

**Project Title: Veolia – Moray Outfalls – Portessie**      **Type of Work or Operation: Repair works to outfall**

**Method Statement Number: MS001**

**Contract Number: TBC**

**Issue Number: 001**

**Author: C Bailey**

**Scope of Works: -**

Undertake concrete repairs to joints & surfaces on existing concrete outfall.  
Undertake replacement of approximately 40m of outfall foundation where it has been scoured by sea.  
Undertake installation of approximately 40m of rip-rap in identified locations.

Phase commencement approximately spring 2024

**Personnel – All persons employed for this scheme of work are over 18 years of age and will inducted into the sites safe systems of work.**

Role	No	Training Required
Site Supervisor	1	Brian Dallas - SMSTS/SSSTS, EUSR Water Hygiene Card, DOMS Training, CSCS Card & First Aid
Operative	1-3	David Watson; John Gallacher; - EUSR Water Hygiene Card, DOMS Training, CSCS / CPCS Card
Programme		
Planned duration	8 weeks	
Planned start	TBC – approx. spring 2024	

**Personal Protective Equipment (PPE) & Emergency Equipment – To conform to British & European standards**

**COP = Carry On Person**

Equipment	Status	Use with following operations	Equipment	Status	Use with following operations
Hard Hat	Mandatory		Safety Wellingtons	Optional	Task Specific
Overalls	Optional		Gloves	Mandatory	Suitable for the Activity
Lace up safety boots	Mandatory		Safety Glasses	Mandatory	
Hi Vis Jacket / Vest	Mandatory		Hearing protection	COP	Task Specific
Disposable PPE: Coveralls, nitrile gloves, masks	Task specific	Task specific where RA deems it is required			

**Plant & Equipment –**

Ground hog self-contained welfare unit, Herras safety fencing, 20ft storage container  
Concrete repairs - Plant Nappy, 3kVA Generator, 110V 16A Cables, Pressure Washer, Breaker, Paddle Mixer, 5” Grinder, Diamond cutting disc, Mixing Tubs, Buckets,  
Measuring jug, Wire Brush, Hand tools, Stihl Saw, 110v hammer drill, Cordless Drill  
Foundation repairs – Concrete tremie, 20t excavator, 2” concrete poker  
Rip-Rap Installation – 20t excavator with grab attachment, 7t tracked dumper.

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### Materials –

Clean Fresh water, Natcem 35, Natcem AC

Washed building sand, cement.

Concrete to Grade XS3 C25/30 with minimum 340kg/m<sup>3</sup> cement

Stainless steel dowel bars – 800mm long 20mm diameter – 4no. per foundation pad – 80No. in total

Steel dowels – 200mm long 20mm diameter

Resin Anchor – R-KEM II

Steel reinforcing mesh

Tie-wire

18mm Plywood

4 x 2 Timber

10mm Hammer fixings

Wood screws

Non-woven heavy-duty geotextile. Minimum tensile strength 100 kN/m

6F4 stone locally sourced

Rip-rap stone – Granite, Quarried from Park Quarry, Nairn. Selected at quarry in line with sizes advised by designer - HMA 300/1000 Rock Armour. Approximate size 700mm x 700mm x 700mm. Material to be square in shape, with maximum length to thickness ratio of 3:1 ±5%. Material to have a minimum mean value of compressive of 80MPa as well as having a minimum water absorption rate of 1.5%. Material should have a minimum particle density of 2.7.

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**Co-ordination with other Site Operations:** Existing Site Risks are to be included within Construction Phase Plan for the works and to be briefed at site induction. Ensure information is received regarding gas storage / Chemical Storage / Emergency procedures (i.e. chlorine, ozone or the like). Scottish Water / Veolia Access permits are to be gained / issued prior to works commencing.

All site roads and access doors on the works are to be kept clear at all times. Roads around the site are to be kept clear – park in designated areas.

Discussions at site induction with SW Operator to ensure we are aware of planned deliveries and other contractors on site.

**Stop logs in sea defence wall may be removed for access to the beach for machines. These stop logs must be replaced at the end of every shift.**

#### **Working Area**

The working area will be restricted to the designated area of the ATC certificate which will be issued by Scottish Water to Veolia / Stonbury

#### **Parking**

Parking is to be restricted to the designated site parking area. On access routes priority to local traffic and SW/Veolia employees will be given where required.

Site laydown area as agreed with Veolia and identified on location map.

Site access route to be as identified and agreed with Veolia. Any deviation due to local ground or site conditions to be notified to the Site Co-ordinator.

#### **Emergency Procedures:**

First aid in site welfare

Follow emergency procedures identified in induction – SW shout.

#### **General notes:**

- Report to site office for induction and issue of permits
- Follow all designated access routes.
- Do not work outside of safety barriers.
- All material deliveries to be controlled and banked by Stonbury, bulk stone deliveries to be delivered as close to working area as possible.
- Report to site office on completion of works & close off permits.
- Ensure sea defence stop logs are in place before leaving site.

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### Safe System of Work –

#### Pre-start

1. Site welfare to be set up within agreed designated laydown areas.
2. Herras fencing to be erected around laydown areas.
3. Rip-rap delivery area to have road plates / type 1 installed to protect ground.
4. Site signage to be erected.
5. Confirm & identify designated access route to work location.
6. Install access ramp from beachhead onto beach utilising 20t excavator and 6F4 stone.
7. Ensure safe access route past the laydown areas is identified for the public.
8. All permits to be secured.
9. All Method Statements & Risk Assessments to be reviewed and signed on to.

#### Concrete repair works – methodology.

1. Point of Work Risk Assessment to be undertaken. (POWRA)
2. Visual inspection of concrete pipeline to be carried out. Any additional defects other than those previously noted to be identified and advised to the Site Co-ordinator.
3. Power-wash the outfall surface to remove vegetation & other contaminants.
4. Any defected areas of concrete identified will be hammer tested, marked, and noted in repair schedule.
5. Defects will then be sawcut to a minimum depth of 10mm using a 5" grinder ensuring all edges are neat, tidy, and square.
6. Breaker will then be used to remove the remaining spalling concrete ensuring a minimum depth of 10mm is left for repair.
7. Any steel present in repairs will be cleaned using a wire brush to ensure all loose and rusted metal is removed.
8. Repairs will then be cleaned out using clean water to ensure all dust and loose material is removed.
9. Area for repair will be saturated with clean water.
10. Natcem 35 will be mixed using a paddle mixer as per manufacturer's instructions.
11. Material will then be hand placed into repair area ensuring it is well compacted.
12. A plastic float will then be used to finish repair ensuring a flat and even surface.
13. Any droppings from material will be lifted, bagged, and removed to site waste.

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### Concrete repair to Outfall sections

1. Point of Work Risk Assessment to be undertaken. (POWRA)
2. Visual inspection of concrete pipeline to be carried out. Any additional defects other than those previously noted to be identified and advised to the Site Co-ordinator.
3. Power-wash the outfall surface to remove vegetation & other contaminants.
4. Any defective areas of concrete identified will be hammer tested, marked, and noted in repair schedule.
5. Defects will then be saw cut by Stihl saw ensuring all edges are neat, tidy, and square.
6. Breaker will then be used to remove the remaining spalling concrete ensuring a minimum depth of 10mm is left for repair.
7. Once the full area of defective concrete has been removed sizes will be taken and recorded in the repair schedule.
8. The 110v hammer drill will then be used to drill fixing holes to the outfall to allow for the 20mm dowels to be fixed in place by resin anchor.
9. Once the resin has set completely, steel reinforcing will be cut to size using the Stihl saw and fixed to the steel dowels using tie wire.
10. A timber shutter will then be constructed using 18mm plywood, 4 x 2 timbers, and wood screws.
11. The shutter will then be fixed to the outfall using 10mm hammer fixings and steel dowels fixed by resin anchor with spinner plates. The same sequence of works will take place when constructing shutters for the chamber remedial works.
12. The concrete will be brought to site by concrete truck and discharged into the bucket of the 20t excavator.
13. The 20t excavator will then transport the concrete to the area for repair and place the concrete within the repair.
14. These steps will repeat until the full area for repair has been filled with concrete.
15. A 2" High frequency poker will be used throughout the works to ensure that all placed concrete has been properly installed and well compact.
16. Once concrete begins to take up a steel float will be used to finish the surface of the repair
17. Once complete all excess materials will be removed into rubble bags and placed into site skips. All tools will be cleaned, and all other surfaces cleaned to ensure no concrete staining to any areas around the repair.
18. Concrete will be left to cure, once curing has taken place the shutter will be removed, broken down and placed into the site skip.
19. Natcem 35 and AC will then be used to infill any blowholes or imperfections present in the repair.
20. **Once remediated concrete works are complete and cured a new none return flap valve will be installed to the end section of the outfall using titanium anchor fixings or similar.**

### Foundation underpinning repair works – methodology.

1. Point of Work Risk Assessment to be undertaken. (POWRA)
2. Visual inspection of concrete pipeline foundations to be carried out. Any additional defects other than those previously noted to be identified and advised to the Site Co-ordinator.
3. Sections of outfall requiring new underpinning to be installed to be identified.
4. Section to be fully cleared of debris and other contaminants to half width of the outfall as per the design.
5. Formwork to be erected along length of new underpinning to be cast to sizes as designed.

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6. New stainless steel dowel bars to be tied into the formwork and set ready to be cast in.
7. Excavator to be positioned on beach below sea wall. Tremie attached to excavator.
8. Concrete to be poured into tremie from concrete delivery truck positioned at ground level.
9. Concrete poured into the formwork and suitable compacted.
10. Concrete cured overnight.
11. Second half of the underpinning foundation to be cast will be excavated and cleared.
12. Formwork erected along second section of new underpinning.
13. Concrete poured utilising excavator and tremie as above.
14. Concrete to be cured overnight.
15. Once concrete is cured dry-pack mortar to be installed between top of foundation and the base of the outfall to give solid installation and support to outfall.
16. Works to be repeated as required until all new sections of underpinning have been installed.

#### **Rip-rap installation works - methodology**

1. Point of Work Risk Assessment to be undertaken. (POWRA)
2. Visual inspection of location for rip-rap to be carried out. Any additional defects or areas that may require new rip-rap other than those previously noted to be identified and advised to the Site Co-ordinator.
3. Utilising excavator area for new rip-rap to be excavated and graded to give trench with level base for first layer of rip-rap.
4. Rip-rap to be delivered to designated laydown area.
5. Rip-rap to be loaded into tracked dumper utilising 20t excavator.
6. Rip-rap transported along designated route to location adjacent to outfall in preparation for installation.
7. Non-woven heavy-duty geotextile to be laid to bottom of trench prior to first layer of rip-rap being installed.
8. Rip-rap to be lifted and placed in location by 20t excavator fitted with grab attachment.
9. Rip-rap to be installed in line with design in approx. 3 layers to top of outfall.
- 10.** Installation to be checked for stability as works progress.

#### **On completion of the works**

1. Confirm all works complete.
2. Completion photos taken at outfall.
3. Access ramp to be remove from beachhead access point.
4. Ensure sea wall stop logs are back in position.
5. Close out all permits.
6. Demobilise site.

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**20 Second Rule – Before starting a task look around your place of work and consider any potential risks. If any identified take immediate corrective action.  
Don't take chances with the Health and Safety of you or others – Stick to the Method Statement.**