

Technical Method Statement note

Contract Name:	Marlas SPS Rising Main	Sheet No.	1
Contract Number:	100428	Date:	05/08/2026

Prepared by: Andrew M Davies 05/08/2026 Date (Print Name) (Signature) Project Manager Alun Griffiths (Job Title)		Technical Method Statement note Project Number: 100428 Marlas SPS Rising Main	
Checked by: xx/xx/xx Date (Print Name) (Signature) (Job Title)		Start Date: November 2026 Finish Date: June 2027	Method Statement Number and Title No: 100428/Screening Pipe installation across scheme including SSSI areas for screening process
Approved by: xx/xx/xx Date (Print Name) (Signature) (Job Title)		Controlled Copy Number: XXXX/XX/XX/XX Issue No. XX Construction Phase Plan Number: XXXX/XX/XX This document is the property of Alun Griffiths (Contractors) Ltd, the Principal Contractor/ Contractor on the project. Controlled copies will have a controlled copy number shown in RED. Any variation will be regarded as uncontrolled for information only. The responsibility for the health, safety and environmental management of the Works rests fully and unreservedly with Alun Griffiths (Contractors) Ltd. Principal Contractor fully meets the statutory requirements.	
Does this Method Statement require acceptance by the Client? No			
Accepted on behalf of (insert Client Name) Date (Print Name) (Signature) (Job Title)			

Issue Control		
Issue No.	Date	Summary of Changes
00	05/08/2026	Compilation of document for screening process

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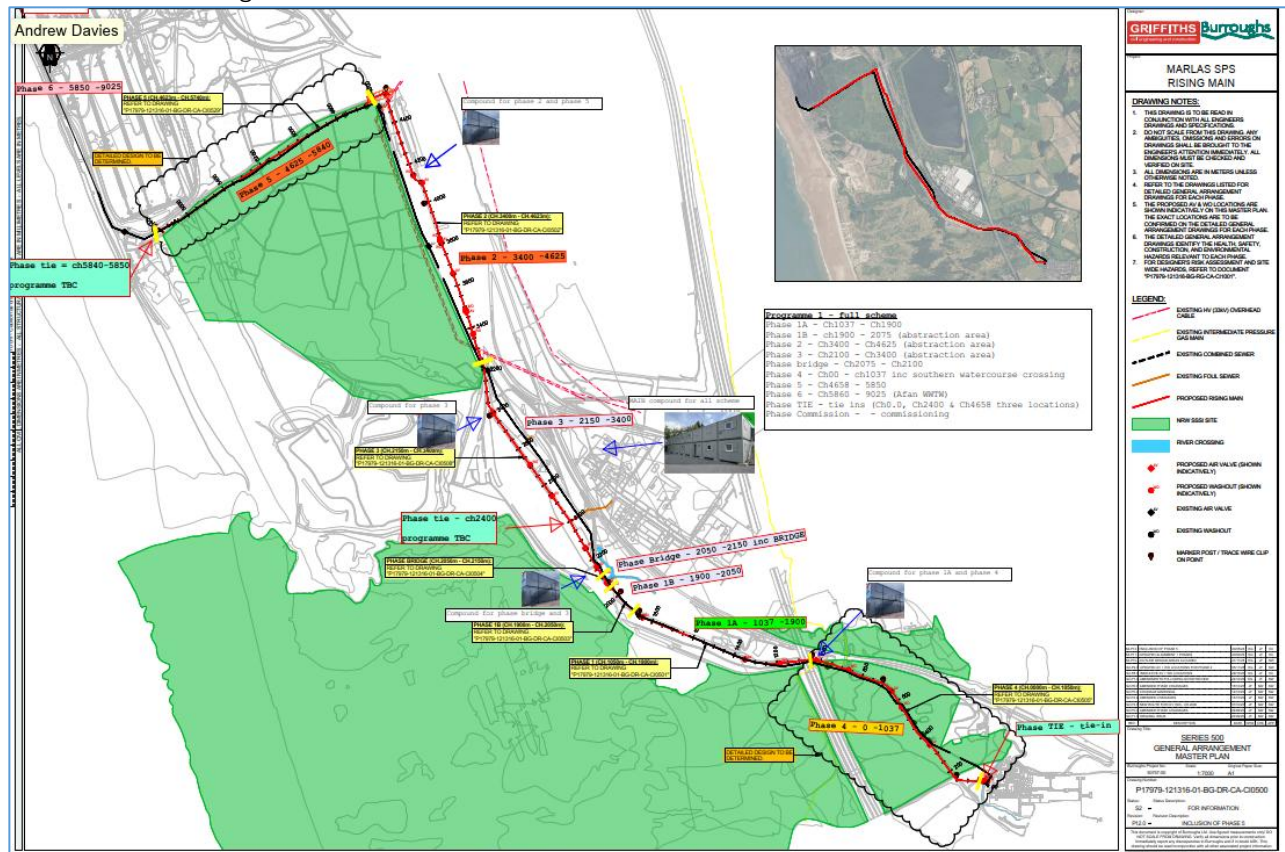
1. Preamble

Marlas Rising Main project consists of the installation of 5.75km of new HDPE pipe from Marlas pumping station ch0.0 to a location within TATA known as Darlows ch5750.0 due to the existing DN500 main having multiple bursts over the last two years.

The new pipe being installed is 560mm OD for the first 2.4km then 630mm for the remaining 3.3km. All pipework is buried below ground apart from a section over the Afon Cynffig where it crosses above the river in a piped sleeve (ch2100)

This document is an extract from the main Metod Statement and written to assist the SSSI screening process required within each end of the project scope due to SSSI areas to be worked through (green shaded area below)

- East end – Kenfig SSSI
- West end - Margam Moors SSSI



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This is Technical note which is an extract from the project health and safety method statement removes some of the unnecessary information that would not be required with the screening process.

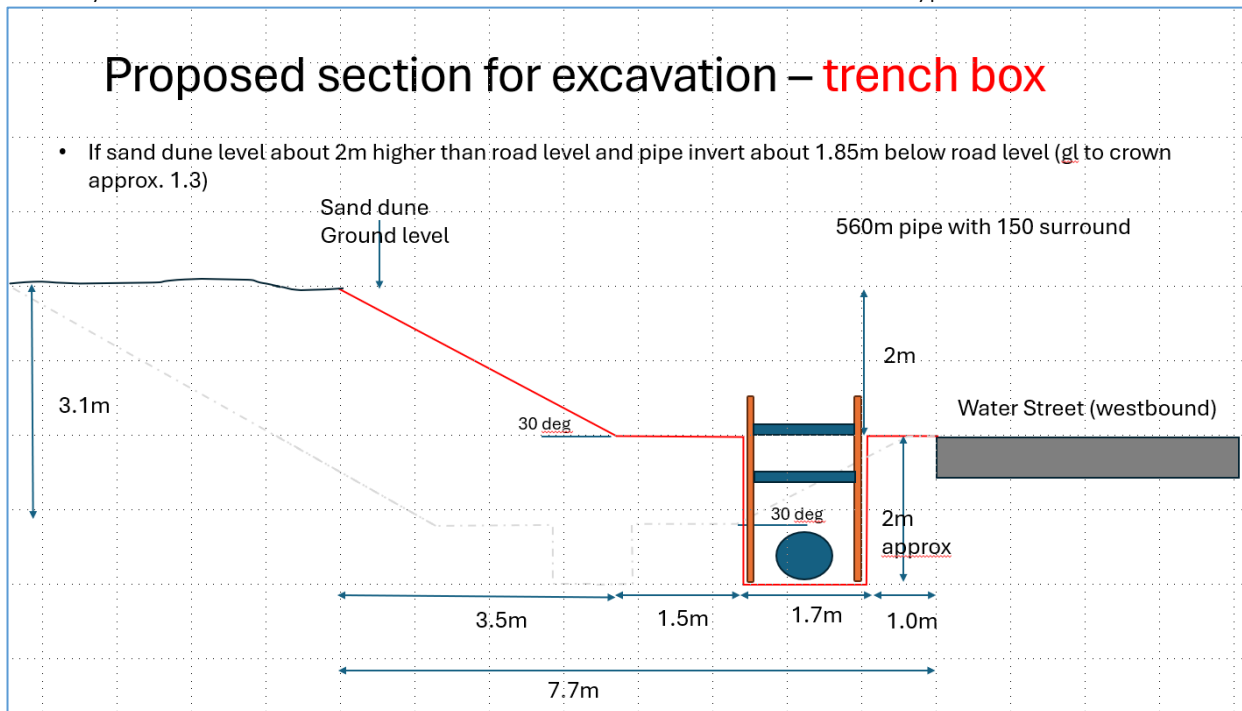
The following are steps required to assist building this infrastructure

2. Working in Kenfig SSSI (SSSI area – east end)

The pipeline is to be located within the majority of the west verge of Water Street which is classed as SSSI area

Access into Kenfig SSSI

- SSSI assent and GCN licence to be obtained before working in this area outside of the screening process
- Water street will predominantly provide the access to the SSSI area we are working in, west of the road
- The area will be required to be cleared of vegetation – see separate method statement. RAM0002
- Where the west side sand dunes/embankment are higher than the road within the 7-10m range of the road they will need to be cleared and lowered to create a level to work from. Typical sketch below



- Any removed sand/material from these embankment/dunes will be temporarily stored to be brought back once the pipeline is completed to reinstate the dunes/embankment
- This will be completed via daywork lorries and 14t/20t excavator. Temporary storage area likely to be in area off Water Street by M4 viaduct
- With the verge created wide enough, work sequence will progress *as typical cross trench box installation*. GI results have indicated ground water should be none or very low.
- At ch575 there is an Auger crossing underneath the existing rising main as its live. This Auger crossing will be completed from installation of two pits, launch 5m x 2.5 and receptor 2.5mx2.5m about 7m each side of the rising main to provide a 14m length of auger crossing
- This work will come under a separate method statement. Pits to be created out of trench sheets similar to the section within this document
- At ch950 we will cross under a Wales and West Utility medium pressure gas pipe. Excavation will be similar to the trench box installation but only difference will be the use of a vacuum excavator to remove all material within 5m of the WWU asset. WWU will have watching brief onsite when excavated
- Once the old main is redundant, sections will be excavated and capped or infilled to confirm its redundant. Separate documents to be written for this activity

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3. Working in Margam Moors (SSSI area – west end)

Access into Margam Moors

- SSSI assent and GCN licence to be obtained before working in this area outside of the screening process
- The ditch alongside Heol Caer Bont track will need to be crossed to gain access into Margam Moors area. There are four existing access points into the fields we can use.
- Route to be set out by engineer
- The route shall then be cleared and any required de-vegetation which is mainly at the location of the rhynes (ditches). This will be done by teams operating as detailed in RAMS002. An ecologist shall be present at all times under a watching brief to ensure no risk due to nesting birds, GCN's etc
- The new rising main will cross under some rhynes/ditches
 - These existing ditches/rhynes will need to have a crossing constructed by infilling a small section of the ditch (7-10m) to gain access across the transverse rhynes to allow the pipe to be excavated though and under the ditch once reformed after the pipe is buried (see Section 5).
- Area between field boundary and overland rising main to be fenced off from those not involved with the construction via heras panels
- The remaining Margam moors grass cutting is being managed outside this scope under separate SSSI assents
- The pipe will be installed via a **typical trench boxes installation** across the area
- Two gangs would be working installing the main across the area separately to achieve programme Once the old main is redundant, sections will be excavated and capped or infilled to confirm its redundant.
- Separate documents to be written for this activity

4. Pipe installation method

a. Ground contamination consideration

Presence of contaminated water and soils

Following completion of trial holes within across the project, it has been identified that at some locations there is elevated levels on contaminants present within the ground.

All three metals exposure pathways include Inhalation, ingestion, and dermal contact. Therefore, dust control, avoiding direct dermal skin contact (gloves, long sleeved jackets), general good hygiene practices should be applied during the excavation works.

In addition, although no asbestos was detected in the analysed samples, based on the site history, it should be assumed that there is a risk of asbestos fibres being present in the made ground. It is recommended that Ciria C765 Asbestos in soil and made ground good practice site guide is followed.

In these areas additional controls shall be put in place as follows:

- Airbourne dust will be controlled during the excavation works within these areas. This will consist of the area being regularly dampened down using a jet wash to minimise any dust generated. The area will not be saturated with water as this could affect the stability of the ground and also wash potential contaminants into the ground water.
- If it is not possible to use a jet wash or if this method does not suppress the dust adequately then all involved in the activity will be required to wear face masks during the excavation works. These masks will be FFP3 rated face mask and will be issued to all involved at the start of the shift. All workers to wear appropriate PPE at all times including long sleeved vests and trousers and gloves at all times to avoid dermal contact.
- Those involved with the works will be briefed on the possible contamination prior to starting works. The type of contamination, its location and the required controls will be included within the task briefing and the POWRA. No eating or drinking will be permitted in the area. All those involved in the task will be required to wash their hands before taking breaks and drinking or eating food.
- For the localized areas where the contamination has been identified the excavated materials shall be stored separately until it is confirmed if they can be reused or if they need to be suitably disposed of.

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In the storage area located outside of the SSSI plastic sheeting will be placed onto the ground surface and the excavated contaminated material will be placed on top of this. It will be fenced off and signed. Once confirmation of any required treatment has been received it will either be reused or removed from site for proper disposal. If disposed of it must go to a licensed tip and hazardous waste notes must be in place for all loads. Imported fill will be used to backfill the trenches

The groundwater has also been tested for contamination.

Until we have this information confirming if it is contaminated or not, which will vary across the different fields and areas of the project including areas of the SSSI's we can't pump the groundwater. The strategy will be:

- If water is not contaminated and if the volume to be pumped is less than 20m3/day then the dewatering can be carried out without any additional exemptions or consents or licenses.
- If the volume of uncontaminated water pumped is between 20m3/day and 50m3/day this works are to stop and DCWW will confirm if we are able to proceed under a Regulation 5 exemption.
- If the water **IS contaminated**, then it cannot go back to ground. It will be limited to the above thresholds of less than 20m3/day no licenses or exemptions but where 20m3 to 50m3/day it would be under a Regulation 5. Only difference though is the water cannot be placed back to source, it must be removed via tanker lorries and placed into the local WWTW pipeline under approval from Dwr Cymru which has been granted.

Ground Contamination from Sewerage following previous pipe bursts

Due to the history of the project and nature of the planned work, there is potential for the ground to be contaminated with sewage. Some areas have been positively identified as contaminated with sewage following recent bursts. The proposed new rising main route passes through some of these areas and specific controls are required to be in place while working in these areas.

- No smoking, eating or drinking is permitted until protective clothing has been removed, hands & face have been washed and the person has returned to the welfare area.
- Briefings will be undertaken prior to each task, highlighting the importance of personal hygiene and the approved method of work, especially when working close to / with watercourses, culverts, drainage and groundwater.
- Gloves to be worn for all works and suitable hand washing / sanitizing facilities to be provided.
- Welfare with hot water to be provided for washing hands.
- Toolbox Talk on Weil's Disease and Leptospirosis to be undertaken.
- A site-specific risk assessment (HS.F.10) will be conducted to identify the hazards and control measures required. Areas requiring dewatering will be covered by sub-contractor RAMS (to be appointed)
- All persons will be provided with suitable task specific PPE and will be exchanged for new regularly throughout the day.
- Disposable overalls to be worn by ground working team when working in this area
- Heavily contaminated material will be disposed of offsite. This material will be adequately contained and safely stored (to prevent leaching into ground water/airborne dust) prior to disposal at a licensed facility and must be supported by the appropriate paperwork. All lorries/skips removing material must be sheeted.
- A contamination unit will be available on site when working in the area which has had sewerage spilled over the land to ensure no contamination is spread into welfare or personal vehicles etc. Site teams to use this on a daily basis.
- Material that is acceptable to be used will be reused within the area where it was excavated from. Material excavated from this area will be stockpile separately from other areas.

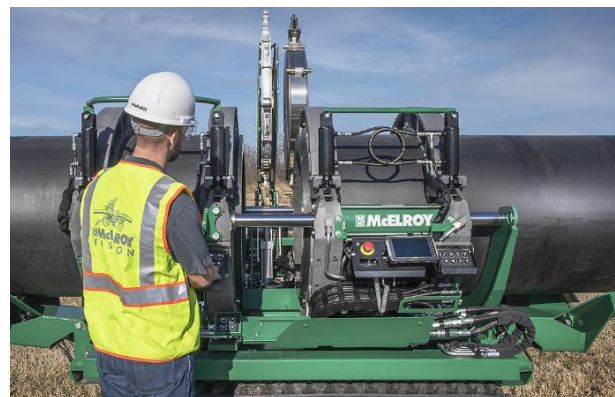
All excavations are to be inspected by a competent person at the beginning of each shift and after any event such as heavy rainfall that might cause it to become unstable. If there are any concerns or signs of the excavation not being stable or safe work is to stop and the excavation will be reassessed and if necessary, amended to ensure it remains stable and is safe to work in and around.

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All open excavations will be protected. with pedestrian barriers during working hours and secured with HERAS fencing installed as per the manufacturer's instructions after hours. The TWS will ensure that weekly recorded inspections are carried out on the temp fencing.

b. Pipe installing using trench boxes due to poor ground

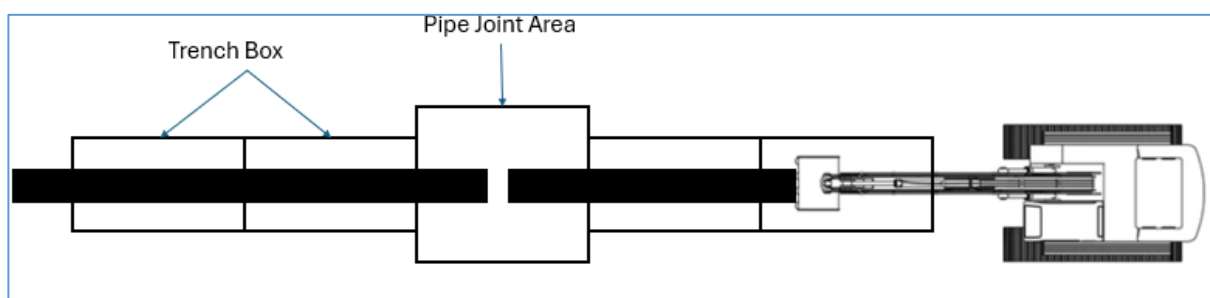
- This methodology being used where the insitu material could be sand, gravel, slag or clay or combination of these elements.
- The pipe route will be marked out by the site engineer.
- When using this methodology the pipe would be pre- welded (butt fusion) into predetermined shorter lengths (2 pipes 27m or 3pipes = 40.5m) that would then be moved into the excavated trench then Electrofusion couplers will be used to connect to the previously installed pipe section.
- Butt fusion welding would be via a welding machine as below



See separate welding method statement

- These pipes once butt welded into the 27/40.5m lengths will be moved and laid out along the route prior to starting the excavation, offset by 3m to allow the excavation to proceed
- The total length of boxes required to be installed will depend on the exact location and length of welded pipe being installed but generally will be suitable enough to span longer than the welded standard pipes, typically the 13.5m, 27m or 40.5m as welded.

See below box layout for installing a single 13.5m length of pipe connection to another single length of pipe.



- We will use **5m long super maxi drag boxes** so for a single pipe (13.5m) this will require a minimum of three boxes to achieve the required length.
Generally, the box will be setup so that the inside width is min 200mm bigger than the pipe diameter then with the wall thickness added and rounded up the closest standard bucket size, approximately 1.1m wide. The width will be increased to provide a min of 1m clearance each side of the pipe at the 'pipe joint area' of the electrofusion joint location(s), so typically 2.7m wide
The box will be assembled as per the manufacturer's instructions and placed local to the work area.
- Based on the GI and trial hole information groundwater is expected to be present in the excavation; this will be required to be pumped out in order to carry out the works safely and to QA procedures.

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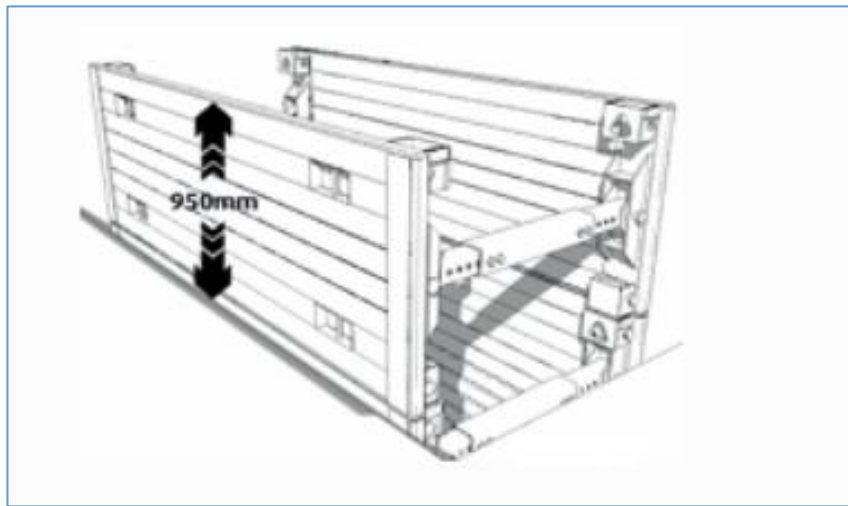
- Water pumping will depend on 4" or 6" Pumps removing water and will be fitted with a flow meter to monitor water extraction volumes. Sumps to be placed in the excavation and water pumped from those along the pipe installation route
- If ground conditions are very loose (sandy) then well pointing would be used which is from 5m tubes placed into the ground at 1m distances apart and connected to a pump which removed the water over the area in advance, 24hrs to draw down. See separate method statement for this installation



- Water will be pumped
 1. into a sedimentation tank (silt buster) **if uncontaminated** and then
 - if volumes are less than 20m³ per day then no consents, permits or permissions will be required and the water can be returned to source (ground) a short distance away as agreed with ECoW.
 - If volume of water being removed is greater than 20m³ per day but not more than 50m³/day, then a Regulation 5 exemption will be already be completed and the water can be returned to source (ground) a short distance away as documented in the Regulation 5
 2. Into a waste tanker lorry **if contaminated** and removed from site to local WWTW as agreed with DCWW
- The trench will be then excavated using a 20t excavator. Excavated material will be placed into a dual view dumper or a tractor and trailer. Excavated material will be taken to a suitable stockpile
 1. close to work area if uncontaminated and suitable for reuse without processing
 2. away from the work area for reprocessing if required.
 3. temporary storage and then removal if hazardous and cant be processed
- If competent ground is present the trench can be excavated to full depth and then the trench box lifted in.
- If poorer conditions are present like running sand or gravel, then the trench will be excavated in a dig and push method - <https://www.youtube.com/watch?v=O3bjxULlGO>
 1. **Initial Excavation:** Dig the trench to a maximum depth of about 1 meter before initially lowering the box into place.

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2. **Incremental Pushing:** Using your excavator bucket, gently apply downward pressure to the top corner posts of the box. Try to push on opposite corners to maintain an even, steady motion, avoiding excessive lateral loads
3. **Limit Depths:** Do not push plates down by more than 150mm to 300mm at a time to prevent damage to the struts and panels.
4. **Dig Below:** Always excavate the soil from inside the box while pushing down; do not force the box into un-dug ground. Ensure that you dig between the panels and take care not to strike the struts



- Trench box will be installed ensuring that the top of the box remains a minimum 950mm above the ground level.
With the differing excavation depths, this will be achieved either by reducing the ground level around the box or by placing the extension box on top when the excavation gets deeper and reducing the ground level is not possible. If this is not possible then work is to stop and the supervisor contacted to discuss options to proceed.
- OR if less than 950mm fix handrailing to the top of the box to provide minimum 950mm edge protection.



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- Once the box is at the required depth the excavator will place a self-compacting material like drainage stone down both outsides of the box to prevent localized ground collapse when the machine tracks past it.
- This process of excavation and trench box installation shall be repeated until the required length of trench boxes has been installed suitable to the pipe length
- Typically upto 50m of boxes could be installed at any one time whilst connecting two lengths of welded pipe
- After the last trench box is install, leave an earth ramp from bottom of trench to ground level outside last box to assist pipe movements into boxes later with gradient at a minimum of 1in4
- A secured ladder shall be installed into the first box in the run to provide safe access along with the access platform and EdgeSafe panel system. Access gate to the platform will be checked that it is secure before lifting into position. Platform will not be lifted if the gate is not secured and able to swing open/closed.
- As per note above the joint box will be installed in a wider configuration with at least 1m working room on either side of the pipe at a 'joint area' location. It will also be dug deeper to give at least 300mm clearance under the pipe and a localized sump shall be installed in the corner to control water ingress if required.
- Once the boxes have been installed Terram will be placed along the whole length of the excavation.
- Terram to be cut in 8-10m lengths on the ground then offered over one side of the box holding each side
- Lengths will be laid across the width of the excavation and up the sides of the trench box and secured with rope, wire or sandbags.
- Once the terram is in place, the 100mm clean gravel stone can be placed as pipe bedding using either the 20t or 14t excavator. It will be levelled by operative using shovels.



- At spacings not exceeding 5m timber blocks will be placed across the width of the trench on the pipe bedding at the correct levels to give the pipe something to slide on when being moved into position the drainage stone can be levelled between the blocks
- Once bedding has been installed the pipe will be manoeuvred into position.
 1. For short lengths it can be carried via the excavator OR
 2. for longer lengths it will be dragged carefully into position using low level pipe rollers positioned on the floor in advance to the pipe. Either a sling or a pipe puller will be used to connect the excavator to the end of the pipe section being moved.

For longer lengths of pipe two excavators may be used to move each length into the required position.

Hold point:

Approved lift plan must be in place if the pipe is to be lifted.

Hold Point:

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When moving the pipe care must be taken to ensure that the outside of the pipe isn't damaged or scored.

- Once the pipe is in line with the installed boxes the excavator will pull it up to the end of the last box installed. The end of the pipe will be fed down the earth ramp at the end of the excavation and under the trench box supporting arms. The excavator will then reach carefully into the box and under the control of the banksman will pull the pipe along the length of each box until it eventually reaches the joint pit location and is the required distance of 700mm from the previous pipe.
- Once the pipe is in its final position the crown of the pipe level will be checked using the rotating laser, where required the bedding will be locally adjusted to ensure that the pipe has been installed to the correct level.

Hold Point:

Site engineer to check the line and level of the pipe and survey the installed position of each joint prior to the excavation being backfilled.

- Any vertical or horizontal adjustments will be made as required lifting with the excavator
- Once the pipe is in the correct position an inflatable tent or tarpaulin will be placed over the top of 'jointing box area' to protect it from the weather so the electrofusion coupling can be installed
- The welding will be undertaken by competent EUSR trained personnel.
- The pipe will be prepared and the electrofusion coupler will be installed as per the manufacturer's instructions.
- At a high level works shall be carried out as follows
 1. The ends of the pipe will be re-ovalised if required
 2. The ends of the two pieces of pipe shall be marked up and then peeled with the pipe preparation tool (photos to be taken)
 3. The coupler will be fitted onto the pipe ends
 4. The bracing frame will be installed to ensure the pipes are aligned and fully seat into the coupler
 5. The electrofusion equipment will be plugged into the fitting and the fitting barcode will be scanned and the welding machine shall be setup and the joint will be "cooked"



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6. After completion of the weld the fitting will be inspected to confirm both “telldales” have activated as expected
7. After welding is complete the joint will be allowed to cool down for the specified period
8. Once cooldown is complete the bracing frame will be removed
9. NB cleanliness of the joint is essential to achieving a good weld

Hold Point:

after welding has commenced no backfilling to be carried out until the cooling time for the joint is fully expired

- Once the pipe joints have been surveyed by engineer, the backfilling of the pipe haunch and surround can be completed using clean drainage stone. This needs to be brought up to a level 100mm over the top of the pipe. Once the drainage stone is up to the required height the terram will be wrapped over the top.
- Once this has been done the excavation can be backfilled. The as dug material can potentially be used (if uncontaminated) but only if suitable (might need to be processed to make it suitable). Alternatively, if required a suitable backfill material like ‘general fill’ may be imported and this installed and compacted in layers. This will be done in line with the backfilling and reinstatement details section. Working from the new joint end, the 20t excavator will progressively backfill the trench
- After about 300mm layer of as-dug/imported is placed over the terram, lay the warning tape along the top of the backfill ensuring all tape is connected together and where needed brought to the surface at a marker post location
- Manhole boxes can be removed as backfill section completed. These boxes will then be carried down past the end of the installed pipe ready for the next length to be installed
- Once ready this process can be repeated to install the next length of pipe. This process will be repeated until the next manhole location is reached.

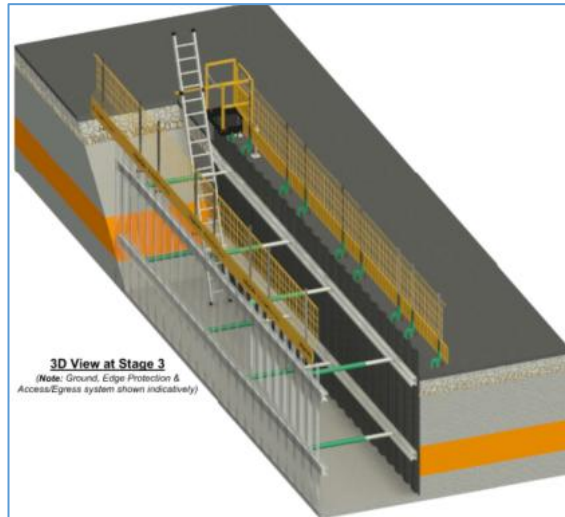


c. Pipe installing using sheet pile shoring in poor ground or space constricted areas (where a underground pipe is encountered)

- When using this methodology the pipe would be pre- welded into predetermined shorter lengths that would then be moved into the trench then Electrofusion couplers will be used to connect to the previously installed section. This will be strung out along the route prior to starting the excavation.

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- The pipe route will be marked out by the site engineer. The total length of the excavation required to be installed will depend on the exact location but generally will be a multiple of the standard pipe length of 13.5m. It is expected that we will usually install between one and three lengths of pipe in one go but usually about two lengths at a time. Temporary works design will be produced prior to using this method of excavation support. See image below box typical layout for installing pipe using trench box shoring equipment.



- Dewatering of this excavation will be using large 4 or 6" pumps or well pointing as previously mentioned
- Water will be pumped
 - into a sedimentation tank (silt buster) if **uncontaminated** and then
 - if volumes are less than 20m³ per day then no consents, permits or permissions will be required and the water can be returned to source (ground) a short distance away as agreed with ECoW.
 - If volume of water being removed is greater than 20m³ per day but not more than 50m³/day, then a Regulation 5 exemption will be already be completed and the water can be returned to source (ground) a short distance away as documented in the Regulation 5
 - Into a waste tanker lorry if **contaminated** and removed from site to local WWTW as agreed with DCWW
- The area will be reduced by 1m around the extents of the excavation before the sheet piles are installed.
- The area will be excavated using a 20t excavator. Excavated material will be placed into a dual view dumper or a tractor and trailer Excavated material will be taken to a suitable stockpile
 - close to work area if uncontaminated and suitable for reuse without processing (if space allows)
 - away from the work area for reprocessing if required.
 - Storage and then removal if hazardous and cant be processed
- Sheet piles will be installed as per the manufacturer's instructions and temporary works design.
- Sheet piles will be installed based on a pre driven method of installation. The sheet piles will be driven to full depth prior to excavating to include a "toe-in" of as specified in the temporary works design. Sheet piles will be pushed into position using a 20t excavator and supplied pile driver cap placed on top of the sheet piles.
- Material will then be excavated from inside of the trench sheets to the required depth.
- Bracing might be required to cross between trench sheets

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- A 1in4 ramp is to be left at the end of the last sheet
- A secured ladder shall be installed to provide safe access along with the access platform and EdgeSafe panel system.
- Once the sheet piles have been installed Terram will be placed along the whole length of the excavation. Lengths will be laid across the width of the excavation and up the sides of the trench sheets and secured with rope, wire or sandbags.
- Once the terram is in place, the 100mm layer of clean stone pipe bedding pipe can be placed. This will be done using either the 20t or 14t exc and it will be levelled by operative using shovels.
- At spacings not exceeding 5m timber blocks will be placed across the width of the trench at the correct levels to give the pipe something to slide on when being moved into position the drainage stone can be levelled between the blocks
- Once bedding has been installed the pipe will be manoeuvred into position.
 1. For short lengths it can be carried via the excavator OR
 2. for longer lengths it will be dragged carefully into position using low level pipe rollers positioned on the floor in advance to the pipe. Either a sling or a pipe puller will be used to connect the excavator to the end of the pipe section being moved.

Either a sling or a pipe puller will be used to connect the excavator to the end of the pipe section being moved.

For longer lengths of pipe two excavators may be used to move each length into the required position.

Hold point:

Approved lift plan must be in place if the pipe is to be lifted.

Hold Point:

When moving the pipe care must be taken to ensure that the outside of the pipe isn't damaged or scored.

- Any vertical or horizontal adjustments will be made as required lifting with the excavator
- Once the pipe is in line with the installed trench sheets, the excavator will pull it up to the end of the excavation. The end of the pipe will be fed down the earth ramp at the end of the excavation and under the Waler. The excavator will then reach carefully into the excavation and under the control of the banksman will pull the pipe along the length of excavation until it eventually reaches the joint pit.
- Once the pipe is in its final position the crown level of the pipe will be checked using the rotating laser, where required the bedding will be locally adjusted to ensure that the pipe has been installed to the correct level.

Hold Point:

Site engineer to check the line and level of the pipe and survey the installed position of each joint prior to the excavation being backfilled.

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- Once the pipe is in the correct position an inflatable tent or tarpaulin will be placed over the top of the 'jointing box area' to protect it from the weather so the electrofusion coupling can be installed.
- The welding will be undertaken by competent EUSR trained personnel.
- The pipe will be prepared and the electrofusion coupler will be installed as per the manufacturer's instructions. At a high level works shall be carried out as follows
 - The ends of the pipe will be re-ovalised if required
 - The ends of the two pieces of pipe shall be marked up and then peeled with the pipe preparation tool (photos to be taken)
 - The coupler will be fitted onto the pipe ends
 - The bracing frame will be installed to ensure the pipes are aligned and fully seat into the coupler
 - The electrofusion equipment will be plugged into the fitting and the fitting barcode will be scanned and the welding machine shall be setup and the joint will be "cooked"
 - After completion of the weld the fitting will be inspected to confirm both "teltales" have activated as expected
 - After welding is complete the joint will be allowed to cool down for the specified period
 - Once cooldown is complete the bracing frame will be removed
 - NB cleanliness of the joint is essential to achieving a good weld

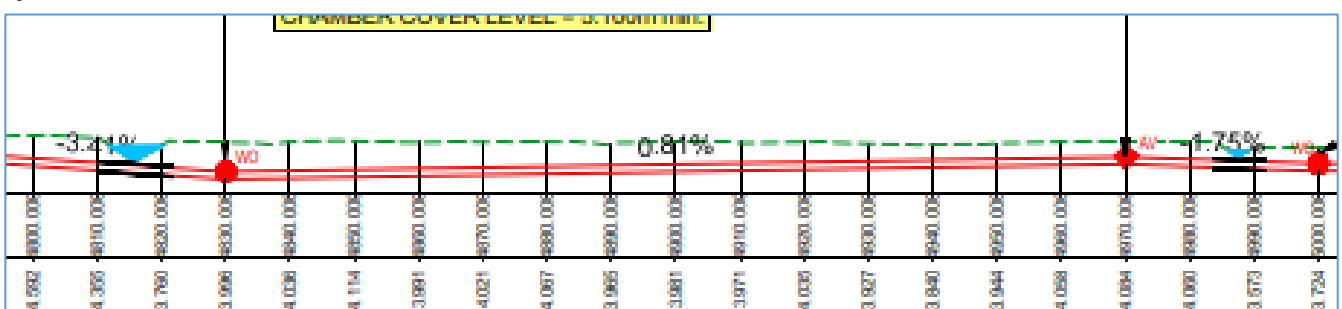
Hold Point:

after welding has commenced no backfilling to be carried out until the cooling time for the joint is fully expired

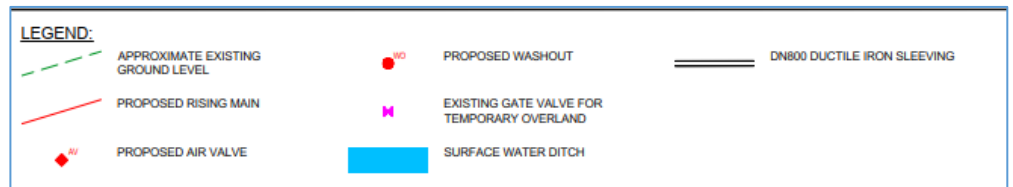
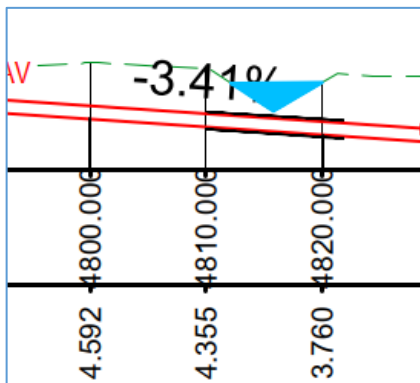
- Once the pipe joints have been surveyed, the backfilling of the pipe haunch and surround can be completed using clean drainage stone. This needs to be brought up to a level 100mm over the top of the pipe.
- With the drainage stone up to the required height the terram will be wrapped over the top.
- Once this has been done the excavation can be backfilled. The as dug material can potentially be used but only after it has been reprocessed to make it suitable. Alternatively, if required a suitable backfill material like 'general fill' may be imported and compacted in layers. This will be done in line with the backfilling and reinstatement details section. Working from the new joint end the trench the 20t exc will progressively backfill, compact and remove the trench sheets. These will then be carried down past the end of the installed pipe ready for the future use or off hire
- After about 300mm layer of as-dug/imported is placed over the terram, lay the warning tape along the top of the backfill ensuring all tape is connected together and where needed brought to the surface at a marker post location
- The trench sheets can then be extracted where backfilled readiness for the next location

5. Rising main pre-works for installation within ditch (rhynes) locations of Margam Moors SSSI

- The new 630mm HDPE plastic pipe goes under the existing ditches within Margam Moors. See typical longitudinal section below indicating this (extract from Phase 5 longitudinal section drawing (CI0530))



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- The design allows for a metal sleeve over the plastic HDPE rising main to protect the pipe shallow cover on top of the pipe <1m.
- A working width of about 7-10m will be required across the ditch/rhyne to facilitate the trench box and pipe installations
- Assuming water is present in the ditch that the proposed new rising main goes underneath. Water will need to be blocked and over pumped around the excavation to maintain water flows.
- Location of the crossing will be marked out by the site engineer.

Over pumping for infill

- The ecologist will inspect the existing ditch prior to any work
- The ecologist will note any INNIS within the area before commencing. Ideally the location will be chosen away from any such plants.
- Should any plants be seen, fence off and if need to be removed then separate RAMS to be written for removal and disposal
- Agree crossing location
- Bulkbags of sand/gravel will be placed in the invert of the ditch upstream of the crossing point by 3-5m. These will be delivered to work area using a tractor and trailer. Bulk bags will be lifted into position using a 360 excavator and suitable 4 leg lifting chains. Area around bulk bags will be filled using smaller sandbags to create a tight seal upstream to back up the water and over pump using a 2/4" pump to create a fairly dry working area.
- Depending on water volume, a 2" or 4" Pump will be set up on one side of the ditch to over pump the ditch from each side. Pump will operate on a float system to only operate when water levels reach a set level and to prevent overtopping.
- The over-pumping of water from the work area would need to be discharged onto the bank or side wall of the ditch within the ditch and not onto the land adjacent to the ditch as stated in the work methodology statement. Pumping the water high on the bank at a lower pressure within the ditch will elevate any concerns regarding the disturbing of sediment
- Switch on pump and allow water to be pumped with bagging placed on opposite side to work area with water discharged onto ground adjacent to the ditch to allow to seep back into the ditch without disturbing the base of the ditch.
- (Access to the opposite side of ditch to be achieved by ladders, walkway or suitable means as noted in the POWRA once size of ditch determined)

Site clearance for ditch infill/crossing

- Any residue Water will be removed from the proposed excavation using a 2in submersible pump.
- If needed the excavator will remove any slurry or remove about 50-80mm material along a 7-10m length to allow excavated material to be placed into the ditch to allow excavator to site when excavating
- Vegetation clearance to be kept to a minimum and only conducted where necessary. An Ecological Clerk of Works
- Sediment within the ditch can be removed to facilitate installation on condition that the material removed is silt/sediment deposition. This removed material will need to be placed on the shoulders of the ditch bank,

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downstream of the work zone, in order to allow any organisms within the sediment to return to the watercourse. This excavated material (ditch spoil) can then be removed and incorporated/graded onto adjacent land after a minimum of 48 hours has passed. The profile of the ditch must not be altered in any way

- Any earthworks and or excavations need to be covered or have a means of escape, if not infilled by end of working day.
- Throughout the construction project, there is to be no discharging or deposition of any matter into the ditch network, other than materials originating from the ditch(es). If any materials are inadvertently introduced to the ditch(es) during the construction process, they are to be removed immediately.
- The excavated silt material (ditch spoil) is to be removed and incorporated/graded onto adjacent land after a minimum of 48 hours has passed. The profile of the ditch must not be altered in any way.
- Silt netting/matting to be installed and monitored at any point on or near the SSSI site where there is the potential for works or disturbance that would result in the release/discharge of material/sediments into the watercourse(s).

Infill of ditch

- With the area dry and cleared of vegetation, the area will need to be infilled with non-contaminated excavated material of imported 'general fill' to allow the ditch to be flat between fields to allow excavator to be positioned when digging, installing and backfilling the trench
- Dumper to tip material into the ditch and excavator level it and then compact
- Using a ramax roller compact the fill with 6 passes per 300m layer

Rising main installation

- Will proceed as per typical details for installation with trench boxes
- Locations where rising main spans under the ditches the 630mm HDPE pipe will be sleeved with a ductile iron DN800(mm) pipe to provide extra protection should anyone try digging into a ditch post project completion
- Therefore, DO NOT align a 'joint area' (electrofusion connection) to be located under the watercourse due to the sleeve requirements
- After HDPE pipe installation across ditch location, lower in ductile iron sleeve with excavator

Hold point:

Approved lift plan must be in place if the pipe is to be lifted.

Hold Point:

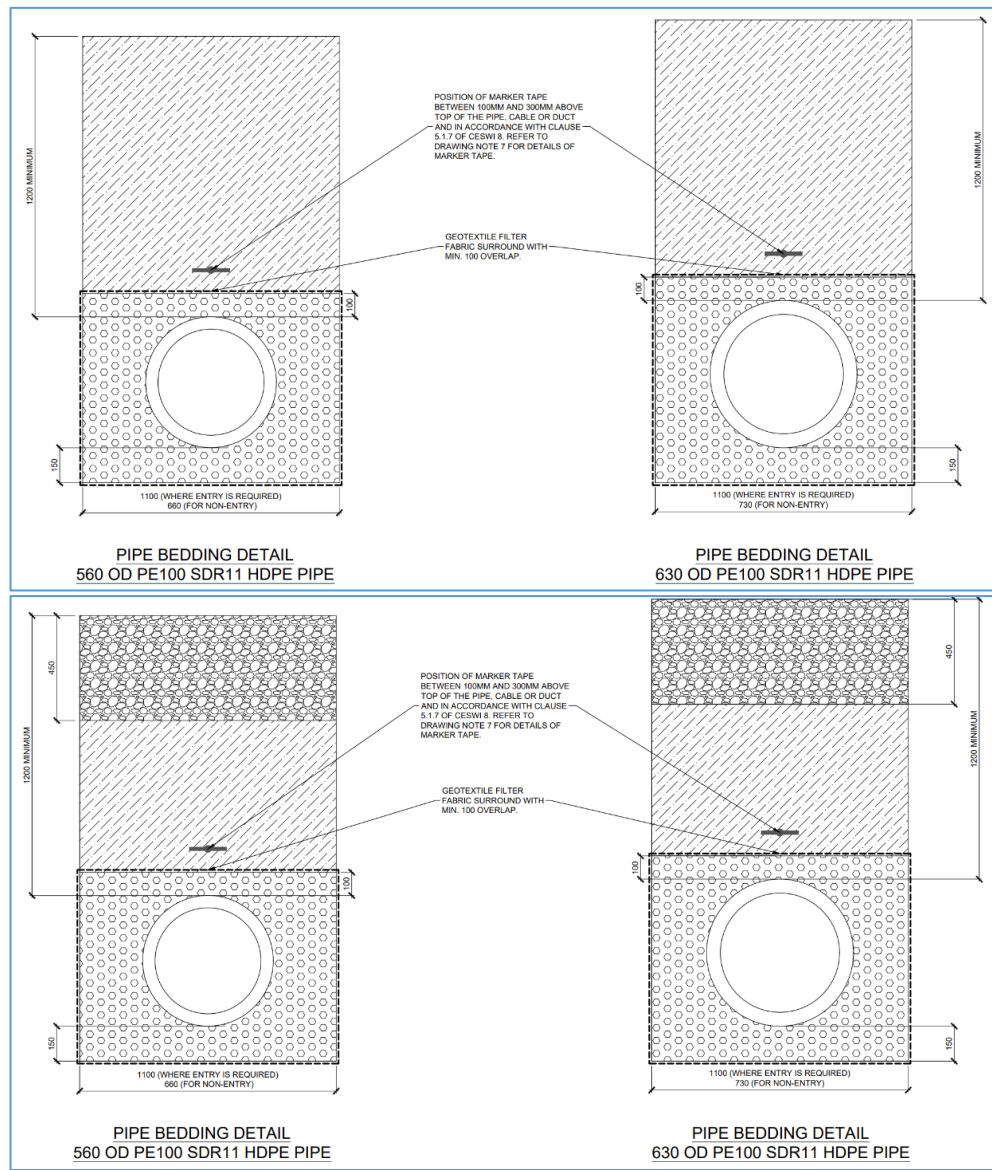
When moving the sleeve care must be taken to ensure that the outside of the HDPE pipe isn't damaged or scored.

- Using a sling and excavator slide the sleeve over the end of the HDPE pipe then slowly pull up the pipe to the required location directly under the ditch.
- For wide ditches use more than one 6m length of DN800 ensuring the socket spigot joint is pulled together.
- Backfill as typical steps in section 6

6. Back Filling and Reinstatement detail

- Once the pipe has been installed backfilling will be carried out in line with the standard details shown below
- The pipe will be surrounded with clean stone pipe bedding stone using the excavator and where required will be spread by hand (shovel) to ensure no voids at side of the pipe the bedding will be brought up to a minimum of 100mm over the crown of the pipe.
- After the pipe has been covered with pipe bedding, the terram will be folded over to cover all of the pipe bedding. If the terram does not have sufficient overlap (>100mm) then an additional strip of terram will be placed on top.

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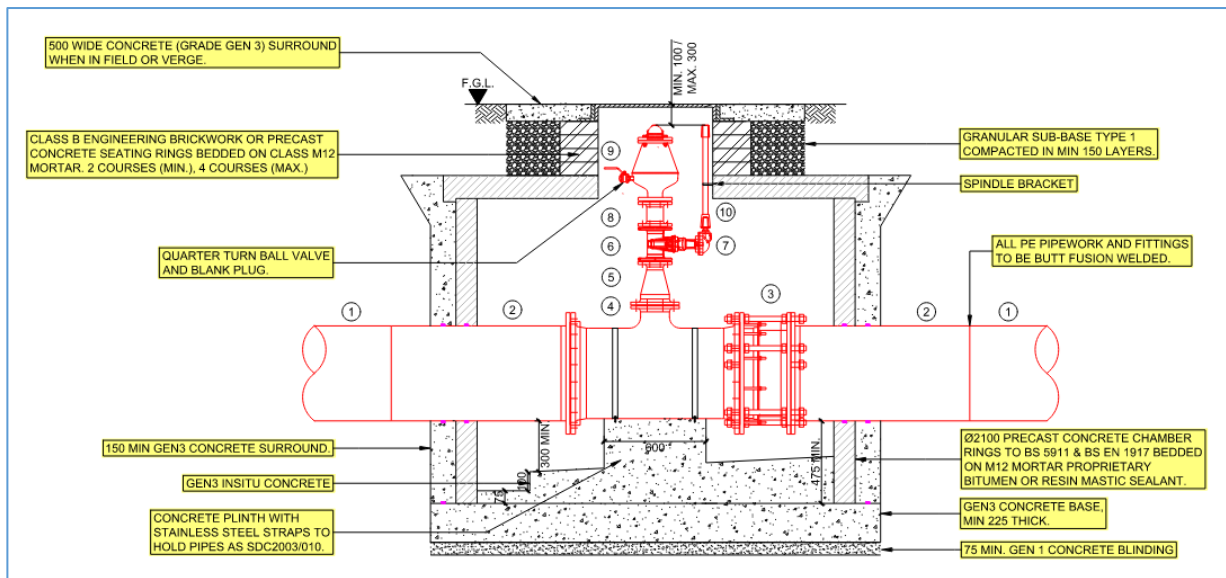
- **Red 150mm "Pressure Sewer"** warning tape with a trace wire to then be laid over the top of the pipe surround at a minimum of 100mm above the crown of the pipe. The trace wire needs to be brought to the surface approx. every 1000m and connected between rolls
- The backfilling will continue with select backfill until the required level is achieved. The backfill process will be kept as tight as possible to pipe laying operation; long lengths of open trench will be minimized as much as possible.
- Wherever possible the select backfill shall comprise of the as dug material, sand can be used as long as no large rocks etc. For areas that contain a mix of gravel, slag and clay wherever possible we shall attempt to reprocess it on site into a suitable material. If practicable this shall be done using a proprietary process the detail of this shall be covered in a separate RAMS. If it isn't possible to reprocess the as dug material, it will be taken of site for disposal. Waste notes will be obtained for all material removed from site. Suitable backfill shall be imported to use as backfill

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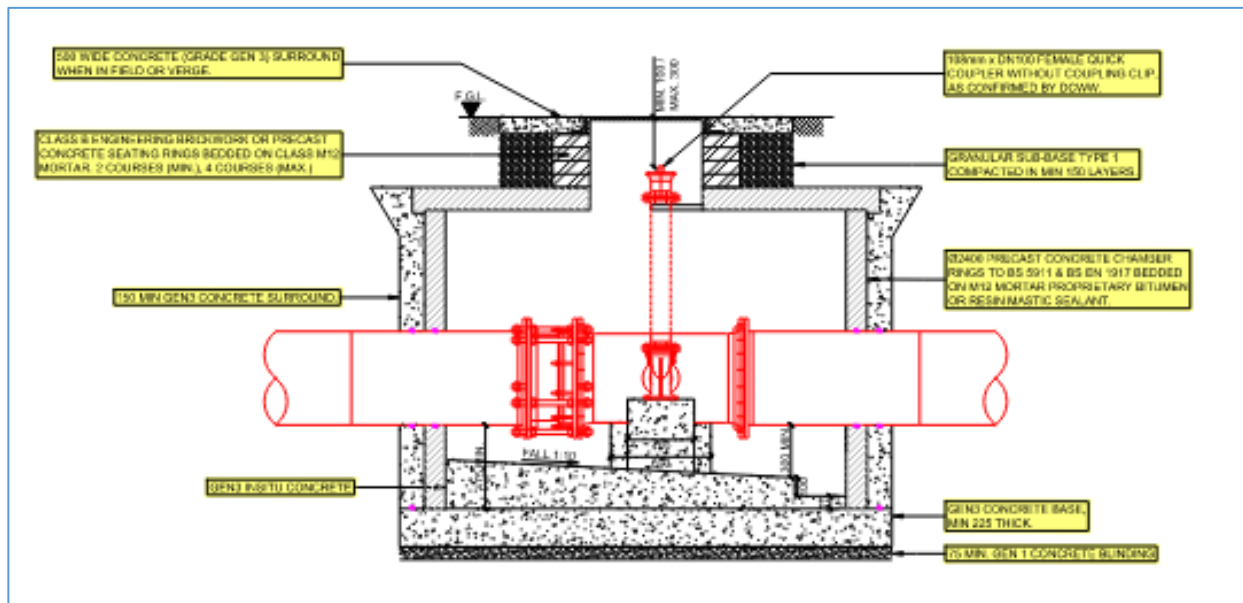
7. Construction of Chambers including AVs and Washouts

- Washouts and air valve chambers will be constructed as per drawings, 560mm & 630mm detail the same but chamber sizes differ



Air Valve Detail

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Washout Detail (560mm)

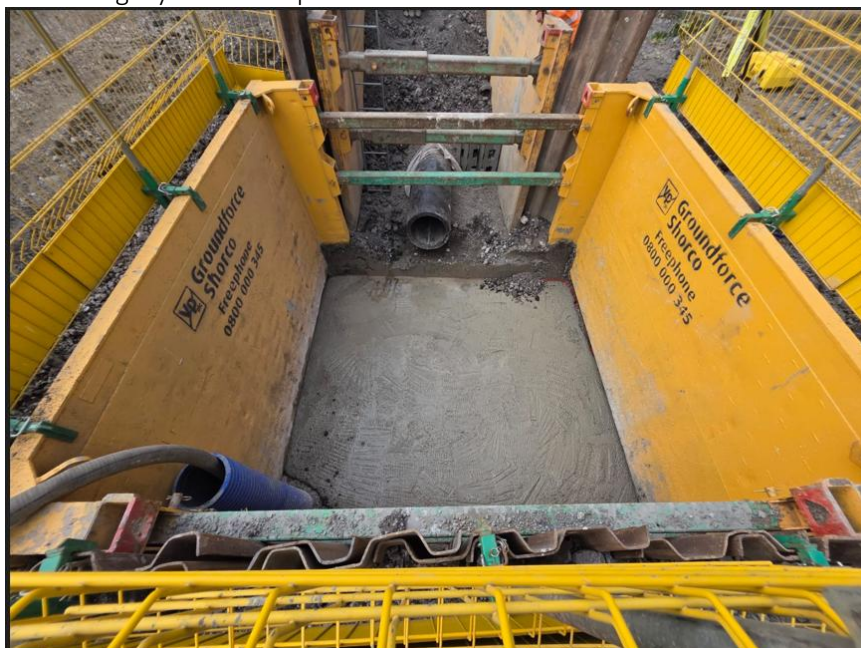
Construction of the Manhole base

- Location of each chamber will be set out by the site engineer
- The area will be fenced off to create a safe exclusion zone using heras fencing
- Chamber position will be excavated to the required level and if required the manhole box will then be installed. The manhole box will be lifted in using the 20t excavator. The excavator will dig and push the manhole box till it is down to the require height. Once down to design level an access ladder will be installed as per the manufacturers instructions.

Hold Point:

Approved lift plan must be in place before any lifting activities are carried out

- Within the excavation the Site engineer will re-mark the location of the new manhole
- The manhole base will then be trimmed to the level of the underside of the base
- Where required a blinding layer shall be poured



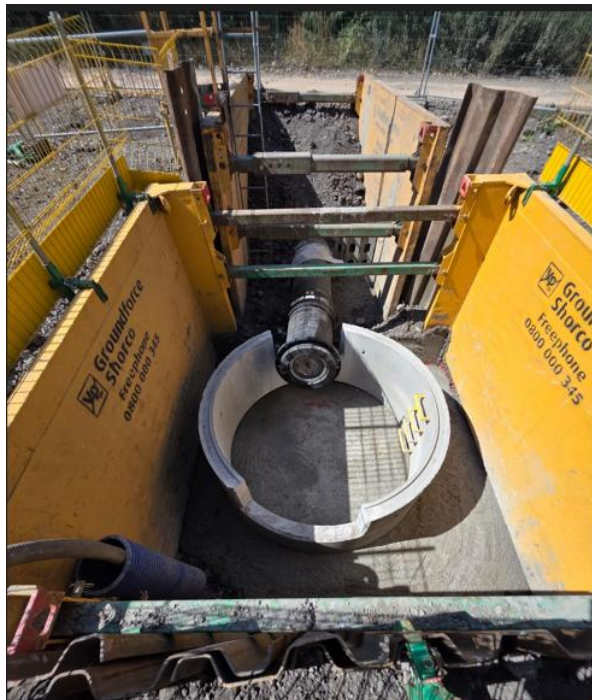
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- The chamber ring will be lifted into position by the 20t excavator using suitable chains and lifting attachments

Hold Point:

Approved lift plan must be in place before any lifting activities are carried out

- The manhole ring will be dropped into position sitting on 150mm concrete blocks positioned at approx 12, 3 and 9 o'clock. The entry/exit holes on the ring will then be cut as per the required pipe alignment for that specific chamber (AV or WO) using a stihl saw with a dust suppression kit. FFP3 dust masks and goggles to be worn and HAVS to be recorded



- After both ends of the pipe have been loosely positioned within the chamber and loosely bolted together with the T section (see detailed installation procedure below) the position of the chamber base can be finalised

Hold Point:

Site engineer to check level of the ring and the orientation of the steps. Engineer will also check the position of the T piece within the chamber and the offset to the main carrier within the chamber. Where required a small push prop, can be used against the manhole box to move the ring to the correct position.

- Once the ring is in the correct position the concrete base can be poured. This will be made up of a 225mm thick concrete base. This will be done using a concrete wagon and 360exc placing the concrete using its bucket.
- A vibrating poker will be used to compact the concrete and remove air bubbles.
- Once the base has been poured and the pipes and fitting fully bolted up the internal support plinths can be formed up.

Hold Point:

Site engineer to confirm and mark out the required location of the support plinths.

- The underside of T section requires a bitumen impregnated fibre board to separate the fitting from the top of the plinth, this will be placed on the underside of the T piece and held in place with adhesive tape. Any areas where the new concrete will come into contact with the newly poured concrete will be receive a strip of waterbar prior to concrete being poured.

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Once the formwork is in position the site engineer will do a final check for levels and the plinths can be poured

- After these have been completed the sloping base and chamber sump can be poured
- A vibrating poker will be used with all concrete pours to compact the concrete and remove excess air bubbles. **HAVS to be recorded for this operation**

Install of the T section and associated pipework sections and fittings

- The bolted connections are only to be installed by competent EUSR trained personnel
- Timber or concrete blocks will be placed on the base of the chamber to support the T piece. It will be lowered into position using the excavator and a suitably rated sling. It will be dummy bolted into position and chocked up off the floor as necessary to support it.
- For the AVs a 1000mm dummy section of 100mm dia pipe will be lowered in by the excavator and bolted onto the T to ensure that it is vertical
- For the Washouts the engineer will bolt a shorted dummy piece on toe ensure that it is horizontal

Hold Point:

Site engineer to check level of the valve to ensure it is level and also sits plumb vertically.

- Once the T section is in position and supported with the compression gasket in place it can be fully bolted up. This will be done using the Control Point App and a wirelessly linked torque wrench, The bolted connection will be progressively torqued up in the required tightening sequence from 30% to 60% to 100%. The control point app will specify the required tightening sequence and torque for each bolt and will record this information for the QA file. **HAVS to be recorded for this operation.**



- Manhole sections and surround

- **PREFERABLY at ground level** the entry/exit holes on the ring will then be cut as per the required pipe alignment for that specific chamber (AV or WO). This will be done using a Stihl saw with a dust suppression kit. FFP3 dust masks and goggles to be worn and HAVS to be recorded
- Weatherproof (tokstrip) will be placed on the lower ring joint in readiness for upper ring.
- Using the excavator the ring will be lifted into position and carefully installed onto the previously installed ring. Once the Rings are all installed the biscuit will be placed on top of the chamber ensuring the step irons ling up with the ring below
- Once the rings and biscuit have been installed the manhole shroud will be installed around the outside of the manhole rings next around the chamber. The opening cut to allow the pipe entry shall be formed up in timber and the steel external shutter shall be put in place
- Concrete will then be poured into the shutter using the excavator, up to top of shroud (about 1.2m high). A Vibrating poker will be used to compact the concrete. **HAVS to be recorded for this operation.** The shroud will be left approx. 200mm below the underside of the biscuit to allow the biscuit to be removed so that the internal pipework and fittings can be installed at a later date
- Once the concrete has set, the internal and external shroud formwork shall be stripped
- The chamber can then be progressively backfilled and compacted with suitable select material and the manhole box can be progressively removed.
- Once the manhole is completed the ductile iron cover will then be placed on a temporary bed of mortar and levelled.
- Frame and cover to be lifted into position via excavator – if this is not practicable the weight of the cover and frame will be determined and a manual handling assessment completed put in place.
- At later date the internal installation of valves, pipes etc will be completed. To complete the following process will be followed.
 - Using an excavator remove the ductile cover and the biscuit and allow to ventilate for min 1 hour.
 - If clear install temp access ladder

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- Install risers and Air valves, scout points
- Using an excavator re install the biscuit
- Form and pour the last section of concrete surround to lock the biscuit in place
- Install concrete risers and frame and cover to the required finished level – if this is not practicable the weight of the cover and frame will be determined and a manual handling assessment completed put in place.
- Complete backfill
- If entry to the Manhole s required after biscuit has been installed, then the chamber must be treated as a confined space

Hold Point:

a confirmed space permit and appropriate controls must be in place

Competent trained personnel must be used, chamber must be checked with a gas monitor before entry, tripod and recovery system must be in place.

8. Environmental Procedures

- Clearance of the route is covered in RAMS002 site clearance and enabling works, these works will be controlled by an ecologist working under a watching brief
- If required dust suppression is to be used during periods of dry weather if required.
- COSHH details on site and communicated for certain materials
- Concrete washout to be used on site or concrete wash out water taken away from site via lorry
- Noise levels shall be minimised where possible and within the site working hours.
- Daylight working only
- Refuelling of plant to be carried out in accordance with the approved procedures within the main compound and not near the watercourse or within the SSSI
- Spill kit(s) to be supplied/carried in case of accidental leakage. This would include hydraulic spill/response kits.
- Ecological Clerk of Works (ECoW) to have oversight over all works and NRW to inspect site during work phase and prior to the vacating of site by contractors.
- Awareness of the potential presence of protected species on site (Great Crested Newt, Water Vole....etc.), working in accordance with best practice methods to limit any impact on these species. Ensuring that when work sites are left/vacated, such as overnight, they are in a state that would not harm or trap any wildlife. This would include, but not limited to, the covering of excavation pits (as previously stated) and the positioning of machinery, tools and plant buckets.
- Routine water quality testing to be conducted before, during and after works on site, with ECoW oversight
- Silt netting/matting to be installed and monitored at any point on or near the SSSI site where there is the potential for works or disturbance that would result in the release/discharge of material/sediments into the watercourse(s).
- Stringent Biosecurity measures to be implemented on all machinery and materials used on site.
- Vehicle (including heavy plant) movements/tracking to be limited to areas necessary for works and will need to utilise all possible mitigation methods to reduce impact on the grassland. These include but are not limited to the use of matting, telehandlers or specialised machinery. Routes should also be agreed during a site walk-over with ECoW and restricted to drier areas. Site conditions and impact of machinery should be monitored and activity/mitigation methods modified in response to any deleterious impact.
- Vegetation clearance to be kept to a minimum and only conducted where necessary. An Ecological Clerk of Works
- (ECoW) will need to be present when these works are conducted, to ensure environmental damage is minimised.
- The siting of the Welfare Unit(s) and Laydown/Setdown Area(s) will be outside of the SSSI area.

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- In conjunction with the culvert pipe installation, sediment within the ditch can be removed to facilitate installation on condition that the material removed is silt/sediment deposition and is not earth that forms the structure of the ditch (consolidated material which forms the bottom channel and banks of ditch), This removed material will need to be placed on the shoulders of the ditch bank, downstream of the work zone, in order to allow any organisms within the sediment to return to the watercourse. This excavated material (ditch spoil) can then be removed and incorporated/graded onto adjacent land after a minimum of 48 hours has passed. The profile of the ditch must not be altered in any way.
- The over-pumping of water from the work area would need to be discharged onto the bank or side wall of the ditch within the ditch and not onto the land adjacent to the ditch as stated in the work methodology statement. Pumping the water high on the bank at a lower pressure within the ditch will elevate any concerns regarding the disturbing of sediment
- Any earthworks and or excavations need to be covered or have a means of escape, if not infilled by end of working day.
- Throughout the construction project, there is to be no discharging or deposition of any matter into the ditch network, other than materials originating from the ditch(es). If any materials are inadvertently introduced to the ditch(es) during the construction process, they are to be removed immediately.
- When works are complete, it is expected that the site will be returned to its condition prior to works being conducted and/or undergone appropriate remediation to off-set the impact of the works.

9. Equipment to be used

- Tracstar 560i or 900i (depending on 560mm or 630mm pipe) c/w rollers and tent/shed
- 20t Excavators
- 14t excavator
- Dual view dumper
- Tractor and trailer
- Manhole boxes
- Trench boxes
- Pumps
- Sediment tanks (silt busters)
- Water tanker lorries
- Lifting equipment – slings and chains
- Concrete poker
- Disk cutter (stihl saw)
- Small tools