equipment from other site activities throughout the contract. Damaged equipment will affect the performance of the system which will in turn elevate groundwater levels.

- All permits and discharge consents are to be arranged by the main contractor and in place prior to pumping.
- All generated water will pass through a siltbuster before final gravity discharge into the Menai Straits adjacent to the working area.
- We anticipated pumped water to be visually clear after approximately 20 minutes of the pump start up. Sediment content will be monitored during the initial stages of pumping. If sediment content is unacceptable, each wellpoint on the system will be checked and any rogue wellpoint pumping fines will be shut off. Initial maximum start up flows with a double-sided wellpoint system are likely to be in the region of 4lts/sec.
- Commissioning of Wellpoint System
 - The wellpoint pump will be started against a closed gate valve and the vacuum generated noted on the pump pressure gauge. The gate valve will then be opened so the pump draws from the header main. Once the vacuum has developed in the header main it should be checked for leaks or any "bumping" wellpoints which may be drawing air.
 - The discharge pipework should be checked for leaks and the water quality checked visually in the discharge tank; the water should be clear within approximately 1 hours pumping of starting each pumping system. As groundwater levels are lowered during the first few days of pumping, some of the wellpoints may begin to draw air, resulting in reduced vacuum and surging of the pump. The wellpoints drawing air will be trimmed by throttling the individual control valve on each swing connector.

8) Excavation & blinding concrete works

- For the excavation of the cofferdam, two separate excavators will be required for the digging. One 35-tonne long reach excavator and a 20-tonne excavator. These excavators will enter the cofferdam from the access point. For the commencement of the dig, the 35-tonne excavator will be situated on the eastern face of the cofferdam, with the 20-tonne excavator based on the western face. The 35-tonne excavator will be completing the digging and casting the spoil backwards to the 20-tonne excavator. The 20-tonne excavator, this will remain situated on the Eastern face of the cofferdam loading muckaway wagons.
- The excavation process will be repeated until the 35-tonne excavator has dug such an extent backwards that it will be able to load the muckaway wagons directly. Once the 35-tonne excavator has reached this point the 25-tonne excavator will move from the working area. To finish the excavation down to the formation level the excavator will

exit the cofferdam via the access/egress point. The remainder of the spoil will have to be stockpiled and sealed on site to use as backfill.

- To grade to formation levels the 35-tonne excavator will lift an 8-tonne excavator into the cofferdam in accordance with lift plan. MS engineer will setup a dual grade rotating laser which will enable the formation level to be graded. The 8-tonne excavator will move the spoil that is excavated during the grading to the sides of the cofferdam where it will be cleared away and lifted out using the 35-tonne excavator.
- Once formation level has been graded, MS engineer will inspect the formation level for any soft spots within the alluvial clay layer. Any soft spots uncovered by the MS engineer will need to be excavated out and will be replaced with a 300mm layer of Type 1 MOT stone which will be done by the 8-tonne excavator. Any stone required within the cofferdam will be lowered into the excavation by an excavator. Stone deliveries will be tipped onto the crane pad via the haul road.
- Subsequent to the soft spots being excavated out of the cofferdam and replaced with Type 1 stone, the scaffolding screed rails can then be installed ready for the 75mm thick blinding concrete. These will be lifted into the excavation by the 35-tonne excavator. For the longer section of Phases 1,2 and 3, these have been segregated into equal 12m wide section running from east to west. Thus, for the large section of Phase 1 this will be segregated into three 4m wide bays. This will then enable a Magi-screed to be pulled in between each respective bay.
- To set the screed rails into position MS engineer will order a load of semi-dry concrete which will be lowered into the excavation by the 35-tonne excavator. MS operatives will place tumps of concrete at regular increments along the line of the screed rail. The screed rails will then be placed on top of the concrete where the MS engineer will set the level of each screed rail using an automatic level. The concrete will then be given time to cure which will then fix the screed rails into the correct position.

9) Concrete pumping

- Location of pump position to be agreed on site prior to setting up pump and area barriered off from other works.
- Proposed pump location to be suitable stable ground away from services which could be affected by outriggers and boom must be minimum 6m away from overhead services.
- Concrete pump to be located in agreed position guided by trained and competent banksman.
- Pump operator to demonstrate the hopper interlocking device depending on pump type.

- The operator will extend the articulated boom to confirm delivery hose can reach required areas.
- Pumping Operation
 - When suitably positioned the operator will prime pump with grout mix prior to using concrete.
 - Trained and competent banksman will guide delivery vehicle into position at concrete pump and correct mix checked by engineer – Hold Point.
 - Pump can be operated from remote control unit to increase visibility and safe position but must prove emergency shutdown is effective from remote unit.
 - The boom should be extended to required position and checked that manufacturers recommendations are not exceeded, as attached data sheet, with regards to boom extension and wind speed.
 - The hopper shall be filled to required level prior to pumping concrete through boom and level maintained by operative.
 - Concrete shall be pumped through with operative checking manufacturers operating pressure is not exceeded.
 - The tremie pipe attached to boom shall be guided by operative at arms length and be responsible for the signals to the operator.
 - During operation no one must be beneath the boom with the exception of the operative handling the tremie pipe.
 - Once concrete has been placed the hopper shall be forced through the pump in to position nominated by general foreman.
 - The boom shall be retracted and outriggers shall be retracted prior to moving the pump.
 - If the machine operative requires to access the back of the vehicle where there is a risk of fall then a safety harness shall be utilised with lanyards to restrain in safe position.
- Blockages
 - The pump may become blocked during works and will require clearing.
 - This can be alleviated by ensuring correct mix consistency is used and circulate hopper when concrete stood.
 - To remove blockage the pump action shall be reversed until the pipe line pressure is released.
 - If this frees up the blockage the pump can commence but will cause the boom to kick requiring all personnel to retreat to safe position until concrete flowing freely again.

- If the pipes are required to be disconnected there must be no residual pressure on the pipeline.
- If required the pipe line shall be dismantled and cleaned out with the use of compressed air by the machine operator only.

10) Construct new concrete tank – Site specific RAMS to be completed by specialist subcontractor

- Safe access for delivery of precast units on 40-foot articulated trailers, as per traffic management plan. All deliveries to be banked and marshalling of the Welsh Water Right of Way by subcontractor.
- Contractor to have excavation, cofferdam & concrete blinding prepared per the approved temp works design.
- HOLD POINT – Permit to load to be issued from Morgan Sindall. Crane mat / pad / travelling strip to be in place as per temp works design (Design, construction & checks to be carried out by Morgan Sindall).
- HOLD POINT – Permit to lift to be issued by subcontractor for Morgan Sindall review and approval. Placement of all precast units on the concrete levelling pad. (Delivery loading list will be supplied to Morgan Sindall one week prior to commencement). Each unit will be lifted directly off the wagon onto the sand pit using slings or the factory installed capstan lifting arrangement. Swivel Lifters will then be installed in the top of the wall, righted and lifted into position off the turn table. (Lifting certs will be supplied to Morgan Sindall for review and approval prior to lifting).
- Units will be lifted into position to pre-marked gridlines. The units will be spotted and lined off the main grid using shims under the toes. (The toes are raised 10mm higher than the bottom of the unit to allow plumbing) All lifts will be controlled by designated Banksman / Slinger (Tim Power). Once the units are in their final position the lifters will be unscrewed by use of a podium steps with guardrails.
- Steel fix the floor bays as detailed in the subcontractor in-situ design. Install external toe shutters to allow the base pour flow into the vertical insitu joints. Joiner shall cut/rip sheets of 18mm plywood to the required size, drill and fix down to concrete blinding and to the rear of precast wall unit using 100mm Excaliber concrete screw. (See photo below). External formwork to the side of tank shall be shuttered in a similar way and propped off sheet piles in coffer dam for extra support (see photo below). Before any steel rebar is placed in tank, the entire area shall be cleaned of all debris. Steel will be lifted in by mobile Crane (Size TBC) (Supplied by subcontractor) (pre slung by supplier) all lifting shall be supervised by crane supervisor/Banksman and positioned in the correct orientation as to reduce the need for lifting by operatives

(12m long 20mm bar) shall therefor be lifted at one end and dragged into position. Where the need to fix bar at right angle to laydown position 2 operatives shall lift either end and place in position. This method shall be used for both Bottom & Top mat steel. (Bottom Mat steel Blue Tag, Top Mat Yellow Tag). During steel fixing Top Mat, sheets of plywood 600mm wide will be laid to form a walkway as work progresses to avoid slips/trips/falls and turning ankles (see sample photos below) these walkways shall also be used for concrete pour of base slab (see below detail). ALL protruding rebar below 2.1m shall be immediately covered with Mushroom Caps to avoid any injury to personnel.

11) Backfill to concrete tank

- Prior to any backfill material being deposited into the cofferdam, the plant required for the task will need to be lifted into the cofferdam. For this task a 3-tonne excavator, Bomag 120 roller and a DPU80r remote controlled compactor plate will be lifted into the cofferdam. The 3-tonne excavator and the Bomag 120 roller will be done using the 220-tonne crane on-site being used by subcontractor. These items have been inspected and added onto the lift plan for this particular crane by the Appointed Person (AP). The configuration of lifting these items will be specified in the lift plan. The DPU80r compactor plate will be lifted into the cofferdam by the 22.5-tonne excavator.
- Once these items have been lifted into position, the backfill material can then be delivered to site. For the backfilling of the tank, it will be agreed with subcontractor that general fill sand can be used to a 6N grading. The general fill sand will be delivered to site via the one-way system that has been put in place on-site. Delivery wagons will drive into the site from Beach Road where a designated banksman will guide them to their designated tipping point. Once the wagons have delivered the sand, they will drive from site via Beach Road.
- Whilst the backfilling operations are going on, this will overlap with subcontractor pouring the 125mm screed on top of the roof slab for the attenuation tank for one day on a date to be agreed. Whilst this is being completed the delivery wagons will reverse onto the haul road from Beach Road East Car Park, being guided by a designated Banksman, and will tip at the designated tipping point. This will enable the concrete wagons to drive onto the haul road via and then reverse onto the crane pad where the concrete pump for the pour will be situated. They can washout in the concrete washout situated on the crane pad and then drive from site via Beach Road. This will keep the delivery wagons segregated during the concrete pour. The general fill sand will either be deposited directly into the void between the storm tank walls

and the cofferdam sheet piles by the 22.5-tonne excavator or loaded into the 9-tonne dumper which will tip the material directly into the void. Also, these are the areas where the ground has been reduced by a metre in accordance with the temporary works design for the cofferdam. The 22.5-tonne excavator will be able to feed from the access road and will load the 9-tonne dumper from this point also. The dumper will then be able to feed the cofferdam via the crane pad. The 3-tonne excavator will have to push the backfill around the tank via the use of its blade.

- Prior to the backfilling commencing MS Engineer to ensure that all external finishing works on the concrete walls have been completed. The backfill material will be brought up in 150mm layers, with each layer being sufficiently compacted with each layer receiving minimum 8 passes of either the Bomag 120 roller or the remote-controlled whacker plate. MS Engineer will mark these 150mm increments on the walls of the attenuation tank which the operatives will be able to use as a guide.
- Once the sand has been brought up above the level of the in-situ heel, it will then be possible to compact all the sand fill with a combination of the roller and the compaction plate. However, once the sand reaches a certain point, the F-bracket falsework, for the roof screed formwork will then obstruct the roller directly adjacent to the tank. Thus, the remote-controlled compaction plate will have to be used in this instance.
- Note: The Bomag 120 roller will not be allowed to compact against the external walls of the storm tank and compaction here will be achieved using the remote-controlled compaction plate in all instances.
- The backfilling process will be repeated until the level of the backfill has been brought up to the underside of the F-bracket falsework. After the 125mm roof screed together with the 300mm thickening has been casted, the F-brackets can then be removed. At which point the formwork can then be stripped with the backfill then brought up to the top of the vertical walls.
- After the backfill has been brought up to this level the plant will be able to exit the cofferdam via the section of piles cut down to ground level to enable access for the excavators into the cofferdam during the mass excavation works.

12) Install pipelines with sheets and frames and dewatering system

- Pipe bedding will be delivered to the site compound and will be stockpiled in the required area, the bedding stone will be loaded into dumpers and will be taken to the pipe route and tipped every 12mtr spacings, thus allowing 1 gang to progress with excavation and installation works and a second gang to carry out the reinstating works.

- The site will then take delivery of pipe work. All pipes will be offloaded within the site compound's pipe store. A permit to lift will be in place from the delivery of the pipe work. Wagon driver to be assisted into the site, edge protection to be in place and excavator to unload the pipes by use of slings. The pipes will then be distributed along the easement.
- All pipe installation will be carried out by utilising the sheet and frames (where depth exceeds 1mtr (dependent upon ground conditions) and dewatering system where applicable.
- Once excavation commences, no other personal can enter the specific section of works until the excavation has progressed along the line / no clash with the gangs. Any site visitors must gain the banksman attention prior to entry (air horn located at each entry point, sound and alert the banksman, excavator to stop, place bucket on the ground and switch off the engine).
- The Engineer will mark the line of the pipe and will set a rotating grade laser to enable the team to excavate to the correct grade of the pipe. The excavator under the supervision of the banksman will excavate to formation, excavations to be no greater than 1mtr without support (depending on the ground conditions). All excavated material will be placed to one side of the easement and as far away from the trench sides as possible.
- The team will then continue to excavate down to formation level (Engineer to check). The excavator will then place a layer of 20mm bedding stone to the required gradient by use of pipe laser level, again the Engineer will check all depths as works proceed.
- Once checked, a blank stopper will be placed into the spigot end of the pipe and tightened as per manufacturers recommendations, the section of pipe will be lifted into the excavation. The pipe will be checked for level by use of the rotating pipe laser as well as the Engineer (line and level), once confirmed in the correct position a piece of plywood will be placed on the spigot end thus to protect the blank stopper when the trench is being backfilled.
- The team will then place a layer of pipe bedding to surround the pipe, the bedding material will be packed beneath the pipe while being surrounded thus to ensure no voids are present. Once the entire pipe has been surrounded, the geotextile will then be cut and folded over the top of the bedding stone. A layer of the excavated material will now be placed on top of the geotextile and the team will continue to excavate for the next section of pipe.
- As and when the second section is being excavated and supported as necessary, the first gang will continue to excavate and install the pipes and the second gang will commence on the backfilling and reinstating works. The first gang will again, dig to

formation line and level, clean the end of the previously laid pipe (collar end to have piece of plywood placed once installed to prevent any debris from entering the pipe). Grease will be applied to install the rubber gasket, the second pipe will then be lowered into the excavation and positioned into the collar. (Operatives will not be within the box as and when lifting takes place), a heavy-duty timber will be placed on the end of the pipe and the excavator driver will remove its bucket and will position the quick hitch against the timber, operative will move out of the way and once clear the plant operator will apply pressure against the timber until the pipe has been pushed home safe and securely. The team will carry out air testing of the main as the works proceed thus to ensure no fractures/ a good seal is made in all collars. (The above process will repeat itself for all pipeline sections).

- The second gang will commence compacting the excavated material within the trench in layers not exceeding 150mm depth. The excavated material will be replaced and marker tape to be installed above the crown of the pipe. The material will be compacted by a sheep's foot remote controlled compactor (6No passes for each 150mm layer of material). Operator to stand well clear of the compactor (no need to stand within the excavation while compaction takes place).
- Once the trench has been fully backfilled and compacted, all surplus material will be loaded into the dumper where it will be taken to the material stockpile area within the site compound. Once a sufficient load has accumulated, a 20t wagon will collect and take the waste off site (transfer notes etc will be kept within the site office).
- The same sequence as mentioned above will apply to all rising main pipe installation within the field sections, as and when the depth of the main increases sheets and frames will be utilised, all edge protection to be in place.

13) Decommissioning of Dewatering – Site specific RAMS to be completed by specialist subcontractor

- Adequate access needs to be made for the safe removal of all dewatering pumps and equipment upon completion of the dewatering works. A flat stable, unrestricted working area is required. If our operatives are to be working in close proximity to excavations, the main contractor is to ensure adequate edge protection / shoring is in place.
- Pumps will be stopped, and pressure/vacuum allowed to dissipate before decommissioning procedures can commence. A check will be made of the vacuum gauge to ensure vacuum has fully dissipated prior to disconnecting the pipework from the pumping units.

- The bauer type coupling on each length of header pipe and discharge hose will be manually uncoupled and each length lifted stacked into various stacks across the site. In order to prevent unnecessary manual handling, site craneage will then lift a pipe stillage to each stack to be manually lifted into the stillage.
- Loose fittings and connections will be collected and contained within the settlement tank for removal from site in a single lift.
- Care will be taken when removing the equipment in close proximity to the Menai Straits to prevent pollution.
- We will require the main contractor to provide adequate craneage for the loading of all dewatering equipment onto our transport at the end of the contract.

14) Demobilisation

- Site to be reinstated as per design.
- All materials, plant, and equipment to be removed from site.
- Site to be left clean and tidy.
- Close-out access permissions and return keys / padlocks.
- Complete handover documentation i.e., operation and maintenance manuals.

4.3.2 Environmental RAMs

The following best practice Risk Avoidance Measures (RAMs) have been provided, detailing how impacts to the environment will be avoided at each of the three Sites during construction.

To avoid environmental pollution in relation to the works in sections 1 through 3 in Section 4.3.1⁶:

- Vehicle movements on the beach limited to the 1no excavator and 1no dumper.
- Visqueen to be used to catch any concrete drips.
- Care will be taken to ensure that neither watercourse nor the groundwater becomes polluted, particularly by, for example Biodegradable drilling fluid Pure-Bore, diesel fuel, petrol and oil from machinery and plant.
- All fuels, oils and chemicals will be stored securely and any large containers left on site will be bunded. Care will be taken when filling machinery and plant to ensure that no

⁶ As per the contractor RAMs - 'Method Statement for Menai Strait beach works at Glandwr Rd 09.08.23docx' – Produced by Morgan Sindall and supplied to APEM on 14th August 2023.

diesel/petrol or oils are spilt onto the ground that could lead to pollution by migration or direct run off. Spillages must not be washed away but will be absorbed by some medium and then removed from site to a suitable licensed waste facility.

- Site roads and other access roads will be kept free from mud and dust.
- Appropriate emergency spillage kits and absorbents will be made available at all times.
- Plant and fuel storage facilities will be protected by secure fencing and locked where possible to prevent accidental spillages.
- Spill kits will be kept with all machinery, in the vicinity of the works and within the site compound.
- Bulk fuel will be stored in a double bunded tank inside the site compound.
- Diesel and petrol will be contained in clearly marked suitable containers and stored in secure storage COSHH container within the site compound. All refuelling will be done over hardstanding.
- Biodegradable oils will be used for vehicles and plant where possible.
- Prior to commencing within the working areas Heras fencing will be erected to demarcate and secure the working areas.
- Silt fencing, if deemed necessary, will be correctly installed along access tracks or around and within construction works.
- Drip trays/ plant nappies will be placed underneath all standing plant (at all times and when working in the vicinity of the ditches). Any drip trays / plant nappies with a mixture of water and contaminant will be emptied into plastic container using a funnel. The container will be disposed of at the end of the construction or when full.

To avoid environmental pollution in relation to the works in sections 4 through 14 in Section 4.3.17:

- Care will be taken to ensure that neither watercourse nor the groundwater becomes polluted, particularly by, for example Biodegradable drilling fluid Pure-Bore , diesel fuel, petrol and oil from machinery and plant.
- All fuels, oils and chemicals will be stored securely and any large containers left on site will be bunded. Care will be taken when filling machinery and plant to ensure that no diesel/petrol or oils are spilt onto the ground that could lead to pollution by migration

⁷ As per the contractor RAMs – ‘Method statement for Menai Strait Main Tank Area Works 27.07.23.docx’ – Produced by Morgan Sindall and supplied to APEM on 27th July 2023.

or direct run off. Spillages must not be washed away but will be absorbed by some medium and then removed from site to a suitable licensed waste facility.

- Site roads and other access roads will be kept free from mud and dust.
- Concreting work will be carried out in a manner that keeps the working area dry. Any water that comes in contact with wet concrete will be treated as contaminated and will not be allowed to discharge back into the ditches. Measures will be taken to prevent contamination to the watercourse by wet concrete.
- Appropriate emergency spillage kits and absorbents will be made available at all times.
- All excavations and other works will be carried out in a careful manner that will not result in water pollution. An appropriate system will be set up in order to reduce the amount of suspended sediment. During construction, any dewatering activities will allow for the removal of suspended solids prior to the water being discharged. This will be achieved by the use of settlement tank/s as required.
- Plant and fuel storage facilities will be protected by secure fencing and locked where possible to prevent accidental spillages
- Spill kits will be kept with all machinery, in the vicinity of the works and within the site compound.
- Bulk fuel will be stored in a double bunded tank inside the site compound.
- Diesel and petrol will be contained in clearly marked suitable containers and stored in secure storage COSHH container within the site compound. All refuelling will be done over hardstanding.
- Biodegradable oils will be used for vehicles and plant where possible.
- Prior to commencing within the working areas Heras fencing will be erected to demarcate and secure the working areas.
- Silt fencing, if deemed necessary, will be correctly installed along access tracks or around and within construction works.
- The amount of time stripped ground and soil stockpiles are exposed will be kept to a minimum. This is dependent on the prevailing weather condition and work progress.
- Only removing vegetation from the areas that need to be exposed will be carried out.
- During dewatering suspended solids will be allowed to settle before disposal.
- Drip trays/ plant nappies will be placed underneath all standing plant (at all times and when working in the vicinity of the ditches).
- Any drip trays / plant nappies with a mixture of water and contaminant will be emptied into plastic container using a funnel. The container will be disposed of at the end of the construction or when full.

4.4 Timing and Duration of the Works

Works are due to start in April 2024, with the exact programme and duration of works still to be determined.

5. Identification of Relevant European Sites

5.1 The Identification Process

To understand the potential implications for European Sites from the proposed project it is necessary to identify those sites that are located close to the project or are linked by pathways such as hydrological connections.

All European Sites within 10 km of the project or linked by pathways were identified using Geographic Information System (GIS) datasets downloaded from the Government's MAGIC⁸ website and NRW⁹. The 10 km buffer was chosen based on the characteristics of the project and the likely effects.

5.1.1 Understanding Qualifying Interests and Conservation Objectives

For each of the sites identified the features were established and the conservation objectives for each feature were obtained. Information was also sought to understand the potential vulnerability of the features to any effect that might arise from the proposed project.

5.1.2 Identification of the Potential Effects of the Project

Any potential pathways for effects on European sites resulting from the proposed scheme were identified prior to consideration of best practice procedures (e.g., Guidelines for Pollution Prevention and CIRIA guidance) or the integration of any mitigation measures.

5.1.3 Identification of Plans or Projects Considered for In-combination Effects

An 'in-combination' assessment is required where the project may have an effect on a European site, but on its own the effects would not be significant. The potential effects of the project should be considered in-combination with other plans or projects that similarly may have an effect, but where on their own those effects would not be significant. The combined effects may therefore become significant.

Details of other plans and projects which are currently proposed or consented within the vicinity of European sites identified were obtained from the local planning authority website to inform the in-combination assessment of the proposed project. DCWW also track all

⁸ Multi-Agency Geographic Information for the Countryside. Available at <https://magic.defra.gov.uk/magicmap.aspx>

⁹ Data Map Wales. Available at: <https://datamap.gov.wales/>

committed schemes and their potential to impact European sites and this data has been used to inform the in-combination assessment.

5.1.4 *Consideration of the Significance of Potential Effects*

The significance of potential effects was assessed in the absence of avoidance or other mitigation measures other than those which are standard construction practices such as pollution control or those incorporated into the scheme. The assessment has been made with awareness of the conservation objectives for the features of the European sites.

In the assessment of the significance of effects, professional judgement was applied using the following criteria, as often insufficient information about the elements and interests is available:

- The vulnerability / sensitivity of the ecological receptors of interest;
- When the risk of effects is likely to occur (e.g., construction and / or operation);
- The likely geographical extent of the effects; and,
- Likelihood of significant effects (e.g., those above negligible in magnitude) occurring based on previous experience with similar elements, where available.

Professional judgement was used in the carrying out of this work where professional guidance was not available. Where there was not enough information about the risk of qualifying interest being present, or of the risk of effects, the assessment used the precautionary principle¹⁰ to inform the judgement. The precautionary principle has been applied to ensure that any assessment errs on the side of caution, without being overly cautious. This principle means that the conservation objectives of European sites should prevail where there is uncertainty or that harmful effects will be assumed in the absence of evidence to the contrary.

5.2 Relevant Sites

The GIS-based search using the site boundaries published on MAGIC identified that there are eight European sites located within 10 km of the proposed works:

- Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC
- Traeth Lafan / Lavan Sands, Conway Bay SPA

¹⁰ The precautionary principle applies where scientific evidence is insufficient, inconclusive, or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU. EU (2000) Communication from the commission on the precautionary principle, COM1, Brussels: Commission of the European Communities.

- Eryi / Snowdonia SAC;
- Liverpool Bay / Bae Lerpwl (Wales) SPA; and
- Coedydd Aber SAC;
- Anglesey Terns / Morwenoliaid Ynys Môn SPA.
- Corsydd Môn a Llyn / Anglesey and Llyn Fens Ramsar Site;
- Corsydd Mon / Anglesey Fens SAC;

The proposed works are within 1 km of and have direct hydrological connectivity to Y Fenai a Bae Conwy / Menai Strait and Conwy Bay Special Area of Conservation (SAC) and Traeth Lafan / Lavan Sands, Conway Bay Special Protection Area (SPA). As such, there is a direct impact pathway between the proposed works and both of these designated sites. The project is not directly connected with or necessary for the management of the SAC or SPA; therefore, DCWW is required to assess the implications for both designated sites in view of its conservation objectives.

Liverpool Bay / Bae Lerpwl (Wales) SPA is located approximately 7.3 km north-east of the proposed works and is hydrologically connected via the Menai Strait. This site is designated for populations of breeding little tern (*Sterna albifrons*) and common tern (*Sterna hirundo*) populations, as well as wintering red-throated diver (*Gavia stellata*) and little gull, (*Hydrocoloeus minutus*).

Anglesey Terns / Morwenoliaid Ynys Môn is located 9.2 km north of the proposed works and is hydrologically connected via the Menai Strait. This site is designated for populations of breeding roseate tern (*Sterna dougallii*), common tern (*Sterna hirundo*), arctic tern (*Sterna paradisaea*) and Sandwich tern (*Sterna sandvicensis*).

The remaining four European sites are located more than 5 km from the proposed works and lack hydrological connectivity.

Due to the small scale, temporary nature of the works and physical separation, it is considered that there are no direct impact pathways between the proposed works area and the European Sites listed above, apart from the Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC and Traeth Lafan / Lavan Sands, Conway Bay SPA. All other European sites are scoped out of the report and are not considered further.

5.3 Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC

5.3.1 Site Description

The Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC is 26,483 ha in size which includes the whole of the Menai Strait from its south-western entrance at Abermenai Point through to Red Wharf Bay and Conwy Bay to the north. The SAC is underpinned by eight Sites of Special Scientific Interest (SSSI). However, only three of these SSSIs are considered to be relevant to the scheme including Coedydd Afon Menai SSSI, Traeth Lafan SSSI and Glannau Porthaethwy SSSI due to their proximity or hydrological connectivity to the Site.

Table 2 outlines the features for which the SAC is designated and the condition of each feature.

Table 2 Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC

Designated feature		Condition	
		Status	Reason
Feature 1	Mudflats and sandflats not covered by seawater at low tide	Unspecified	The condition of this feature is not stated, however, the following is highlighted. The feature is considered of international importance, especially for its species rich infaunal species [aquatic organisms that live in soft sediments]. However, areas of the feature have been negatively impacted through bait digging for king ragworm (<i>Alitta virens</i>), use of small vehicles on the foreshore and a number of activities that risk the introduction of invasive non-native species with recreational boats being a potential vector for introduction.
Feature 2	Reefs	Unspecified	The condition of this feature is not stated, however, the follow is highlighted. The feature has been impacted by the collection of crabs undergoing ecdysis (or shell shedding) for bait in large numbers which likely has a negative impact of marine food systems.
Feature 3	Sandbanks which are slightly covered by	Favourable	The feature is not considered to be impacted by any fishery related activity (such as dredging or other activities that effect coastal processes), which is the predominate risk factor for such a feature.

Designated feature		Condition	
		Status	Reason
	seawater all the time		
Feature 4	Large shallow inlets and bays	Unfavourable	The feature is considered to be impacted by extensive fisheries activity, including small vehicle tracking and bait digging as described for Features 1 and 2.
Feature 5	Submerged or partially submerged sea caves	Favourable	The feature is not considered to be impacted by any of the previously mentioned factors. However, it is stated that this judgement may change in time as 'knowledge of the sea caves and the activities affecting them improves'.

5.3.2 Conservation Objectives for Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC

The following conservation objectives are taken from NRW's Core Management Plan for the site¹¹.

The health and quality of the five SAC habitat features are inter-related and may also depend on the state of other non-feature marine habitats within the site, as well as structural and functional components of the marine ecosystem.

Feature 1: Mudflats and sandflats not covered by seawater at low tide

- Sands and muds of the coasts of the oceans, their connected seas and associated lagoons, not covered by sea water at low tide, devoid of vascular plants, usually coated by blue algae and diatoms. They are of particular importance as feeding grounds for wildfowl and waders". Eelgrass communities are included in this habitat.
- All of the intertidal mudflat and sandflat communities contribute to the overall representation, range and integrity of the feature within the site, however three notable mudflat and sandflat habitats and their associated assemblages of marine plants and animals are of particular conservation importance, namely:
 - intertidal muddy gravels;
 - dwarf eelgrass *Zostera noltei* beds; and
 - intertidal sediments on Traeth Lafan.
- The feature should continue to comprise an array of sediment habitats and their associated biological communities, ranging from wave-exposed sands, through to sheltered muds and tide-swept muddy gravels.

¹¹ Available at https://naturalresources.wales/media/688114/sac_uk0030202_enreg_37.pdf; accessed 29/08/2023. Some text has been shortened / adapted for the purpose of this report.

- In many areas, such as at Traeth Lafan and around the mouth of the Conwy Estuary, the feature will comprise a dynamic mosaic of sediment types, with associated communities, whilst other intertidal sediments, such as sheltered areas in the Menai Strait are expected to have more temporal and spatial stability. On the extreme lower shore in the western Menai Strait and Conwy Bay, dynamism is expected between the intertidal mudflat and sandflat and the subtidal sandbank features, depending on the prevailing physical conditions.
- The use of small vehicles throughout the feature and the presence of fishery activities, including bait digging, on the western and eastern ends of the Menai Strait have caused a presently modified state in some areas.
- There is currently no requirement for restoration of these areas of intertidal mudflat and sandflat.

Feature 2: Reefs

- The reef feature should continue to comprise a variety of habitats and their associated biological communities, occurring on hard substrate of different types throughout the site. Substrate types range from limestone and clay habitats, through to areas of tide-swept sublittoral hard substrata, including boulders and bedrock.
- Some areas of reef feature, such as intertidal boulder habitats are expected to improve in quality and become more diverse under appropriate management. Other areas will be expected to either maintain their condition or improve.

Feature 3: Sandbanks which are slightly covered by seawater all the time

- The subtidal sandbanks feature should continue to comprise mobile or highly mobile sediment habitats and their associated communities. On the extreme lower shore in the western Menai Strait and Conwy Bay, dynamism is expected between the subtidal sandbank and the intertidal mudflat and sandflat features, depending on the prevailing physical conditions.
- Sandbanks in Conwy Bay and Red Wharf Bay are expected to continue to be part of the dynamic mosaic of shallow sublittoral coastal sediments within the two bays and may also fluctuate according to prevailing physical conditions.

Feature 4: Large shallow inlets and bays

- The large shallow bay feature should continue to comprise a variety of sediment and hard substrate habitats and their associated biological communities, subject to a wide range of physical conditions, from the wave-sheltered, tide-swept conditions at the eastern end of the Menai Strait through to the more open coast, wave-exposed conditions in Conwy Bay.

- The subtidal sediments within the embayment should comprise a dynamic mosaic of sediment types, with associated communities which may display considerable temporal and spatial variation, influenced by prevailing physical conditions.
- Areas of enriched muddy sand in Red Wharf Bay and Conwy Bay are expected to persist, whilst the large shallow bay is expected to continue to be an important feeding and breeding area for a variety of fish species.
- Certain habitats and communities within the large shallow bay (many of which are part of other habitat features) are expected to improve in quality and become more diverse under appropriate management. Other areas will be expected to either maintain their condition or improve.

Feature 5: Submerged or partially submerged sea caves

- The sea caves feature should continue to comprise intertidal and subtidal caves, clefts, crevices and tunnels in the limestone substrate around the Great and Little Ormes and the north-east coast of Anglesey.

5.4 Traeth Lafan / Lavan Sands, Conway Bay SPA

5.4.1 Site Description

The Traeth Lafan / Lavan Sands, Conway Bay SPA is 2,643 hectares in size which is located in Conwy Bay lying between Bangor and Llanfairfechan in north-west Wales. The SPA is underpinned by one SSSI and is also included largely under Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC.

Table 3 outlines the features for which the SAC is designated and the condition of each feature. In addition, Features 1 and 4 discussed in Section 5.3.1 are included within the SPA and are covered under Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC.

Table 3 Traeth Lafan / Lavan Sands, Conway Bay SPA

Designated feature		Condition	
		Status	Reason
Feature 1	Oystercatcher (<i>Haematopus ostralegus</i>)	Favourable	The most recent five-year peak mean from 2004/2005 is at 6,971 birds that is above the lower limit of 4,000 (Banks et al, 2006). The extent of intertidal flats and the broad-scale spatial distribution of their constituent sediment and community types have been maintained, as well as the abundance and distribution of oystercatcher prey species. This is ascertained due to the good level of birds, which are utilising the site. It also would appear that the birds have not been disturbed significantly; otherwise a reduction in population may well have occurred.

5.4.2 Conservation Objectives for Traeth Lafan / Lavan Sands, Conway Bay SPA

The following conservation objectives are taken from Countryside Council for Wales's Core Management Plan for the site¹².

Feature 1: Oystercatcher (*Haematopus ostralegus*)

- CCW and other partners are actively working with the Northwest and North Wales Sea Fisheries Committee to ensure that any cockling is undertaken in a sustainable manner and in a way which does not cause unacceptable disturbance or loss of food resource to oystercatchers and other waders.
- Management of the landward fringe of the site (which is not currently covered by SPA or SSSI designation) as an LNR with appropriate birdwatching hides and public access, provides some suitable high tide roosts. However, there is open access to the shore and localised disturbance from people and their dogs is difficult (or impossible) to control. Some of the high tide roosts are in fields close to the shore outside the SPA and LNR and it is important that these roosts are not subjected to excessive disturbance, particularly in periods of severe weather when the birds' energy reserves are low.

¹² ¹² Available at [https://naturalresources.wales/media/674184/Traeth%20Lafan%20SAC%20Plan%2021\[1\].4.08%20English.pdf](https://naturalresources.wales/media/674184/Traeth%20Lafan%20SAC%20Plan%2021[1].4.08%20English.pdf); accessed 29/08/2023. Some text has been shortened / adapted for the purpose of this report.

- High tide roosting sites are characterised by having good sightlines (i.e. open spaces where the birds can see any potential predators). Any significant increase in grass height through cessation of grazing, in hedge height or changes by means of tree planting or installation of tall structures could impact on the roosts and consequently the oystercatcher population. This should be considered in assessing any plans or projects close to the shore.
- Disturbance from increased or new types of recreation e.g. wind kites, small hovercraft etc could potentially threaten the oystercatchers but is mostly confined to the summer months and less likely to occur in the winter when they are roosting on Traeth Lafan.

6. Supporting Studies

6.1 Reports

A Preliminary Ecological Appraisal (PEA) in relation to the scheme was carried out by APEM in April 2023. A Phase 1 habitat survey and Preliminary Roost Assessment (PRA) of buildings within the Site were undertaken.

Key findings of the PEA are set out below. Further information can be found in the PEA report¹³ issued to Morgan Sindall in June 2023.

- On Site the habitat consisted of intertidal mud / sand with brown algae, intertidal shingles / cobbles with brown algae, shingle above high tide mark, strandline vegetation, amenity grassland, standing water and a building.
- The habitats present at the Site may support amphibians, otter, badger, reptiles, and nesting birds.

Flood defence works are currently underway adjacent to the Site. The Hirael Flood Alleviation Scheme Habitats Regulations Assessment (HRA) Test of Likely Significant Effects (TSE) Stage 1 Screening¹⁴ has been reviewed to determine whether there are likely to be any in-combination effects.

¹³ APEM (2023). *Menai Shellfish – Preliminary Ecological Appraisal*. APEM Scientific Report P00011872. DCWW, 15/06/2023, v1.0 Final.

¹⁴ Hirael Flood Alleviation Scheme Habitats Regulations Assessment (HRA) Test of Likely Significant Effects (TSE) Stage 1 Screening CPF 7720 file:///P:/7720_Hirael_Habitats%20Regulations%20Assessment_v0.02.pdf

7. Screening for Likely Significant Effects

7.1 The 'Screening' Process

The term 'screening' is routinely adopted to describe the initial stage of the HRA. The purpose of screening is to:

- Identify all aspects of the project that are not likely to have a significant effect on a European site, either alone or in combination with other aspects of the project or other plans or projects. These can then be screened out from further assessment.
- Identify those aspects of the project where it is likely to have a significant effect on a European site, either alone or in combination with other plans or projects. These aspects will require 'Appropriate Assessment' and mitigation measures may need to be introduced.

7.2 Likely Significant Effects

Current guidance defines a 'likely' effect as one that cannot be ruled out on the basis of objective information. In the Waddenzee case the European Court of Justice provides further clarity on this point, advising that a project (and a plan) should be subject to an 'Appropriate Assessment' if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site, either individually or in combination with other plans and projects¹⁵. Therefore, 'likely' should be interpreted as a significant effect that, objectively, cannot be ruled out.

An effect may be significant if it undermines the conservation objectives for the European site. The assessment of whether a potential effect is significant for the site's interest features must consider, amongst other things, the characteristics and specific environmental

¹⁵ See paragraph 45 of European Court of Justice case C-127/02 dated 7th September 2004, the 'Waddenzee ruling'.

conditions of the site concerned. The Advocate General's opinion for the Sweetman case¹⁶ provides further clarification, stating that consideration of the likelihood of a significant effect is simply a case of determining whether the plan or project is capable of having a significant effect.

The overarching aim of the Natura 2000 network is to achieve favourable conservation status of habitats listed in Annex I and habitats of species listed in Annex II of the Habitats Directive, and of regularly occurring migratory bird species and the species set out in Annex I of the Birds Directive. In considering whether a site's integrity will be affected, Member States must have regard to the site's conservation objectives. In this regard, the site's overall conservation objectives will extend beyond an isolated consideration of the Annex I habitats and Annex II species (or relevant bird species) contained within the site and take account of the wider ecological context of the site as a whole in terms of its effects on the designated features.

At the same time, according to Sweetman, site integrity must be determined by reference to 'the lasting preservation of the constitutive characteristics of the site concerned that are connected to the presence of a priority natural habitat whose preservation was the objective justifying the designation of that site'. This case is able to show that the favourable conservation status of a listed natural habitat or of the habitat of a listed species (and linked to its site integrity) extends beyond focusing on merely protecting the natural habitat or the habitat of the species.

A further recent HRA judgment¹⁷ has also been considered within this assessment. In summary this judgement provides further clarification about the scope of an assessment, requiring that all habitats and species associated with a European site must be considered (irrespective of whether they are qualifying features) if impacts on those habitats and species are liable to affect the conservation objectives of the site.

7.3 Elements of the Project that can give rise to Likely Significant Effects

Section 3 has identified the activities that will take place during the Project. The impacts of these activities on the qualifying features of the two European designated sites have been evaluated. The following potential effects may occur as a result of the proposed works:

- Disturbance and deterioration of habitats within the designated site from construction activities, caused by pollution of fuel / debris and silt from the works area / excavation, and changing hydrologic conditions.

¹⁶ Sweetman v. An Bord Pleanála, Case C-258/11, CJEU judgment 11 April 2013.

¹⁷ Holohan & Ors. v An Bord Pleanála, 7 November 2018, C -461/17

- Disturbance, deterioration, or displacement of species associated with the designated site from construction activities, caused by pollution of fuel / debris and silt from the works area / excavation and changing hydrologic conditions.
- Disturbance to oystercatchers as a result of the noise generated by sheet piling.

7.4 In-combination Assessment

Gwynedd County Council's online planning portal was searched for any new Plans or Projects, or those that may act in-combination with the proposal at Menai Strait. Due to the nature of the works, and the likely impacts that could arise, it was deemed appropriate to consider Plans and Projects within approximately 1 km of the works area¹⁸.

A single project has been considered as having the potential to produce in combination effects alongside this project. Hiraef Raised Promenade flood defence works are currently in progress adjacent to the proposed Site:

"Construction of flood defence in the Hiraef area of Bangor to include:-

1. Improvements to the cycle path.
2. Construction of a new concrete wall to displace the existing gabions following the footprint of the existing sea wall.
3. Re-construct slipway.
4. Construction of earth bund.
5. Install 2 flood gates.
6. Raise height of part of Glandwr Road together with erecting a new concrete wall." ¹⁹

It is not anticipated that there will be any in-combination effects from this project. It is anticipated that the new flood defences will reduce the level of noise resulting from sheet piling because the raised flood defences will have a screening effect, effectively isolating the Site from the Traeth Lafan / Lavan Sands, Conway Bay SPA.

¹⁸ <https://www.gwynedd.llyw.cymru/map/default.htm?iaith=en> - accessed 29/09/2023.

¹⁹ Hiraef Flood Alleviation Scheme Habitats Regulations Assessment (HRA) Test of Likely Significant Effects (TSE) Stage 1 Screening CPF 7720

7.5 Testing for likely significant effects

A recent decision by the Court of Justice of the European Union (CJEU, 2018)²⁰ dictates that measures intended to avoid or reduce the harmful effects of a proposed Project on a European site may no longer be taken into account by competent authorities at the HRA screening stage when judging whether a proposed Plan or Project is likely to have a significant effect on the integrity of a European designated site.

Consistent with C-323/17, the potential for interest features to be adversely impacted by the Project is initially assessed in the absence of design mitigation, i.e. in the absence of those measures which are accepted or known impact reducing measures. Examples of design measures include those elements associated with an agreed surface water management strategy. By assessing LSE initially in this manner, a transparent assessment is ensured.

One way of determining whether measures should not be considered at the screening stage may be to consider whether the particular aspects have been included primarily to mitigate the likely habitats-related effects on the site. If they have, this may suggest that an Appropriate Assessment is required. Whether or not something is integral to the project and not a mitigation measure is determined on a case-by-case basis on its particular characteristics at the screening stage. Some features of a plan or project may be the product of other considerations, irrespective of any nature conservation issues, for example safety considerations. The design of a development may also have been devised to take account of the distance from or relationship to the site and intervening physical matters.

If any interest features fail the screening test, the entire site is taken through to Stage 2 of the HRA process.

The LSE testing of the project on the site interest features of the Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC and Traeth Lafan / Lavan Sands, Conway Bay SPA in the absence of mitigation measures is shown in Table 4 and Table 4 respectively.

²⁰ Court of Justice of the European Union (CJEU, 2018) 'People Over Wind and Sweetman v Coillte Teoranta' (C-323/17)

Table 4 - Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC HRA Screening Process

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
Annex I habitats that are a primary reason for selection of this site				
Sandbanks which are slightly covered by sea water all the time; EU habitat code 1110	Menai Strait and Conwy Bay between mainland Wales and Anglesey includes the Four Fathom Banks complex, which is a relatively rare type of subtidal sandbank in Wales, in that it is comparatively large, and is fairly sheltered from wave action but situated in an area of open coast. The sandbanks vary from stable muddy sands in areas that experience weak tidal streams to relatively clean well-	Potential impacts are likely to be from pollution by contaminated runoff (fuel or sediment), silt mobilisation or other debris. Disturbance or deterioration of habitats from construction activities, caused by pollution	All equipment will be stored within a compound that is located on hardstanding, and no fuel will be stored on site ^{22,23} . It is not anticipated that there will be significant surface run-off as a result of the works. The planned activities are not located near this feature, with the nearest example being located in Llanfairfechan approximately 9.5 km east.	No Likely Significant Effect

²¹ As provided by the Joint Nature Conservation Committee – available at <https://sac.jncc.gov.uk/site/UK0030202>; accessed 31/08/2023.

²² As per the contractor RAMs - 'Method Statement for Menai Strait beach works at Glandwr Rd 09.08.23.docx' – Produced by Morgan Sindall and supplied to APEM on 14th August 2023.

²³ As per the contractor RAMs – 'Method statement for Menai Strait Main Tank Area Works 27.07.23.docx' – Produced by Morgan Sindall and supplied to APEM on 27th July 2023.

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
	sorted and rippled sand in the outer area of the bank where tidal streams are stronger. In very shallow waters, particularly in the inner shore areas, relatively species-rich sandy communities are dominated by polychaetes such as <i>Spio filicornis</i> . In some years when numbers of bivalves are high, internationally important flocks of common scoter (<i>Melanitta nigra</i>) have been observed to congregate in the area of the Four Fathom Banks complex to feed.	of fuel/ debris from the works area.	As such, given the characteristics of the work, it is not considered that an impact on this feature is likely to occur as a result of the proposed works.	
Mudflats and sandflats not covered by seawater at low tide; EU habitat code 1140	The intertidal mudflats and sandflats of the Menai Strait and Conwy Bay on the north Wales coast include Traeth Lafan, the shores of the Menai Strait, and the Foryd estuary. Traeth Lafan is an example of an almost fully marine extensive mud and sandflat that experiences a broad range of wave	Excavation is expected in this habitat. Using a small, tracked vehicle the cover, brickwork and manhole cover slab will be removed in order to access an existing chamber. The proposed works fall outside of the SAC boundary, however, is	The only area of habitat which is likely to suffer negative impacts (through direct and indirect means) is a small section of the sandflat which is located along the foreshore. This area has a high degree of existing disturbance associated with it as it is adjacent to urban development and is	No Likely Significant Effect

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
	exposure, providing a range of sediment types with typical associated communities. For example, the shrimps <i>Haustorius arenarius</i> and <i>Bathyporeia sarsi</i> are found in mobile clean sand, whilst bivalves such as the cockle <i>Cerastoderma edule</i>, the gaper <i>Mya arenaria</i> and <i>Baltic tellin</i>. <i>Macoma balthica</i> are common in more sheltered fine and muddy sand. The sand-mason worm (<i>Lanice conchilega</i>) is found in more tide-swept areas. The mixed sediment shores between Beaumaris and Lleiniog are highly productive shores that are rich in animal and plant species. These shores include a nationally important biotope that is rare in the UK. The nationally scarce dwarf eelgrass (<i>Zostera noltei</i>) is also found at this site.	a part of a continuous annex 1 habitat. It is stated in the RAMS that the works area will be returned to its previous physical state once the works are complete. Direct disturbance to the habitat is likely to be sustained via this excavation and the movement of the tracked vehicle to the location of the works.	heavily used for recreational purposes. In addition, the area of the feature that is to be disturbed is approximately 60 m². Disturbance through the usage of tracked vehicles and excavating of materials within the habitat is considered likely. Any disturbance to the habitat is expected to be of a small scale and temporary in nature with recovery of the habitat expected within a short time period. As such, given the characteristics of the work, the limited extent of the works and the location of the proposed work site, it is not considered that an impact on this	

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
			feature is likely to occur as a result of the proposed works.	
Reefs; EU habitat code 1170	The reefs of the Menai Strait and Conwy Bay between mainland Wales and Anglesey include the tidal rapids of the Menai Strait, and limestone reefs along the south-east Anglesey coast and around Puffin Island and the Great and Little Ormes. The environmental conditions of the Menai Strait are unusual. The water is relatively turbid, containing a relatively high level of suspended material, and although the area is largely sheltered from wave action tidal streams are strong, reaching up to 8 knots (4 m s ⁻¹) in places during spring tides. As a result, the rocky reefs of the Strait are dominated by a diverse and unusual mixture of animals that feed mainly by filtering their food from the seawater.	Potential impacts are likely to be from pollution by contaminated runoff (fuel or sediment), silt mobilisation or other debris. Disturbance or deterioration of habitats from construction activities, caused by pollution of fuel/ debris from the works area.	All equipment will be stored within a compound that is located on hardstanding, and no fuel will be stored on site. It is not anticipated that there will be significant surface run-off as a result of the works. As such, given the characteristic of the work, it is not considered that an impact on this feature is likely to occur as a result of the proposed works.	No Likely Significant Effect

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
	For example, colonies of sponges, such as the breadcrumb sponge (<i>Halichondria panicea</i>), grow to unusually large sizes, with single colonies covering areas of over 1 m ² . The limestone reefs are home to several species that bore into rock, and some limestone specialists are restricted to this relatively rare habitat. Species include the rock-boring sponge <i>Cliona celata</i> , piddocks (<i>Hiatella arctica</i>), polychaete worms (<i>Polydora</i> sp.) and acorn worms (<i>Phoronis hippocrepia</i>).			
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site				

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
Large shallow inlets and bays; EU habitat code 1160	Large shallow inlets and bays are habitat complexes which comprise an interdependent mosaic of subtidal and intertidal habitats.	Potential impacts are likely to be from pollution by contaminated runoff (fuel or sediment), silt mobilisation or other debris. Disturbance or deterioration of habitats from construction activities, caused by pollution of fuel/ debris from the works area.	All equipment will be stored within a compound that is located on hardstanding, and no fuel will be stored on site. It is not anticipated that there will be significant surface run-off as a result of the works. As such, given the characteristic of the work, it is not considered that an impact on this feature is likely to occur as a result of the proposed works.	No Likely Significant Effect
Submerged or partially submerged sea caves; EU habitat code 8330	This Annex I type includes submerged sea caves and also partially submerged caves which are only exposed to the sea at high tide. Caves vary in size, from only a few metres to more extensive systems, which may extend hundreds of metres into the rock. There may be tunnels or caverns with one or more entrances, in which vertical and	Potential impacts are likely to be from pollution by contaminated runoff (fuel or sediment), silt mobilisation or other debris. Disturbance or deterioration of habitats from construction activities, caused by pollution	All equipment will be stored within a compound that is located on hardstanding, and no fuel will be stored on site. It is not anticipated that there will be significant surface run-off as a result of the works. In addition the nearest caves are across the Menai Straits.	No Likely Significant Effect

SAC Feature	Description of Feature at the SAC Level ²¹	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
	overhanging rock faces provide the principal marine habitat.	of fuel/ debris from the works area.	As such, given the characteristic of the work and distance from the feature, it is not considered that an impact on this feature is likely to occur as a result of the proposed works.	

Table 5 Traeth Lafan / Lavan Sands, Conway Bay SPA

SPA Feature	Description of Feature at the SPA Level ²⁴	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
Annex II species that are a primary reason for selection of this site				
Oystercatcher (<i>Haematopus ostralegus</i>); EU habitat code A130	This large area of intertidal sand- and mudflats lies at the eastern edge of the Menai Strait. The area has a range of exposures and a diversity of conditions, enhanced by freshwater streams that flow across the flats. The site is of importance for wintering water birds, especially Oystercatcher (<i>Haematopus ostralegus</i>) and Curlew (<i>Numenius arquata</i>). In conditions of severe winter weather, Traeth Lafan acts as a refuge area for Oystercatchers displaced from the Dee Estuary. The site is also an important moulting roost for Great	Potential impacts are likely to be from pollution by contaminated runoff (fuel or sediment), silt mobilisation or other debris. Disturbance or deterioration of habitats used by oystercatcher from construction activities, caused by pollution of fuel/ debris from the works area and the installation of sheet piles.	All equipment will be stored within a compound that is located on hardstanding, and no fuel will be stored on site. It is not anticipated that there will be significant surface run-off as a result of the works. Current works to install enhanced flood defences will result in a raised sea wall or bund that will act as a screen to reduce the transmission of noise from the works.	No Likely Significant Effect

²⁴ As provided by the National Resources Wales Designated Sites Search – available at <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en>; accessed 31/08/2023.

SPA Feature	Description of Feature at the SPA Level ²⁴	Potential Impacts of Proposals in the Absence of Mitigation Measures	Probability, Magnitude, and Reversibility of Potential Impact	Conclusion
	Crested Grebe (<i>Podiceps cristatus</i>) in late summer/early autumn.		Sheet pilling works are scheduled to be undertaken between April and October 2024. Therefore, no impact on overwintering oystercatcher is anticipated.	

7.6 Likely Significant Effects Screening Summary

The screening test has concluded that the project will not result in an LSE on the interest features of the Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC or the Traeth Lafan / Lavan Sands, Conway Bay SPA.

Due to the overlap in interest features, this conclusion can be extended to all component SSSIs within the SAC and SPA.

8. Conclusions

8.1 Screening Stage

Screening for LSE on European designated sites located within 10 km of the project area has been carried out as required under European and UK law. Two designated sites were considered to be relevant to the scheme and required assessment: Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC and Traeth Lafan / Lavan Sands, Conway Bay SPA.

Screening has considered the following potential effects that could possibly occur as a result of the project:

- Disturbance, deterioration or displacement of species associated with the designated sites from construction activities, caused by pollution of fuel / debris and silt from the works area / excavation and changing hydrologic conditions and the noise generated from the installation of sheet piles.

However, the screening process has concluded that the project will not result in an LSE on the interest features of Traeth Lafan / Lavan Sands, Conway Bay SPA due to the proposed timings of the sheet piling works.

8.2 Summary

It is concluded that the proposed works will not have an adverse effect on Y Fenai a Bae Conwy/ Menai Strait & Conwy Bay SAC and Traeth Lafan / Lavan Sands, Conway Bay SPA. Due to the overlap in interest features, this conclusion can be extended to all component SSSIs within the SPA.

This is because the works are scheduled to be undertaken outside of the most sensitive period for overwintering birds. If the timings for the project change this will require reassessment.

9. Appendix 1 – Works summary

