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15 April 2021

Secretary of the Department of Planning, Industry and Environment

Cc: Mitch Pelling
Multiplex Australasia
Level 22, 135 King Street, Sydney, NSW 2000

Dear Sir/Madam,

Re: SSD 8925 Modification 4: Basement Redesign and Sediment Redistribution

1A-1C Bridge Road, Glebe and Part of 56-60 Pyrmont Bridge Road, Pyrmont NSW

The NSW State Government has engaged Multiplex to design and construct the new Sydney Fish Market. Senversa has been engaged by Multiplex to provide environmental consulting advice and assist in preparation of certain environmental management plans for the project.

The New Sydney Fish Market project was declared a State Significant Development (SSD 8925) under the *Environmental Planning and Assessment Act 1979*, with approval of the development application by the Minister for Planning and Public Spaces on 12 June 2020. Senversa understands that a modification (MOD 4) to the development application will be submitted to the Department of Planning, Industry and Environment. The key features of the modification relevant to construction environmental controls are:

- An increase in the extent of sediment that requires reprofiling within the site footprint – the EIS included an initial estimate of *circa* 1000 m^3 sediment requiring reprofiling, but a recent bathymetric survey following demolition of wharf structures allowed a more accurate estimate of *circa* 12,000 m^3 (refer **Attachment A**).

Senversa has assessed potential changes to environmental impacts and mitigations associated with the proposed increase in extent of sediment reprofiling with respect to those evaluated in the EIS. The EIS found that sediments within the development site contain acid sulfate soils and other contaminants consistent with sediment quality within Blackwattle Bay and/or Parramatta River/Port Jackson. The principal impacts from sediment reprofiling during construction were identified to be related to exposure of acid sulfate soils and re-suspension of sediments into Blackwattle Bay. The principal environmental mitigations were to minimise sediment disturbance to the extent practicable, maintain sediments in a submerged state, use of engineering controls (including the coffer dam around the construction zone and silt curtains) and monitoring. The EIS anticipated the uncertainty in extent of sediment reprofiling, recommending that the extent be re-evaluated following wharf demolition works.

The increase in extent of sediment reprofiling has the potential to cause additional environmental impacts. However, Senversa considers that the increase in extent of sediment reprofiling is in keeping with the assessment in the EIS and represents minimal environmental impact on this basis provided:

- Consistent with the requirements of the Remediation Action Plan[1], Acid Sulfate Soil Management Plan[2] (ASSMP) and post-demolition sediment assessment (JBS&G, Jan 2021)[3], conduct additional investigation of sediment quality with respect to the relative levels of the materials within the previous investigations and modified depth of sediment disturbance to demonstrate consistency with the EIS. The investigation should comprise review of existing sediment quality data, identification of any data gaps, and sampling to address the data gaps consistent with requirements in Section 5.2 of the ASSMP and general methodology in (JBS&G, Jan 2021).
- Environmental procedures and controls to mitigate environmental impacts from sediments containing acid sulfate soils in the ASSMP are appropriately implemented. This includes maintaining sediments containing acid sulfate soils in a wet or submerged state such that they are not drained and/or exposed to the air.
- Appropriate environmental procedures and controls to mitigate environmental impacts from dewatering of the coffer dam are developed in the Dewatering Management Plan and implemented within consideration of the modified scale of sediment reprofiling.

The Sediment Redistribution Methodology, provided at **Attachment B**, is broadly in keeping with the above.

Should you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours sincerely,
On behalf of **Senversa Pty Ltd**

Jason Clay
Senior Principal

AW/JC

Attachment A: *Modified Sediment Reprofiling Extent Provided by Multiplex*
Attachment B: *Sediment Redistribution Methodology*

[1] JBS&G (Jul 2020) *Remediation Action Plan, The new Sydney Fish Market*, dated 8 July 2020.

[2] JBS&G (Apr 2020) *Acid Sulfate Soil Management Plan, The new Sydney Fish Market*, dated 4 April 2020.

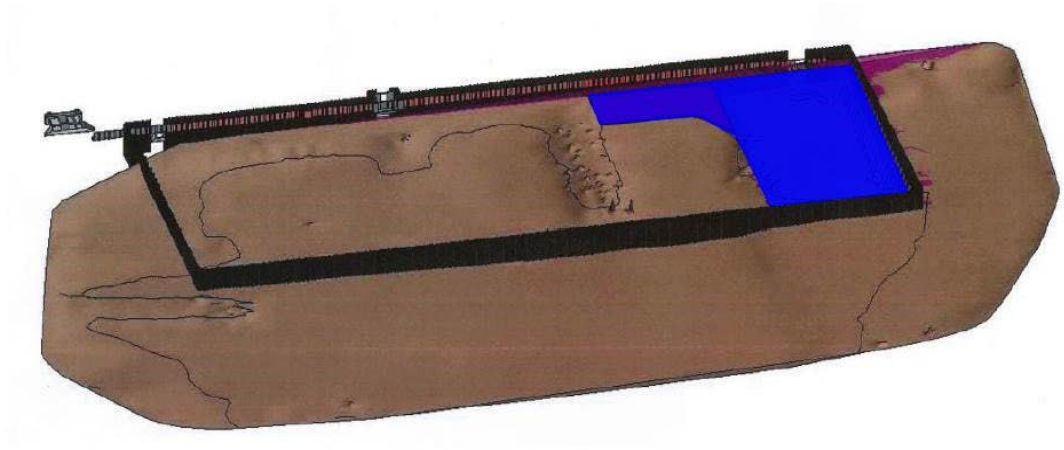
[3] JBS&G (Jan 2021) *Sediment Characterisation Assessment, The new Sydney Fish Market, 1A to 1C Bridge Rd, Glebe NSW*, 12 January 2021

Attachment A: Modified Sediment Reprofiling Extent Provided by Multiplex

SEDIMENT REDISTRIBUTION VOLUMES

Assessed quantities of marine sediment under the Hansen Concrete Batching Plant area not possible during the Development Consent process due to total inaccessibility.

Now that the demolition of the Hansen Area has been completed, the subsurface conditions have revealed an unexpected quantity of material that will require re distribution to level the seabed.



- **Area shown in blue is where the Hansen batching Plant and Wharf was located.**
- **Approximately 12,000m3 of sediment requires redistribution within the Site.**
- **Previous reports prepared as part of the SSD submission referred to less than 1,000m3**

Attachment B: Sediment Redistribution Methodology

High level Methodology

Establishment

The cofferdam for the project is installed only after the main building piling works are complete and is in line with the construction management plan previously provided with the SSD. This is to ensure all associated piling plant leaves the site and is not entrapped inside the cofferdam. It is also not possible to trap the barges inside the cofferdam due to the current grid system utilized for the piling works (there is no room to store a piling barge inside the cofferdam). Therefore it is on the same note, that it is not practical to have large profiling barges inside the cofferdam after it is closed. Due to the volume of works required for sediment redistribution, the works need to be conducted prior to the installation of the cofferdam and piling works, but within the confines of the site that is governed by the larger silt curtain. This position is contemplated within the contractor's silt curtain set out.

Typical Machinery

The Seabed profiling works will be carried out by profiling barge using associated machinery. A non-propelled split hopper barge will also be moored alongside the profiling barge and has a capacity to store up to 1200m3 of material. The material moved by the profiling barge (referred to as profile/cut) will firstly be loaded into the split hopper barge from the work area. The hopper barge is then used to transport the material to the relocated area on site (referred to as the disposal cell). Refer to Figure 1 for an image showing the profiling barge adjacent to the hopper barge.

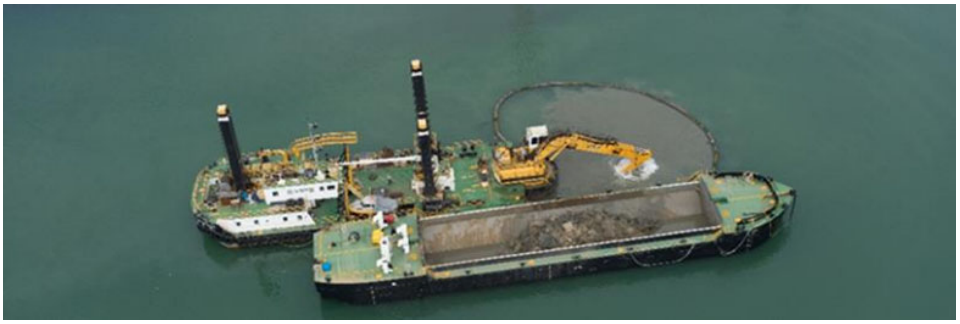


Figure 1. Machinery proposed

The profiling barge will operate within a moon pool arrangement with a short silt curtain attached to it. The moon pool generally serves as a barrier, delineating the operational area of the excavator whilst also creating an exclusion zone for other floating plant. It also serves as a containment area for localised turbidity and in the unlikely event of an in-water oil spill. Refer to Figure 1 and 2 for associated images. This moon pool acts as the sites second line of silt curtain (double curtain), with the site governed by a larger aforementioned site wide silt curtain.

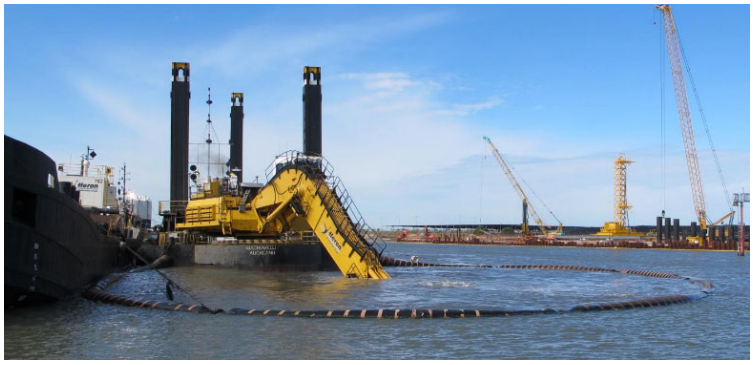


Figure 2. Typical moonpool arrangement

As an additional measure for minimising plume during the sediment redistribution process, a silt curtain will also be installed to the perimeter of the hopper barge for when the sediment material is released / relocated.

General Methodology

Due to the high level of sediment found on the site inhibiting draft requirements of the barges, the barges will work from either East to West or West to East as is required for follow on building works. The existing sediments are generally highest closest to land and at the existing Hansen wharf most likely due to their long term use as functional concrete batching plants throughout their history. The works will intend for those sediments to be distributed evenly into the deeper areas of the site, at all times within the confines of the overall site silt curtain (but prior to cofferdam installation). As sufficient draft is required for the working vessels to access the highest areas, the sediment distribution process will commence from the area's most seaward points. As the required draft conditions are activated progressively, the vessels will then be able to progress closer towards the land to complete the profiling works.

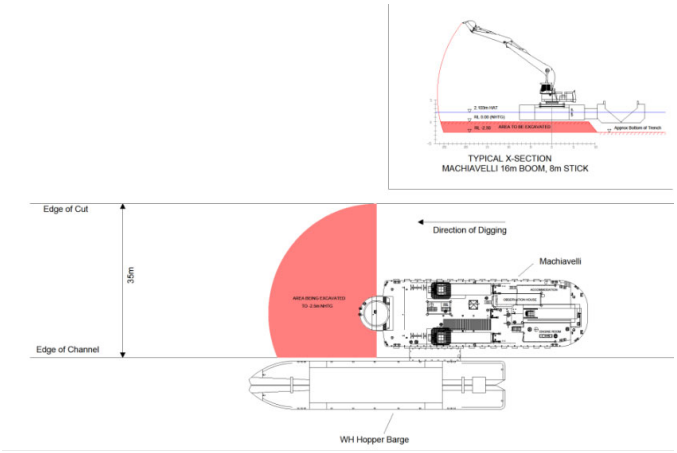


Figure 3. Typical working zone arrangement

Material will be kept saturated by the profiling works to avoid any drying of PASS material. The material will remain wet inside the hopper barge (the material is already saturated from leaving the water), and each loaded barge of material will be relocated from hopper (which will be outside of water, on a barge) and re-placed below the water surface to a deeper area of the site within 12-

hours. Typically, the barge / hopper will be emptied of material at the end of each working day and any material found in the barge at end of the working day will be resubmerged into the water. The walkways of the hopper barge are generally washed down at the end of a typical disposal using a bucket with local marine water

Material in the hopper stays saturated for extensive periods due to the hopper slowly sinking as the material is loaded in. As the water ingresses into the hopper sediments are further saturated. Generally the bottom three quarters of the hopper barge are saturated in this process. The top quarter of the barge is continually saturated with wet material as each sediment load is added. The sediments are placed systematically across the barge accordingly. In the event of mechanical failure there is a manual release feature for the hopper barge.

The loaded draft of the barge is between 3-4m, and the deepest pockets of the site are in the region of -7CD (refer bathymetric survey). This implies the sediments are falling on average 2m but up to 3-4m. The bottom of the barge is very close to the seabed during the disposal which further minimises the fall time of the sediment and the expected plume. This is positive mitigation as opposed to extensive disposals found in other deeper areas of Sydney Harbour which are generally in excess of 10-20 meters.

A progressive disposal plan would be established prior to commencement of works, and this would be supported by hydrographic survey. The volumes are distributed to the basement footprint and profiled to the extent of the cofferdam footprint.

Assistance Vessels

The profiling barge will feature spuds for added stability during the works, however each of the barges are also fitted with stern thrusters which assist the tugs boats adjacent in the overall positioning of the barges. The preferred method of connection between the tug and barge when transiting will be via hip tow. All tugs will be fitted with heavy duty towing winches so that barges can be retrieved to the tug quickly and safely.

Figure 4. Hip Tow zone arrangement

At the completion of the re-profiling, if any levelling off of sediment is required to the seabed, a smaller vessel with a sweep bar may be used. The depth and profile of the sweep bar can be adjusted to suit the final levelling off activity. An example of this vessel is noted in Figure 5.

Figure 5. Vessel with sweep bar example.

Monitoring and Adaptive Management

Monitoring buoys will be implemented outside of the proposed silt profiling zone, and provide real-time data to the profiling team and in accordance with the tiered trigger levels. A baseline would be established prior to works commencing and following completion of the works.

Adaptive management monitoring during the sediment profiling works, will be managed in response to results of visual turbidity and from turbidity buoys. An environmental assistant will monitor and collect data during the works. The visual turbidity data will be collected at various locations. There would be a previously established five tiered trigger system to manage these events. The triggers nominated will provide a basis for informing the profiler operator that alterations may need to be implemented throughout the works. At the last stage of the tiered approach, complete cease of the works is implemented to reduce the turbidity at the point of exceedance. This tiered approach is further developed in detail in associated planning and risk workshops prior to commencement of works.

There are three primary contingency methods to avoid sediments oxidising throughout the methodology;

1) The sediments will not be exposed for longer than 12 hours and always redispersed prior to end of day works.
2) There is a manual release on the hopper barge if required due to mechanical failure
3) In the event the manual release does not work (fails), a pump system and sprinkler drawing on the seawater could be applied to mitigate this risk temporarily until repairs are made.
4) If points #1-#3 have failed for any reason, a local storage of lime in bulker bags sufficient to treat an entire hopper load can be applied. A crane on board the barge would assist to spread this evenly. It is reiterated this event is a last measure and unlikely to occur.

Pre-established risk workshops, methodology reviews and overall planning workshops are conducted prior to commencement of works to work through the proposed methodology, and adopt an adaptive regime to respond to any events that may occur. Further modified strategies can be formulated in the workshop development stage.