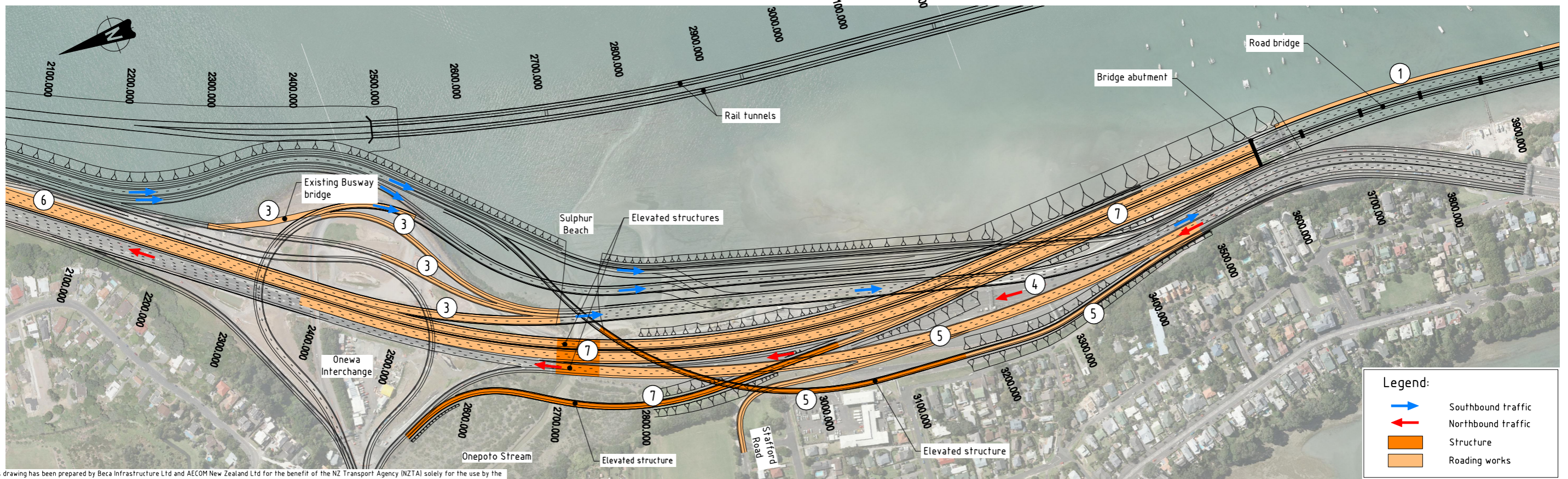


- Northern Sector Construction: Stage 3**
1. Remove temporary trestle
 2. Construct temporary diversion and divert SH1 southbound traffic
 3. Construct Onewa interchange links and demolish existing Busway bridge
 4. Divert AHB northbound traffic onto existing SH1 southbound lanes to Onewa Interchange
 5. Construct AHB northbound lanes to Onewa interchange
 6. Ground improvement and raise levels of SH1 southbound lanes
 7. Construct AWHC north and southbound lanes to Onewa interchange

STAGE 3 - Distance 0 to 2000
1:2500



Legend:

- Southbound traffic
- ← Northbound traffic
- Structure
- Roading works

STAGE 3 - Distance 2000 to 3900
1:2500

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

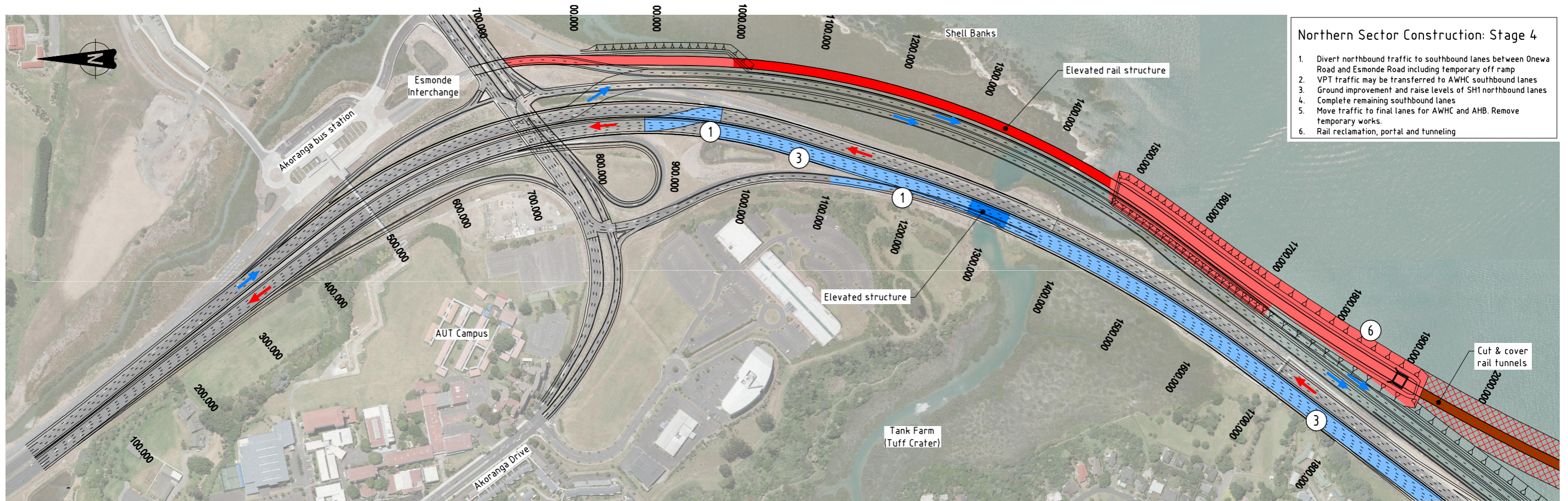
| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JJC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3



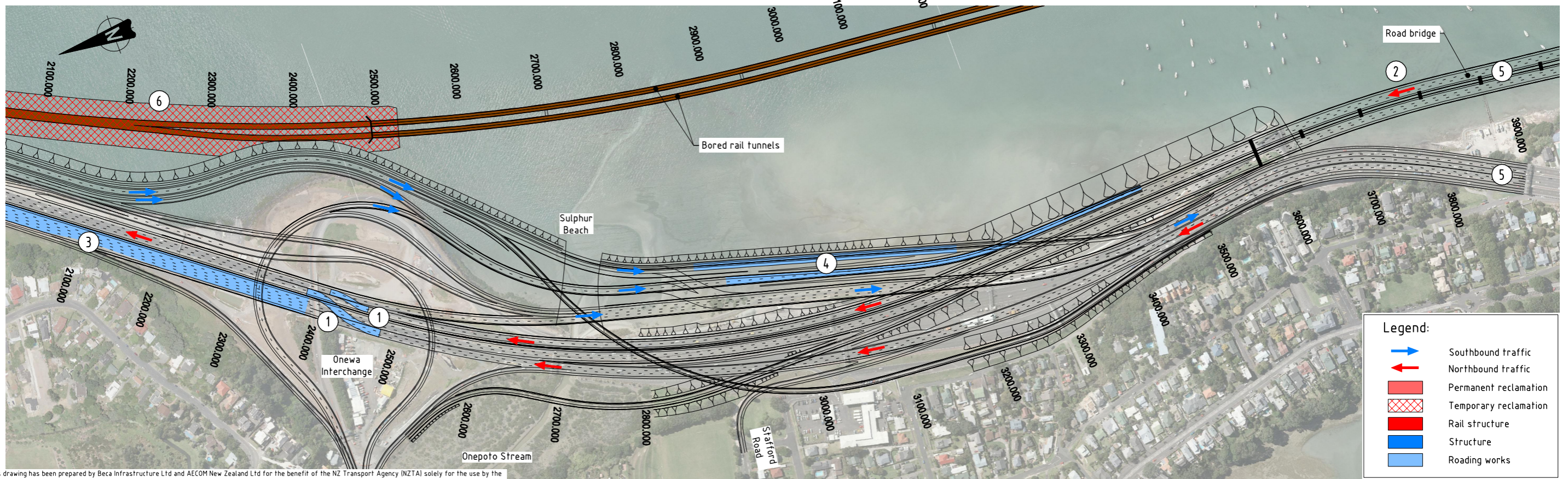
| | | | |
|---|-------------------------------|-----------------------------|--------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
| BRIDGE OPTION | | | |
| NORTHERN SECTOR CONSTRUCTION SEQUENCING | | | |
| STAGE 3 | | | |
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-078 | REV: 0 |

Last saved: Tue, 19 Oct 2010 11:01 am



- Northern Sector Construction: Stage 4**
1. Divert northbound traffic to southbound lanes between Onewa Road and Esmonde Road including temporary off ramp
 2. VPT traffic may be transferred to AWHC southbound lanes
 3. Ground improvement and raise levels of SH1 northbound lanes
 4. Complete remaining southbound lanes
 5. Move traffic to final lanes for AWHC and AHB. Remove temporary works.
 6. Rail reclamation, portal and tunneling

STAGE 4 - Distance 0 to 2000
1:2500



Legend:

- Southbound traffic
- ← Northbound traffic
- Permanent reclamation
- Temporary reclamation
- Rail structure
- Structure
- Roading works

STAGE 4 - Distance 2000 to 3900
1:2500

CAD Ref: P:\ATT\BEC\A001 Waitemata Hbr\60157303\5. CAD\5.6 Final drawings\60157303-TR-079.dwg

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JJC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

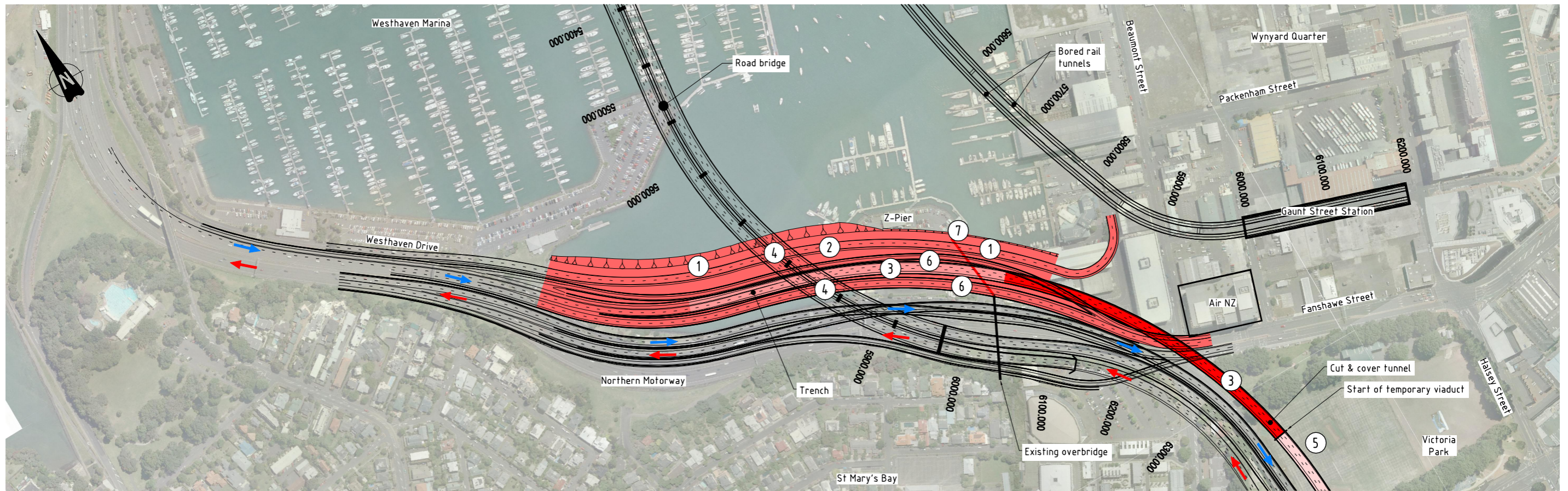
Beca
AECOM
AECOM New Zealand Limited

AWHC

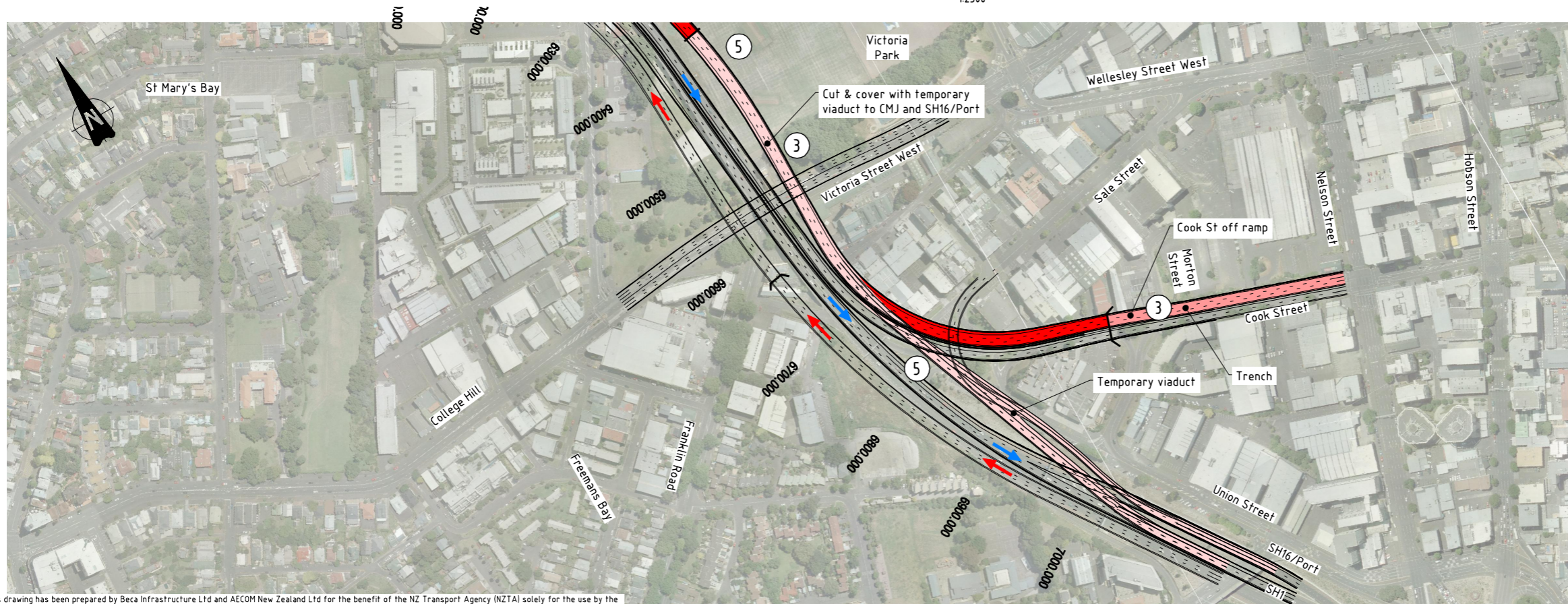
CLIENT:
NZ TRANSPORT AGENCY
WAKA KOTAHĪ

ADDITIONAL WAITEMATA HARBOUR CROSSING
BRIDGE OPTION
NORTHERN SECTOR CONSTRUCTION SEQUENCING
STAGE 4

| | | | |
|----|-------------------------------|-----------------------------|--------|
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-079 | REV: 0 |
|----|-------------------------------|-----------------------------|--------|



STAGE 1 - Distance 5500 to 6300
1:2500



STAGE 1 - Distance 6300 to 7000
1:2500

Southern Sector Construction: Stage 1

1. Construct reclamations along Westhaven Drive.
2. Construct Westhaven Drive to Wynyard Quarter
3. Construct Cook Street off ramp
4. Construct bridge piers
5. Construct temporary viaduct from Cook Street off ramp to southbound lanes of SH1 and SH16/Port diverge.
6. Construct southbound off ramp and bus lane and to Fanshawe Street.
7. Extend existing footbridge to Westhaven Drive

Legend:

| | |
|--|-----------------------|
| | Southbound traffic |
| | Northbound traffic |
| | Structure |
| | Permanent reclamation |
| | Trench |
| | Temporary structure |

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

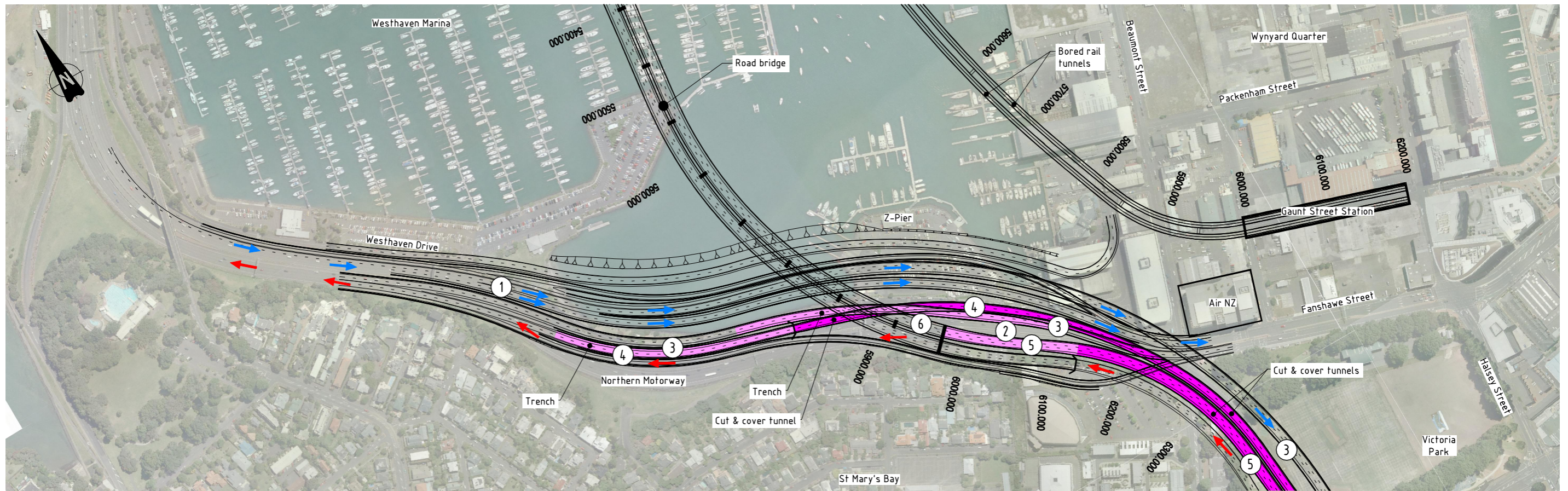
| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JQC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

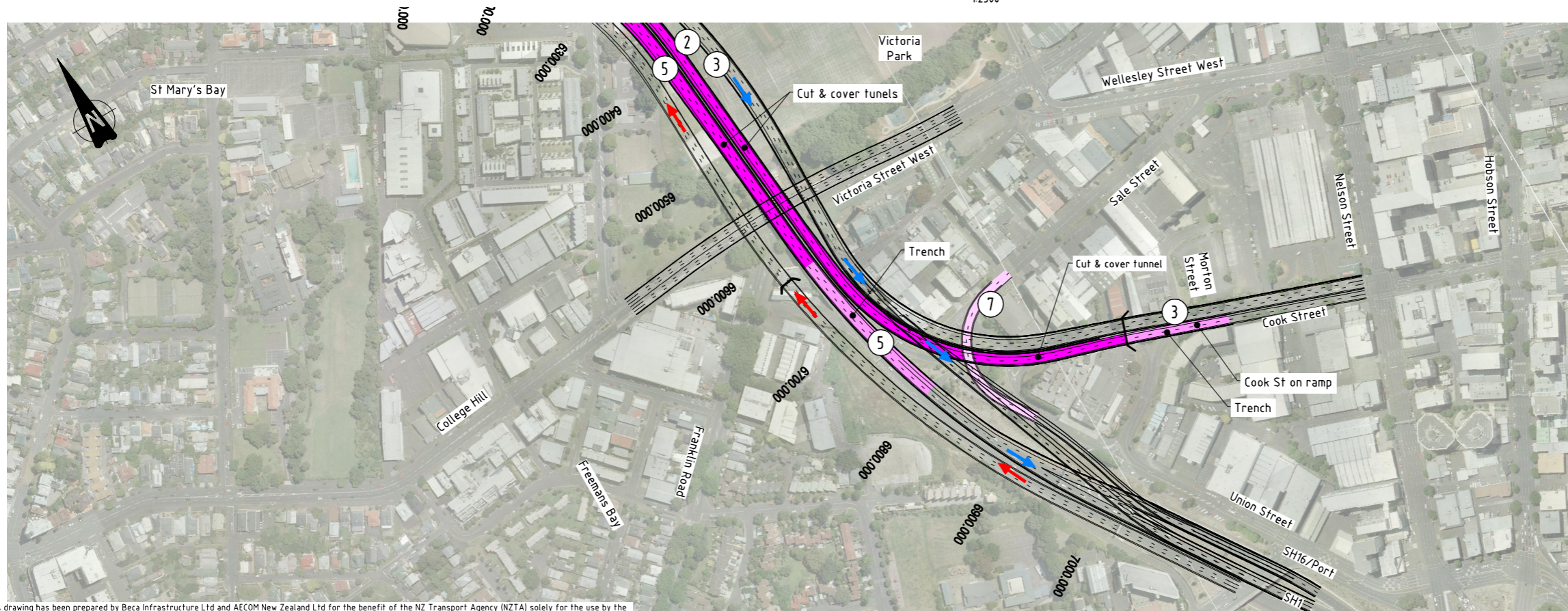


| | | | |
|---|-------------------------------|-----------------------------|--------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
| BRIDGE OPTION | | | |
| SOUTHERN SECTOR CONSTRUCTION SEQUENCING | | | |
| STAGE 1 | | | |
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-080 | REV: 0 |

Last saved: Tue, 19 Oct 2010 11:45 am



STAGE 2 - Distance 5500 to 6300
1:2500



- Southern Sector Construction: Stage 2**
1. AHB southbound traffic diverted to Cook Street and Fanshawe Street off ramps
 2. Remove Victoria Park Viaduct
 3. Construct Cook Street on ramp
 4. Construct Fanshawe Street on ramp
 5. Construct mainline southbound tunnel
 6. Construct AWHC southbound connection to mainline southbound trench
 7. Construct new road linking Sale Street to Union Street

Legend:

- Southbound traffic
- ← Northbound traffic
- Trench
- Structure

STAGE 2 - Distance 6300 to 7000
1:2500

CAD Ref: P:\ATT\BECAD01\Waitemata Hbr (60157303)\S_CADD\S.6.Final Drawings\60157303-TR-081.dwg

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JOC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

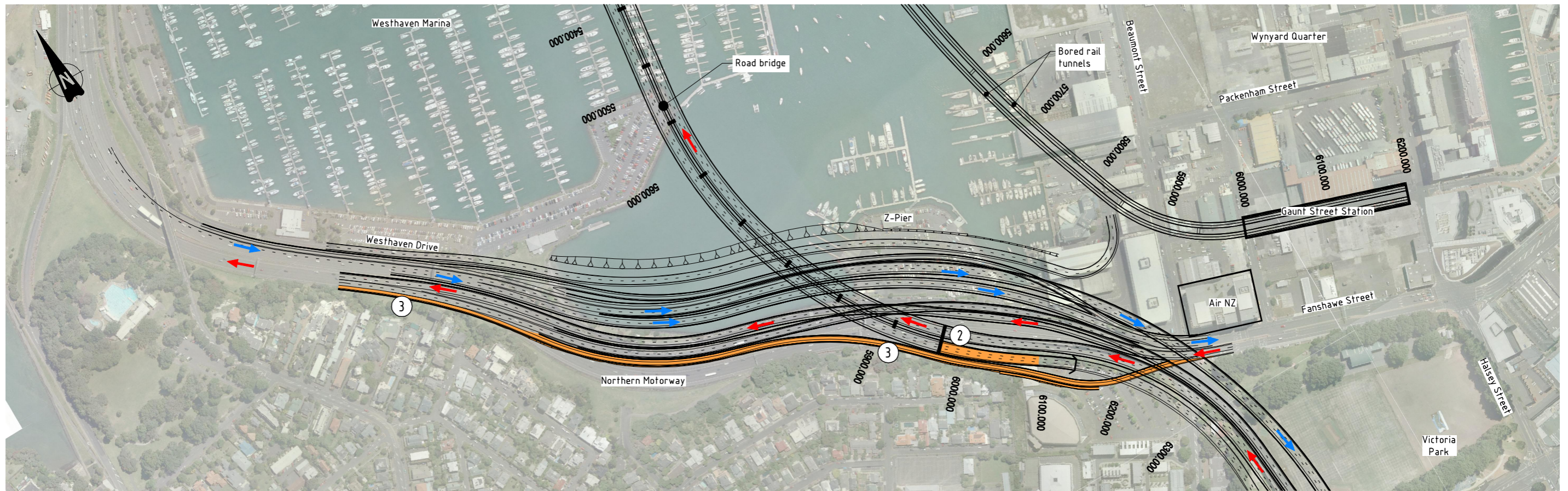
Beca
AECOM
AECOM New Zealand Limited

AWHC

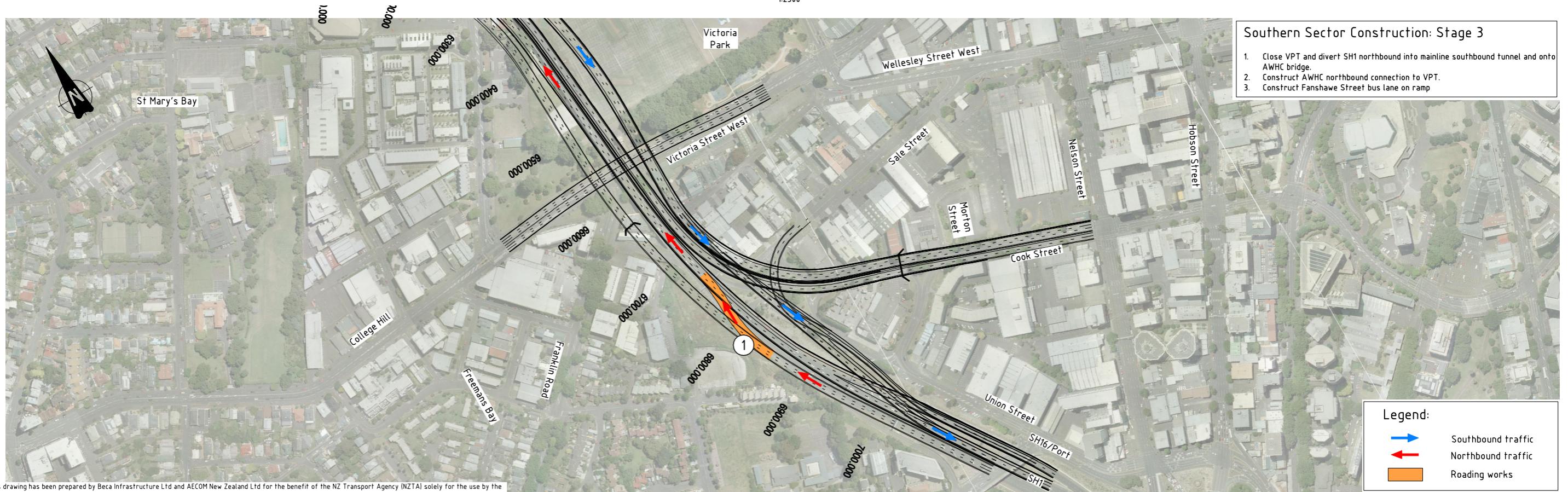
NZ TRANSPORT AGENCY
WAKA KOTAHĪ

ADDITIONAL WAITEMATA HARBOUR CROSSING
BRIDGE OPTION
SOUTHERN SECTOR CONSTRUCTION SEQUENCING
STAGE 2

| | | | |
|----|-------------------------------|-----------------------------|--------|
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-081 | REV: 0 |
|----|-------------------------------|-----------------------------|--------|



STAGE 3 - Distance 5500 to 6300
1:2500



STAGE 3 - Distance 6300 to 7000
1:2500

- Southern Sector Construction: Stage 3**
1. Close VPT and divert SH1 northbound into mainline southbound tunnel and onto AWHC bridge.
 2. Construct AWHC northbound connection to VPT.
 3. Construct Fanshawe Street bus lane on ramp

Legend:

- Southbound traffic
- Northbound traffic
- Roading works

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

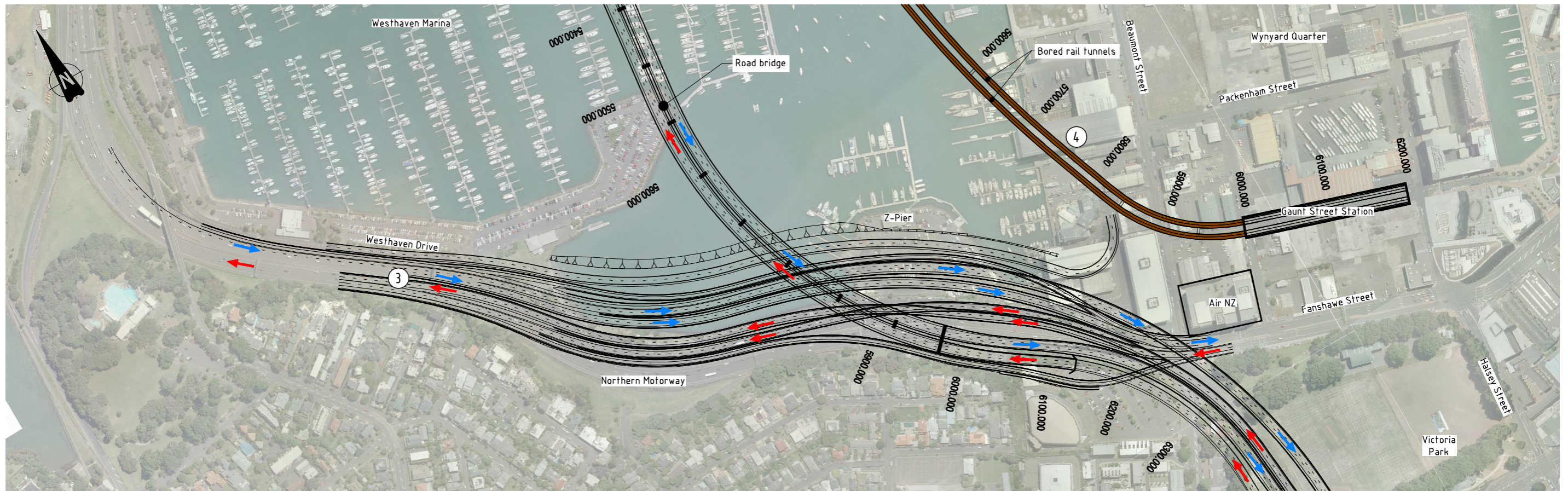
| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JQC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

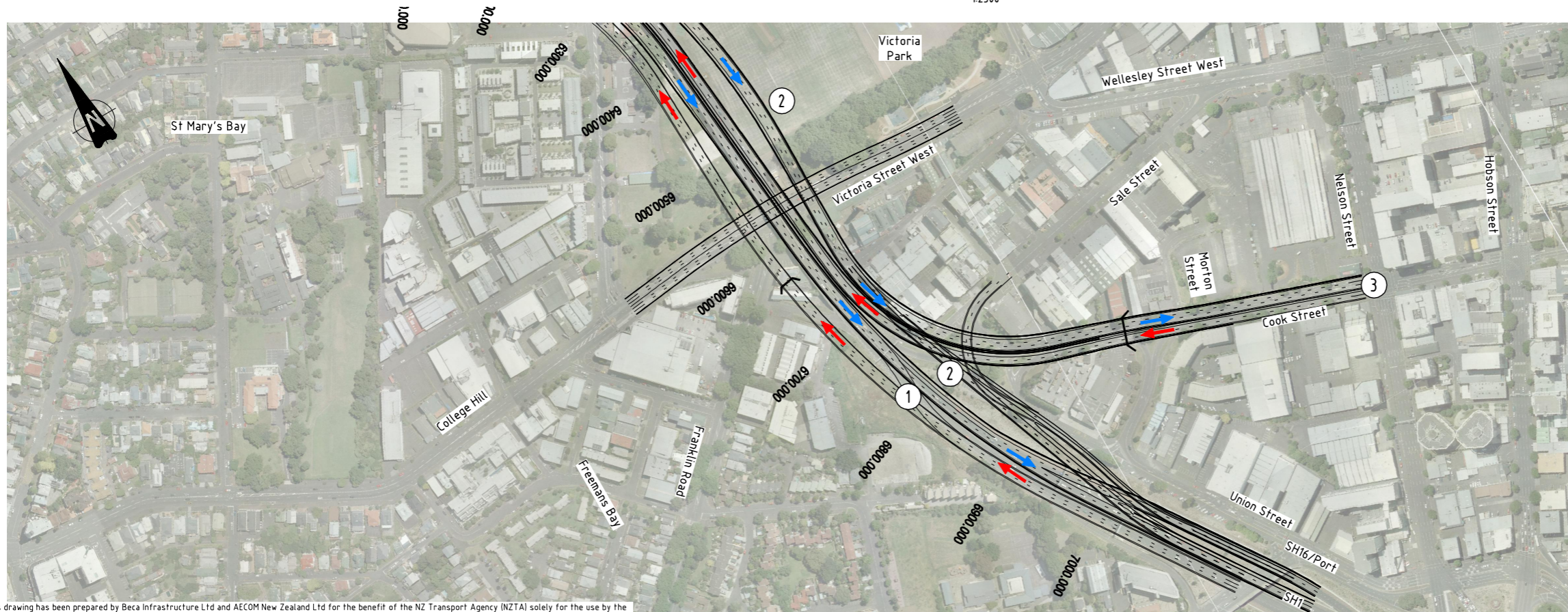


ADDITIONAL WAITEMATA HARBOUR CROSSING
BRIDGE OPTION
SOUTHERN SECTOR CONSTRUCTION SEQUENCING
STAGE 3

| | | | |
|----|-------------------------------|-----------------------------|--------|
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-082 | REV: 0 |
|----|-------------------------------|-----------------------------|--------|



STAGE 4 - Distance 5500 to 6300
1:2500



STAGE 4 - Distance 6300 to 7000
1:2500

- Southern Sector Construction: Stage 4**
1. Move traffic to final lanes to AWHC and AHB. Remove temporary works
 2. Remove temporary viaduct from Cook Street off ramp and complete roof structure
 3. Open Cook Street off ramp
 4. Rail tunneling

Legend:

- Southbound traffic
- Northbound traffic
- Bored tunnel

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| | | | |
|----------|----|---------|-----|
| DESIGNED | BS | CHECKED | JQC |
| DRAWN | NW | CHECKED | BS |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

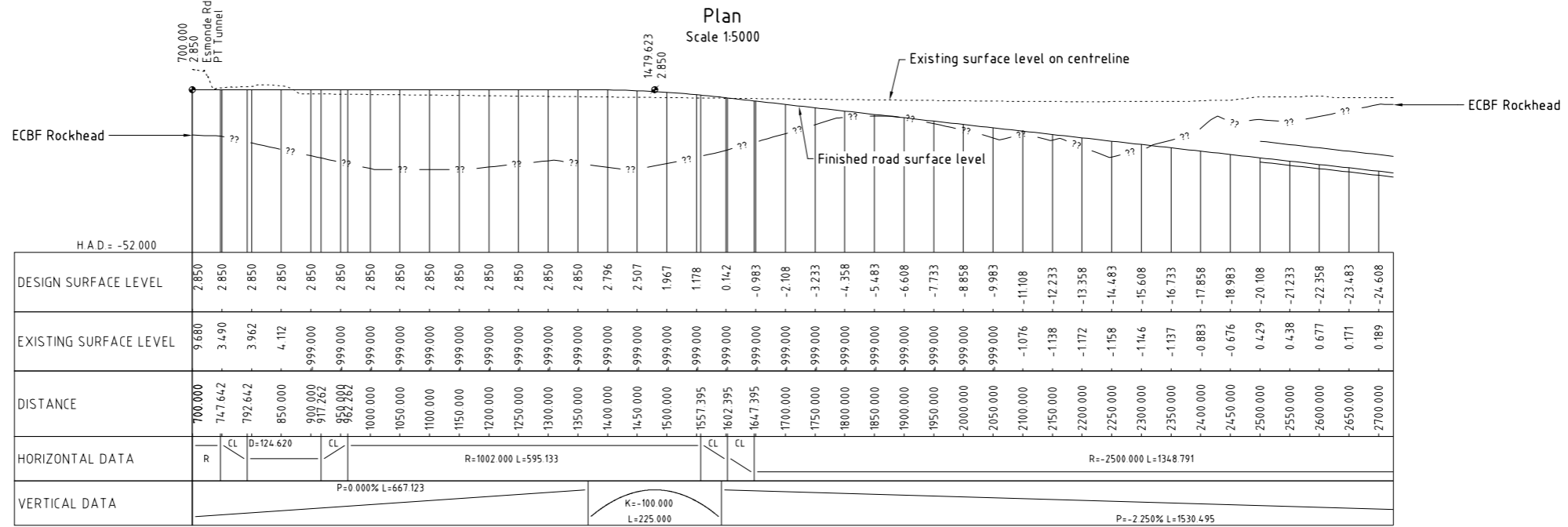
Beca
AECOM
AECOM New Zealand Limited

AWHC

CLIENT:
NZ TRANSPORT AGENCY
WAKA KOTAHĪ

ADDITIONAL WAITEMATA HARBOUR CROSSING
BRIDGE OPTION
SOUTHERN SECTOR CONSTRUCTION SEQUENCING
STAGE 4

| | | | |
|----|---------------------------------|--------------------------------|-----------|
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-083 | REV. 0 |
|----|---------------------------------|--------------------------------|-----------|



Longitudinal Section on Rail
Scale 1:5000 Hor, 1:1000 Ver

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | | | |
|----------|-------|---------|----|
| DESIGNED | IH/KT | CHECKED | GH |
| DRAWN | JRH | CHECKED | GH |
| APPROVED | | DATE | |

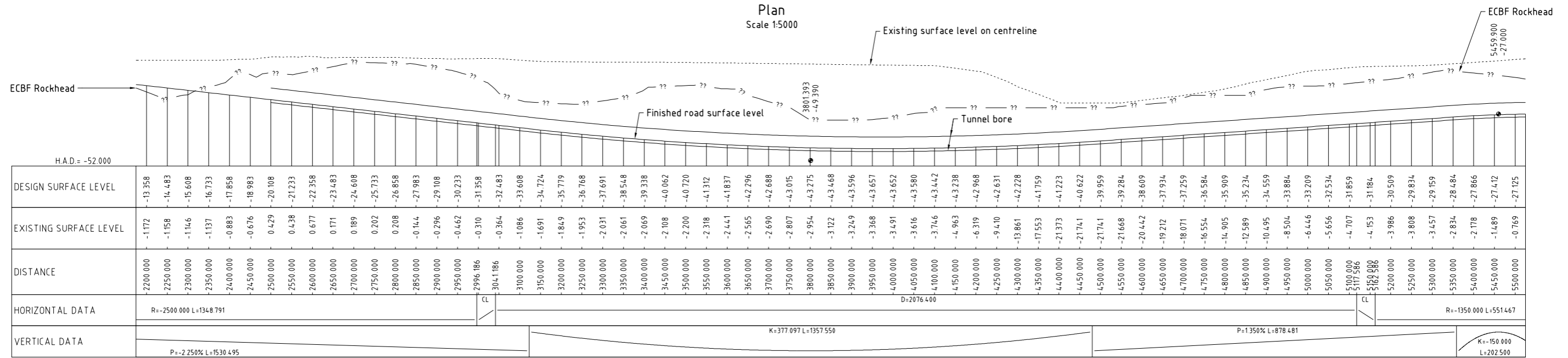
SCALES:
AS SHOWN



ADDITIONAL WAITEMATA HARBOUR CROSSING

RAIL OPTION
PLAN AND LONGITUDINAL SECTION
SHEET 1 OF 3

| | | | |
|----|---------------------------------|--------------------------------|-----------|
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-085 | REV. 0 |
|----|---------------------------------|--------------------------------|-----------|



This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | CHKD | CHECKED | GH |
|----------|------|---------|----|
| IMH/KT | | | |
| DRAWN | JRH | CHECKED | GH |
| APPROVED | | DATE | |

SCALES:
AS SHOWN

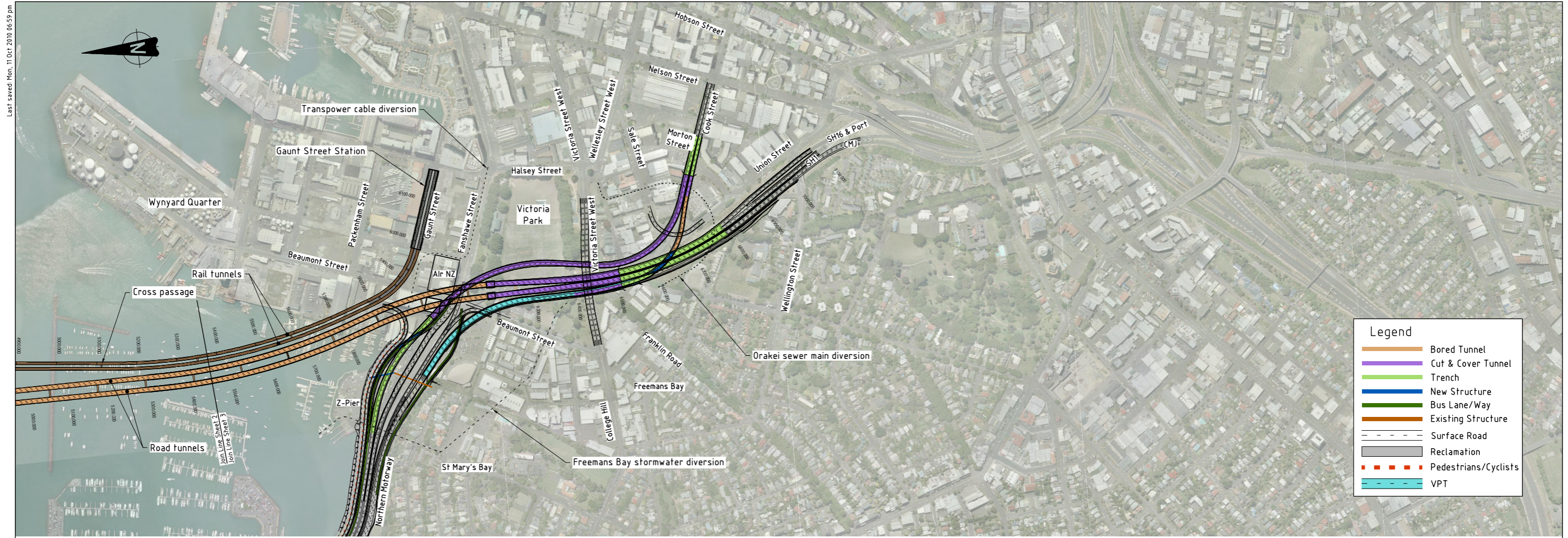


ADDITIONAL WAITEMATA HARBOUR CROSSING
RAIL OPTION
PLAN AND LONGITUDINAL SECTION
SHEET 2 OF 3

A1 STATUS: FORM ASSESSMENT STUDY
DRAWING NO: 60157303-TR-086
REV: 0

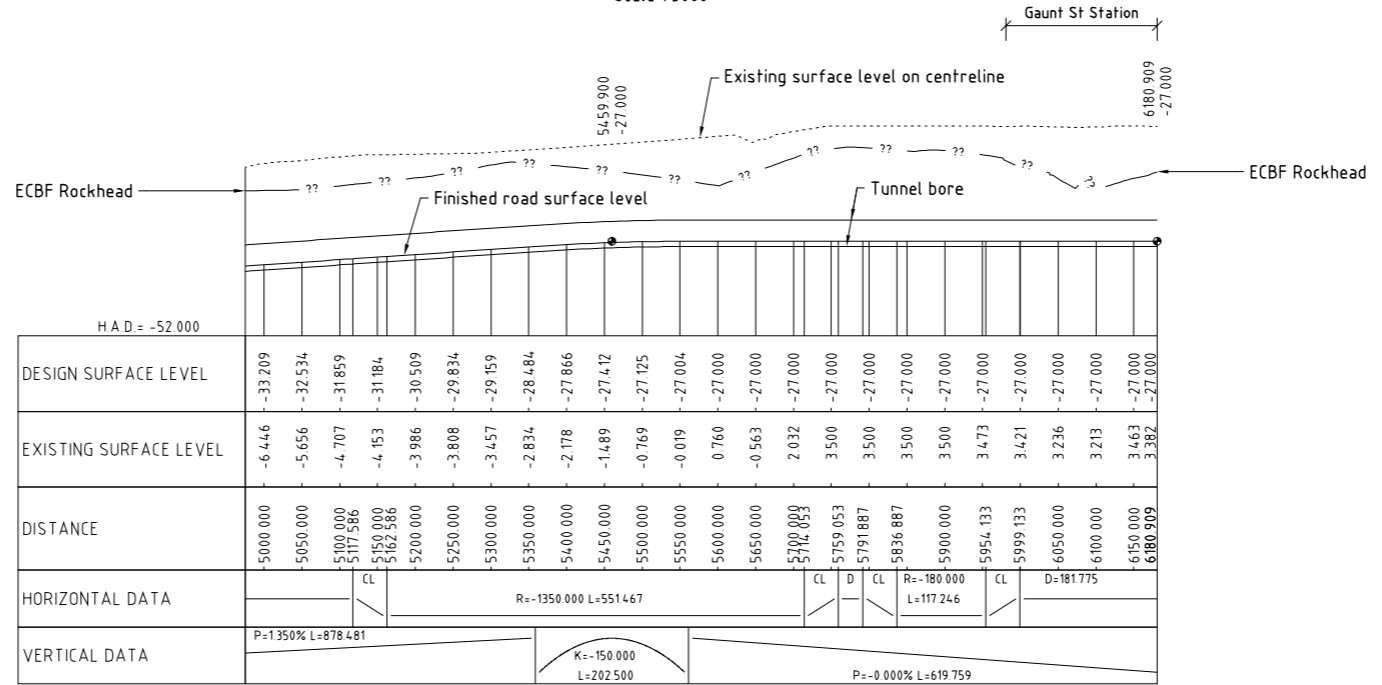
Last saved Mon, 11 Oct 2016 06:59 pm

CAD Ref: P:\ATTP BECA001 Waitemata Harbour (60157303)\5. CAD\15.6 Final drawings\60157303-TR-087.dwg



| Legend | |
|--------|----------------------|
| | Bored Tunnel |
| | Cut & Cover Tunnel |
| | Trench |
| | New Structure |
| | Bus Lane/Way |
| | Existing Structure |
| | Surface Road |
| | Reclamation |
| | Pedestrians/Cyclists |
| | VPT |

Plan
Scale 1:5000



Longitudinal Section on Rail
Scale 1:5000 Hor, 1:1000 Ver

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

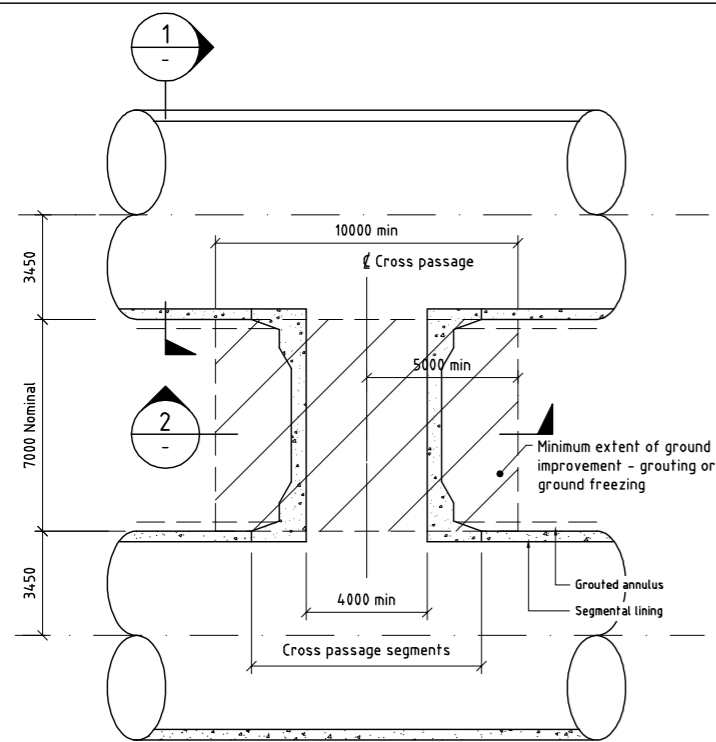
| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | | | |
|----------|---------|----|--|
| IH/KT | CHECKED | GH | |
| JRH | CHECKED | GH | |
| | DATE | | |

SCALES:
AS SHOWN



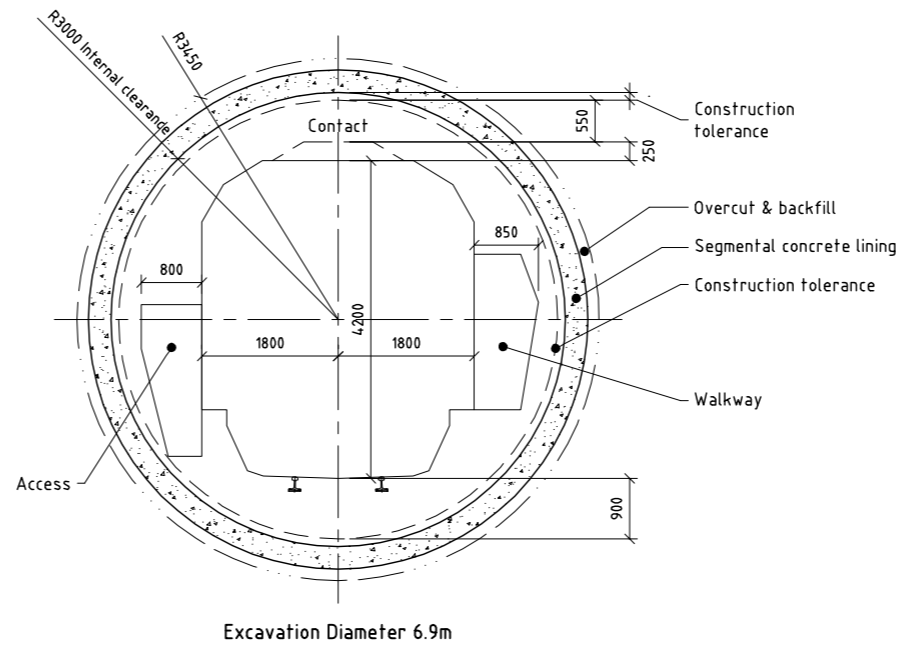
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
|--|---------------------------------|--------------------------------|-----------|
| RAIL OPTION PLAN AND LONGITUDINAL SECTION SHEET 3 OF 3 | | | |
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-087 | REV. 0 |



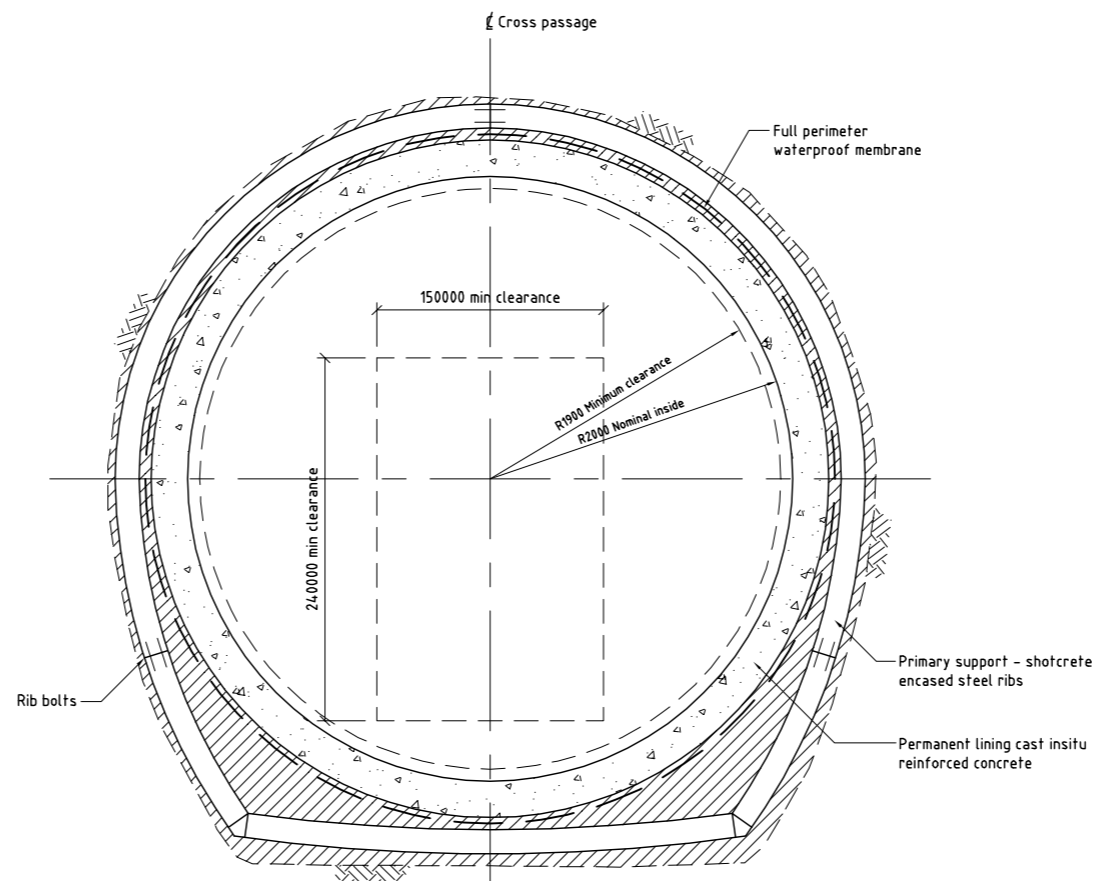
A BORED RAIL TUNNEL CROSS PASSAGE
- TYPICAL LAYOUT PLAN
1:125

Notes:

1. Refer to General Arrangement plans for location of cross passage and substation passages.
2. Cross passages spaced at 240m crs.



1 TYPICAL CROSS SECTION - BORED RAIL SINGLE TRACK RAIL TUNNEL
- 1:50



2 BORED RAIL TUNNEL CROSS PASSAGE SECTION
- 1:25

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | | | |
|----------|---------|-----|--|
| JJA | CHECKED | ADC | |
| DRAWN | | | |
| NW | CHECKED | ADC | |
| APPROVED | | | |
| | DATE | | |

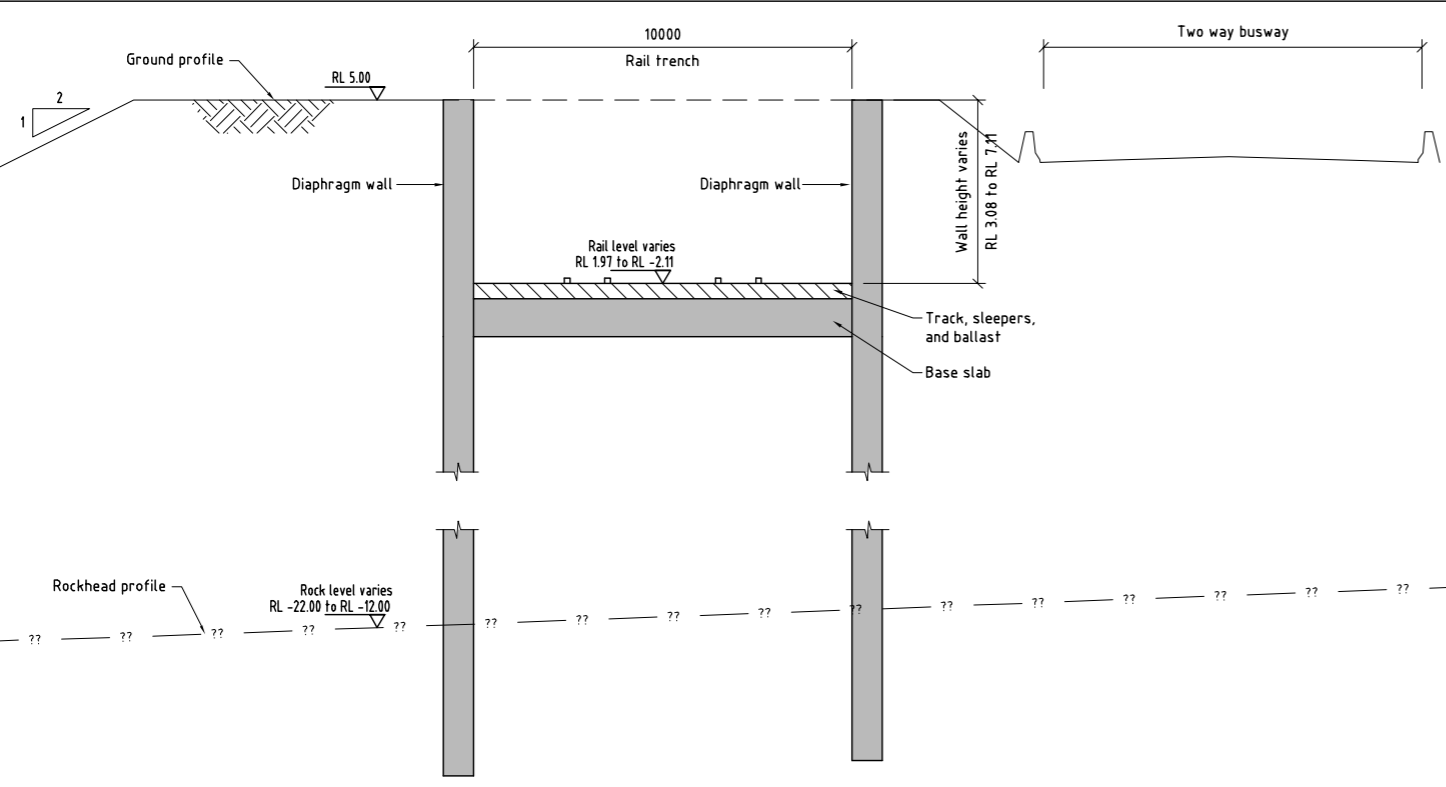
SCALES:
AS SHOWN
HALF SIZE



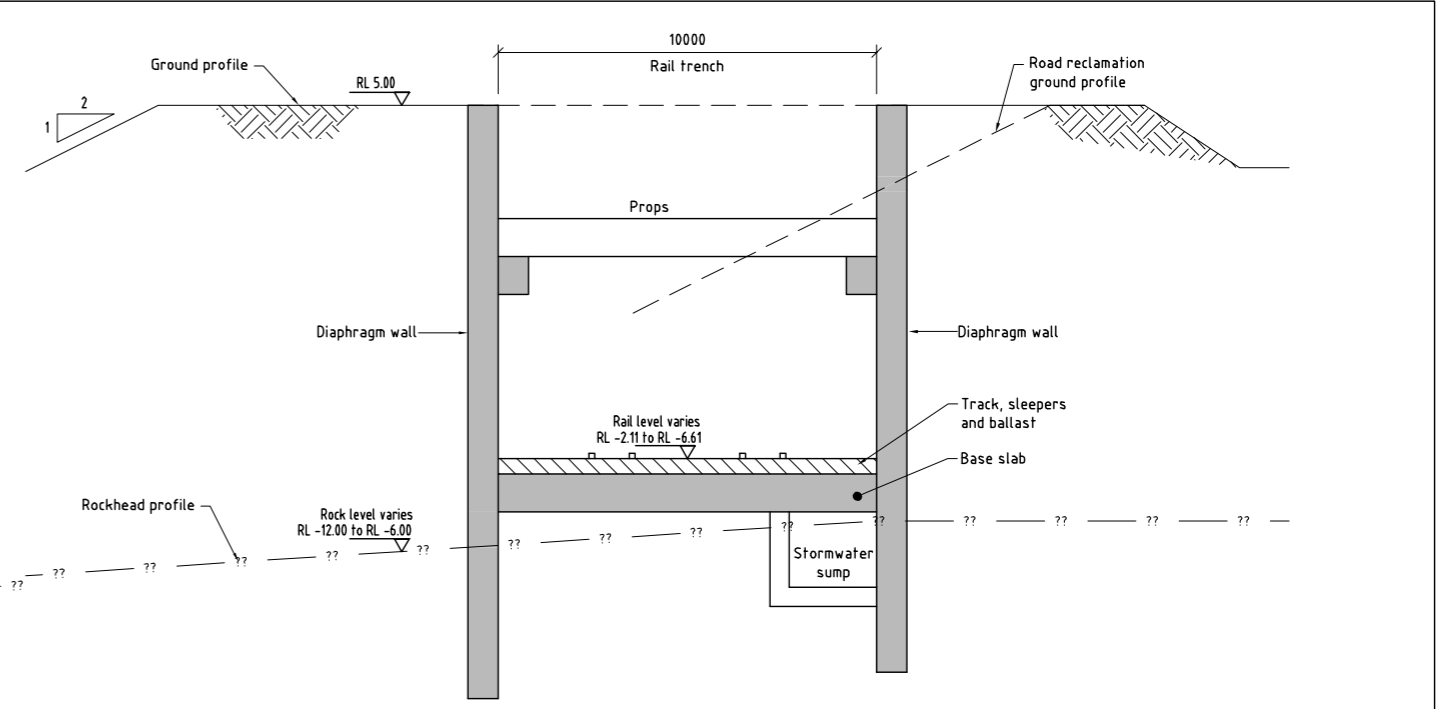
| | | | |
|---|---------------------------------|--------------------------------|-----------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
| RAIL OPTION BORED TUNNEL TYPICAL CROSS SECTIONS | | | |
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-088 | REV. 0 |

Last saved Mon, 11 Oct 2010 06:59 pm

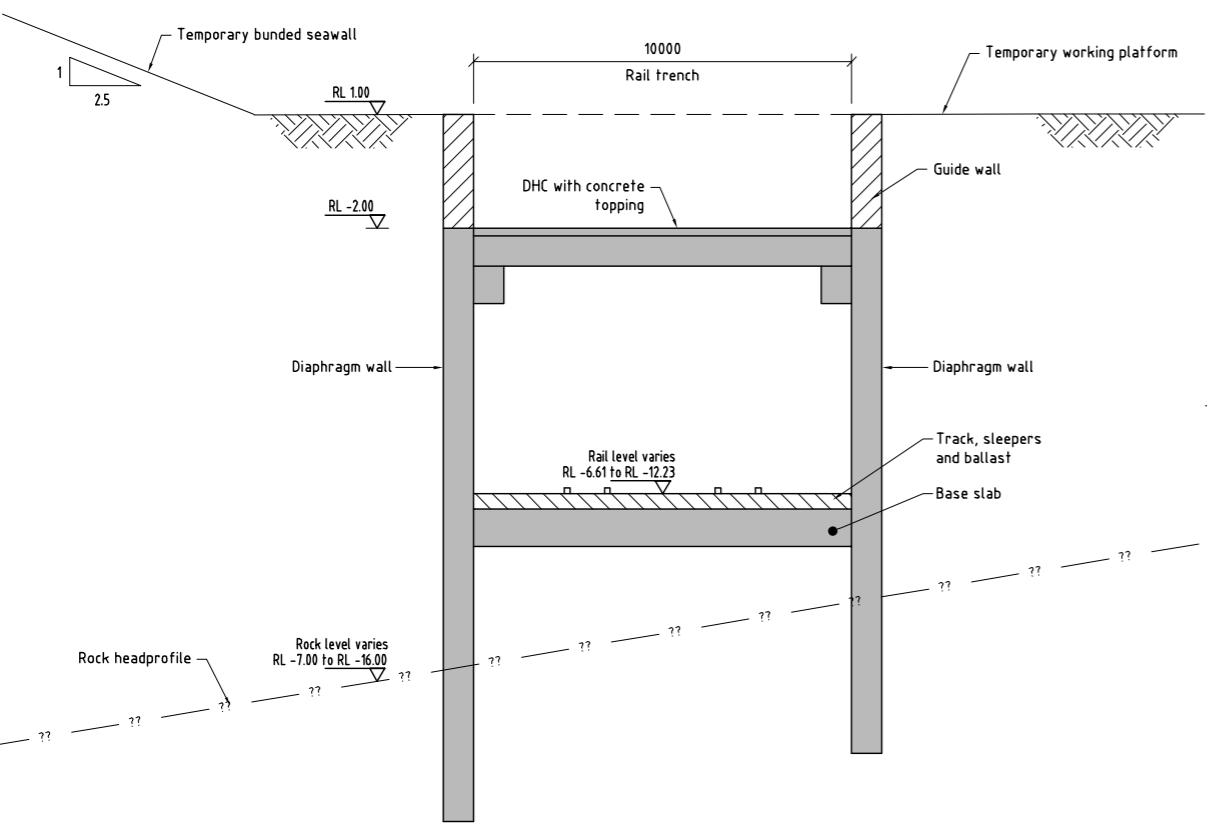
CAD Ref: P:\ATT\BEC\A001 Waitemata Hbr (60157303)\5. CAD\5.6 Final drawings\60157303-TR-090.dwg



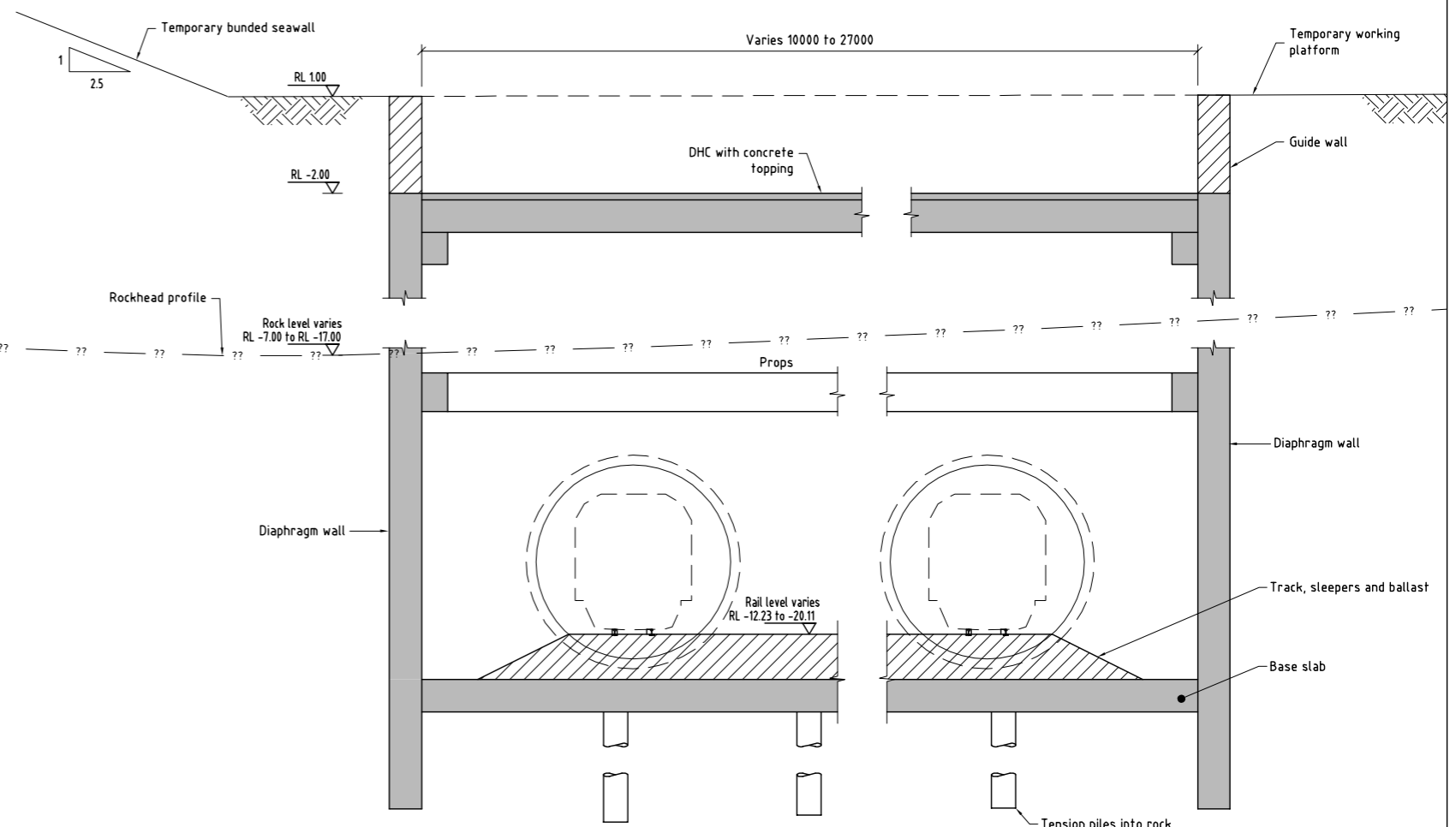
1 TYPICAL SECTION FROM DIST. 1500 TO 1700
1:100



2 TYPICAL SECTION FROM DIST. 1700 TO 1900
1:100



3 TYPICAL SECTION FROM DIST. 1900 TO 2150
1:100



4 TYPICAL SECTION FROM DIST. 2150 TO 2500
1:100

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | | | |
|----------|---------|-----|--|
| TKS | CHECKED | ADC | |
| DRAWN | | | |
| NW | CHECKED | ADC | |
| APPROVED | | | |
| | DATE | | |

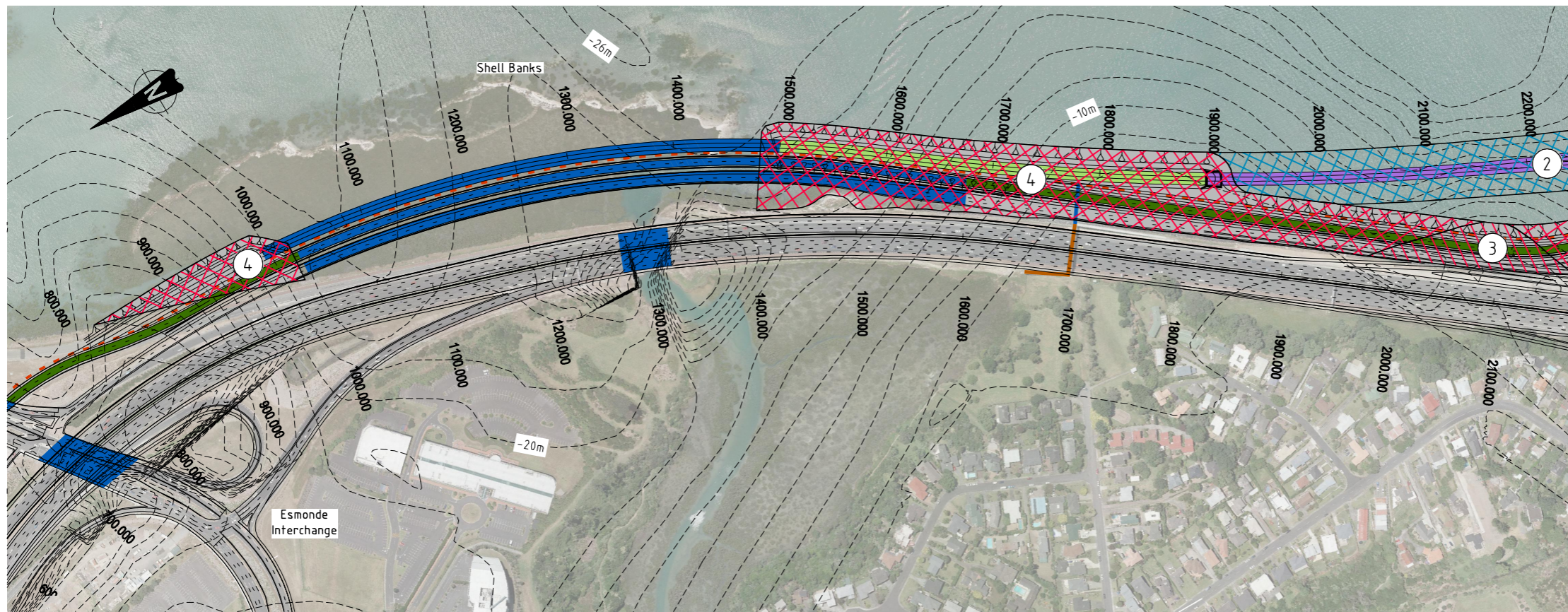
SCALES:
AS SHOWN
HALF SIZE



ADDITIONAL WAITEMATA HARBOUR CROSSING
RAIL OPTION
NORTHERN SECTOR - TYPICAL CROSS SECTIONS

| | | | |
|----|-------------------------------|-----------------------------|--------|
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-090 | REV: 0 |
|----|-------------------------------|-----------------------------|--------|

Last saved Mon, 11 Oct 2016 07:01 pm

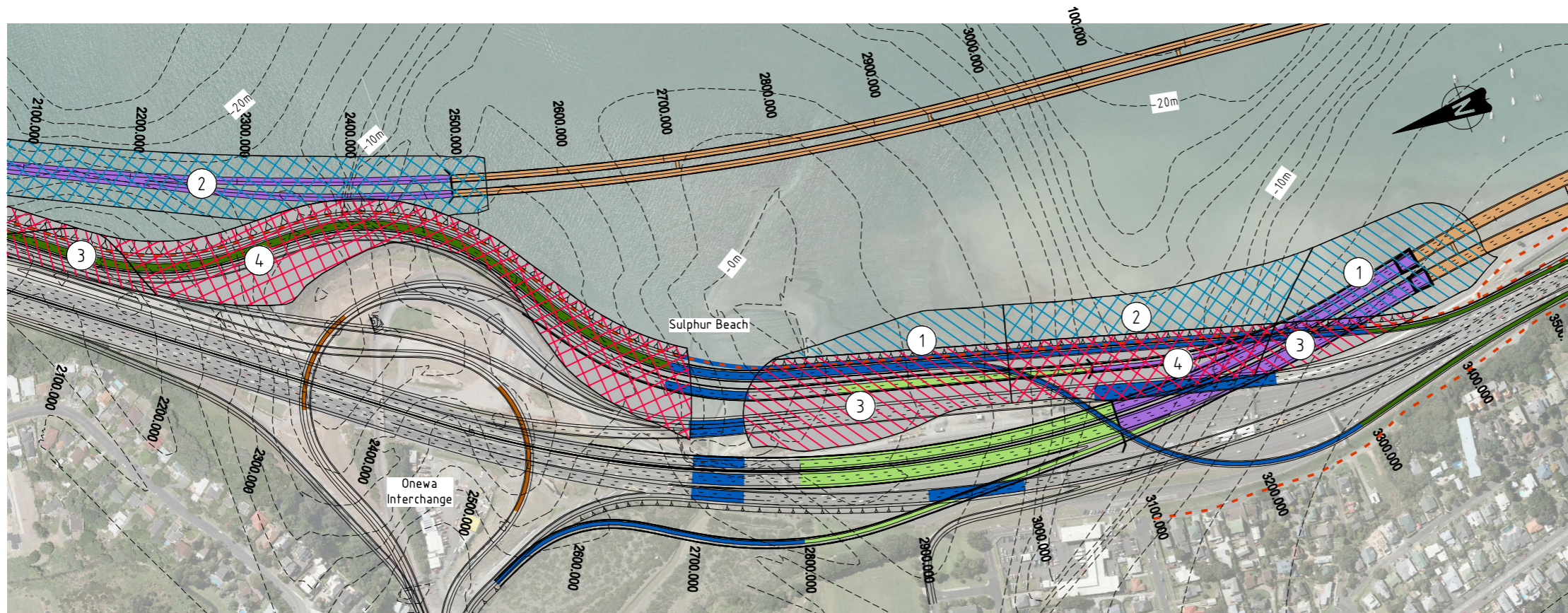


Notes:

- It is intended that temporary reclamation areas be reinstated to seabed/mudflats following completion of construction.

Key:

- Inferred ECBF Rockhead Level Contours (mean sea level)
- Temporary Reclamation - Shallow Mud
- Temporary Reclamation - Deep Mud
- Permanent Reclamation - Shallow Mud
- Permanent Reclamation - Deep Mud
- Bored Tunnel
- Cut & Cover Tunnel
- Trench
- New Structure
- Bus Lane/Way
- Existing Structure
- Surface Road
- Reclamation
- Pedestrians/Cyclists



CAD Ref: P:\ATTN\Beca\001 Waitemata Harbour\60157303\5.6 Final drawings\60157303-TR-091.dwg

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| | | | | |
|---|-----|----------|------------------------|------|
| This drawing is confidential and shall only be used for the purposes of this project. | | | | |
| REVISIONS | | | | |
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

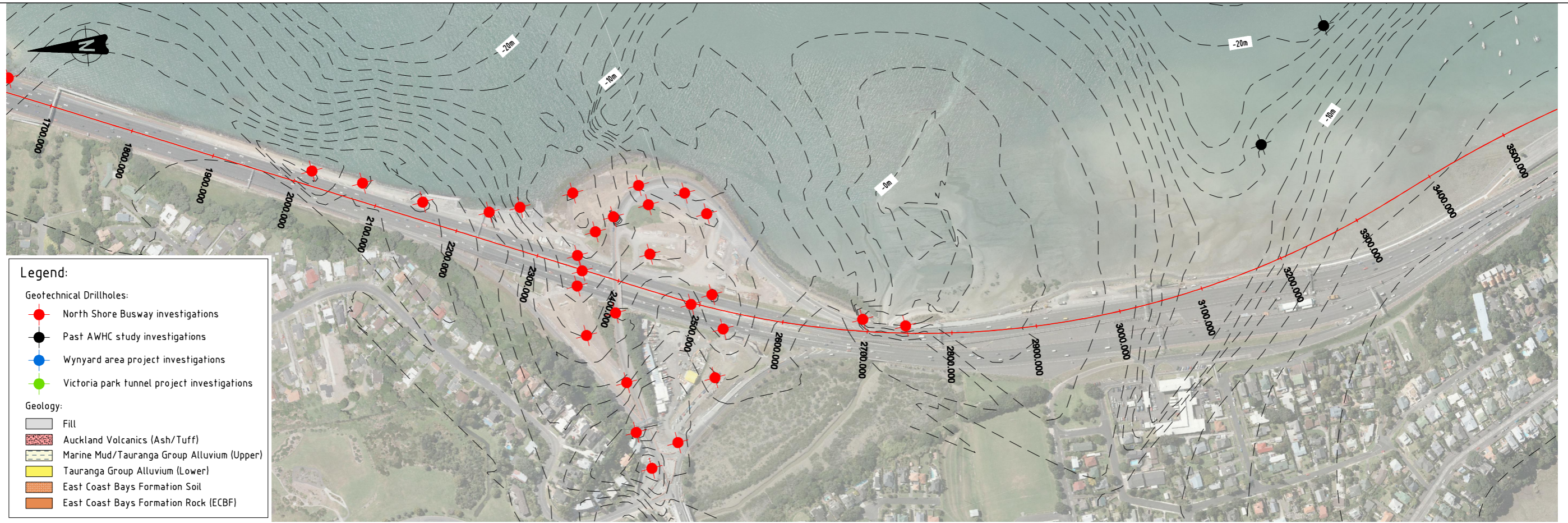
| | | | |
|----------|-----|---------|-----|
| DESIGNED | JMT | CHECKED | KRA |
| DRAWN | JRH | CHECKED | JMT |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3

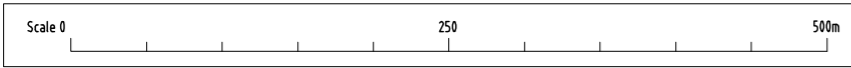


| | | | |
|--|---------------------------------|--------------------------------|-----------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
| RAIL OPTION NORTHERN SECTOR - RECLAMATION | | | |
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-091 | REV. 0 |

Last saved: Tue, 19 Oct 2010 12:07 pm

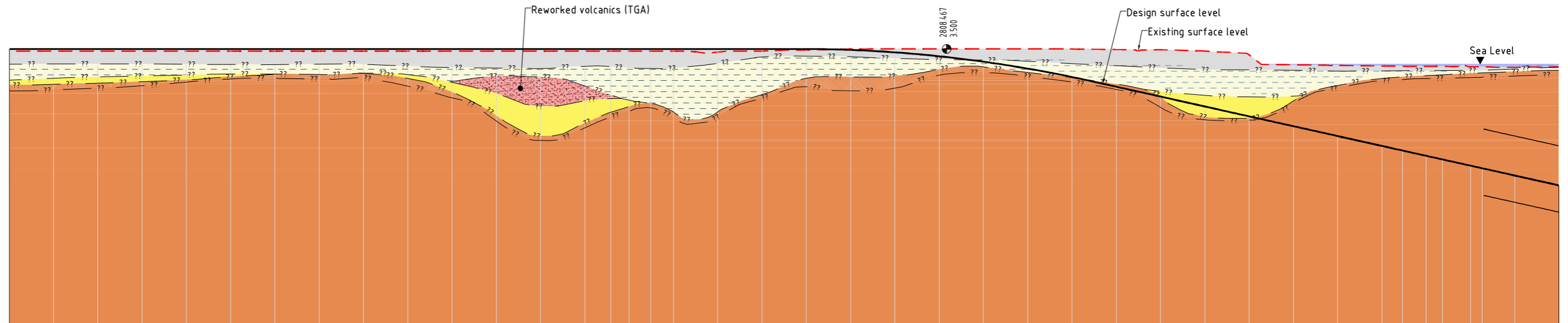


- Legend:**
- Geotechnical Drillholes:**
- North Shore Busway investigations
 - Past AWHC study investigations
 - Wynyard area project investigations
 - Victoria Park tunnel project investigations
- Geology:**
- Fill
 - Auckland Volcanics (Ash/Tuff)
 - Marine Mud/Tauranga Group Alluvium (Upper)
 - Tauranga Group Alluvium (Lower)
 - East Coast Bays Formation Soil
 - East Coast Bays Formation Rock (ECBF)



Plan
Scale 1:2500

--- --- ECBF Rockhead level contours (mean sea level)



H.A.D. = -59.000

| DESIGN SURFACE LEVEL | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3497 | 3284 | 2732 | 1843 | 0616 | -0949 | -2851 | -5045 | -7275 | -9506 | -11736 | -13967 | -16197 | -18428 | -20658 | -22889 | -25120 | -27350 | | | | | | |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| EXISTING SURFACE LEVEL | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 2774 | 3003 | 3267 | 3450 | 3500 | 3500 | 3500 | 3485 | 3360 | 3302 | 3014 | 2145 | -0088 | -0228 | -0351 | -0434 | -0514 | -0650 | -0598 | | | | | | |
| DISTANCE | 1800.000 | 1850.000 | 1900.000 | 1950.000 | 2000.000 | 2050.000 | 2100.000 | 2150.000 | 2200.000 | 2250.000 | 2300.000 | 2350.000 | 2400.000 | 2429.343 | 2450.000 | 2474.343 | 2500.000 | 2550.000 | 2600.000 | 2650.000 | 2700.000 | 2750.000 | 2800.000 | 2850.000 | 2900.000 | 2950.000 | 3000.000 | 3050.000 | 3100.000 | 3150.000 | 3200.000 | 3250.000 | 3300.000 | 3323.244 | 3350.000 | 3368.244 | 3400.000 | 3413.244 | 3450.000 | 3500.000 |

Long Section - Distance 1750 - 3500
Scale 1:2500 H, 1:500 V

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| REVISIONS | No. | BY | DATE | DESCRIPTION | APPD |
|-----------|-----|----------|------|------------------------|------|
| 0 | IMH | 15.10.10 | | FORM ASSESSMENT REPORT | |

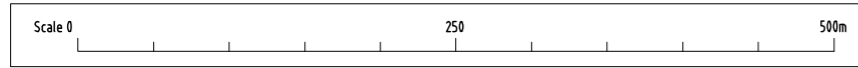
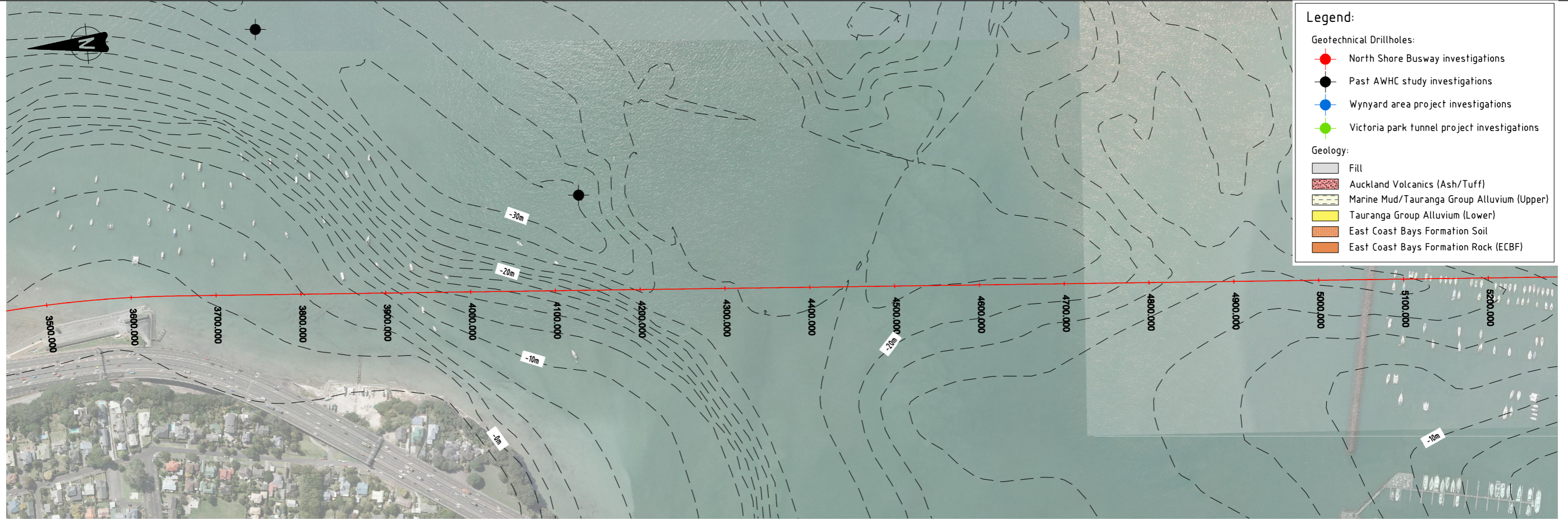
| | | | |
|----------|-----|---------|-----|
| DESIGNED | JMT | CHECKED | SBN |
| DRAWN | NW | CHECKED | SBN |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3



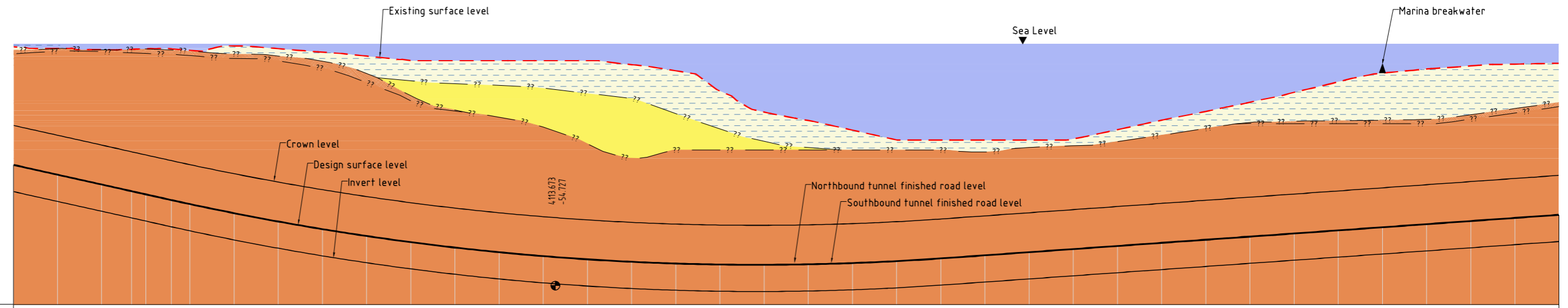
| | | | |
|---|-------------------------------|-----------------------------|--------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | | |
| TUNNEL OPTION | | | |
| GEOLOGICAL LONG SECTION ON SH1 SOUTHBOUND | | | |
| SHEET 2 OF 4 | | | |
| A1 | STATUS: FORM ASSESSMENT STUDY | DRAWING NO: 60157303-TR-096 | REV: 0 |

CAD Ref: P:\ATTN Beca\001 Waitemata Hbr (60157303)\S_CADD\S.6 Final drawings\60157303-TR-096.dwg



Plan
Scale 1:2500

--- ECBF Rockhead level contours (mean sea level)



| H.A.D. = -59.000 | |
|------------------------|--|
| DESIGN SURFACE LEVEL | -29.581 -31.811 -34.042 -36.248 -38.306 -40.197 -42.179 -43.479 -44.870 -46.094 -47.152 -48.043 -48.767 -49.325 -49.716 -49.998 -49.889 -49.613 -49.171 -48.562 -47.856 -47.150 -46.444 -45.737 -45.031 -44.325 -43.618 -42.912 -42.205 -41.499 -40.793 -40.086 -39.380 -38.674 |
| EXISTING SURFACE LEVEL | -0.950 -1.218 0.079 -1.389 -0.385 -1.014 -1.810 -2.691 -3.726 -3.742 -3.742 -3.742 -4.639 -6.029 -10.613 -15.378 -17.299 -19.475 -21.709 -21.741 -21.741 -21.741 -21.465 -19.377 -17.233 -15.237 -13.149 -10.904 -8.526 -6.557 -5.630 -4.917 -4.515 -4.326 |
| DISTANCE | 3550.000 3600.000 3633.847 3650.000 3678.847 3700.000 3750.000 3800.000 3850.000 3900.000 3950.000 4000.000 4050.000 4100.000 4150.000 4200.000 4250.000 4300.000 4350.000 4400.000 4450.000 4500.000 4550.000 4600.000 4650.000 4700.000 4750.000 4800.000 4850.000 4900.000 4950.000 5000.000 5050.000 5100.000 5150.000 5200.000 5250.000 |

Long Section - Distance 3500 - 5250
Scale 1:2500 H, 1:500 V

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

| REVISIONS | | | | |
|-----------|-----|----------|------------------------|------|
| No. | BY | DATE | DESCRIPTION | APPD |
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | | | |
|----------|---------|-----|--|
| JMT | CHECKED | SBN | |
| DRAWN | | | |
| NW | CHECKED | SBN | |
| APPROVED | | | |
| | DATE | | |

SCALES:
1:2500 A1
1:5000 A3

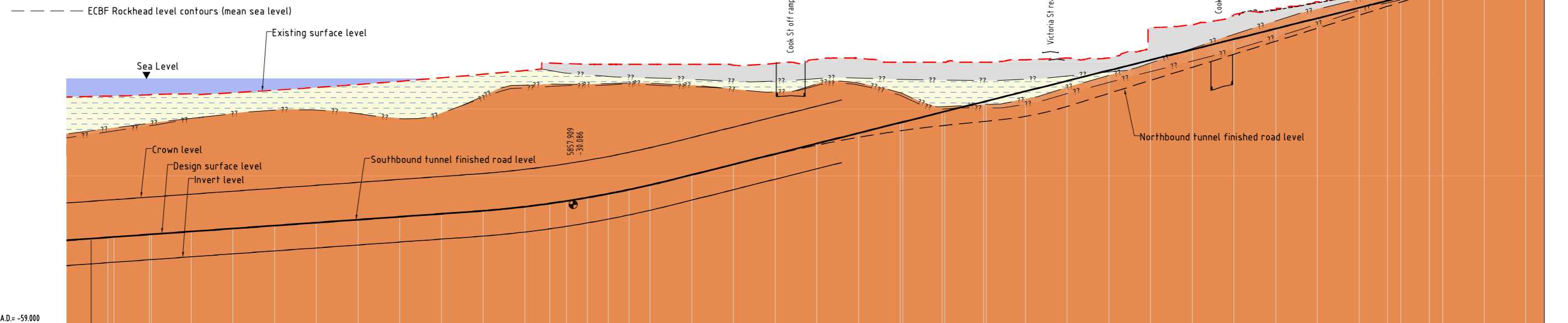
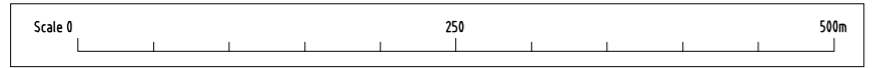


| | | |
|---|-------------------------------|--------|
| ADDITIONAL WAITEMATA HARBOUR CROSSING | | |
| TUNNEL OPTION | | |
| GEOLOGICAL LONG SECTION ON SH1 SOUTHBOUND | | |
| SHEET 3 OF 4 | | |
| A1 | STATUS: FORM ASSESSMENT STUDY | REV: 0 |
| | DRAWING NO: 60157303-TR-097 | |

- Legend:**
- Geotechnical Drillholes:**
- North Shore Busway investigations
 - Past AWHC study investigations
 - Wynyard area project investigations
 - Victoria park tunnel project investigations
- Geology:**
- Fill
 - Auckland Volcanics (Ash/Tuff)
 - Marine Mud/Tauranga Group Alluvium (Upper)
 - Tauranga Group Alluvium (Lower)
 - East Coast Bays Formation Soil
 - East Coast Bays Formation Rock (ECBF)



Plan
Scale 1:2500



Long Section - Distance 5250 - 7050
Scale 1:2500 H, 1:500 V

| | 5300.000 | 5315.51 | 5330.999 | 5336.231 | 5400.000 | 5450.000 | 5500.000 | 5550.000 | 5600.000 | 5650.000 | 5700.000 | 5750.000 | 5800.000 | 5819.291 | 5850.998 | 5900.000 | 5950.000 | 6000.000 | 6050.000 | 6100.000 | 615.802 | 6150.000 | 6200.000 | 6250.000 | 6286.372 | 6300.000 | 6350.000 | 6400.000 | 6450.000 | 6470.296 | 6500.000 | 6550.000 | 6600.000 | 6650.000 | 6700.000 | 6750.000 | 6800.000 | 6831.524 | 6850.000 | 6881.524 | 6900.000 | 6950.000 | 7000.000 | 7011.385 | 7050.000 |
|------------------------|----------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| DESIGN SURFACE LEVEL | -37.967 | -37.261 | -36.555 | -35.848 | -35.142 | -34.436 | -33.729 | -33.023 | -32.316 | -31.599 | -30.614 | -29.257 | -27.526 | -25.422 | -22.981 | -20.481 | -17.981 | -15.481 | -12.981 | -10.481 | -7.981 | -5.481 | -2.981 | -0.481 | 2.019 | 4.519 | 7.019 | 9.519 | 12.019 | 14.519 | 17.019 | 19.519 | 22.019 | 24.519 | 26.889 | 28.495 | | | | | | | | | |
| EXISTING SURFACE LEVEL | -4.138 | -3.798 | -3.597 | -3.319 | -2.720 | -2.066 | -1.350 | -0.573 | 0.744 | 1.104 | 2.001 | 2.915 | 3.500 | 3.500 | 3.424 | 3.873 | 4.746 | 5.000 | 4.060 | 4.000 | 4.000 | 4.586 | 5.000 | 5.103 | 12.296 | 13.049 | 15.179 | 16.940 | 18.485 | 20.339 | 21.995 | 23.493 | 25.411 | 27.130 | 28.506 | | | | | | | | | | |
| DISTANCE | 5300.000 | 5315.51 | 5330.999 | 5336.231 | 5400.000 | 5450.000 | 5500.000 | 5550.000 | 5600.000 | 5650.000 | 5700.000 | 5750.000 | 5800.000 | 5819.291 | 5850.998 | 5900.000 | 5950.000 | 6000.000 | 6050.000 | 6100.000 | 615.802 | 6150.000 | 6200.000 | 6250.000 | 6286.372 | 6300.000 | 6350.000 | 6400.000 | 6450.000 | 6470.296 | 6500.000 | 6550.000 | 6600.000 | 6650.000 | 6700.000 | 6750.000 | 6800.000 | 6831.524 | 6850.000 | 6881.524 | 6900.000 | 6950.000 | 7000.000 | 7011.385 | 7050.000 |

This drawing has been prepared by Beca Infrastructure Ltd and AECOM New Zealand Ltd for the benefit of the NZ Transport Agency (NZTA) solely for the use by the NZTA for the purpose for which it has been prepared. This purpose being the Form Assessment Study input to the Additional Waitemata Harbour Crossing Business Case. No liability is accepted by these companies or any employee or sub-consultant of these companies with respect to its use by any other person. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Beca Infrastructure Ltd and AECOM New Zealand Limited

This drawing is confidential and shall only be used for the purposes of this project.

| No. | BY | DATE | DESCRIPTION | APPD |
|-----|-----|----------|------------------------|------|
| 0 | IMH | 15.10.10 | FORM ASSESSMENT REPORT | |

| DESIGNED | JMT | CHECKED | SBN |
|----------|-----|---------|-----|
| DRAWN | NW | CHECKED | SBN |
| APPROVED | | DATE | |

SCALES:
1:2500 A1
1:5000 A3



ADDITIONAL WAITEMATA HARBOUR CROSSING
TUNNEL OPTION
GEOLOGICAL LONG SECTION ON SH1 SOUTHBOUND
SHEET 4 OF 4

| | | | |
|----|---------------------------------|--------------------------------|-----------|
| A1 | STATUS FORM ASSESSMENT STUDY | DRAWING NO. 60157303-TR-098 | REV. 0 |
|----|---------------------------------|--------------------------------|-----------|