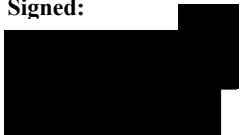
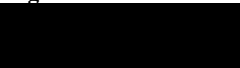


**Installation of 2 x 225mm & 1 x 110mm
 SDR11 MDPE Pipework by
 DIRECTIONAL DRILLING
 TECHNIQUES
 River Avon
METHOD STATEMENT**

For: JT UTILITIES

<i>Method Statement Title: P2810</i>				
Method Statement No: MS/WMC/01/P2810 – River Avon				
Location: Approx Site entry Point: ///perfume.twists.sized				
Prepared By: Wayne Cartwright	Position: Operations Director	Company: GMac Utilities	Signed: 	Date: 24-11-25
Checked By: Gerald McCloskey	Position: Director	Company: GMac Utilities	Signed: 	Date: 25-11-25
For Comment:	Issue: 01	Revision: 00	Accepted By:	Date:

DECLARATION

I confirm that I have been briefed and understand the contents of this Risk Assessment & Method Statement. I have been made aware of the risks involved and agree to abide by the control measures and method of work.

I will inform my site supervisor immediately of any changes which may affect the health and safety of me/us or others likely to be affected by the works:

Print Name	Signed	Date

Table of contents

- 1) INTRODUCTION
- 2) METHOD OF WORK
- 3) PORTABLE TOOLS (Noise & Vibration)
- 4) MECHANICAL PLANT
- 5) MATERIALS
- 6) CONTROL OF WORK (COSHH)
- 7) HOUSEKEEPING & WELFARE
- 8) SIGNS AND NOTICES
- 9) SITE RULES
- 10) RESPOSIBILITIES
- 11) METHOD OF WORK
- 12) SITE AND ACCESS
- 13) RISK ASSESSMENT/SAFETY PRECAUTIONS
- 14) TRAINING
- 15) PERSONAL PROTECTIVE EQUIPMENT
- 16) WASTE MANAGEMENT
- 17) METHOD STATEMENT REVIEW
- 18) CONTRACT DOCUMENT CLAUSE
- 19) Appendix 1 Permit to Drill
- 20) Appendix 2 Risk Assessment

1.0 INTRODUCTION

- 1.1 Method Statements are produced to a Company standard written by the senior safety officer, and prepared as contract specific by the contract engineer and are intended as instructions for undertaking specific, identified work. Where there may be included within the method statement, reference to other instructions, etc, due regard must also be given to any Health and Safety issues raised in such documents.
- 1.2 Method statements are further supported by arrangements set out in company health and safety procedures that are issued as controlled documentation to all operatives.
- 1.3 *Gmac Utilities Ltd* undertakes to co-operate with *JT UTILITIES* in upholding contractual safety requirements for ensuring a safe system of work.
- 1.3.1 Exploratory points such as bore holes, trial pits or other survey points can by their nature only provide information on a relatively limited area., in general the conditions encountered may vary between exploratory points.
- 1.3.2 ALL WORKS WILL BE CARRIED OUT IN CONJUNCTION WITH JT UTILITIES SITE RULES.

2.0 METHOD OF WORK

Gmac Utilities Ltd Site Manager to ensure that Method Statement has been briefed to all operatives. All operatives to sign and date page 2.

Gmac Utilities Ltd with JT UTILITIES appointed engineer will check service drawings.

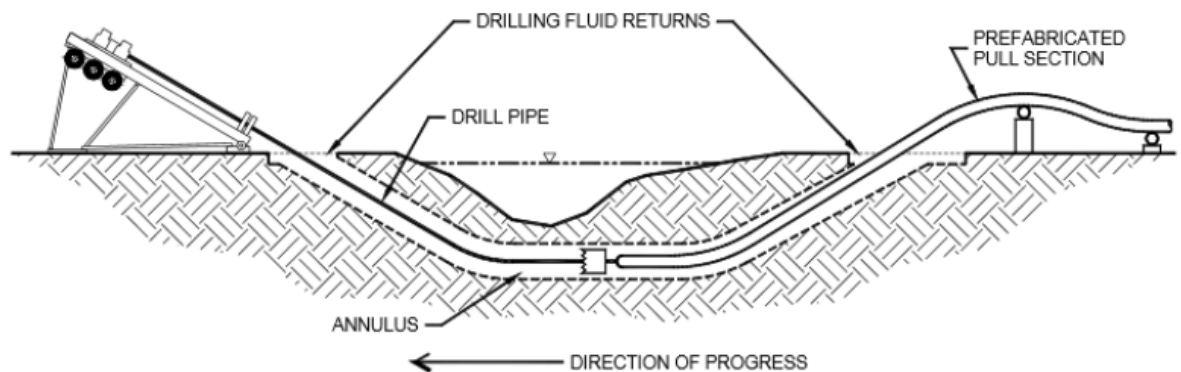
JT Utilities will need to excavate a 4mtr(W) x 4mtr(L) x1.2mtr(D) pit at start point, and at exit point. Exit pit will be enlarged as required for slurry management.

JT UTILITIES to provide Heras Fence as required for all working areas and all excavations.

Service drawings to be provided by JT UTILITIES

- 2.1 The drill rig will be delivered to site on a special Low loader, along with recycling system, drill rods, tooling, mixing tanks, mud holding tanks, high pressure mud pump and mud skips.
- 2.2 Drill rods will be placed within the working area adjacent to the drilling machine.
- 2.3 Upon completion of Permit to dig, work will then proceed.

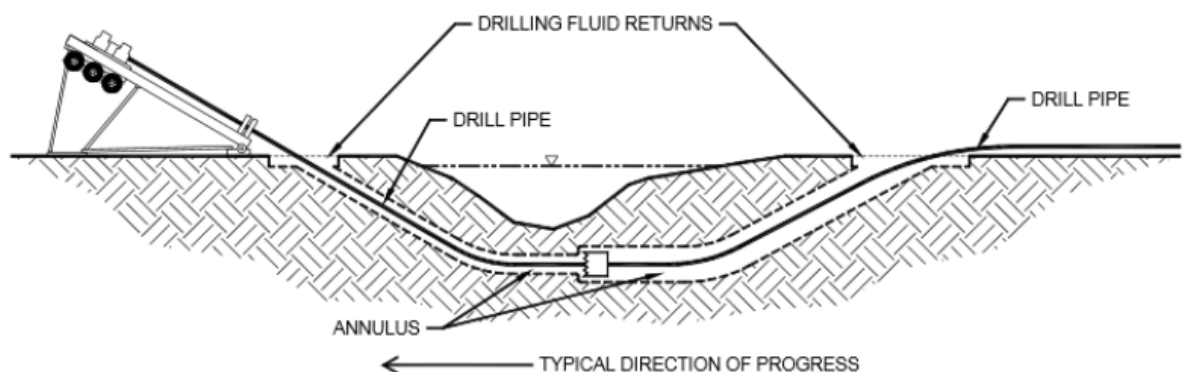
- 2.4 Once the launch pit has been excavated, work will then commence on the pilot bore. The pilot bore will be undertaken using the best option available for ground conditions expected along bore path. This may be a walk over system or wireline.
- 2.5 Once all of the above have been checked then the water will be added to the mixing systems to start mixing the necessary mud design mix. Mud engineer will be on site, during all drilling activities. (COSSH for all Muds/ Polymers issued separately)
- 2.6 If the steering is to be completed with wireline the steering engineer check the position of the drill head. The steering engineer will have the co-ordinates of the exit point (to be determined by final design) and will follow the design path. The steering system is powered by a small 6mm cable fed down the inside of each drill rod, jointed and crimped.
- 2.7 During the pilot operation drilling fluid will be used to remove spoil, support and lubricate bore path. The drilling fluid will be monitored to ensure that there are constant returns to the excavated pits, thus reducing hydraulic pressure within the bore. In addition, the use of recycling system will allow drilling supervisor to visually see how much returns are removed to compare to theoretical volume.
- 2.8 At the exit pit, a recycling system and mud pump may be required. This will be used to clean and pump slurry back to rig side through the drill string.
- 2.9 Upon completion of the pilot bore, the drill head assembly will then be removed at exit side. A suitable (for ground conditions) reamer will be attached on to the drill string. For Pull reaming, the reamer will be placed onto the rods at exit point and pulled back towards the drill rig, connected to the reamer whilst towing rods behind to maintain a live feed within the bore at all times. The reamer will be pulled and rotated allowing for cuttings to flow directly back to pits this will be carried out until the bore is of an acceptable size 600mm to accept the product pipe.
- 2.10 During reaming, drill rods will be live trailed behind the reamer in the event of any issues, the rods can be pulled /pushed from either end. A 14-t excavator will lift the drill rods at entry and exit sites. Gmac will have sufficient drill rods on site to complete pilot bore and ream prior to swab run.
- 2.11 The directional drill rig operator will pull the rods back towards the launch pit, during this operation the mud fluid will be charged under pressure and forced down the drill string, until it exits at the reamer.
- 2.12 The pipe will be positioned at the reception pit by Gmac for installation post welding.



A picture illustrating the pullback phase of HDD operation

- 2.13 Radios will be used between the monitors and drilling crew in case of any frac-out to enable the quick shut down of all pumping/drilling activities. In the event of an emergency, where a large frac-out occurs, drilling will cease and tooling retracted. Drilling additives will be added to the drilling slurry to attempt to block up any fissures where slurry is escaping from the bore.

2.14 DRILLING FLUIDS



A picture illustrating the reaming phase of HDD operation

Drilling Fluid

The directional drilling process involves use of a drilling fluid made up of primarily water and bentonite, with pH values between 8 & 10. Bentonite is a naturally occurring, non-toxic, and inert substance. Therefore, the environmental impacts of an inadvertent release of drilling fluid

in a watercourse is a temporary increase in local turbidity until the drilling fluid dissipates with the current or is settled.

The primary purpose of drilling fluid is to remove the cuttings from the borehole, stabilize the borehole and act as a coolant and lubricant during the drilling process. The water and clay drilling fluid consist of 1 to 5% active clays and from 0 to 40% inert solids with the rest being water. The primary active clay component is bentonite. The drilling fluid is prepared in the mixing tank with both new and clean recycled drilling fluid. The fluid is pumped through the center of the drill pipe to the cutters. Return flow is through the annulus created between the wall of the boring and drill pipe. The cuttings are then carried to either the entry or exit pit, depending on a combination of elevation difference and drilling hole opening direction.

Drill fluid is easily contained by standard erosion and sedimentation control measures such as straw bales and silt fence installed and maintained around the perimeter of each site. Within the boundaries of the work site, drill fluid will be controlled using pits at crossing entry and exit points and typical fluid handling pump equipment. Drill fluid is released regularly on the drill rigs as part of normal operations when sections of drill pipe are separated. The worksite will be graded such that fluid released on the rig will flow into the fluid pit adjacent the rig.

Frac out of Drilling Fluid

A frac-out is the unintentional return of drilling fluids to the surface during the directional drilling process. A frac-out occurs when the down hole mud pressure exceeds the overburden pressure, or the fluid finds a preferential seepage pathway such as a fault line or fracture. Throughout the directional drilling process there is a loss of drilling fluid into the geologic formation through which the drill passes. In some cases, the drilling fluid may be forced to the surface resulting in what is commonly referred to as a frac out.

It is extremely important to note that a loss of drilling fluid into the formation is not necessarily an indication that a frac out has occurred or is about to occur. It is normal to lose a significant amount of fluid into the formation without ever having a frac out. In fact, in very soft ground formations or in highly fractured formations it is normal to lose all the drill fluid pumped into the borehole without a frac out occurring. A frac out cannot occur unless drill fluid escapes from the borehole into the formation. Hence preventing and managing such escapes will in turn prevent and manage frac outs.

Frac Out Prevention

The risk of a frac out in a sensitive area will be mitigated through profile design and through implementation of specific measures throughout the installation process. During the HDD process passing below the water course a watching brief will attend the water crossing, to watch for any sign of fluid release, all works will cease and pumping of fluids stopped, mitigation measures and tripping of drill string installation of N-Seal bore stabiliser products will be undertaken in attempt to cease any flow. To reduce frac -out risk, the HDD design has been undertaken to given sufficient cover to product pipe to keep risk low, Drill fluid in Bore pressure monitoring will be carried out to understand bore pressure and to enable operator to trip out and flush heavy fluids as required to maintain a good fluid flow and reduce hydraulic risk of frac-out. Fluid Rheology readings will be undertaken to ensure Drill fluids are working



at their Optimal capacity. Gmac's operatives are responsible for execution of the directional drilling operation, including actions for detecting and controlling drilling fluid seepage. Gmac will closely supervise the progress of the directional drilling through the use of regular onsite inspections.

Equipment for containing, controlling, and cleaning up any drill fluid released during a frac out will be kept on site throughout the installation process. Heavy equipment not specifically designated for control and clean-up of drill fluid such as excavators and Vac Tanker will also be available on site.

The following list identifies some materials and equipment that will be maintained at the directional drilling site in sufficient quantities to help ensure containment of frac outs of drilling fluid:

- Straw bales
- Sandbags
- Silt fence
- Wooden stakes
- Hand tools (shovel, sledgehammer, pinch bar, rake, broom and buckets)
- Pump and flexible hose
- On call vacuum tanker and skips with an approved waste disposal site

Monitoring & Detection

An obvious key to the timely detection of a frac out is monitoring of the surface above the crossing point for drill fluid. Gmac will have operatives to visually monitor the ground above the directional drill crossing for frac outs. They will be supplemented by information from the rig operator as described above, namely pressure monitoring and volume monitoring.

The monitoring operative will survey the site along the HDD centreline. The monitor will be in constant radio contact with the rig operator who will keep them informed of the position of the downhole tool.

The rig operator will also keep the monitor informed of the drill fluid pressures and mud volume balance and will provide his professional opinion of level of risk of a frac out occurring at any given time. Similarly, the operatives who will supervise monitoring and mitigation efforts will also be experienced in this type of work.

Corrective Action for Frac Outs

If a frac out occurs, Gmac will be immediately notified and shall report the incident to JT UTILITIES in accordance with the 30-minute reporting rule. Gmac will temporarily suspend forward progress of the drilling operations if excessive loss of mud circulation is noted and conduct a detailed examination of the drill path and surrounding area for evidence of a release to the surface.

The directional drilling equipment may continue to operate during this period. It is important to initially maintain operations since soils such as sands, gravels, and some clays do not have the frictional characteristics necessary to maintain a void or hole from a drill. Once the clean-up response has started, the drilling activities will immediately resume.

After the drilling fluid seepage has been contained via straw bales and sandbags, Gmac will make every effort to determine why the seepage occurred. Once the cause of the seepage has been determined, measures will be enacted to control the factors causing the seepage and to minimize the chance of recurrence.

Minimisation of Volume Released

The first action required when a frac out is detected is to minimize the volume of drill fluid that is released. This will be done by immediately halting pumping of drill fluid downhole. Pumping will not resume until the situation is assessed and, if possible, the fluid release is contained and controlled. As it is probable that the frac out will resume as soon as fluid pumping starts again containment and control measures will have to be able to contend with a further release of fluid. Normally the frac out stops of its own accord when the drilling assembly progresses a short distance ahead of the release point.

The risk of failure of the directional drill installation increases dramatically as the duration over which pumping is halted increases. Hence, actions will be taken quickly in order that pumping may resume as quickly as possible.

Containment & Control of Drill Fluid Released

The types of measures implemented to contain the fluid released will depend on the type of area in which the release occurs.

Surface Release

If an inadvertent release of drilling fluid is observed above ground, the following measures will be implemented:

1. Immediately notify site management.
2. Attempt to regain returns. Trip drill pipe and downhole tools back toward the direction of flow until returns through the drilled hole return to the entry/exit pit. Correct the bentonite properties, if necessary, and start drilling back in the same hole to see if the seepage continues. By swabbing the tool through the hole, this may remove any build-up of cuttings that created the inadvertent release. If the fracture is mitigated and controlled, resume directional drilling activities.
3. Evaluate the release to determine if containment structures are necessary. If containment structures are necessary and if the volume of the release is too small for containment measures to be practical, the area will be allowed to dry. This applies to surface releases

only. The containment structures (i.e., straw bales, and sandbags) will be placed around the affected area to prevent flow of the drilling fluid. If the release exceeds the amount that can be contained with the abovementioned barriers, then a small (generally less than four cubic meter) collection pit will be excavated at the release location.

4. If there is a threat to a sensitive resource or to public health and safety, directional drilling activities will be suspended immediately.

Prior to any drilling operations the Bentonite mix is created, and the bentonite powder is fully hydrated before entering into the pumping system of the machinery, should this fully hydrated bentonite leech into a fast-moving water course, it would disperse as its carried downstream, due to the nature of the fast water a Bentonite bloom would not be able to be formed.

Bentonite frac-outs are an issue when in slow moving water as they can create a large bloom that will rise within the slow water creating dense bentonite particles.

In the event of a frac-out all pumping should stop, while investigations are made, and an inert grout type additive will be added to the bentonite to try to re-condition the bore to stop the frac-out.

The effectiveness of the measures implemented to limit the release of drill fluid will be closely monitored. If the measures are not effective and if the environmental impact of the release is deemed unacceptable the directional drill installation will be abandoned. Another attempt using a modified profile or at an alternate location may be made.

Additional Control Measures

A determination will be made of the cause of the frac out. If it is determined that downhole pressures are excessive then measures to reduce them will be implemented. These measures are described above and include swabbing the hole and or modifying the drill fluid properties.

Drill Fluid Clean Up

Measures to clean up drill fluid released by a frac out will be by suction tankers with the fluid transported to skips and disposed offsite at an appropriately licenced waste facility.

3 PORTABLE TOOLS (Noise & Vibration)

3.1 Operatives and supervisors within the work zones will be obliged to use ear defenders during noisy operations based on monitoring of similar operations – to establish threshold limits and noise levels at/away from workforce. Warning signage will be posted to remind operatives/supervisors and visitors that noise zones are in operation.

When in close proximity to the directional drilling rig, ear defenders will be used (approximate noise level of 76dB).

Vibration impact on operatives carrying out the works will also be considered, and the guidelines set out in the Safe Operating Procedures/Policy for Vibration Generating Work Tools will be followed.

4 MECHANICAL PLANT

- 4.1 Drilling Rig
- 4.2 Recycling system
- 4.3 Mud Mixing System
- 4.4 Excavators Launch & Reception points.
- 4.5 Support Vehicles
- 4.6 Generators
- 4.7 Tractor and trailer/bowser

5 MATERIALS

- 1. Pipework as required
- 2. Emergency spill kits, Drip trays & Nappies
- 3. Bentonite Drilling Fluids/ Polymers

• CONTROL OF WORK (HAZARDOUS SUBSTANCES AND PROCESSES)

- 1. Diesel
- 2. Bentonite/Drilling additives
- 3. Grease
- 4. Hydraulic Oil
- 5. Polymers

7.0 HOUSEKEEPING & WELFARE

- 7.1 GMAC Utilities Ltd will ensure that the workplace is kept tidy and dispose of any waste material on a regular basis.

- 7.2 **Gmac will provide welfare within site Compound.**

8 SIGNS, BARRIERS & TRAFFIC MANAGEMENT

- 8.1 Where required by the presence of overhead lines, excavations or whenever road conditions dictate or vehicle load or off load requires it; signage, barriers and/or traffic management will be provided by JT UTILITIES or nominated contractor in line with

GS6, HSG47, Traffic Signs Manual Chapter 8, their Excavation Procedures and/or Traffic Management Plan.

9 SITE RULES

- 9.1 The site person in charge JT UTILITIES or nominated contractor shall ensure all persons under his control are made aware of the contract site rules and, where practicable, these rules shall be displayed at site.

10 RESPONSIBILITIES

- 10.1 The project manager is overall responsible for contract safety management. Duties include ensuring adequate resources, equipment, training and supervision for safe undertaking of the work. Supervisors and foreman/site persons in charge are responsible for site ensuring work is conducted in accordance with this method statement, and that operatives are aware and comply with the safety arrangements, particularly the safety precautions and site rules, as given in the Appendices. Also list of contact details

Company	Title	Name	Telephone Number
JT UTILITIES	Director	James Teenan	
JT UTILITIES	Contracts Manager	Barrie Couch	
JT UTILITIES	Site Manager		
GMAC	SHEQ Manager	Rob Callen	
GMAC	Ops Director	Wayne Cartwright	
GMAC	Site Manager	Mick Whitehead	
GMAC	Site Manager	Craig Thurman	
FIRST AID			
NHS	Nearest A&E Hospital	Royal United Hospital Bath, Combe Park BA13NG	

11 METHOD OF WORK

11.1 Labour force

Agent / Manager (as required)

- Craig Thurman / Mick Whitehead / Shane Jestin-Cull

Operatives (Permanent)

- Drill operator
- Drilling supervisor
- Mud Engineer
- Pipe Supervisor Watch man
- Site support staff

11.2 Permit to Work/Authorization

Details of issue and control of permits, as applicable to the Works.

GMAC Utilities Ltd agent / operator will have a permit to dig form that must be signed by **JT UTILITIES** representative prior to drilling commencing. JT UTILITIES will provide a permit to dig.

The form has details of all relevant services and utilities and any extra requirements.

12.0 SITE AND ACCESS

12.1 Attention will be given to ensuring a safe site, including safe access and egress for all persons who may be affected by the works, including:

- Employees
- Other workers
- Visitors
- General Public (Inc the infirm, partially sighted and children)
- Emergency Services

JT UTILITIES should make arrangements for and carry out the following items, which are **EXCLUDED**.

- 1) All traffic management required to carry out the works safely.
- 2) The protection or diversion of all services and statutory undertakers' apparatus which may affect the Works.
- 3) Obtaining of all licences and permits, the giving of notices and the payment of all fees required under law by any organisation affected by the Works.

13 RISK ASSESSMENT/SAFETY PRECAUTIONS

A documented risk assessment (identified hazards and safety precautions for controlling risk) will precede all working activities.

Identified hazards and risk control measures (as identified from the Risk Assessment) shall be brought to the attention of the site person in charge of site works in the course of method statement inductions carried out by the site engineer.

First Aid

A first aid kit is located in each Gmac vehicle and the Welfare Unit. In addition to the Gmac First Aiders and a list of other First Aiders is available in the JT UTILITIES Welfare Units/Offices. All injuries will be reported to JT UTILITIES at the first available opportunity.

Fire

If you discover a fire, raise the alarm and make your way to the Muster Point. Details of the nearest site muster point is to be recorded on the daily risk assessment. A list of trained and appointed Fire Marshals is available in the JT UTILITIES / Farrans Welfare Units

No one is to fight the fire unless they are trained, and it is safe to do so. All fires will be reported to JT UTILITIES at the first available opportunity.

Natural Environment

Due to the nature of our works a number of animals and their habitats may be affected. These animals include, but are not limited to Badgers, Water Voles, Otters, Bats & other mammals, Newts & other amphibians, Grass snakes & other reptiles, Nesting Birds, their eggs and their young. In addition, damage to trees, hedges, plants and all other fauna will be prevented by consulting with industry standards such as BS5837:2012 Trees in Construction and similar guidance. To mitigate the risk to the wildlife and fauna all staff will receive the Site Induction before commencing works and will follow the guidelines and mitigation as stated in the project EMP

Asbestos

If asbestos or suspected asbestos is discovered, work will stop, and JT UTILITIES informed immediately.

Contaminated Land

If you know or it is suspected that the work area is contaminated, work will stop, and JT UTILITIES informed immediately.

Accident/Incident Reporting

All Accidents, Incidents, Near Miss's and Hazards will be reported to JT UTILITIES Site Management immediately.

14.0 TRAINING

Persons shall be trained as competent for duties they are to undertake.

15.0 PERSONAL PROTECTIVE EQUIPMENT

PPE appropriate to the undertakings and as per the JT UTILITIES site rules and must be worn at all times.

16.0 Waste Management

GMAC Utilities Ltd undertakes to conduct its contractual activities with full respect for safeguarding the environment.

Environmental attention will be directed at effective containment and disposal of waste.

17.0 METHOD STATEMENT REVIEW

This Method Statement shall be subject to a review of its effectiveness by the site engineer together with the site person in charge. The frequency of the review shall be determined by an assessment of potential risk and consequences. Method statements and risk assessments relating to activities with high risk shall be subject to initial, frequent and regular reviews.

18.0 CONTRACT DOCUMENT CLAUSE

This document shall form part of any contract entered into.

APPENDIX 1: Permit to Drill

Date:		Site location:	
Customer:		Job description:	
MACHINE: No:		TRUCK No: VAN	
Have all underground services been located?	Underground depths	If all underground services are not located and depths given, give reason why	
BT	Y/ N		M
WATER	Y/ N		M
ELECTRIC	Y/ N		M
CABLE TV	Y/ N		M
FIBRE-OPTICS	Y/ N		M
GAS	Y/ N		M
SEWER/DRAINS	Y/ N		M
CONTAMINATED LAND	Y/ N		M
TRAFFIC MANAGEMENT	Y/ N		M
OTHERS	Y/ N		M
SPECIFY	Y/ N		M

Directional Drilling Appendix 2

RISK ASSESSMENT FORM

ACTIVITY: Directional Drilling

(C) Environmental Consequence

E1 Insignificant (No Effect)
E2 Marginal (Minor Effect)
E3 Serious (Major Effect)
E4 Critical (Irreversible)
E5 Catastrophic

(C) Health & Safety Consequence

S1 Insignificant (No Effect) 1
S2 Marginal (Minor Injuries)
S3 Serious (Major Injuries) 3
S4 Critical (Fatalities)
S5 Catastrophic

(F) Frequency

1 Improbable
2 Unlikely
3 As Likely As Not
4 Probable
5 Highly Probable

(RR) Risk Rating (Consequence x Frequency)

1-5 Insignificant
6-8 Acceptable **PROCEED**
9-15 Unacceptable **WORK SHALL NOT START**
16-25 Intolerable

No	Activity/ Event/ Feature/ Situation	Hazard/Issue/ Interaction (Cause)	Undesired Event	Consequences	Before Control			CONTROL	After Control		
					(C)	(F)	(RR)		(C)	(F)	(RR)
1	Access to / from site	General Public & local Residents.	Gaining Access to site	Fatality, or major injury. Damage to equipment & plant. Oil/diesel Spillage	S4	4	S16	Site to be delineated from public and footpaths to be diverted away from compound / working area by JT UTILITIES Signage to be erected to warn of dangers by JT UTILITIES Visiting security to be mobilised. Spill response kits on site by Gmac Utilities Ltd Emergency procedures in place by GMac Utilities Ltd	S4	2	S8
				E2	3	E6	E2		2	E4	
2	Site Movements	Plant & Vehicle movements	Collision with operatives & public. Collision with other plant and equipment.	Fatality, or major injury. Damage to equipment & plant. Oil/diesel Spillage	S4	3	S12	Designated vehicle and pedestrian routes. By JT UTILITIES Trained operatives and signallers. By Gmac Utilities Ltd Use of signaller / banksman when plant in motion by GMac Utilities Ltd Spill response kits on site. By GMac Utilities Ltd Emergency procedures in place. By JT UTILITIES & GMac Utilities Ltd	S4	2	S8
				E2	3	E6	E2		2	E4	
3	Drilling	Re-Fuelling mobile plant	Diesel oil spillage	Contamination of ground, watercourses and sewers Irritants- Dermatitis	E3	3	E9	Authorised personnel to operate only Spill response kit on site. By GMac Utilities Ltd Drip Trays Emergency procedures in place. COSHH procedures.	E3	2	E6
				S2	3	S6	S2		2	S4	

Directional Drilling Appendix 2

RISK ASSESSMENT FORM

ACTIVITY: Directional Drilling

(C) Environmental Consequence

E1 Insignificant (No Effect)
E2 Marginal (Minor Effect)
E3 Serious (Major Effect)
E4 Critical (Irreversible)
E5 Catastrophic

(C) Health & Safety Consequence

S1 Insignificant (No Effect) 1
S2 Marginal (Minor Injuries)
S3 Serious (Major Injuries) 3
S4 Critical (Fatalities)
S5 Catastrophic

(F) Frequency

1 Improbable
2 Unlikely
3 As Likely As Not
4 Probable
5 Highly Probable

(RR) Risk Rating (Consequence x Frequency)

1-5 Insignificant
6-8 Acceptable PROCEED
9-15 Unacceptable **WORK SHALL NOT START**
16-25 Intolerable

No	Activity/ Event/ Feature/ Situation	Hazard/Issue/ Interaction (Cause)	Undesired Event	Consequences	Before Control			CONTROL	After Control		
					(C)	(F)	(RR)		(C)	(F)	(RR)
4	Drilling	Hydraulic hose leak /failure	Hydraulic oil spillage	Contamination of ground, watercourses and sewers Irritants-Dermatitis	E3	3	E9	Correctly maintained equipment. Daily vehicle inspection carried out and copies available on site and in the JT UTILITIES Site Office Authorised personnel to operate only.	E3	2	E6
					S2	3	S6	Spill kits on site at all times	S2	2	S4
5	Unloading PE pipe from transport	Falling / crushing of operatives	Collision with operatives & public.	Fatality, major injury. Damage to equipment & plant	S4	3	S12	Certified Plant & Lifting Gear by Gmac Trainer Operatives for off-loading	S4 E2	2 3	S8 E6
					E2	3	E6				
6	Setting up Directional Drill Rig	Crushing of operatives /public	Collision with operatives & public	Fatality, major injury. Damage to equipment & plant	S4	3	S12	Exclusion Zone Trained Operator working with Heras fenced area supplied by Gmac	S4	2	S8
					E2	3	E6		E2	3	6
7	Drilling	Rotating rods out of ground	Entanglement with personnel	Fatality, major injury. Damage to equipment & plant	S4	3	S12	Barriers to prevent access supplied JT Utilities Ltd Permit to Drill to be completed prior to work commencing.	S4	2	S6
					E2	3	E6	Trained personnel Only	E2	3	E6
8	Pulling back Reamer & Pipe	Crushing of operatives /public	Collision with operatives & public	Fatality, major injury. Damage to equipment & plant	S4	3	S12	Barriers to prevent access supplied by JT Utilities Ltd	S4	2	S8
					E2	3	E6	Trained personnel Only	E2	3	E6
9	Drilling	Underground services	Drill rod hitting buried underground services.	Fatality serious injury	S4	3	S12	All drawings incorporating all known utilities. Depths and locations provided by JT UTILITIES at design stage. Permit to Drill	S4	1	S4

Directional Drilling Appendix 2

RISK ASSESSMENT FORM

ACTIVITY: Directional Drilling

(C) Environmental Consequence

E1 Insignificant (No Effect)
E2 Marginal (Minor Effect)
E3 Serious (Major Effect)
E4 Critical (Irreversible)
E5 Catastrophic

(C) Health & Safety Consequence

S1 Insignificant (No Effect) 1
S2 Marginal (Minor Injuries)
S3 Serious (Major Injuries) 3
S4 Critical (Fatalities)
S5 Catastrophic

(F) Frequency

1 Improbable
2 Unlikely
3 As Likely As Not
4 Probable
5 Highly Probable

(RR) Risk Rating (Consequence x Frequency)

1-5 Insignificant
6-8 Acceptable PROCEED
9-15 Unacceptable **WORK SHALL NOT START**
16-25 Intolerable

No	Activity/ Event/ Feature/ Situation	Hazard/Issue/ Interaction (Cause)	Undesired Event	Consequences	Before Control			CONTROL	After Control		
					(C)	(F)	(RR)		(C)	(F)	(RR)
10	Drilling	Works traffic	Collision	Fatality serious injury	S4 E2	3 3	S12 E6	Traffic management undertaken by JT UTILITIES and use of high visibility clothing for all personnel.	S3 E2	1 1	S3 E2
11	Drilling	Small tools SMALL Tools Cont.	Electrocution of operator due to faulty equipment Injury from flying debris. Damage to hearing	Electrocution causing death or burns Damage to eyes	S4	3	S12	Use of safety glasses at all times Use of ear defenders Use of gloves at all times All small tools to be P A T tested prior to use 110volts only	S4	1	S4
12	Drilling	COSHH	Pipe grease	Causes dermatitis	S3	2	S6	Wear gloves Good hygiene before eating COSHH Assessment	S3	2	S6
13	Drilling	COSHH	Diesel oil	Dermatitis and poisoning if ingested	S3	3	S9	Cover exposed skin and wear gloves COSHH Assessment	S3	1	S3
14	Drilling	COSHH	Skin contact Eye contact Ingestion	Fatality Burns Dermatitis and asphyxiation	S4	3	S12	Identify all substances to be used Carry out COSHH assessment Provide adequate first aid facilities Only competent personnel to be used	S4	2	S8
15	Drilling	Eating & drinking	Increase contact with contaminant during meal breaks	Ingestion due to direct contact via hand & mouth	S3	4	S12	Provision of suitable welfare facilities	S3	1	S3
16	Drilling	Moving / lifting of loads	Failure of lifting equipment	Load falling fatality Crushing/ injury damage	S4	3	S12	Only fully approved and tested appliances and equipment to be used	S4	1	S4
17	Drilling	Fluid Frac – out	Contamination into the Water course	Environmental Incident, Killing Fish	E3	3	E9	Full time watching brief during all pumping activities 2 way radio's to cease all pumping	E3	2	E6

Directional Drilling Appendix 2

RISK ASSESSMENT FORM

ACTIVITY: Directional Drilling

(C) Environmental Consequence

E1 Insignificant (No Effect)
E2 Marginal (Minor Effect)
E3 Serious (Major Effect)
E4 Critical (Irreversible)
E5 Catastrophic

(C) Health & Safety Consequence

S1 Insignificant (No Effect) 1
S2 Marginal (Minor Injuries)
S3 Serious (Major Injuries) 3
S4 Critical (Fatalities)
S5 Catastrophic

(F) Frequency

1 Improbable
2 Unlikely
3 As Likely As Not
4 Probable
5 Highly Probable

(RR) Risk Rating (Consequence x Frequency)

1-5 Insignificant
6-8 Acceptable PROCEED
9-15 Unacceptable **WORK SHALL NOT START**
16-25 Intolerable

No	Activity/ Event/ Feature/ Situation	Hazard/Issue/ Interaction (Cause)	Undesired Event	Consequences	Before Control			CONTROL	After Control		
					(C)	(F)	(RR)		(C)	(F)	(RR)
18	Pilot bore	Hit other utilities Stall/breakage of drill string/drill head, Hydraulic fracture Equipment failure Borehole collapse	Utility Damage Loss of equipment or bore	Fatality Serious Injury	S3	3	S9	All utilities searches to be undertaken by Client Trial holes to be undertaken Equipment well Maintained Follow Bore plan Design Use correct drilling Fluids Confirm all UTILITIES PRESENT	S3	1	S3
19	Reaming	Stall/breakage of reamer head, Clogging of borehole	Loss of Bore Damage to surface	Loss of Bore / tooling within the bore	E3	3	E9	Use certified Equipment follow agreed bore plan all tooling to be used within bend Radius. Check drilling fluid viscosities	E3	1	E3
20	Pull back	Product pipe failure Pipeline collapse Equipment failure Over bending Stalled Pipe pull back	Pipe breakage Loss of Bore	Extended timeframe on works Re-drill pilot & Reaming process	E1 S1	1 1	E1 S1	Pipe welding to be undertaken correctly and within all welding equipment Parameters. Welding equipment to be check for correct welding parameters Qualified Welders to use only Correct Bore Radius & Muds	E1 S1	1 1	E1 S1
21	Exceeding force limits of the drill rig	Pipe becoming stuck in Bore	Loss of Pipe install tooling	Extended Time frame / Unable to complete	E1	1	E1	Correct machinery choice for the works	E1	1	E1

Appendix 1: Borehole Logs - May & April 2025

Appendix 2: Cable Route with River Survey

Appendix 3: HDD Coordinates across River

Rotary Core Log

Project Name: JT Utilities Chippenham		Client: JT Utilities		Date: 30/04/2025 - 02/05/2025	
Location: Riverside Dr Chippenham		Contractor: Marshall Drilling Ltd		Co-ords: E393352.00 N173668.00	
Project No. : R4607		Crew Name: LG		Drilling Equipment: GEO 405 Low Pressure Rig	
Borehole Number BH01	Hole Type RC	Level	Logged By TS	Scale 1:55	Page Number Sheet 1 of 2

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.25			TOPSOIL: Brown slightly clayey fine to medium SAND. Frequent rootlets. Brown fine to medium SAND. (ALLUVIUM)	1
		1.20 - 2.00		100			1.20			Soft brown sandy CLAY. Sand is fine to medium. (ALLUVIUM)	2
		2.00 - 3.00		100			2.85			Between 2.40mbgl and 2.85mbgl: Grey with organic odour.	3
		3.00 - 4.50		100			4.30			Brownish grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of flint. (ALLUVIUM)	4
		4.50 - 6.00		68			5.00			Soft dark grey sandy CLAY. Sand is fine to medium. (ALLUVIUM)	5
		6.00 - 7.00		80			5.50			Between 4.50mbgl and 5.00mbgl: Poor recovery.	6
		7.00 - 8.50		100	57	54	6.10			Grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (ALLUVIUM)	7
		8.50 - 10.00		88	69	46	6.35			Stiff grey CLAY (KELLAWAYS CLAY MEMBER)	8
		10.00 - 11.50		89	72	64	6.60			Between 6.00mbgl and 6.20mbgl: Poor recovery.	9
							7.45			Greyish brown fine to medium SAND (KELLAWAYS CLAY MEMBER)	10
							8.25			Soft brownish grey gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of flint. Sand is fine to coarse. (KELLAWAYS CLAY MEMBER)	11
							9.35			Stiff grey CLAY (KELLAWAYS CLAY MEMBER)	
										Strong, very weak in places, very poorly bedded bioturbated grey fine to medium grained LIMESTONE with shells. Strength decreases towards centre due to weathering. (CORNBRAH FORMATION)	
										Strong very poorly bedded bioturbated light grey fine to medium grained LIMESTONE with shells and possible trace fossils. (CORNBRAH FORMATION)	
										Medium strong, very weak in places, very poorly bedded bioturbated blueish grey fine to medium grained LIMESTONE with frequent shell fragments.	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 20.5mbgl. 3. Hole backfilled with arisings. 4. Groundwater was encountered at 4mbgl.



**EARTH ENVIRONMENTAL
& GEOTECHNICAL**
A Technics Group Company

Rotary Core Log

Project Name: JT Utilities Chippenham			Client: JT Utilities			Date: 28/04/2025 - 30/04/2025		
Location: Riverside Dr Chippenham			Contractor: Marshall Drilling Ltd			Co-ords: E393274.00 N173693.00		
Project No. : R4607			Crew Name: LG			Drilling Equipment: GEO 405		
Borehole Number BH02		Hole Type RC		Level		Logged By TS		Page Number Sheet 1 of 2
						Scale 1:55		

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.30			TOPSOIL: Soft brown slightly sandy CLAY. Sand is fine to coarse. Frequent rootlets.	
							1.00			Soft brown slightly sandy CLAY. Sand is fine to medium.	1
		1.20 - 2.00		80			1.30			(KELLAWAYS CLAY MEMBER)	
							1.40			Soft brown slightly gravelly slightly sandy CLAY. Gravel is subangular to sub rounded fine to coarse of flint. Sand is fine to coarse.	
		2.00 - 3.00		94						(KELLAWAYS CLAY MEMBER)	2
							3.00			Soft brown CLAY.	
							3.50			(KELLAWAYS CLAY MEMBER)	
		3.00 - 4.50		95						Stiff grey fossiliferous CLAY.	3
							4.50			(KELLAWAYS CLAY MEMBER)	
		4.50 - 6.00		57						Very stiff grey fossiliferous CLAY.	4
							7.60			(KELLAWAYS CLAY MEMBER)	
		6.00 - 7.50		90						Between 4.50mbgl and 6.00mbgl: Poor recovery.	5
							8.80			Weak thinly bedded grey bioturbated medium to coarse grained WACKESTONE. Steady increase in strength with depth due to weathering. Some clay infill.	6
		7.50 - 9.00		94	89	80				(CORNBRAH FORMATION)	7
							9.50			Strong poorly bedded cream bioclastic medium grained PACKSTONE with frequent shells and shell fragments with possible trace fossils.	8
		9.00 - 10.50		86	82	76				(CORNBRAH FORMATION)	9
										Strong weak in places very poorly bedded bioturbated grey fine to medium grained LIMESTONE with occasional shells.	10
										Strength decreases towards the centre with some clay infill.	11
										(CORNBRAH FORMATION)	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks
 1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 20mbgl. 3. Hole backfilled with arisings. 4. Groundwater was encountered at 4.8mbgl.

Rotary Core Log

Project Name: JT Utilities Chippenham		Client: JT Utilities		Date: 28/04/2025 - 30/04/2025	
Location: Riverside Dr Chippenham		Contractor: Marshall Drilling Ltd		Co-ords: E393274.00 N173693.00	
Project No. : R4607		Crew Name: LG		Drilling Equipment: GEO 405	
Borehole Number BH02	Hole Type RC	Level	Logged By TS	Scale 1:55	Page Number Sheet 2 of 2

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		10.50 - 12.00		97	68	57	11.40			Strong weak in places very poorly bedded bioturbated grey fine to medium grained LIMESTONE with occasional shells. Strength decreases towards the centre with some clay infill. (CORNBRAH FORMATION)	12
		12.00 - 13.50		83						Very stiff grey CLAY. (FOREST MARBLE FORMATION)Between 11.40mbgl and 17.00mbgl: Lenses of fine sand throughout.	13
		13.50 - 15.00		97							14
		15.00 - 16.50		100							15
		16.50 - 18.00		100			17.00			Very stiff slightly sandy CLAY. Sand is fine to medium. (FOREST MARBLE FORMATION)Between 17.00mbgl and 17.60mbgl: Occasional subangular to subrounded fine to medium possible nodules of pyrite.	17
		18.00 - 19.50		100			18.20			Very stiff grey CLAY. (FOREST MARBLE FORMATION) Very stiff grey slightly sandy CLAY. Sand is fine to medium. (FOREST MARBLE FORMATION)Between 18.50mbgl and 20.00mbgl: Occasional subangular to subrounded fine to medium possible nodules of pyrite.	18
		19.50 - 20.00		100			20.00				19
										End of Borehole at 20.000m	20
											21
											22

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks
1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 20mbgl. 3. Hole backfilled with arisings. 4. Groundwater was encountered at 4.8mbgl.

Rotary Core Log

Project Name: JT Utilities Chippenham		Client: JT Utilities		Date: 07/05/2025 - 09/05/2025	
Location: Riverside Dr Chippenham		Contractor: Marshall Drilling Ltd		Co-ords: E393203.00 N173782.00	
Project No. : R4607		Crew Name: JJ		Drilling Equipment: GEO 405	
Borehole Number BH03	Hole Type RC	Level	Logged By TS	Scale 1:55	Page Number Sheet 1 of 2

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
										MADE GROUND: Soft brown gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse of brick flint and concrete. Sand is fine to coarse.Between 0.50mbgl and 1.00mbgl: Occasional subangular cobbles of concrete brick and cement (100mm - 200mm).	1
		1.20 - 2.70		100			1.30			Soft orangish brown mottled grey slightly sandy CLAY. Sand is fine to coarse. (KELLAWAYS CLAY MEMBER)	2
		2.70 - 4.20		100			4.00				3
		4.20 - 5.70		35						Firm grey CLAY. (KELLAWAYS CLAY MEMBER)Between 4.20mbgl and 5.70mbgl: Poor recovery.	4
		5.70 - 7.20		98							5
		7.20 - 8.50		93							6
		8.50 - 10.00		91			9.70			From 8.00mbgl : Becomes stiff.	7
		10.00 - 11.50		98						Stiff grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)Between 10.70mbgl and 10.85mbgl: Sandy	8
											9
											10
											11

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks 1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 20.45mbgl. 3. Hole backfilled with arisings. 4. Groundwater was not encountered.															 EARTH ENVIRONMENTAL & GEOTECHNICAL A Technics Group Company		
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	--	--

Rotary Core Log

Project Name: JT Utilities Chippenham			Client: JT Utilities			Date: 07/05/2025 - 09/05/2025		
Location: Riverside Dr Chippenham			Contractor: Marshall Drilling Ltd			Co-ords: E393203.00 N173782.00		
Project No. : R4607			Crew Name: JJ			Drilling Equipment: GEO 405		
Borehole Number BH03		Hole Type RC		Level		Logged By TS		Page Number Sheet 2 of 2
						Scale 1:55		

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		11.50 - 13.00		93						Stiff grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)Between 10.70mbgl and 10.85mbgl: Sandy fossil bed. Sand is fine to coarse.	12
		13.00 - 14.50		92			13.20			Very stiff grey CLAY. (KELLAWAYS CLAY MEMBER)	13
		14.50 - 16.00		100	70	60	14.60			Grey clayey fine SAND. (KELLAWAYS CLAY MEMBER)	15
		16.00 - 17.50		100	98	84	15.15 15.30 15.45 15.50 15.85 16.15			Weak very poorly bedded grey bioturbated LIMESTONE with frequent shells. Some clay infill. (CORNBASH FORMATION) Very strong poorly bedded bluish grey medium grained bioclastic LIMESTONE with frequent shells and shell fragments. (CORNBASH FORMATION) Soft sandy CLAY. Sand is fine to coarse. (CORNBASH FORMATION)	16
		17.50 - 18.50		82	54	49	16.70			Medium strong poorly bedded grey medium to coarse grained LIMESTONE with rare shells. (CORNBASH FORMATION) Strong poorly bedded light grey coarse grained bioclastic LIMESTONE with shells. (CORNBASH FORMATION)	17
		18.50 - 20.45		84	15	15	18.80			Strong poorly bedded cream medium to coarse grained bioclastic LIMESTONE with frequent shells, shell fragments and possible trace fossils. (CORNBASH FORMATION) Medium strong poorly bedded grey medium to coarse grained bioclastic LIMESTONE with shell fragments and some clay infill. Reduction in strength around weathered bands between 17.20mbgl – 17.28mbgl and 17.90mbgl – 18.20mbgl. (CORNBASH FORMATION)	19
							20.45			Very stiff grey CLAY. (FOREST MARBLE FORMATION) End of Borehole at 20.450m	20
											21
											22
Type/FI				TCR	SCR	RQD	D/R/(SPT)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks
1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 20.45mbgl. 3. Hole backfilled with arisings. 4. Groundwater was not encountered.

Rotary Core Log

Project Name: JT Utilities Chippenham			Client: JT Utilities			Date: 06/05/2025 - 07/05/2025		
Location: Riverside Dr Chippenham			Contractor: Marshall Drilling Ltd			Co-ords: E392840.00 N174038.00		
Project No. : R4607			Crew Name: JJ			Drilling Equipment: GEO 405		
Borehole Number BH04		Hole Type RC		Level		Logged By TS		Page Number Sheet 1 of 2

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.15 0.25			TOPSOIL: Soft brown slightly sandy CLAY. Sand is fine to coarse. Frequent rootlets. ...Between 0mbgl and 0.15mbgl: Desiccated.	
							1.00			MADE GROUND: Brown clayey slightly sandy subangular to subrounded fine to coarse GRAVEL of Oolitic limestone. Brown slightly clayey fine to coarse SAND. (KELLAWAYS CLAY MEMBER) Soft grey mottled brown slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	1
		1.20 - 2.70		100							2
											3
		2.70 - 4.20		100						From 3.20mbgl : Becomes firm.	4
											5
		4.20 - 4.95		100			4.55			Firm grey slightly sandy CLAY. Sand is fine. Frequent shells and shell fragments. (KELLAWAYS CLAY MEMBER)	6
		4.95 - 5.80		96							7
											8
		5.80 - 7.30		90			6.00			Grey clayey fine SAND. (KELLAWAYS CLAY MEMBER)	9
											10
							7.00			Firm grey CLAY. Occasional fragments of shells and subangular to subrounded fine to medium possible nodules of pyrite. (KELLAWAYS CLAY MEMBER)	
		7.30 - 8.80		93							
										Between 8.80mbgl and 10.30mbgl: Poor recovery.	
		8.80 - 10.30		78							
			Type/FI	TCR	SCR	RQD	D/R/(SPT)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 17.7mbgl. 3. Hole backfilled with arisings. 4. Groundwater was not encountered.

Rotary Core Log

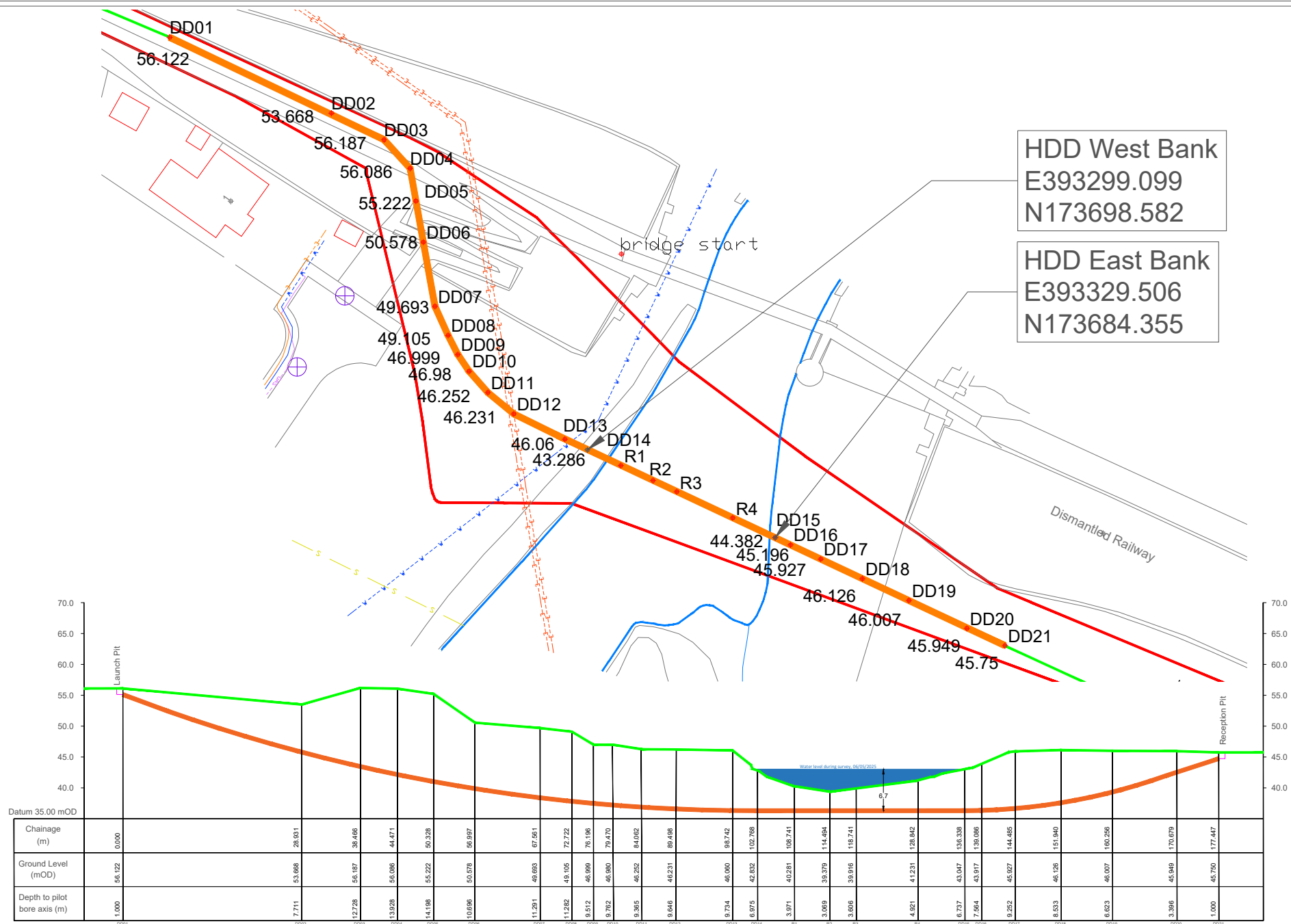
Project Name: JT Utilities Chippenham			Client: JT Utilities			Date: 06/05/2025 - 07/05/2025		
Location: Riverside Dr Chippenham			Contractor: Marshall Drilling Ltd			Co-ords: E392840.00 N174038.00		
Project No. : R4607			Crew Name: JJ			Drilling Equipment: GEO 405		
Borehole Number BH04		Hole Type RC		Level		Logged By TS		Page Number Sheet 2 of 2
						Scale 1:50		

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		10.30 - 11.80		100			10.40 10.75			Firm grey CLAY. Occasional fragments of shells and subangular to subrounded fine to medium possible nodules of pyrite. (KELLAWAYS CLAY MEMBER) Firm sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)Between 10.4mbgl and 17.7mbgl: Fragments of shells and occasional subangular to subrounded fine to medium gravels of possible nodules of pyrite.	11
		11.80 - 13.20		96						Very stiff grey CLAY. (KELLAWAYS CLAY MEMBER)	12
		13.20 - 14.70		90			14.00			Stiff grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	14
		14.70 - 16.20		80			15.50			Very stiff grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	16
		16.20 - 17.70		89			17.70			End of Borehole at 17.700m	17
											18
											19
											20

Remarks																	
1. Hole location scanned with CAT. 2. Borehole terminated at target depth of 17.7mbgl. 3. Hole backfilled with arisings. 4. Groundwater was not encountered.																	

HDD West Bank
E393299.099
N173698.582

HDD East Bank
E393329.506
N173684.355



Note: HDD Profile is Straightened out

				Design by: PM			Project No. / Name: 221216 FOREST GATE		DNOC Consulting Limited Unit 6A Broad Quay Road Newport Gwent NP15 4PN Tel: 01793 861482 email: info@dnoc.co.uk							
				Checked by: ST			Drawing Title: 33kV CABLE ROUTE - HDD PROFILE 1									
				Approved by: LM												
01	Added data from riverbed survey			14.05.25	PM	SCALE: NTS	Draft	Drawing No :			This drawing is the property of DNOC Consulting Ltd. The drawing is protected by copyright and the information contained therein is confidential. It must not be copied or disclosed to third parties without written permission.					
00	Issued for comment			08.04.25	PM	Status: Draft Construction (Approved) Construction (Not Approved) As Built			221216	01		04	15	00	00	01
Rev./Modification:				Date	Name											

Point	Easting	Northing	Elevation	Notes
DD01	393231.470	173765.401	56.122	Launch Pit
DD02	393254.873	173751.253	56.000	
DD03	393260.390	173747.578	55.500	
DD04	393268.132	173741.872	54.750	
DD05	393271.566	393271.566	54.000	
DD06	393275.383	173735.725	53.250	
DD07	393283.235	173728.043	50.500	Ground Level TBC
DD08	393288.739	173721.956	49.500	Ground Level TBC
DD09	393290.817	173719.457	49.000	Ground Level TBC
DD10	393292.946	173717.093	48.500	Ground Level TBC
DD11	393296.772	173713.109	47.500	Ground Level TBC
DD12	393299.226	173710.706	45.750	Ground Level TBC
DD13	393301.600	173708.476	44.750	Ground Level TBC
DD14	393303.615	173706.644	44.500	Ground Level TBC
R1	393306.954	173703.689	43.500	River bed
R2	393308.718	173702.204	40.250	River bed
R3	393312.743	173698.968	39.750	River bed
R4	393318.193	173694.896	40.250	River bed
R5	393324.538	173690.569	40.750	River bed
R6	393328.839	173687.867	42.750	River bed
DD15	173687.867	173686.322	43.500	
DD16	393335.729	173683.905	45.500	
DD17	393339.898	173681.621	46.750	
DD18	393344.695	173678.980	46.500	
DD19	393351.678	173675.137	46.020	
DD20	393360.819	173670.106	45.990	
DD21	393366.707	173666.866	45.750	Receive Pit