Tarbert Ferry Terminal Upgrade Construction Licence Variation Request

Date:27/01/2020

Document Control

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Contents

1 Introduction

To facilitate the upgrades to the Tarbert Ferry Terminal and to support the docking of the larger ferry under construction, Caledonian Maritime Assets Limited (CMAL) were granted Marine Construction Licence No: 06907/19/0 and Dredge and Disposal Licence No: 06908/19/0 from Marine Scotland in September 2019.

In support of the Marine Licence applications, an Environmental Impact Assessment Report (EIAR) was produced to indicate and signify the likely environmental implications of the proposal (Affric, 2019).

The existing construction licence was based on information available during the design stage, it proposed the use of a temporary steelwork access jetty to facilitate construction, while minimising disruption to ferry operations, as described in Section 2.6.1.9 of the EIAR (Affric, 2019). The project main contractor (R.J. McLeod (Contractors) Limited) has since been appointed and they are proposing the use of a temporary rock infill bund instead of a piled structure. Hence, a variation to the Marine Construction Licence (No: 06907/19/0) is requested.

It is recognised that the variation to the construction works falls under Section 13 of Schedule 2 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, whereby; "*Any change to or extension of works of a description mentioned in paragraphs 1 to 12 of Column 1 of this table where those works are already authorised, executed or in the process of being executed*", may require further assessment. However, it is noted that the existing consented works includes rock infill as part of the land reclamation and the variation is within the area previously considered (Affric, 2019).

This report lays out the need for and details of the proposed variation, re-considers environmental topics to identify any potential additional or change in significant levels of effects on the environment as a result of the variation.

2 Need for Variation

2.1 Existing Consent

The existing Marine Construction Licence allows for the construction of a temporary steelwork access jetty to the north of the existing pier, in order to facilitate access for plant and materials for the pier reconstruction and extension works. Section 2.5 of the Construction Licence allows for the following materials for the temporary construction works:

- 300 tonnes of steel;
- 360 tonnes of concrete; and
- 10 tonnes of plastic/synthetic material

This material list is based on the construction of a steelwork access jetty and the installation of a temporary fendering system.

Section 3.1.4 for the Construction Licence requires the licensee to inform the licensing authority of any material alterations to the information on which the licenced was based. It is therefore highlighted that Section 2.6.1.9 of the EIAR specified the use of a temporary piled structure to facilitate construction.

2.2 Construction Variation Requirements

Following R.J. McLeod (Contractors) Limited being appointed as principal contractor, they propose to use a temporary rock infill bund option to the north of the existing pier, in order to facilitate access for plant and materials to the pier reconstruction and extension works, rather than the temporary steelwork access jetty. The temporary rock infill bund option would allow for more than one crane to be utilised at any one time, which will assist with the demolition, piling and the installation of the pre-cast concrete associated with the permanent pier. It will also provide valuable storage space for materials including piles and precast concrete during construction.

The temporary infill bund will cover an area of 1100m^2, as shown in Drawing 2210-191B, and will be constructed within the coordinates given in the existing Marine Construction Licence and shown on Drawing 1973-909. Rock will be layered and compacted along the footprint of the infill bund to a final level of +5.5m as shown in Drawing 2210-192B. Primary and secondary rock armour will be placed on the outer edge of the bund, providing a suitable platform to facilitate construction.

In addition, an existing outfall pipe which the infill bund would cover, is proposed to be extended out beyond the infill bund as shown in Drawing 2210-192B. Scottish Water currently have a licence issued in 1998 by the Scottish Environment Protection Agency (SEPA) under the '*Reviewed Consent to Discharge Treated Sewage Effluent to Controlled Waters under the Control of Pollution Act 1974 (as amended)'* for the discharge pipe from their wastewater treatment plant. The current licence is issued to allow for the discharge of sewage effluent into East Loch Tarbert. Discussions have been held with Scottish Water who have no issues with the proposed plans.

Once the pier construction works are completed, the infill bund will no longer be required. The bund material shall be removed from the seabed and reused as part of the land reclamation being carried out to extend the marshalling area. The outfall pipe extension shall be left in situ and continue to be the discharge point from the wastewater treatment plant.

A variation to the marine licence is therefore required to approve the alternative temporary rock infill bund as opposed to the original temporary steelwork access jetty and to allow for the outfall pipe to be extended.

The materials for the temporary construction work listed in Section 3.1.4 of the Construction Licence (06907/19/0) need to be updated to that shown in Table 2.1, note this is based on Table 6(d) of the construction licence application form. The materials required are for the access bund and temporary fendering arrangements.

Table 2.1: Temporary substances of objects to be deposited below MHWS

Type of Deposit/Removal	Deposits		Comments
	Description	Quantity & Dimensions	
Boulders	Primary and Secondary Armour	120m^3 216t	Assume 1.8t/m^3 placed density.
Cobble	Type 6A Rock Fill	4,400m^3 7920t	Total of 5500m^3 assume 80:20 split
Gravel		1,100m^3	

		1980t	cobble to gravel. Placed density 1.8t/m^3
Steel	Bracing, Fendering, Kentledge Supports and Miscellaneous	200t	-
Concrete	Temporary Fender Foundations and Kentledge	150m^3 360t	Density of 2.40t/m^3 assumed.
Plastic / Synthetic	Fender Units and Fender Facings	10t	-

The extension to the outfall pipe shall utilise iron pipework held in place by concrete blocks, the quantity of which are estimated at 70kg of steel and 2.88 tonnes of concrete and can be accounted for within the existing licence 'materials to be used in construction'.

3 Environmental Considerations

Due to a change in construction design, it is possible that the environmental topics considered and identified as having potential significant or cumulative effects within the EIAR (Affric, 2019), may also change. As such, a review of each environmental topic has been completed to identify if there is a potential change in effect level (Table 3.1). Where a re-evaluation is required, the assessment methodology detailed in Section 3.5 of the EIAR has been utilised.

Table 3.1: EIA Topics Potential Effect Change

EIAR Chapter	Topic	Potential Effects of Changes	
		Effects	Construction Phase Comments
Chapter 5	Air Quality: Dust	No Change	Infilling has the potential to give rise to dust, however the full site boundary was utilised in the identification of sensitive receptors, and infilling was activities were assessed as a source. Hence no new impacts will occur, and existing mitigation measures are appropriate hence dust is not taken forward for further assessment.
Chapter 5	Air Quality: Greenhouse Gas (GHG) Emissions	Minimal Change (Reduction)	Materials for the temporary infill bund will arrive from a local quarry and will be re-used in the main infill area, there may be a slight increase in GHG emissions associated with the movement of materials. However, the previously proposed 300 tonnes of steelworks would have had a carbon dioxide equivalent of 411 tonnes which will more than offset the difference in material movements. Overall GHG emissions are likely to be slightly less than previously assessed with no change to significance levels for the project, therefore GHG emissions have not been taken forward for assessment.
Chapter 7	Marine Mammals	Minimal Change	The proposed variation to the construction licence will no longer require the potential installation and removal of temporary piles. This reduces the sources of high-level underwater noise, but as piling will still be required for the pier underwater noise effects although reducing in duration will not reduce in significance. The proposed variation will not incur any further negative effects on marine mammals. Therefore, this topic has not be taken forward for further assessment.

EIAR Chapter	Topic	Potential Effects of Changes	
		Effects	Construction Phase Comments
Chapter 8	Benthic Ecology	Potential Effect	The use of quarried material for infill has the potential to cause smothering of benthic species through placement on the seabed. The construction of this temporary infill bund is therefore likely to cause the temporary loss of benthic habitats to the north of the proposed pier, therefore Benthic ecology has been taken forward for further assessment in Section 3.1.
Chapter 9	Fish Ecology	No Change	The proposed variation to the construction licence will not impact the conclusions of the EIA regarding Fish Ecology, therefore this chapter has not been taken forward for further assessment.
Chapter 10	Noise & Vibration (In-Air)	Potential Effect	The proposed variation to the construction licence requires different activities with different noise sources to be carried out north of the existing pier than those previously planned. Hence effects on, In-Air Noise have been taken forward for further assessment in Section 3.2.
Chapter 11	Noise & Vibration (Underwater)	Minimal Change	The proposed variation to the construction licence will no longer require the potential installation and removal of temporary piles, in turn reducing the sources of high-level noise underwater. As piling will still be required for the pier Noise and Vibration (underwater) will still arise as predicted in the EIAR, therefore it has not been taken forward for further assessment.
Chapter 12	Traffic, Access and Navigation	Potential Effect	The proposed variation to the construction licence requires the import of quarry material into the site. A change in location associated with the temporary infill bund will now require material movements to a different location. Changes in traffic movements in Tarbert are taken forward for further assessment in Section 3.3.
Chapter 13	Water Quality & Coastal Processes.	Potential Effect	The proposed variation to the construction licence requires the extension of a Scottish Water outfall pipe through the proposed infill bund therefore, Water Quality and Coastal Processes has been taken forward for further assessment in Section 3.4.
Chapter 14	Landscape, Seascape and Visual	No Change	The proposed variation to the construction licence will not impact the conclusions of the EIA regarding Landscape, Seascape and Visual aspects of the project. No new significant effects or receptors are identified associate with the construction and removal of the temporary infill bund, which is low-lying. It will be removed prior to operations, hence no change to operational effects.

Key	
	No Change
	Minimal change within scope of existing EIAR
	Potential effect requiring consideration.

3.1 Benthic Ecology

The potential effects on benthic ecology with regards to the construction and operations of the Tarbert Ferry Terminal Upgrade were discussed and assessed within Chapter 8 of the EIAR (Affric, 2019). Benthic receptors were considered and evaluated in the context of nature conservation legislation and relevant marine policy. Impacts on receptors were identified and subject to detailed impact assessment. Mitigation was proposed and cumulative and residual impacts and their significance assessed.

Due to the variation in construction method as aforementioned in Section 2.2: Construction Variation Requirements, the potential effects have been re-evaluated in the context of the potential impacts of infill placement. The impacts of the placement of infill material on the seabed for the purpose of this variation have been considered with regards to loss of habitat, remobilisation of sediments and release of hazardous substances.

3.1.1 Habitat Loss

The area utilised for rock placement in the formation of the temporary infill bund to the north of the proposed pier, is mainly within the footprint of the subtidal benthic ecological habitats and species re-visit survey (APEM, 2018), conducted for inclusion within the EIAR (Affric, 2019) and shown in Drawings 49.08.05 and 49.08.06. Within the footprint of the temporary infill bund, the following biotope complexes were identified, and their ecological value determined in Table 3.2:

- *SS.SMx.CMx.OphMx*; and
- *SS.SMp.KSwSS.LsacR*; *SS.SMp.KSwSS.LsacR.Mu* mosaic

Table 3.2: Ecological Value of Receptors Considered

Receptor	Description	Receptor Ecological Value
SS.SMx.CMx.OphMx	*Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment.	Negligible
SS.SMp.KSwSS.LsacR	*Laminaria saccharina* and red seaweeds on infralittoral sediments.	National
SS.SMp.KSwSS.LsacR.Mu	*Laminaria saccharina* with red and brown seaweeds on lower muddy mixed sediments.	National

It is noted that there is a small area where the proposed bund will be located that has not been subject to benthic survey, this is due to the location being between the existing pier and the shore in shallow waters, which were not accessible by the survey vessel. As shown in Drawings 49.08.05 and 49.08.06, there are no other benthic habitats in the vicinity of greater ecological value of National, hence the areas of the bund location is not predicted to provide benthic habitat value of no greater than National level.

SS.SMx.CMx.OphMx and *SS.SMp.KSwSS.LsacR.Mu* were previously considered in the EIAR with regards to habitat loss as a result of dredging. Dredging activities were identified as not

necessarily causing permanent habitat loss (Affric, 2019) due to the ability of benthic flora and fauna communities to recover and recolonise once disturbed habitats (Newell, Seiderer, Simpson, & Robinson, 2004). Given the relatively small area affected, in the context of the wider East Loch Tarbert, the potential impact of the habitat loss resulting from dredging was assessed as **low, reversible,** and **medium term,** giving rise to **negligible to minor: non-significant** effects (Affric, 2019).

It is anticipated that through the placement and formation of the temporary infill bund, the aforementioned benthic communities (see Table 3.2) will be impacted through direct loss of habitat following the construction of the temporary infill bund as part of reclamation. *SS.SMp.KSwSS.LsacR* was not previously assessed as part of the EIAR but has been identified within the temporary reclamation area and is of national importance. It is anticipated that, as the bund will be removed, construction activities associated with the rock placement and formation of the structure will not necessarily result in permanent habitat loss, as found with dredging activities. Given the relatively small area affected, in the context of the wider East Loch Tarbert, and the ability of benthic communities to recolonise the area once the temporary bund is removed, the potential impact of the temporary habitat loss is assessed as **low, reversible** and **medium-term**. The affected biotopes have been assigned values of between negligible and National, as detailed in Table 3.2, resulting in **negligible to minor: non-significant** effect for all benthic receptors.

3.1.2 Remobilisation of Sediments

No additional impacts are expected to benthic ecology from the construction of the temporary infill bund to the north of the proposed pier, than those previously assessed in Section 8.5.2 of the EIAR (Affric, 2019). As such, the conclusions in Section 8.5.2 of the EIAR with regards to potential sediment loading impacts to all benthic receptors are still valid, and the impact assessed as **negligible, short-term** and **reversible**, constituting to a **negligible: non-significant** effect for all benthic receptors.

The impacts on sediment loading and smothering on the biotopes *SS.SMx.CMx.OphMx* and *SS.SMp.KSwSS.LsacR/SS.SMp.KSwSS.LsacR.Mu* mosaic receptors are not considered, since these habitats will be lost during the construction process of the temporary infill bund, as detailed in Section 3.2.1

3.1.3 Release of Hazardous Substances

No additional impacts are expected to benthic ecology from the construction of the temporary infill bund to the north of the proposed pier, than those previously assessed in Section 8.5.3 of the EIAR (Affric, 2019). As such, the conclusions in Section 8.5.3 of the EIAR with regards to impacts to benthic ecology from the accidental release of hydrocarbons and other hazardous substances in the event of a loss of containment during the construction works are still valid, and the impact assessed **as negligible, short-term** and **reversible**, constituting to a **negligible: non-significant** effect for all benthic receptors.

3.1.4 Mitigation

No significant impacts on benthic ecology have been identified as a result of the variation in construction methods of the proposed temporary infill bund. As such, no specific mitigation measures are required to reduce impacts on benthic ecological receptors. The reason for the

lack of significant impacts is in part due to the embedded mitigation provided by the design and location of the development as previously discussed in the EIAR (Affric, 2019). With the implementation of secondary mitigation and following standard industry good practice to minimise deterioration of water quality (as discussed in Section 3.4.4) the release of hazardous substances associated with plant utilised in the formation and removal of the temporary infill bund are unlikely to impact upon benthic communities.

3.2 In-Air Noise

In-Air Noise modelling was carried out to inform Chapter 10 of the EIAR (Affric, 2019). The modelling utilised a range of scenarios which were based on combined construction phase activities and typical plant which would be utilised to carry out the works. The proposed variation would change some of the construction noise sources positioned to the east of the existing ferry terminal building and hence need to be considered.

3.2.1 Construction Noise

Noise sources associated with Construction Phase 9: Install Temporary Pier Works (as detailed in Appendix J.2 of the EIAR) are changed by the variation, hence a comparison between the noise sources utilised for that part of the assessment and for those likely to be utilised for infill activities is required. Table 3.3 details the equipment listed for Phase 9 and those likely to be utilised for the infill bund construction, along with their published source noise levels to understand the effects of the variation.

Table 3.3: Noise Source Comparison

Phase 9			Variation (Infill Bund)		
Plant Type	**Make and Model**	**Source Power Level (Lw dB(A))**	**Plant Type**	**Make and Model**	**Source Power Level (Lw dB(A))**
Generator	Clarke FG5100ES 5.5kVA	97.0	Dumper	Bell B30E	102.0
Excavator	JCB 220LC	105.9	Excavator	JCB 220LC	105.9
Work Boat	Multicat	87.0	Roller	Bomag BW 213DH	101.6
100t Crawler Crane	Kobelco CKE1100G	94.5			

The assessment of Phase 9 assumed that piles could be vibrated in utilising attachments on the Crawler Crane. If vibro pilling had been unsuccessful and thus the need for impact piling was required, then the hammer could have had noise levels of up to 119.5dB.

The loudest piece of kit required for the installation of the temporary access pier was the excavator. An excavator will be utilised to place rock for the infill bund; hence the loudest noise source remains the same. For the pier option all of the plant would have been operational at the same time giving rise to a combined noise source of 107dB. For the infill bund the excavator and dumper may be used at the same time or the roller and dumper, but it is unlikely that all three pieces of kit would operate at the same time. Such as, the highest noise combined noise levels associated with the infill bund variation is 107dB.

Therefore, the variation does not result in a change to the noise sources modelled within the EIAR, hence there is no change to the findings of the EIAR noise assessment and construction noise effects remain **non-significant** for daytime working.

3.2.2 Mitigation

Existing mitigation measures identified within the CEMD to minimise noise effects are applicable. The infill activities do give rise to noise levels that will not be acceptable outwith daytime working hours, hence the working time restrictions detailed in the CEMD will be followed.

3.3 Traffic, Access and Navigation

The material to be utilised for the temporary infill bund, will be removed and utilised within the marshalling area land reclamation, as such the material that has already been accessed in terms of delivery to the harbour from the quarry within the transport assessment (Atkins, 2018) and Chapter 12 of the EIAR. As such this assessment focuses on the movement of delivery vehicles within the village of Tarbert only.

3.3.1 Construction Traffic Movements in Tarbert

Access to the marshalling area is via the A868 avoiding the use of Main Street and Pier Road. The temporary infill bund areas closest point to the public road is on the corner between the A868 and Pier Road (east of the marshalling area), this section of the road is one way with traffic movements from east to west. To continue to avoid HGV movement on Main Street and Pier Road, deliveries will be through the marshalling area, from the east end of the marshalling area the A868 will be utilised in the wrong direction. A banksman will stop traffic at the bottom of Pier Road, to allow the delivery wagons to safely carry out this manoeuvre, as detailed in Drawing 49.V.1.

In the region of 10,000 tonnes of material needs to be moved into and out of the area. Based on a HGV being able to take 20 tonnes, there will be a total of 2000 vehicle movements between the marshalling area and the temporary infill areas. These will be split into two discrete periods, 1000 movements (500 deliveries) during construction and 1000 movements during removal (500 collections).

3.3.1.1 Pedestrians, Cyclists and Road Users

As shown in Drawing 49.V.1, the footpath to the north of the A868 will not be affected by the movements. Pedestrians and cyclists accessing the ferry terminal building may need to cross the route of deliveries. However, as there will be a banksman in place to stop traffic, they will also be able to manage pedestrian movements preventing risks of injury.

Road users could be slightly delayed during movements; however, the preference will be for the banksman to wait until a break in the traffic before allowing access for deliveries and collections. Delivery times will avoid ferry disembarking and embarking times as is the case for existing deliveries. Impacts magnitudes are assessed as being of **minor adverse temporary** giving rise to **minor: non-significant** effects on a high sensitive receptors of pedestrians and cyclists and **negligible: non-significant** on road users whom have a low sensitivity.

3.3.1.2 Public Transport Users

Impacts on public transport users are not expected due to the avoidance of deliveries during ferry arrival and departure times.

3.3.1.3 Road Safety

The use of a banksman to stop traffic whilst deliveries are being carried out will ensure road safety. Road Safety is recognised as having a high sensitivity level, impact magnitude is at most **minor adverse temporary**, giving rise to a **minor: non-significant** effect.

3.3.1.4 Local Amenity

Local amenity is a high sensitivity receptor, in this case local amenity includes the Harris Hotel and other shops and facilities in the vicinity of Pier Road. Effects on local amenity due to the HGV movements at the bottom of Pier Road will be **minor adverse temporary** giving rise to **minor: non-significant** effects.

3.3.2 Mitigation

The proposed route avoiding Main Street and Pier Road and use of the banksman will be ensured to minimise effects of material movements to and from the temporary infill bund.

3.4 Water Quality and Coastal Processes

The potential effects on water quality and coastal processes with regards to the construction and operations of the Tarbert Ferry Terminal Upgrade were discussed and assessed within Chapter 13 of the EIAR (Affric, 2019). Mitigation measures to minimise the effects were identified and potential cumulative impacts were discussed.

Due to the variation in construction method as aforementioned in Section 2.2: Construction Variation Requirements, the potential effects on water quality and coastal processes have been re-evaluated in the context of the potential impacts of infill placement. The impacts of the placement of infill material on the seabed for the purpose of this variation have been considered with regards to the extension of a Scottish Water outfall pipe through the proposed infill bund.

3.4.1 Extension of Outfall Pipe

During the operations of the Tarbert Ferry Terminal, both the temporary and new ferry terminal buildings were anticipated to be connected into the existing foul drains routed to the wastewater treatment work. Following treatment, wastewater would be released through the foul outfall into East Loch Tarbert as described in Section 2.2. Given that the treatment works was found to have the capacity to be able to support foul drainage from a larger ferry terminal building, **no changes** were anticipated in the associated environmental effects of foul outfall into East Loch Tarbert (Affric, 2019).

The extension and repair work to the foul outfall will be carried out, the proposed extension can be seen in Drawing 2210-191A. The repair works will reduce risk of blockages. In addition, the proposed discharge point is located in slightly deeper waters further into the channel, giving rise to improved mixing and dispersion constituting in a **positive, permanent**, **medium** magnitude of impact. Given the positive impact, this is likely to give rise to a **positive, long-term** and **moderate: significant** effect.

3.4.2 Increased Sediment Loading

The placement of infill material has the potential to increase sediments in the water column, which can have negative effects on water quality and ecological receptors (see Section 3.2.2). Sediments are most likely to be suspended through agitation via rock placement as part of rock placement during the formation of the temporary infill bund.

The placement of rock fill as part of the formation of the temporary infill bund will not differ from those previously described in the EIAR associated with land reclamation (see Section 13.5.1.1.3 of Chapter 13: Water Quality & Coastal Processes in the EIAR). As granular infill material and rock armour will be imported to site from a local quarry and placed into the infill area dry, the infill material will have a low fines content and as such it will not give rise to an increase in sediment loading. Hence **no-change** in water quality is predicted as assessed in the EIAR.

3.4.3 Release of Hazardous Substances

During the formation and removal of the temporary infill bund, a number of potential pollution sources will be present on the construction site and plant utilised in the construction process, including:

- Fuel oil/diesel associated with construction plant, and vehicles; and
- Hydraulic fluids and oils associated with construction plant and vehicles.

Materials will be appropriately stored and handled as discussed Section 3.4.4. However, if a loss of containment were to happen then there could be harm caused to the environment. As such the risk of pollution impacts on water quality were assessed in Table 13.5.1 of Chapter 13: Water Quality & Coastal Processes of the EIAR (Affric, 2019). The proposed variation doesn't change the risk assessment previously completed, which concluded that only **minor: non-significant** impacts could occur.

3.4.4 Mitigation

Mitigation measures are in line with those already produced and suggested in Sections 13.6.1.1 and 13.6.1.2 of Chapter 13: Water Quality & Coastal Processes of the EIAR (Affric, 2019) and incorporated into the Construction Environmental Management Document (Affric Limited, 2019) will be implemented.

This mitigation includes visual observed to ensure that any sediment plumes that occur are localised and/or disperse quickly as they occur. If this is not the case, the construction techniques for the formation and removal of the temporary infill bund will be reviewed to prevent reoccurrence. With regards to the release of hazardous substances, strict management controls to prevent pollution incidents will comply with the requirements of the relevant GBR's of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), as well as the applicable Guidance on Pollution Prevention. Where practicable, bio-degradable hydraulic fluids will be utilised in machinery during construction.

In addition, the team is in dialogue with Scottish Water with regard to the works on their outfall pipe, to ensure that all appropriate measures are in place during the works.

4 Conclusions

The proposal to utilise a temporary rock infill bund to facilitate construction works on the Tarbert Ferry Terminal pier, instead of a piled pier structure will not give rise to any new significant environmental effects. It will reduce the amount of pilling required and hence the duration of underwater noise effects which could cause disturbance to marine mammals. As such the variation to the marine licence is within the boundary of the existing EIAR. Mitigation identified within the CEMD is still appropriate and will continue to be implemented via the Risk Assessment Method Statements.

5 References

Affric. (2019). Tarbert Ferry Terminal Upgrade Environmental Impact Assessment Report. *2*.

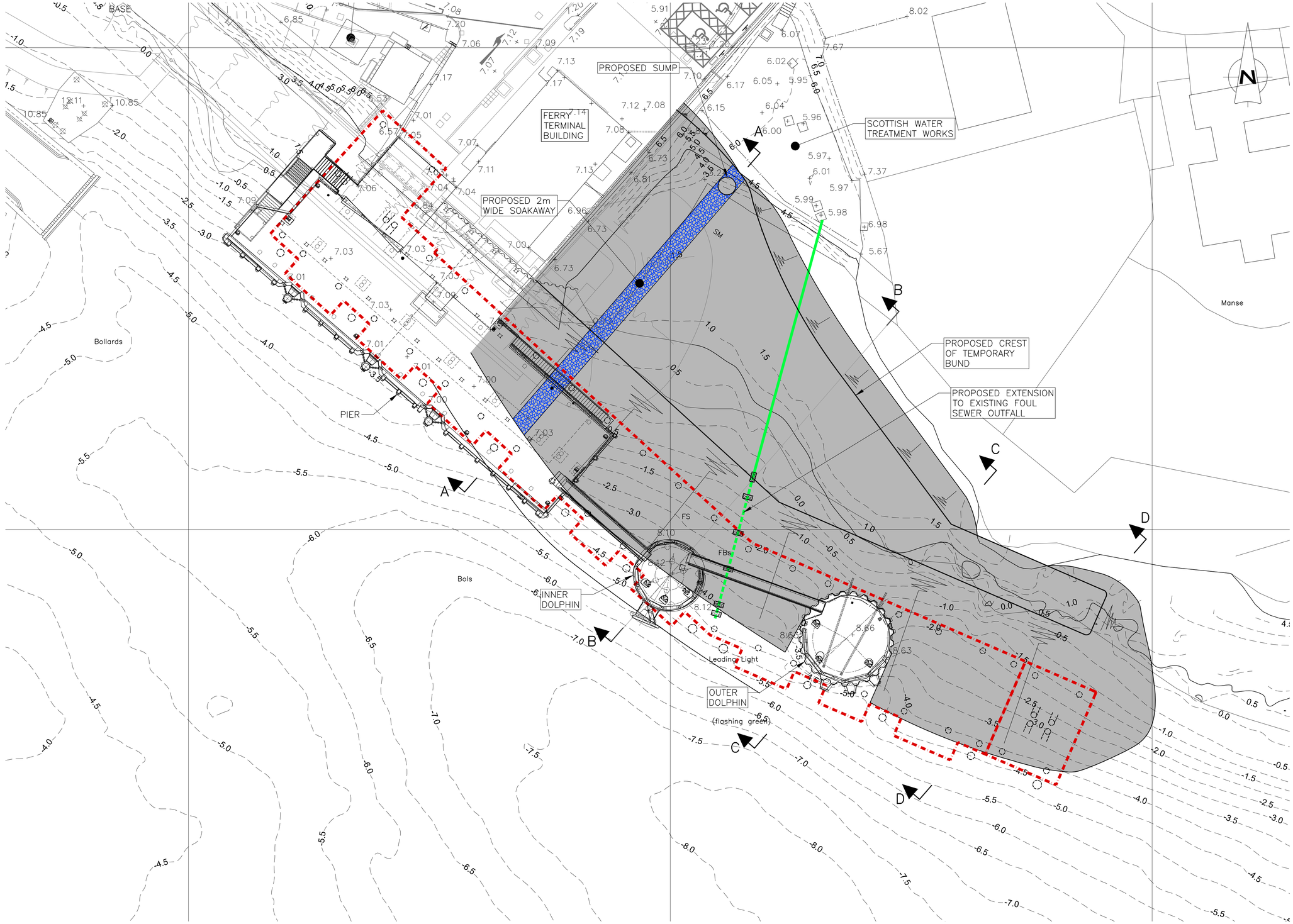
Affric Limited. (2019). Lochmaddy Ferry Terminal Upgrade - Construction Environmental Management Document.

APEM. (2018). Tarbert Ferry Terminal - Subtidal Benthic Ecology Re-visit Survey Report.

Atkins. (2018). Tarbert Ferry Terminal Development, Isle of Harris Transport Assessment.

Newell, R., Seiderer, L., Simpson, N., & Robinson, J. (2004). Impacts of Marine Aggregate Dredging on Benthic Macrofauna off the South Coast of the United Kingdom. *Journal of Coastal Research, 20*(1), 115-125.

Drawings



GENERAL NOTES

1. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+5.9mCD
MHWS	+5.0mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 2.74m BELOW ORDNANCE DATUM.
5. FOR SECTIONS INCLUDING SECTION THROUGH OUTFALL EXTENSION REFER TO DRAWING 2210/192.

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
B	04.12.19	PIPE ANCHOR BLOCKS ADDED	LS	TR	TR
A	27.11.19	SUMP ADDED TO SOAKAWAY	LS	TR	TR

AMENDMENTS

CLIENT

RJ McLEOD

PROJECT

TARBERT FERRY TERMINAL
UPGRADE WORKS

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HEBRIDES
01851 612454
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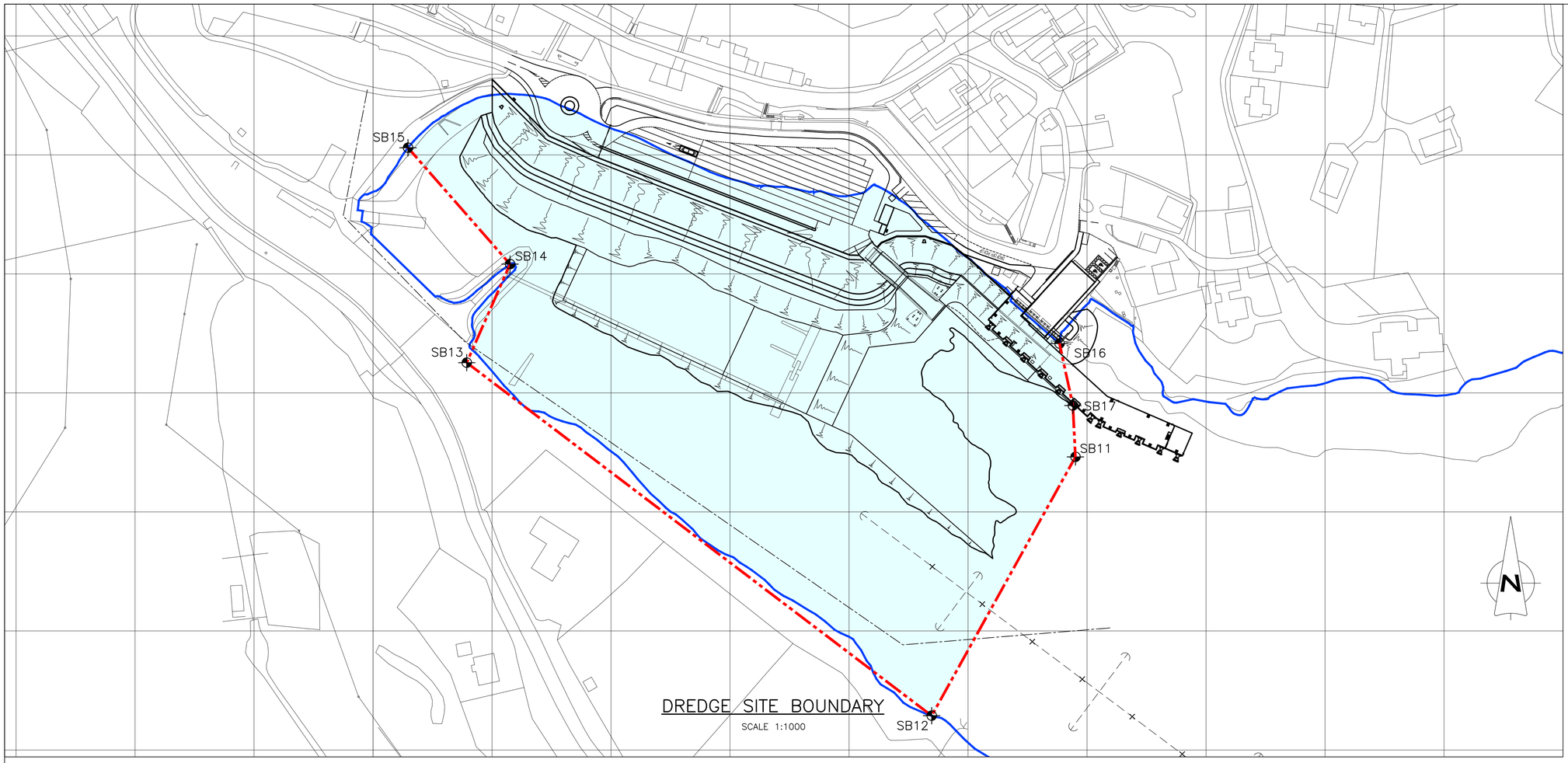
DRAWING TITLE

TEMPORARY BUND
GENERAL LAYOUT

DRAWN	CHECKED	APPROVED
LS	TR	TR
DATE 25.11.19	DATE NOV. 2019	DATE NOV. 2019

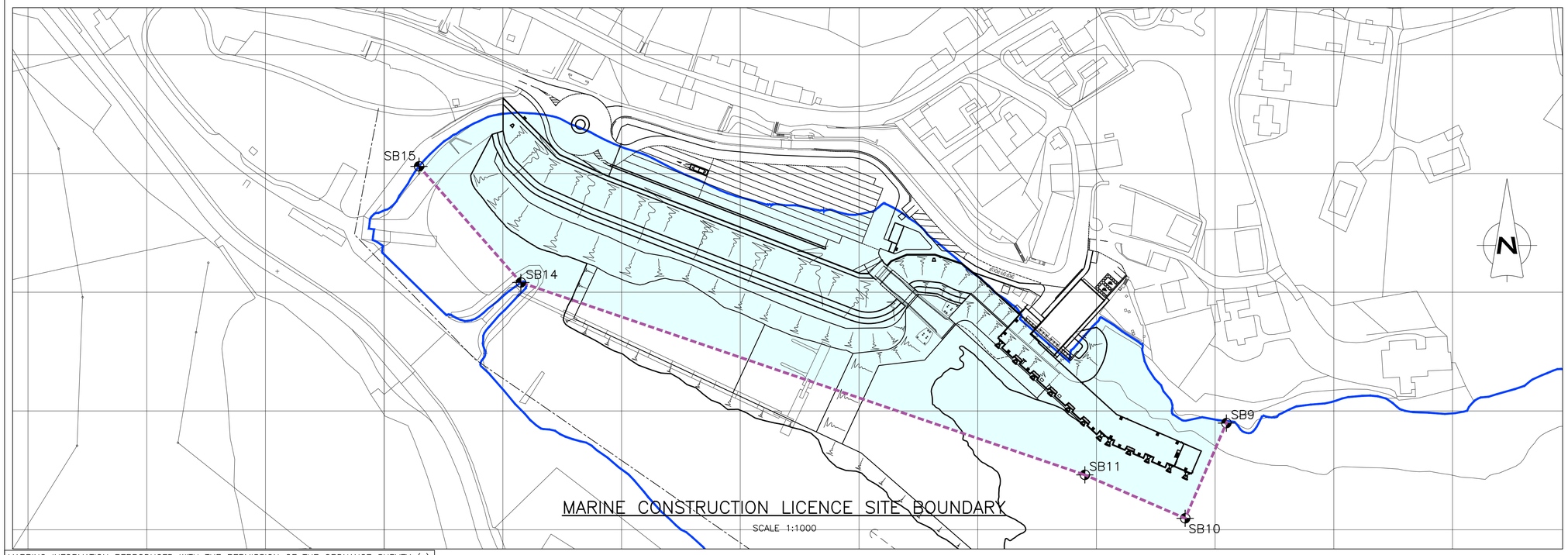
SCALE (A1) 1:200
STAGE CONSENTS
REVISION A B

PROJECT No. 2210
DRAWING No. 191



DREDGE SITE BOUNDARY

SCALE 1:1000



MARINE CONSTRUCTION LICENCE SITE BOUNDARY

SCALE 1:1000

GENERAL NOTES

1. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM UNLESS NOTED OTHERWISE.
2. TIDE LEVELS ARE AS FOLLOWS:
   HAT = +5.9mCD
   MHWS = +5.0mCD
   MLWS = +0.8mCD
   LAT = +0.1mCD
4. CHART DATUM IS 2.74m BELOW ORDNANCE DATUM.

POINT	LATITUDE LONGITUDE	NATIONAL GRID REF
SB9	N57°53.804' W06°47.838'	NG15855 99795
SB10	N57°53.782' W06°47.853'	NG15837 99755
SB11	N57°53.790' W06°47.897'	NG15795 99773
SB12	N57°53.729' W06°47.950'	NG15735 99664
SB13	N57°53.801' W06°48.158'	NG15539 99813
SB14	N57°53.824' W06°48.142'	NG15558 99854
SB15	N57°53.849' W06°48.189'	NG15515 99903
SB16	N57°53.815' W06°47.907'	NG15788 99820
SB17	N57°53.801' W06°47.899'	NG15794 99794

LEGEND

- MHWS (APPROX)
- DREDGE SITE BOUNDARY
- MARINE CONSTRUCTION LICENCE SITE BOUNDARY
- WORKS BELOW MHWS

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D

AMENDMENTS

CLIENT

CMAL
Caledonian Maritime Assets Ltd
Stòras Mara Caledonach Bta

PROJECT

TARBERT FERRY TERMINAL UPGRADE WORKS

Wallace Stone
CONSULTING CIVIL ENGINEERS

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HEBRIDES
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DRAWING TITLE

PROPOSED DREDGE SITE BOUNDARY & MARINE CONSTRUCTION LICENCE SITE BOUNDARY

DRAWN	CHECKED	APPROVED
JA	BP	TR
DATE 10/18	DATE 12/18	DATE 12/18

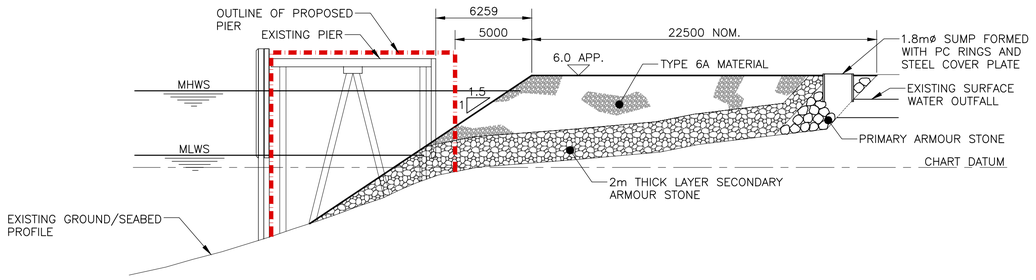
SCALE (A1) AS SHOWN

STAGE PRELIMINARY

REVISION

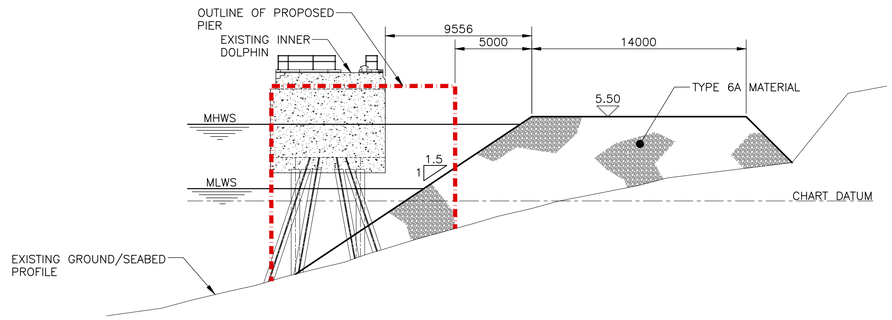
PROJECT No. 1973

DRAWING No. 909



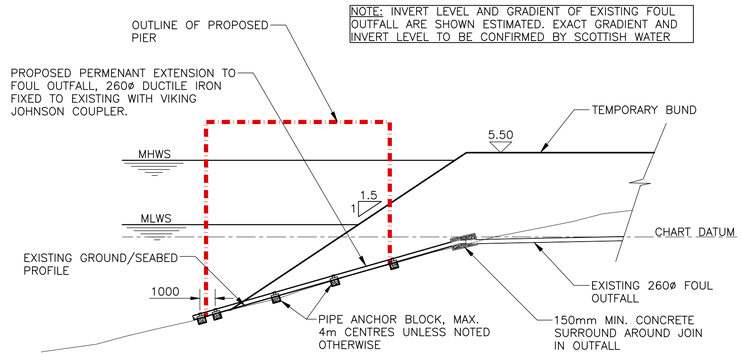
SECTION A–A

SCALE 1:200



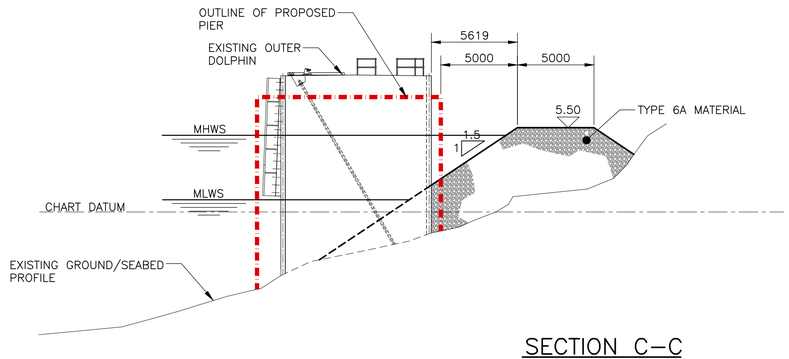
SECTION B–B

SCALE 1:200



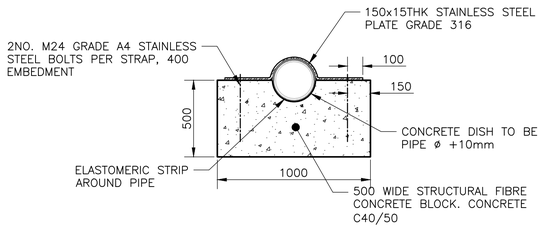
SECTION THROUGH FOUL OUTFALL EXTENSION

SCALE 1:200



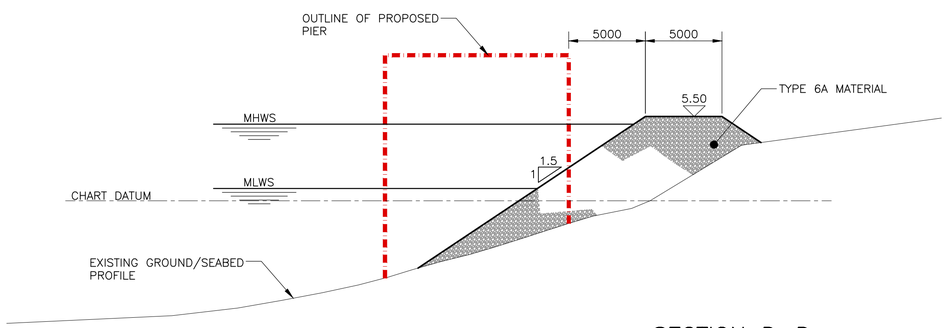
SECTION C–C

SCALE 1:200



PIPE ANCHOR BLOCK

SCALE 1:20



SECTION D–D

SCALE 1:200

GENERAL NOTES

1. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+5.9mCD
MHWS	+5.0mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 2.74m BELOW ORDNANCE DATUM.
5. DUCTILE IRON PIPE TO BS EN 598 LAID TO THE REQUIREMENTS OF 'SEWERS FOR SCOTLAND v4.0'.

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
B	04.12.19	PIPE ANCHOR BLOCKS ADDED	LS	TR	TR
A	27.11.19	SECTION A–A REVISED, SECTION THROUGH OUTFALL ADDED	LS	TR	TR

AMENDMENTS

CLIENT

RJ McLEOD

PROJECT

TARBERT FERRY TERMINAL
UPGRADE WORKS

Wallace Stone
CONSULTING CIVIL ENGINEERS
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HEBRIDES
01851 612454
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DRAWING TITLE

TEMPORARY BUND
PROPOSED CROSS SECTIONS

DRAWN	CHECKED	APPROVED
LS	TR	
DATE 25.11.19	DATE NOV. 2019	DATE NOV. 2019

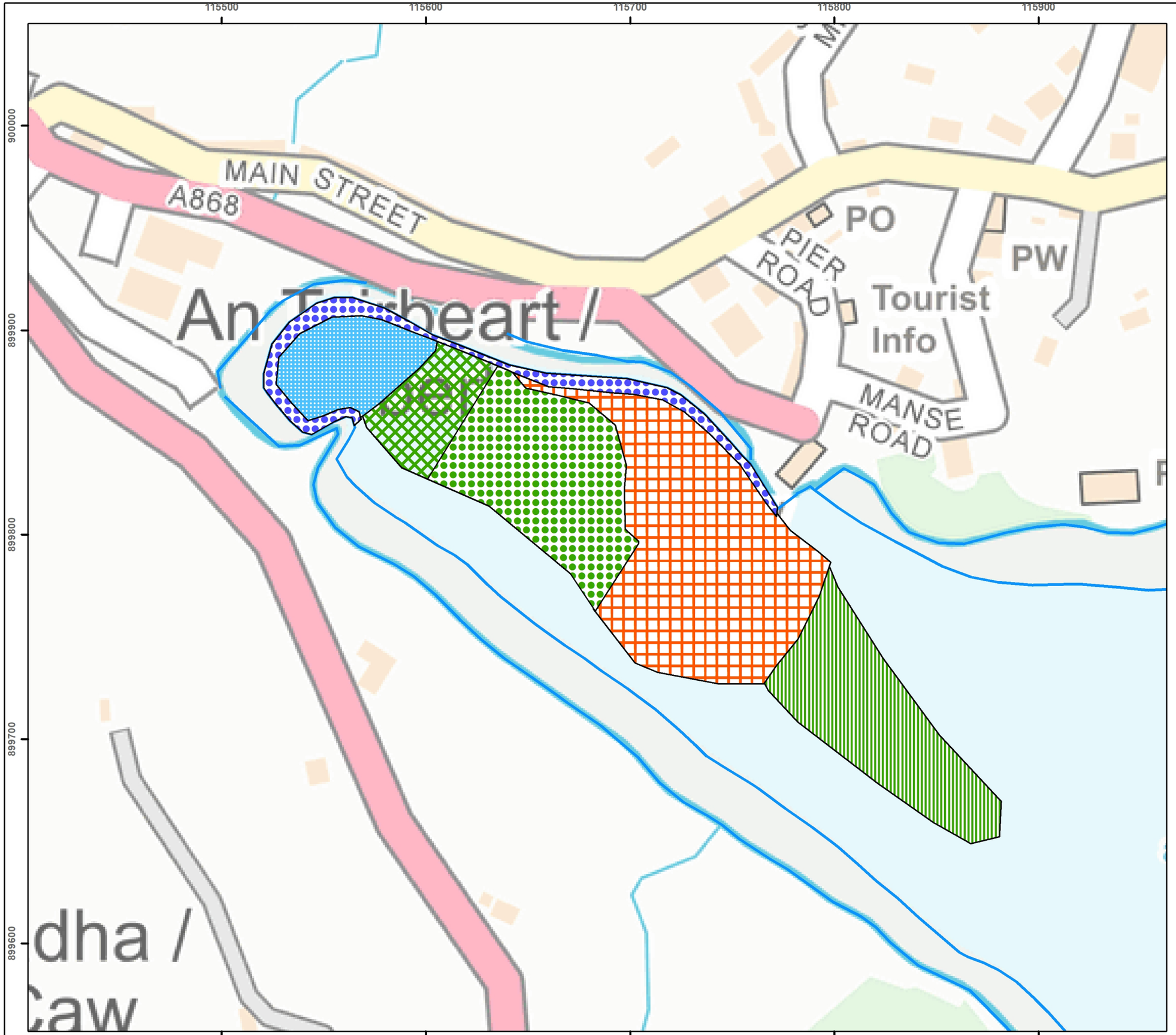
SCALE (A1) 1:200

STAGE CONSENTS

REVISION A B

PROJECT No. 2210

DRAWING No. 192



Legend

Drawing 49.08.05

Tidal Boundary

Biotope

- LR.LLR.F.Fserr.X
- SS.SCS.CCS.MedLumVen
- SS.SMu.ISaMu
- SS.SMu.IFiMu
- SS.SMu.IFiMu.PhiVir
- SS.SMx

N

0 25 50 75 100 Meters

APEM

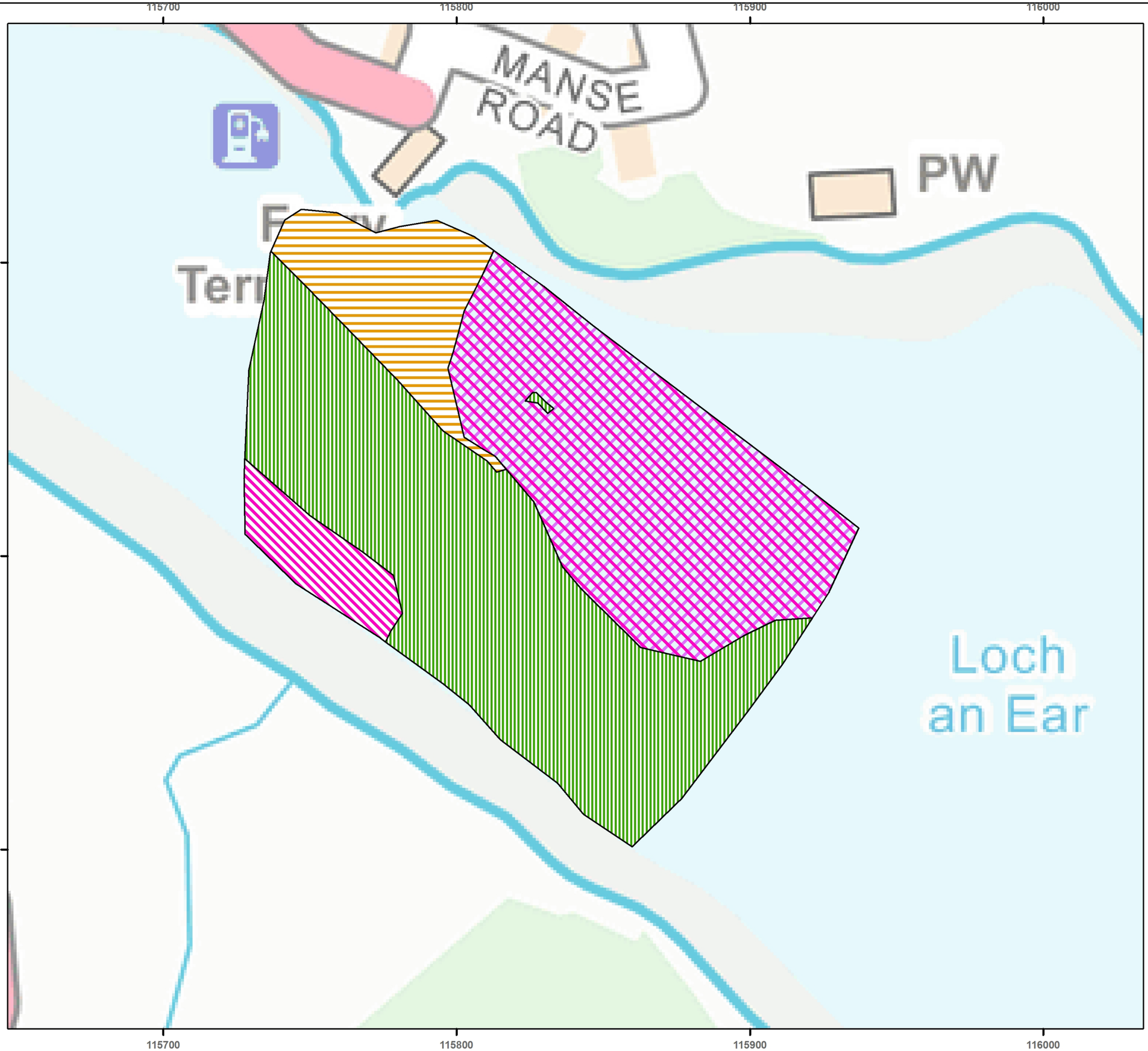
Aspect Land+Hydrographic Surveys CHARTERED SURVEYORS

Project
P2178 Tarbert Ferry Terminal
Subtidal Benthic Ecology Surveys

Title
Tarbert benthic survey biotopes

Scale	Drawn	Chk	Auth
1:1,800	SP	NP	NP

Coordinate System	Date
British National Grid (OSGB 1936)	25/01/2018



Legend

Drawing 49.08.06

- SS.SMp.KSwSS.LsacR/SS.SMp.KSwSS.LsacR.Mu mosaic
- SS.SMx.CMx.OphMx#
- SS.SMp.KSwSS.LsacR.Mu
- SS.SMu.IFiMu

N

0 20 40 60 80 Meters

APEM

Aspect Land+Hydrographic Surveys CHARTERED SURVEYORS

Project

P2178 Tarbert Ferry Terminal
Subtidal Benthic Ecology Surveys

Title

Tarbert April 2018 Biotopes

Scale	Drawn	Chk	Auth
1:1,250	SP	AS	AS

Coordinate System	Date
British National Grid (OSGB 1936)	10/05/2018

Drawing 49.V.1

Phase 4 works – delivery trucks access existing/infilled marshalling area and access temporary quay location