SITE SPECIFIC
RISK ASSESSMENT AND
METHOD STATEMENT (RAMS)

Project Name	**Baglan Bay Pipe Crossing – Ground Investigation**
Project No.	**Q1556**
Reference No.	**RA-MS_01**
Title	**RA-MS_01 for Ground Investigation**

DOCUMENT REVISION AND APPROVAL				
Revision	**Date**	**Details**	**Issued by**	**Approved**
Original	10-06-24		Lee Simlett	Phil Darby
01	08-07-24		Arwel Jones	Phil Darby

SITE SPECIFIC

RISK ASSESSMENT & METHOD STATEMENT (RAMS)

This method statement outlines initial proposals for this activity. Where it is identified that there is a need to change the method of work due to unforeseen circumstances, then revision, authorisation and issue will follow the same procedure as the original.

All site personnel will then be familiarised with the site and made aware of any hazards, by way of a site-specific induction.

All operatives working in the areas described in this Risk Assessment and Method Statement and any Task Statement must be briefed on its contents. Operatives must sign the attached briefing attendance sheet to confirm that they have been briefed and understood the contents.

Project Name	**Baglan Bay Pipe Crossing – Ground Investigation**				
RAMS Title	RA-MS_01 for Ground Investigation				
RAMS Ref. No.	Q1556	**Revision**	01	**Date**	08-07-2024
Generated By	A. JONES	**Signature**	*Arwel Jones*		

1.0 Site Details

Site Address	**The site is broken into 2 areas located at the following co-ordinates.** **Area A – Access from Brunel Way** (E. 272888, N. 192968) **Area (B) – Access from Fabian Way** (E. 272323, N. 193081)		
QGL Supervisor Name	Lee Simlett	**QGL Supervisor Mob. No.**	07809 236891

2.0 QGL Personnel – Head Office

Managing Director	Ross McDermott
Technical Manager	John Stark
Ground Investigation Manager	Phil Darby
Site Supervisor	Lee Simlett Mob: 07809 236891 Email: lee@spencerquantum.co.uk
Health & Safety Advisor	Ross McDermott
Office Contact No.	01554 744880

3.0 Client Details

Client	Wales & West Utilities Ltd
Contact Name	Steve Davies Steven.Davies@wwutilities.co.uk
Address	Wales & West Utilities Ltd, Unit 6.2, Heol Y Gamlas, Parc Nantgarw, Rhondda Cynon Taf, CF15 7QU
Tel. No.	07976170298

4.0 Principal Contractor / Project Manager

Client	Wales & West Utilities Ltd
Contact Name	Steve Davies Steven.Davies@wwutilities.co.uk
Address	Wales & West Utilities Ltd, Unit 6.2, Heol Y Gamlas, Parc Nantgarw, Rhondda Cynon Taf, CF15 7QU
Tel. No.	07976170298

5.0 Project Designer

Company	Wales & West Utilities Ltd
Contact Name	Steve Davies Steven.Davies@wwutilities.co.uk
Address	Wales & West Utilities Ltd, Unit 6.2, Heol Y Gamlas, Parc Nantgarw, Rhondda Cynon Taf, CF15 7QU
Tel. No.	07976170298

6.0 Site Equipment and Services

Please list in the table below
Site Equipment 1 No. Tracked Small Telehandler (Norcar) 1 No. Comacchio MC450/ MC600 Multi-functional Drill rig 2 No. 4x4 vehicle and Trailer 1 No. Small Van 1 No. 400cfm compressor Water bowser Various hand digging tools Spill kits, Fire extinguishers, First Aid kits to be held in each Quantum Vehicle Various PPE and Safety Equipment as listed in Table 18

7.0 Work Details

7.1 Summary of Works

The proposed ground investigation works are required to assist with the detailed design of a new utility pipeline across the Afon Nedd (Neath River) for Wales & West Utilities.

Any necessary Permissions/ Licences will be obtained by the Client, Wales & West Utilities, prior to commencing the work which will include but not limited to Landowners. The site works element of the project covered by this RA-MS document will entail:

- 3 No. Dynamically Sampled and Rotary Cored Borehole to a scheduled depth of 30m bgl.
- In-situ Standard Penetration Testing (SPT) throughout superficial deposits/ bedrock
- Installation of groundwater monitoring standpipes in BHs
- CAT & Genny – identification of underground services
- Sampling for Geotechnical purposes
- Full time Supervision and logging of samples by an Engineering Geologist in accordance with BS EN ISO 14688 and BS EN ISO 14689.
- Preliminary Risk Assessment (PRA)
- Preliminary UXO Desktop Survey (MACC International Ltd)
- Bathymetric Survey (Shoreline Surveys Ltd) - RA-MS included in Appendix III
- GPR & Topographic Survey (Intersect Surveys) – RAMS included in Appendix IV

A Marine licence will be required from NRW to allow BH03 to be progressed, this will be obtained by the client.

7.2 Protection of Works and Surrounding Area

Area A borehole BH01 is accessed off Brunel Way along an un-named road adjacent to Afon Nedd.

Area B Boreholes BH02 and BH03 are accessed off Fabian Way, Swansea at the roundabout adjacent to Ffordd Amazon. There is an existing trackway from the roundabout to the proposed borehole locations. Sigma track mats may be required to access some boreholes if they are required away from the existing track. This will be confirmed once final borehole locations are confirmed.

The classification of the entire site is GREEN in accordance with the British Drilling Association (BDA) Guidance for Safe Intrusive Activities on Contaminated or Potentially Contaminated Land (2008). The Client / Site Supervisor will be informed if exploratory holes are found to require yellow or red site working conditions. If gross contamination is encountered, then work should cease, and the Client / Site Supervisor informed. If

instructed, the RAMS will be revised, and appropriate control measures will be put in place before continuing with the site works.

7.3 Vegetation Clearance

Vegetation clearance by SQL is not required at this point.

7.4 Mobilisation

The works are planned for up to 12 day(s). The rotary rig will be mobilised to site on the morning of day 1 and removed from site after the completion of all boreholes. All supervision and co-ordination of onsite works will be undertaken by Spencer Quantum Ltd in conjunction with the Client.

The tracked rotary drilling rig will be mobilised to site on a low loader/articulated lorry directly to site.

All Spencer Quantum personnel will abide by any site and the highway's traffic rules.

All vehicles will be directed by a banksman and there will be no reversing, at any time, unless a banksman is in attendance.

A tracked telehandler will also be mobilised to site to aid equipment mobilisation and minimise manual handling.

7.5 Exploratory Hole Locations

The location of the intended exploratory hole/ test locations shall be marked out on site in cooperation with the Client. A copy of the proposed borehole location plan is presented in Appendix I of this document.

Service plans will be made available by the Client to Quantum and shall be consulted. All hole locations will be cleared of services and scanned using an approved eCAT4+ & Signal Generator equipment by the client.

The boreholes will be undertaken above High Water Level.

7.6 Landowner Liaison

It is assumed that all landowner liaisons shall be undertaken by the Client and communicated to Quantum, with Quantum offering assistance throughout.

7.7 Supervision

Supervision of the site works will be undertaken by Quantum's site engineers. The nominated supervisors will hold the Construction Skills Certification Scheme (CSCS) card, a minimum of a Site Supervisors Safety Training Scheme (SSSTS) and will have a minimum of 5 years' experience. A list of Quantum Project staffing is presented in Table 11.

7.8 Works Duration & Working Hours

The fieldworks duration is anticipated to be 12 day(s) on site; however, this is dependent on the ground conditions encountered. Typical working hours, daylight permitting, will be 07:30hrs – 17:00hrs. Site operating hours will be relayed to staff during specific site induction by the client.

7.9 Personal Protective Equipment (PPE)

Suitable and appropriate Personal Protective Equipment (PPE) will be used throughout the works. Torso and legs to be covered at all times. High visibility tops shall be worn on site . Good personal hygiene shall be maintained to prevent any spread of potentially contaminated soils with no food to be consumed on site where potential contaminated land is present. Hi-visibility clothing will be kept in good order at all times. Full list of PPE required is shown in Table 18.

7.10 Re-fuelling

Re-fuelling of any machinery will take place on areas of hardstanding wherever possible. Spill trays and absorbent plant 'nappies' will be used at all times when re-fuelling. No refuelling will be permitted closer than 20m of a watercourse. Any contaminated spill kit materials will be double bagged securely sealed and labelled and disposed of at a licensed waste receiving facility by SQL.

7.11 Archaeology

There are no archaeological interests known on site.

7.12 Site-Specific Hazards

The known hazards and risks are indicated in Risk Assessment Tables in section 8.0 within this document. On-going dynamic risk assessments will be undertaken during the course of the works as required.

Site specific hazards include:

Working within tidal zones – All boreholes will be located above High Water Level or undertaken under a suitable Marine License. Plant and equipment will be removed if extreme high tides are forecast and there is a risk of flooding of the work area.

Unexploded Ordnance – All staff will be briefed by a trained EOD Engineer before starting work on site. For all Excavations the EOD Engineer shall provide a safety watching brief, and for boreholes, these will be checked for UXO by the EOD Engineer equipped with specialist magnetometers which will be used to scan at 1.5m intervals ahead of the drilling / sampling bits. (See Section 7.22)

7.13 Special Task Training

All plant operators will hold current and valid CPCS Cards for the plant they are operating, operations and any ancillary attachment training that maybe applicable.

7.14 Reinstatement

Quantum will take every precaution to minimise unavoidable damage and shall act swiftly to reinstate areas where deemed necessary. No specific reinstatement is expected to be required. Selected boreholes will have groundwater monitoring standpipes installed with secure covers at the surface to protect the installations.

7.15 Members of the public

No members of the public will have access to the works. No excavation will be left unattended or open overnight. Any unauthorised access by members of the public will be reported to the Client.

7.16 Waste disposal

Drilling arisings will remain on site. Any groundwater flows will percolate to the ground.

7.17 Welfare & Storage

Client to provide welfare facilities.

7.18 Restricted areas

Spencer Quantum Ltd have not been made aware of any restricted areas.

7.19 Drugs and Alcohol

No drugs and alcohol are allowed on site. All Spencer Quantum employees and subcontractors could be subjected to unannounced drugs and alcohol testing and any non-compliance will be dealt with accordingly.

7.20 Behaviour

All SQL's Supervisors, operatives and subcontractor will comply with any WWU and SQL policies at all times. A copy of SQL's Site Safety Golden Rules are presented in Appendix II of this document.

7.21 Daily co-ordination and weekly progress meetings

No formal meetings are planned for the works after initial set-up.

7.22 Unexploded Ordnance (UXO)

A detailed Unexploded Ordnance (UXO) Risk assessment has been carried out on the site by MACC International Ltd on behalf of SQL meeting the requirements of CIRIA C681"Unexploded Ordnance (UXO)". The risk Assessment has determined a medium Risk during drilling operations and recommends a suitable degree of mitigation to permit the work to proceed in the Safest "acceptable manner in compliance with current legislation and best practices.

All staff will be briefed by a trained EOD Engineer before starting work on site. For all Excavations the EOD Engineer shall provide a safety watching brief, and for boreholes, these will be checked for UXO by the EOD Engineer equipped with specialist magnetometers which will be used to scan at 1.5m intervals ahead of the drilling / sampling bits.

7.23 Additional Remarks

Toolbox talks will be conducted at commencement of the works. Daily and weekly plant maintenance checks will be carried out by competent persons for all plant and machinery. Any incidents / accidents on site shall be reported to WWU immediately and Spencer Quantum Project Manager as soon as practicable and recorded within the accident / incident book. Throughout works, Spencer Quantum will maintain a safe and tidy site and the correct PPE will be worn at all times within defined working areas. Spencer Quantum is committed to stringent Environment Work Practices and Site Safety at all times and shall liaise directly with the Client where required. All Spencer Quantum site personnel will actively aid Client / Engineer throughout the scheme particularly with landowner liaison and public inquisitiveness.

7.24 Methods of Work

Activity 1: Borehole Drilling: Methodology

Dynamic Sampled / Rotary Core Boreholes

Three boreholes are proposed through soils and into bedrock to a maximum depth of 30m. All Borehole locations will be subject to a GPR Utility Clearance (PAS 128 Type B survey) to confirm there are no underground services in the area. A hand excavated inspection pit will be dug to 1.2m BGL using insulated hand tools prior to drilling with each pit scanned using an eCAT4 + and Genny at intervals throughout the pit.

The proposed drill rig to undertake this rotary work would be the Commachio MC 450/ 600. The rig has a diesel engine and is powered with the drive being transmitted through hydraulic or clutch gearing to the swivel head that provides rotation to the rods and core barrel. Prior to drilling the drill rig will be set up which includes stabilising the rig by extending outriggers.

In-Situ testing will be carried out as specified by the client, Standard Penetration Tests will be undertaken at 1m intervals throughout the superficial deposits commencing at 1.2mbgl and will be followed by a 1m length Dynamic Sample.

Dynamic Sampling, using 87-102mm sample barrel, providing a 1.0m long soil sample and progressed using a percussive action will be undertaken within the superficial deposits in conjunction with the "P" casing turned into the ground to keep the borehole open to progress through the superficial deposits. The drill rigs include a cage located around the drilling zone which is closed as the drilling action is occurring.

Throughout the superficial deposits an EOD Engineer will scan the base of he borehole after each 1.5m run using a magnetometer to check for the presence of UXO and allow the borehole to be progressed.

For all boreholes, upon encountering rockhead, coring of the underlying rock will involve the removal of the drill bit, from the borehole which is replaced by a core barrel. The core barrel is lowered to the base of the borehole through the addition of drill rods and progresses through the rock through rotary action. The cores are recovered in 1.5m lengths (nominally 78mm diameter), which once drilled is recovered from the borehole

by the removal of the drill rods. This process is repeated to progress the borehole. The core bits used will be governed by the particular rock type encountered and the coring rate achievable. In typical medium strength sandstones and mudstones, surface diamond and tungsten carbide bits will be most appropriate. The core recovered is placed immediately in sound wooden core boxes in a specific manner, to enable examination and for safe storage. All associated rotary drilling plant and materials shall be kept on-site including a 400cfm compressor and drill string equipment.

Water flush will be used during drilling rates to recue the risk of blowing sand within the drill string. The water will be circulated through a built in pump fixed to the back of the drilling rig and will pump the water from IBC tanks. The return water from the borehole will be collected in a low level tank with baffles to aid settlement of sedimentation, and once full this water will be recirculated through the pump. Any water left in the low level tank on completion of the works will be pumped into IBC tanks and removed from site for safe disposal.

Rigid plastic liner (coreliner) is employed to reduce disturbance of the core both during drilling and subsequent handling, giving a triple lined approach to coring. The recovered rotary cored rock sample liners are split, photographed and logged in accordance with BS5930: 2015; BS EN ISO 14688-1:2018 and BS EN ISO 14688-2:2018, by a SQL Engineering Geologist.

In selected boreholes a groundwater monitoring standpipe shall be installed. This comprises of nominal 50mm diameter HDPE plastic casing with slotted sections in the desired response zone. A pea gravel filter surround is placed around the slotted pipe with a bentonite seal above this to ground level and a secure lockable cover at ground level. In boreholes where no installation is planned, the borehole shall be backfilled with bentonite pellets to surface.

The rotary drill rigs will be transported to and from site on a lorry. The drill rig will be tracked on and off via ramps. The driller's assistant will act as a banksman preventing plant or pedestrians from entering an exclusion zone adjacent to the lorry / trailer. The rig will be operated and tracked using the remote control, with the lead extended to its full reach, by the lead driller who will be stood outside the exclusion zone. The rig can then be tracked on or off the trailer in a slow, controlled manner, ensuring that it is central to the ramps. If the rig is off-centre then the tracking must be stopped and recommenced only after suitable adjustments have been made.

If contamination is suspected or encountered within any Made Ground, a bentonite plug shall be formed within the Made Ground above natural strata creating a seal. Reduced diameter casing will then be used to drill through the bentonite seal and continue the borehole to scheduled depth. Clean water will be used within any drilling flush used.

During the event of encountering a source of contamination, all work must be stopped until additional safety checks have been carried out and appropriate safety measures put in place. The investigation supervisor must be kept informed in case any changes to the specification are needed. For any subsequent encounter or development of contamination, including Asbestos, these procedures are to be repeated.

8.0 Individual Activity Related Risk Assessments and COSHH Assessments

Risk Assessment Matrix

How to Assess the Risk? For each hazard answer A then B then add A & B together to determine the Risk.

[A] What is the potential impact or consequence of the hazard	[B] What is the likely risk of the event happening?	Risk Level - Add A & B together	Risk Level with controls in place	Risk	Action
1 = Minor – First aid required with little or no lost time.	**1 = Low** – It could happen but only rarely			Score 1-2 = **Low risk**	Proceed with caution
2 = Moderate – Medical treatment required, reversible damage to health.	**2 = Moderate** – It could occasionally happen.			Score 3-4 = **Moderate**	Regularly monitor the situation
3 = Serious – Medical treatment required. Irreversible damage including death.	**3 = High** – It could frequently happen.			Score 5-6 = **High**	Do not proceed

RISK ASSESSMENT & METHOD STATEMENT

ACTIVITY 1: Dynamic Sampled / Rotary Drilled Boreholes

RISK ASSESSMENT: – ***If any task hazards pose a risk during the works covered by this RAMS, indicate who could be harmed and describe the controls in place, any further action necessary and by whom.***

TASK HAZARD	TICK IF THE HAZARD APPLIES?	HOW MAY PERSONS BE HARMED?	WHO COULD BE HARMED? Site Persons	Members of Public	RISK LEVEL	RISK LEVEL WITH CONTROLS	DESCRIPTION OF HAZARD	STANDARD SAFEGUARDS & CONTROLS TO CONSIDER	FURTHER ACTION NECESSARY	BY WHOM:	BY WHEN:
Hazardous Substances	✓	**Poisoning, burns, diseases**	✓		**If yes, go to table 8B to complete the COSHH assessment for the relevant substances**						
Asbestos		**Fatal lung diseases, plaques**			**Specialist contractor work only, seal off any suspected areas and seek advice**						
Difficult access/egress to works location	✓	Become trapped, slips, trips, falls, broken bones, sprains	✓		3-4	1-2	Moving vehicles, tracking plant across soft ground,	Two safe means of access/egress, do not track plant across side slopes, plan routes, competent drivers, competent and authorised (CPCS) operators, segregation of pedestrians	Hi Vis at all times to be worn by all site personnel	Operatives	Prior to works commencing
Work at height, Ladders		Falls, Sprains, broken limbs									
Work at height, Scaffolding		Falls, falling objects, head injury									
Work at height, Mechanical		Falls, falling objects									
Other contractors / Public / Site Users	✓	Increased risk from presence of.	✓		3-4	1-2	Drilling process. Other site users in drilling area	Liaise with other site users, working area is secure		Operatives and Supervisor	ongoing
Working over/adjacent to water	✓	Falls into water, drowning, hypothermia	✓		4	1-2	High tides	Suitable location of boreholes, plan access routes, suitable license if required		Operatives and Supervisor	ongoing
Work adjacent to Traffic	✓	Collision, unsafe loads, fuelling	✓		4-5	2	Moving Vehicles on public highways	Only during mob/demob. Banksmen in attendance.	Hi Vis at all times to be worn by all site personnel	Clients, Operatives and Supervisor	ongoing

Work in vicinity of livestock		Livestock in work area, impact, crushing									
Confined spaces		Asphyxiation, drowning etc						Trained personnel, permit system			
Lifting operations with drill rig	✓	Falling/swinging load, impact	✓		4-5	2-3	Lifting drill tools with drill rig / winch	Trained and competent CPCS operators with NVQ Level 2. Use of certified lift apparatus. Operated in accordance with manufacturers manual Checked for signs of damage immediately prior to use, Daily pre-inspection checks completed, No personnel to stand under or near to suspended loads, drilling personnel only within drilling area / fencing		Operatives	ongoing
Basic Lifting operations with telehandler	✓	Impact, crushing, failure of lifting equipment, uncontrolled lifting resulting in injury / damage, uncontrolled lifting of loads causing failure of lifting appliances or equipment, dropping load in unsafe manner, overturning	✓		4-5	2-3	Lifting drilling equipment on stillages, pallets of bentonite and gravel, IBC's with water	All lifting equipment and accessories to have current valid certification and checked for damage immediately prior to use. All plant to be operated by trained and competent operatives in accordance with manufacturers manual, Check ground and site conditions prior to lifts. Lifts on level ground, operatives briefed prior to tasks being carried out, daily pre-inspection checks completed, Adequate separation between pedestrians and operating plant. No persons in close proximity of lifts		Operatives	ongoing
Use of construction plant – drill rigs and excavator	✓	Collision, crushing, noise and vibration, ear damage	✓		4	2	Movement and operation of rig/excavator	Plant operated by trained, competent (CPCS or similar) and authorised personnel, suitable PPE (ear defenders, eye	Ensure daily vehicle checks have been undertaken and recorded on daily check sheets. Any	Operatives and Supervisor	ongoing

								protection, gloves, safety footwear, hi vis clothing, hard hat), switch off plant when not in use, good housekeeping, certified plant, daily check sheets to be completed prior to use.	defects to be reported to site supervisor immediately.		
Use of 4x4	✓	Collision, impact, crushing	✓		3	2	Moving vehicles, overturning,	4x4 vehicles driven by competent drivers, plan routes, stick to agreed access routes, do not drive across steep side slopes, drive within vehicles capabilities, do not drive across wet, slippy or excessively steep ground. Tow within vehicles capabilities (weight limit)	Hi Vis at all times to be worn by all site personnel. Ensure daily vehicle checks have been undertaken and recorded on daily check sheets. Any defects to be reported to site supervisor immediately.	Operatives and Supervisor	ongoing
Manual handling	✓	Strains, sprains, hand/foot injuries	✓		2	2	Lifting samples, drilling equipment	Two-man operation where required / if load is irregular shape or awkward. Max. 25kg per person limit. Personnel to have completed manual handling training. Lift on level ground. Lift on firm ground. Tools and materials delivered as close as possible works area.	Mechanical assistance wherever possible. Provide regular manual handling toolbox talks	Operatives	ongoing
Lone working		Trapping, lack of emergency assistance									
Trip hazards	✓	Fractures, cuts, etc from slips, trips	✓		3	1-2	Equipment & tools Uneven Ground	Good housekeeping – work area kept clear of manual tools and drilling equipment, tools and materials not in use removed from work area immediately, tools and materials stored neatly away from work area	Ensure walkways are clear from tools and material at all times.	Operatives	Ongoing
Electrical tools		Shock, burns, fire, arcing									
Pressure systems	✓	Explosion, air penetration, eye damage	✓		4-5	2-3	Ruptured air line	Ensure whip checks in place and good condition, only experienced and competent operatives to use pressure systems, hoses free of kinks or twists, ensure pressure is	Correct PPE to be worn at all times – gloves, eye protection	Operatives	Ongoing

								released in air hoses prior to uncoupling, close valve to which hose is connected when not in use, daily checks	Check whip checks before each shift		
Use of drilling equipment	✓	Trapping, impact, entanglement.	✓		4	2-3	Entangled in drilling rod apparatus	Drilling operations by trained site personnel only. Work area kept clear of tripping hazards. Tools and materials not in use removed from the work area immediately, stored neatly, no loose clothing to be worn. Cage fitted on rig with cut off to prevent rotation of drill head when open.	Correct PPE to be worn at all times – gloves, overalls, hard hat, safety footwear.	Operatives	Ongoing
Moving plant	✓	Crushing injury, broken limbs	✓	✓	4-5	2-3	Site vehicles, drill rig and excavator movements striking other plant and operatives	Trained banksman, segregation of plant, high visibility clothing, plant to be certified, lifting equipment fit for purpose, lift plan completed, loads not lift on uneven ground, avoid tracking across excessive side slopes, plan routes, only track across suitable ground conditions	Operatives to be safe distance from machine. Hi Vis at all times to be worn by all site personnel	Operatives	Ongoing
Power tools		Contact injuries, ejected particles.									
Hot work/welding		Burns, arc eye, fumes, fire									
Pressure jetting		Eye injuries from flying particles									
Vibrations		White finger – spinal disorder									
Noise	✓	Hearing loss, tinnitus	✓		4	1-2	Noise from drilling works above 85dB(A)	Suitable PPE – ear defenders must be worn, drilling personnel only within drilling area / fencing	Monitor noise levels	Operatives	Each day
Dust/flying objects	✓	Respiratory, eye disorders, impact	✓		4	2	Returns from drilling works	Suitable PPE – eye protection Minimise borehole ejector material – dampen down/rod cover in place	RPE where considered necessary minimum FFP3 filter.	Operatives	Ongoing
Excavations	✓	Collapse, falls into, services, gas	✓		4	1-2	Collapse, service strike	Insulated hand tools, CAT scan, suitable PPE. Refer to service plans, scan area prior to excavating is CAT & Genny ,hand excavated service		Operatives	Ongoing

RISK ASSESSMENT & METHOD STATEMENT

								clearance pit to be undertaken to 1.2mbgl prior to drilling. Case borehole to prevent ground instability, stop works if evidence of ground instability observed (tension cracks)			
Under/ Overground services	✓	Shocks, release of gas, water, fuel etc	✓		5	2	Buried or overhead services/ utilities	Refer to service plans, scan area prior to excavating is CAT & Genny, hand excavated service clearance pit to be undertaken to 1.2mbgl prior to drilling, access via goal posts, only raise drill mast once at borehole position. standoff zones, site specific induction warning of overhead cables, always treat services as live unless told otherwise by supervisor or another competent person	Obtain information regarding service location from client. Ground disturbance permit / permit to dig required. If unknown service found stop and report to management team	Operatives and Supervisor	Ongoing
Ground stability		Collapse, plant, etc - trapping									
Temporary works	✓	Instability, collapse, collision with.	✓		4	1-2	Collapse, service strike	Plant operated by qualified Ops with banksman in attendance	Banksman	Operatives and Supervisor	Ongoing
Protruding or sharp objects		Impact, puncture injuries									
Presence of vermin	✓	Leptospirosis	✓		3	1-2	Illness	Correct PPE and good personal hygiene		All site staff	Ongoing
Unstable structures											
Driving on site	✓	Collision with other public vehicles, pedestrians and other land users	✓		4-5	1-2	Pedestrians along road/ footpaths where work is undertaken at risk	Fence off all work areas and suitable signs.	Banksman when reversing	All site staff	Ongoing
Contaminated soil/groundwater	✓	Ingestion, dermal contact, migration	✓		3	1-2	Illness, contamination of surface water / groundwater	Correct PPE and good personal hygiene, clean drilling practises (bentonite seal, telescopic casing, contain drill flush)		All site staff	Ongoing
Archaeology											
Artesian flow	✓				2	1	Surface flow of artesian groundwater	Stop drilling immediately, seek instruction from Client, to install measures to stem flow		All site staff	Ongoing

ACTIVITY 1: Dynamic Sampled / Rotary Drilled Boreholes

COSHH ASSESSMENT: – If any hazardous substance poses a risk during the works covered by this RAMS, describe the controls already in place, any further action necessary, by whom and by when.

HAZARDOUS SUBSTANCE	TICK	HOW MAY PERSONS BE HARMED	CONTROLS ALREADY IN PLACE	FURTHER ACTION NECESSARY	BY WHOM:	BY WHEN:
General dust	✓	Eye irritation, breathing difficulties	Dust suppression to be implemented in the first instance. Dust masks (FFP3 min.) or other respiratory ppe worn	Continued monitoring	Supervisor	Ongoing
Silica	✓	Dermatitis, burns and damage to eyes Skin & eye irritation	Operators must wear P.P.E. - impervious boots, gloves, eye protection should be worn at all times.	Continued monitoring	Supervisor	Ongoing
Animal Faeces	✓	Nausea, skin irritation, headaches.	PVC Gloves should be used and splashes to the skin washed off - prolonged skin contact can cause dermatitis.	Continued monitoring	Supervisor	Ongoing
Fuel Oils	✓	Dermatitis, burns and damage to eyes, headaches	PVC Gloves should be used and splashes to the skin washed off - prolonged skin contact can cause skin irritation	Continued monitoring	Supervisor	Ongoing
Cement	✓	Skin & eye irritation	Operators must wear P.P.E. - impervious boots, gloves, eye protection should be worn at all times.	Continued monitoring	Supervisor	Ongoing
Leptospirosis	✓	Not Immediately Identified: Delayed reaction – flu-like symptoms, headaches followed by severe major organ damage long term	Employees given HSE leaflet on Leptospirosis together with Good person hygiene is essential – wash hands before eating etc	Continued monitoring	Supervisor	Ongoing

FURTHER CONSIDERATIONS:					ACTION TAKEN	ACTION NEEDED	BY WHOM	BY WHEN
Further testing of materials or equipment?	YES		NO	✓	N/A	N/A	N/A	N/A
Direct supervision of workforce?					Supervisor assigned to works has been briefed on requirements and safe working practises	N/A	N/A	N/A
Specific instruction and training?					N/A	N/A	N/A	N/A
Emergency plans?					See table 16	N/A	N/A	N/A
Health surveillance?					Company monitoring procedure in place	N/A	N/A	N/A
Monitoring?					SQL Management to review periodically	N/A	N/A	N/A

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9.0 Permit to Work Regulations

Assess the need to control how the work is undertaken

PERMIT REQUIREMENT	✓	IF YES, DESCRIBE ARRANGEMENTS HERE
Access/Entry to premises required?	✓	As confirmed and arranged by Client Access/ Egress to be controlled and strict management and authorisation in place.
General permit to work required?	✓	To be implemented by Wales & West Utilities Ltd prior to work **The Client will apply for a Marine licence before work can commence.**
Permit to Dig	✓	To be issued by Wales & West Utilities Ltd site manager
Hot work permit required?	N/A	
Confined space entry permit required?	N/A	
Permit to lift	N/A	

10.0 Safe Access to Working Areas

Locations where work will be carried out	Access to working areas by:
As agreed on site with Client / Investigation Supervisor	As agreed onsite with Client. All vehicles will be directed by a banksman and there will be no reversing, at any time, unless a banksman is in attendance.

11.0 Security

- Site works will be enclosed in fencing and signage areas.
- CCTV Cameras will be installed around the site works area
- Manned Security will also be in place for regular patrols out of working hours.
- All materials and plant to be kept within fenced site area.

12.0 Labour Resources

LABOUR REQUIREMENT	✓	IF YES, DESCRIBE REQUIREMENTS	CERTIFICATION NEEDED
Supervisors/ Engineers?	✓	1 Supervisor - Lee Simlett	CSCS/SSSTS/ eCAT4+ & Genny / First Aid
General Operatives required?			
Technicians required?			
Crane operators required?			
Drillers required?	✓	1No. = 2 Man Crew	CSCS / NVQ / CPCS / First Aid
General Labour			
Telehandler Operator	✓	1 No.	CSCS / CPCS
Specialist sub-contractors required?			

13.0 Plant Resources

PLANT REQUIREMENT	✓	IF YES, DESCRIBE REQUIREMENTS	CERTIFICATION NEEDED
All plant and equipment to be checked daily by competent Quantum person, using daily record check sheets. All plant arriving onsite will have valid LOLER/ PUWER certification.			
Craneage required?	N/A		
Lifting Equipment required?	✓	Norcar Tracked Telehandler	✓PUWER/ LOLER
Excavation Plant required?	N/A		
Earthmoving Plant required?	N/A		
Drill Rig Equipment	✓	1 x Comacchio 450	✓PUWER/ LOLER
Compressed Air Plant required?	✓	400cfm Compressor	✓PUWER

14.0 Welfare Arrangements

WELFARE ITEM	WELFARE PROVIDER		LOCATION (Provide a description of the facilities provided)
	QGL	CLIENT	
Site Office		✓	(Location TBC) - Static Groundhog Unit
Canteen		✓	
Toilets/Washing Facilities		✓	
Drying Room		✓	
Flat screen TV	**Not required**		N/A

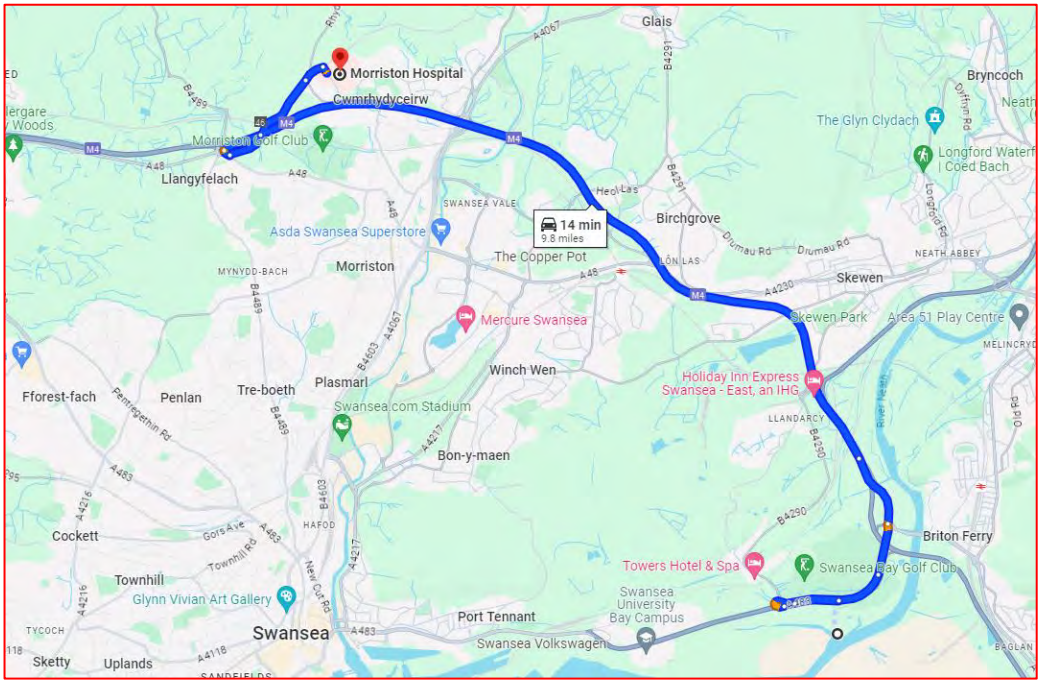
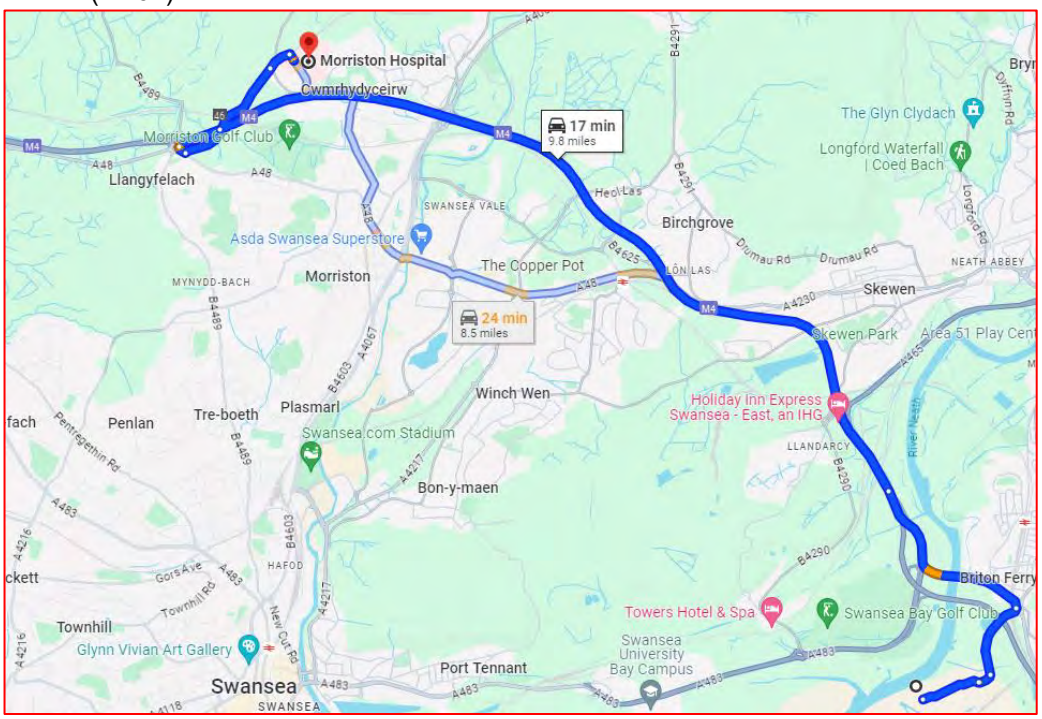
15.0 Health & Safety Monitoring

The day-to-day standards of Health &Safety will be monitored by:	LEE SIMLETT • The site may be subject to regular unannounced visits by Quantum Health & Safety Manager who shall inspect and report on the management of the site from inspecting risk assessments to commenting on site tidiness.

16.0 Environmental Controls

Potential threats to the environment are:	The control measures that will be put in place are:
Oil and hydraulic leaks, fuel spills	Spill kit and absorbent granules to be available on site. Work is to stop and controlled using skill kits to prevent spillage worsening and the client will be notified. To be stored in secure storage container and disposed correctly.
Silt and water migration to water courses and drains	Sandbags and plastic sheeting to be available to prevent surface migration if required. Water re-circulation tanks to contain and re-use water flush.
The types of waste that will be generated and stored are:	The methods by which the waste will be disposed of are:
Arisings	Excess arisings to be removed from site to SQL HQ for licenced disposal.

17.0 Emergency/First Aid Procedures

The Nearest A & E Hospital is Located at:	**Major Injuries A&E:** Morriston Hospital Heol Maes Eglwys, Morriston, Cwmrhydyceirw, Swansea. SA6 6NL Tel: 01792 702222 Area A (BH02 & BH03)  Area B (BH01) 

RISK ASSESSMENT & METHOD STATEMENT

Site Specific Emergency Arrangements	In the event of discovering a **FIRE:** • Raise the alarm (shout fire, warning bell/horn etc). • Switch off all plant, machinery, close any windows and doors and ensure that anything you have been using is left safe. • Dial 999 to call the fire brigade. • Attack the fire if possible, using the correct appliances provided and if you are trained to do so. In the event of **HEARING AN ALARM** (Fire/Emergency Alarm) • Cease work and if possible, turn off all plant and machinery and ensure that anything you have been using is left safe. • Leave the building/site area by the nearest available exit, closing all windows and doors behind you. • Proceed to the Emergency Assembly Point. • Check for presences of known colleagues • Do not re-enter any buildings or works areas until the alarm has been silenced and you are authorised by a Fire Officer/Emergency Co-ordinator In addition, Fire extinguishers are kept within QGL Engineer's van. In the case of an **ACCIDENT/INJURY:** • Cease work and if possible, turn off all plant, machinery, electric and gas supplies and ensure that anything you have been using is left safe. • Carry out on the spot first aid or get help from your nearest first aider but do not move the injured person unnecessarily. • Call for medical assistance if injury requires further assistance by dialling 999 stating which emergency service you require, nature of incident, your location, best access point and contact details. Appropriate First aid kits are kept in QGL Engineer's, driller's and subcontractor vans. In the event of a **PERSON FALLING INTO THE WATER** • DO NOT enter the water • Dial 999, state which emergency service you require, nature of incident, your location, best access point and contact details. • Raise alarm (shout/radio). • Contact Pierhead if applicable • Use lifesaving equipment (if available) to bring the casualty to shore. • Make the casualty secure, render first aid (if you are qualified). • Make the area safe to prevent any further accident/incidents. All positive interventions, near miss and incidents will be reported to Morrison Water Services

The On site trained First Aiders are:	**Mobile Telephone Number:**
Lee Simlett	07809 236891
Accidents must be reported to:	**Contact Telephone Number:**
Ross McDermott Wales and West supervisor	07398 753729 TBA
All serious Accidents or Incidents must be reported to:	**Contact Telephone Number:**
Ross McDermott Wales and West Supervisor	07398 753729 TBA

18.0 Personal Protective Equipment

PPE to be used at all times for these site works:			
Item	**B.S./EN Codes**	**Item**	**B.S./EN Codes**
Black Hard Hat (Supervisor) White Hard Hat (Management and competent operatives and trades)	EN 352-3	Safety glasses / eye protection	AS/NZS 1337.1 EN 170 2C-1.2 EN 172 5-1.7 EN 166 1 FT EN 172 5-3.1
Hi Visibility Waistcoat or Jacket (long sleeve only)	EN 471 Class 2	Ear defenders (plugs or muffs)	EN352-2
Safety Boots (Wellington only permitted upon approval)	EN 345	Gloves	EN388 3444 EN374-3 3 EN374-2
Overalls (Optional)	N/A		

19.0 Emergency Utility & Service Numbers

BT	0800 0232023
Wales & West Utilities / National Grid (Gas)	0800 111999
National Grid (Electricity)	0800 404090
Welsh Water	0800 0853968 (Dirty Water)
Welsh Water	0800 0520130 (Clean Water)

20.0 Briefing Record

ALL PERSONS INVOLVED IN THE WORK OPERATION MUST SIGN BELOW TO CONFIRM HAVING RECEIVED INDUCTION AND UNDERSTOOD THIS RA/MS:			
Inductee Name	**P.P.E. Issued /Checked**	**Signature**	**Date**

21.0 APPENDICES

APPENDIX I:

GROUND INVESTIGATION PLAN

Drg. No.: 2353 / 001 Sht 2 Rev 0

BOREHOLE LIST		
ID	COMMENT	COORD'S
01	~30m MIN. OR REFUSAL	272888, 192968
02	~30m MIN. OR REFUSAL	272323, 193081
03	~25m MIN. OR REFUSAL	272356, 192962

2 AERIAL PLAN
1:5,000 @ A3

0 100 200
METRES

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

IT IS ASSUMED THAT ALL WORK WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE WORKS DETAILED IN THIS DRAWINGS, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS.

TIDAL ESTUARY – WATER INUNDATION

GAS PIPELINES – GAS APPARATUS OPERATING AT 7BARG

STATUTORY SITE – CRUMLIN BURROWS SSSI

OTHER UTILITIES – INCL. WATER & CHEMICAL PIPELINES

WALES&WEST UTILITIES

PYTHIA CONTRACTS

REV	DESCRIPTION	DRN	CHK	APP	DATE
0	SI LOCATIONS	PCL	MGG	KVG	7/12/23

BAGLAN BAY
SITE INVESTIGATION LOCATIONS

PROJECT Ref	DRAWING NO.	SHEET	REV	DRG SIZE
2353	001	2 OF 2	0	A3

2353SILOCN.dwg

APPENDIX II:

SITE SAFETY GOLDEN RULES

Objectives

The RSK Safety Council has established **RSK's Golden Safety Rules** to help prevent occupational accidents, by

- clearly explaining the basic rules that everyone should know and apply
- strengthening prevention by encouraging the workforce to intervene if they see something being done wrong
- enabling the workforce to stop work if the risk is not being managed properly.

The rules draw on the approaches adopted in many RSK client sectors including construction, oil and gas, rail and agriculture.

The rules reinforce existing aspects of the SHEQMS and impose no new processes or procedures.

Golden Safety Rules

Complete planned and point-of-work (last-minute) risk assessments for every task

Obtain permits to work when necessary

Use proactive management to avoid service and utility lines

Follow vehicle, driver and journey management procedures

Only use competent and appropriately trained people with the right equipment for the task

Always use appropriate and correctly fitted personal protective equipment

Never work or drive under the influence of alcohol or drugs

Protect yourself from falls when working at height

Remember that we all have the authority to stop work

APPENDIX III:

BATHYMETRIC SURVEY RA-MS

By Shoreline Surveys Limited

SHORELINE SURVEYS LIMITED

Moreford Hall, Moreton, Dorchester, Dorset, DT2 8BA

surveys@shorelinesurveys.com | www.shorelinesurveys.com | +44 7950 038317 | Over 25 years, approaching 2500 projects | Company Number: 04464556 - Vat Registered

METHOD STATEMENT: JX2713 - Hydrographic survey - River Neath, South Wales

Date:	20-Jun-24
Quote reference:	JX2713
To:	Pete Willis
Position:	Director
Company	Spencer Quantum Ltd
Survey location:	River Neath, South Wales
Survey types:	Multibeam
Description:	Pre-works survey
Confidentiality:	Medium

Introduction	We are pleased to provide the following method statement for the above survey types. We feel we are ideally suited to this work as we have undertaken many surveys of this nature in the past. Our mission is to provide an efficient, reliable and cost effective surveying service. We achieve this by adopting an open and honest relationship with our client, using modern technologies and investing in, motivating and supporting our workforce.

Brief	We propose to use multibeam soundings for the provision of high detailed levels. This will be combined with multibeam side scan sonar survey data which will further facilitate the nature of the side with respect to possible seabed mounted objects on site together with detail on the nature of the seabed (rock/ sand etc.) We plan to undertake the survey utiliing our MCA Category 3 Coded workboat, mobilising from the lcoal sailing club. The survey site will require a suitable sea state and high tide, springs preferred for maximum coverage. All data will be collected, processed and presented in house.

Experience	We have worked in this location many times and are known to the local harbour authority and they are known to us. We understand the requirements of working in this location. As per previous surveys undertaken here, we will provide: sufficient and accurate notice of the survey schedule, regular updates of our progress and provide clear communication with the required authorities whilst on the water.

Core details	**Prepared by:**	Emile Foote, Managing Director, Shoreline Surveys Limited, ef@shorelinesurveys.com, +447950038317
	Key client contact 1:	Pete Willis
	Position:	Director
	Email:	pete@spencerquantum.co.uk
	Phone number:	07528 300736
	Client:	Spencer Quantum Ltd

Survey description	**Location:**	River Neath, South Wales
	General description:	Pre-works survey
	Data requirement:	To provide the client with soundings to facilitate their works.
	SURVEY METHOD	
	All surveys are planned ahead of mobilisation. We use our extensive experience in conducting surveys of this nature to ensure that the requirements of the project are met safely. Ahead of mobilising, the team will be briefed on the project scope, survey method and risk assessment. The client will be provided with notice of survey schedule and progress at the agreed key points (i.e. onsite, start of survey, end of survey, offsite). For surveys onboard *Shoreline,* the survey team will tow the survey vessel to the launch point. The team will review the launch site ahead of using (see risk assessment). Ahead of launching they will load light (<10kg) equipment aboard. Heavier equipment will be loaded when tightly moored alongside. Manual handling techniques will be adhered to for all lifting. The team will review the launch site ahead of using (see risk assessment). Once launched, they will complete installation of the survey system. They will then transit to site and undertake the necessary checks, tests and calibrations. Upon completion of the survey and before leaving site, the team will check the data coverage and backup the data. At all the above stages the team will adhere to the survey notes and risk assessment. Details of the survey description, equipment, deliverables, logistics, timescales and limitations are given below.	
	Survey extents (plan at end of document):	
	Survey area definition method:	Client defined in screen shot.
	Coverage extending to:	Area as defined.
	Survey coverage notes:	200% coverage minimum.
	Dimensions (metres):	50 metres upstream and downstream of client defined cross section
	Surface area (hectares):	0.5
	Name & method of survey area definition (KML/ CAD/ coordinate):	Client defined in screen shot.
	Coordinate datum:	OSTN15
	Provided by:	Pete Willis

Survey equipment (see separate tabs for more information)	**Proposed vessel or platform:**	*Shoreline*
	Multibeam:	For comprehensive bed level (top of silt) mapping.
	Coverage type:	Dredge (200%)
	IHO Standard (see appendices):	Order 1A
	Swath width:	Typically 130 degrees, steered as required.
	Multibeam back scatter side scan sonar:	Offered as an option to increase IHO Order to Special Order for the detection of bed mounted contacts.
	Minimum size contact:	0.3 x 0.3 x 0.3
	Multi-detect:	NA
	Other:	Nothing specific.

Deliverables	**Deliverables type:**	Digital data (XYZ and drawings)
	Deliverables method:	Via Shoreline's FTP
	Multibeam survey:	Presented soundings with shaded contours to maximise one A1 sheet drawing, overlaid onto client supplied background.
	Multibeam shoal bias XYZ:	Yes
	Multibeam average bias XYZ:	Yes
	Multibeam cell size:	0.5
	Horizontal datum:	OSGB36
	Vertical datum:	Chart Datum
	ODN/ CD separation value (metres):	-5
	LAS file:	No
	Soundings:	Sorted to present shoal soundings without overwriting with sun illuminated shaded contours.
	Drawings:	Presented on A1 to a standard scale to maximise the use of one or more sheet drawings (as detailed below).
	Drawing horizontal datum:	OSGB36
	Drawing vertical datum:	Chart Datum
	Shaded or line drawn contour:	Shaded
	Number of survey drawings:	1
	Metadata:	Metadata will be provided in an Excel Spreadsheet detailing dates, contractor personnel, client, equipment, key settings, sea conditions and any problems encountered during the survey, deliverables list.
	Buoy position list:	Not required

Key Logistics	**Survey coverage and environmental factors:**	
	Tidal or non-tidal:	Tidal.
	Tidal range (MHW):	~10 metres.
	Water depth range (CD):	Expected mostly to be drying at low water.
	Inshore survey extent:	To within 2 metres (at high water)
	High tide requirement:	Yes
	Spring tide requirement:	Yes
	Max transit to site wind speed:	10-15 knots.
	Max site wind speed on-site:	15 knots from exposed direction.
	Max site wave height on-site:	0.3 metres.
	Max tidal flow speed:	NA
	Site access limitations and possible conflicts:	
	Controlling Port Authority:	Neath Port Authority
	Physical access limitations:	None.
	Vessel height restrictions:	None.
	Vehicle height restrictions:	None.
	Notice to Mariners requirement:	Yes - Shoreline have been in contact with the local Port Authority
	Port Authority (notice period):	Shoreline have been in contact with the local Port Authority
	Speed limits:	6 knots (no wake).
	Other:	Nothing specific.

Timescales	**Planned survey date**	25-Jun-24
	Survey duration:	1 day
	Survey timing each day on-site:	Working around suitable tides and winds.
	Quoted processing timescale (excluding weekends & public holidays - unless arranged otherwise):	14 days

Risks and protection	**Risk assessment:**	To be provided on request.
	Personal Protective Equipment:	Lifejackets | Steel toe boots | High viz vest | Gloves | Goggles | Ear Protection (as required).
	First aid kit:	Onboard.
	First aiders:	Vessel boatman.
	Welfare:	Public facilities/ local marina etc.
	Strong currents/ tidal flows:	Strong currents during flood and ebb tide. Survey to be conducted over high water slack.
	Briefing:	Prior to team heading to site each day.

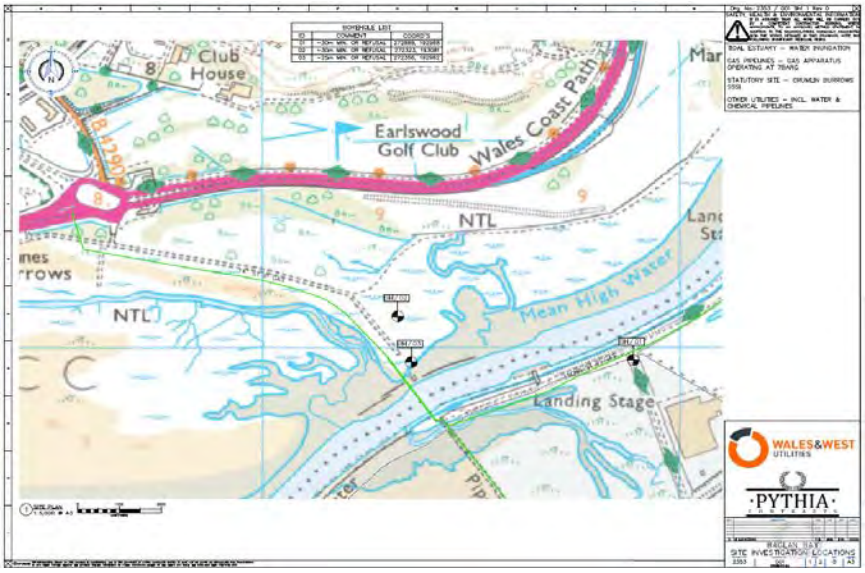
General limitations	As per equipment specifications in appendices.
	To ensure the safety and comfort of the crew, delays may occur due to precipitation/ strong winds/ rough water.

Please follow the link below for Appendices

http://gofile.me/7jNzq/d0otH59oH

SURVEY EXTENTS

Survey extents are 50 metres upstream and downsteam from the client annotated green line:



RISK ASSESSMENT

	Low risk
	Medium risk
	High risk

SHORELINE SURVEYS LIMITED

J2406

V2.2

Survey Vessel and Systems Specific

Risk	Operation	Hazard(s)	Controls(s)	Net Risk
	FIRST AID KIT	For treatment of minor injuries and initial response to larger injuries.	There is a first aid kit in the towing vehicle cab, passenger door. Shoreline, Echo and Sailfish all have Category 2 first aid kits. They also have day first aid kits which are to be used for minor injuries.	
	Loading of electrical/ fuel/ hazards	Risk of injury, fire or explosion	Ensure fuel tanks are sealed, stored as low as possible and level. Ensure batteries are securely stored with the terminals covered, ideally in a batter storage box. No live connections during transit. **Ensure no cable connections are exposed to any chance of becoming wet.** All other chemicals/ generators etc. need to be stored safely. Ask if in doubt.	
	Whilst on site	Damage to persons	Wear work boots whenever you are on site. Wear your lifejacket whenever you are near or on the water. Ensure the client knows you are on site and do not work alone.	
	Launching and recovery of trailered vessels Tidally restricted slip: Check notes Significantly hazardous slip: Check notes Vertical drop: Check notes Drive beyond slip: Check notes USING TO CHECK FOR IRREGULAR/ ICY SURFACES WALK SLIPWAY BEFORE USING	Slippery surface Vertical drop Blind spot reversing Stranding Winch recoil Shore-break	Check slipway coding to ensure you're trained to use this slipway. If in doubt, ask. Check slipway before use and grit if necessary. 4 wheel drive engaged for all slipway driving. Consider tying the towing vehicle to strong point if icy or limited traction is encountered - last resort. Never drive forwards down the slipway with trailer loaded. Always try to reverse down the slipway perpendicular to the slope. Observe notices and seek local knowledge. Manually probe before reversing if not certain of slipway condition/ length. Always use banksman and use mobile communication - windows down. Do not launch/ recover over mud or sand. Stage launch, checking traction at regular intervals. If winch recoils DO NOT ATTEMPT TO STOP WITH HANDS/ BODY. Use secondary securing strop to ease boat into water if winch load is high. 2nd forward facing boat strop to be in place whenever boat is out of water. Do not loiter behind vessel/ trailer when on slope. Watch out for larger passing vessels which could cause swell/ waves on the slipway. DO NOT LAUNCH/ RECOVER IF UNSURE OR IF NOT SAFE.	
	Vehicle stranding	Risk of the work vehicle becoming stuck. Risk of total loss on tidal slipways.	Assess slipways and any other off road driving on foot ahead of driving over with vehicle. Consider worst case scenario and if there is a backup to assist in case of stranding. Discuss with office the conditions if you think that there even marginal risks of stranding.	
	Loading of equipment	Heavy equipment (>10 kg)	Work in pairs. Pass equipment between work colleagues to span water gap. Securely moor vessel when loading/ unloading heavy equipment. Ensure vessel is securely moored when boarding or disembarking. Use rails. Use gloves and work boots and proper lifting techniques.	
	Man overboard	Member of crew falls into water	Awareness on board of trip hazards/ grab rails etc. Drysuits (if worn) to be zipped up fully when on or near the water. Familiarisation with man overboard procedure and equipment. Inform Port Control as soon as safe to do so if assistance is required.	
	Vessel collision	Vessel strikes obstruction of another vessel. RISK OF TOTAL LOSS Perpendicular survey lines to channel orientation	Inspection and briefing of survey area before commencements of survey. Qualified and experienced skipper. Communication with Port Control detailing survey plan. Do not work when visibility is not suitable for the area of work (<100 metres). Ensure any on-site plant/ dredgers/ etc. are aware of your presence. Issue a Notice to Mariners if required by the client. Review previous survey notes and charts of the survey area if available. Maintain contact with Port Control detailing survey plan for each day including when starting and completing for the day. All crew responsible for lookout. Double checking whenever boat changes to next survey line. Note upcoming traffic. Adhere to the speed limit noting that often the best speed is much slower.	
	Fire	RISK OF TOTAL LOSS	No smoking on boat or site. Proper and qualified installation of high voltage electronics. Relevant safety provisions (fire extinguishers, life raft etc.). No refuelling of vessel where the is a risk of spark or hot works in the locality.	
	High voltage equipment	RISK OF DEATH. Electrical installation and possible exposure to water/ condensation etc.	Ensure all exposed wiring is away from water and securely stored. Ensure the inverter/ generator is sufficiently rated for the demand. Brief all personnel on risk of 240V equipment and show how to isolate the power supply. If using 240v in the small boat ensure that it is contained in splash proof box with the lid on at all time. All connections and terminals to be contained in splash proof box also.	
	Multibeam survey equipment	Risk of damage/ collision with personnel should weak link break	Do not walk in front of the multibeam pole during survey. Consider securing multibeam pole with rope to stop it from going forward and hitting personnel.	
	Engine or equipment fouling on ropes or moorings	Possible damage to equipment or stranding	Maintain a good lookout for buoys, mooring ropes & debris. Pickup & correctly dispose of floating debris that could cause fouling or damage. Ensure ships knife is available and sharp to cut free any rope or debris. (Outboard engines can be tilted to remove most fouling).	
	Shallow water Tidal considerations	Risk of grounding, damage to vessel and equipment and also risk of stranding	Pay attention to echo sounder depths and use shallow alarm when working in water depths of less than 2.0 metres. Ensure latest charts are loaded on chart plotter and that the survey plan has addressed the extent and location of any critical draft survey areas. Plan survey to take place during suitable tidal levels - use charts and historical data. Where possible, observe site location at low water and note any obstructions.	
	Working close to shore	Risk of grounding and boat stranding	Review chart. Use on-line annotation guidance for tidal access times. Work in sections if need be. Be very careful when working close to shore with onshore wind in order not to become stranded on the	
	Other water users - Fishermen	Risk of being entangled with fishing lines/ hooks. Risk of being struck with weight from casted line/ hook	Attempt to survey when fishermen are not present. Ensure clear and respectful communication is made with fishermen. If there is any doubt or possible conflict or entanglement avoid the area that they are fishing in. Work in sections ensuring that any fishermen in that section are informed of start and end time of survey. Maintain a close watch for any fishermen that look to be preparing their rods for casting. Wear hard hats. Remain 10 metres away from bank when not surveying. Only survey in a perpendicular direction to the banks to maximise visibility.	
	Other water users - Swimmers	Risk of death	Always try to survey when timing is likely so not encounter swimmers. Do not go inside any swim zones normally buoys with yellow markers unless express permission is given by the authorities. Where swimmers are present in the water slow down and if necessary, place a lookout on the bow to ensure a thorough dedicated lookout is achieved. Work inshore in one go so that you do not have to keep entering areas of risk.	
	All other water users	Risk of conflict, injury or death.	Maintain a proper look out.	
	Chemical contamination - Petrol	Risk of spilling petrol into the environment	Carry fuel in suitable containers. Do not fill or transfer fuel whilst on-site. Check hoses and connections before use to ensure they are not damaged. Wear eye protection whenever refuelling.	
	Chemical contamination - Oil	Rush of hydraulic oil/ engine oil contaminating water body	Ensure engines are serviced as per manufacturers recommendations. Do not fill/ drain when on-site. Inspect engines before use to ensure no leaking is present. Ensure spill kit is available on site.	
	One man operation	Risk of going overboard without assistance to recover/ raise alarm	Only work alone when transiting from slipway to pickup point. Never leave wheelhouse with engine running when working alone. Never work in exposed areas/ or make voyages greater than 0.5 miles from land alone. Inform Port Control (where relevant) at the start and end of transit.	
	Strong current flows Working close to site structures	Disorientation of passage progress or entrapment against fixed structures	When tidal flow speeds are greater than 2 knots do not work upstream of any fixed structure where the risk of immediate collision is present in the event of propulsion failure. Use slack water lower flow rates to access areas which will be subject to this risk at other times. Prepare anchor for rapid deployment if in any doubt. Survey into the direction of the tidal flow, specifically for single beam line sets.	

DIAL 999 in an emergency - see nearest hospital using company phone

APPENDIX IV:

GPR AND TOPOGRAPHICAL SURVEY RA-MS

By Intersect Surveys Limited

Method Statement

Job: Baglan Bay Pipe Crossing

Topographical & Utility Survey

Author: Leah Whittington Date of Issue: 27/06/24

Client: Spencer Quantum

Contact: Lee Simlett

Site: Baglan Bay Pipe Crossing

Survey Area:

Work Activity

Site Access

Site freely accessible with vehicle. No parking restrictions.

Pre-Start Checks

Receive site induction from site manager

Establish and walk exact site location for works. Highlight any unforeseen issues.

Review all site information received, and compile with any additional information provided upon arrival on site i.e. utility record information.

Amend RAMS if required.

Sequence of Work Activities

Topographical Survey & Utility Survey

1. Topographical Survey

   Topographic Mapping to accurately determine ground relief & map the location of natural & man-made features across the Site.

2. Electromagnetic Location
   a. Active

      All inspection chambers will be lifted. The depths and numbers of ducts will be recorded. All stop valve/hydrant covers will be lifted. All cables and pipework accessible on site will be induced on using an induction clamp or direct connection (clips) using a specified frequency. This frequency will be located using a receiver, and the location and depth of each service induced on will be marked on the ground and recorded on the site plan.

   b. Passive

      Power and Radio sweeps will be conducted across the whole site.

      Induction sweep will be conducted across the whole site, using the transmitter and receiver in passive mode.

3. Radar Survey (Utilities only)

   Existing record information will be referenced in order to target specific areas with the GPR to attempt to locate any remaining services.

   Passive sweeps will also be carried out with the GPR in a grid pattern in order to locate any additional unidentified services, or any not appearing on the record drawings.

Equipment Details

Marking Out:

Road Marking Crayons (Wax)

Survey Spray Paint

Topographical Survey:

Robotic Total Station & GNSS.

Utility Survey:

RD4000/8000 Locating Equipment

IDS Detector Duo GPR System

Flexi Trace

Measuring Wheel and Tape Measure

Various Hand Tools (Manhole Keys, Hammers, Chisels, Screwdrivers etc)

Volkswagen Caddy Van

Health and Safety Management and Control Measures

PPE

All site personnel will wear appropriate PPE for the job. At a minimum this is:

Steel Toe/Mid-Sole, Lace-up Boots	At All Times
Hi Visibility Class 3 Coat/Vest	At All Times
Neoprene Gloves	At All Times
Hard Hat	At All Times
Hearing Protection	Where Required
Safety Goggles	At All Times

Lifting of Manholes/Inspection Chambers

All manhole covers and inspection chambers will be lifted where possible. Hand tools will be used to loosen covers prior to lifting, and then two operatives with hand held manhole keys will lift the cover out. Hydraulic lifters are available when necessary.

Where lightweight or hinged manhole covers are encountered, these control measures may be reduced appropriately.

Broken or damaged manhole covers, or manhole covers that will pose a trip hazard once lifted and replaced, will not be attempted. All other reasons for not being able to lift a manhole cover will be noted on the plan or in the report.

All staff are trained in correct manual handling techniques.

Vehicle Movements

Operatives will wear high visibility clothing at all times whilst on site.

Appropriate vehicle protection measures will be instated where necessary in accordance with Chapter 8 Signing, Lighting and Guarding.

Pedestrians

All manholes that are opened will be cordoned off with barriers in order to offer protection to pedestrians. Manholes will not be left unattended while they are open.

Confined Spaces

All works within manholes or inspection chambers will be carried out from above ground. Operatives will not enter any manholes or chambers.

Site Personnel

NAME	POSITION	SIGNED

INTERSECT SURVEYS

Intersect Surveys Ltd Risk Assessment

Site Address: Baglan Bay Pipe Crossing

Insructions for using this Risk Assessment:

1) The task risk assessor will review the work task then list the main task steps or job components, if required have the RA reviewed by a colleague.
2) Using the items in column 1 list the main hazards as a result the working environment and undertaking the work activity
3) Note the event or incident (the 'accident') that could occur and the likely injury or loss that may occur as a result
4) Use the "Risk Rating" matrix to assess each hazard likelihood X severity, multiply the two numbers then indicate level of risk i.e. L = 1-4; M = 5-10; H = 15-30 or VH = 50 in column 4 before the controls have been applied.
5) Apply and record control measures and actions needed to mitigate the risks to prevent accidents and injury.
6) Again, use the 'risk rating' matrix to assess the residual risk after controls have been applied. Then communicate the RA to user(s).
7) Use the controlled risk outputs and control measures from the RA as input to develop the Task Specific Method Statement (TSMS).

Risk Rating Matrix - Indicate L; M; H; VH or N/A in columns below

Likelihood of exposure or an event occurring			Severity of "HARM" resulting	
1	Unlikely to be affected	x	1	Minor Injury or slight damage
2	May be affected		2	Hospital Treatment or some damage
3	Occasionally affected		5	Disability Likely or serious damage
5	Likely to be affected		10	Permanent Serious Disability/Death

		Potential for Harm							Controlled Potential for Harm					
No.	**Significant Hazards**	**Severity**		**Likel'd**		**Risk**	**Persons affected**	**Existing Control Measures**	**Severity**		**Likel'd**		**Risk**	**Additional Controls Required on site**
1	Working with Sewage	VH	5	M	3	VH	Employees	**Maintain good hygiene. Wear waterproof gauntlet gloves and wash hands before eating and smoking. Segregate heavily soiled equipment and PPE from clean equipment using bags before transporting in vehicle**	L	2	L	2	L	
2	Asbestos	VH	5	M	3	VH	Employees General Public	Employees to be provided with asbestos awareness training. Cease survey work in the immediate vicinity on suspected identity of asbestos. Do not disturb any asbestos found on site. Record it's position and report to the client.	H	4	VL	1	L	Remember there are many forms of Asbestos Containing Materials not just the obvious e.g. roof boards and panels and many electricity cables are often wrapped in asbestos materials (especially on rail track sites).Our Surveyors are trainied in Asbestos Awareness.
3	Buildings	H	4	M	3	H	Employees	Derelict or empty buildings can contain unforseen hazards due to lack of upkeep. Vagrants or other unauthorised occupants can be present in buildings and can pose a hazard. Do not enter without appropriate authorisation	M	3	VL	1	L	
4	Hypodermic needles	H	4	M	3	H	Employees	Wear safety boots with reinforced sole. Do not handle any sharps. Wear protective PVC gauntlet gloves & EN166 compliant EYE PROTECTION when working in gullies and manholes. Advise client site contact of location of any sharps discovered on site.	H	4	VL	1	L	DO NOT TOUCH - Report to local authorities for removal.
5	Manhole lifting (non man entry)	H	4	M	3	H	Employees	Identify manhole type and method for removal. Erect adequate edge protection around manhole cover and cordone off works area using chapter 8 barriers. Lace up safety boots to be worn, hydraulic and lever-type manhole cover lifters are available and should be used to remove manhole covers. Manual lifting keys can be used where this agrees with manual handling training on weight limits and safe environment (subjective based on staff member) – do not improvise and follow appropriate lifting procedure as per method statement – all staff to have manual handling training.	H	4	L	2	M	
6	Pedestrians	H	4	M	3	H	Employees General Public	Wear high visibility clothing and ensure all open manholes are protected with barriers; never leave an open chamber unattended as per Manhole Lifting control measures. Ensure equipment not in use is locked away and does not pose a trip hazard when in use.	L	2	VL	1	L	
7	Eye Injury	H	4	M	3	H	Employees General Public	Wear Safety Goggles when using cold chisels. Carry eye wash (van pack eyewash kit is carried in vehicles)	L	2	L	2	L	
8	Impact Injury	H	4	M	3	H	Employees	Wear impact protection gloves when using cold chisels (these should be at least EN ISO 21420:2020 Dexterity 5)	M	3	L	2	M	
9	Site access	M	3	M	3	M	Employees	Sign in with site manager where present, complete site induction where required and complete dynamic risk assessmen of the sitet. Liaise with office on findings.	M	3	L	2	M	Vehicle movements on site
10	Vehicle movements on site	VH	5	L	2	M	Employees General Public	Wear high visibility clothing, deploy road signs, cones and vehicle on approach to working area Avoid peak times. Sunday work for busy roads using traffic management. Control speed limit or block traffic access with van if necessary. Use "Banksman" for reversing	H	4	VL	1	L	
11	Permanent Ground Markers	VH	5	L	2	M	Employees	Check service records, review locations with site staff and cat scan before placing	H	4	VL	1	L	
12	Lone working	VH	5	L	2	M	Employees	Lone working will be required on this project and therefore the lone working policy should be adhered to. (separate document)	M	3	VL	1	L	
13	Slips, Trips and falls	H	4	L	2	M	Employees General Public	Staff to be briefed on permitted areas and walkways. Staff to wear safety footwear. Ensure good housekeeping. Ensure the work area is sufficiently lit to allow for safe working.	M	3	VL	1	L	
14	Unforeseen hazards	H	4	M	3	H	Employees General Public	Note, assess and update dynamic risk assesment as necessary and pass back to office.	H	4	M	3	H	FURTHER CONTROLS WILL BE REQUIRED
15	To be notified by client		0		0		Employees General Public	All hazards known to the client (not listed above) to be notified to the surveyor with suggested controls		0		0		

Risk Assessment undertaken by: **Alex Shiels** **Director** _____

Date of Assesment: