TECHNICAL NOTE

JBA Project Code	2021s1087
Contract	South Bank Outline Design
Client	Teesworks
Day, Date and Time	14/06/2022
Author	S Thomson
Reviewer / Sign-off	Dave Sargent
Subject	MMO Scope of Works

1 Purpose

This document has been prepared to describe the South Bank Channel Outfall and Inter-tidal Area scope of works to be considered by the MMO. This description is based on industry best practice and experience from other similar works we have undertaken. The overall approach is not likely to significantly change, but the contractor, when appointed, may refine the process.

2 South Bank Arterial Drainage Network Overview

The South Bank arterial drainage network is required to facilitate drainage from the developments under construction at Teesworks South Bank and Dorman Point sites. The drainage network also incorporates two existing ordinary watercourses, Holme Beck and Knitting Wife Beck. Both of which are currently culverted throughout the site and discharge to the Cleveland Channel.

The arterial drainage network restores the watercourses to open channels and provides an unrestricted conveyance route through to the South Bank to a new confluence with the tidal River Tees (Figure 1). The South Bank channel and associated culverts have significant capacity to convey the 1:100year +cc event even when sea level rises of around 1m are in considered.

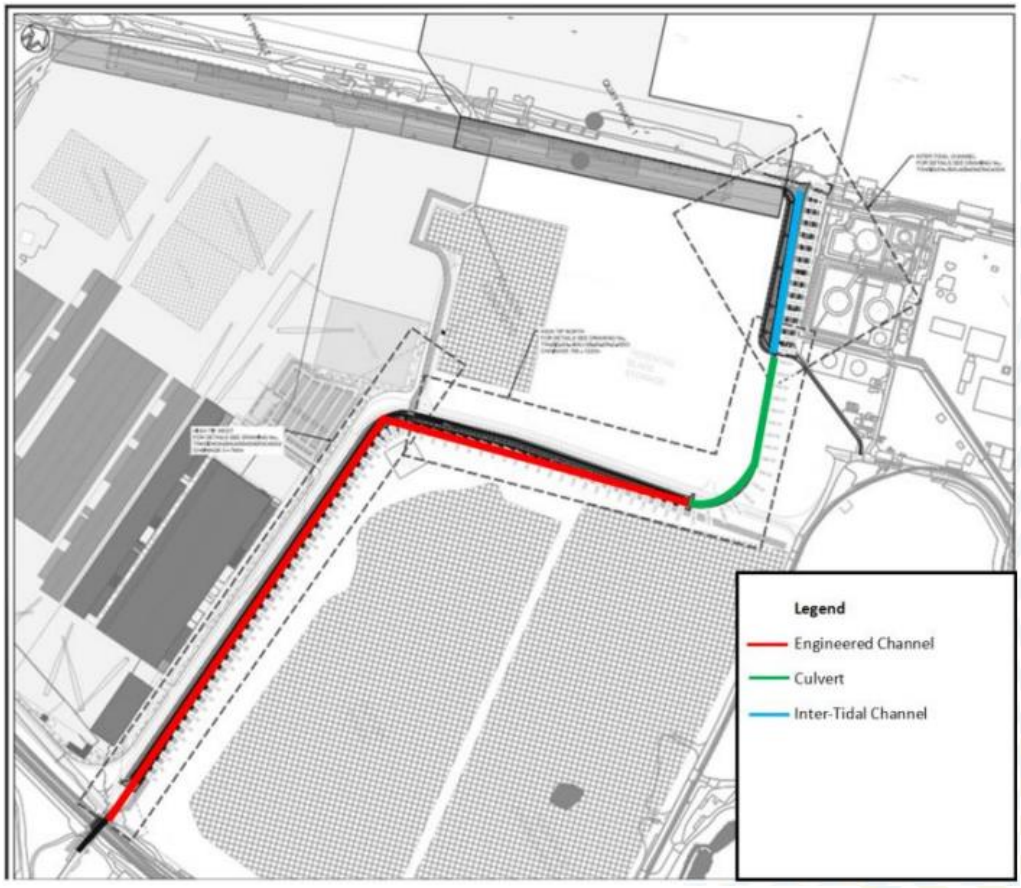

Figure 1 South Bank Channel Outfall and Intertidal area.

3 South Bank Channel Outfall and Inter-tidal Area

The South Bank channel culminates in a headwall structure located approximately 300m inland at an elevation of 3.25mAOD which is High Astronomical Tide level (HAT) (See drawing TW-SIZ-XX-JBAU-SB-00-DR-C-0004-A1-C03- South_Bank_General_ Arrangement_Inner_Tidal_Channel).

The outfall structure consists of a reinforced concrete headwall, wingwall and apron with low flow eel pass channel and high flow spillway which discharge into a stilling basin before flowing into the inter-tidal channel (Figure 2).

The inter-tidal area consists of a 20m wide flatbottomed invert with 1 in 3 side slopes. The invert is formed of a coarse granular aggregate to aid tidal sediment accretion. The level of the inter-tidal channel is set between MHWS and MHWN to encourage the formation of salt marsh in the long term (Figure 3).

The purpose of the outfall and inter-tidal area is to set back the hard outfall inland away from the sensitive River Tees. The outfall dissipates flows, reducing the energy and velocity prior to its confluence with the Tees. Even during extreme flood events velocities are less than 0.8m/s as such there is no risk of erosion within the Tees Estuary itself.

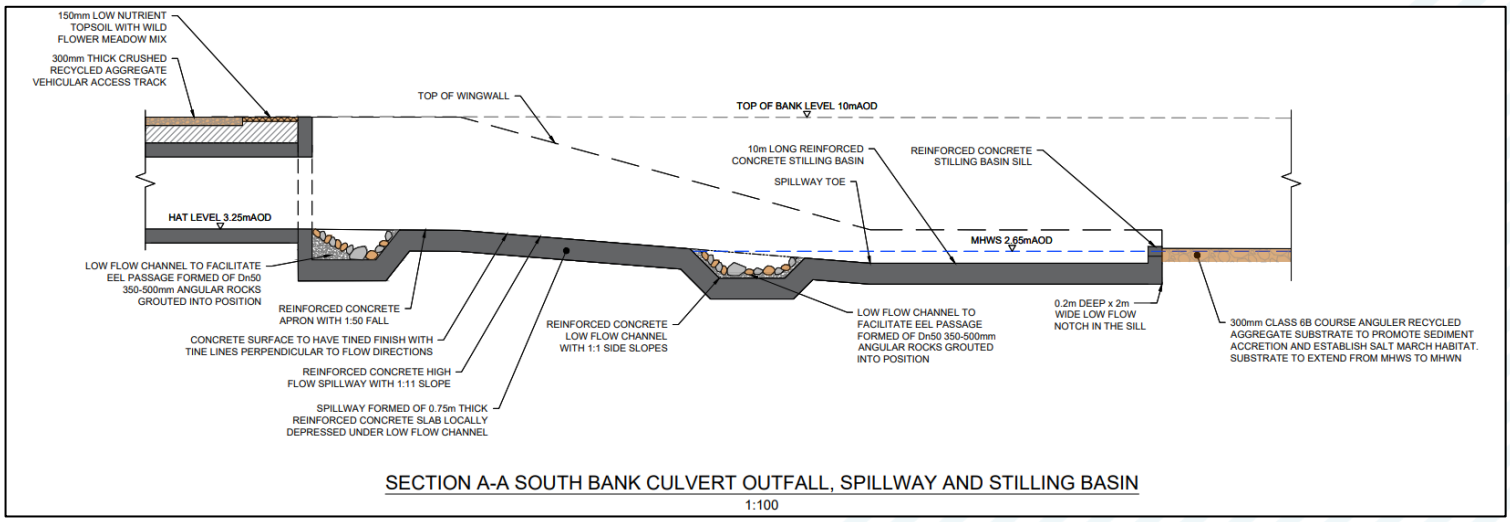

Figure 2 South Bank outfall channel structure (extract from drawing TW-SIZ-XX-JBAU-SB-00-DR-C-0303-A1-C01-South_Bank_Details_Sheet_3_of_4)

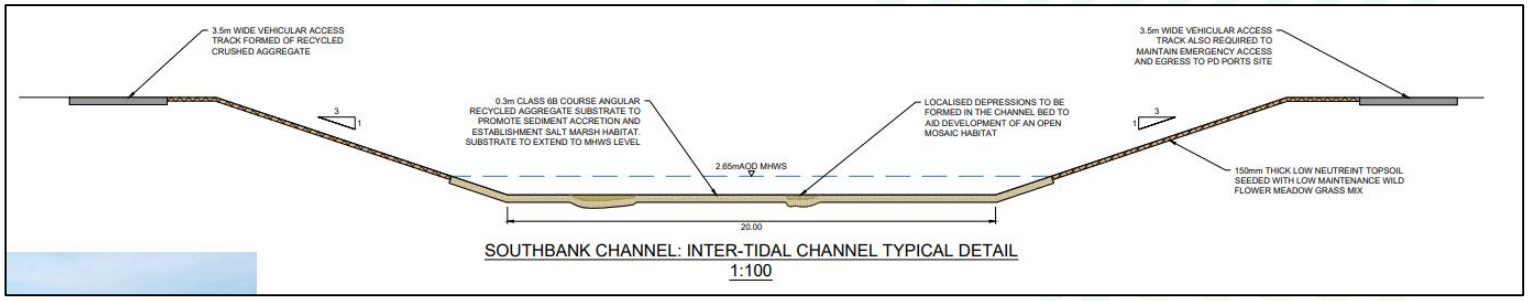

Figure 3 South Bank channel typical detail (extract from drawing TW-SIZ-XX-JBAU-SB-00-DR-C-0304-A1-C01-South_Bank_Details_Sheet_4_of_4)

4 Environmental Considerations

The contributing watercourses have a minimal sediment load due to the urban nature of the upstream catchment. All surface water discharges into the arterial drainage network will be subject to treatment as required through the terrestrial planning process as such are out with JBA's control.

The South Bank and Dorman Point arterial drainage network effectively form a sealed system. This means that any sections of open channel that are at risk of contamination from ground water or leachate potential are lined with a suitable hydraulic barrier to prevent any potential contamination pathways.

5 Operations and Maintenance Considerations

At all points Teesworks will be responsible for the maintenance of the arterial drainage network. Please refer to section 6.3 of the South Bank Arterial Drainage Network Asset Maintenance Plan (TW-SIZ-XX-JBAU-SB-ZZ-RP-C-0006-S4-P01-Asset_Maintenance_Plan)

6 Construction Considerations

6.1 Construction sequencing & licencing

The South Bank Channel is due to be constructed between Q2 2022 and Q2 2023 at present. The construction is to be spilt into two distinct phases the "dry works" and "wet works". All of the works shall be covered by Ordinary Watercourse Consent via Redcar & Cleveland Borough Council and be subject to meeting the WFD requirements as required by a planning condition.

Dry works shall consist of the construction of all works within chainages 0-1800m as shown on South Bank Key Plan (TW-SIZ-JBAU-SB-00-DR-C-0001-A1-C02-South_Bank_Key_Plan). As there are no existing watercourses, or existing surface water discharges within this area the works are effectively "dry".

The "wet works" will be undertaken upon completion of the dry works and consist of the construction of all the works within chainages 1800-1837.91m (figure 4) as shown on South Bank Key Plan (TW-SIZ-JBAU-SB-00-DR-C-0001-A1-C02-South_Bank_Key_Plan). These works effectively involve reprofiling of approximately 60m section of the existing esturine bank, as well as associated light earthworks to create the tie into the riverbanks to the east and west of the confluence. This marine licence application is only for the reprofiling of the existing estuarine bank as all other works will be terrestrial.

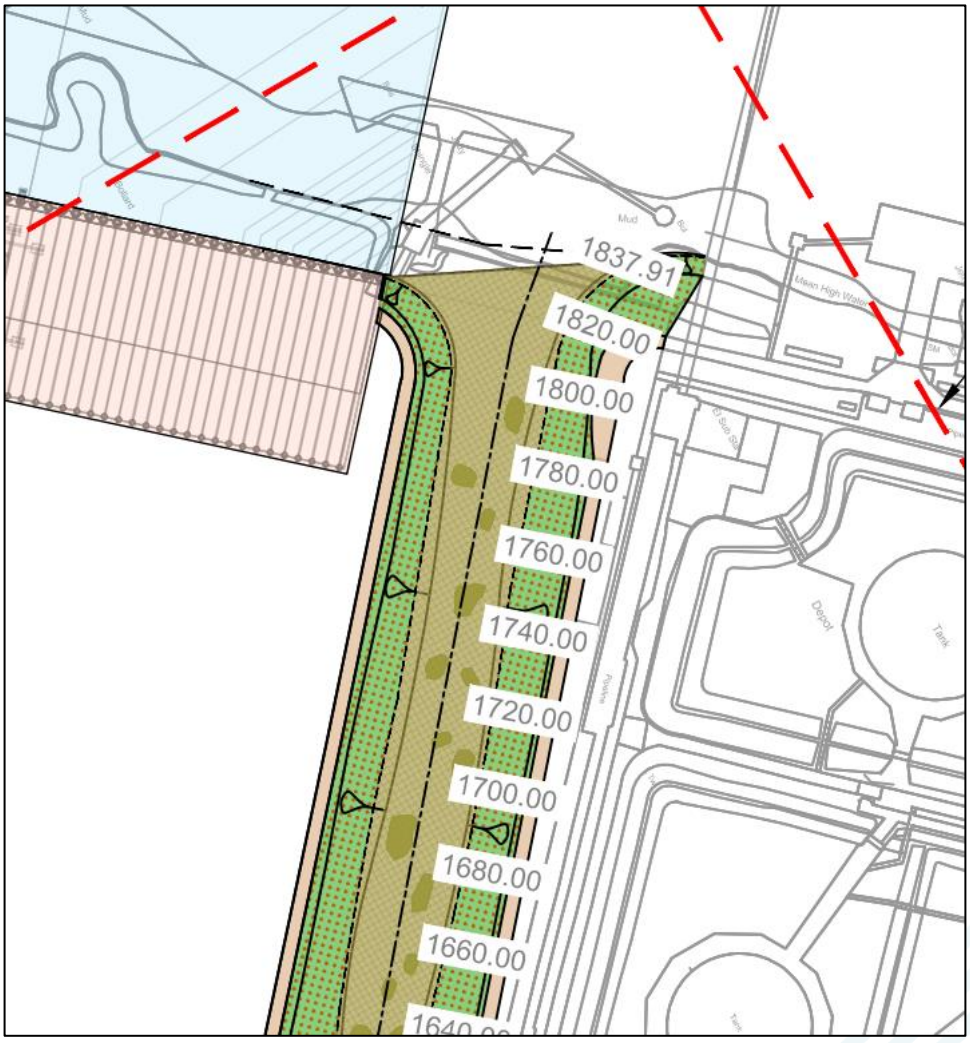

Figure 4 Wet work chainage 1800-1837.91 (extract from drawing TW-SIZ-JBAU-SB-00-DR-C-0001-A1-C02-South_Bank_Key_Plan)

7 MMO Licence Considerations

7.1 Temporary Case

In the temporary case it is our understanding that the MMO jurisdiction is limit to MHWS level. As such the dry works detailed above will be out with the scope of the MMO as prior to the breach the MHWS mark is located inline with the existing sea wall. Hence, there are no environmental or construction related risks to the estuary during the dry works.

The construction of the wet works which will link the Tees estuary with the dry works will come under MMO jurisdiction at all phases of the works.

7.2 Permanent Case

7.2.1 Environmental Risk

In the permanent case the MHWS mark will move approximately 300m inland to the South Bank Channel Outfall Structure. As discussed, the channel is to be lined and the upstream network is effectively sealed as such there is no long-term contamination risk.

7.2.2 Jurisdiction Post Construction

It is our understanding that this new inter-tidal area will come under control of the Harbour Master due to MHWS moving inland. However, given that the inter-tidal channel is located between MHWS-MHWN there is no navigable value to the channel. It is Teesworks intention to undertake all aspects of operation and maintenance of the inter-tidal area.