



# Method Statement

MS No:	001
Issue:	Rev O
Date Submitted:	16/05/16

**CONTRACT NO:** C142

**SHEET 1. OF 17.....**

**CONTRACT TITLE:** Tilbury Power Station  
CW Outlet Culvert Plugging

Action	Name	Signature	Date
Prepared By	A Haggart		16/05/16
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## DESCRIPTION OF WORKS COVERED BY THIS METHOD STATEMENT

The plugging of outfall culverts at the Tilbury "B" Power Station.

- Site set up
- Access / egress to site
- Setting up of over pumping
- Reduced excavation of working area
- Saw cutting openings into culvert
- Permanent blockwork formwork
- Dowel & Water Stop installation
- Casting of mass concrete plugs

## SUPERVISION OF WORKS COVERED BY THIS METHOD STATEMENT

Name	Position	Company	Telephone No.
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## 1. SCOPE OF WORK

The breaking out of access into the culverts, confined space entry, construction of the mass fill concrete plugs to 4nr RFC box culverts and associated over pumping of the culverts.

## 2. HAZARDS IDENTIFIED

The hazards have been identified by carrying out a job specific risk assessment (see Appendix 1).

The significant hazards are:

- |                               |                               |
|-------------------------------|-------------------------------|
| i. Access / Egress            | xi. Vibration                 |
| ii. Working at height         | xii. Temporary works          |
| iii. Excavations              | xiii. Vehicle plant movements |
| iv. Overhead services         | xiv. Power tools              |
| v. Lifting operations         | xv. Hand tools                |
| vi. COSHH                     | xvi. Darkness                 |
| vii. Confined spaces          | xvii. Site Security           |
| viii. Work over or near water | xviii. Contaminated water     |
| ix. Manual handling           | xix. Pollution of watercourse |
| x. Noise                      | xx. Leptospirosis             |

## 3. INTERFACE REQUIREMENTS

There will be full liaison with all stakeholders involved in the site including dialogue with RWE and Brown & Mason (BAM). The SCEL Project Manager will liaise with RWE & BAM to ensure no disruption to any other operations in the area and the client will be advised of the programme of works on a regular basis.

Access into the works will be by designated site routes only as shown Southbay traffic management plan, all drivers & site personnel will be fully briefed on these routes.

The works will be fully fenced off and warning notices will be erected. There will be no public access into the works.

All site personnel and visitors will be required to report to the security gate and sign in prior to entering the works.

## 4. PLANT & EQUIPMENT

The following plant and equipment is anticipated, but not limited to the activity:

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| • 2no Self-contained cabins        | • Diamond drilling rig            |
| • Stores                           | • Standby diesel generator        |
| • Portaloo                         | • Submersible pumps               |
| • Tracked excavator                | • Fuel bowser                     |
| • Breaker attachment for excavator | • Confined space rescue equipment |
| • Hi Ab delivery wagons            | • Concreting plant & equipment    |
| • Pressure washer                  |                                   |

This list is not by any means exhaustive and may be added to at any time.

## 5. PERSONNEL INVOLVED

Name	Position	Company	Telephone No.
Andrew Georgeson	Contract Manager	Southbay Civil Eng.	07908 134125
Adrian Haggart	Construction Manager	Southbay Civil Eng	07950 587200
Stuart Heather	H&S Manager	Southbay Civil Eng	07495 270908
Rob Collins	Civils Foreman	Southbay Civil Eng	07961 589301
Darren Everitt	Exp Operative	Southbay Civil Eng	
Paul Everitt	Operative	Southbay Civil Eng	
TBC	Drill Operative	TBC	



## 6. METHODOLOGY

### General

- Prior to starting work all personnel involved with the works will receive an induction from BAM, a method statement briefing and a safety induction from Southbay site management which they will sign to confirm acceptance. Daily and weekly briefings will also be held with all site personnel to inform them of the activities / daily restrictions (if any), weather, tidal activity and Tool Box Talks.
- At all times operatives will wear a safety helmet, safety boots, hi-vis jacket, safety glasses and gloves. Where no edge protection is in place a safety harness / lanyard will be worn. When working over water life jackets will be worn.
- Further PPE will be worn as indicated on any COSHH material and/or stated in the works risk assessment.
- All plant operators will be CPCS trained and all site operatives will hold a safety passport or CSCS card.
- All lifting equipment and plant certificates will be maintained in the SCEL head office. Copies will be maintained on site.
- First Aiders will be present on site and identified to all operatives.
- All plant will be refuelled on land away from watercourses prior to work commencing. Care to be taken at all times, drip trays to be placed under all static plant. Any spillages cleaned up immediately using spill kits.
- Working hours will vary depending on tide times.
- All permits from RWE to be issued prior to works commencing and then updated as required.
- At all times during the works the site is to be kept tidy and workmanlike.
- Whilst carrying out tasks operatives to be aware at all times of pinch points and nips to fingers and keep hands clear of drill bits and other rotary tools
- Access to SCEL worksite will be by the approved access routes from the main road through BAM's site, see traffic management plan.
- Traffic management / laydown area to be agreed prior to commencement on site, see traffic management plan.

### Lifting Operations

Lifting will be carried out by the hiab delivery wagons or the onsite excavator. All lifting will be planned by an appointed person on a lift plan. All lifts will be supervised by a CPCS lift supervisor and all banksman / slingers will hold a current CPCS card. Crane drivers will be CITB registered drivers and copies of their cards maintained in the site office.

Lifting equipment will be inspected every time before use by the slinger / banksman and recorded formally at least weekly and a LOLER register will be maintained in the site office. Any faults to lifting equipment should be reported immediately to site staff for repair or replacement with new equipment, faulty equipment will be taken out of service and quarantined until repaired or destroyed.

All site personnel will only perform lifts which are detailed on the lift plan, any alterations or lifts which are not stipulated on the lift plan will be brought to the attention of the Appointed Person and then the lift plan revised to incorporate such lifts.

### Establishment of Site Boundary

Operatives to direct delivery vehicle into position along the intended fence line and commence offload procedure, by means of Hi-ab. Exclusion zone will be set-up using crowd barriers or red & white bunting prior to commencing offloading. This zone will be controlled by operatives.

### **Hi-ab Offload**

Hi-ab to be set-up and operated in accordance with manufacturer guidelines.

- Operative to sling load from floor level sliding sling through the underside of load with a timber and lowering crane to attach ends.



- If loads are positioned such that access cannot be achieved from floor level: operatives will utilize an inertia reel attached to the Hi-ab crane hook and onto the operative by means of full body harness and short fixed length lanyard. Once attached the operative will access the trailer by means of industrial class ladder and sling the load.
- The hi-ab crane and slings will have in date certificates of thorough examination. The hi-ab operator will hold a recognised card. Harness and inertia reel will have in date certificates of thorough examination and will be inspected before use. Ladder must be of industrial class, inspected periodically, inspected visually before first use and footed by the banksman.
- Fencing materials to be offloaded one pack at a time at intervals along the intended fence line to minimise manual handling for erection operatives.

#### **Herras Fence Erection Procedure**

- Operatives to layout 2No. herras fence blocks 3.4m apart.
- Fence panel to be lifted from the stockpile by two operatives and insert panel into blocks.
- Backstay with kentledge tray on one end will be installed with security clip about one third from the top of the herras fence panel using a proprietary security spanner.
- 3 number blocks will be placed onto the kentledge tray lifted on one at a time
- Second clip installed one third from the bottom of panel
- Sequence 1 to 5 to be repeated in all areas along the designated herras fence lines.

#### **General Maintenance**

- Operatives to move panels into position by mechanical means or by two men if short distance
- Components to be replaced / moved / replaced by dismantling the installation into singular components so they can be lifted safely and re-assembled. However, check to ensure other end is secure first so that the remaining fence line or panel being removed is not able to fall down. Second operative to be used to hold the panel if assistance is required.
- Do not drag or pull fence lines.

#### **Cabin Installation and compound set up**

- Site cabins including offices / stores / welfare facilities, drying rooms etc. will be transported to site on HIAB wagons.
- They will be offloaded by a competent HIAB operator holding all current certification for the HIAB crane and also for any lifting equipment used. The lifting equipment will have adequate capacity to lift the cabins taking into account necessary angles of chains between the crane lifting point and the lifting points of the cabins.
- The site compound area will be demarcated using fencing to prevent unauthorised access and the location of the accommodation will be marked on the ground.
- Prior to the cabins been placed the existing ground will be graded out by excavator to ensure it is level. A permit to excavate from RWE will be issued prior to works commencing.
- To access the cabin lifting points a ladder will be utilised. The ladder will be an industrial ladder which will be inspected periodically and prior to use. This will be footed at all times by another site operative. At all times while working at height the HIAB operator will be clipped on to an inertia reel attached to the crane. The operative will clip onto the inertia reel at floor level before climbing the ladder. All harnesses will have current inspections / certification available at all times.
- The cabins will be lifted off the HIAB wagon and placed in the required positions. Access to remove the lifting equipment will be via a footed ladder.
- Site cabins will be self-contained units powered by their own generators. Prior to use the certification for the cabins will be checked, this will be kept within the site health & safety folder.

#### **Access / egress to site**

Access to the works will be through the main security gates, prior to delivery all companies will have forwarded the drivers identity and vehicle registration number to enable entry into the facility. The access route to the compound area will be agreed with RWE and detailed on the TM plan. All site personnel, visitors and deliveries will sign in at the BAM security office and sign out when they leave site. Whilst on site all vehicles will be marshalled into and out of the works.



If the route crosses a footpath, a pedestrian crossing point will be created. This will be manned by a banksman when vehicle movements are taking place. Adequate warning signage will also be erected to warn the public.

All temporary traffic management will be as per Chapter 8 protocol.

#### **Over pumping Protocol (CW Riser chamber)**

- It has been agreed that the existing 6” submersible pumps would be used to provide the over pumping of each culvert. Should the existing electrical supply fail a back-up generator will be in place to provide power for the pumps. RWE will reconfigure the existing wiring so commando sockets are used and the power supply can be switched quickly. RWE will also install float switches to the pumps to minimise use of the pumps. This will also negate the need for operatives to access the upper area of the pumping chambers to view the head of water.
- If access above the chambers is required all hand rails will be checked / replaced / repaired to prevent falls into the chamber and any openings in the floor will be covered.
- The backup power supply will be configured to suit the existing pump take and discharge arrangement, so should the existing supply fail, a swift change in supply can be achieved.
- A standby 6” submersible pump will be available on site should any of the existing pumps fail this will be used to over pump the chamber.
- We would propose to have a “look out person” sited on the riser structure to monitor water conditions whilst activities are ongoing in the working area.
- Contact between the “watch person” and the construction team will be via hand held radios, and if there is a “double failure” on the over pumping, operatives can be warned to vacate the culvert. However, in our opinion, only a complete failure of the mechanical stop log would affect the safe working within the culvert.
- Should there be a failure on the existing over pumping system, the watch person would switch the power supply.

#### **Secondary over pumping at working area.**

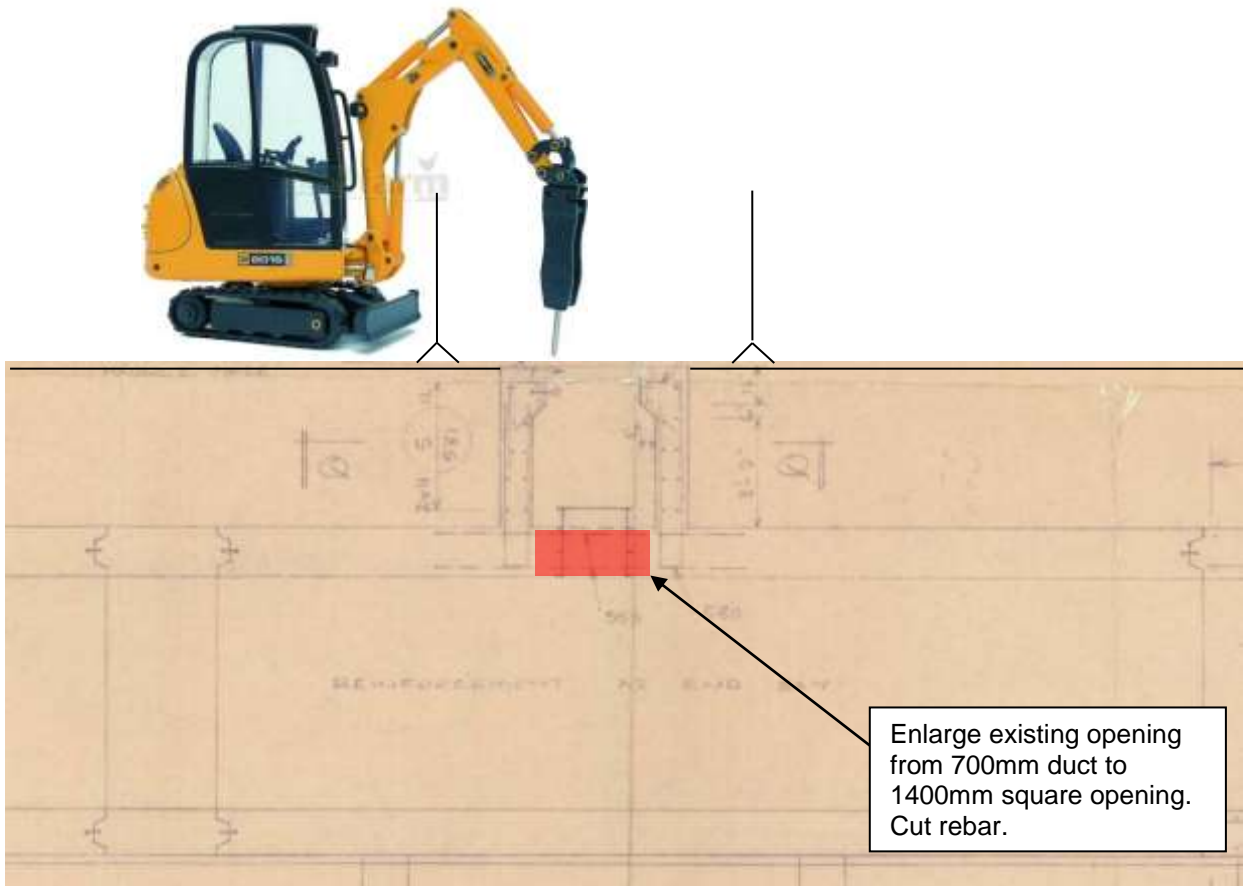
- Daily prior to works commencing in the culvert, localised dewatering of the culvert will be carried out using 4” & 2” submersible pumps.
- Firstly any standing top water will be pumped out via the access chamber using the 4” submersible.
- Following the formation of the access opening onto the culvert soffit, safe entry into the culvert will be made.
- Sand bag stank walls will be used to form sumps, thus enabling any residual water to be pumped out using the 2” submersible pump.
- To ensure a continued water free construction zone the pumps will be on stand – by, through the access chamber openings.
- It is envisaged the discharge point for these pumping operations would be the existing discharge manhole currently used by the on-site RWE opps team.

#### **Edge protection of working area around inspection points.**

- Pedestrian barriers will be erected to the perimeter of the existing tub and fitting hand railing.
- 4no pedestrian barriers will be placed around each culvert inspection point.
- The existing tube and fitting handrail will then be removed and placed to one side for collection by RWE.

#### **Enlargement of access openings into culvert soffit.**

The existing inspection points will be used to gain access into the culverts. Currently the inspection points are a 700mm duct cast into the top of the culvert, this is not suitable for personnel to access / egress the culvert. A small excavator (3t-8t) with a breaker attachment will be used to enlarge the access into the culvert to approx. 1400mm.



During the breaking out process a banksman will guide the excavator driver on where to break out, the debris will be allowed to fall into the culvert, this will be removed once personnel access into the culvert is established. Should access to breakout the opening be restricted then the ground level around the existing opening will be reduced and the side walls will be broken down using the mini digger and breaker. No entry into the culvert will be allowed until a gas test has been carried out and a permit is issued by RWE.

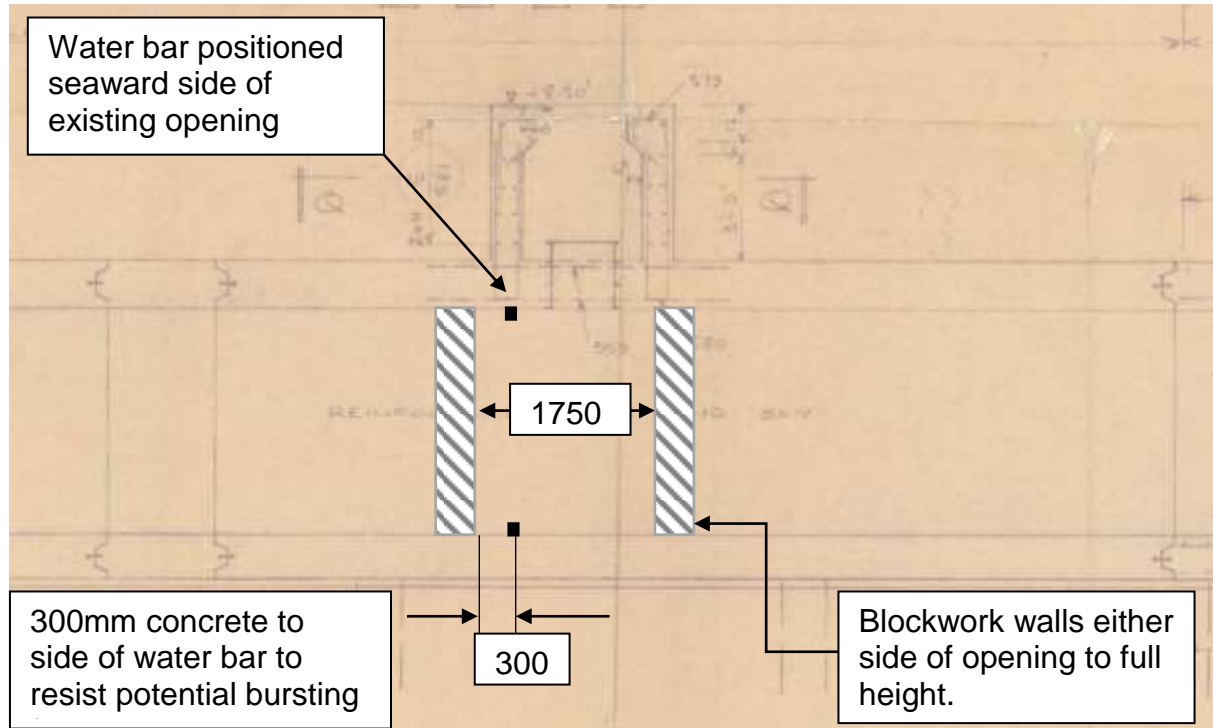
#### **Entry into the culvert.**

- Prior to carrying out any works in the culvert all personnel will be briefed on the approved confined space procedure / rescue plan.
- A gas test will be carried out by RWE and a permit issued to Southbay.
- Only confined space trained personnel wearing the approved PPE will be permitted into the culvert in accordance with the entry and rescue procedure.
- Edge protection & ladder access will be erected around the culvert opening, during this activity all operatives will be attached by lanyard and harness to a fixed point.
- Daily, prior to entering the culvert, a gas detector will be lowered down by draw cord and a gas test carried out. Results of the gas test will be recorded on the SCEL permit to enter, if within the specified limits the permit will be issued and accepted by the site foreman. The gas detector will be kept in place prior to and during all activities in the culvert.
- A rescue winch / tripod will be fixed over the entry points to aid retrieval of an IP.
- A top man, will always be in attendance while operatives are in the culvert and an entry log will be kept of all personnel in the culvert.

#### **Permanent formwork**

- Once the gas test has been carried out and the permit to enter has been issued, operatives will access the culvert via ladder.
- Tripod lighting will be used to illuminate the culvert during the works.

- The locations of the permanent formwork block walls will be marked out by the site engineer.
- The walls & floor of the existing culvert will then be cleaned free of marine growth / silt by power washing.
- Again with full monitoring of the gas detection equipment, the culvert will be prepared for blockwork wall shutters.



- Blocks will be lowered into the culvert by excavator and lifting cradle.
- Block layers will then mechanically fix brick ties into the culvert walls, on hit and miss courses each side.
- The blockwork will be laid (440x215x100mm) laid flat to form a 215mm wide edge permanent edge shutter.
- The wall will be full height, to the underside of the opening.
- For the higher lifts of the edge walls a standing podium will be used.
- Laying mortar will be mixed on site and lowered into the culvert by bucket.
- The base and walls of the culvert will be again cleaned.

#### **Dowel & Water Stop Installation.**

- The proposed positions of dowel bars will be marked onto the invert and walls of the culvert, as shown on the construction drawing.
- The 32mm dia dowel bar holes will be drilled to a 170mm embedment using a diamond drilling rig with water suppression, the dowel bar will be chemically fixed using a Hilti HY200 or similar.
- The SW20 water stop will be fixed to the perimeter of the culvert in accordance with the manufacturers' instructions.
- On completion of the prep works the area will be checked and signed off for casting by the site manager.

#### **Casting of mass concrete plugs**

- Each culvert plug will be cast in one single pour using a controlled rate of pour, thus protecting the integrity of the blockwork shutters. The concrete used will be of a retarded mix, this will allow for a controlled pour to be achieved and also mitigate against excessive heat generation from the curing concrete.





- The concrete will be delivered by wagon, the wagon driver will sign in with BAM security and be escorted to the SCEL work area. The concrete wagon will be reversed under the control of a banksman into the required location and discharged into the concrete skip.
- The concrete will be poured via 0.5m<sup>3</sup> concrete skip, with tremmie pipe attached, this will be lifted by an excavator and lowered into the culvert.
- Operatives on the ground will slowly discharge the concrete into the culvert, operatives will be behind barriers or will wear safety harnesses and lanyards connected to a fixed point.
- The concrete will be poured in accordance with the temporary works design.
- The concrete will be compacted by means of a high frequency poker.
- Upon completion of discharge the concrete wagon will washout into a designated skip before been escorted out of site.

#### **Reinstatement of area.**

- Upon completion of casting all the culvert plugs up to ground level, all the pedestrian barriers surrounding the area will be removed and the area cleaned of any debris.

#### **De – mobilisation of site.**

- Once works are complete the backup generator for the over pumping will be disconnected and removed off site.
- All plant, fences and accommodation will be collected and removed from site using the reverse methodology as for the delivery.

### **7. BRIEFING ARRANGEMENTS**

All personnel will receive the method statement briefing by the Southbay supervisor and will sign the briefing sheet to confirm their understanding. Permit briefings will be carried out daily prior to accessing the culvert.

### **8. QUALITY CONTROL ARRANGEMENTS**

All quality procedures will be in line with SCEL ISO 9001:2008 accreditation. Prior to the works commencing on site a site specific Project Quality Plan will be produced and used throughout the contract.

### **9. ENVIRONMENTAL PROTECTION ARRANGEMENTS**

All environmental procedures will be in line with SCEL ISO 14001:2004 accreditation.

Spill kits are available on site, operatives are briefed on the Pollution Incident Response Plan (PIRP). All plant to be checked daily prior to use. Any plant found to have defects to be quarantined until repaired or replaced. Refuelling of plant to be 5m away from the river / watercourse, static plant to use drip trays / plant nappies.

All plant to be removed from the tidal zone at the end of the working window.



# **Appendix A**

## **Risk Assessment**



<b>TENDER NO:</b> C142	<b>CONTRACT TITLE:</b> RWE Tilbury Culvert Works
<b>DESCRIPTION OF ACTIVITY:</b> Construction of Mass fill concrete plugs & enabling works	<b>NUMBER OF PEOPLE EXPOSED:</b> 8 <b>FREQUENCY &amp; DURATION OF EXPOSURE:</b> 5 weeks

HAZARDOUS ACTIVITY/ SITUATION	HAZARD	RISK FACTOR	EFFECTED PERSONS	CONTROL MEASURES	ACTION BY	RESIDUAL RISK FACTOR	OTHER PPE	
A	ACCESS/EGRESS	Injuries to personnel from access / egress to site	3x3=9	All	Receive safety induction from BAM; liaise with site management for phasing of works. Follow all safety information and warning signs.	SCEL	3x1=3	
B	WORKING AT HEIGHT	Falls into existing culvert, stop log area	3x3=9	Operatives	Hand rails to be erected around culvert openings prior to works commencing and maintained at all times. Where barriers are opened for access operatives to wear fall arrest equipment, which will be suitably anchored.	SCEL	3x1=3	Harness and lanyard
C	EXCAVATIONS	Not applicable						
D	SERVICES (UTILITIES, BURIED etc.)	Striking of services	3x3=9	Operatives	Isolation handover certificate from RWE prior to works commencing. CAT scan and permit to dig to be issued by Site Manager to regulate ground for cabins.	RWE / SCEL	3x1=3	
E	LIFTING OPERATIONS (CRANES, LIFT TRUCKS, and HOISTS etc.)	Lifting of materials and plant	4x4=16	Operatives	Use of CITB trained drivers, banksman / slinger, use of properly maintained plant, weekly inspections on plant & lifting gear. Lift plan to be worked to and alterations to be carried out by the AP only. Permit to lift required. Exclusion zone around all lifting operations.	SCEL	4x1=4	
F	WORK ON OR NEAR ASBESTOS	Not applicable						
G	WORK INVOLVING LEAD	Not applicable						
H	HAZARDOUS SUBSTANCES	Working with diesel operated plant, mortar and ready mixed concrete	3x3=9	Operatives	COSHH briefings of all substances to be given to operatives. PPE stated on the COSHH briefings to be worn when using substances.	SCEL	3x1=3	See COSHH briefings
I	DANGEROUS SUBSTANCES	Not applicable						
J	CONFINED SPACES	<ul style="list-style-type: none"> <li>Ingress of water into the culvert from failure of stop logs with risk of drowning.</li> <li>Collapse of structure with risk of crushing operatives</li> <li>Vapour and particular build up with a risk of asphyxiation of operatives</li> </ul>	3x3=9	Operatives	<ul style="list-style-type: none"> <li>Over pumping of chambers with backup power supply and standby pump. Stop logs monitored.</li> <li>Works within concrete culvert so no risk of collapse</li> <li>Gas test prior to entering culvert and continual monitoring during works. Rescue plan and equipment in place. Trial rescue to be carried out prior to works commencing.</li> </ul>	SCEL	3x2=3	Radio Gas monitor Rescue equipment
K	WORK OVER OR NEAR WATER	Working in a tidal area	3x4=12	Operatives	Use of experienced ops, work to method statement, working times to be monitored and maintained,	SCEL	3x1=3	
L	MANUAL HANDLING	Injuries to personnel from manual handling	4x2=8	Operatives	All heavy awkward or bulky items must be lifted by mechanical means. Gloves to be worn, keep hands clear of pinch points. Separate Risk assessment may be required	SCEL	4x1=4	Gloves
M	NOISE	Noise from plant	3x3=9	All	All personnel to wear ear protection if required during plant operation.	SCEL	3x1=3	Ear defenders
N	VIBRATION	HAV's from hand held plant	3x3=9	Operatives	Well serviced and maintained plant/tools to be used. Operatives will be informed of the vibration magnitude for each vibrating tool so the ELV (Exposure Limit Value) is not exceeded. Times to be recorded and monitored.	SCEL	3x1=3	
O	FIRE	Not applicable						
P	HOT WORK (WELDING, GRINDING, etc.)	Not applicable						
Q	DEMOLITION/DISMANTLING	Not applicable						
R	ERECTION WORK	Falling blockwork	4x3=12	Operatives	Facing blocks to be backed with 2 courses of blocks, height of courses and concrete infill not to be exceeded.		4x1=4	
S	UNSTABLE STRUCTURES	Collapse of existing culvert	4x4=16	Operatives	A full design protocol & method has been proposed.	SCEL	4x1=4	
T	ELECTRICAL WORKS	Not applicable						



HAZARDOUS ACTIVITY/ SITUATION	HAZARD	RISK FACTOR	EFFECTED PERSONS	CONTROL MEASURES	ACTION BY	RESIDUAL RISK FACTOR	OTHER PPE	
U	MECHANICAL WORKS	Failure of stop logs	4x4=16	Operatives	Over pumping of chambers	SCEL	4x1=4	
V	VEHICLE/ PLANT MOVEMENTS	Injuries to persons from moving plant and overturning of plant	3x4=12	All	Trained plant operatives to be used at all times, operatives not to exceed working gradient of plant, face slope not work sideways.	SCEL	3x1=3	
W	MOBILE PLANT	Not applicable						
X	POWER TOOLS	Poor or damaged equipment	3x3=9	Operatives	Use 110v equipment, check weekly, report faults, PAT test every three months.	SCEL	3x1=3	
Y	HAND TOOLS	Poor or damaged equipment	3x3=9	Operatives	Tools to be checked prior to use	SCEL	3x1=3	
Z	COMPRESSED AIR	Not applicable						
AA	LIGHTING (DARKNESS, INDOOR etc.)	Working in the dark	4x4=16	Operatives	Lighting tower to be provided if working during darkness. Task lighting will also be provided.	SCEL	4x1=4	
AB	SECURITY/ VANDALISM	Unauthorised personnel	4x3=12	All	All fencing to be checked and maintained.	SCEL	4x1=4	
AC	CONTAMINATED WATER	See Item AF – Spillage of fuel, oils into river	3x3=9	All	Spill kits are available on site, operatives are briefed on the Pollution Incident Response Plan (PIRP). All plant to be checked daily prior to use. Any plant found to have defects to be quarantined until repaired or replaced. Refuelling of plant to be 5m away from the river / watercourse, static plant to use drip trays / plant nappies.	SCEL	3x1=3	
AD	CONTAMINATED LAND							
AE	DUST (ENVIRONMENTAL)	Not applicable						
AF	NOISE/ VIBRATION (ENVIRONMENTAL)	Not applicable						
AG	DISCHARGE TO DRAIN, SEWER OR WATERCOURSE	Pollute watercourses	3x3=9	All	Pumping of culvert into adjacent ground water drain	RWE / SCEL	3x1=3	
AH	PROTECTED SPECIES (PLANTS, BIRDS, ANIMALS)	Not applicable						
AI	INVASIVE SPECIES (RATS, PIGEONS, WEEDS)	See Item AM						
AJ	HYPODERMIC NEEDLES	Injuries from sharp objects	3x3=9	Operatives	Area to be checked prior to work for needles, fish hooks etc. Any items found to be placed into a sharps box using gauntlets or grab.	SCEL	3x1=3	Gauntlets
AK	OVERHEAD SERVICES	Electrocution	4x4=16	Operatives	Demarcation fence to be erected	SCEL	4x1=4	Goal posts
AL	DIVING OPERATIONS	Not applicable						
AM	WEILS DISEASE	Dirty/contaminated ground	4x3=12	Operatives	Wear gloves at all times, wash hands before eating, smoking, drinking.	SCEL	4x1=4	Gloves
AN	OTHER	Potential interaction with Adders (snake) and snake bites	4x4=16	All	Boots and trousers to be worn at all times. Do not put hands into openings without checking. If contact is made keep still and the snake will move on. If bitten seek medical advice immediately.	SCEL	4x1=4	Boots and trousers



CONTROL MEASURES:	
Existing Control Measures	Action By
All personnel to be inducted and RAMS briefed prior to works commencing	SCEL
Experienced and trained operatives to be used to carry out the works	SCEL
Permits to be issued by RWE for isolation and confined space entry	RWE
Permit to enter to be issued daily for culvert	SCEL

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED:			
✓	01 - Safety Helmet	✓	07 - Gloves:
✓	02 - Safety Footwear		Kevlar
✓	03 - Hi Vis Clothing		Surgical
✓	04 - Ear Protection		Grab & Grip
	05 - Body Protection	✓	Rigger
✓	06 - Eye Protection:		08 – Respirator
	Goggles	✓	09 – Safety Harness
	Full Face Visor	✓	10 – Waterproofs
✓	Safety Glasses	✓	11 – Dust Mask: FFP3
	Welding Visor	✓	12 – Other: Rescue equipment

**Assessment of Risk with Existing Control Measures:**  
 (If not LOW, then additional control measures are needed before accepting risk) **LOW** ~~MEDIUM~~ **HIGH**

**Assessment of Residual Risk with Additional Control Measures:**  
 (If not LOW, then further additional control measures are needed before accepting risk) **LOW** ~~MEDIUM~~ ~~HIGH~~

RISK FACTOR CALCULATOR (SEVERITY x LIKELIHOOD)			
Severity	Weight	Likelihood	Weight
Low	1	Not Likely	1
Slight – First Aid	2	Possible – Other factors needed but not likely	2
Moderate – Over Three Days	3	Quite Possible – Other Factors needed, likely	3
High – Major Injury/Death	4	Likely – Other Factors, then will happen	4
Very High – Multiple Death	5	Very Likely – Waiting to happen	5

**Assessment of Risk without Control Measures:**  
 (If LOW no further action is required) **LOW (1-6)** **MEDIUM (8-15)** **HIGH (16-25)**

**ASSESSOR:**

**COMPLETED BY (Names):** A Haggart

**DATE:** 12/05/16

**REVIEW DATE:** 12/07/16



# **APPENDIX B CONSTRUCTION DRAWINGS**







