

15 February 2022

Paul Couani  
Development Manager  
Multiplex  
The New Sydney Fish Markets  
22 Bridge Road  
Glebe NSW 2037

Dear Paul,

## Re: Sediment Capping - Environmental Assessment New Sydney Fish Market

Senversa Pty Ltd (Senversa) has been engaged by Multiplex to support environmental management aspects of Multiplex's construction of the new Sydney Fish Markets (nSFM). The NSW State Government engaged Multiplex as the Principal Contractor (PC) to design and construct the nSFM (Stage 2).

Multiplex has considered two options best suited to reduce exposure of potential acid sulfate sediments (PASS) during dewatering and construction works within the cofferdam:

- Option 1 – Dewater to 1 m above sediment and conduct construction works over water within the cofferdam.
- Option 2 – Cap sediments prior to dewatering and create a dry working surface within the cofferdam. This is Multiplex's preferred approach.

This letter describes the proposed methodology, and an assessment of environmental management risks and controls associated with preferred option of sediment capping within the cofferdam.

### 1. Background

The nSFM project was declared 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. There have been subsequent approved modifications, including the most recent approved MOD4 (approved 2 July 2021), which relates to sediment requiring redistribution to level the seabed under the building basement. MOD4 included as assessment of environmental impacts, including updated versions of the following key environmental management plans and assessments that relate to sediments:

- Marine Ecology Assessment<sup>1</sup>.

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<sup>1</sup> Ecological Australia (2022). *New Sydney Fish Markets Ecology Assessment – Sub-basement rock placement*. 20WOL-16700, 14 February 2022.



- Acid Sulfate Soil Management Plan (ASSMP)<sup>2</sup>.
- Remediation Action Plan (RAP)<sup>3</sup>.

The RAP and ASSMP assessed and developed the approach to manage contaminated sediments that require redistribution within the site as part of the project. The key environmental management requirements in Section 5.4 of the ASSMP include a requirement for consideration of in-situ capping of placed sediments as part of the redistribution works.

Multiplex is proposing to conduct in-situ capping of the sediments following redistribution works in order to:

- 1) Provide a safe working surface for construction and enable the basement to be constructed as a 'dry' activity.
- 2) While this is the primary objective of the works, there are secondary environmental benefits to reduce the potential for mobilisation of suspended solids and exposure of PASS sediments to the atmosphere during construction works within the cofferdam.

Sediment capping works are proposed to be carried out as per the Multiplex methodology provided in **Attachment A**. While the proposed works are broadly in line with works approved in MOD4, Senversa understands there is a requirement of approval to conduct these capping works. This letter has been prepared to meet the requirements of an environmental assessment for approval by the Harbour Master and/or a modification application to SSD 8925 to conduct these works.

## 2. Proposed Capping Works

Construction of the nSFM building requires the following approved works:

- Sediments to be redistributed within the work area as outlined in the approved MOD4 application.
- Installation of a temporary cofferdam around the construction footprint overlying Blackwattle Bay (refer drawings in **Attachment B**).
- Temporary partial dewatering inside the cofferdam to facilitate pile completion and building construction.
- Flooding and subsequent removal of the cofferdam on completion of building basement construction.

Drawings in **Attachment B** present the extent of the cofferdam.

As per **Attachment A**, Multiplex is proposing to place a 1.6 m thick layer of suitable sand and sandstone virgin excavated natural material (VENM) or quarried rock product over approximately 23,000 m<sup>2</sup> redistributed sediments inside the cofferdam prior to commencing building construction works within this area. The capping material will be validated by a suitably qualified and experienced person to meet specifications for imported VENM in Section 6.7 of the approved RAP. The capping records shall be documented in the validation reporting required by the RAP.

The cap will remain in-situ, i.e. will remain in place underlying the constructed building.

The sediment area to be capped is presented in drawings in **Attachment B**.

Silt curtains will be maintained in place around the work area during capping works, and surface water quality monitoring will be conducted as required by the project approval conditions.

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<sup>2</sup> JBS&G (Apr 2021). *Acid Sulfate Soil Management Plan, The new Sydney Fish Markets, 1A to 1C Bridge Rd, Glebe NSW*. Revision 6, 26 April 2021.

<sup>3</sup> JBS&G (2020). *Remedial Action Plan - The new Sydney Fish Market*, Rev 4. 8 July 2020



### 3. Project Conditions and Management Plans

SSD DA 8925 MOD4 development application was approved based on several conditions. Conditions of approval relevant to the proposed capping works are outlined below in the following table.

Condition	Addressed
<b>B90</b> – “Prior to the commencement of works, the Applicant must prepare a Dewatering Plan demonstrating that dewatering will not result in the discharge of pollutants at non-trivial levels”.	A Dewatering Management Plan (DMP) <sup>4</sup> has been prepared.
<b>B94</b> – “Prior to the commencement of works, the Applicant must submit to the Certifier a Section B Site Audit Statement, prepared by an EPA accredited Site Auditor that confirms that the remediation action plan is appropriate for the site and that the site can be made suitable for the proposed use.”	The Site Auditor has provided a Section B Site Audit Statement on the RAP.  This letter will be provided to the Site Auditor for comment.
<b>B95</b> – “The Applicant must adhere to the management measures accepted or recommended by the site auditor”.	
<b>B103</b> – “All recommendations within the Marine Ecology Assessment report (MEA), prepared by Ecological Australia, dated 2 April 2019 shall be implemented, including preparation of an Aquatic Biodiversity Management Plan (ABMP), which shall address OEH guidelines. Further, research from Macquarie University and University of NSW to enhance native habitat-forming organisms shall be included in the ABMP, once proof of the concept phase is completed, where relevant. Prior to the commencement of works, details demonstrating compliance with this requirement shall be submitted to the Planning Secretary and Certifier”.	A Marine Ecology Assessment (MEA) <sup>5</sup> was included in the original project application and updated in the MOD4 application <sup>6</sup> .  An additional ecological assessment in relation to the proposed capping works is provided in <b>Attachment C</b> .
<b>C17</b> – “All remediation work must be undertaken in accordance with the remediation action plan and site auditor’s section B Site Audit Statement.”	The proposed capping works will be conducted consistent with requirements in the RAP. The RAP concludes that “Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in Section 11, it is considered that the Site can be made suitable for the intended uses and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.”
<b>C19</b> – “The Applicant must ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site so as to result in significant contamination [note this would render the Applicant the ‘person responsible for the contamination under section 6(2) of the Contaminated Land Management Act 1997].”	This is assessed in <b>Section 4</b> – the proposed works are consistent with the approved ASSMP and should result in further mitigation of contamination risk.

<sup>4</sup> Senversa (2021). *Dewatering Management Plan – Construction of New Sydney Fish Market*, S18417\_003\_RPT\_Rev1 DMP, dated 29 April 2021.

<sup>5</sup> Ecological Australia (2019). *Marine Ecology Assessment – Stage 1 (Concept & Demolition) and Stage 2 (Main Works)*, V6, dated 2 April 2019.

<sup>6</sup> Ecological Australia (2021). *New Sydney Fish Markets (MOD4): Modification Consistency with Marine Ecology Assessment*. 20WOL-16700, 16 April 2021.



## Condition

## Addressed

**C30** – “The Applicant must ensure silt curtains are installed throughout the duration of the works to minimise disturbance and mobilisation of sediments and contaminants in the seabed of Blackwattle Bay. The silt curtains must be installed and maintained throughout the duration of works. The silt curtain must extend from the surface of the water to the seabed and ensure that all attachment points for the silt curtains are firmly anchored to avoid gaps and release of contaminants.”

The proposed capping works will be conducted inside the cofferdam, which will control sediment disturbance. The capping will allow better control of ongoing cofferdam dewatering.

Silt curtains are currently installed around the outside of the work area and will be maintained during the works as required by project approval conditions.

**C32** – “All works must be undertaken in a manner that ensures the protection of the water quality objectives and environmental values for Sydney Harbour estuarine waters in accordance with the NSW Water Quality Objectives and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) for the environmental values under the ANZECC Guidelines<sup>7</sup>.”

Sediment redistribution, cofferdam installation and dewatering, and surface water quality monitoring will be conducted as required by existing project approval conditions.

**C34** – “No approval is permitted to pollute waters. All water discharge from the site must meet all requirements of the Protection of Environment Operations Act 1997.”

**C38** – “All fill imported onto the site shall be validated to ensure the imported fill is suitable for the proposed land use from a contamination perspective. Fill imported on to the site shall also be compatible with the existing soil characteristics for site drainage”.

Imported VENM will meet the environmental specifications of the approved RAP.

**C57** – “The Applicant must ensure that any acid sulfate soil (ASS) and potential acid sulfate soil (PASS) excavated or other disturbed during construction is managed in accordance with the Acid Sulfate Soils Manual 1988 (NSW Acid Sulfate Soil Management Advisory Committee and the EPA’s Waste Classification Guidelines 2014 (Part 4: Acid Sulfate Soils).”

The proposed capping works are consistent with requirements of Section 5.4 of the approved ASSMP.

**C58** – “All recommendations contained in the Acid Sulfate Soils Management Plan prepared by JBS&G Australia Pty Ltd dated 26 April 2019 must be implemented throughout the works”.

## 4. Environmental Assessment

The original project application and MOD4 application included assessments of environmental impacts associated with the nSFM construction. The proposed sediment capping works are consistent with the requirements of the ASSMP approved as part of the MOD4 application. An assessment of the key environmental factors associated with the proposed capping works are presented in the following sections – these are limited to:

- Marine ecology impacts.
- Contamination management.
- Acid sulfate soil management.
- Water quality impacts.

<sup>7</sup> ANZECC (2000) guidelines have been superseded by the ANZG (2018) guidelines



## 4.1 Marine Ecology Impacts

Potential ecological impacts were assessed in the MEA in the approved original project development application and approved MOD4 application. Further ecological assessment of potential impacts from the proposed capping was conducted (refer **Attachment C**). This assessment confirms that the proposed rock placement beneath the basement is acceptable from a marine ecology perspective and is comparable with what has been previously assessed in the approved in original project development application and approved MOD4 application. The existing conditions and monitoring requirements of these approvals are applicable.

## 4.2 Contamination Management

The RAP and subsequent investigations reported that sediments in the extent of the development site are variably contaminated with heavy metals, petroleum hydrocarbons and some other semi volatile organic compounds, and that the sediments of Blackwattle Bay had significant metal and nutrient contamination, indicative of highly disturbed conditions. Asbestos fibres were also reported within a number of sediment samples. On this basis, the RAP concluded that elevated contaminant concentrations reported in sediments within the development site were likely reflective of conditions throughout the extent of Blackwattle Bay as a result of historical industrial activities along the foreshore of the bay.

The sediments also comprise PASS (refer **Section 4.3** below).

The RAP considered that specific remediation of the sediments was not required, but that environmental management of sediments was required during construction – the ASSMP sets out these requirements, which are discussed in **Section 4.3** below. The RAP concluded that “.....and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.” The proposed capping will likely have a net environmental benefit relative to existing works.

The RAP includes requirements for importation of materials to the site. The capping materials shall comprise suitable imported VENM or quarried rock product, as required in the approved RAP. The capping material will be validated prior to importation to meet specifications for imported VENM in Section 6.7 of the approved RAP.

In summary, potential environmental impacts associated with sediment contamination as part of the approved nSFM project have previously been assessed and are managed via the RAP and ASSMP. The RAP and ASSMP conclude that appropriate implementation of the measures in the plans will minimise or adequately protect human health and the environment risks associated with the works. The proposed capping works are consistent with the requirements of the approved RAP and ASSMP.

## 4.3 Acid Sulfate Soil Management

Previous investigations found that all sediments encountered within the wider development footprint comprise PASS.

Management of PASS is outlined in the approved ASSMP. The ASSMP concludes that “Where existing and future assessment data identifies the presence of ASS/PASS materials that may be disturbed during construction activities, the measures identified in this acid sulfate soil management plan (ASSMP) provide appropriate procedures to manage the risks associated with the proposed activities. If successfully implemented, these measures will minimise the environmental risks associated with disturbance of the PASS materials.”



The proposed capping works are consistent with the requirement in Section 5.4 of the ASSMP that *“should further assessment of site conditions prior to, or during disturbance identify geochemical changes in the in-situ sediments upon this disturbance works, consideration will be given to capping the newly exposed material so as to preserve the anoxic balance of material within this portion of the site.”* The capping is an additional practical step to further mitigate the potential for environmental impact (i.e. will likely have a net environmental benefit relative to existing works) caused by potential exposure of redistributed PASS sediments to the atmosphere and formation of acidity and mobilisation of suspended solids by:

- Reduce oxygen permeation into sediments from overlying oxygenated water or atmosphere.
- Providing a buffer when undertaking temporary dewatering of the cofferdam to more practicably maintain underlying sediments in a saturated condition.
- Reduce potential for disturbance and entrainment of PASS sediments in water during cofferdam dewatering and construction works.

The capping will also provide physical separation between PASS sediments and construction workers or future ecological receptors.

The capping materials shall comprise suitable imported sand or sandstone VENM or quarried rock product, as required in the approved RAP. The capping material will be validated prior to importation to meet specifications for imported VENM in Section 6.7 of the approved RAP.

In summary, potential environmental impacts associated with PASS sediments as part of the approved nSFM project have previously been assessed and are managed via the RAP and ASSMP. The RAP and ASSMP conclude that appropriate implementation of the measures in the plans will minimise or adequately protect human health and the environment risks associated with the works. The proposed capping works are consistent with the requirements of the approved RAP and ASSMP.

#### 4.4 Water Quality Impacts

The proposed in-situ capping has potential environmental benefits on water quality via:

- Reduced potential for disturbance and mobilisation of contaminated or PASS sediments during construction and ongoing use.
- Reduced potential for exposure and oxidation of PASS sediments, and associated generation of acidity or dissolution of metals and nutrients, during building construction and dewatering of the cofferdam.

The proposed in-situ capping has potential environmental impacts on water quality within Blackwattle Bay associated with:

- Temporary disturbance of redistributed sediments during placement of the capping layer.
- Future erosion of capping layer material, following removal of cofferdam.
- Ongoing leaching of contaminants from the capping material into surface water.

These potential environmental impacts can be mitigated to low and acceptable levels via appropriate implementation of the following:

- Use of suitable imported sand or sandstone VENM or quarried rock product. The capping material will be validated prior to importation to meet specifications for imported VENM in Section 6.7 of the approved RAP. This validation shall include sampling and chemical analysis of the materials by a suitably qualified and experienced person.
- Placement within the cofferdam. This, and the period of construction, will allow control of any suspended solids and fines to settle to acceptable levels.
- Management and monitoring of temporary partial dewatering of the cofferdam in accordance with the DMP.





- Maintenance of the silt curtain around the perimeter of the development site, including during installation of the capping layer and removal of the cofferdam, as required by the conditions of project approval. The silt curtain will mitigate migration of suspended solids if appropriately installed and maintained.
- Undertake water quality monitoring outside the silt curtain within Blackwattle Bay as required by conditions of the ASSMP, Water Quality Management Plan (WQMP), DMP and other project approval.

## 5. Environmental Assessment Summary

The table below identifies the key potential environmental hazards associated with proposed capping and control measures to reduce risk of adverse impacts to the environment to acceptable levels.

Hazard	Potential Impact	Mitigation
<b>Impacts to marine ecology</b>	Direct or indirect harm to marine animals or vegetation. There is minimal change from the existing design.	Comply with existing conditions of approval for the original development application in the MEA, including monitoring during dewatering of the cofferdam.
<b>Impact on contamination of sediments</b>	Disturbance or exposure of existing contaminated sediments.	The capping is considered likely to have a net environmental benefit in relation to mitigation of contamination and PASS risks – consideration of in-situ capping is a requirement of Section 5.4 of the approved ASSMP.
<b>Impact on PASS sediments</b>	Disturbance or exposure and oxidation of existing PASS generating acidity or dissolution of metals and nutrients.	Implement the approved ASSMP.
<b>Impacts on water quality in Blackwattle Bay</b>	Mobilisation of contaminated sediments or increased dissolution of contaminants from sediments into the water column and migration into Blackwattle Bay caused by the capping during construction.  Importation of unsuitable capping materials and ongoing leaching of contaminants into surface water.	Placement of the cap within the cofferdam extent.  Use of suitable imported sand or sandstone VENM or quarried rock product. The capping material should be validated prior to importation to meet specifications for imported VENM in Section 6.7 of the approved RAP.  Handling, sampling, and inspection of imported material to be conducted in accordance with the RAP.  Installation and maintenance of a silt curtain around site boundary (outside of cofferdam) during capping and cofferdam removal to reduce risk of off-site sediment migration.  Implementation of the DMP during cofferdam dewatering.  Surface water monitoring outside the silt curtain in accordance with requirements in the approved ASSMP and WQMP.



## 6. Conclusion and Recommendations

This environmental assessment has been prepared as part of an application for a modification to SSD 8925 to conduct sediment capping works for the nSFM project.

The original nSFM project and MOD4 applications included assessments of environmental impacts associated with the nSFM construction. The environmental assessments concluded that the works were assessed to be of minimal environmental impact, subject to appropriate implementation of various environmental controls and procedures required by the conditions of approval. The conditions of approval include, but are not limited to, requirements to implement the RAP and management plans.

The proposed sediment capping works are considered to be consistent with the requirements of the RAP and management plans approved as part of the MOD4 application, and on this basis and the additional assessment in this letter, are expected to have minimal environmental impact if the recommended mitigations outlined in this letter are appropriately implemented-. Additionally, any sampling, monitoring or unexpected finds identified during these works should be recorded in accordance with specified management plans.

If you have any comments or questions, please do not hesitate to contact the undersigned at [zoe.smith@senversa.com.au](mailto:zoe.smith@senversa.com.au) on 0488 211 265.

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

**Zoe Smith**  
Senior Environmental Scientist

**Andrei Woinarski**  
Principal

Enclosures: Attachment A: Multiplex Proposed Sediment Capping Methodology  
Attachment B: Drawings  
Attachment C: New Sydney Fish Market Ecological Assessment – Sub-basement rock placement

### **Limitations**

Senversa has prepared this document for use only by its client for the specific purpose described in its proposal, which is subject to limitations. Matters of possible interest to third parties may not have been specifically addressed for the purposes of preparing this document and Senversa's use of professional judgement for the purposes of the work means that matters may have existed that would have been assessed differently on behalf of third parties.





## Attachment A: Multiplex Proposed Sediment Capping Methodology

## High level Methodology – Sediment Capping

The works proposed in this methodology describe the installation method of a working platform that is installed atop the profiled marine sediments. The platform is made up of two 600mm bands of clean sand (VENM) followed by a 400mm layer of suitable crushed stone (VENM). The platform provides a means of working safely inside the cofferdam to construct the Nsfm building. The works extent of sediment capping activities will be inside of the sites steel cofferdam structure, and an indicative sketch is shown further below in Figure 1 and a typical section of the proposed works is shown in Figure 2.



Figure 1. Extent of works inside cofferdam shown in red outline.

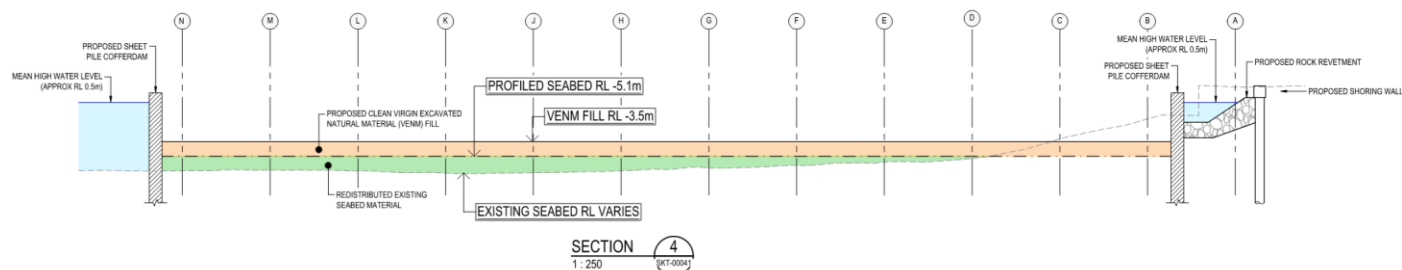


Figure 2. Extent of works inside cofferdam shown in section

The sediment capping works will be carried out by machinery currently utilised on the project. A non-propelled 'split hopper barge' will be moored alongside a backhoe profiling barge (which provides mooring) and has a capacity to store up to 1200m<sup>3</sup> of material. The sand material to be installed will be loaded onto the 'hopper barge' at a storage facility in Glebe Island which is currently being used on the project. Refer to Figure 3a below for a snap shot of the Glebe island facility and to Figure 3b for an image showing the anticipated marine plant required for these works. The preferred method of connection between the tug and hopper barge when transiting will be via 'hip tow', which is a tow to the side of the vessel as demonstrated in Figure 4 below. All tugs will be fitted with heavy duty towing winches so that barges can be retrieved to the tug quickly and safely.



*Figure 3a. Glebe Island Storage Facility*



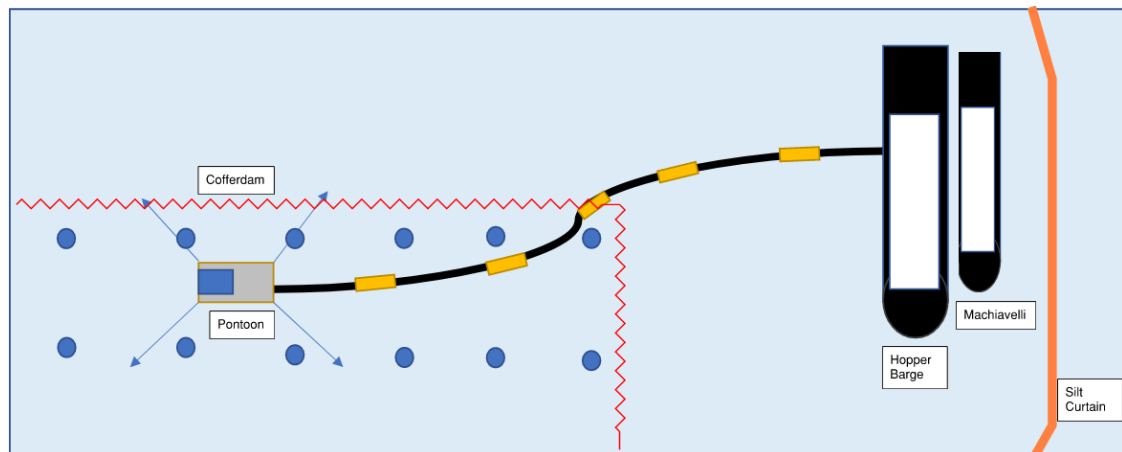
*Figure 3b. Machinery proposed (right)*



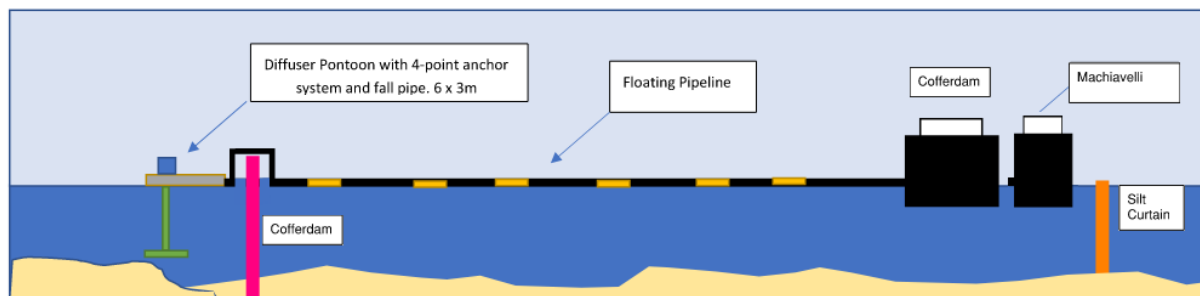
*Figure 4. Hip Tow zone arrangement (bottom)*

The hopper barge will have sand pumped directly from the hopper to the workforce via a hydraulically driven submersible pump (DOP pump). A pontoon located inside the cofferdam will help position and release the end of the pumping line to evenly distribute the sand across the cofferdam footprint. The works will progress working behind the cofferdam and marine piling works.

An indication of the works method is indicated in Figure 5 and 6 below.



*Figure 5. Typical arrangement (plan)*



*Figure 6. Typical arrangement (plan)*

The marine based installation method for the sand layers of the capping platform provides an efficient way to deliver the material into place, and minimises disruption to vehicular traffic in the precinct as well as site congestion. The marine based placement takes place following authority approval which is anticipated approximately to be in April 2022.

The completion of the marine based installation of the sediment capping works coincides with the dewatering of the cofferdam. At this stage, the level of the sediments will be -3.9 AHD, which is 200mm above the dewater level. Following this dewatering, the remaining sediment capping layer of crushed stone will be installed via land based machinery and will work progressively out from land to the extents of the cofferdam footprint, in sequence with the construction of the buildings structure. Traditional excavators and earth moving equipment will be utilised for those works, building the sediment level up to -3.5 AHD, which is approximately 2.93m below mean low water tide (-0.57 AHD). An indicative plan set out is shown below in figure 7.

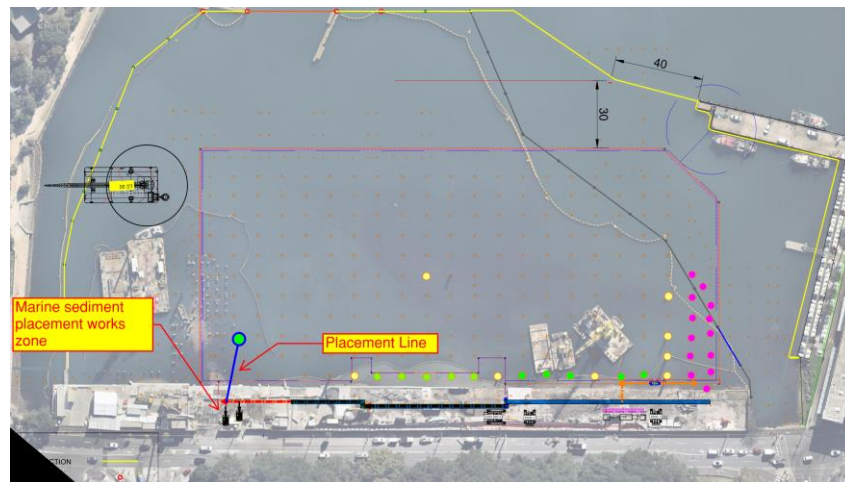


Figure 7. Location of plant setup on land based approach following dewater (plan)

Following completion of the sediment capping, the Nsfm building structure progresses, effectively forming off the installed sediment capping. Once the basement structure is complete, the cofferdam will be removed from the project. It is at this stage the sediment capping layer becomes fully submersed by the natural water levels of Blackwattle Bay. An indication of the overall basement structure and water level are shown further in figure 8 below.

During the proposed works, the site's perimeter silt curtain will be maintained consistent with exiting project approval conditions.

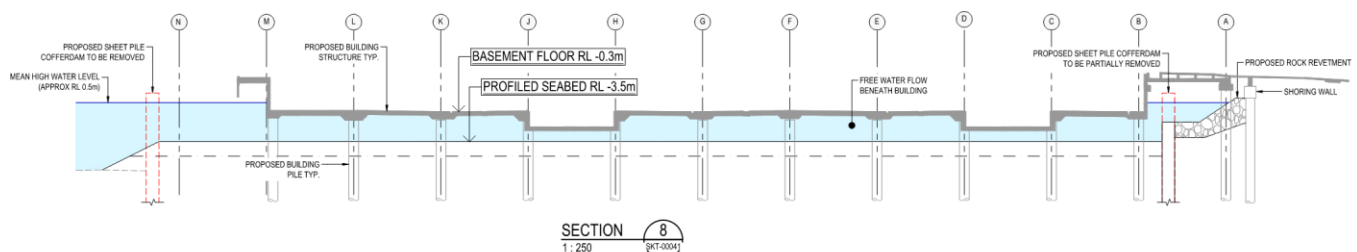


Figure 8. Natural water levels submerge platform following cofferdam removal (section).

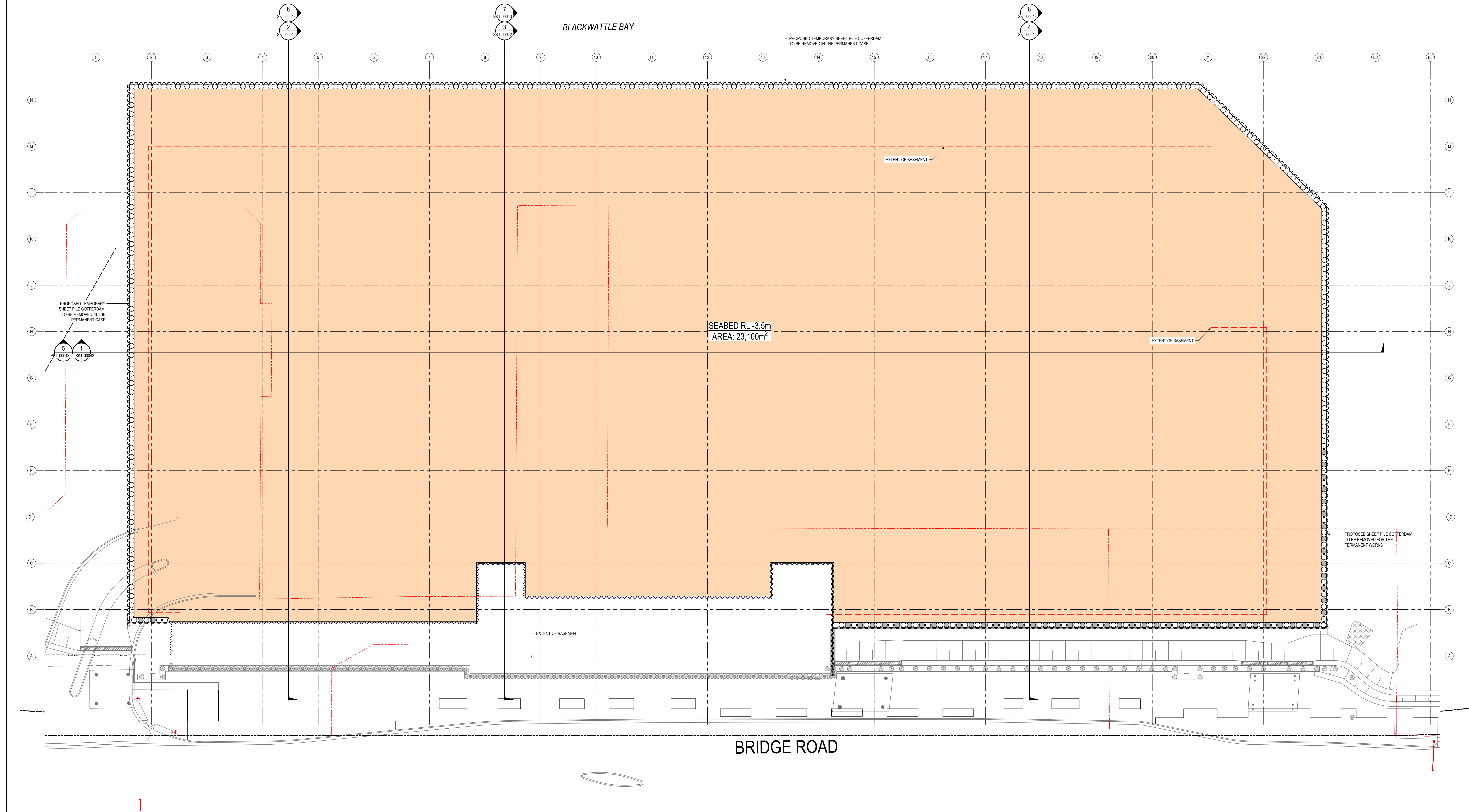
Overall the planned works provide some key benefits for the project;

- Offset additional truck movements that would otherwise be expected utilising alternate basement construction methods.
- Net positive impact to capping PASS sediments
- Reduction in vessels inside the cofferdam
- Provides a conventional, tried and tested approach to forming the submerged basement structure.
- Provides simpler, safer access to the workface, removing dependence on water based construction.
- Reduction of approximately 2000 Tonnes of CO<sub>2</sub> (carbon) emissions for temporary steel work, which would otherwise be required for alternate methodologies.



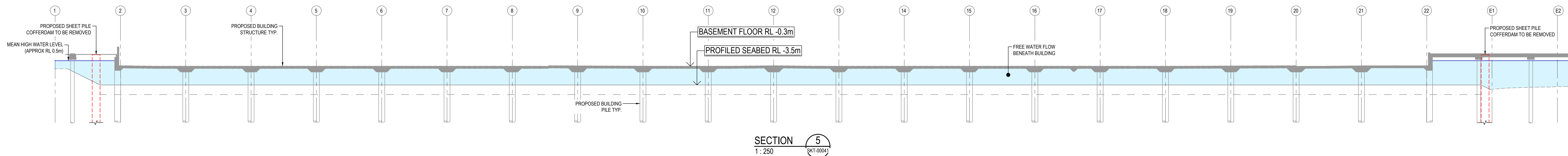
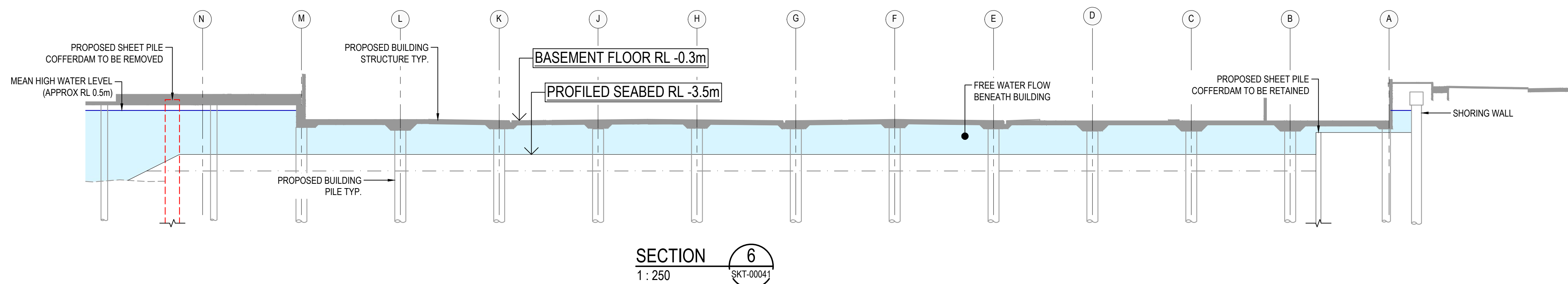
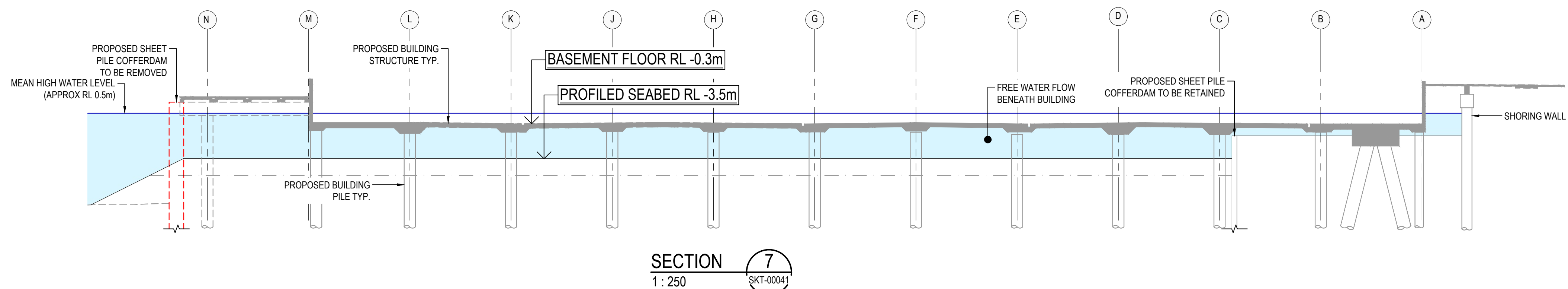
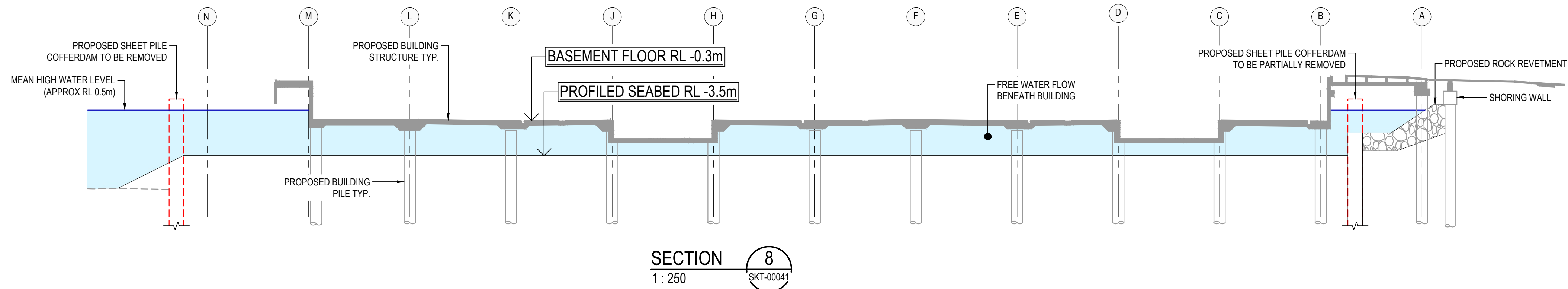
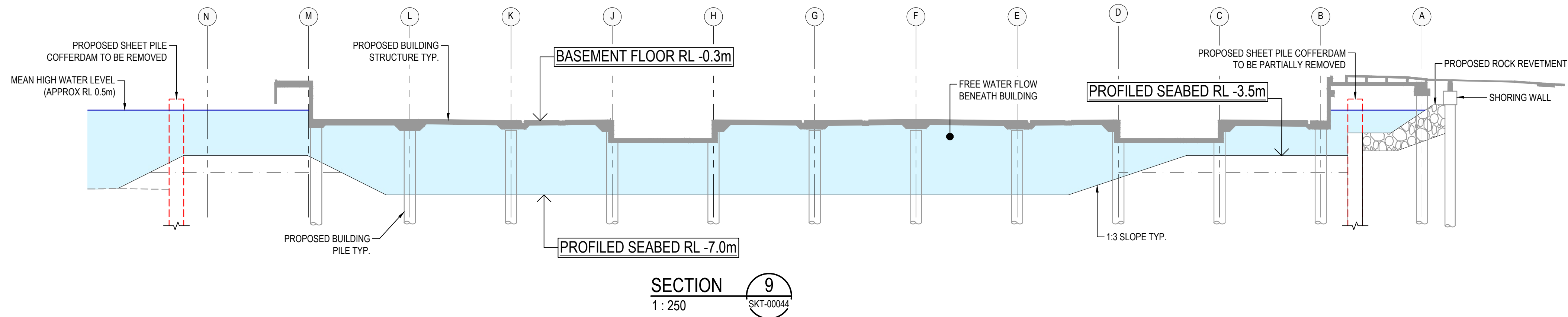
## Attachment B: Drawings



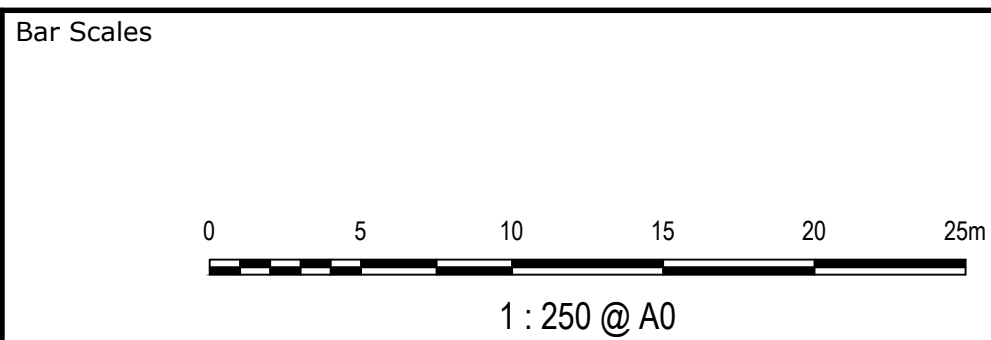
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1	ISSUED FOR INFORMATION	10-10-21
Issue	Description	Date



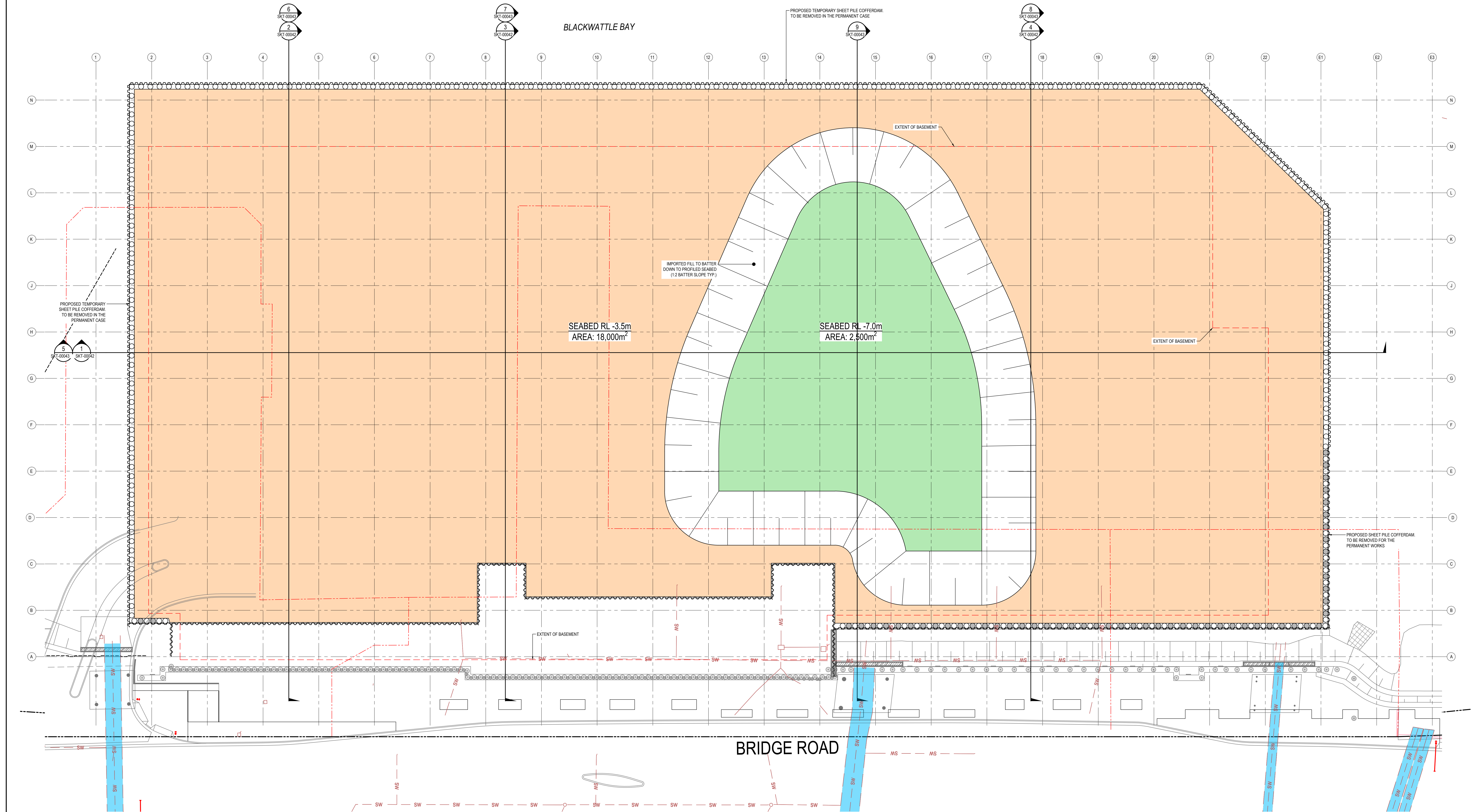
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MULTIPLEX

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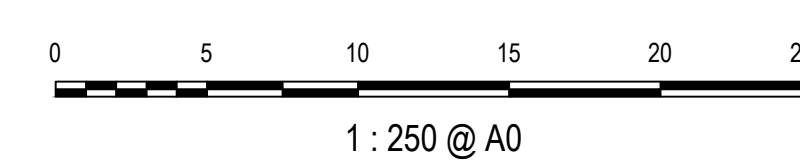
Project	SYDNEY FISH MARKETS		Civil Engineers and Project Managers	
			<b>at&amp;l</b>	
			Level 7, 153 Walker Street North Sydney NSW 2060 ABN 96 130 882 405 Tel: 02 9439 1777 Fax: 02 9623 1056 www.atl.net.au info@atl.net.au	
Title	PERMANENT COFFERDAM PROFILING SECTIONS		Status	FOR INFORMATION (NOT FOR CONSTRUCTION)
	Drawing No.	AT&L Project		A0
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1	ISSUED FOR INFORMATION	24-11-21
Issue	Description	Date

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## MULTIPLEX

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Project	SYDNEY FISH MARKETS
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Title	COFFERDAM PROFILING PLAN WITH CENTRAL CULVERT INDICATIVE DREDGING AREA
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Civil Engineers and Project Managers

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Status	FOR INFORMATION (NOT FOR CONSTRUCTION)	A0
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## Attachment C: New Sydney Fish Market Ecological Assessment – Sub-basement rock placement

14 February 2022

Our ref: 20WOL-16700

Multiplex Constructions Pty Ltd

Site Address: Level 2, 22 Bridge Road Glebe, NSW 2037

Attention: Anthony Toomeh [Anthony.Toomeh@multiplex.global](mailto:Anthony.Toomeh@multiplex.global)

Dear Anthony,

**RE: New Sydney Fish Markets Ecology Assessment – Sub-basement rock placement**

This letter confirms the proposed rock placement beneath the basement is acceptable from a marine ecology perspective and is comparable with what has been previously assessed in the approved Development Application (DA).

The Marine Ecology Assessment approved under the DA states that the entire area beneath the basement is 'Key Fish Habitat Type 3' and will be completely lost due to absolute shading by the basement. The crushed rock would also be 'Key Fish Habitat Type 3' of similar value. So, anything beneath the basement is regarded (and approved) as lost habitat.

In relation to an early DA modification (sediment redistribution), the Environmental, Energy and Science (ESS) group provided an evaluation of the marine ecology in the same area (ESS letter ref DOC21/367964), noting that:

- The existing habitat or biota would not be significantly impacted because the site is so depauperate
- Ecological impacts remain the same regarding lost habitat opportunities because of increased hard substrate
- Methods to minimise escape of sediment are adequate.

Please contact me on the number above should you have any questions.

Regards,



Ian Dixon  
Senior Aquatic Ecologist