Project Description: Proposed Effluent Outfall Line Replacement

Site Address: Cooke Aquaculture, Mid Yell Fish Factory, Yell, Shetland, ZE2 9BN

Document Description: Designer Risk Assessment & Method Statement (RAMS)

Date: 15 December 2022

Revision: Second Issue

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Client	Cooke Aquaculture Scotland Ltd
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	Yell
	Shetland
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-	05/12/2022	Issued for Comment	RJW	EJR	EJA
A	15/12/2022	Updated with Client Comments	RJW	EJR	EJA

1) Introduction

Civil And Structural Engineering (CASE) Shetland Ltd have been asked to provide a designer Risk Assessment and Method Statement for a proposed Effluent Outfall Line Replacement at Cooke Aquaculture Scotland (CAS) Ltd, Fish Processing Plant, Mid Yell, Shetland.

This is in relation to the installation of a 160mm Outside Diameter (OD), High Density Polyethylene (HDPE) line connecting from the existing Water Treatment Plant and discharging 250m offshore into Mid Yell Voe. For further details of the site location please refer to the Engineers Location Plan, *Drawing Number CS22.044-01* by CASE Shetland Ltd.

The purpose of this designer Risk Assessment and Method Statement (RAMS) document is to identify potential hazards and provide a safe and considered method of work. Job specific RAMS should still be requested from the Civils Contractor and Offshore Installation Contractor when the project has been awarded. This document must be read in conjunction with the Engineers Plans/Detail drawings by CASE Shetland Ltd.

Drawing No.	Description	Rev	Date
CS22.044-01	Location Plan	A	Dec 2022
CS22.044-02	Existing Site Plan	-	Dec 2022
CS22.044-03	Proposed Site Plan 1 of 3	A	Dec 2022
CS22.044-04	Proposed Site Plan 2 of 3	A	Dec 2022
CS22.044-05	Longitudinal Section 1 of 2	A	Dec 2022
CS22.044-06	Longitudinal Section 2 of 2	-	Dec 2022
CS22.044-07	Effluent Treatment Outflow Diagram	-	Dec 2022
CS22.044-08	Proposed Site Plan 3 of 3	A	Dec 2022

Key Personnel

Name	Position	Company	Contact
Caroline Roberts	Client	CAS Ltd	[Redacted]
Christine Nicolson	Factory Manager	CAS Ltd	
Ross Work	Engineer	CASE Ltd	
Civils Contractor	Contractor	T.B.C	T.B.C
Offshore Contractor	Contractor	T.B.C	T.B.C

2) Resources

The below lists of resources are split into 'Onshore' and 'Offshore' to give the Client and Contractors a general overview of the main resources required for the project.

2.1 Plant & Equipment (Onshore)

Description	Quantity
Excavators – 2.5 and 13 tonnes (long reach)	1 Each
Telehandler or Forklift	1 No.
All Terrain Dumper	1 No.
Fuel Bowser	1 No.
Pipe Coil Trailer	1 No.
Compressor	1 No.
Generator	1 No.
Concrete Poker	1 No.
Roller (Bitmac)	1 No.
Compactor Plate	1 No.
110v Tools	As Required
Hand Tools	As Required
HGV Deliveries	As Required
Electrofusion or Butt-Fusion equipment	1 Set

2.2 Materials & Supplies (Onshore)

Description	Quantity
Setting out pins, pegs, profile boards	As Required
Spray marker paint	1 box
450mm dia Inspection Chamber Base	2 No.
450mm dia inspection chamber risers	See Longitudinal section
450mm dia Ductile Iron inspection cover	2 No.
160mm Marley Solid wall drainage pipe	3.0m
160mm dia Marley long radius bend	1 No.
160mm dia Marley 90 deg branch	1 No.
160mm dia Marley 90 deg bend	1 No.
160mm dia Marley 22.5 deg bend	1 No.
160mm OD HDPE Pipe Coil – SDR17	50.0m
10mm Pipe Bedding	Site measure
Quarry aggregates	Site measure
Ready mix Concrete	Site measure
Bitmac Resurfacing	Site measure

2.3 Plant & Equipment (Offshore)

Description	Quantity
Support/Rescue Vessel	1
Barge with Crane	1
Electrofusion or Butt-Fusion equipment	1 Set

2.4 Materials & Supplies (Offshore)

Description	Quantity
160mm OD HDPE Pipe Coils - SDR17	250.0m
3.0 x 1.50m x 0.15m Concrete Mattresses	38 No.
22.5 deg HDPE bend (Electrofusion)	1 No.

3) Method Statement

3.1 Pre-Start Activities

1. CASE Shetland/Cooke Aquaculture to confirm all consents are in place (Planning Permission, Works License, Marine License and CAR License). This includes any notifications for works commencing on site.
2. Cooke Aquaculture to confirm the Otter Survey check has been completed.
3. Contractor to inform client of intention to begin work activities & obtain all relevant permissions for working on the factory site.
4. Cooke Aquaculture/Contractor to obtain landowner permission to cross land at Linkshouse. A temporary ramp will be required for mobile plant to access the beach.
5. Work party to receive Cooke Aquaculture site inductions (if applicable).
6. Emergency response plans by Cooke Aquaculture to be briefed to operatives.
7. Contractor to agree temporary welfare locations with Cooke Aquaculture.
8. Contractor to establish temporary welfare facilities.
9. Contractor to ensure area of works is isolated from conflicting factory works & members of the public. This should be done using a suitable fence or barriers with a controlled access point. Unauthorised persons should report to main reception.
10. Contractor to set up Construction Site signage.
11. Contractor to establish Traffic Management Plan with Cooke Aquaculture and erect suitable signage.
12. Fuel bowser location to be agreed with Cooke Aquaculture and positioned over a spill mat.
13. Contractor Supervisor to review RAMS documents with work party and carry out Task Briefings (Toolbox Talks) prior to starting each shift.
14. Contractor to walk the proposed location of works to check for wildlife and potential Japanese Knotweed on the steep bank to the East of the factory. Japanese Knotweed is a Non-Native Species and should not be allowed to spread from the worksite. Any findings to be reported to the Client and Engineer.
15. Contractor to review underground service drawings (Refer to Appendix A) and discuss with Cooke Aquaculture personnel.

16. Contractor to check for underground services and scan the development area with a Cable Avoidance Tool (CAT) Scanner.
17. If any services are identified highlight with line marker paint, record on the Site Plan and contact Cooke Aquaculture representative and the Engineer.
18. If required, trial holes to be hand dug to expose services under supervision of the Engineer.
19. Plant Operative to only work with a Banksman who must be present at all times during any excavations.

3.2 Preparatory Works

- Remove section of timber sleepers within the route of the new line, currently used as a storage area. (Refer to drawing *CS22.044-03* by CASE Shetland Ltd).
- Remove 3 No. sections of timber fencing within the route of the new HDPE line. Timber fence North of new IC03, fence East of IC04 and fence at top of the steep bank above the beach.
- Ensure temporary pedestrian barriers are fitted at the opening above the steep bank.
- Scaffold contractor to erect a scaffold staircase down the bank to the beach to provide safe access/egress for the construction team. This should be located to the North side of the proposed HDPE line.

3.3 Install HDPE line from Inspection Chamber (IC03) to Chamber (IC04)

3.3.1 Excavate to formation level for HDPE line

- Set out the proposed locations for Inspection Chambers IC03 and IC04.
- Carry out a trial dig/hand dig near IC04 in the gravel area to expose the existing outfall line to confirm extent of Bitmac to be saw cut. This line will be removed towards the end of the project.
- Check invert level at existing IC02 from the datum point (corner of concrete bund) prior to setting out levels at IC03.
- Set out the limits of the proposed excavation between the water treatment plant and IC04. Profile boards will be installed to facilitate level control, laser levels may also be used in conjunction to the profile boards.
- Discuss the Operational equipment at Water Treatment Plant within the vicinity of the work scope.
- Saw cut the Bitumen surface between new IC03 and IC04 which includes the existing outfall line.
- Break out/side cast excavated materials in such a manner as to ensure that the excavation sidewalls are not surcharged, load them into dumpers for storage in an agreed stockpile area or load them into a tipper wagon for removal from site.
- As the excavation works continue and the depth progresses, the side walls will be protected against potential collapse by Battering of the sidewalls to a safe angle of repose for the substrate.

- When formation level is reached, the base of the trench and inspection chambers are to be checked for soft spots and levels verified against the Engineering drawings. (Refer to Drawings Number CS22.044-05 Rev A for details)

- If any poor ground conditions are found excavation will continue until suitable ground is found. This will require suitable rock infill backfilled & compacted in layers, or for extra lean mix concrete to be poured underneath the base of the inspection chamber. The decision will be taken by the Engineer.

3.3.2 Install HDPE Line and Inspection Chambers

- Spread 10mm pipe bedding material (Min. 150mm deep) across the bottom of the trench to reach the designed invert level of the new HDPE line.
- Position the new inspection chamber bases at IC03 & IC04
- Position the 'Pipe Coil Trailer' adjacent to the excavation and dispense the line from the coil to the required length between IC03 & IC04. Note the coil will be restrained with the pipe trailer steel cage preventing any uncontrolled release.
- Cut the section of 160mm OD HDPE within the trench.
- Connect the 160mm line between IC03 & IC04.
- Spread 10mm pipe bedding material (Min. 150mm deep) over the HDPE pipe.
- Lift on the inspection riser pieces to suit the finished ground level
- Lift on the ductile iron inspection chamber covers.

3.3.3 Backfill HDPE line and around Inspection Chambers

- Backfill the trench and around the inspection chambers with suitable Type 1 material, in 150mm layers tamped with the excavator bucket before compaction is complete with a rammer. Leave clearance at IC03 (backdrop connection) and East connection on IC04.
- This process shall continue until the excavation reaches sub-base formation level in Bitmac areas or finished ground level at existing gravel areas.
- Reinstatement of Bitmac surface finishes to be carried out at the end of the project.

3.4 <u>Install HDPE line from Manhole (IC04) down to the beach (Intertidal Zone)</u>

3.4.1 Excavate to Formation Level down the Steep Bank to the Intertidal Zone

- Set out the limits of the proposed excavation from IC04 (top of bank) to Mean High Water Springs (MHWS) at the bottom of bank. Use of scaffold staircase for access/egress.
- Saw cut the concrete footpath where the new line will pass at the top of the bank
- Break out the concrete using a hydraulic rock breaker attachment on the excavator. Remove the concrete debris for disposal off site.

- A temporary ramp is required at Linkshouse near the Mid Yell Care Centre for Plant/Equipment access to the beach. Ramp to be formed using 4" crushed rock (or equal approved equivalent) and finished with a Type 1 capping layer. (Refer to Drawings Number CS22.044-08 for details)
  Note the ramp can only remain in position for a maximum of 28 days or Planning Permission will be required.
- Long reach excavator and dumper to access the beach during low tide, move across the beach and position below (East of) the factory.
- Remove section of rock armour within the route of the line and set to the side for reuse.
- Excavate trench from the top of the bank down to the beach (intertidal area) between MHWS and MLWS.
- Side cast excavated materials in such a manner as to ensure that the excavation sidewalls are not surcharged.
- Check formation level has been achieved down the bank. (Refer to Drawings Number CS22.044-05 Rev A for details)

3.4.2 Install HDPE Line down the steep bank to the Intertidal Zone

- Spread 10mm pipe bedding material (Min. 150mm deep) across the bottom of the trench to reach the designed invert level of the new HDPE line.
- Position the '160 pipe coil trailer' near IC04.
- Using the long reach excavator dispense the 160mm OD HDPE pipe from IC04 down the bank to Minimum 4.0m below MHWS. (This will leave 250m to the agreed discharge location in Mid Yell Voe and will suit the pipe coil standard lengths)
- Cut the line at a suitable location and position into the trench.
- Connect the line to IC04 and fit at temporary cap to the lower end of the pipe.
- Mark the end of the pipe with a ranging rod or similar.
- Spread 10mm pipe bedding material (Min. 150mm deep) over the HDPE pipe from IC04 to MHWS.

3.4.3 Backfill HDPE Line down the steep bank to the Intertidal Zone

- Backfill around IC04 outlet with suitable Type 1 material, in 150mm layers tamped with the excavator bucket before compaction is complete with a rammer
- Backfill the trench with the suitable material from the side cast spoil. Any excess material to be hauled offsite with an all-terrain dumper. This will need to be moved along the beach and collected at a suitable point near 'Linkshouse' area.
- Re-instate the rock armour to its previous form.

3.5 Install HDPE from the Intertidal Zone to Subtidal Zone (250m Offshore)

3.5.1 Offshore (Subtidal) Installation

- Final/detailed methodology to be agreed with the Offshore Installation Contractor prior to works commencing on site.

- Offshore installation contractor to mobilise to site. (Standby/Rescue Vessel and Barge with Crane)
- Linkshouse Pier to be used as a loading point for the offshore materials. (Concrete Mattresses etc.)
- Civils contractor to excavate trench from below MHWS to MLWS using the long reach excavator.
- A weather window to be checked and agreed for the offshore phase of the project.
- Civils contractor to spread 10mm pipe bedding material (Min. 150mm deep) across the bottom of the trench.
- Barge to attend site with the 160mm pipe coil secured on board.
- End of pipe to be attached onto long reach excavator and pulled up to MHWS area.
- Locate the end of the pipe on the beach from the onshore installation.
- Remove the temporary cap from the end of the pipe and clean/prepare for jointing.
- Electrofusion or Butt-Fusion joint to be carried out to connect the lines on the beach.
- Barge to dispense the line, heading offshore to the discharge location in Mid Yell Voe. (Easting:451640m, Northing: 1191235m)
- Electrofusion or Butt-Fusion joint to be carried out as required, this is to be kept to a minimum by using 100m and 50m pipe coils.
- Support vessel to locate end of outfall line at agreed co-ordinates and hold line in this location.
- Section of line to be water filled from IC04 and air vented to reduce the buoyancy of the line.
- Barge to commence placing concrete mattresses at 6.0m centres over the outfall line starting below MLWS. Line to be sunk on the seabed in a controlled manner taking care not to over stress/kink the line. (Refer to Drawing Number CS22.044-04 Rev A and CS22.044-06)
- Barge to continue installing concrete mattresses until the line is fully on the seabed.
- Civils contractor to backfill the intertidal section of line with 10mm pipe bedding material (Min. 150mm deep) Suitable existing excavation material to be used to backfill remainder of the trench to original beach/ground level.
- Note no intertidal material is to be removed from site, excess material to be spread out/graded to suit existing beach/ground levels.

3.5.2 Post Subtidal Installation Survey

- The Coordinates of outfall discharge location on the seabed to be checked and confirmed.
- The ballast (concrete mattresses) holding the outfall line are all properly sitting on the bottom contour and the line is not forced to bridge any changes in the seabed elevation.
- The outfall pipe is not resting on any rock, debris or materials that could cause damage.
- Any auxiliary lines, such as hoses, ropes, buoys, or other equipment used during the installation has been removed.

3.6 Final Connection of New Outfall Line to the Water Treatment Plant

3.6.1 Install short section of line between IC02 and Backdrop IC03

- Civils contractor/Cooke Aquaculture to agree suitable time to shut down the existing effluent outfall line.
- Cooke Aquaculture to confirm isolation is in place on the Water Treatment Plant outfall line.
- Saw cut the concrete bund up to existing Inspection Chamber IC02.
- Break out the concrete using a small hydraulic rock breaker attachment on the excavator.
- Remove the concrete debris and carefully excavate and expose the inspection chamber outlet. Use of hand pneumatic breaker as required.
- Lay 10mm pipe bedding material (Min. 150mm deep) to the required invert level between IC02 and IC03.
- Connect new section of 160mm OD Marley solid wall pipe from IC02 and install backdrop arrangement at IC03
- Backfill 10mmm pipe bedding material from IC02 and around IC03.

3.6.2 Plug/Seal Redundant Outlet at IC02

- Place an expanding bung down the redundant 100mm diameter outfall line
- Fill the section between the bung and side of redundant outlet on the IC with concrete.

3.6.3 Commission New Outfall Line

- Cooke Aquaculture to De-Isolate the effluent outfall at the Water Treatment Plant.

3.6.4 Reinstate Concrete Bund

- Install formwork to the concrete bund upstand.
- Pour concrete (C35 grade) and make good section of bund from IC02 to IC03.
- Pour concrete capping cover over the section of line outside the bund to IC03 where cover is less than 600mm.

3.7 Remove Redundant Outfall Line

- Excavate and expose the redundant steel line from the side of the concrete bund at the Water Treatment plant to the top of the bank.
- Cut line from the side of the concrete bund to the top of the bank into manageable pieces and remove offsite for recycling.
- Seal the exposed outlet at the side of the concrete bund
- Backfill the trench, compacting in 150mm layers to sub-base level.

- Using the long reach excavator from the beach, expose the redundant line from top of the bank to MLWS.
- Cut the steel line at the bottom of the bank.
- Pull the section of line on the slope down to the beach.
- Cut the remainder of the steel line into manageable pieces and remove offsite via Linkshouse area for recycling.
- Backfill the line from top of the bank to MLWS.
- Temporary access ramp at Linkshouse to be removed and made good. Note the ramp is to be removed within 28 days of placement.

3.8 Replace Timber Fences, Concrete Path and Bitmac Surface

- Scaffold Contractor to attend site and remove access stair from the steep bank.
- Contractor to Reinstate the 3 No. sections of timber fence near IC04 and top of the bank.
- Install formwork, pour concrete (C35 grade), and make good around path at the top of the bank.
- Check/grade sub-base levels ready for the Bitmac base course between IC03 and the existing storage area.
- Lay the section of Bitmac base course, (thickness to match existing) from the concrete bund to side of the storage area.
- Lay the section Bitmac wearing course, thickness to match existing.
- Seal joints between the new Bitmac and existing Bitmac.
- Reinstate the timber sleeper wall at the existing storage area.

3.9 Contractor Demobilise Site

- Ensure the worksite is tidy and returned to its previous condition.
- Contractor, Engineer and Cooke Aquaculture to walk site and carry out snagging list.
- Contractor to clear any snag list items.
- Official ‘Client Handover’ to take place, with Engineer present if required.
- All plant and excess construction materials to be removed from site.
- Construction signage and temporary fencing to be removed.
- Temporary contractor welfare facilities to be removed.

4) Risk Assessment

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.1 Pre-Start Activities								
Untrained & incompetent personnel: Not following safe systems of work	Contractor personnel & Anyone in the Vicinity of the Works	3	2	6	**Civil Contractor job specific RAMs to be discussed in line with this document.** Operatives to have attended Site Induction. Supervisor to Verify Competency of Personnel Carrying Out Works. Plant Operatives to be in possession of Current CPCS or equivalent Skills Card. General Operatives to be in possession of CSCS or equivalent Skills Card. Supervision to have attended SMSTS/SSSTS Supervisors Training. Supervision to Review & Record Briefings & RAMS with team Members. All involved with Task to have Read, Understood & Signed Specific RAMS. All involved will also attend a daily TBT.	2	2	4
Unsupervised Personnel: Not following safe systems of work	Contractor personnel & Anyone in the Vicinity of the Works	3	2	6	Supervisor to perform pre-start work briefings. (Toolbox Talks) Supervisor to ensure all relevant documentation is in place & has been briefed to workforce. Supervisor to ensure the works are being carried out to current engineering drawings.	2	2	4
Lack of Communication	Contractor personnel	3	2	6	Operatives to be aware of Cooke Aquaculture emergency procedures. Operatives to have a direct line of communication to nominated supervisor. Operatives to be briefed on work face interfaces.	2	2	4
Adverse Weather	Contractor personnel Damage to Equipment & Materials	3	2	6	Works Supervisor to review weather forecasts & potential impact on work. Loose equipment, materials & tools to be properly stored at all times. Excess materials are to be removed from work areas each night. All operatives to wear standard PPE at all times, additional PPE may be required in adverse weather conditions. General Information RAMS are to be used as a guide during adverse weather. Any Cables & Leads are to be clearly marked & removed when not in use.	2	2	4
Untidy Work Areas without Good Access & Egress (Slips, Trips & Falls)	Contractor personnel & any visitors to the work area	3	2	6	Personnel To Access work areas via designated walkways. Access into excavations by shallow ramps or steps. Personnel to take care when walking on hardcore surfaces. Maintain regular housekeeping in all areas. Access/egress to be kept clear at all times. Any Cables & Leads to be clearly marked & kept away when not in use.	2	2	4

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.2 Excavations & Backfilling								
Inadequate Access/Egress Excavation Collapse Ingress of Fumes & Water	Contractor personnel	3	4	12	Provide safe access/egress point into the excavation. Excavation to be highlighted with appropriate barriers & signage. Secured barriers will be set up a minimum of 1m back from the edge of the excavation. Access/egress to be via sloped ramp with firm under footing conditions. Maintain access/egress point. Excavation inspections must be carried out at the start of every shift & after any event that could have led to deterioration. All excavations will be battered back to a safe angle, the angle of repose will be determined by the ground conditions. All excavations near existing structures will be assessed by supervision to identify any requirement for temporary works.	2	3	6
Excavator & Attachments: Quick Hitch & other mechanical failures, operatives struck by excavator causing crush injuries or fatality Operatives being struck by loose materials falling out of bucket Fire Unauthorised use	Banksman/persons in vicinity	3	3	9	Excavator & quick hitch to have 12-month thorough examination. All excavator operators will hold a current CPCS or equivalent qualification. All Operators to perform & record pre-use checks on excavator, quick hitch & excavator accessories & maintain as per manufacturer's instructions. Any defects or concerns are to be reported to supervision. Operator will ensure that: -all mirrors, cameras & windows are in working condition & 360 vision is achieved prior to starting work -flashing beacon is in good working order. -cab of machine is kept in a clean condition free of any materials that could cause a nuisance. -a fire extinguisher & spill kit are present. -no persons work under bucket or attachments at any time. -safety pins are located in the correct position before use. -All buckets & attachments are stored in a safe & secure place when not in use. -excavator is parked in an approved area at the end of each shift & the engine is isolated & keys located in an agreed location.	2	3	6
Site Dumper & Roller: Personnel run over by mobile plant causing serious injuries or fatality. Collisions with other plant on site. Flying particles from wheels during operation.	Contractor personnel	3	3	9	All operators must have current CPCS or equivalent qualification. Hi-Viz clothing & all other required PPE to be worn by all personnel on-site. Operator to inspect & record each item of plant daily prior to use. Flashing beacons to be inspected & seat belts to be worn at all times. Handholds & steps must be used & maintained in safe condition. Operators must switch off engine, apply handbrake & dismount the dumper whilst it is being loaded.	2	3	6

Dust Overturning while tipping loads/moving with raised skips Access & Egress Parking & dismounting machine on a slope. Unauthorised use. Working Near excavations Overloading Skip Fall of materials					Operator of the dumper must ensure it is not overloaded. Skip to be lowered immediately after tipping a load, no driving with raised skips. Load only to be tipped on suitably level ground. Designated haul route will be provided & kept clear at all times to ensure a clear path of travel at all times. Plant never to be left with engine running while unattended. Banksman will be provided where deemed necessary. Where possible no work will be undertaken next to an excavation. Fencing, signage, bunds & or stop blocks will be placed around edge of excavation to prevent plant or vehicles driving in. Ground personnel must keep clear of plant at all times. Rollers will only operate on even surfaces on a gradient less than specified by manufacturer.			
Plant/Personnel Interface (Excavator Strikes person)	Contractor personnel or anyone in the vicinity of the works	3	4	12	If possible, an exclusion zone should be set up around the working area to separate all site operatives from the plant removing the need for a banksman. Persons to keep clear of excavator swing radius. Banksman to restrict access to authorised persons only in the working area. Excavators to maintain 360 vision, Hazard beacons to be operating when machine is in use. Persons not to approach working excavator without permission of operator	2	3	6
Plant defective or Unsafe: Crushing, Electrocution, falls of materials	Contractor personnel	3	4	12	All plant to be subject to planned maintenance as per manufactures instructions. All plant to have current thorough examination Only CPCS or equivalently qualified operators to operate plant. Daily inspections to be carried out & recorded for each item of plant. Any defects found by the operator must be reported to their supervisor immediately, the supervisor will then instruct the operator on the next stage. Daily inspections are to be returned to supervisor weekly.	2	3	6
Uncontrolled Plant: (Unexpected movement of plant)	Contractor personnel & anyone in the vicinity of the works	3	4	12	Use chocks on steep slopes to supplement the handbrake. Do not leave engines running whilst unattended. Excavator drivers to be aware of catching 'deadman' handle with loose clothing when demounting. Personnel to be aware of the settlement of materials. Operators to secure & remove keys from machines when left unattended. Plant to be parked up & secured in designated areas at the end of each shift.	2	3	6

Instability of Excavations: Collapse of sides & flooding	Persons entering excavations	3	4	12	Excavations shall be carried out following one of the methods described in this document. Install & maintain dewatering activities to protect against collapse. Daily inspections of excavations to be carried out by trained & competent person each morning & after any flooding throughout the shift. Remove personnel from excavation if sidewalls show signs of water ingress. The surface water management plan must be in place prior to work commencing.	2	3	6

Hazard	**Persons Affected**	**Risk**			**Control Measures**	**Risk**		
		L	**S**	**R**		**L**	**S**	**R**
4.3 Pipework & Inspection Chambers								
Injury due to collapse of excavation. Inhalation of dust. Exposure to excessive noise. People, plant and materials falling into excavation. Uncontrolled release of pipe coil. Manual handling of pipes. Contact with Silica. Hand tools/abrasive tools injuries. Contact with contaminated materials. Injury due to contact with existing underground services	Contractor personnel	3	4	12	Persons carrying out the works will be trained and supervised by a competent person. Suitable and sufficient trench supports are to be provided as necessary. Location of existing services to be completed before work start, also information on ground conditions to be obtained. Use of pipe coil trailer to transport and dispense outfall line in restrained manner. COSHH, manual handling and PPE assessments to be available for materials and tools used. Use mechanical means to lift materials where possible. Safe access/egress from trench to be provided at all times. Signs and barriers to be positioned to give warning of work where appropriate. Operatives to maintain a safe distance from the slung pipe until it can be safely manoeuvred to place. First aid and welfare facilities to be made available. Ensure safe systems of work, taking into account traffic movement, weather conditions and existing structures.	2	3	6

Inhalation of dust. Exposure to excessive noise. Contact with cementitious products. Manual handling injuries. Injury caused by contact with abrasive wheel. Trip hazards from tools and materials.	Contractor personnel	4	3	12	Work planned in advance, Where cutting equipment is required, operatives are to be trained to use and change the abrasive wheel. COSHH, manual handling and PPE assessments will be available for materials and tools used. Safe access and egress to be maintained when working near occupied premised or footpaths. Material deliveries are to correspond with the work activities, deliveries and storage areas are to be monitored and controlled to reduce/remove trip hazards and damage to loads.	2	3	6

Injury due to bursting of abrasive wheel or disc. Eye injury from flying particles.					Signs, barriers and alternative safe routes will be used to give warning of pavement/road closures and provide safe access routes for pedestrians and vehicles where appropriate. Cutting equipment to be inspected prior to use. Control cutting dust by utilising dampening down techniques. Manual handling assessments and safe lifting techniques are to be adopted. Work sequences to be planned and defined by site manager. Work will be co-ordinated to reduce risks to third parties from trip hazards, notably materials and tools left unattended on public access/tenants' thoroughfare or a failure to comprehensively sign/barrier works. Work shall be monitored to ensure the safety of operatives and those who may be affected by dust. Supervisor to monitor manual handling techniques and ensure that physical and mechanical lifts are not exceeded, e.g. overloading of wheelbarrows Supervisor to ensure operatives are aware of the COSHH data regarding cementitious and Silica products.			

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.4 Small Plant & Equipment								
Use of Pneumatic Tools: Vibration White Finger Hearing Damage Dust Particles	Contractor personnel	3	3	9	The operator is to be familiar with the tool prior to first use. Tools frequency rating to be established. Operatives to be issued with information on time tool can be used in 8-hour shift. Establish work rotations if required. Time spent on each tool to be recorded on site in HAVS register. Weather conditions need to be considered when assessing the time, a person will use the tool for. Ways of communication need to be assessed in case of emergency. A pre-use safety inspection is to be performed before use. All defected tools are to be taken out of service & returned to site supervision. All work areas to be inspected before use for potential trip hazard. All work zones to be fenced off to control unwanted entry. Warning signage to be in place with the recommended PPE on. Ensure all correct task specific PPE issued is being worn/used at all times i.e. ear mufflers/ear plugs, Dust masks, etc. All equipment to be silenced, serviced & in good condition.	2	3	6

					All whip checks to be in place on all hoses & equipment.			
Use of 110Volt small power tools: Electric shock, injury to operative, cuts, entanglement	Contractor personnel	3	3	9	Only tools with a current PAT test to be used. Tools & leads to be checked prior to use. All persons utilising such equipment to be trained & competent in the safe use of such equipment. Battery operated tools to be used wherever possible. Suitable task specific PPE/RPE to be worn at all times. Tools should be suitable for purpose. No loose clothing/suitable cut resistant gloves to be worn.	2	3	6
Use of Spray Paint: COSHH	Engineers, Chainman & Site Operatives	2	3	6	Operatives to be briefed on COSHH assessments. Adequate PPE/RPE to be worn as directed by COSHH assessment. Any contact & signs of burning seek medical attention. Avoid contact with eyes (all operatives to be aware of eye washing facilities. Any containers & materials not required to be disposed of.	2	2	4
Use of Abrasive Wheels: Bursting of disc / wheel Eye injury Damage to respiratory system	Contractor personnel Those involved in operation / local vicinity	3	4	12	Only trained and certified workers to operate the abrasive wheel. The right cutting disk for cutting the selected material must be chosen. A pre use safety inspection on the abrasive wheel equipment and disks is to be performed at the start of every use. Work area must be cleared of all workers and public who may be affected by the abrasive wheel cutting process. Work area to be inspected before use, identifying, and removing any potential and trip hazards. At all times the operator must sustain total control of the abrasive wheel, if this cannot be sustained for any reason other means of cutting should be sought. If cutting concrete, a dust suppression unit should be used at all times to minimise the dust created. If the cutting process is going to take a while, a second worker is required to job rotate with. PPE & RPE is required at all times when using the abrasive wheel. (Gloves, high impact goggles, visor, hard hat, High Vis, Ear defenders & FFP as a minimum for RPE) No lose clothing is to be worn when operating the abrasive wheel. The abrasive wheel should be filled with petrol in a controlled area, which has the required spill kits and fire appliances.	2	3	6

Hazard	**Persons Affected**	**Risk**			**Control Measures**	**Risk**		
		L	**S**	**R**		**L**	**S**	**R**
4.5 Site Traffic Management								

Interaction between any of the following: a) mobile plant and site vehicles b) delivery and other non-site vehicles c) pedestrians on and off site d) plant working next to excavations/top of slopes	Contractor personnel including inspectors and visitors	3	4	12	A well planned, constructed and signed road network to be designed for the site, incorporating temporary and permanent roads as necessary, with entrances and exits clearly identified and access maintained at all times for emergency services. All height, width or weight restrictions to be clearly indicated with signs at all entrances. Tipper lorries not to travel with back in raised position. Hard standings for loading/offloading, parking areas, one-way systems and turning circles to be provided as necessary. Segregation of pedestrians/ traffic wherever possible, with barriers, signs, designated pedestrian walkways & crossing points. Suitable and sufficient permanent and temporary lighting to be utilised. Regular monitoring to ensure that both pedestrian & vehicle routes remain clear, tidy, unobstructed and signs are clearly visible. A well maintained transport fleet that is suitable and licensed for on & off site use as necessary Only certificated and/or licensed drivers authorised to drive site vehicles and mobile plant. Banks men to control reversing maneuvers. Drivers accompanied by children or animals in the cab will not be allowed on site. Only trained and authorised persons to act as Slinger/Signalers or to load/offload materials. The Slinger/Signaler to be clearly identified as such and use an agreed and understood signaling system. Loads to remain restrained until offloading point is reached. Mobile phones are not to be used whilst walking the site and extra precautions to be taken in areas used by vehicles. High visibility vest/jacket to be worn while on site. Persons with hearing difficulties to be individually assessed for risk. Where necessary physical protection, such as barrier walkways, screens or hoarding to be provided. Where possible no works will be undertaking next to excavations. Fencing, signage, bunds and or block stops to be placed around excavations and top of slope to prevent plant entering excavations or approaching slopes.	1	4	4

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.6 Use of Floor Saw								

Vibration Noise	Contractor personnel	3	4	12	Area of work to be identified and all service drawings/engineering drawings understood. Area of work to be CAT scanned and all known services marked so easily avoided with saw blade. Area of work to be accurately set out prior to starting saw cut. User of saw to be trained, competent and familiar with the floor saw. Only abrasive wheel trained and certified workers to change the blade on the floor saw. A pre use safety inspection is to be performed on the floor saw by the purposed user. All defects are to be reported to the site manager. Dust suppression units used at all times. TBT – Operators instructions and maintenance. Additional PPE – Safety goggles, ear plugs, suitable dust mask. Fence off working area. Check HAVs register for exposure times when using this equipment.	2	3	6

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.7 Bitmac Resurfacing								
Burns, COSHH, Strikes from moving equipment, Crushes, Manual Handling	Contractor personnel	3	4	12	Design out the need to carry out manual handling. Only trained & competent operatives to operate plant & equipment. Banksman present during reversing manoeuvres. Daily inspections to be carried out on all plant prior to use. No works to take place inside the paver unless its isolated. COSHH sheets to be available & briefed to operatives. Additional PPE – Suitable gloves & coveralls	2	3	6

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.8 Environmental Impact								
Fuel / Hydrocarbon Spills Fire Risk (Clothing etc.) Diesel fuel in eyes Hydrocarbon pollution of ground	Environmental Damage	3	2	6	Refuelling operative to wear specific additional PPE e.g. Chemical resistant gloves & goggles. Monitor fuel levels & never leave fuel hose unattended. Remove coveralls immediately if contaminated with fuel. Carry Portable spill kit & eye wash facilities with refuelling vehicle.	2	2	4

					Contain & absorb all spills & double bag contaminated materials. Dispose of contaminated absorbents as hazards waste. Store hazardous liquids in designated flammable liquid storage containers in bunded areas.			
Local Oil Spills Contamination of ground	Environmental Damage	3	2	6	Operational areas to have spill response equipment available. Contain & absorb all spills & double bag contaminated materials. Containment absorbents to be disposed of as hazardous waste.	2	2	4
Silt Run Off Contamination of natural waterways	Environmental Damage	3	2	6	Spoil storage areas to incorporate protection against silt run off & be monitored for effectiveness of control measures. Do not overload skips on dumpers & firm down materials before travelling. Water management from excavations to incorporate measures for silt reduction when over pumping & be monitored for effectiveness of control measures.	2	2	4
Japanese Knotweed Non-Native invasive species	Roots can damage paved areas, fences, drains, & structures	3	2	6	Brief contractor personnel with the potential for Japanese Knotweed on the steep back East of the factory. Ensure personnel understand what the Non-Native species looks like. Japanese Knotweed to be excavated from the site, taking care not to cross contaminate with any other materials. Japanese Knotweed contaminated soil must be disposed to a registered landfill site.	3	1	3

Hazard	**Persons Affected**	**Risk**			**Control Measures**	**Risk**		
		L	**S**	**R**		**L**	**S**	**R**
4.9 Working on a Slope								
Falls, Slips/Trips	Contractor personnel	3	3	9	Scaffold staircase to be erected down the steep slope for access/egress to the beach. Long reach excavator to be used from the beach level, to prevent workers being on the slope. Banksman to be in attendance from the temporary scaffold staircase.	2	3	6

Hazard	**Persons Affected**	**Risk**			**Control Measures**	**Risk**		
		L	**S**	**R**		**L**	**S**	**R**
4.10 Working near live Water Treatment Plant								
Damage to Factory equipment, Unplanned Shutdown, Financial impact	Contractor personnel and Client	3	3	9	Prior to any work commencing Cooke Aquaculture to brief site contractors with the Water Treatment Plant operations. Cooke Aquaculture Emergency procedures to be discussed.	1	3	3

					Suitable barriers and signage to be in place separating the worksite from the operational plant. Plant to be selected to suit size of working areas.			

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.11 Lifting Operations								
Falling materials and or pipework. Impact and collision. Failure of cranage and lifting equipment.	Contractor personnel, property damage.	3	4	12	A lift plan is to be developed by an Appointed Person in Lifting Operations. Only Certified plant and equipment to be to be used. Only Certified competent personnel to carry out the task. Suitable PPE to be worn, Hard Hat, safety Boots, High-Viz, Safety Glasses, Gloves etc. Materials not to exceed the safe working load (SWL) of cranage. TBT to be carried out before commencement on work. Safety warning signs should be in place around the lifting operation. A lifting exclusion zone must be provided with if barriers (if applicable) Tag lines to be used to assist with positioning the load. Personnel never to be underneath a suspended load. Communication to be established between the Crane operator and Banksman prior to starting the task.	1	4	4

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.12 Working in a Tidal Zone								
Access/Egress, Uneven/Soft Ground, Tides, Inclement weather.	Contractor personnel	3	3	9	Tidal zone work to be carried out during low tides, this may be out of standard working hours (To be agreed with Cooke Aquaculture) Tidal zone work shall not be carried out if wind speeds and sea conditions are deemed unsafe. Take care when accessing the beach. Suitable PPE to be worn, (Rubber boots). Be aware of uneven, slippery surfaces an discuss at TBT's. Plant to access site from Linkshouse area via temporary ramps. Long reach excavator to be used within tidal areas.	2	3	6

Hazard	Persons Affected	Risk			Control Measures	Risk		
		L	S	R		L	S	R
4.13 Working on Water								
Falling into water, Hypothermia, Drowning, Slips/Trips,	Contractor personnel	3	4	12	**Offshore Installation Contractor job specific RAMs to be discussed in line with this document.**	1	4	4

Inclement Weather, Lack of communication, Poor Material storage.					Forecast to be checked and offshore installation to be planned during a suitable weather window. Offshore work will stop if wind speeds, and sea conditions are deemed unsafe. Only competent/trained personnel to carry out the work scope. Standby/rescue vessel to be in attendance to support the installation barge. Minimum of two personnel to be on each vessel and within line of sight. Lifebouys to be aboard each vessel. Suitable PPE to be worn, life jacket at all times. Communication to be established between the ground team and offshore crew via two-way radios. Loading of materials to be carried out from Linkshouse pier.			

5) Risk Matrix

Risk Rating = Likelihood(L) x Severity (S)	Hazard Severity (S)				
	1 Negligible Injury, no absence from work	**2 Slight** Minor injury requiring first aid treatment	**3 Moderate** Injury leading to lost time accident	**4 High** Involving a single persons serious injury or death	**5 Very High** Multiple serious injuries or death
1 – Very Unlikely A freak combination of factors would be required for an incident / accident to result	Low	Low	Low	Low	Low
2 – Unlikely A rare combination of factors would be required for an incident / accident to occur	Low	Low	Low	Medium	Medium
3 - Possible Could happen when accidental factors are present but otherwise unlikely	Low	Low	Medium	High	High
4 - Likely Not certain to happen but an accidental factor may result in an incident / accident	Low	Medium	High	High	High
5 – Very Likely Almost inevitable that an incident / accident would result	Low	Medium	High	High	High

Likelihood
How often could the hazard occur?
Consider the task, frequency, duration, method of work & employees involved.

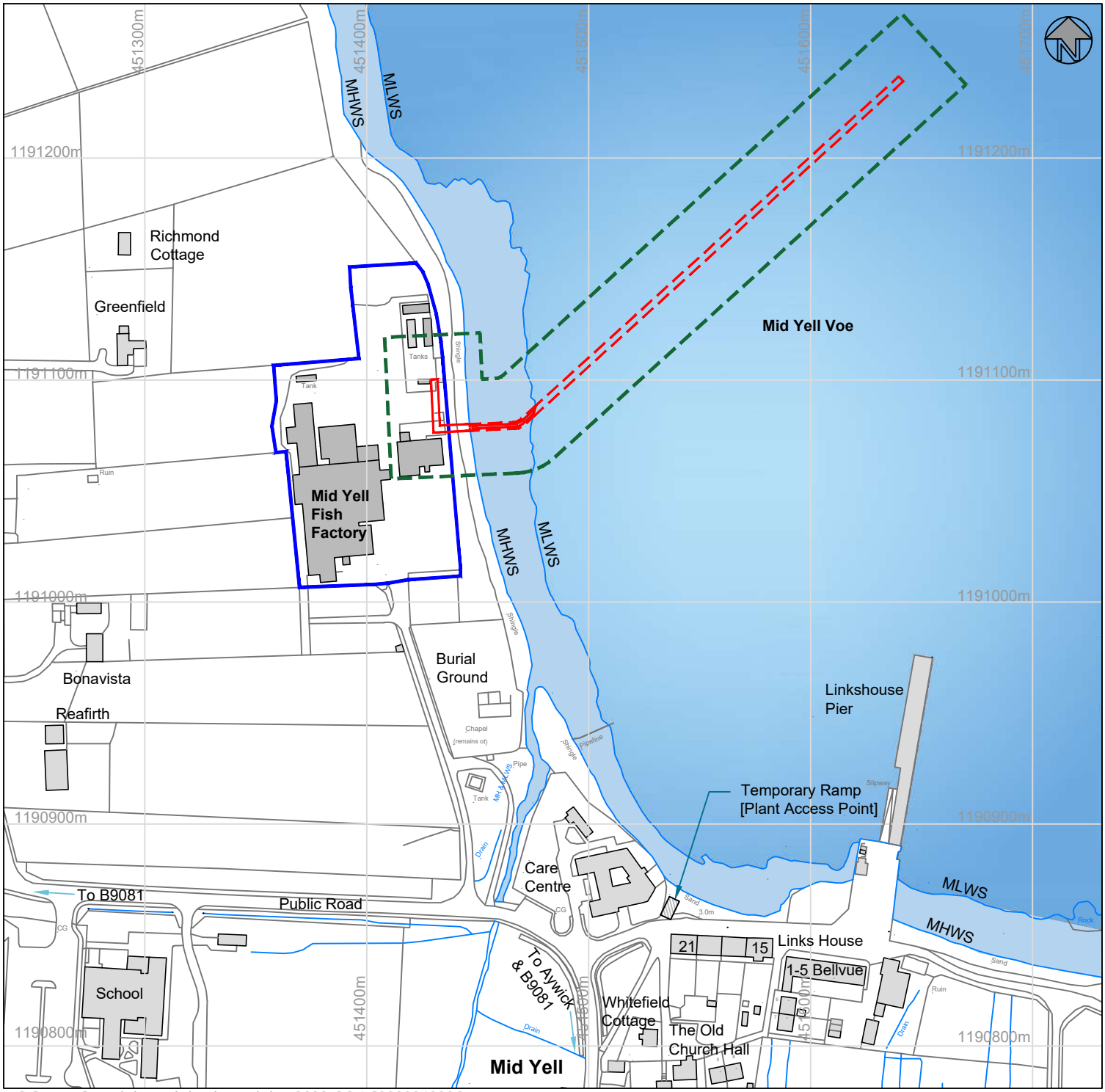
Severity
How serious would the hazards effects be if realized?
Consider the type of hazard, biological, ergonomic, physical & chemical.

Risk
Likelihood x Severity

Low Risk (Score 1 – 6)	May be acceptable; however review the task to see if the risk can be further reduced.
Medium Risk (Score 8 – 10)	Task should only proceed with appropriate consultation with specialist personnel. Where possible the task should be refined to take account of the hazards involved or the risks should be further reduced prior to task commencement.
High Risk (Score 12 – 25)	Task must not proceed. It should be redefined with further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to work commencement.

Appendix A – CASE Shetland Ltd – Engineering Drawings

Site Grid Reference: HU 51387 91043



0m 50 100 200

Scale 1:2500

Location Plan

Scale 1:2500

Drawing Key

- Extent of Land Owned by: Cooke Aquaculture Scotland Ltd, Mid Yell, Shetland, ZE2 9BN
- Land Planning Development Boundary
- Marine Planning Development Boundary
- 20m Neighbour Notification Boundary

REV	DATE	DESCRIPTION	drawn	check
A	12/12/22	For Planning - First Issue	RJW	EJA
-	01/12/22	For Client Comment	RJW	EJA

CASE SHETLAND
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4 Market Street | Lerwick | Shetland | ZE1 0JN
T: 01595 840476 | E: info@caseshetland.co.uk

PROJECT NO. CS22.044

PROJECT TITLE: Effluent Outfall Line Replacement

DRAWING TITLE: Location Plan

SITE DETAILS: Mid Yell Fish Factory, Shetland, ZE2 9BN

CLIENT DETAILS: Cooke Aquaculture Scotland Ltd

DRAWN BY: RJW

CHECK BY: EJA

DATE: Dec 2022

SCALE @ A4: 1:2500

Drawing Status: PLANNING

Drawing Number: CS22.044 -01

Revision: A

Site Grid Reference: HU 51387 91043

General Notes

1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

Drawing Key

- Land Planning Development Boundary [206m²]
- Marine Planning Development Boundary [764m²]
- Land Ownership Boundary
- 20m Neighbour Notification Boundary
- Existing 100mm Ø Effluent Outfall Line
- IC — Inspection Chamber
- Total Station Set Up Location (TS2)

Water Treatment Area
Tank Below
Container
Tank
High Level 200mm Ø Pipework
Existing 450mm Ø IC IL: 100.665
Timber Fence
Rough Grass
Access Platform
Stairs
Vent Pipe
Existing 450mm Ø IC IL: 100.590
Concrete Bund
Concrete Upstand
Access Platform
Tank
Steel Pipe Support Frame
Container
Pumps
Bitmac Turning Area
Existing 100mm Ø Effluent Outfall Pipe (Max. 6 l/s)
Concrete Path
Timber Sleepers
Pedestrian Access Route
To Main Reception
Storage Area
'Type 1' Gravel Finish
TS2
Clean Stone
Timber Fence
Rock Armour
Top of Bank
Bottom of Bank
Rough Grass
Beach
Mid Yell Voe
Existing 100mm Ø Effluent Outfall Pipe (Max. 6 l/s)
Existing Outfall Pipe Discharge Point Easting: 451469m Northing 1191079m
MHWS
MLWS
TS3
Concrete Path
Clean Stone
Factory Workshop
Bitmac Access Road
Delivery/Collection Point
Main Factory Building
To Main Site Entrance
Car Park
20m Neighbour Notification Boundary

Existing Site Plan
Scale 1:100

0m 1 2 3 4 5 7.5 10
Scale 1:100

REV	DATE	DESCRIPTION	drawn	check
-	01/12/22	For Planning - First Issue	RJW	EJA

CASE SHETLAND
Griesta | Tingwall | Shetland | ZE2 9SB
4 Market Street | Lerwick | Shetland | ZE1 0JN

PROJECT NO.	PROJECT TITLE	
CS22.044	Effluent Outfall Line Replacement	
DRAWING TITLE	Existing Site Plan	
SITE DETAILS	Mid Yell Fish Factory, Shetland, ZE2 9BN	
CLIENT DETAILS	Cooke Aquaculture Scotland Ltd	
DRAWN BY	RJW	
CHECK BY	EJA	
DATE	Dec 2022	
SCALE @ A1	1:100	
Drawing Status	PLANNING	
Drawing Number	CS22.044 -02	
Revision	-	

Site Grid Reference: HU 51387 91043

General Notes

1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
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3. Ensure drawing has been printed to the correct size when scaling

Drawing Key

- Land Planning Development Boundary [206m²]
- Marine Planning Development Boundary [764m²]
- Land Ownership Boundary
- 20m Neighbour Notification Boundary
- Redundant 100mm Ø Effluent Outfall Line within concrete bund
- Redundant 100mm Ø Effluent Outfall Line, to be removed following commissioning of new line
- Proposed 160mm OD HDPE Effluent Outfall Line [~290m Long)
- IC — Inspection Chamber
- TS2 — Total Station Set Up Location (TS2)

[Drawing Continued on **CS22.044-04**]

Proposed Effluent Outfall Line to extend 254m offshore from MHWS. Line to be buried underground and rise to the seabed near MLWS. Line to be held securely on the seabed with 38 No. 3.0m x 1.50m x 0.15m Concrete Mattresses at 6.0m centres [Refer to Proposed Site Plan 2 of 2 Drawing No. CS-22.044-04 for Continuation]

Water Treatment Area
Bitmac Turning Area
Bitmac Access Road
Factory Workshop
Main Factory Building
Car Park
Storage Area
Rough Grass
Steep Bank Down
Rock Armour
Beach
Mid Yell Voe
Tank Below
Container
Tank
Access Platform
Stairs
Concrete Bund
Concrete Upstand
Pumps
Existing 450mm Ø Inspection Chamber, IC01 IL: 100.665
Existing 450mm Ø Inspection Chamber, IC02 IL: 100.590
New Effluent Outfall connection to existing IC [160mm Ø Marley Drainage between IC02 & IC03]
Vent Pipe
Proposed Back Drop IC IC03 IL: 100.310 CL: 101.075
Existing Outfall Line to be sealed at IC
Steel Pipe Support Frame
Redundant 100mm Ø Effluent Outfall line to be removed to side of concrete bund and sealed following commissioning of new 160mm OD line
Corner of Bund Wall +101.430 (Datum)
Proposed 160mm OD HDPE Outfall Pipe
Timber Fence
Timber Sleepers
Pedestrian Access Route
To Main Reception
Concrete Path
Clean Stone
Proposed IC04 CL: 101.315 IL: 100.110
'Type 1' Gravel Finish
IC04 Easting: 451431.970m Northing: 1191078.500m
Delivery/Collection Point
To Main Site Entrance
Top of Bank
Bottom of Bank
Rock Armour
MHWS Easting: 451446.420m Northing: 1191079.160m
Proposed 160mm OD HDPE Outfall Pipe
Redundant 100mm Ø Effluent Outfall Pipe (To be removed following commissioning of new line)
Redundant Outfall Pipe Easting: 451469m Northing: 1191079m
Easting: 451469.090m Northing: 1191080.560m
MHWS
MLWS
3.0m Wide Corridor for Pipe
20m Neighbour Notification Boundary
1191100m
(Spot Level)

[Drawing Continued on **CS22.044-08**]

Proposed Site Plan 1 of 3

Scale 1:100

0m 1 2 3 4 5 7.5 10
Scale 1:100

REV	DATE	DESCRIPTION	drawn	check
A	14/12/22	For Planning - First Issue	RJW	EJA
-	01/12/22	For Client Comment	RJW	EJA

CASE SHETLAND
Griesta | Tingwall | Shetland | ZE2 9SB
4 Market Street | Lerwick | Shetland | ZE1 0JN

PROJECT NO. CS22.044
PROJECT TITLE Effluent Outfall Line Replacement
DRAWING TITLE Proposed Site Plan 1 of 3
SITE DETAILS Mid Yell Fish Factory, Shetland, ZE2 9BN
DRAWN BY RJW
DATE Dec 2022
CLIENT DETAILS Cooke Aquaculture Scotland Ltd
CHECK BY EJA
SCALE @ A1 1:100
Drawing Status PLANNING
Drawing Number CS22.044-03
Revision -

Site Grid Reference: HU 51387 91043

451400m
451500m
451600m
451700m
1191200m
1191100m
1191000m

MHWS
MLWS

Proposed Effluent Outfall Line
Discharge Point into Mid Yell Voe
Easting: 451640m
Northing: 1191235m
Depth: 6.08m

Proposed 3.0m long x 1.50m wide
x 0.15m Thick Concrete Mattresses at
6.0m Centres over new outfall line
38 No. Total

Mid Yell Voe

Proposed 160mm OD
HDPE Effluent Outfall Line

Tank
Tank
Tank
Tank
Tanks
Existing
IC01
IC02
Water
Treatment
Area
Tank
Pumps
Beach
Proposed
Back Drop
IC03
Tank
Extent of site shown in
Drawing Number: **CS22.044-03**
Existing Outfall
Line removed
and sealed
Bitmac
Turning Area
Proposed
IC04
Main
Reception
Gravel
Area
Sheep
Bank
Down
Proposed Effluent Outfall
Line to extend 254m
offshore from MHWS
Redundant Outfall Pipe
Easting: 451469m
Northing: 1191079m
Rock Armour
Factory
Workshop
Car Park
Delivery/Collection
Point
Mid Yell Fish
Factory
Carpark
Bitmac
Turning Area
Main Site
Entrance
Burial
Ground
Burial
Ground
To Mid Yell

MHWS
MLWS
MHWS
MLWS

General Notes

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2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

Drawing Key

- Land Planning Development Boundary [206m²]
- Marine Planning Development Boundary [764m²]
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- Redundant 100mm Ø Effluent Outfall Line within concrete bund
- Redundant 100mm Ø Effluent Outfall Line, to be removed following commissioning of new line
- Proposed 160mm OD HDPE Effluent Outfall Line [~290m Long]
- Inspection Chamber (IC)
- Total Station Set Up Location (TS2)

[Drawing Continued on **CS22.044-08**]

Proposed Site Plan 2 of 3

Scale 1:500

0m 5 10 20 30 40 50
SCALE 1:500

REV	DATE	DESCRIPTION	drawn	check
A	14/12/22	For Planning - First Issue	RJW	EJA
-	01/12/22	For Client Comment	RJW	EJA

CASE SHETLAND
Griesta | Tingwall | Shetland | ZE2 9SB
4 Market Street | Lerwick | Shetland | ZE1 0JN

PROJECT NO. CS22.044
PROJECT TITLE Effluent Outfall Line Replacement
DRAWING TITLE Proposed Site Plan 2 of 3
SITE DETAILS Mid Yell Fish Factory, Shetland, ZE2 9BN
CLIENT DETAILS Cooke Aquaculture Scotland Ltd
DRAWN BY RJW
CHECK BY EJA
DATE Dec 2022
SCALE @ A1 1:500
Drawing Status PLANNING
Drawing Number CS22.044-04
Revision -

General Notes

1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

HDPE Pipework Specification

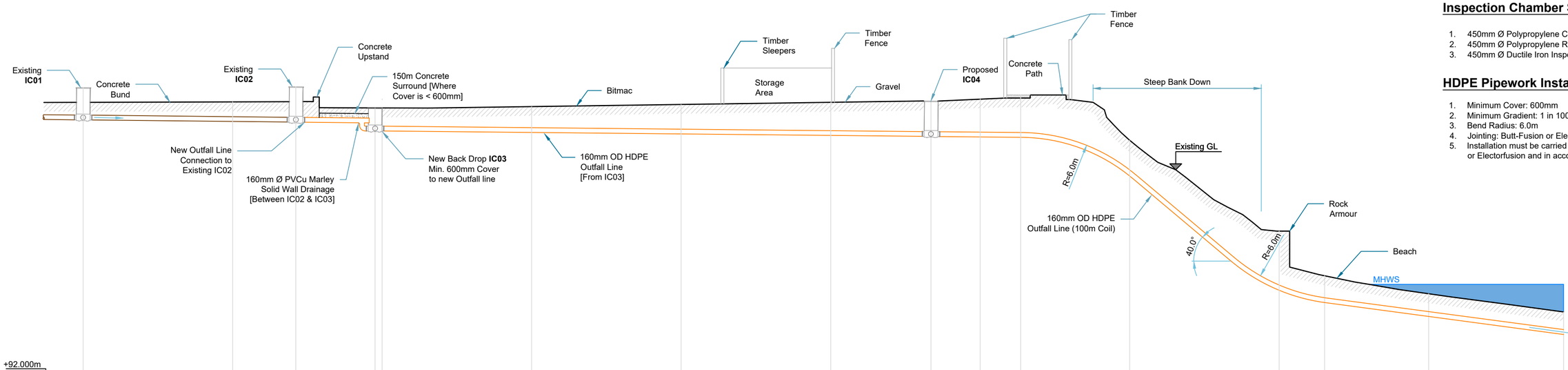
1. Pipework to be supplied from 'JD Pipes' or equal approved
2. Application Type: Non-Potable Water (Suitable for Marine outfalls)
3. Size (OD): 160mm
4. Nominal Bore: 140.3mm
5. Wall Thickness: 9.9mm
6. Pipe Length: 50m or 100m coils
7. Material: High Density Polyethylene (HDPE)
8. Material Strength: PE100
9. Minimum Required Strength (MRS): 10.0MPa (Megapascal)
10. Standard Dimension Ratio: SDR17
11. Pressure Nominal: PN10
12. Water Pressure Resistance: 10 bar
13. Standards: EN 12201
14. Approx. Weight (p/mtr): 4.56kg

Inspection Chamber Specification

1. 450mm Ø Polypropylene Chamber Base with 160mm Ø Outlets
2. 450mm Ø Polypropylene Risers
3. 450mm Ø Ductile Iron Inspection Chamber Cover

HDPE Pipework Installation Notes

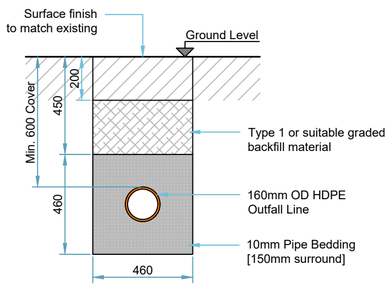
1. Minimum Cover: 600mm
2. Minimum Gradient: 1 in 100 (1.00%)
3. Bend Radius: 6.0m
4. Jointing: Butt-Fusion or Electofusion
5. Installation must be carried out by an operative trained in Butt-fusion or Electorfusion and in accordance with manufacturer's guidelines.



Chainage (m)	0.000		5.000	7.114	9.727	10.000		15.000		20.000		25.000	28.354	30.000	31.354		35.000		40.000	41.518		45.000		49.500	
Cover Level (m)	101.250 [Bund Level]		101.267	101.275 [Bund Level]	101.075	101.065		101.109		101.178		101.178	101.315	101.363	101.495		99.987		96.950	95.460		94.860		94.260	
Invert Level (m)	100.665		100.612	100.590	100.310	100.295		100.245		100.195		100.145	100.110	100.095	100.080		98.790		94.970	94.560		94.100		93.500	
Gradient	1 in 94.85 (1.05%) 7.114m			1 in 100 (1.00%) 2.650m	1 in 100 (1.00 %) 18.590m								1 in 100 (1.00 %) 3.0m		10.164m					1 in 7.5 (13.33%) 7.992m					

Proposed Longitudinal Section

Scale 1:100



Typical Cross Section

Scale 1:20

Scale 1:100

REV	DATE	DESCRIPTION	drawn	check
A	12/12/22	For Planning - First Issue	RJW	EJA
-	01/12/22	For Client Comment	RJW	EJA

CASE SHETLAND
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PROJECT NO. CS22.044

PROJECT TITLE Effluent Outfall Line Replacement

DRAWING TITLE Proposed Longitudinal Section 1 of 2

SITE DETAILS Mid Yell Fish Factory, Shetland, ZE2 9BN

CLIENT DETAILS Cooke Aquaculture Scotland Ltd

DRAWN BY RJW

CHECK BY EJA

DATE Dec 2022

SCALE @ A2 As Shown

Drawing Status PLANNING

Drawing Number CS22.044 -05

Revision A

General Notes

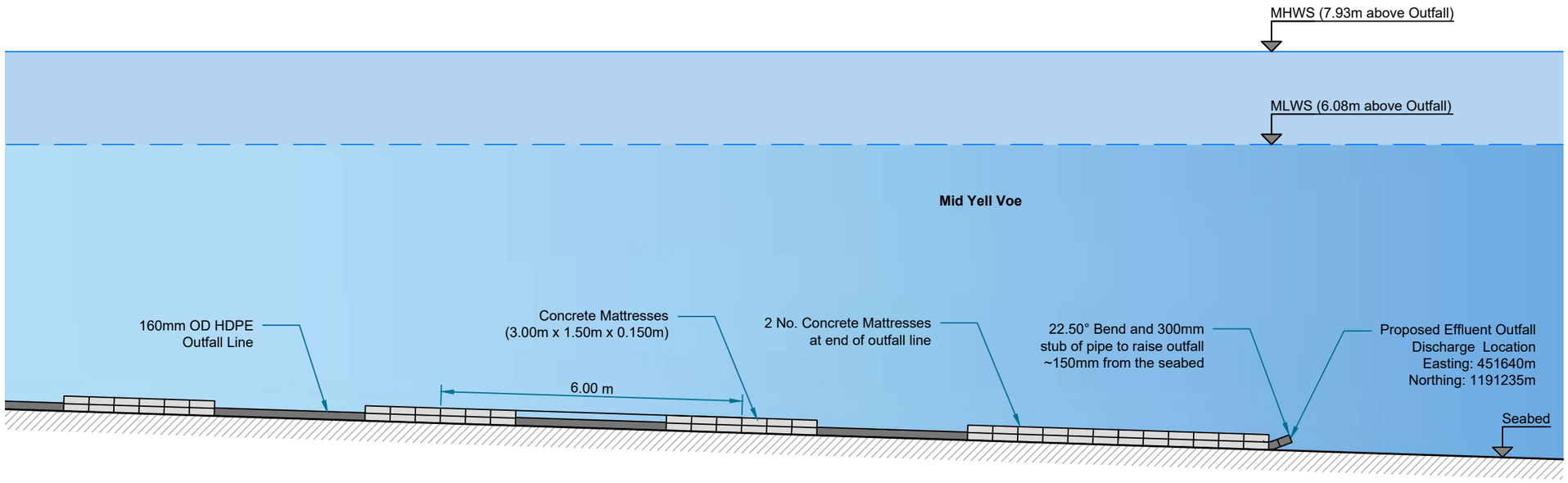
1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

Drawing Notes

1. A Bathymetric Survey of the seabed has not been carried out. This drawing is to provide an inductive longitudinal section of the proposed outfall discharge location.

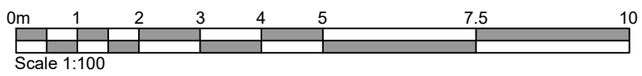
Drawing Key

MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
OD	Outside Diameter
HDPE	High Density Polyethylene



Proposed Longitudinal Section 2 of 2

Scale: 1:100



REV	DATE	DESCRIPTION	drawn	check
-	01/12/22	For Planning - First Issue	RJW	EJA

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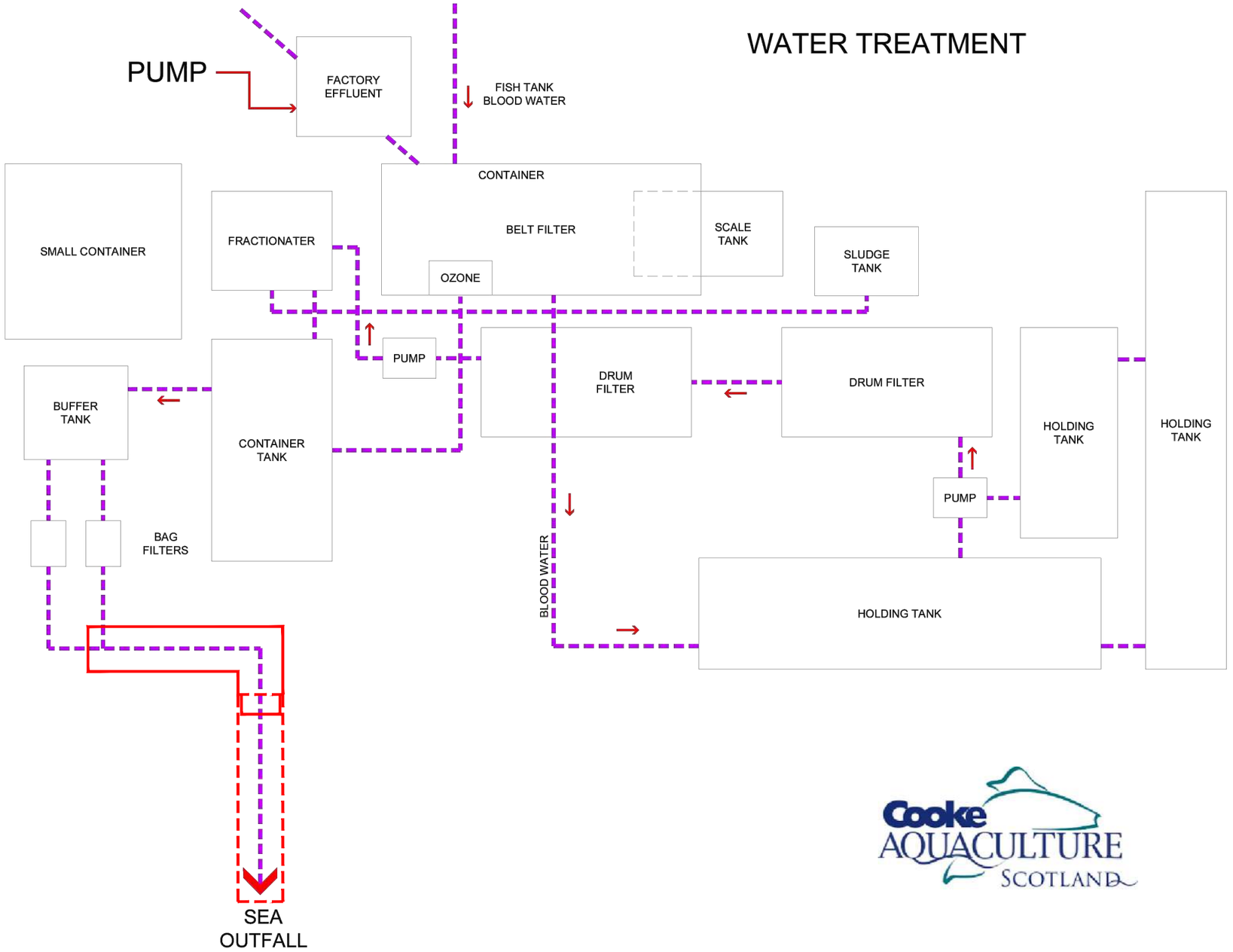
PROJECT NO.
CS22.044

PROJECT TITLE
Effluent Outfall Line Replacement

DRAWING TITLE
Proposed Longitudinal Section 2 of 2

SITE DETAILS	DRAWN BY	DATE
Mid Yell Fish Factory, Shetland, ZE2 9BN	RJW	Dec 2022
CLIENT DETAILS	**CHECK BY**	**SCALE @ A3**
Cooke Aquaculture Scotland Ltd	EJA	1:100

Drawing Status	Drawing Number	Revision
PLANNING	**CS22.044-06**	**-**



Effluent Treatment Flow Diagram

Scale: NTS

General Notes

1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

Drawing Notes

1. This drawing is based on ***Drawing Number 2222.01/SK07 Rev C*** by Atom Consultants (Edinburgh). The original drawing is entitled *'Effluent Treatment Flow Diagram'* dated July 2018.
2. It has been reproduced here to support the Planning Application for the Effluent Outfall line replacement.

Drawing Key

Land Planning Development Boundary

Marine Planning Development Boundary

REV	DATE	DESCRIPTION		
-	01/12/22	For Planning - First Issue	RJW drawn	EJA check

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PROJECT NO.	PROJECT TITLE
CS22.044	Effluent Outfall Line Replacement

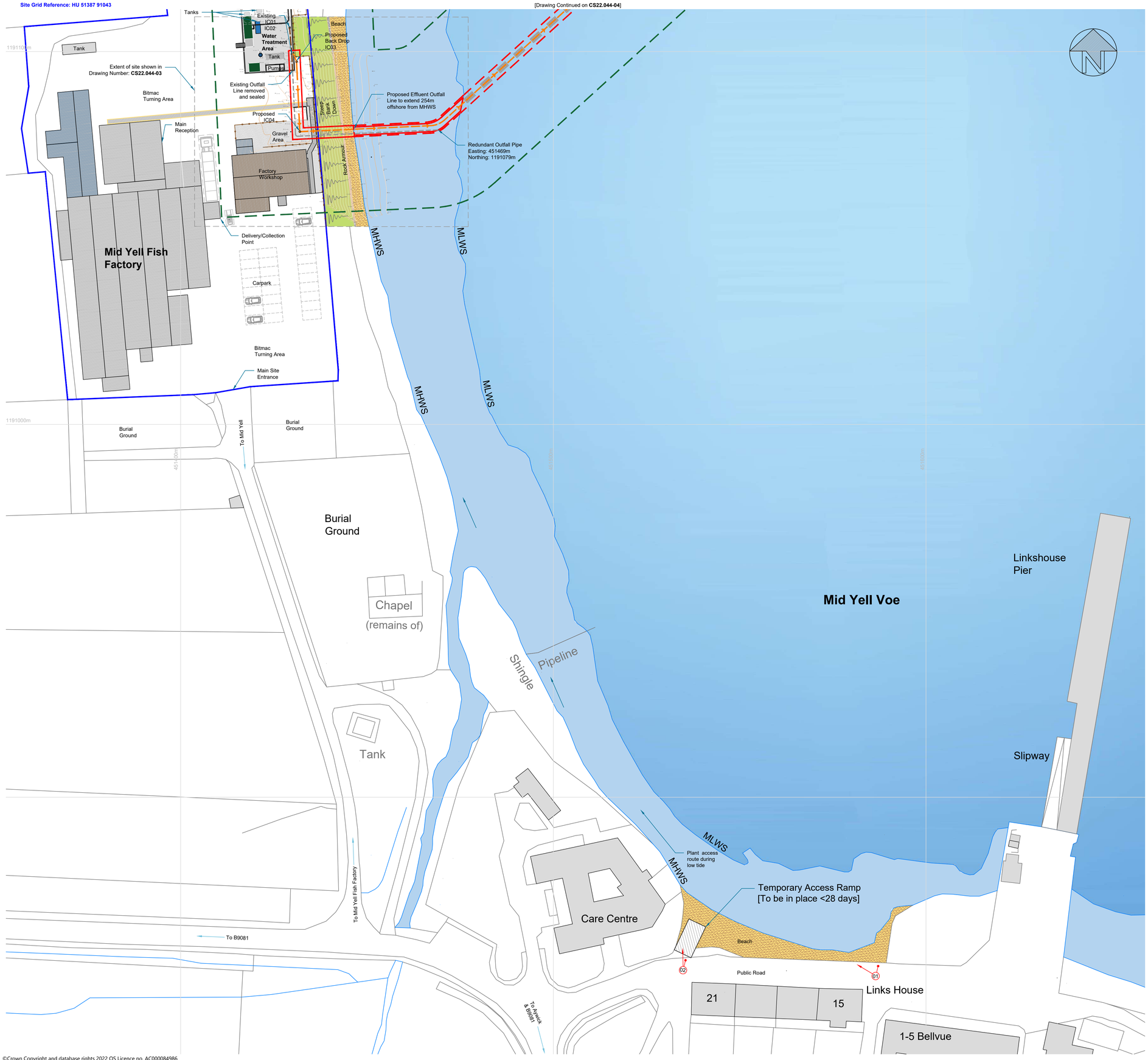
DRAWING TITLE: Effluent Treatment Flow Diagram

SITE DETAILS	DRAWN BY	DATE
Mid Yell Fish Factory, Shetland, ZE2 9BN	RJW	Dec 2022
CLIENT DETAILS	**CHECK BY**	**SCALE @ A3**
Cooke Aquaculture Scotland Ltd	EJA	NTS

Drawing Status	Drawing Number	Revision
PLANNING	CS22.044-07	-

Site Grid Reference: HU 51387 91043

[Drawing Continued on **CS22.044-04**]



Proposed Site Plan 3 of 3 [Temporay Access Ramp]

Scale 1:500

0m 5 10 20 30 40 50

SCALE 1:500

General Notes

1. This drawing is to be read in conjunction with all other relevant drawings and Specifications
2. All dimensions are in mm unless specified otherwise
3. Ensure drawing has been printed to the correct size when scaling

Drawing Key

- Land Planning Development Boundary [206m²]
- Marine Planning Development Boundary [764m²]
- Land Ownership Boundary
- 20m Neighbour Notification Boundary
- Redundant 100mm Ø Effluent Outfall Line within concrete bund
- Redundant 100mm Ø Effluent Outfall Line, to be removed following commissioning of new line
- Proposed 160mm OD HDPE Effluent Outfall Line [~290m Long]
- IC — Inspection Chamber
- Temporary Access Ramp [To be in place <28 days]
- 01 — Photo Location and Direction

Photo 01 **Location:** Links House, Mid Yell **Date**: Dec 2022
Description: Proposed Plant/Equipment access point to the beach [Mid Yell Fish Factory in the background]

Photo 02 **Location:** Links House, Mid Yell **Date**: Dec 2022
Description: Proposed Plant/Equipment access point to the beach [Mid Yell Care Centre left of photo]

REV	DATE	DESCRIPTION	drawn	check
-	16/12/22	For Planning - First Issue	RJW	EJA

CASE SHETLAND

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PROJECT NO. CS22.044
PROJECT TITLE Effluent Outfall Line Replacement
DRAWING TITLE Proposed Site Plan 3 of 3 [Temporary Access Ramp]
SITE DETAILS Mid Yell Fish Factory, Shetland, ZE2 9BN
DRAWN BY RJW
DATE Dec 2022
CLIENT DETAILS Cooke Aquaculture Scotland Ltd
CHECK BY EJA
SCALE @ A1 1:500
Drawing Status PLANNING
Drawing Number CS22.044 -08
Revision -

Appendix B – Cooke Aquaculture – Site Drainage Plan

Tank 1

Tank 2

Shingle

N

Container

Container

Chemical store

New Plinth

Formic acid

Ø150mm PIPE

NEW MH

Sample Tap

Ø150mm PIPE

to Effluent Treatment Plant

Chamber with macerator pump

New MH

EXIST PIPE DISCONNECTED

MAINS WATER SUPPLY

PROCESS WATER TANK

Diesel Tank

Cattle Grid

Graveyard (opened 1999)

Ex. Foul Drain

Ex. Foul MH

Ex. Foul Gulley

Foul Rodding Eye

Ex. Surface Water Drain

Ex. Surface Water MH

Surface Water Gulley

Surface Water Rodding Eye

Rainwater Downpipe

Effluent Drain

Effluent MH

Effluent Gulley

Surface Water Drain

GENERAL NOTES

1. As part of our ISO 9001 Quality Assurance procedures the copyright of this drawing remains with Atom TPM (Edinburgh) Ltd in accordance with our rights under the Copyright Designs & Patents Act :1988 unless otherwise agreed. The unauthorised or unlicensed reproduction may be considered an infringement under the above Act.

Rev.	Description	By	Date	Chk'd	Auth
C	General Amendments	JA	01/22	PT	PT
B	General Amendments	JA	01/22	PT	PT
A	Water Supply added.	SR	09/19	PT	PT

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FOOD INDUSTRY CONSULTANTS
PROJECT MANAGERS
CONSULTING ENGINEERS
CDM ADVISOR

Client

Cooke AQUACULTURE SCOTLAND

Project

Yell Facility – Shetland

Title

Site Drainage Plan and Mains Water Supply

Scale	Drawn	Checked	Authorised
1:200	P.Meiklejohn	S.Ritchie	P.H.Thomson
	Date March 15	Date March 15	Date March 15

A1

0 10 Millimetres 150

Drawing Number 2222/08

Rev C

Appendix C – Example of a Pipe Coil Trailer

180
Coil Trailer

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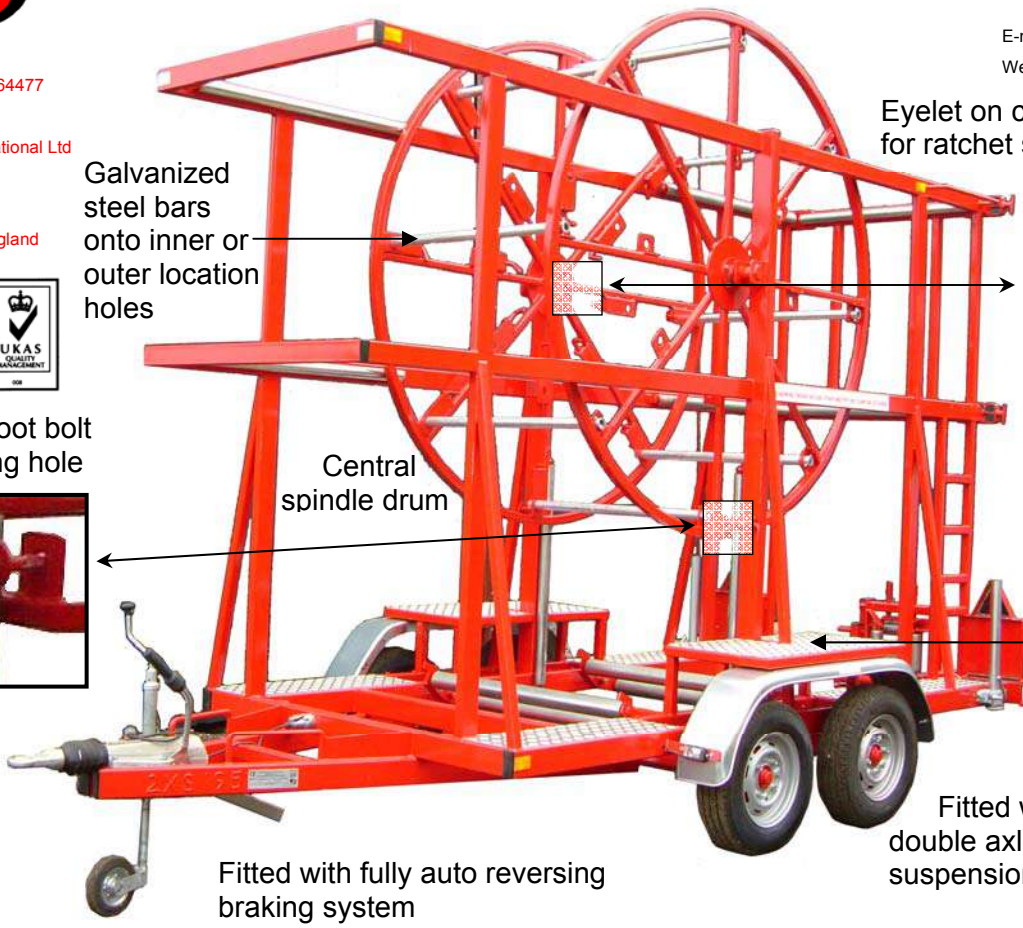


Galvanized steel bars onto inner or outer location holes

Eyelet on central spindle for ratchet strap

Spring shoot bolt and locking hole

Central spindle drum

New lightweight access plates

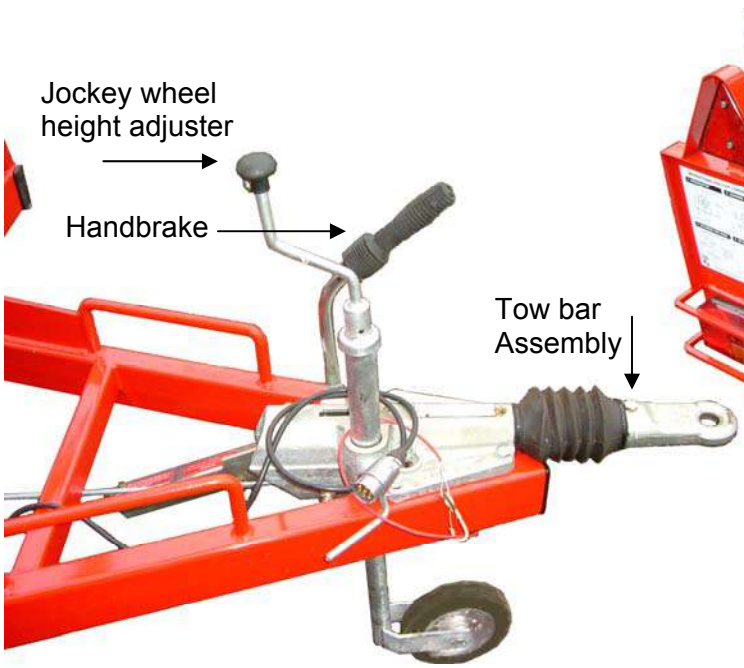
Fitted with heavy-duty double axle independent suspension

Fitted with fully auto reversing braking system

Jockey wheel height adjuster

Handbrake

Tow bar Assembly



Pipe re-rounder/pipe end securer and dispenser

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180 Coil Trailer

Instructions

- Apply Handbrake, lower and secure prop stands
- Attach ratchet strap to eyelet on central spindle
- Remove drum bars on central spindle and open rear gate
- Roll PE vertically into position with end of coil positioned for dispensing - Large coils may need to be craned in
- Ensure both ends of the PE are secured:-
  Front end ratchet strapped to eyelet on spindle
  Dispensing end secured to fitted pipe end re-rounder/dispenser
- Close and secure rear gate
- Position spindle wheel(s) so that locking holes on either side line up
- Begin re-attaching drum bars individually - this can be safely achieved by partially rotating spindle wheel to gain access to the next drum bar hole
- To make spindle and coil rotation easier and safer use extension arm which slots over spindle stump to increase fulcrum
- When all (or as many as possible) drum bars are securely attached lock spring shoot bolts through locking holes
- Ensure tow bar assembly is correctly and safely linked up to vehicle
- Follow guidelines found on trailer for dispensing of coil

Coil Carry Capacity		
Maximum Coil Outside Diameter	4.21m	
Minimum Coil Inside Diameter	0.8m	
Maximum Coil Width	1.0m	
The following currently available coil lengths can be handled by the 180 trailer		
63mm, 75mm SDR11/17(10 Bar)	All sizes	
90mm SDR17.6 (6 Bar)	Up to 200m	
110, 125mm SDR11 or SDR 17.6	Up to 150m	
140, 160 180 SDR17.6 and 180 SDR11	Up to 100m	
Trailer Dimensions	**Unloaded**	**Loaded with 4.21m O.D. Coil**
Overall Length	5.0m	5.0m
Overall Width	2.3m	2.3m
Overall Height	3.4m	4.5m
Trailer Weight		
Un-laden (Design Weight)	1020kg	
Maximum Gross Weight	2600kg	
Maximum Payload	1580kg	

[End of Designer Risk Assessment & Method Statement]

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