

Our Ref: 4NW30091:VJ
Contact: Venus Jofreh

4 April 2022

Mirvac Group
Level 28, 200 George Street Sydney
Sydney 2000

Attention: Norm Chow

Cardno (NSW/ACT) Pty Ltd
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Dear Norm,

FLOOD ADVICE FOR THE PROPOSED EXCAVATION WORKS FOR HARBOURSIDE SHOPPING CENTRE REDEVELOPMENT

Cardno has been commissioned by Mirvac Group to undertake a flooding assessment in relation to the excavation works for Harbourside Shopping Centre redevelopment. The purpose of this letter is to assess the potential impacts of the proposed demolition and excavation works on flooding at the study site and surrounds.

1 Background

In 2021 Cardno undertook a flooding assessment for the proposed Harbourside Shopping Centre redevelopment. The study used the Darling Harbour Catchment regional flood model (BMT WBM, 2014) as a base and updated this with site specific survey and features to represent Existing Conditions. This model was then further updated to represent a Proposed Conditions scenario. The results show that the proposed development will not cause any flood impact on surrounding properties or roads and all impacts will be contained within the study site.

Cardno has adopted the flood model results from the Existing Conditions scenario (Cardno, 2021) to inform the current assessment of the proposed excavation works.

2 Existing Conditions Flood Behaviour (Cardno, 2021)

Figures presenting flood depth and flood level contours at the site and surrounds in the 1% Annual Exceedance Probability (AEP) event are provided in **Attachment A**. The figures show that in the 1% AEP event the study site and surrounding roads are mostly flood free with the exception of water ponding at the north-western corner of the site with depths of up to 0.7 m and flood levels of about 3.13 mAHD. Localised flooding with depths of up to 0.47 m and a level of 3.00 mAHD is observed adjacent to the Sofitel Building along Darling Drive.

In the Probable Maximum Flood (PMF) event Darling Drive is shown to be completely flooded with the depth of flooding around the study site reaching 1.4 m.

3 Proposed Excavation Works and Flood impacts

The proposed excavation works plans (dated 01/03/2022) are provided in **Attachment B** of this letter. The works include demolition of the ground floor slab and excavation to -11.7 mAHD at the Stage 1 DA Basement location. Cardno has also been provided with the Construction and Environmental Management Plan (Rev C – Dated 31 March 2022) which includes a site hoarding plan (reproduced in Figure 3-1 below). The hoarding will be installed to protect the site boundaries and also to delineate the construction site from the public areas. The hoarding is expected to remain in place throughout the excavation and construction stages.

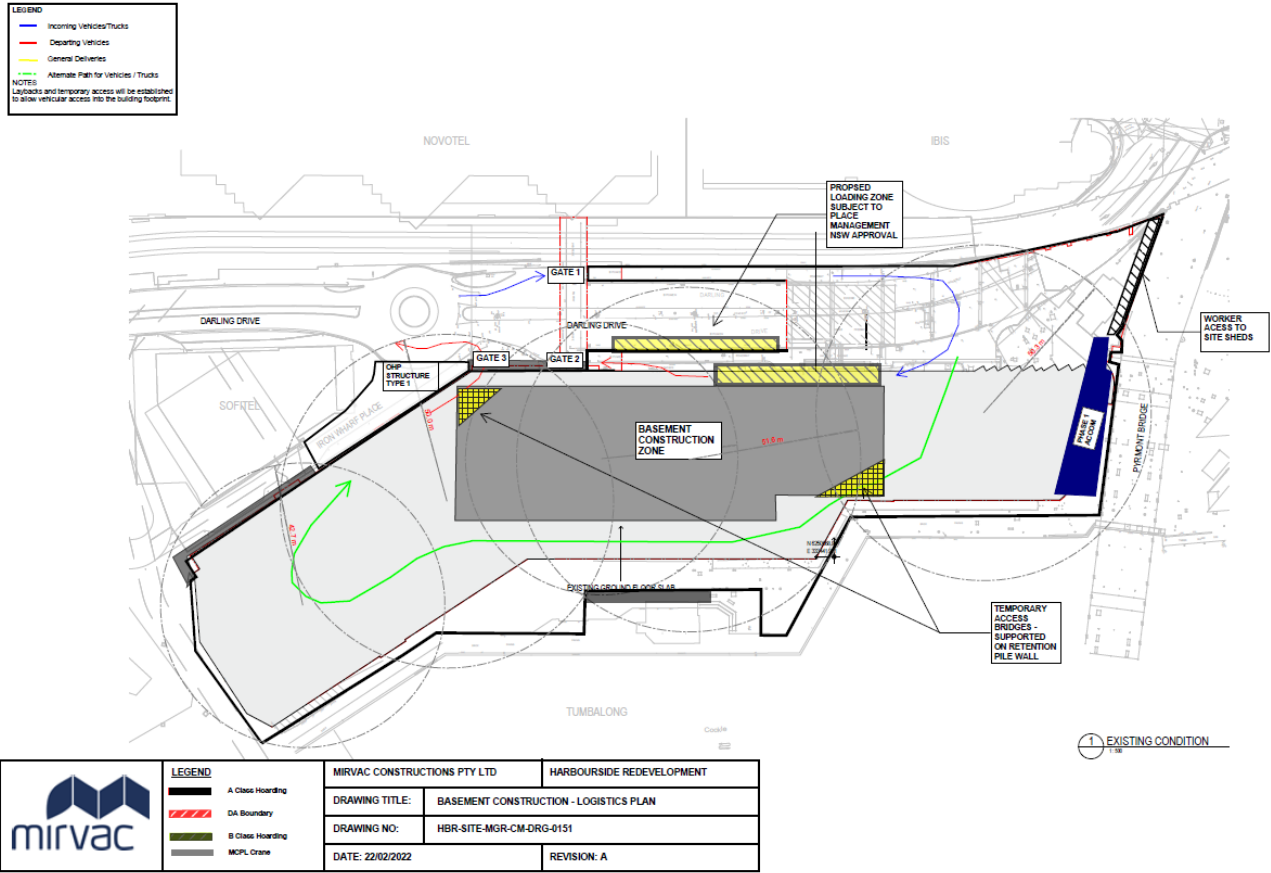


Figure 3-1 Vehicle Access & Egress Plan / Site Hoarding Plan

It is expected that installation of the hoarding will result in minor flood impacts (increased flood depth and extents) under the Darling Drive overpass. The current ponding during major flood events at the north-western corner of the site (with depths of up to 0.7 m) is partly due to the upstream flows from the south of the underpass. The hoarding, although it will not be water-proof and will allow for some flows to still enter the site, will block flows to some extent and therefore could result in increased flood levels along the light rail. Considering the small volume of water ponding at the north-western corner of the site it is expected that the potential increase in flood levels would not be significant and unlikely to impact the light rail. The light rail has a surface level of approximately 3.80 mAHD and the existing 1% AEP flood levels are approx. 3.14 mAHD. With approximately 760 mm of freeboard and minimal flow to this location, it is considered highly unlikely that the hoarding would increase flood levels to a point where they would have a material impact on the light rail. Any potential impacts would also be temporary.

4 Summary

Cardno undertook a flooding assessment for the proposed excavation works for Harbourside Shopping centre redevelopment. A review of the available data including the flood modelling results from Cardno's flooding assessment (2021) and the proposed excavation works and site hoarding plans. The assessment suggests that the proposed hoarding around the site will result in minor increased flood levels and depth under Darling Drive overpass, however the potential impacts are unlikely to impact any properties or infrastructure and would also be temporary (ie. would only potentially occur for the duration of construction) and therefore no mitigation and management measures are proposed.

At this stage no flood modelling is considered necessary, however; in the later stages of the project detailed flood modelling will be undertaken to assess the impacts of the proposed main works and public domain State Significant Development Application (SSDA) on flooding.

Please do not hesitate to contact me if you need any further information.

Yours sincerely,



Venus Jofreh
Senior Engineer
for Cardno
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Enc: Attachment A _ Existing Conditions Flood Behaviour
Attachment B _ Proposed Excavation Works



Legend

- Harbourside Boundary
- Existing Harbourside
- Spot Height
- 0.5m Contour

Flood Depth (m)

- 0.00 to 0.10
- 0.10 to 0.30
- 0.30 to 0.50
- 0.50 to 0.70
- 0.70 to 1.00
- 1.00 to 1.50
- > 1.50

Harbourside SSSA Flooding Assessment
Existing Conditions

Figure E2
1% AEP
Peak Flood Depth and Water Level Contours

Map Produced by Cardno
Date: 3/3/2021
Coordinate System: MGA Zone 56



PRELIMINARY
NOT FOR CONSTRUCTION

SSDA1 EXCAVATION WORKS

Drawing List	
Sheet Name	Drawing Number
COVER SHEET	AR-SSDA1 0000
SITE PLAN	AR-SSDA1 0100
EXISTING CONDITIONS	AR-SSDA1 0200
DEMOLITION PLAN	AR-SSDA1 0300
EXCAVATION PLAN	AR-SSDA1 0400
PROPOSED RETENTION WALL PLAN	AR-SSDA1 0500
PROPOSED CAPPING BEAM PLAN	AR-SSDA1 0550
PROPOSED RETENTION WALL ELEVATIONS	AR-SSDA1 0700
PROPOSED RETENTION WALL SECTIONS	AR-SSDA1 0750



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REV DESCRIPTION
2 For Information

DATE
01.03.22

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The applications will be consistent with the Harbourside Concept Approval (SSD 7874) 25 June 2021.

CLIENT
MIRVAC

PROJECT
MIRVAC HARBOURSIDE

PROJECT NO.
016152-61A-P

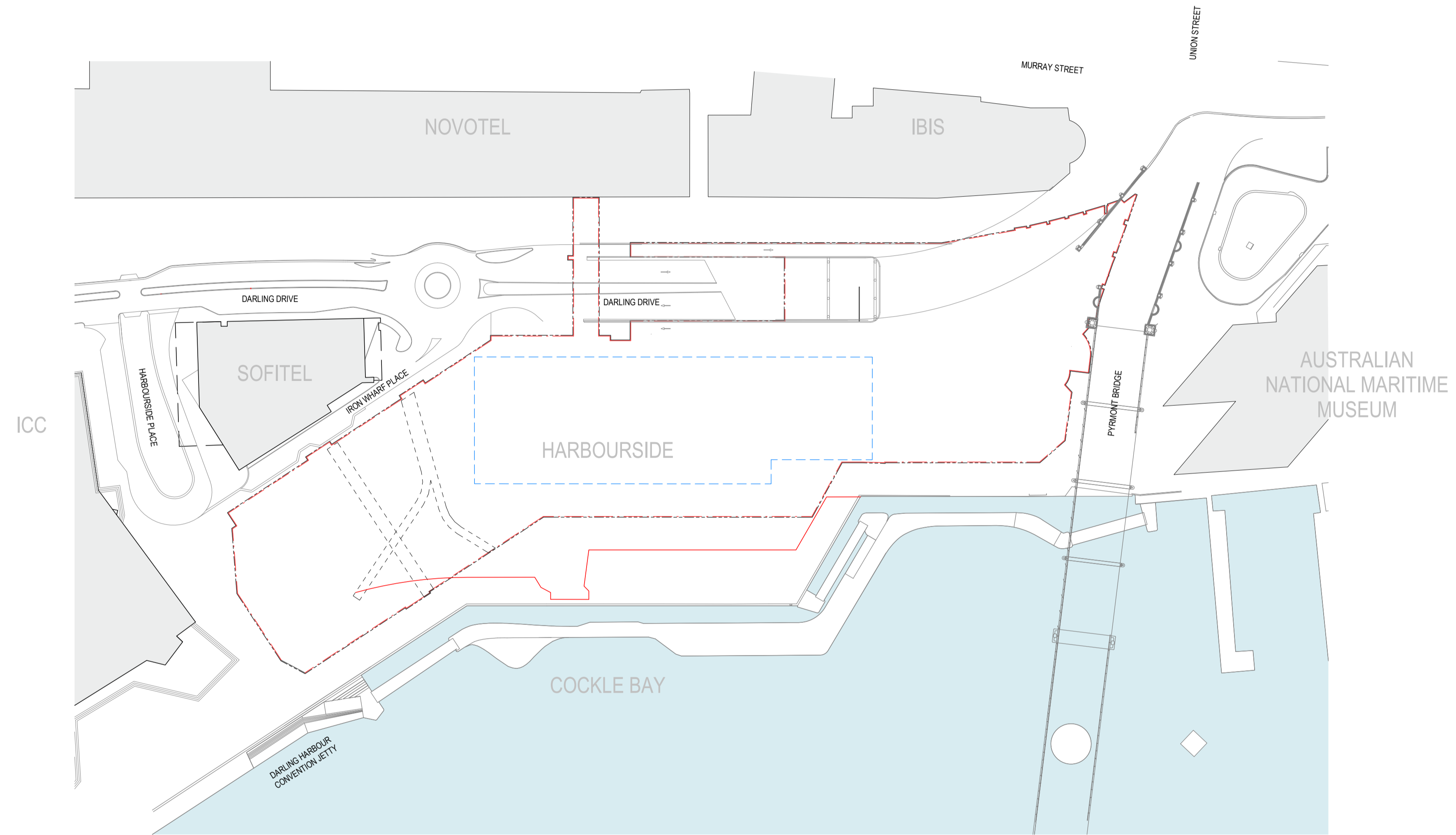
DRAWING TITLE
COVER SHEET

DRAWING NO.
AR-SSDA1 0000

**PRELIMINARY
NOT FOR CONSTRUCTION**

LEGEND

- EXISTING SITE BOUNDARY (LOT BOUNDARY)
- APPROX. LOCATION OF WALL BELOW PROMENADE
- - - STAGE 1 DA - DA BOUNDARY EXTENT (APPROVED APPLICATION SSD 7874)
- - - STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- PROPOSED DISCHARGE LOCATION
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 SITE PLAN
3000 1:1000



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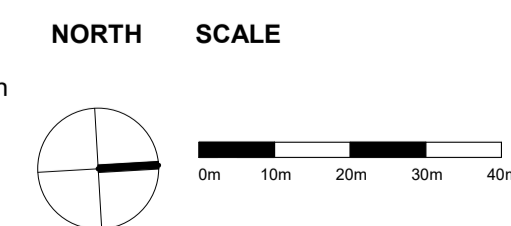
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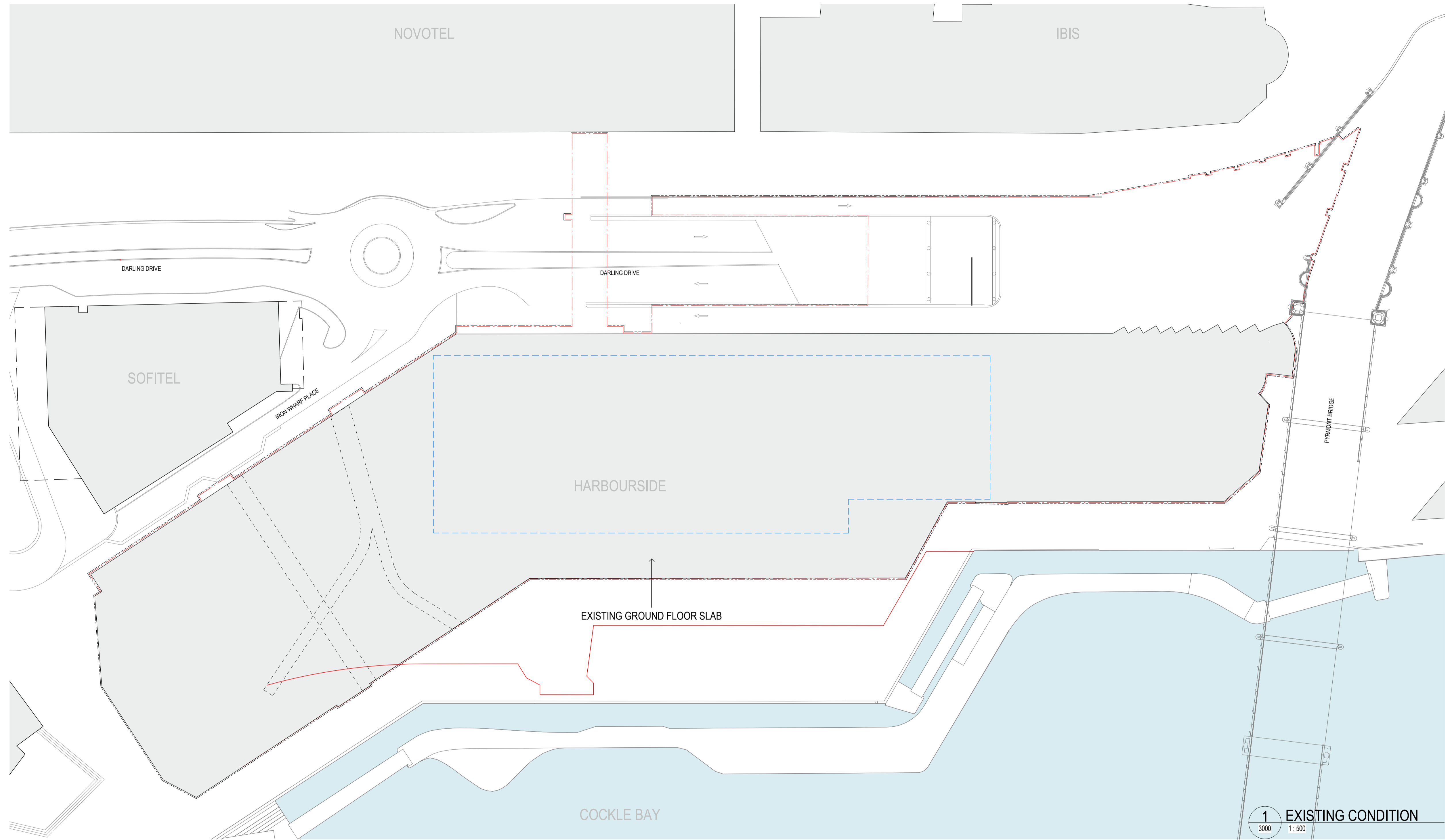
PROJECT
MIRVAC HARBOURSIDE

PROJECT NO.
016152-61A-P
SCALE @ A1
As indicated
DRAWING TITLE
SITE PLAN
DRAWING NO.
AR-SSDA1 0100

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LEGEND

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- - - STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- - - EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- PROPOSED DISCHARGE LOCATION
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 EXISTING CONDITION
3000 1:500



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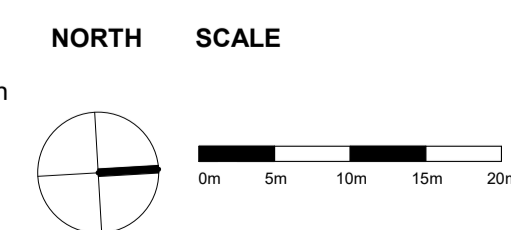


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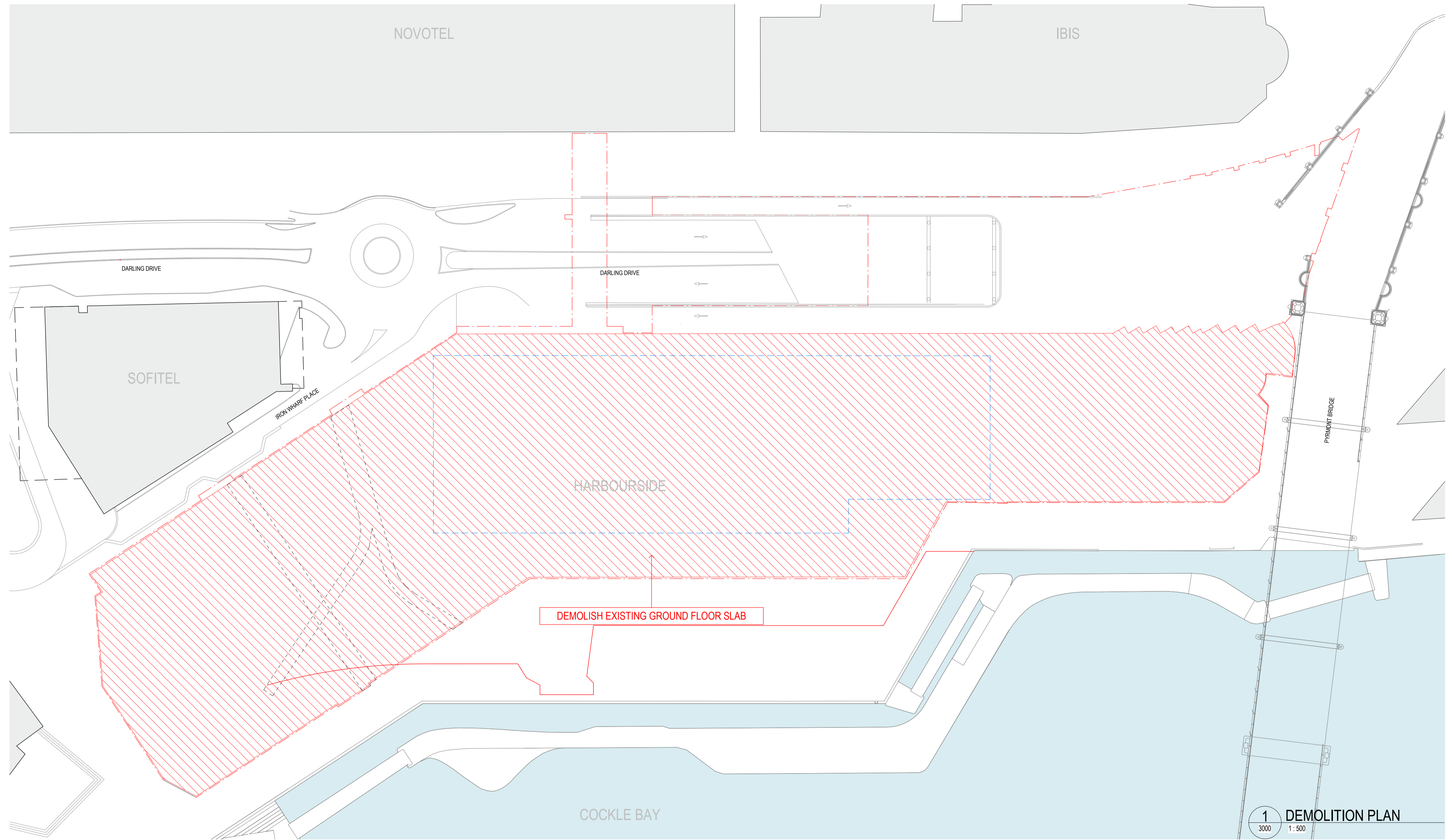
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PROJECT NO.
016152-61A-P
DRAWING TITLE
EXISTING CONDITIONS
DRAWING NO.
AR-SSDA1 0200
SCALE @ A1
As indicated

**PRELIMINARY
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- - - STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- - - EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- ▨ EXTENT OF DEMOLITION



1 DEMOLITION PLAN
3000 1:500



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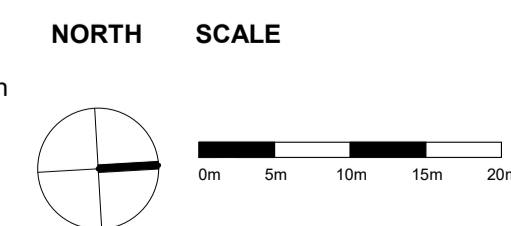


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DRAWING TITLE
DEMOLITION PLAN

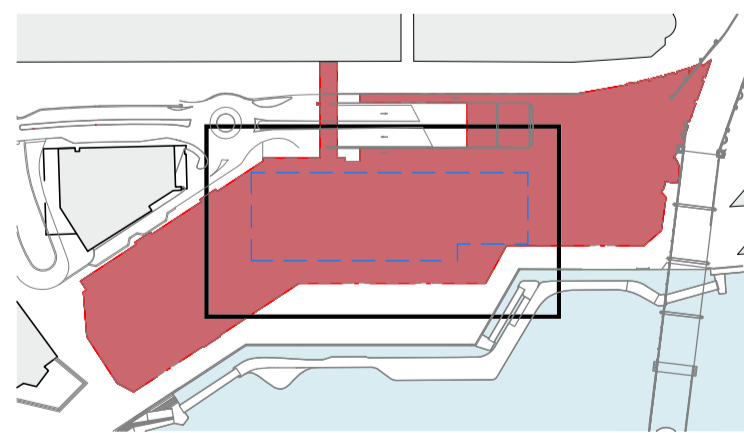
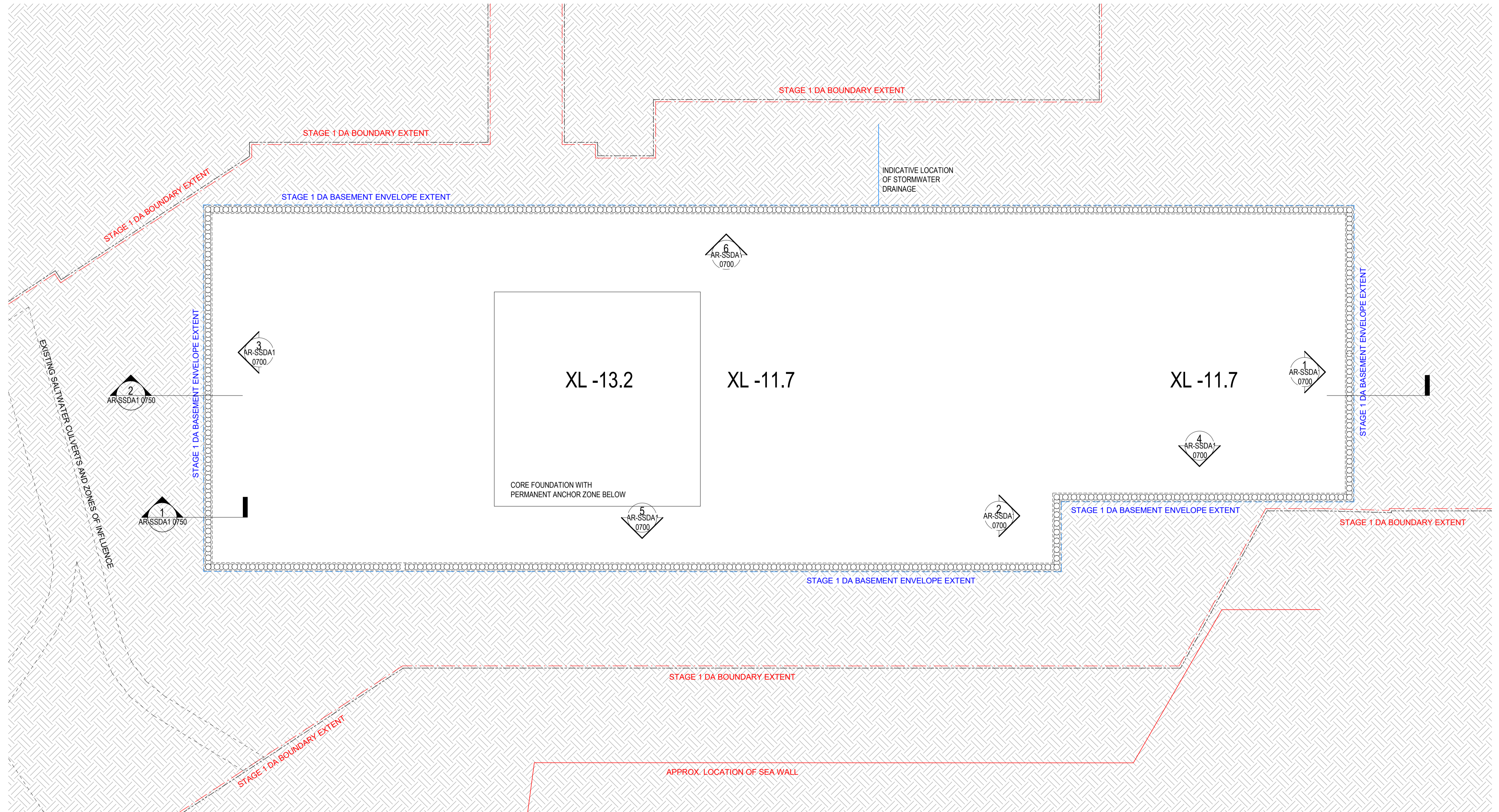
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AR-SSDA1 0300

SCALE @ A1
As indicated

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- EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- PROPOSED DISCHARGE LOCATION
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 EXCAVATION PLAN
3000 1: 250



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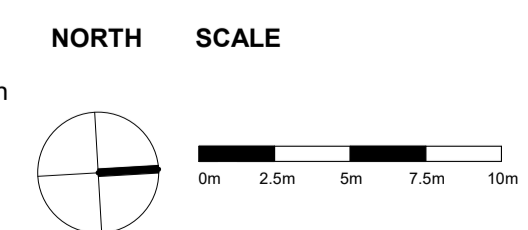
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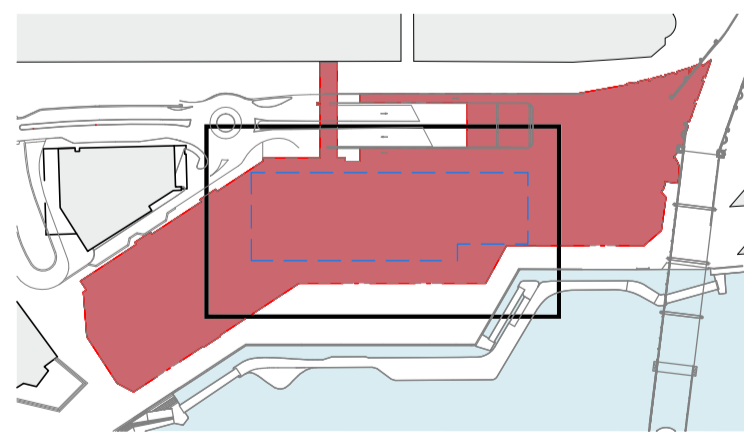
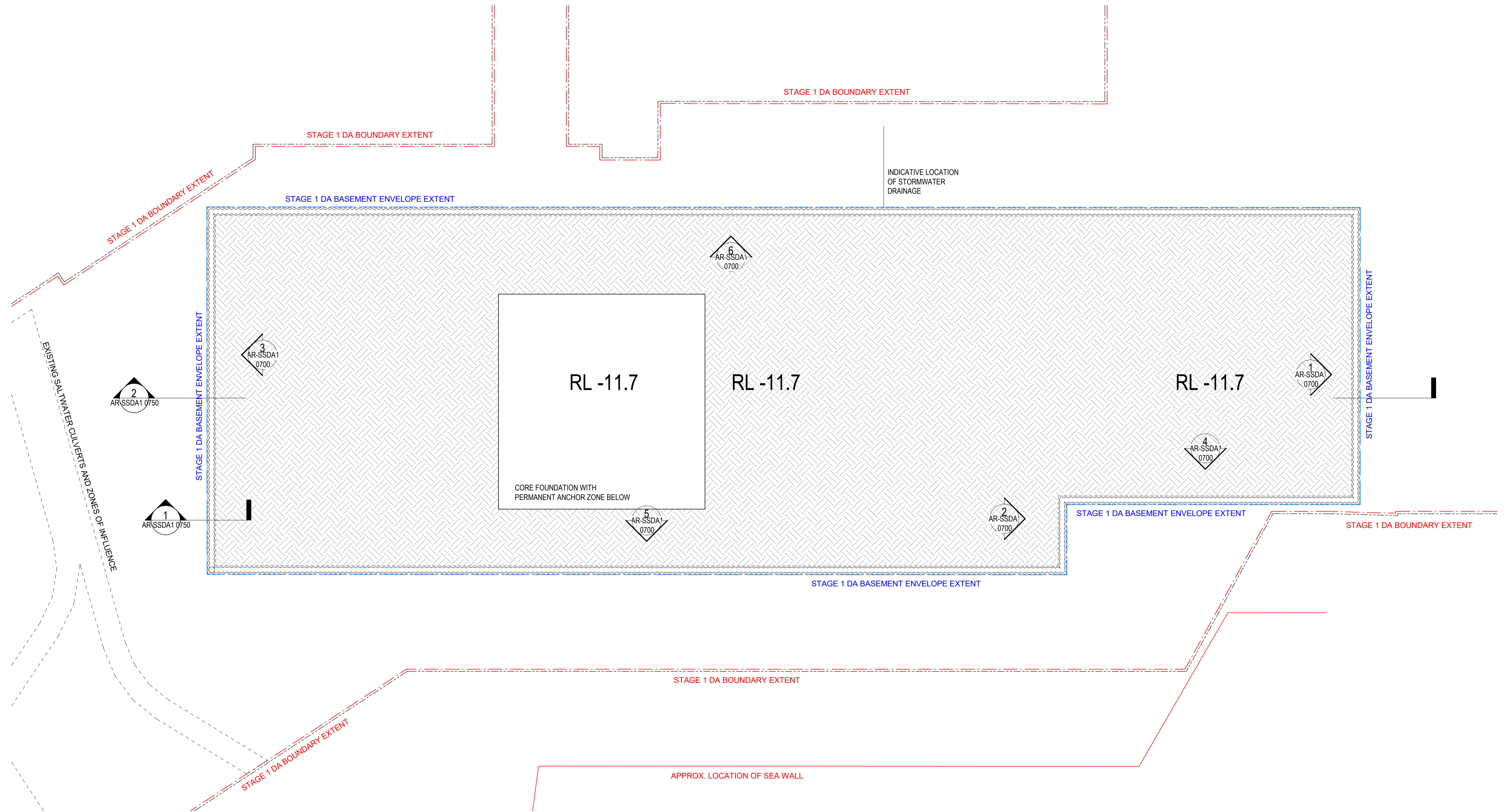
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016152-61A-P
DRAWING TITLE
EXCAVATION PLAN
DRAWING NO.
AR-SSDA1 0400
SCALE @ A1
As indicated

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- - - STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- PROPOSED DISCHARGE LOCATION
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 PROPOSED RETENTION WALL PLAN
3000 1:250



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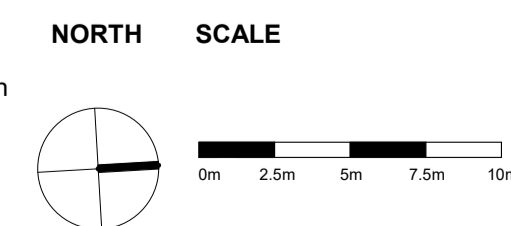
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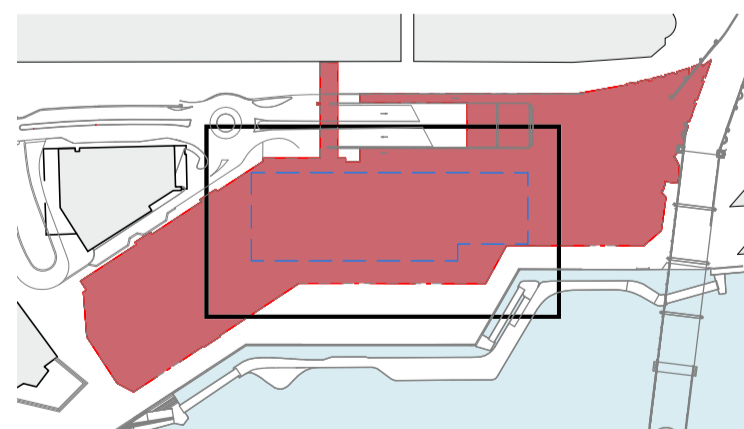
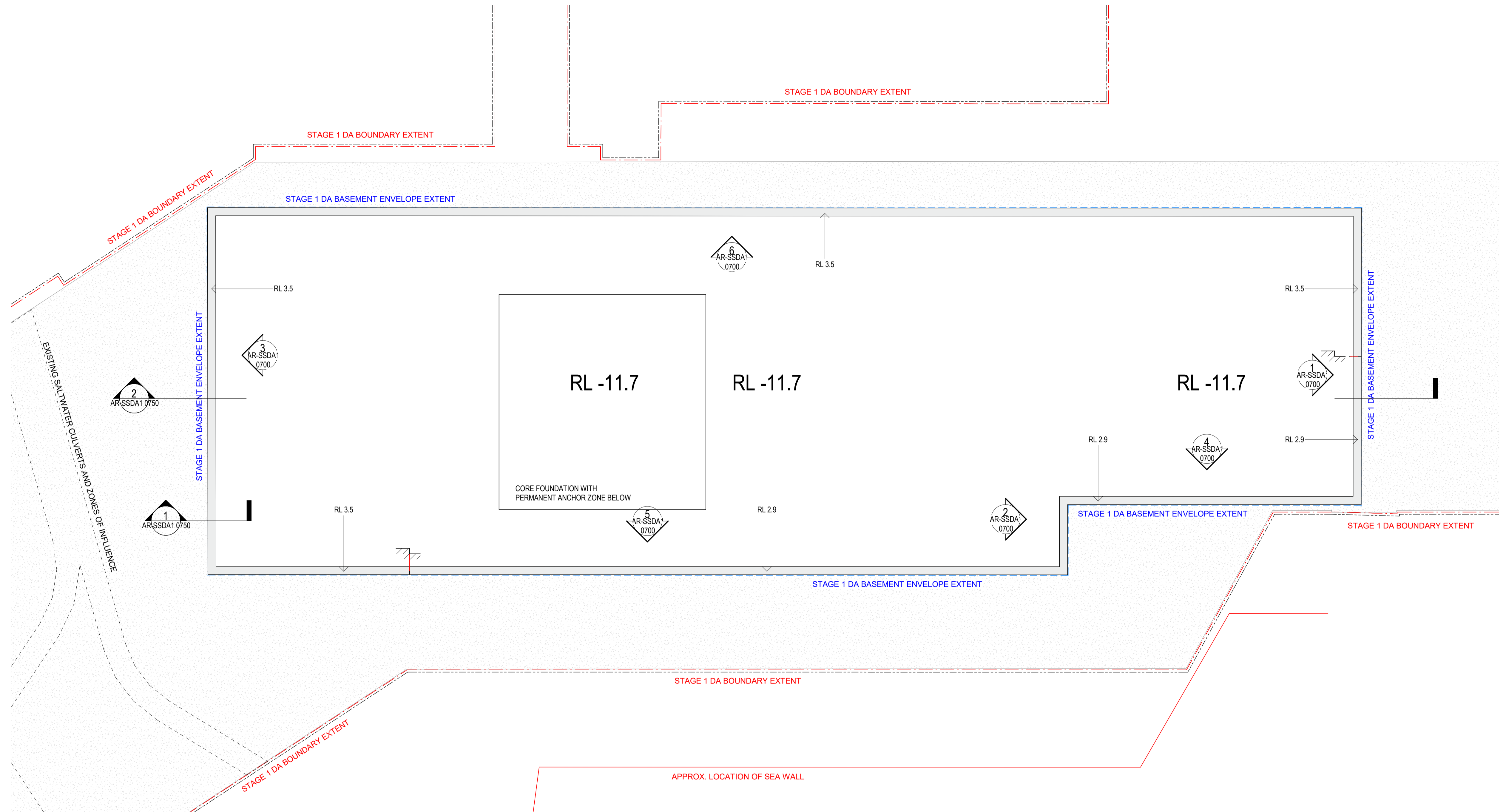
PROJECT
MIRVAC HARBOURSIDE

PROJECT NO.
016152-61A-P
SCALE @ A1
As indicated
DRAWING TITLE
PROPOSED RETENTION WALL PLAN
DRAWING NO.
AR-SSDA1 0500

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- - - STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- - - EXISTING SALTWATER CULVERTS AND ZONES OF INFLUENCE
- PROPOSED DISCHARGE LOCATION
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 PROPOSED CAPPING BEAM PLAN
3000 1:250



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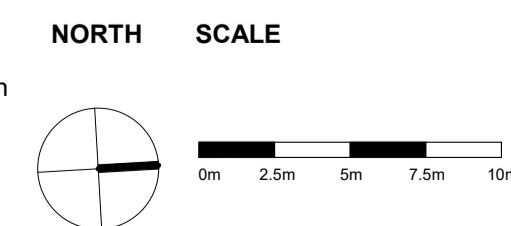
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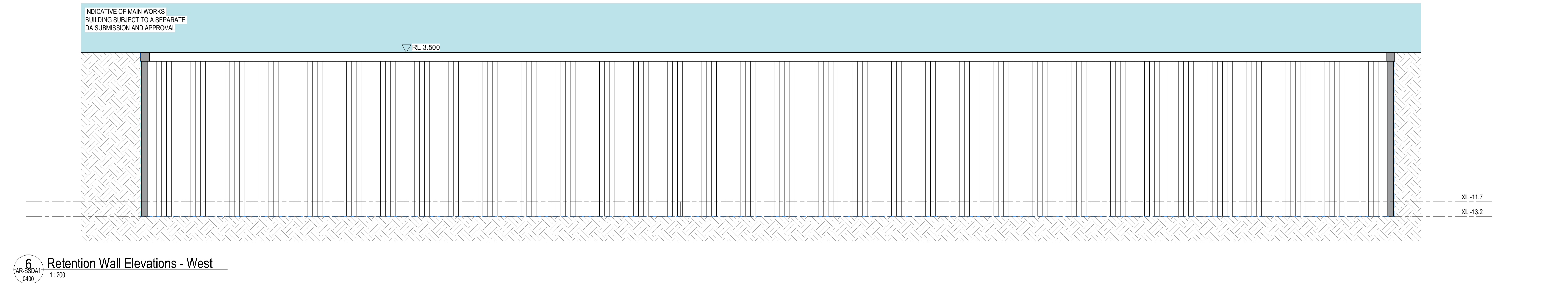
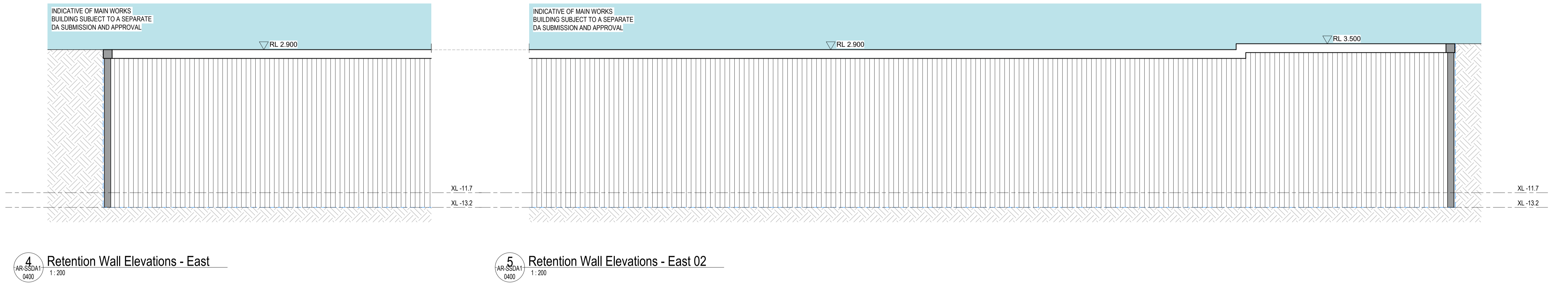
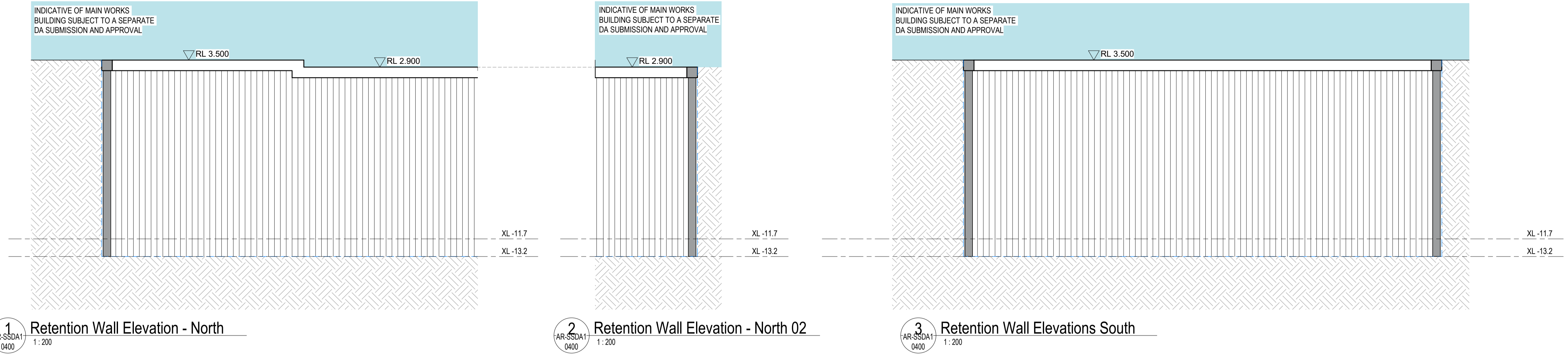
PROJECT
MIRVAC HARBOURSIDE

PROJECT NO.
016152-61A-P
SCALE @ A1
As indicated
DRAWING TITLE
PROPOSED CAPPING BEAM PLAN
DRAWING NO.
AR-SSDA1 0550

**PRELIMINARY
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LEGEND

- STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT
(APPROVED APPLICATION SSD 7874)
- █ ZONE INDICATIVE OF MAIN WORKS BUILDING SUBJECT TO A SEPARATE DA SUBMISSION AND APPROVAL
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



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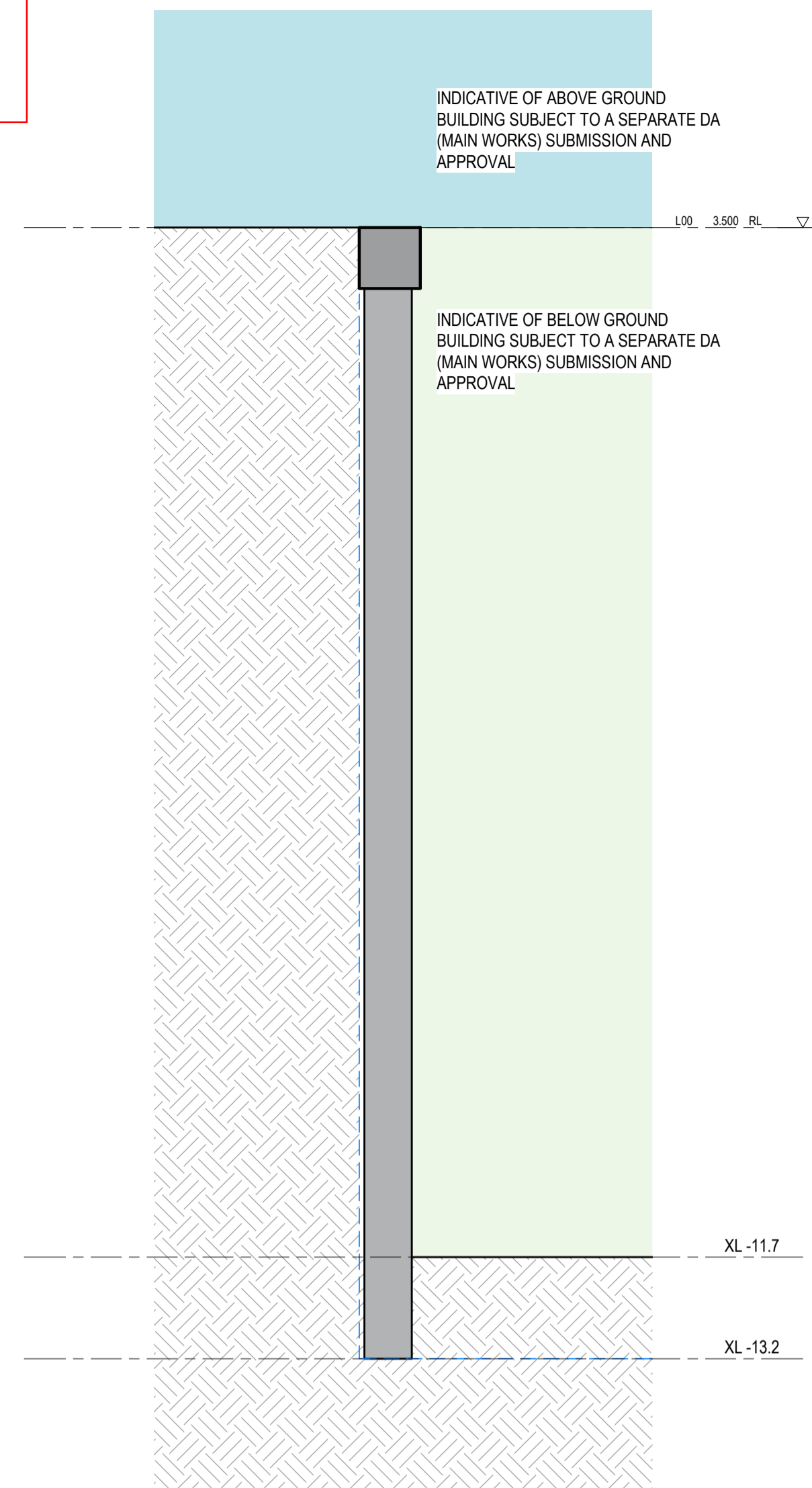
PROJECT
MIRVAC HARBOURSIDE

PROJECT NO.
016152-61A-P
SCALE @ A1
As indicated
DRAWING TITLE
PROPOSED RETENTION WALL ELEVATIONS
DRAWING NO.
AR-SSDA1 0700

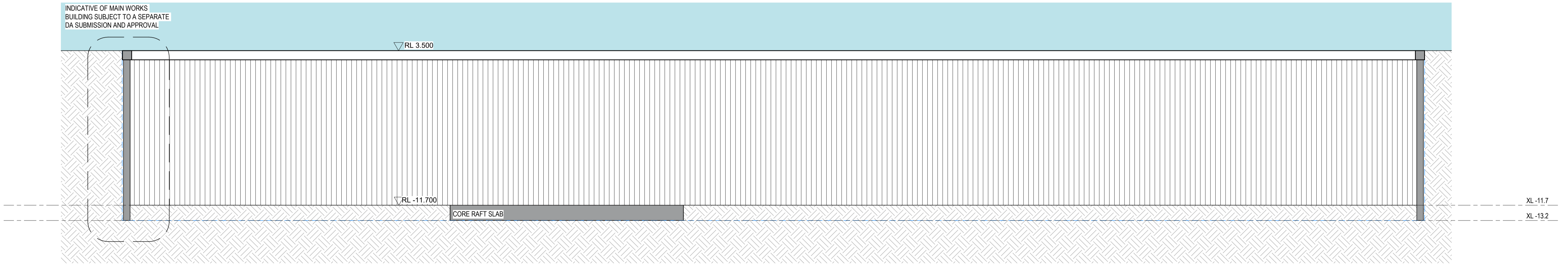
**PRELIMINARY
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LEGEND

- STAGE 1 DA - DA BASEMENT ENVELOPE EXTENT (APPROVED APPLICATION SSD 7874)
- INDICATIVE OF BELOW GROUND BUILDING SUBJECT TO A SEPARATE DA (MAIN WORKS) SUBMISSION AND APPROVAL
- ZONE INDICATIVE OF MAIN WORKS BUILDING SUBJECT TO A SEPARATE DA SUBMISSION AND APPROVAL
- XL ESTIMATED FINAL EXCAVATION RELATIVE LEVEL



1 TYPICAL PILE SECTION
AR-SSDA1 0400 1:75



2 Retention Wall Section 01
1:200



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NORTH SCALE

CLIENT
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PROJECT
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PROJECT NO.
016152-61A-P
SCALE @ A1
As indicated
DRAWING TITLE
PROPOSED RETENTION WALL SECTIONS
DRAWING NO.
AR-SSDA1 0750