



METHOD STATEMENT & RISK ASSESSMENT

Morfa Culvert Remediation 2024

Document Control Sheet						
Title: Morfa Culvert Remediation 2024 METHOD STATEMENT & RISK ASSESSMENT			Document No. TN/KM/SCC-MCR/OCT23/1			
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Copy No.	Issued to:					
1	Mike Sweeney – City & County of Swansea	✓				
2	Apem – Amber Villanueva-Brackley	✓				
3	Kaymac Marine Records					

!!!THIS IS A LIVE DOCUMENT THAT CAN BE ALTERED BY THE ON-SITE MANAGER / SUPERVISOR AT ANY TIME SHOULD THEY FEEL THE WORKING CONDITIONS ON SITE REQUIRE A CHANGE TO THE PLANNED WORKING PROCEDURES!!!

1.0 Introduction

1.1 Legislation

This document has been prepared to comply with, as far as reasonably practicable, the following current relevant legislation;

- The Health & Safety at Work etc. Act 1974
- Construction Health Safety and Welfare Regulations 1996 (CHSW)
- The Management of Health & Safety at Work Regulations 1999
- The Provision and Use of Workplace Equipment Regulations 1998
- The PPE (Personal Protective Equipment) Regulations 1992
- The Manual Handling Regulations 2002
- The Reporting of Injuries, Diseases & Dangerous Occurrences Regulations (RIDDOR) 1995
- The Work at Height Regulations 2005
- The Lifting Operations and Lifting Equipment Regulations (LOLER) 1998
- Provision and Use of Work Equipment Regulations (PUWER) 1998
- The Construction (Design and Management) Regulations 2015
- The Conservation of Habitats and Species Regulations 2010
- Environmental Protection Act 1990
- Wildlife and Countryside Act (1981)

Kaymac plan to carry out the works in compliance with the Environment Agency's pollution prevention guidelines (Appendix B) and utilising practical pollution prevention control methods per the Pollution Prevention Guidance GPP5 Works and maintenance in or near water (Appendix C).

1.2 Description of the Site & Work

The City and County of Swansea has commissioned Kaymac Marine & Civil Engineering Ltd to carry out the remediation work of a collapsed culvert adjacent to Neath Road.

All works will be carried out by trained and competent personnel per the Confined Space Regulations 1997.

The works will comprise of: -

- Installation of a temporary dam within the River Tawe.
- Installation of a temporary dam to the upstream of the Culvert to allow for over pumping system to be installed.
- De-Watering the structure.
- Installation of temporary access along the embankment.
- Installation of a temporary modular support system within the Culvert.
- Concrete repair to the north abutment and haunching

1.3 Location on Site

Morfa Culvert is located 200m north of Swansea City Football Stadium Sa1 2JG. The site is located at OS Grid Reference SS 66144 95790.

Full Site Address for deliveries: -

Kaymac Marine & Civil Engineering Ltd.

Stadium Car Park C, A4067, Landore, Swansea, Wales, SA1 2JG

OS Grid Reference: SS 97555 95072 (E297555, N195072)

what3words: - ///flank.void.tricky

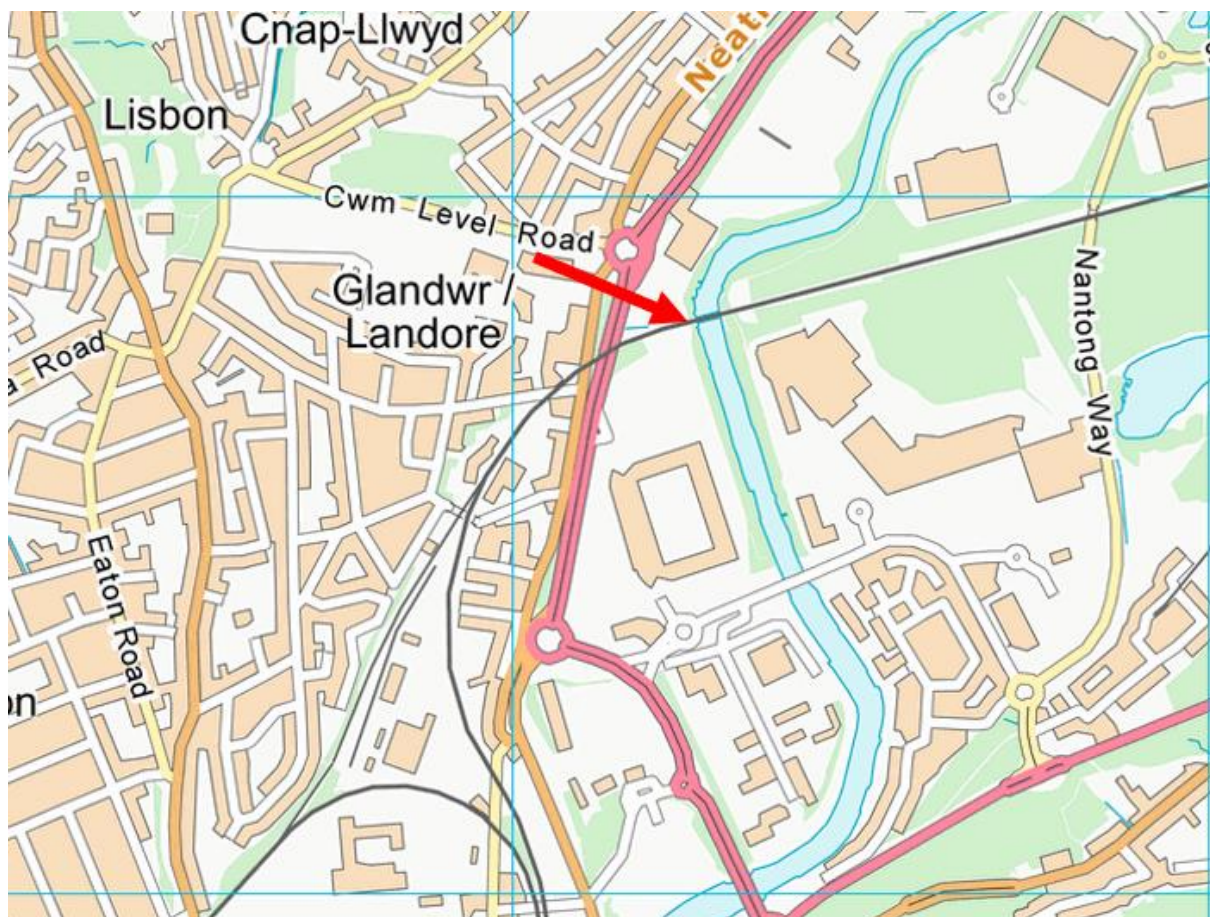


Figure 1: Morfa Culvert Works Location.

1.4 Interface with others

There is a high possibility of an interface with the public who use the footpath, which is popular for local dog walkers and families. Kaymac will erect appropriate signage and security fencing to ensure all are aware of the construction works and that there is no unauthorised access to the compound.

1.5 Named Supervisor

TBC

1.6 Number of Personnel/Job Titles

Team TBC before work commences.

1.7 Authorised Persons (permits etc.)

Person In Charge of Works –

- Paul Retalick – 07473 169768
- Mike Sweeney – 07796 27504.

1.8 Specific Job Training (confined spaces, etc.)

The site manager will be SMSTS accredited.

All operatives will be fully trained and competent to cover job-specific work duties.

All certificates will be provided to Swansea City Council before the commencement of the works.

1.9 Asbestos/Hazardous Substances

N/A.

1.10 First Aid Requirements

See *4.0 Emergency Procedures* below.

1.11 Plant/Tools/Equipment/Materials

- 15T Long Reach Excavator c/w Bio-oil and Rubber Tracks;
- 8T Excavator c/w Bio-oil and Rubber Tracks;
- 7T Tracked Dumper c/w Bio-oil and Rubber Tracks;
- 10T Crawler Crane;
- Eco10 Welfare Facilities;
- Engineering setting out/surveying equipment, Total Station;
- CAT & Genny;
- Track Mats;
- Fencing, hoardings & barriers;
- CCTV Surveillance equipment;
- 10-foot stores;
- Pumping Equipment;
- Davit Arm System;
- Silt Curtain;
- 2 No. frame dame systems, upstream & downstream;

- Concrete Pump;
- Generators to power site;
- Toproc C40/50 Rapid Concrete with Anti washout or similar approved product;
- Type 1 stone;
- C6 Stone 20mm – 80mm;
- Visqueen;
- Scaffold & handrailing – where necessary;
- Sand;
- Sandbags;
- Drip Trays / Plant Nappies;
- Spill kits;
- Petrol – fuel for generators, Pumps etc.;
- Fuel Bowsers;
- Steel modular System Formwork, including rollers & runners,
- Misc. Hand Tools, shovels, etc.

Certificates and specification sheets will be provided and checked prior to the commencement of work.

1.12 PPE Requirements

The minimum PPE requirement for the site will be: -

- High Visibility Jacket/Waistcoat to EN471:2003;
- Safety Boots (or Wellington Boots) to BS EN ISO 20345;
- Safety Glasses to EN166;
- Gloves to BS EN 14328;
- Safety Helmet to BS EN 397:2012;
- Hearing Protection to EN 352-1:1993;
- Dry suit to BS EN ISO 14225-2: 2005;
- Lifejacket to ISO12402-2.

Operatives working within the watercourse to install the temporary works will only be required to wear a dry suit and hard hat. The dry suits are deemed as buoyancy aids.

1.13 Pre-Start Operation/Arrangements

Before starting any work on site:-

- A site Induction of all Kaymac Operatives by Swansea City Site Manager / Site Supervisor must be carried out.
- A Walk Round Induction of the Site by a Swansea City representative must be carried out.
- All on-site personnel must sign Into the Site Attendance Register daily.
- All personnel must receive a brief on planned works for that day from the Kaymac Supervisor.

1.14 Lone Working

There will be no requirements for Lone Working on site.

1.15 Work at Height Requirements

Working at Height is expected on this project. A Dynamic Risk Assessment will be conducted on-site.

1.16 COSHH Assessments

- Concrete;
- Diesel;
- OPC;
- Petrol.

COSHH Assessments & MSDS are to be found within the Kaymac Site Folder.

1.17 Welfare

Welfare is to be provided and maintained by Kaymac. The welfare will consist of a 20' EcoHybrid Welfare Unit or similar.



Figure 2: General image highlighting a typical 20' Welfare Unit.

1.18 Project Directory

SWANSEA CITY COUNCIL		
Paul Retallick – Project Manager	07810 517378	Paul.retallick@swansea.gov
Mike Sweeney – Principal Engineer	07796 275704	Mike.sweeney@swansea.gov
Jack Davies – Senior Drainage Engineer	07880 426488	Jack.davies@swansea.gov
KAYMAC		
Kaymac Head Office – Swansea	01792 301818	enquiries@kaymac ltd.co.uk
Jeff Lippiett – Operations Director	07971 880029	Jeff.Lippiett@kaymac ltd.co.uk
Rhys Colcombe – Project Director	07950 501774	Rhys.Colcombe@kaymac ltd.co.uk
TBC – Site Manager	07557 921044	-
Jon Dean – Project Co-ordinator	07976 122883	Jon.Dean@kaymac ltd.co.uk
Steffan Williams – Project Engineer	07970 489366	steffan.williams@kaymac ltd.co.uk
Terry Northam – Project Engineer	07877 085486	terry.northam@kaymac ltd.co.uk
Gareth Lippiett – Project Manager	07772 749833	Gareth.Lippiett@kaymac ltd.co.uk
Gareth Crees – Health & Safety Manager	01792 301818	Gareth.Crees@kaymac ltd.co.uk
OTHER CONTACTS		
TBC (NRW)		

1.19 Access

The works compound will be accessed via car park C of Swansea.com Stadium. A pedestrian footpath will be crossed to access the Kaymac site compound.

Access to the watercourse and working area will be via a temporary access haul road. Plant access to the upstream will be via a public tarmac footpath.

HOLD POINT: - No items of plant are to gain/remain within the watercourse overnight/at the end of a shift.

HOLD POINT: - The access slipway will remain accessible at all times should there be an emergency and access be required.

See the access route in the images below (Figure 3 & 4): -



Figure 3: Image highlighting the general access through Swansea.com stadium.

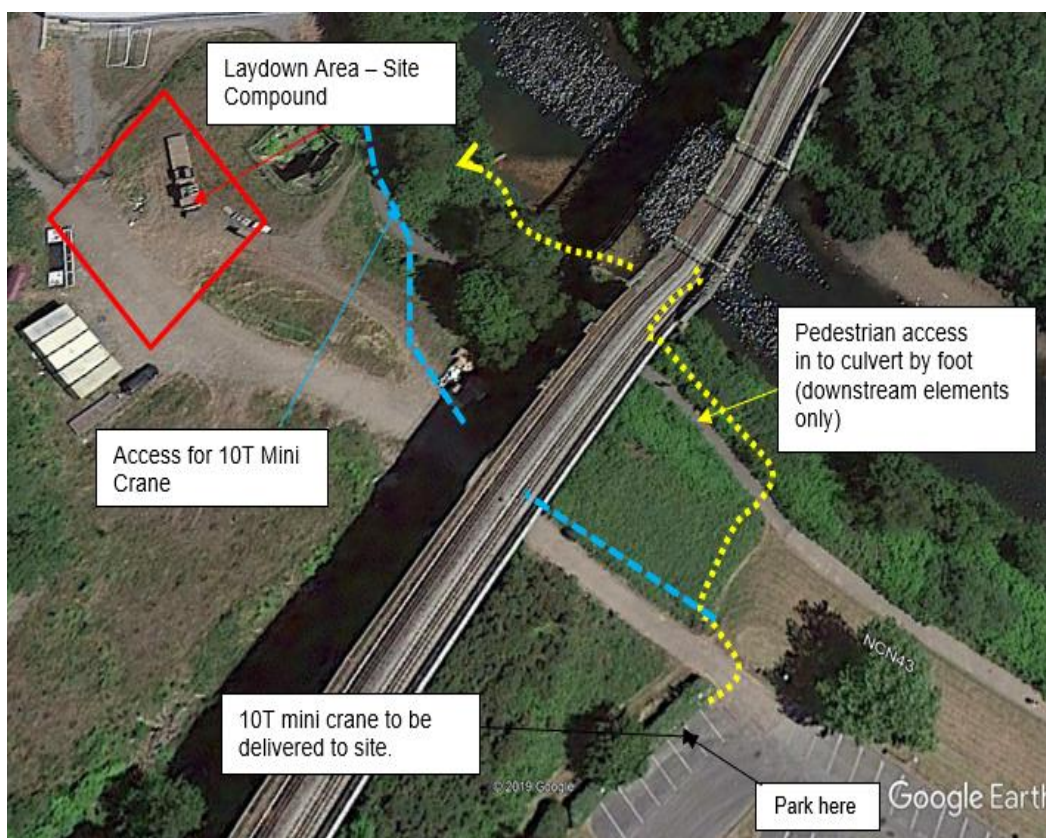


Figure 4: – Image highlighting the general access to the Swansea CC asset.

1.20 Special Requirements

- All Kaymac staff are to be inducted into the site by the Kaymac Site Manager / Site Supervisor;
- All Kaymac staff are to sign in and out on the Site Attendance Record daily;
- All Kaymac staff are to be inducted/briefed by the Kaymac Supervisor before work commences on-site;
- A weekly safety audit/report is to be compiled by the Kaymac site supervisor;
- Kaymac are to complete daily health & safety briefings each morning concerning the specific works being carried out;
- A weekly toolbox talk will be delivered to Kaymac at the beginning of the work;
- Kaymac operate a 'Close Call' card system, and any issues raised will be relayed to the Swansea City Council representative;
- Any landowner consents/issues are to be dealt with by Swansea City Council before the commencement of works.

1.21 Environmental Considerations

Kaymac plans to conduct the works utilising practical pollution prevention control methods and best practices per Pollution Prevention Guidance GPP5 Works and maintenance in or near water.

The primary considerations when working within this site are:

- Installation of temporary dam system.
- Access into the dry working area for plant and machinery.

Throughout all aspects of the works, Kaymac will actively aim to conduct activities in a manner that will cause minimum detrimental effects to the local ecology and wildlife and, as a result, will carry out the works with the following Environmental Actions:

- No plant leaking fuel, lubricating oil or hydraulic fluid will be allowed on site;
- Bio-degradable hydraulic fluid will be used on all plant on site;
- Rubber Tracks on plant to avoid high ground pressures and minimise impact to the habitats, where possible;
- All plant will be cleaned before delivery to the site;
- Fluid and oil will be stored fully banded to 110% of the volume. Delivery and vent pipes will be terminated within the bund;
- Plant will be removed from the works area before refuelling or servicing;
- Any spilt fuel, hydraulic fluid or lubricating oil will be immediately contained and removed from the site;
- Plant will be effectively silenced and will comply with the requirements of the Local Authority;
- Any small items of plant (generators, small pumps, etc.) will be placed within plant nappies/drip trays;
- No plant re-fuelling is to occur within 10m of the watercourse. Refuelling of plant to be carried out per the approved procedures and in accordance with the Control of Pollution (Oil Storage) Regulations 2001;
- Spill Kit's will be immediately available for all plant and equipment;
- All practical measures will be adopted on-site to prevent any cross-contamination of invasive species;
- Leptospirosis – Weils Disease: All operatives and visitors will be given a Toolbox Talk on Leptospirosis and measures required to protect from its effects;

- All operatives entering the watercourse in dry suits will be washed down with Virkon 'S' on-site to prevent cross-contamination;
- The works will be planned and undertaken in such a way that disruption to the natural environment and local habitat is kept to a minimum;
- Noise levels shall be minimised where possible and within the site's working hours. In line with Control of Noise Regulations 1998;
- A silt curtain will be placed around the working area to further mitigate pollution from on-site concrete operations.

1.22 Permits to Work

Natural Resources Wales will require a Band 2 Marine Licence for the works. This licence will be obtained by Apem with assistance from Kaymac.

It is not envisaged, but if required, a Hot Works Permit will be issued by the Kaymac Site Manager.

1.23 Contract Commencement and Duration

Start Date: - May 2024 – 9 Weeks.

1.24 Working Hours

Normal working hours will be defined as: -

Monday to Friday – between 08:00 and 18:00 hours;

Saturday – between 08:00 and 18:00 hours.

1.25 Emergency Response Procedure

Prevention

Kaymac Site Manager will be signed up to the Natural Resources Wales Flood Watch and will receive automated phone calls regarding Flood Events and/or SSA for the area.

Kaymac Site Manager will monitor the weather regularly to ensure no high flows are expected within the watercourse.

Working areas will be fenced off for the duration of the work. The footpaths leading to and from the site will be closed for the duration of the work. The welfare and plant will be securely stored.

Works will be put on hold under extreme temperatures (hot – threshold temperature to be decided on site) or any biological, accidental hazard.

Following a Flood Warning

- Kaymac Site Manager will liaise with the stakeholders after employing the emergency response procedure;

- Demobilise from site;
- The works will then be on hold until further notice;

Fire

If a fire occurs, the muster points will be identified within the Site Induction and signed appropriately.

Suitable fire extinguishers will be positioned within the compound and at the location of the work to deal with a fire.

The Fire Marshal for the site will be confirmed and identified within the Site Induction.

Recovery of an Incapacitated Person(s) from the Structure through Ill Health or Injury

In the event of one of the team becoming incapacitated through ill health or injury, but NOT because of an unsuitable atmosphere, the following procedures will be applied;

- The other team members will raise the alarm with operatives on the embankment, or if all operatives are seen to be incapacitated, the riverbank operative will raise the alarm with other external team members;
- If it is deemed safe to do so, the first aid kit will be mobilised to the casualty by one or more of the other team members;
- The First Aid trained rescuers will then give emergency first aid where required;
- The casualty will then be removed from the structure via stretcher;
 - Lift via the winch on the scaffold as a last resort.
- Once recovered to the road, further first aid can be administered, and the emergency services can be contacted if required;
- The operatives will then return to the structure with the stretcher to retrieve the second casualty (if required);
- Once recovered to the riverbank, further first aid can be administered, and the emergency services can be contacted if required.

1.26 Environmental and Flood Risk Management

Environmental

The work will be undertaken within a bund.

No significant Environmental risks are envisaged as no items plant will not be entering the watercourse.

Spill kits will be immediately available in each item of plant in readiness to contain any spills that may occur.

All re-fuelling will occur at a distance greater than 10m from any watercourse or drainage inlet.

Bio-degradable hydraulic fluid will be used on all plant on site.

Flood Risk

To minimise the flood risk, the dam will not take up more than 1/5 of the watercourse and be no taller than 2.0m high.

The temporary dam will be monitored daily and checked before each shift.

The Site Supervisor will monitor the weather forecast regularly, and all operatives and materials will be removed from the watercourse should levels begin to rise.

The Kaymac Site Manager will also be signed up to the NRW Flood line to receive any alerts should any flooding be anticipated in the area.

Should heavy rain occur, and the river levels begin to rise, the working area will be made safe, and all labour and plant removed from the watercourse until it is safe to re-enter.

1.27 Drugs and Alcohol

Alcohol and drugs are forbidden on site. Anyone suspected of being under the influence will be reported to their employer and may be tested accordingly.

1.28 Sub-contractors

Kaymac will undertake the work without any subcontractors.

1.29 Health & Safety

Kaymac will employ our '*Target Zero*' approach to Health & Safety for this project. To achieve this, we aim to provide the following:

- No injury, ill health or incident caused by our work activities;
- To ensure safe access and egress to and from the site;
- To protect pedestrians and adjacent occupiers from any risks associated with the site;
- To ensure all persons visiting the site have been given necessary safety information on any hazards related to the current phase of work;
- Visitors are to be always escorted while on-site;
- Ensure operatives act safely and wear personal protective equipment appropriate to the task at hand;
- To investigate any accidents or incidents on-site and take note of any recommendations coming from accident and incident investigations;
- To use (where required) professional support for assisting in the safety of the site;
- To provide regular toolbox talks throughout the project.

These safety goals are monitored and discussed during site meetings and actions given to the appropriate personnel.

Our Site Manager will monitor the work. All reporting will be per Appendix G's Kaymac Organisational and Report Chart.

If required, the Kaymac Site Manager will amend RAMS on site if any elements of the works are to alter from what has been planned from the information provided.

1.30 Traffic/Pedestrian Management Plan

No traffic management will be required, but there will be a need for some pedestrian management. Kaymac and Swansea CC will erect signage to inform local pedestrian and football academy users of the works. Signage will be placed around working areas, and pedestrian diversions will be set to ensure no interface at the location of the work.

1.31 Site Constraints

Before, during and after the work, the following constraints will be adhered to: -

- Due to access to the site via Swansea Stadium.com, several events have been planned; therefore, no deliveries will occur during these times. If required, alternative access will be provided for the workforce.
- The pedestrian footpath will be closed, and Heras security fencing will be installed to prevent unauthorised access.

1.32 Lifting Equipment

- All craneage, chains, slings, shackles, and shoes will always have a valid certification for inspection.
- Daily checks are to be made on chain clamp / locknut pitching chain and component connectors, together with the operator's standard daily rig check.
- The winch for lowering materials will be certified and checked before use.

1.33 Lighting

Safety and Task lighting will be provided as necessary by Kaymac. Site lighting will also allow safe movement around the site if needed.

1.34 Housekeeping

All vehicles and plant will be kept in a clean condition.

The working area will be kept clean and clear of trip hazards. Any spillages will be reported to Kaymac and cleared immediately. All waste will be deposited into skips provided by Kaymac for disposal.

All plant will carry a comprehensive spill kit.

2.0 Methodology

The works will comprise of: -

- Mobilisation and set-up of Site Compound;
- Set up Environmental Protection Measures in the form of a silt curtain (during concrete operations only) and Visqueen bund;
- Installation of a temporary dam upstream of the repair to provide facilities for over-pumping;
- Install temporary access to the culvert entrance;
- Installation of a temporary support system within the Culvert;
- Concrete works to infill voided areas within the Culvert and along the abutment;
- Site Clearance and De-mobilisation.

Remediating the collapsed culvert section at Morfa requires a robust series of temporary works methods. To overcome this relatively complex engineering challenge, Kaymac has developed a steel modular and frame dam system that will permit the works to be undertaken in dry conditions while facilitating the requirement to control and monitor any environmental implications and provide safe working conditions for all personnel.

This section summarises the resources and methods used to install the frame and modular steel systems and provides a detailed insight into the remediation work. Our in-house CITB-qualified Temporary Works Co-ordinator will compile a detailed Temporary Works Management Plan before the commencement of the work.

Mobilisation

A 7-man team will attend the site on the start date agreed with the Client, per the project programme, and report to the main site compound and Client representative. The Kaymac Site Management team will consult with the Swansea CC responsible person.

All Kaymac personnel and any other personnel involved in the project will be site inducted by the Kaymac Site Manager to ensure they are aware of the site layout, the hazards and risks involved in carrying out the works, and the emergency arrangements in the event of an incident, including the location of the nearest hospital.

All Kaymac personnel must sign in on the site attendance register before starting work each day and sign out at the end of each shift. The Kaymac Site Manager/Supervisor will be responsible for briefing the site-specific Method Statement and Risk Assessments pertaining to the project tasks to the site team.

Hold Point

Work will only commence after the initial site Health and safety procedures are completed. Kaymac will set up the site compound within the area of land directly west of the upstream catchpit. Heras fencing and pedestrian barriers will be installed, segregating the access route to the asset along with the site compound.

Installation of Access

A haul road consisting of 'crush and run' will be installed to provide all plant and equipment access to the downstream culvert portal. This road will originate from the tarmac cycle path and veer towards the watercourse, utilising the shallowest gradient possible. Before the roads' construction,

de-vegetation works may be deemed necessary. Before any material is placed, a geotextile or membrane will be placed on the ground. Crush and run will then be incrementally placed on the geotextile and terminate a sufficient distance from the retaining wall, minimising any unwarranted loading on the existing masonry retaining wall. During the previous inspection, the gabion baskets at the downstream portal were in poor condition, with significant material loss noted. The haul road orientation will ensure that it is constructed at a suitable distance from any existing assets deemed to be in poor condition. Please see the image below for further details on the location and orientation of the haul road.



Figure 5: – Image highlighting the general location of the haul road.

Conversely, access to the upstream catch pit will only be obtained via a 10T Crawler Crane. Much like the previous inspection carried out in 2021, the crane will be sited on the tarmac footpath directly south of the catch pit. Due to the relative difference in levels from the upper to lower elements of the catch pit, i.e., 5.0m>, this has been deemed the only safe means of access to the upstream.

Undertake Pre-Construction Inspection

Due to the complexity and relative risk attributed to the scheme, it has been deemed prudent that all personnel have a site walkover before carrying out any form of repair.

Hold Point

All personnel must ensure that they are familiar with the asset layout along with all matters of Health and Safety highlighted above before any remediation commences.



Figure 5: – Image highlighting the general arrangement of upstream.

De-Watering Procedures

First, a suitably sized crane will lower a thick membrane into the lower catchpit area upstream of the collapsed section of culvert, followed by the trash box and pump heads. With the trash boxes and pumps adequately sited, the discharge hoses will be lowered into the upstream catchpit and secured to the pump heads. While this operation is carried out, operatives at the downstream embankment will insert two number tirfor wires through the 400mm overflow pipes. These wires will pull the remaining discharge hoses through the overflow culvert. Any additional sections of the discharge hose will then be connected downstream and terminate a sufficient distance from the watercourse. The area between the discharge hoses and the waterway will comprise of Sedi-mats and/or similarly approved pollution control measures. The discharge will then be allowed to permeate to the watercourse through the pollution control measures naturally. It is worth noting that the water will be discharged upstream of the downstream frame dam system but within the silt curtain.

With the pumps and discharge hoses now in place, Kaymac operatives will erect the upstream frame dam. A temporary bund and flume to divert water will be installed to create a 'dry' working area to allow for the installation of the membrane to along the frames. The temporary bund will consist of sandbags and a half section of twin wall pipe. The temporary flume and dam will be removed once the frame dam system has been installed.

Kaymac operatives will install the frame dam system utilising the previously mentioned membrane as a water-resistant barrier, creating a catch pit to house the upstream de-watering pumps. In this instance, to reduce pumping, the water will be allowed to overtop the frame dam through the flume whilst preparations for installing the downstream frame dam and subsequent membrane commence.

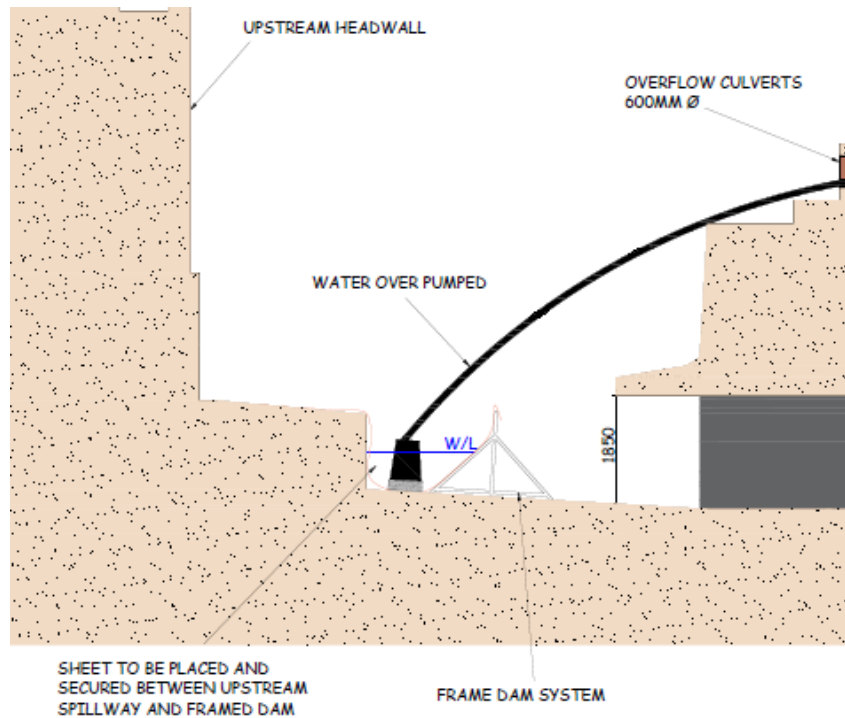


Figure 7: – Image highlighting the general pumping arrangement upstream.

In conjunction with installing the upstream frame dam, Kaymac operatives will also install the downstream frame dam system. The frame will be installed to create a good seal at the interface with the existing masonry retaining wall and follow the shallower section of the river channel encompassing the downstream culvert portal. Operatives will install a water-resistant membrane with the frame adequately sited, creating a seal and bunded area.

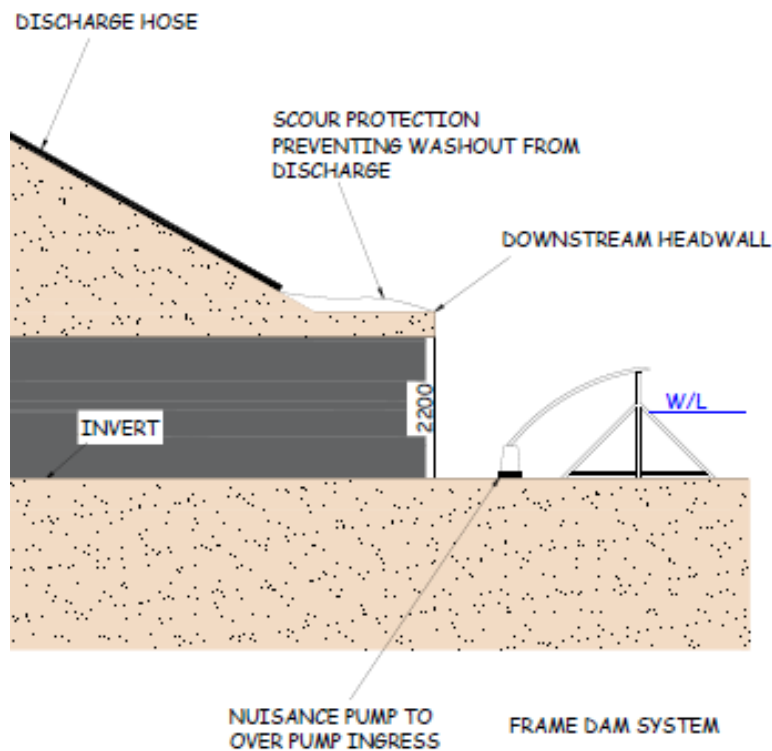


Figure 8: – Image highlighting the general pumping arrangement downstream.

Operatives will then proceed to install a nuisance pump at the lowest level within the downstream banded area (identified within a previous topographical survey) and commission it. With the upstream pumps now operational and dealing with the water from the adjoining Culvert and the downstream nuisance pump coping with the water within the footprint of the Culvert, a dry working area will be achieved. It is worth highlighting that the downstream nuisance pump will also deal with any ingress or leakage from the upstream by simply over pumping into the watercourse.



Figure 9: – Image highlighting the general frame dam arrangement.

Following the removal of the water within the asset, Engineers will proceed to undertake further inspection of the Culvert with particular interest in previously submerged areas, i.e., the masonry invert.

Hold Point

The engineers are to terminate the inspection at a sufficient and safe distance from the collapse. An on-site dynamic risk assessment will determine this distance.

Ensuring no apparent change can be determined from the inspection, Kaymac operatives will begin to remove the finer aggregation from the downstream elements of the Culvert only.

Hold Point

Kaymac operatives are not to remove any of the larger areas of aggregation located adjacent to the sinkhole. This debris is to be removed when implementing the steel modular system only.

While a team of Kaymac operatives remove the debris from downstream, an additional team will take delivery of the steel modular system sections. These will be delivered to the site through the Swansea.com Stadium Carpark. The frames will be repositioned from the compound with a 15T-long reach excavator. The frames will be temporarily stored along the haul road and will be retrieved when necessary.

With approximately 8.0m of the downstream Culvert cleared of all debris, operatives will place front and back shutters on the invert. These will act as stop ends for the initial concrete pour. A highly workable mix will be installed, ensuring a sufficient finish to base the modular steel systems guide rails. The concrete will be delivered to the pour location via a static line pump. The concrete mix will consist of a C40 with anti-wash-out agents. This mix design will mitigate the risk of a pollution

incident and allow a faster setting time. The concrete delivery system will be positioned at least 10.0m from the watercourse on a contained and bunded area. All mixing/deliveries will be undertaken within this bunded area.

It is worth noting that this process will only be carried out if the invert construction is deemed insufficient for securing the tack and subsequent modular system.

Hold Point

All concrete pours will be carried out during dry weather periods only, this will reduce the chance of any washout.

Hold Point

A silt curtain will be erected around the downstream frame system whilst all concrete operations are carried out. **Following the concrete operation, the silt curtain must be removed.** The silt curtain installation process has been highlighted below:

Installation of the Silt Curtain

A survey will be carried out along the riverbed where 2 operatives will conduct a depth survey, which will involve submerging the surveyor's staff into the water along the line of the intended curtain until it reaches the invert. The readings will be recorded as the survey progresses. Following the survey, the results will be collated, and a suitable position for the silt curtain will be established.

The silt curtain will be delivered to the site in a Kaymac vehicle and offloaded by hand.



Figure 6: – Image highlighting a silt curtain capturing silt and fines.

The curtain will be rolled out along the edge of the watercourse, ready to deploy into position. When the location of the silt curtain has been confirmed, an operative will assist in rolling out the curtain from the water's edge.

The silt curtain will be floated to the correct position upstream of the works, ensuring that the whole worksite is within the encapsulation zone. Once in the correct position the curtain will be fixed into the masonry upstream.

The silt curtain is manufactured with a weighted base. When the curtain is in the correct position, two Kaymac operatives wearing dry suits will ensure that the curtain is lying on the riverbed. Additional weights can be added to the curtain if required.

The silt curtain will be monitored daily and following any additional flows due to weather/tide levels. Any signs of movement will be addressed following the process above.

Hold Point

Before any concrete is discharged, the delivery ticket will be checked to ensure that the correct mix design has been delivered. A slump test and concrete cubes will be taken from each load.

Kaymac operatives will install the guide rail system after a sufficient curing period (if concreting the invert is deemed necessary). This system will consist of two parallel length 50mm box sections drilled and fixed to the invert. The guide rails will start outside the culvert portal and finish at the end detail of the concrete pour. The individual elements of the modular system will utilise the lengths of guide rails positioned outside the Culvert as an initial landing area.

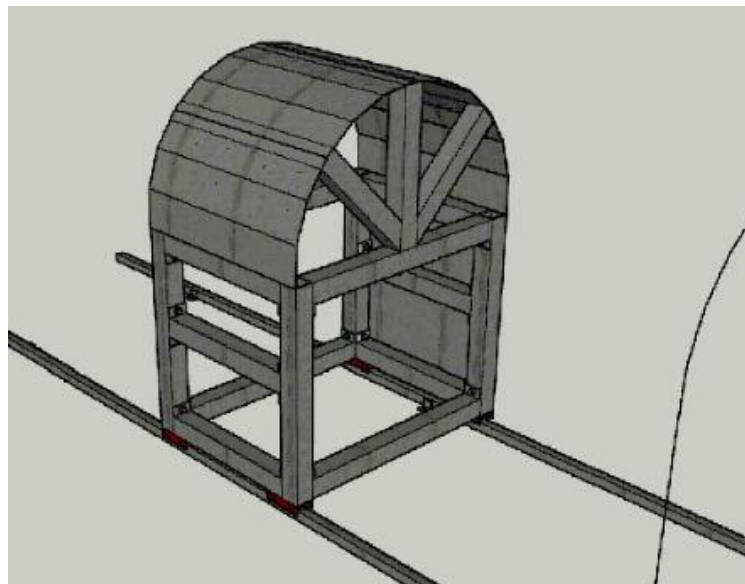


Figure 10: – Image highlighting indicative sketch of the modular and guide system.

Installation of the Steel Modular System

With the guide rails now in place and utilising the 15T long reach excavator, the eight number individual steel modular units will be repositioned within the Culvert. The first modular unit will be placed on the guide rails located outside the Culvert.

Hold Point

All operatives should not be within the slew radius whilst the modular system is repositioned.

With the first modular unit placed on the guide rails and de-rigged from the 15T excavator, operatives will then make their way into the Culvert and proceed to push the unit a sufficient distance within the Culvert. The second modular unit will be placed within the Culvert and bolted to the first using the same method. This process will be repeated until all eight individual units are installed. With the weight of the modular system increasing with every unit, mechanical methods of repositioning the system may be required. This mechanical method will have an upstream anchor detail to secure a tirfor wire.

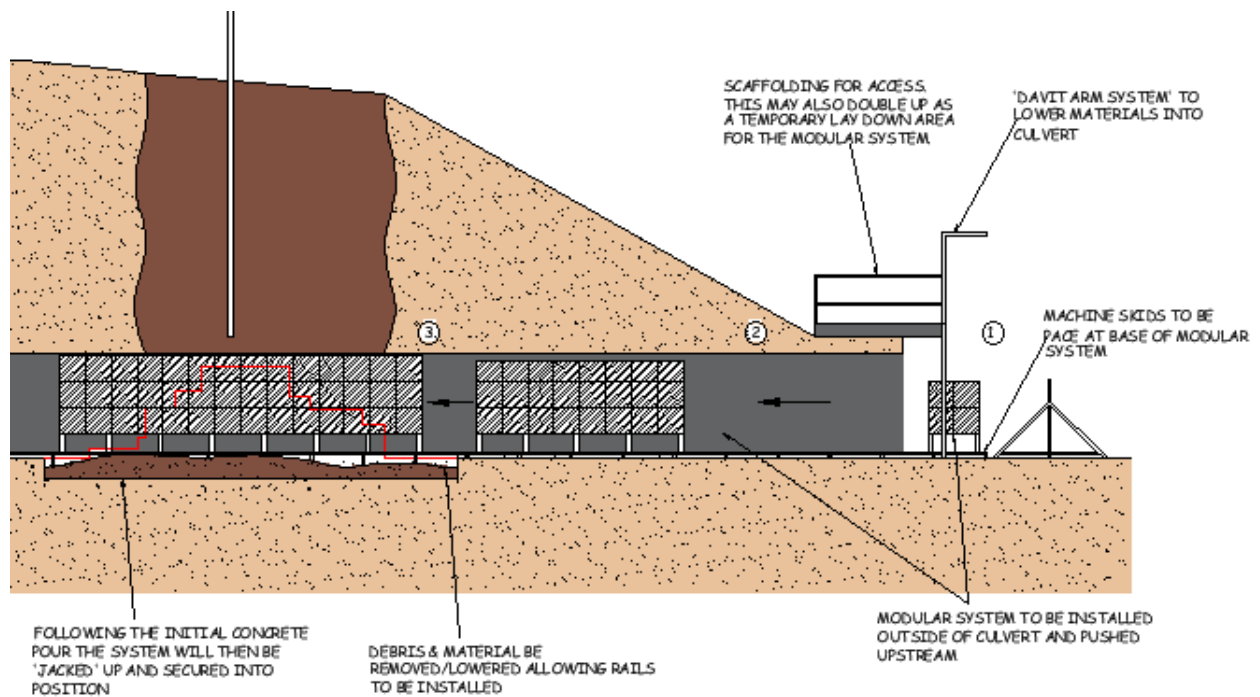


Figure 11: – Image highlighting sequence for inserting the modular system.

Removal of Debris

The steel modular system will be repositioned to the upstream extent of the guide rails and subsequent concrete using mechanical methods. Operatives will then proceed to remove the aggregation from the area adjacent to the collapse from a position of safety within the modular system. All removed debris will be placed in buckets using extendable tools, transported through the modular system and subsequent culvert, and repositioned on the surface for disposal.

To ensure the debris removal process is carried out as efficiently as possible, the concrete invert and guide rails will be extended further, albeit in shorter increments. This process will follow the outlined methodology above.

After removing all the debris within the Culvert and installing a new concrete invert to the upstream extent of the collapse, the modular system can be prepared to receive concrete.

Hold Point

All debris removed from the culvert will be initially placed in skips and disposed off site via licensed waste carrier to a nearby approved facility.

Preparation of Modular System & Concrete Operations

The modular system will be jacked and braced from the opposing abutment to create a sufficient seal between the steel and existing masonry abutment interface. Furthermore, the system will also be jacked up, creating a seal with the upper haunches of the arch. Due to the nature and finish of dressed masonry, minimal voids are expected. These voids are to be filled with a fast-setting repair mortar.

Hold Point

To avoid the unwarranted ingress of concrete through the system, all voids must be addressed and secured before placing the concrete. All bracing and jacking mechanisms must be checked before the lateral loading of the concrete is applied.

Hold Point

A silt curtain will be re-erected around the downstream frame system. Following the concrete operation, the silt curtain is to be removed.

The concrete will be placed in three pours (minimum) to avoid undue stress on the modular system. Much like the concrete used for the invert, the concrete used for the sinkhole will have similar properties, i.e., C40 with anti-washout properties. The concrete placement will be monitored from a safe distance upstream and downstream of the defected area. Following the final pour, the concrete will encapsulate the sinkhole and the upper arch extrados. This final pour level will form the permanent works for the scheme.

Hold Point

The final level of concrete will need to be confirmed from the exterior of the sinkhole.

The concrete will be delivered to the collapse area via a concrete boom pump. As highlighted previously, all concrete operations will be conducted within a bunded area and a sufficient distance from the watercourse.

Removal of the Modular System

Following a sufficient curing period, the modular system will be removed. Both vertical and horizontal jacking systems will be released, ensuring the system is free from the newly installed concrete. The system will then be relocated to the downstream portal. Once again, mechanical means may be deployed to assist with this operation. The system will then be individually unbolted and repositioned on the surface for disposal by the 15T excavator.

Removal of Equipment

After completing all the permanent works and removing the modular system and rails, Kaymac operatives will remove all the temporary works, including the frame dams and over-pumping equipment. Any temporary works within the footprint of the Culvert will be removed first, i.e., guide rails, followed by the pumping equipment. The Culvert will be allowed to fill with water, thus reducing any pressure differential between the river and permitting the frame dams, particularly the membrane, to be removed with relative ease. The silt curtain will be the last in-water item to be removed. This sequence concludes all the in-water elements of the scheme.

All other equipment located on the embankment, including the discharge hoses and pollution control measures, will also be removed by Kaymac personnel. Said items will be repositioned and contained within the site compound for disposal.

Aside from the compound, the haul road will be one of the last elements to be removed. As discussed previously, this will be removed with items of plant, including the excavators and dumpers. All material will be repositioned to the compound and disposed of at a licensed facility.

Demobilise Site Compound

The site compound will then be demobilised, leaving the site clean and tidy.

Temporary Works

The range of temporary works for this scheme is extensive and has been covered within the Methodology section. However, and in summary, the Temporary works consist of the following:

In-Water Temporary Works

- Upstream & Downstream Frame Dam System.
- Over pumping equipment
- Silt Curtain

‘Dry’ Temporary Works

- Steel Modular System
- Scaffold Access
- Davit Arm System
- Haul Road
- Cranes, along with all lifting capabilities

Excavation Works

No excavation works are envisaged in this scheme.

3.0 On-site Risks / Hazards

- Interface with traffic/pedestrians.
- Debris removal.
- Working within or above water.
- Working at Height.
- Exceptional weather.
- Difficult site access.
- Environmental constraints.
- Manual handling.
- Silt agitation.
- Pollution of river channel.
- Leptospirosis (Weil’s disease).

4.0 Emergency Procedures

The nearest hospital to the site with a 24-hour Accident and Emergency Unit has been identified as: -



Figure 12: – Image highlighting the emergency route to Morriston Hospital

Transfer time from site: approximately **12 minutes (Distance – 4.6 miles)**. Full details can be found in the emergency procedures section of this document.

4.1 Minor & Major Injuries

Depending on the injury, a Kaymac First Aider, Jon Colcombe, will administer First Aid on Site as appropriate before contacting the nearest hospital, if required: -

Bleeding – It is essential to stop blood flow as quickly as possible.

Minor Cuts – Small cuts in the vein stop bleeding and clot within a few minutes. The area should then be washed, and a plaster placed gently on top.

Deeper Cuts – Deeper cuts in the veins produce dark blood that seeps out slowly and steadily. It can be stopped by gentle pressure on the wound with a sterile or clean cloth, followed by applying a clean or sterile bandage.

Arterial Bleeding – **ARTERIAL BLEEDING MUST ALWAYS BE TREATED BY A DOCTOR** - Bleeding from an artery can cause death within a few minutes, so urgent first aid is essential. This type of bleeding pulsates and squirts blood as the pulse beats. To stop the bleeding from an artery:

- Apply pressure on the wound and keep this up until the patient receives medical treatment;
- Press with a sterile cloth or use your hand if nothing else is available;
- Put a bandage on the wound if possible. If blood soaks through the bandages, press harder until the bleeding stops;
- Do not remove the soaked bandages, but place another on top if necessary;
- Do not attempt to clean the wound;
- The person must be made to lie down, preferably with their head lower than the rest of the body. This will ensure that enough oxygen gets to the brain.
- Position the wounded area higher than the rest of the body, if possible, to reduce the bleeding.

Nosebleeds – occur when small blood vessels in the mucous membranes of the nose burst. Blood may also run into the stomach and then be vomited up.

Do not bend the head backwards or lie down because this increases blood pressure in the head, and so increases the bleeding.

To limit the bleeding:

- Pinch the nostrils shut with the index and middle finger for 10 minutes. This way, the vein is compressed, which is often enough to stem the flow;
- While the nostrils are shut, the person must breathe through their mouth;
- If the bleeding continues, it is crucial to contact a doctor.
- If the person frequently suffers sudden, intense nosebleeds - they should also consult a doctor.

Chocking – Chocking happens when the passage through the windpipe is blocked. This usually occurs when food that has not been thoroughly chewed gets stuck. If someone looks like they are chocking, ask them if they can talk.

A genuinely choking person can usually only communicate with hand movements and may place their hand against their throat. In such a case, they will need help, so summon assistance.

Provided the person is conscious and talking, you should not interfere. Encourage them to cough. However, be prepared if the obstruction becomes complete or markedly worse.

If the person is conscious but struggling to breathe, stand behind them and lean their head slightly forward.

Using a flat palm, strike them forcefully between the shoulder blades, hoping they will cough up (and out) the item, causing choking. Repeat up to five times. If unsuccessful, proceed to the Heimlich manoeuvre.

The Heimlich Manoeuvre

- Stand behind the person who is choking;
- Place your arms around their waist and bend them well forward;
- Clench your fist and place it right above the person's navel (belly button);
- Place your other hand on top, then thrust both hands backwards onto the stomach with a hard, upward movement;
- Repeat this until the object stuck in the throat is expelled through the mouth.

If you must carry out this manoeuvre, place a clenched hand above your navel (belly button) and your other hand on top. Then, thrust your fist hard into your stomach.

Repeat this until the object stuck in the throat is expelled through the mouth.

Shock – Shock occurs when too little blood circulates to the brain.

This means that the brain is not receiving enough oxygen, which leads to a feeling of faintness, disorientation, and dizziness.

Shock may occur: -

- After an accident involving loss of blood;
- After a serious infection, with loss of fluid;
- After a serious burn;
- After other accidents that cause loss of fluids or blood;
- As part of an allergic reaction (anaphylaxis).

When insufficient blood is in the blood vessels, the blood pressure drops, and too little oxygen is circulated to the brain.

When this occurs, a person may: -

- Go pale;
- Turn sweaty, clammy, and cold;
- Become dizzy;
- Become anxious or restless;
- Have a weak, fast pulse;
- Have low blood pressure;
- Have slow, weak breathing;
- Lose consciousness.

What to do if someone is in shock?

- The person must lie on their back – preferably with their feet raised – to ensure enough blood gets to the brain;
- Make sure the person is warm, comfortable, and covered by a blanket if possible;
- Do not give them anything to drink because they could run a risk of choking;
- If the person vomits or bleeds from the mouth, they must be placed on their side to prevent choking;
- Call for an Ambulance; a doctor must always treat a person in shock.

Burns – The first thing to do is limit the damage's extent and prevent the burn from worsening.

- Taking care that you do not put yourself at risk from the cause of the burns, move the person away from the danger area. Smother flames with a blanket or douse the person with water, but beware of electricity or caustic chemicals;
- Remove clothing or jewellery from the burned area, but do not try to peel back any clothing that is stuck to the skin;
- The burnt area must be cooled by being placed under tepid running water. The water should not be unpleasantly cold;
- Keep the damaged area under running water for at least one hour if the pain has not stopped. Up to four hours of this treatment can be beneficial. However, in severe burns, it is more important to get the person to the hospital for treatment, so do not let this delay calling the ambulance;
- Meanwhile, keep the person warm; a lot of heat can be lost from extensive burns, so put a blanket or clothing around the non-injured areas;
- First-degree burns, e.g., mild sunburn, may not require this treatment, although it may help to soothe discomfort;
- Put cling film or a plastic bag over the burn before moving the person to the hospital, but do not wrap the cling film tightly around the limb;
- Do not put creams on the burn at this stage, but you can give the person simple pain relief, such as paracetamol.

Which burns need to be treated by health professionals?

- Burns that are bigger than the palm;
- Burns on the face, neck, hands and in the groin;
- All chemical and electrical burns (electrical burns can look surprisingly minor while causing a lot of damage, and chemical burns may need specific treatment for the chemical that caused them);
- All third-degree burns;
- Most second-degree burns.

Remember that it can be difficult to distinguish between second- and third-degree burns, so always have a doctor or nurse check all but the most minor burns.

For Minor Injuries, the company vehicle will transport the injured person to the local casualty department at the *above* Hospital if required.

For Major Injuries, Kaymac's on-site First Aider will administer First Aid on-site and then contact the emergency services requesting an ambulance to the site location.

Most Kaymac personnel are trained in First Aid and the operative's First Aid certification will be sent to Swansea City Council before mobilisation. For Minor Injuries, a record of the accident is to be entered with all details in the Company Accident Book and notify Swansea City Council's responsible person.

For Major Injuries, Kaymac will compile an accident report and ensure H.S.E. is informed using the F2508 form.

4.2 Emergency Contact Numbers

To contact the police, ambulance, or fire service in an emergency, dial 999.

Royal Glamorgan Hospital (24hr A & E)	01443 443443
Ambulance, Police or Fire and Rescue Service	999
HSE Incident Contact Centre	0845 3009923
HSE Infoline	08701 545500
<u>Natural Resources Wales</u> Flood line	<u>0345 988 1188</u>
Natural Resources Wales Incident Hotline	0300 065 3000 (Option 1)
Gareth Crees, Kaymac Health & Safety Manager	01792 301818
Dean Munkley – Kaymac Site Manager & First Aider	07557 921044
Gareth Lippiett – Kaymac Project Manager	07772 749833
Kaymac Head Office – Swansea	01792 301818
Alun Jones – Swansea City Council Project Manager	07917 710618
Andrew Hobbs – Swansea City Council Contracts Manager	07810 517378
Greg Jones – Swansea City Council Quantity Surveyor	07823 332448

5.0 Reporting Accidents, Work-Related Diseases and Dangerous Occurrences

5.1 Reporting procedures

The Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 2013 (RIDDOR) require that certain accidents on site be reported to the Health and Safety Executive. Any of the following types of accidents that occur on-site must be reported in the first instance to the company Safety Officer or Safety Manager, who will then notify H.S.E.

Fatal or Specified Injuries see www.hse.gov.uk/riddor/specified-injuries.htm for further details) should be reported by completing the appropriate form at www.hse.gov.uk/riddor/report.htm as soon as possible or by telephone by calling the Incident Contact Centre on 0345 300 9923 (Monday to Friday 08.30 to 17:00). A report must be received within 10 days of the incident.

Any Dangerous Occurrence should be reported as soon as possible at www.hse.gov.uk/riddor/report.htm by completing the appropriate form. A report must be received within 10 days of the incident.

An occupational disease should be reported as soon as possible at www.hse.gov.uk/riddor/report.htm by completing the appropriate form. A report must be received within 10 days of the incident.

5.2 Over-seven-day incapacitation of a worker

Accidents must be reported where they result in an employee or self-employed person being away from work or unable to perform their normal work duties for more than seven consecutive days due to their injury. This seven-day period does not include the day of the accident but does include weekends and rest days. The report must be made within 15 days of the accident.

5.3 Over-three-day incapacitation

Accidents must be recorded but not reported where they result in a worker being incapacitated for more than three consecutive days.

5.4 Non-fatal accidents to non-workers (e.g., members of the public)

Accidents involving members of the public or others who are not at work must be reported if they result in an injury, and the person is taken directly from the accident scene to the hospital for treatment of that injury. Examinations and diagnostic tests do not constitute 'treatment' in such circumstances.

5.5 Keeping Records

A record of any reportable injury, disease or dangerous occurrence must be kept. This must include the date and method of reporting, the date, time and place of the event, personal details of those involved and a brief description of the nature of the event or disease. The record can be kept in any form preferred, but each site is supplied with a copy of the Accident Book BI 510 issued by the HSE, and this is the company's preferred method of keeping such records.

6.0 Risk Assessments

RISK ASSESSMENT SCHEDULE	Client: Swansea City Council Location: Morfa Culvert Remediation Start Date: May 2024	
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SECTION A – IDENTIFICATION OF HAZARDS AND RISK LEVEL BEFORE ACTION

RISK CATEGORY CALCULATION

PROBABILITY MULTIPLIED BY SEVERITY EQUALS RISK LEVEL

PROBABILITY	SEVERITY	RISK LEVEL
1. Highly improbable 2. Improbable 3. Probable 4. Likely 5. Highly Likely	1. Minor injuries 2. Multiple injuries x 1 3. Multiple injuries 2 + 4. Fatality 5. Multiple fatalities	1-4 Minimal 4-9 Acceptable 10-14 Moderate 15-19 Substantial 20-25 Intolerable

HAZARD	RISK	PROBABILITY	SEVERITY	RISK LEVEL
KAYMAC PERSONNEL				
Manual Handling.	Back or other musculoskeletal injuries due to poor work practices.	3	2	6
Noise.	Work-induced hearing loss	2	3	6
Biological Agents.	Leptospirosis or Legionella infection	2	4	8
Working at Height	Musco-skeletal injuries from falls.	2	5	10
Collapse of areas of unstable structure.	Crush injuries.	2	5	10
Slips, Trips, or falls.	General injuries	2	2	4
The possible presence of discarded used hypodermic syringes.	Needle-stick injuries resulting in biological contamination or risk of Hepatitis B & C or HIV	3	4	12
Exposure to wet or windy conditions	Illness from exposure to poor weather conditions.	5	2	10
Environmental Hazard – spillage from re-fuelling operations	Contamination of the environment.	2	3	6
Substances hazardous to health.	Dermatitis or other skin damage due to contact with hazardous substances.	3	4	12
Contamination of the watercourse	Contamination of the watercourse and damage to ecosystems and natural habitats.	3	4	12
Aggressive behaviour towards company employees	Injuries sustained by employees.	2	3	6
Falling objects.	Head injuries.	2	3	6

Temporary works within the river – flooding.	Delays in construction work leading to additional costs.	2	5	10
Exceptional weather.	Exceptional weather may delay the progress of construction works, leading to additional costs.	3	4	12
Risk of pollution of the watercourse.	Pollution of the watercourse leading to fish kills. Prosecution by Environment Agency.	2	4	8
Planned events, particularly around Bank Holidays	Additional disruption to traffic and residents.	1	1	1
Vandalism to any part of the works.	Cost of repair or replacement.	2	3	6
Risk of Structural Failure of the structure during work.	Risks to personnel and construction work delays lead to additional costs and contract prolongation.	1	5	5
Flood Risk	Drowning, entrapment.	3	5	15
Failure of Temporary Works.	Contamination of the watercourse.	3	3	9
Use of electrical equipment.	Electrical shock/burns, heart attack, risk of fire.	3	5	15
Working with vibrating equipment.	Hand/Arm Vibration Syndrome-nerve or circulatory damage to hands and/or fingers.	2	3	6
Contact with buried services.	Electric shock. Damage to plant and equipment.	3	5	15
Contact with overhead cables.	Electric shock. Damage to plant and equipment.	1	5	5
GENERAL PUBLIC				
Movement of company vehicles during access/egress to the site	Members of the public being struck by vehicles.	2	4	8
Members of the public encountering work equipment	Injuries sustained by the public.	2	4	8
Interface with traffic/pedestrians.	Injury to workforce or public.	3	5	15
Public interface.	Death/injury of the public following entry to the working area.	3	5	15

RISK ASSESSMENT SCHEDULE

Client: Swansea City Council

Location: Morfa Council

Start Date: May 2024



SECTION B – IDENTIFICATION OF HAZARDS AND RISK LEVEL AFTER ACTION

RISK CATEGORY CALCULATION

PROBABILITY MULTIPLIED BY SEVERITY EQUALS RISK LEVEL

PROBABILITY	SEVERITY	RISK LEVEL
1. Highly improbable	1. Minor injuries	1-4 Minimal
2. Improbable	2. Multiple injuries x 1	4-9 Acceptable
3. Probable	3. Multiple injuries 2 +	10-14 Moderate
4. Likely	4. Fatality	15-19 Substantial
5. Highly Likely	5. Multiple fatalities	20-25 Intolerable

HAZARD	RISK	PROBABILITY	SEVERITY	RISK LEVEL
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KAYMAC PERSONNEL

Manual Handling	The need for manual handling is eliminated or reduced as far as practicable by the availability of mechanical handling devices/machinery and the positioning of storage areas as near as is practicable to where materials will be used. Information, instruction, and training provided on safe manual handling techniques. Guidance on risk reduction measures, e.g., 'team lifting, dividing the load, kinetic handling, etc. Staff are encouraged to report work-related back pain at an early stage. Staff are encouraged to seek medical advice if suffering from work-related back pain.	1	2	2
Noise.	Ear defender to be available if noise levels rise to more than 80 dB(A) Daily Personal Exposure Level	1	3	3
Biological Agents.	Cover any cuts or abrasions with a waterproof dressing before work. Wear gloves! Wash and disinfect your hands before eating or drinking.	1	4	4
Working at Height	Only competent staff are employed to work at height. The work is organised so that the possibility of falls from height is minimised. All personnel are to work behind safety barriers where possible. All personnel are to be briefed on the use of	1	5	5

	the scaffolding system.			
Collapse of areas of unstable structure.	Condition of structure to be monitored for duration of works.	1	5	5
Slips, Trips & Falls.	Keep the site tidy and remove any non-permanent trip hazards where possible. Wear appropriate footwear for the terrain.	1	2	2
The possible presence of discarded used hypodermic syringes.	Always assume there will be needles mixed in with debris-handle with extreme caution! Use appropriate gloves. Dry suits should have steel toe caps and midsole protection when wading through water. If a needle penetrates the skin, Encourage the wound to bleed by holding it under running clean water; Wash the wound with soap and water; Dry the wound and cover with a waterproof dressing; Seek urgent medical advice-A&E.	2	4	8
Exposure to wet or windy conditions	Appropriate clothing is to be worn during poor weather conditions, and surface personnel to wear diver's dry suits when entering the watercourse.	2	2	4
Environmental Hazard – spillage from re-fuelling operations	Comprehensive spill kits are to be provided along with training in its deployment. Refuelling operations ONLY occur over supplied drip-trays and more than 10m away from the watercourse.	1	3	3
Substances hazardous to health, i.e., cementitious products	COSHH assessments will be carried out, and the information gained will be passed to at-risk people. Manufacturer's safety data sheets are made available. Systems of work eliminate or minimise the chance of skin contact. Information is provided on the safe use of hazardous substances. Adequate washing and first aid facilities, including trained first aiders, are available. Cleaning procedures exist for non-disposable protective clothing.	1	5	5
Contamination of the watercourse	Ensure environmental mitigations are always in place, as detailed in the method statement.	1	4	4
Aggressive behaviour towards company employees	Do not enter any confrontation with any members of the public. Segregate working areas where possible to prevent any unauthorised access into work areas. Inform the police if necessary.	1	3	3
Falling objects.	Equipment to be checked before, during and after use. Hard hats are to be worn at all times. Be aware of headroom restrictions while	1	3	3

	working. All Equipment will be suitable for use.			
Temporary works within the river – Flooding.	Works to be carried out following a spell of good weather, liaise with NRW and keep in contact with Swansea City Council. Monitor weather forecast.	1	5	5
Exceptional weather.	Review the programme to prioritise completion of weather dependant activities early.	2	4	8
Risk of pollution of the watercourse.	Kaymac Environmental coordinator to monitor compliance of control measures to prevent pollution. COSHH assessments for all COSHH items. Dispose of all waste materials to designated skips, etc. Emergency spill kits are to be maintained at every work location or be always easily accessible from a centralised location. Equipment to be stored on designated drip trays/bunded areas.	1	4	4
Planned events, particularly around Bank Holidays	No planned events have been identified— Liaise with Swansea CC & Swansea Stadium.com for information on scheduled events.	1	1	1
Vandalism to any part of the works.	Securely fence and protect the works from unauthorised access.	1	3	3
Risk of Structural Failure during works.	Monitor structure throughout the works and have appropriate working methods to mitigate the risk.	1	5	5
Failure of Temporary Works.	Temporary works are to be checked regularly by the on-site supervisor for damage/displacement.	1	3	3
Flood risk.	Site Manager to receive Flood warnings. If required, personnel to evacuate the site to a safe location.	2	3	6
Use of electrical equipment.	Personnel to be trained and competent in the use of electrical equipment; 110v equipment only to be used for work on-site (apart from welding); equipment to be checked daily by supervisor and result entered onto PUWER check sheet; operators to carry out visual checks on electrical equipment before each use. Toolbox talks for personnel using electrical equipment.	1	5	5
Working with vibrating equipment.	The lowest vibration tool that is suitable and can do the work efficiently will be selected. The use of high-vibration tools, wherever possible, will be strictly limited and controlled.	1	3	3

	The exposure limit for the equipment should be obtained, and this should not be exceeded. Good quality gloves will be used to encourage good blood circulation, which should help protect operatives from developing vibration white fingers, but these should not be relied upon to protect from vibration. Carry out health surveillance of personnel exposed to vibration from tools and equipment.			
Contact with buried services.	Before excavation, the area should be CAT Scanned by a trained operative (if required). Service Drawings are to be checked, and any identified services are marked on the ground using timber pegs or spray paint. Other than that noted above, service drawings for the area have not identified any services. However, operatives should proceed with care. If unidentified services are located, cease work, and contact Swansea City Council.	1	5	1
Contact with overhead cables.	This is not anticipated, as no overhead cables are present at the location of the work. Works to be carried out per approved RAMS. An exclusion zone is to be set up per power providers' guidelines. Kaymac to set out an exclusion zone (if required).	1	5	5
GENERAL PUBLIC				
Movement of company vehicles during access/egress to the site	Ensure that the banksman is in attendance while moving vehicles on site.	1	4	4
Members of the public encountering work equipment	Work areas are to be cordoned off. Paths are to be closed for the duration of the works, pedestrians/cyclists, etc., diverted over the road, and appropriate signage is to be erected. Road running over the bridge is to be restricted for the duration of the works. NO reversing of vehicles/plant is to be carried out without banksman.	1	4	4
Interface with traffic/pedestrians.	Suitable traffic/pedestrian management to be in place: protective barriers, adequate safety zones, appropriate signage, etc.	1	5	5
Public interface	The border around the work site will be fenced, preventing the public from entering the works site.	1	5	5

7.0 Personnel Information Briefing Forms

KAYMAC MARINE & CIVIL ENGINEERING LTD. PERSONNEL INFORMATION BRIEFING	
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Document Reference (If Applicable)	TN/KM/SCC-MCR/OCT23/1	Issue No.	1
Briefing Subject	Morfa Culvert Remediation – May 2024		

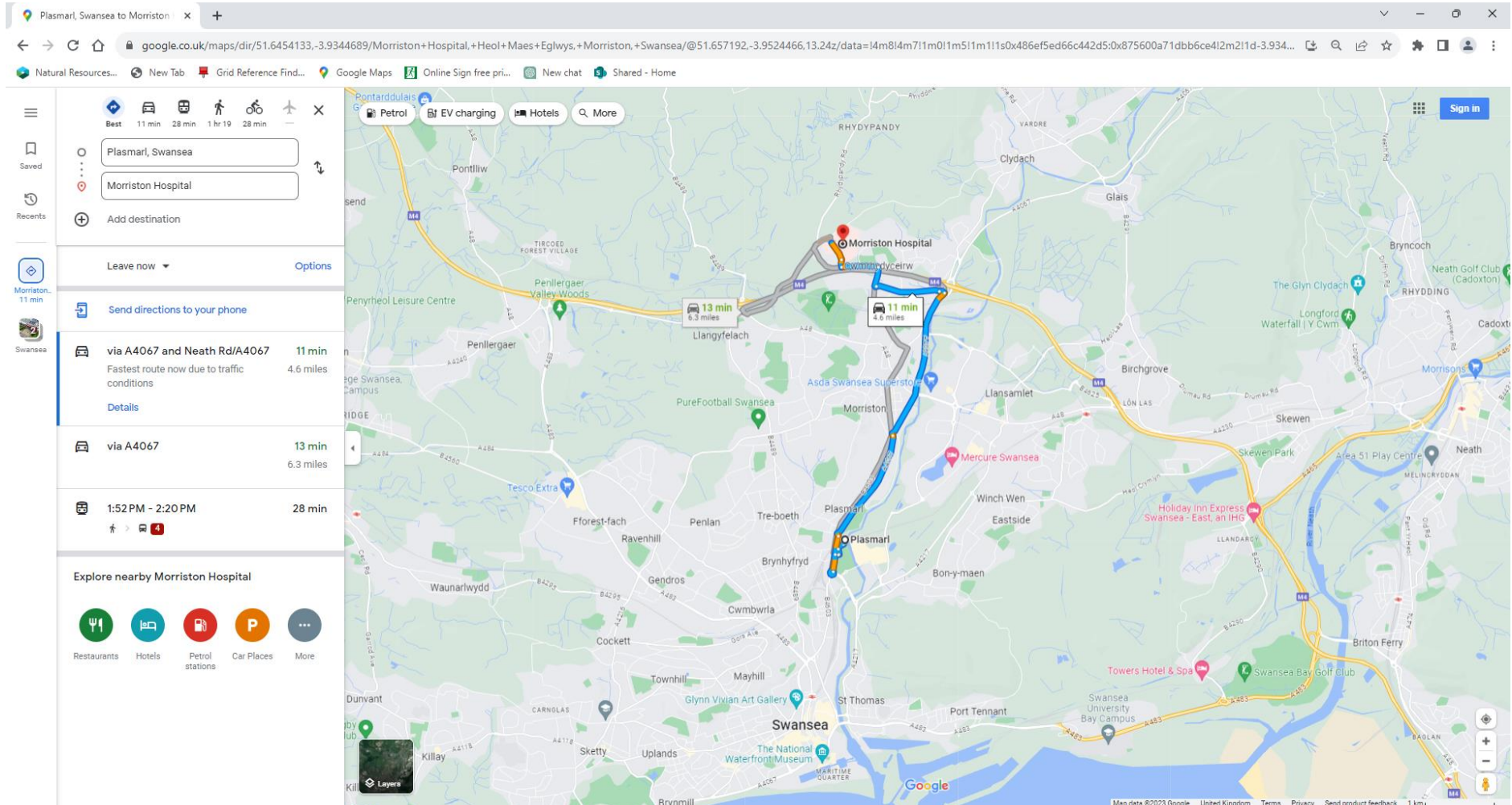
Key Points	
1.	Equipment checks.
2.	Health & Safety implications
3.	Scope of works
4.	Method of carrying out the works
5.	Hazards and risks
6.	Emergency evacuation plan
7.	Emergency contact numbers
8.	Location of welfare facilities
9.	Location of hospital

Briefing delivered by		Date	
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Appendix A – Hospital Route

Morriston Hospital (24hr A&E)



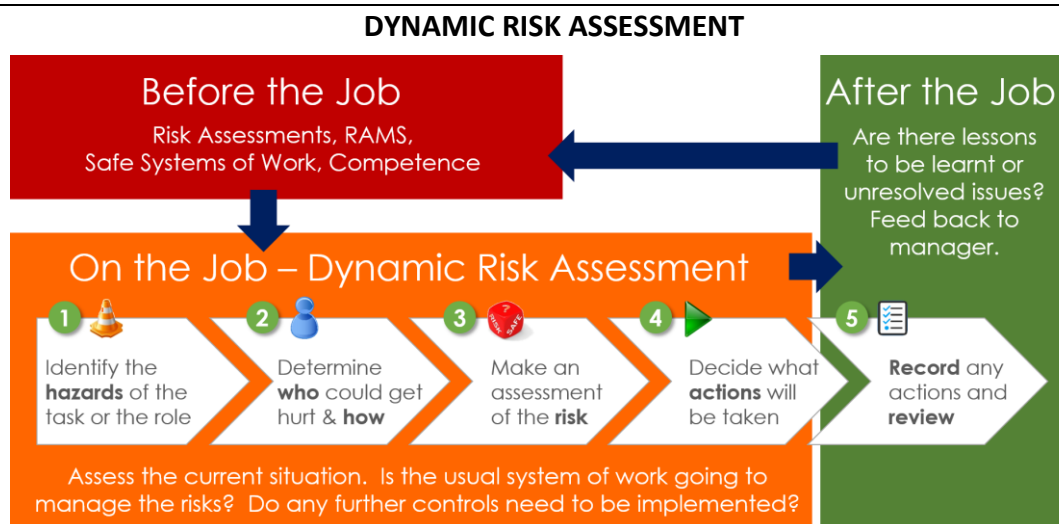
Appendix B – Management Structure

Role	Name	Qualifications	Experience
Managing Director	Gareth Crees	NEBOSH General Certificate in Occupational Health & Safety Part 1 Commercial Diver Mechanical Fitter	Thirty-five years in the diving and marine engineering industry; Managing Director since acquiring the company in 1986.
Operations Director	Jeff Lippiett	Part 1 Commercial Diver BEng (Hons) Civil Engineering CPCS Construction Project Manager	Thirty-five years in the diving and marine engineering industry; 7 years as a commercial diver/supervisor; 28 years as Operations Manager with Kaymac.
Project Co-Ordinator	Jon Dean	BSc (Hons) Construction & Project Management HND Building Studies	Project planner with the company for eight years.
Projects Director	Rhys Colcombe	BEng (Hons) Civil Engineering MSc Civil & Structural Engineering CEng MICE CPCS Appointed Person NEBOSH General Certificate in Occupational Health & Safety NEBOSH Environmental Management	Joined the company as a Graduate Engineer in 2009 and appointed Project Director in 2023.
Project Manager	Gareth Lippiett	HND Construction Project Management SMSTS NEBOSH General Certificate in Occupational Health & Safety Working towards NVQ level 4 In construction site supervision to obtain CSCS Supervisors Gold Card	Joined the company in 2010 as a Junior QS, appointed as a Site Agent/Manager in 2013.
Dive Superintendent and Civil Engineering Site	Alan Byrne	Part 1 Commercial Diver ADC Diving Supervisor	Joined the company as our first apprentice diver in 2004, made

Manager		CPCS Lift Supervisor, Slinger/Signaller SMSTS CPCS 360 machine driver Working towards NVQ level 4 In construction site supervision to obtain CSCS Supervisors Gold card	supervisor and then Dive superintendent in 2016.
Project Manager	Jonathan Colcombe	Part 1 Commercial Diver ADC Diving Supervisor CPCS Lift Supervisor, Slinger/Signaller SMSTS Working towards NVQ level 4 in the construction site CSCS Site Manager Black card	Joined the company as an apprentice diver in 2007, made supervisor and then Site manager in 2015
Civil Engineering Site Manager	Dean Munkley	SMSTS Working towards NVQ level 4 In construction site supervision to obtain CSCS Supervisors Gold card. CPCS CSCS First Aid at Work	Joined the company in 2017 as a Civil Engineering Foreman.
Project Engineer	Steffan Williams	BSc (Hons) Civil Engineering Part 1 Commercial Diver SSSTS CSCS Confined Space First Aid at Work	Joined the company in 2015 as a Commercial Diver and was appointed a Project Engineer in 2020.
Project Engineer	Terry Northam	SMSTS I Eng (Working towards) IOSH Managing Safely CSCS Confined Space	Joined the company in 2020, with experience conducting Structural surveys.

Site Supervisors	Josh Burgess	SSSTS CSCS CPCS Confined Space	Joined the company in 2008 as an apprentice fitter and was appointed Site Supervisor in 2018.
Site Supervisors	Ben Dark	SSSTS CSCS Confined Space First Aid at Work	Joined the company in 2007 as an apprentice fitter and was appointed Site Supervisor in 2019.

Appendix C – Dynamic Risk Assessment



		LIKELIHOOD				
		1	2	3	4	5
SEVERITY	1	Low	Low	Low	Low	Low
	2	Low	Low	Medium	Medium	Medium
	3	Low	Medium	Medium	Medium	Medium
	4	Low	Medium	Medium	High	High
	5	Low	Medium	Medium	High	High

[illegible]

Appendix D – Amendments

No.	Description	Page No.	Date	Initials
1				
2				
3				
4				
5				

Appendix E – Close Calls / Observations



<https://Kaymac.softtr.app>

Appendix F – Other Items

Other Items

Kaymac Policies to be adhered to during the works will include but not limited to: -

- Health & Safety Policy;
- Drugs & Alcohol Policy;
- PPE Policy;
- Coronavirus (COVID-19) Policy.

All Kaymac operatives have been briefed on the most recently updated *Kaymac Policies*, and it is the responsibility of all to ensure that the intentions of the policies are effectively implemented on site with Site Agents/Managers providing necessary, appropriate action is determined and actioned upon if required.