

# NorthLink WA—

## Infrastructure Report

Perth-Darwin National Highway (Swan Valley Section)



CLIENT / Main Roads WA

DOCUMENT NO / BGE-0104-REP-C-001 REV / B DATE / 05/08/2020

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| Document Control |            |               |           |           |          |
|------------------|------------|---------------|-----------|-----------|----------|
| Revision         | Date       | Description   | Prepared  | Reviewed  | Approved |
| DRAFT            | 02/07/2020 | Draft to MRWA | N. Martin | P. Murphy |          |
| B                | 05/08/2020 | Issue to MRWA | N. Martin | P. Murphy |          |

Prepared by:



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# 1 SUMMARY

This post-construction Infrastructure Report (Terrestrial Fauna, Hydrological Processes, Inland Waters Environmental Quality, Amenity (Noise)) is submitted to demonstrate that the key design elements of the Perth–Darwin Nation Highway (Swan Valley Section) have been constructed as detailed in the Infrastructure Plan (NLWA-03-EN-RP-0063). Condition 6-5 of Ministerial Statement No.1036 states that a post-construction Infrastructure Report shall be submitted within 6-months following the completion of construction. This report details the design elements listed in condition 6-5.

This document sets out the as-constructed location and design of the key proposal elements. There are some areas of construction that occurred outside the Development Envelope, which are shown in Appendix B. It was expected that design elements would be modified and refined as the design advanced through the detailed design stage.

Table 1 provides a summary of this plan.

**Table 1: Infrastructure Report Summary**

| <b>Item</b>               | <b>Details</b>   |
|---------------------------|--|
| Title of proposal         | Infrastructure Report Perth–Darwin National Highway (Swan Valley Section)  |
| Proponent name            | Commissioner for Main Roads Western Australia  |
| Ministerial Statement No. | 1036   |
| Purpose of this plan      | The Infrastructure Report is submitted to fulfil the requirements of condition 6-5 to Ministerial Statement No.1036  |
| Environmental objectives  | <ul style="list-style-type: none"><li>• Minimise direct and indirect impacts to conservation significant terrestrial fauna.</li><li>• Minimise impacts to hydrological regimes of surface water.</li><li>• Minimise impacts to the quality of groundwater and surface water.</li><li>• Minimise impacts to amenity as low as reasonably practicable.</li></ul> |

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## 2 CONTEXT AND SCOPE

### 2.1 Description of the Project

Main Roads Western Australia (MRWA) has constructed a new 38 km long section of the Perth–Darwin National Highway (PDNH) between Malaga and Muchea, in Western Australia (Figure 1). The project consists of a dual carriageway highway and connects the intersection of Tonkin Highway and Reid Highway in the south with Great Northern Highway and Brand Highway in the north.

### 2.2 Requirements of the Condition

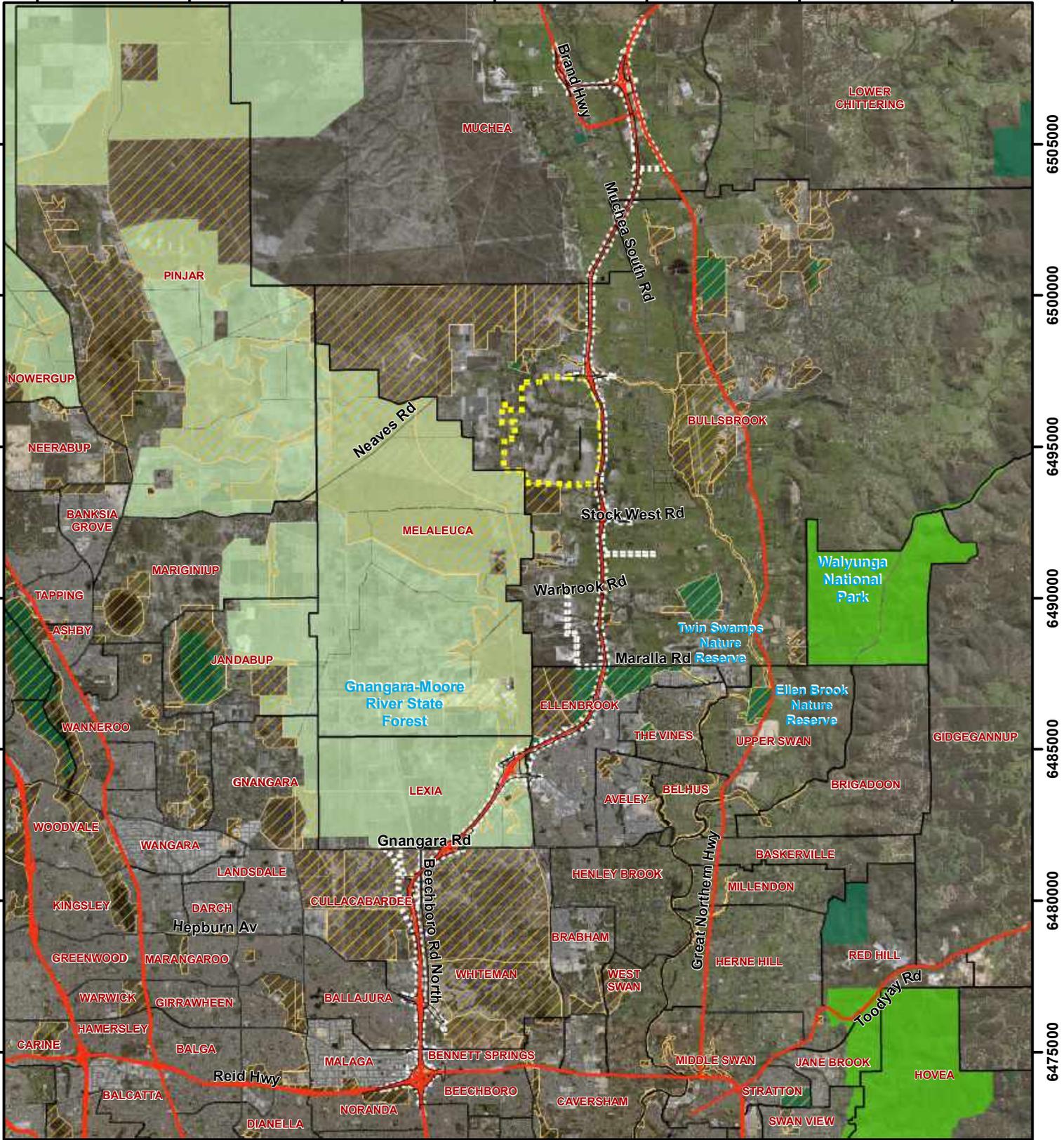
This report is submitted to demonstrate compliance with Ministerial Statement No. 1036, condition 6-5. As required under condition 5-1, this plan will be made publicly available for the life of the proposal. The requirements of this condition and where they are addressed in this report are described in Table 2.

**Table 2: Summary of Conditions**

| Condition No. | Condition   | Section of This Report         |
|---------------|---|--------------------------------|
| 5-1           | Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all environmental plans and reports required under this statement.   | Section 2.2                    |
| 6-5           | <p>The proponent shall prepare and submit a post-construction Infrastructure Report to confirm they the key elements of the proposal as referred to in Columns 1 and 2 of Table 2 in Schedule 1 were constructed in accordance with the requirements of condition 6-2, within six (6) months following the completion of construction, or as otherwise agreed in writing by the CEO. The post-construction Infrastructure Report shall include:</p> <ol style="list-style-type: none"><li>1. The alignment, dimensions and locations of the key proposal elements as referred to in Columns 1 and 2 of Table 2 in Schedule 1;</li><li>2. The dimensions and locations of fauna underpasses and fauna fencing as referred to in Columns 1 and 2 of Table 2 in Schedule 1. Fauna underpass dimensions and locations should be consistent with the approved Fauna – Construction – Condition Environmental Management Plan as required by condition 12;</li><li>3. The design and locations of culverts and bridges as referred to in Columns 1 and 2 of Table 2 in Schedule 1;</li><li>4. The design and location of bioretention swales and infiltration basins in the vicinity of Ellen Brook and within the GUWPCA, consistent with the approved Inland Waters Environmental Quality – Hydrological Processes Condition Environmental Management Plan as required by condition 13;</li><li>5. The dimensions and locations of noise walls as referred to</li></ol> | This plan; Sections 3.1 to 3.6 |

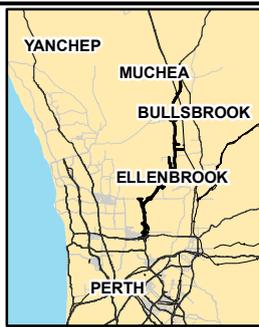
| Condition No. | Condition  | Section of This Report |
|---------------|--|------------------------|
|               | <p>in Columns 1 and 2 of Table 2 in Schedule 1, consistent with the approved Amenity (Noise) – Condition Environmental Management Plan; and</p> <p>6. Spatial data for the proposal elements as detailed in 6-5(1), 6-5(2), 6-5(3), 6-5(4) and 6-5(5).</p> |                        |

Northlink Infrastructure Report - Figure 1 - Proposal Overview - AsCon



### Legend

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li> Local Road</li> <li> State Road</li> <li> As Constructed Footprint</li> <li> Development Envelope</li> <li> Commonwealth Land</li> </ul> | <h4 style="text-align: center;">Conservation Areas</h4> <ul style="list-style-type: none"> <li> State Forest</li> <li> Nature Reserve</li> <li> National Park</li> <li> Bush Forever</li> </ul> |
|--|---|



|  |                               |  |
|--|-------------------------------|--|
| ACKNOWLEDGEMENT  |                               |  |
|  |                               |  |
| DRAWN AS   | PROJECT BGE-0104              |  |
| REVIEWED   | DATE 28/07/2020               |  |
| APPROVED   | DATUM<br>GDA 1994 MGA Zone 50 |  |
| <p>1:175,000 (at A4)</p> <div style="display: flex; align-items: center; justify-content: center;"> </div> |                               |  |

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P:\C12-17 MRWA ETS PANEL CONTRACT\BGE-FXXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Maps\Report Maps\Figure 1 - Proposal Overview - AsCon.mxd

### 3 KEY CONSTRUCTION DESIGN ELEMENTS

The location and authorised extent of the key proposal elements provided in Attachment 2 to Schedule 1 of Ministerial Statement No. 1036 are detailed in Table 3. These construction elements are referred to in Condition 6.5 (1) of Ministerial Statement No. 1036.

**Table 3: Location and extent of physical and operational elements**

| Column 1 – Element  | Column 2 – Location  | Column 3 – Authorised Extent  | Column 4 – Cleared Areas  |
|---|--|---|---|
| Clearing and disturbance for road corridor, drainage structures including infiltration and bioretention basins and swales, laydowns, bridges and culverts, fauna fencing, fauna underpasses, noise walls, road train assembly area and principal shared path. | Located within the development envelope as shown in Figure 1 (of the Ministerial Statement). | <p>Clearing and disturbance of no more than 765.07 ha consisting of up to 206 ha of native vegetation. This includes up to:</p> <ul style="list-style-type: none"> <li>• 129.9 ha of Bush Forever areas.</li> <li>• 0.4 ha of Class A Nature Reserve 46920.</li> <li>• 0.2 ha of Class A Nature Reserve 46919.</li> <li>• 32.6 ha of Gnangara–Moore River State Forest No. 65.</li> <li>• 4 ha Floristic Community Type SCP 20a Threatened Ecological Community.</li> <li>• 31.9 ha of Caladenia huegelii critical habitat.</li> <li>• 2 ha of Grevillea curviloba subsp. incurva critical habitat.</li> <li>• 16 ha of Conservation Category Wetlands,</li> </ul> <p>within a 985 ha development envelope.</p> | <p>Cleared areas have been recorded as follows:</p> <ul style="list-style-type: none"> <li>• 92.5 ha of Bush Forever areas.</li> <li>• 0.07 ha of Class A Nature Reserve 46920.</li> <li>• 0.2 ha of Class A Nature Reserve 46919.</li> <li>• 27.6 ha of Gnangara–Moore River State Forest No. 65.</li> <li>• 3.9 ha Floristic Community Type SCP 20a Threatened Ecological Community.</li> <li>• 29.8 ha of Caladenia huegelii critical habitat.</li> <li>• 1.6 ha of Grevillea curviloba subsp. incurva critical habitat.</li> <li>• 13.3 ha of Conservation Category Wetlands,</li> </ul> <p>within a 1004.07 ha development envelope.</p> |
| Noise walls   | Located within the development envelope as shown in Figure 1 [of the Ministerial Statement]. | Height of Noise walls to be no more than 5m on residential boundaries between Reid Highway and south of Maralla Road.   | Compliant   |

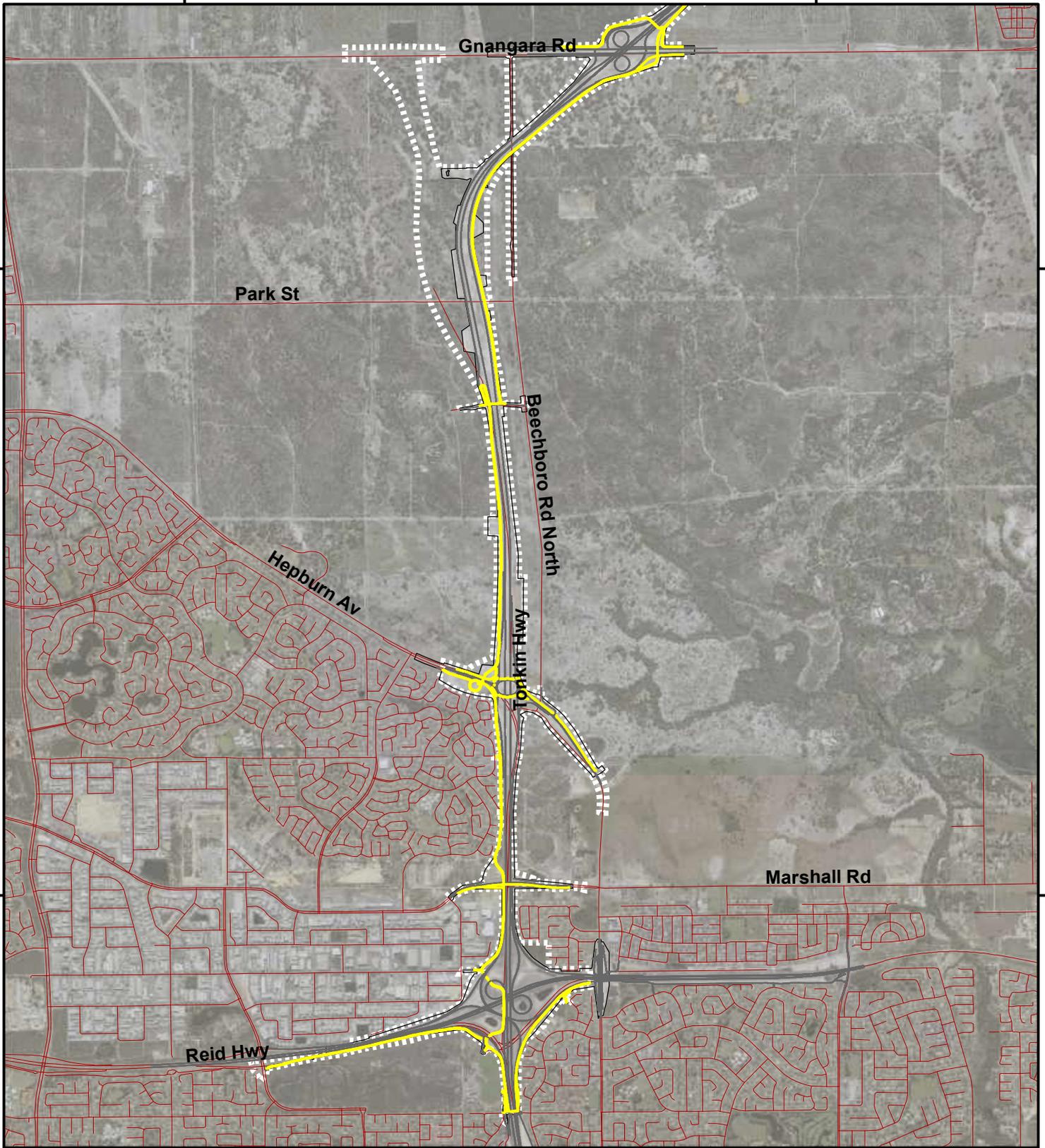
Source: Ministerial Statement No. 1036, Attachment 2

### **3.1 Road Corridor, Principal Shared Path and Road Train Assembly Area**

The road corridor, principal shared path (PSP) and road train assembly area have been constructed within the Development Envelope as shown in Figure 1, with the exception of four areas. Details of these areas and acknowledgement from Department of Water and Environmental Regulation (DWER) can be found in Appendix B and C respectively.

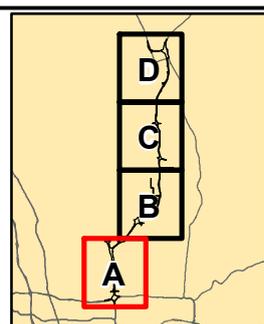
The road corridor, PSP and road train assembly area are depicted in Figure 2.

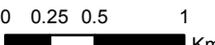
The remainder of this chapter details key elements consistent with the environmental objectives stated in condition 6-1 of the Ministerial Statement.



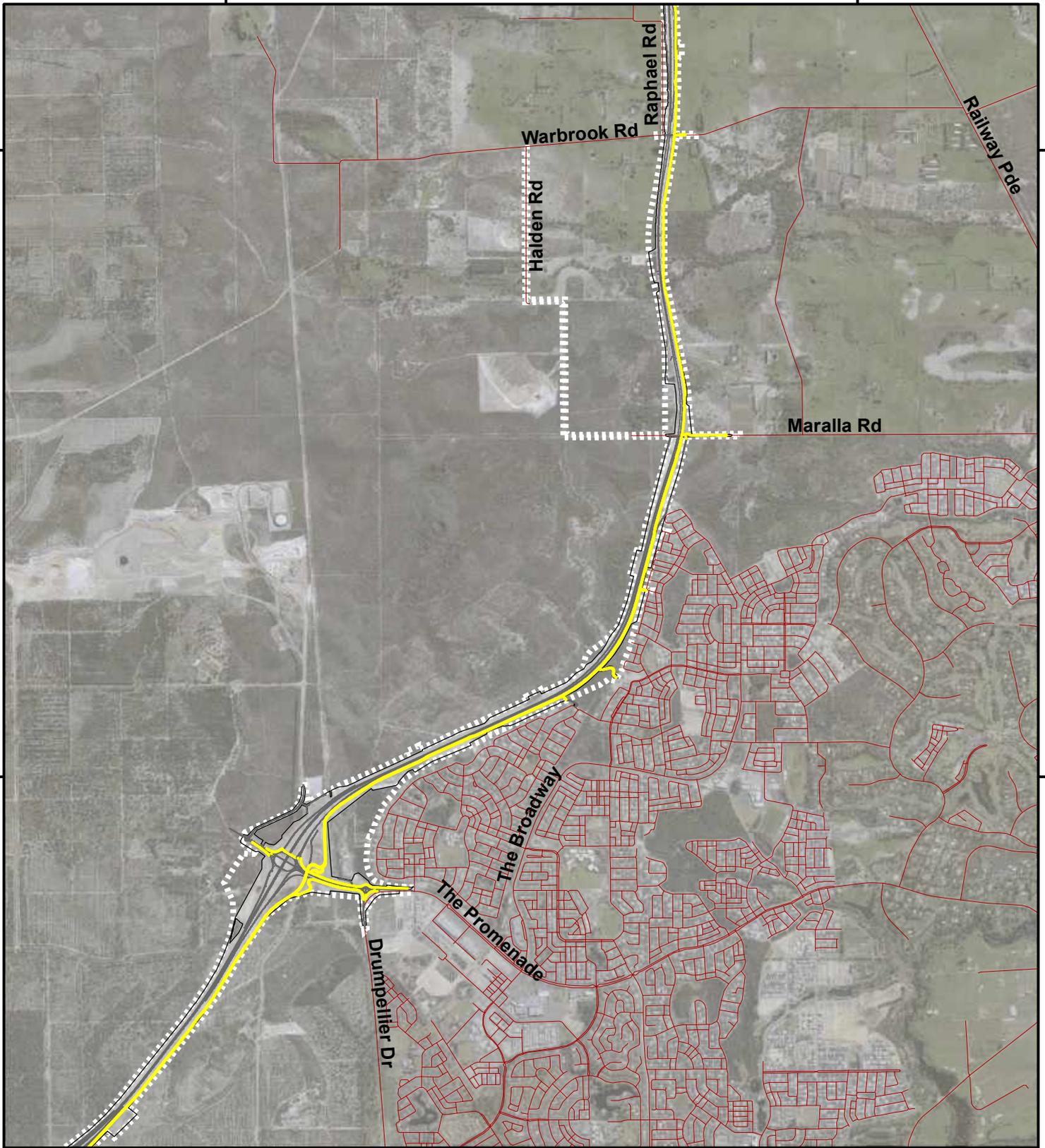
### Legend

|   |                          |   |                       |
|---|--------------------------|---|-----------------------|
|  | As Constructed Footprint |  | Road                  |
|  | Development Envelope     |  | Road Corridor         |
|   |                          |  | Principal Shared Path |



|   |   |   |
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| ACKNOWLEDGEMENT   |   |  |
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| REVIEWED  | DATE 3/08/2020  |   |
| APPROVED  | DATUM GDA 1994 MGA Zone 50  |   |
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 P:\C112-17 MRWAETS PANEL CONTRACT\BGE-PXXXX - PS\AsIGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Map\Report Maps\Figure 2 - Location of Road Corridor, principal shared path and road train assembly area - AsCon.mxd

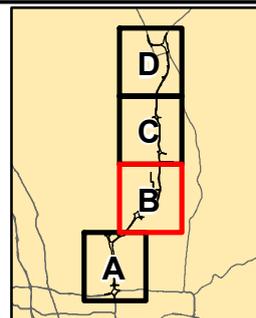


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### Legend

-  As Constructed Footprint
-  Development Envelope
-  Road
-  Road Corridor
-  Principal Shared Path



#### ACKNOWLEDGEMENT



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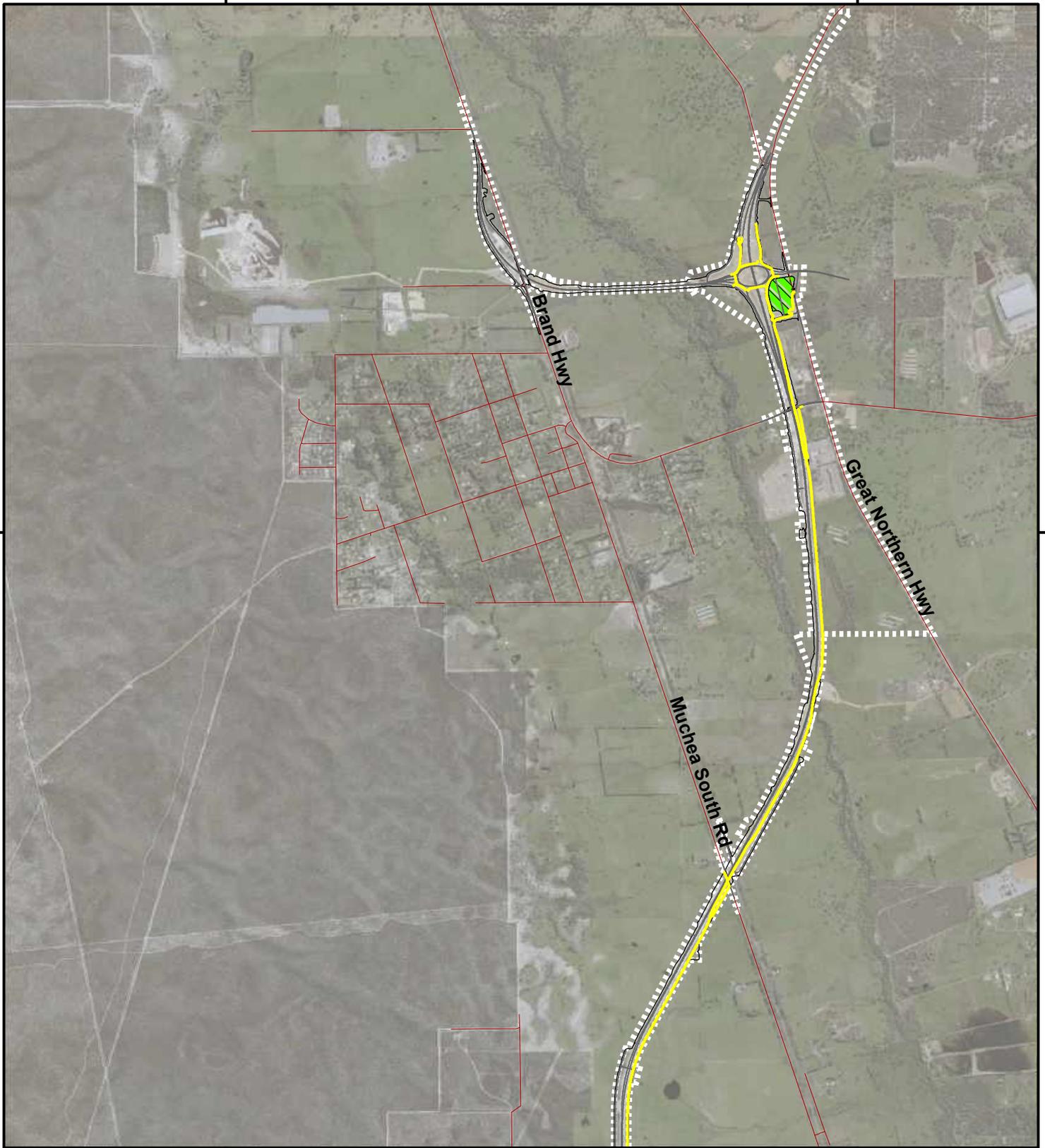
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 P:\C112-17 MRWA/ETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil & Water/GIS/Maps/Report Maps/Figure 2 - Location of Road Corridor, principal shared path and road train assembly area - AsCon.mxd





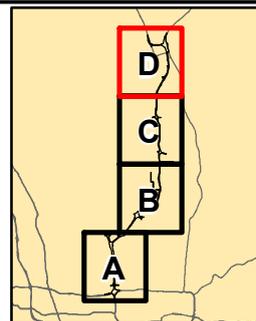
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### Legend

-  As Constructed Footprint
-  Road
-  Development Envelope
-  Road Corridor
-  Road Train Assembly Area
-  Principal Shared Path



#### ACKNOWLEDGEMENT



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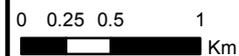
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 PIC112-17 MRWAETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil & Water/GIS/Maps/Report Maps/Figure 2 - Location of Road Corridor, principal shared path and road train assembly area - AsCon.mxd

### 3.2 Laydown Areas

All laydown areas were established within the permanent footprint of the works. No temporary laydown areas involving the clearing of native vegetation were constructed. No laydown areas were constructed within the wellhead protection zones in the Gngara Underground Water Pollution Control Area (GUWPCA).

### 3.3 Fauna Underpasses, Bridges and Fencing

Habitat (and fauna population) fragmentation has been managed through the installation of fauna underpasses and a fauna bridge. Dual use culverts have also been installed which allow for both cross-highway drainage as well as fauna movement under the highway. The as constructed bridge, underpass design, culvert design and locations are summarised in Table 4 and depicted in Figure 3. Dimensions given in Table 4 refer to the internal space available to fauna within the fauna underpass or bridge structure.

The as constructed fauna fence locations are depicted in Figure 3. All fauna fencing is 1,800 mm high and is returned from the boundary over the fauna underpasses to ensure continuous fence line. All fauna fencing has been supplied and installed in accordance with Australian Standard AS1725.

Table 5 summarises the as constructed designs against the proposed design in the Fauna – Construction – Condition Environmental Management Plan and the Infrastructure Plan – Perth – Darwin National Highway (Swan Valley Section), as required by condition 12 of the Ministerial Statement.

**Note:** *The proposed fauna underpass locations are consistent in both the Infrastructure Plan and the Condition Environmental Management Plan (Fauna – Construction), hence the comparisons described in the below apply to both the Infrastructure Plan and the CEMP Fauna – Construction plan.*

In general, the locations of design items as shown in figure 3 match the locations shown in the both the Fauna EMP and the PDNH Infrastructure Plan with the exception of:

- Ascon label 87 is a new dual use culvert;
- Ascon label 19.65 is a new dual use culvert;
- Whiteman Park 2 and 3 as labelled in the Fauna EMP and Infrastructure Plan are no longer required as the projects extents have changed since these documents were issued and;
- Table 5 shows there are changes in the lengths of culverts and bridges as a result of the design progression and refinement through the detailed design stage.

Table 4: Summary of as-constructed Fauna Underpass and Bridge Design and Locations

| Ascon label | Location               | Design           | Internal dimensions <sup>1</sup><br>(height x width) | Length<br>(opening to opening)<br>m | Comments  |
|-------------|------------------------|------------------|--|-------------------------------------|---|
| DU1         | Hepburn Avenue         | Dual Use Culvert | 1200x1200mm  | 194                                 | Under the Alignment   |
| DU2         | Cullacabardee Bushland | Dual Use Culvert | 1200x900mm   | 7                                   | Under the Alignment   |
| DU2.3       | Cullacabardee Bushland | Dual Use Culvert | 1200x900mm   | 22                                  | Under the Alignment   |
| DU2.5       | Cullacabardee Bushland | Dual Use Culvert | 1200x900mm   | 22                                  | Under the Alignment   |
| FU1         | Cullacabardee Bushland | Fauna Underpass  | 1200x1200mm  | 39                                  | Under the Alignment   |
| FU1.3       | Cullacabardee Bushland | Fauna Underpass  | 1200x1200mm  | 22                                  | Under the Alignment   |
| FU2         | Cullacabardee Bushland | Fauna Underpass  | 1200x1200mm  | 40                                  | Under the Alignment   |
| FU2.3       | Cullacabardee Bushland | Fauna Underpass  | 1200x900mm   | 24                                  | Under the Alignment   |
| FU3         | Cullacabardee Bushland | Fauna Underpass  | 1200x1200mm  | 28                                  | Under the Alignment   |
| FU3.3       | Cullacabardee Bushland | Fauna Underpass  | 1200x1200mm  | 40                                  | Under the Alignment   |
| 47          | Whiteman Park          | Box culvert      | 1200x1200mm  | 77                                  | Under the Alignment   |
| 50          | Ellenbrook             | Dual Use Culvert | 1200x600mm   | 83                                  | Under the Alignment   |
| 87          | Ellenbrook             | Dual Use Culvert | 600x600mm  | 17                                  | Under the Alignment   |
| 30          | Ellenbrook             | Dual Use Culvert | 1200x600mm   | 74                                  | Under the Alignment   |
| 1815        | Maralla Road Bushland  | Fauna Bridge     | 12m x 48m  | 48                                  | Bridge over alignment, 10m vegetated surface for fauna use only                                   |
| CT20.64     | Bullsbrook             | Dual Use Culvert | 1200x375mm   | 53                                  | Under the Alignment   |
| CT19.65     | Bullsbrook             | Dual Use Culvert | 2400x600mm   | 44                                  | Under the Alignment   |
| CT10.90     | Bullsbrook             | Dual Use Culvert | 450mm RCP  | 137                                 | Under the Alignment   |
| CT10.70     | Bullsbrook             | Dual Use Culvert | 1200x450mm   | 94                                  | Under the Alignment   |
| CT09.52     | Bullsbrook             | Dual Use Culvert | 1800x600mm   | 40                                  | Under the Alignment   |
| CD01.86     | Bullsbrook             | Dual Use Culvert | 1200x450mm   | 15                                  | Under the Alignment   |
| 1796        | Muchea                 | Bridge           | 32m x 62m  | 62                                  | Bridge over Ellen Brook, design allows fauna movement underneath during periods of low or no flow |
| CT01.41     | Muchea                 | Dual Use Culvert | 2400x60mm & 1200x600mm                               | 102                                 | Under the Alignment   |
| 1798        | Muchea                 | Bridge           | 30m x 45m  | 45                                  | Bridge over Ellen Brook, design allows fauna movement underneath during periods of low or no flow |

Notes: 1. Internal dimensions indicate headroom for enclosed spaces (e.g. fauna underpasses and dual use culverts) or available width for non-enclosed structures (e.g. bridges).

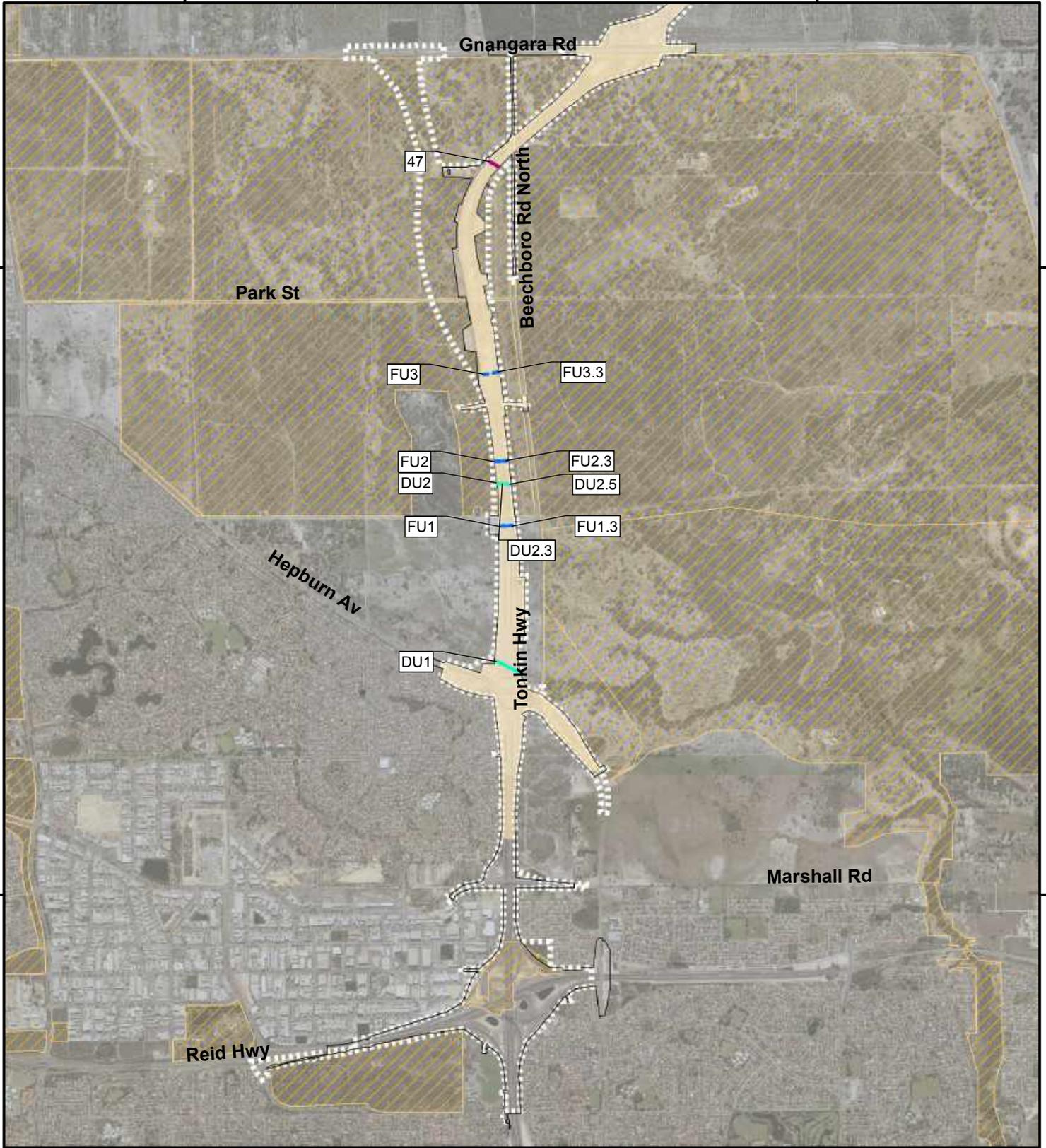
Table 5 Summary of as-constructed Fauna Underpass and Bridge Design against Infrastructure Plan / Fauna CEMP

| Ascon Label | Design           | Internal dimensions <sup>1</sup> (height x width) | Length (opening to opening) m | Infrastructure Plan/Fauna CEMP Label | Design   | Internal dimensions <sup>1</sup> (height x width) | Length (opening to opening) m |
|-------------|------------------|---|-------------------------------|--------------------------------------|--|---|-------------------------------|
| DU1         | Dual Use Culvert | 1200x1200mm                                       | 194                           | Hepburn Avenue                       | Dual use culvert   | 300 × 300mm                                       | Sections of 80m, 20m, 15m     |
| DU2         | Dual Use Culvert | 1200x900mm  | 7                             | Cullacabardee Bushland 2             | Dual use culvert   | 300 × 300mm                                       | 90                            |
| DU2.3       | Dual Use Culvert | 1200x900mm  | 22                            | Cullacabardee Bushland 2             | <b>Note: Cullacabardee Bushland 2 is a combination of DU2, DU2.3 and DU2.5</b> |   |                               |
| DU2.5       | Dual Use Culvert | 1200x900mm  | 22                            | Cullacabardee Bushland 2             |  |   |                               |
| FU1         | Fauna Underpass  | 1200x1200mm                                       | 39                            | Cullacabardee Bushland 1             | Box culvert  | 1200x1200mm                                       | 82                            |
| FU1.3       | Fauna Underpass  | 1200x1200mm                                       | 22                            | Cullacabardee Bushland 1             | <b>Note: Cullacabardee Bushland 1 is a combination of FU1 and FU1.3</b>        |   |                               |
| FU2         | Fauna Underpass  | 1200x1200mm                                       | 40                            | Cullacabardee Bushland 3             | Box culvert  | 1200x1200mm                                       | 80                            |
| FU2.3       | Fauna Underpass  | 1200x900mm  | 24                            | Cullacabardee Bushland 3             | <b>Note: Cullacabardee Bushland 3 is a combination of FU2 and FU2.3</b>        |   |                               |
| FU3         | Fauna Underpass  | 1200x1200mm                                       | 28                            | Cullacabardee Bushland 4             | Box culvert  | 1200x1200mm                                       | Sections of 65m, 50m          |
| FU3.3       | Fauna Underpass  | 1200x1200mm                                       | 40                            | Cullacabardee Bushland 4             | <b>Note: Cullacabardee Bushland 4 is a combination of FU3 and FU3.3</b>        |   |                               |
| 47          | Box culvert      | 1200x1200mm                                       | 77                            | Whiteman Park 1                      | Box culvert  | 1200x1200mm                                       | 60                            |
| 50          | Dual Use Culvert | 1200x600mm  | 83                            | Ellenbrook 1                         | Dual use culvert   | 300 × 300mm                                       | 65                            |
| 87          | Dual Use Culvert | 600x600mm   | 17                            | <b>NEW PIECE OF INFRASTRUCTURE</b>   |  |   |                               |
| 30          | Dual Use Culvert | 1200x600mm  | 74                            | Ellenbrook 2                         | Dual use culvert   | 300 × 300mm                                       | 65                            |
| 1815        | Fauna Bridge     | 12mx48m   | 48                            | Maralla Road Bushland                | Fauna Bridge   | Minimum 12m wide (10m wide fauna access)          | 50                            |
| CT20.64     | Dual Use Culvert | 1200x375mm  | 53                            | Bullsbrook 1                         | Dual use culvert   | 300 × 300mm                                       | Sections of 70m, 44m          |
| CT19.65     | Dual Use Culvert | 2400x600mm  | 44                            | <b>NEW PIECE OF INFRASTRUCTURE</b>   |  |   |                               |
| CT10.90     | Dual Use Culvert | 450mm RCP   | 137                           | Bullsbrook 2                         | Dual use culvert   | 300 × 300mm                                       | Sections of 85m, 50m          |

| Ascon Label  | Design           | Internal dimensions <sup>1</sup><br>(height x width) | Length<br>(opening to opening)<br>m | Infrastructure Plan/Fauna CEMP Label | Design  | Internal dimensions <sup>1</sup><br>(height x width) | Length<br>(opening to opening)<br>m |
|--|------------------|--|-------------------------------------|--------------------------------------|---|--|-------------------------------------|
| CT10.70  | Dual Use Culvert | 1200x450mm   | 94                                  | Bullsbrook 3                         | Dual use culvert  | 300 × 300mm  | 76                                  |
| CT09.52  | Dual Use Culvert | 1800x600mm   | 40                                  | Bullsbrook 4                         | Dual use culvert  | 300 × 300mm  | Sections of 44m, 12m                |
| CD01.86  | Dual Use Culvert | 1200x450mm   | 15                                  | Bullsbrook 4                         | <b>Note: Bullsbrook 4 is a combination of CT09.52 and CD01.86</b> |  |                                     |
| 1796   | Bridge           | 32mx62m  | 62                                  | Bullsbrook/Muchea                    | Bridge  | Unknown  | 78                                  |
| CT01.41  | Dual Use Culvert | 2400x60mm & 1200x600mm                               | 102                                 | Muchea 1                             | Dual use culvert  | 300 × 300mm  | 86                                  |
| 1798   | Bridge           | 30mx45m  | 45                                  | Muchea 2                             | Bridge  | Unknown  | 33                                  |
| <b>PROJECT EXTENT CHANGED<br/>– NO LONGER REQUIRED</b> |                  |  |                                     | <b>Whiteman Park 2</b>               |   |  |                                     |
| <b>PROJECT EXTENT CHANGED<br/>– NO LONGER REQUIRED</b> |                  |  |                                     | <b>Whiteman Park 3</b>               |   |  |                                     |

Notes:

- Internal dimensions indicate headroom for enclosed spaces (e.g. fauna underpasses and dual use culverts) or available width for non-enclosed structures (e.g. bridges).



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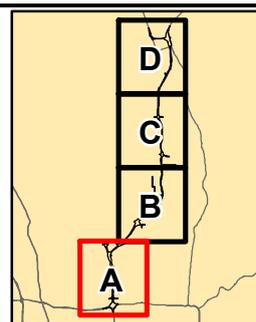
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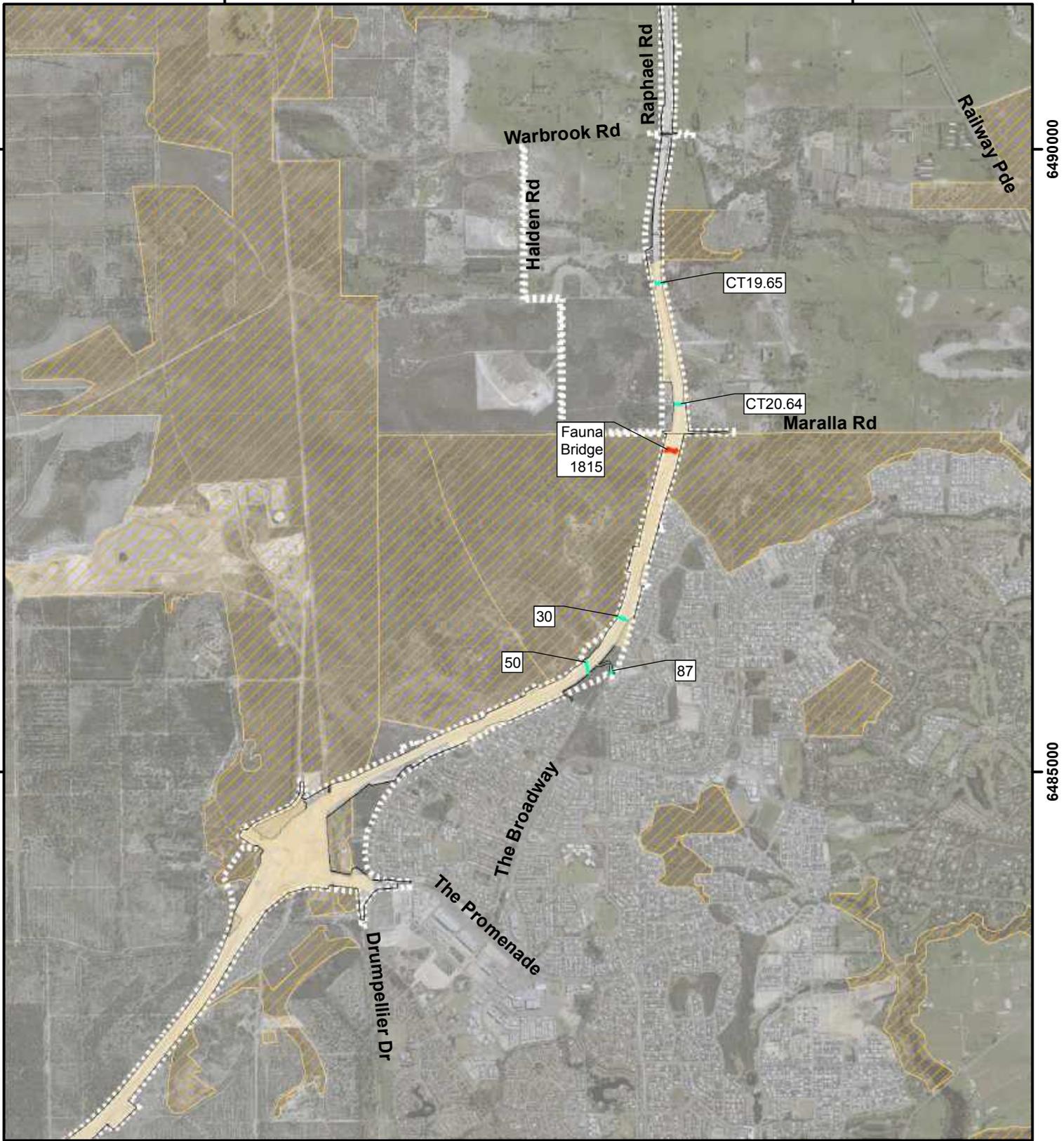
**Legend**

|  |   |                        |                        |
|--|---|------------------------|------------------------|
|  | As Constructed Footprint                        | <b>Fauna Underpass</b> |                        |
|  | Development Envelope                            |                        | Dual Use Culvert       |
|  | Bush Forever                                    |                        | Fauna Underpass        |
|  | Sections including fauna fencing (1,800mm high) |                        | Box culvert, 1200x1200 |



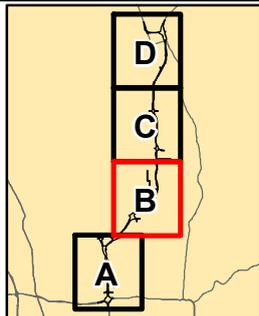
|                  |                            |  |
|------------------|----------------------------|--|
| ACKNOWLEDGEMENT  |                            |  |
|                  |                            |  |
| DRAWN AS         | PROJECT BGE-0104           |  |
| REVIEWED         | DATE 30/07/2020            |  |
| APPROVED         | DATUM GDA 1994 MGA Zone 50 |  |
| 1:42,500 (at A4) |                            |  |
| 0 0.25 0.5 1 Km  |                            |  |

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 P:\C112-17 MRWA ETS PANEL CONTRACT\BGE-PXXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Map\Report Maps\Figure 3 - Location of fauna underpasses, bridges and fencing - AsCon.mxd



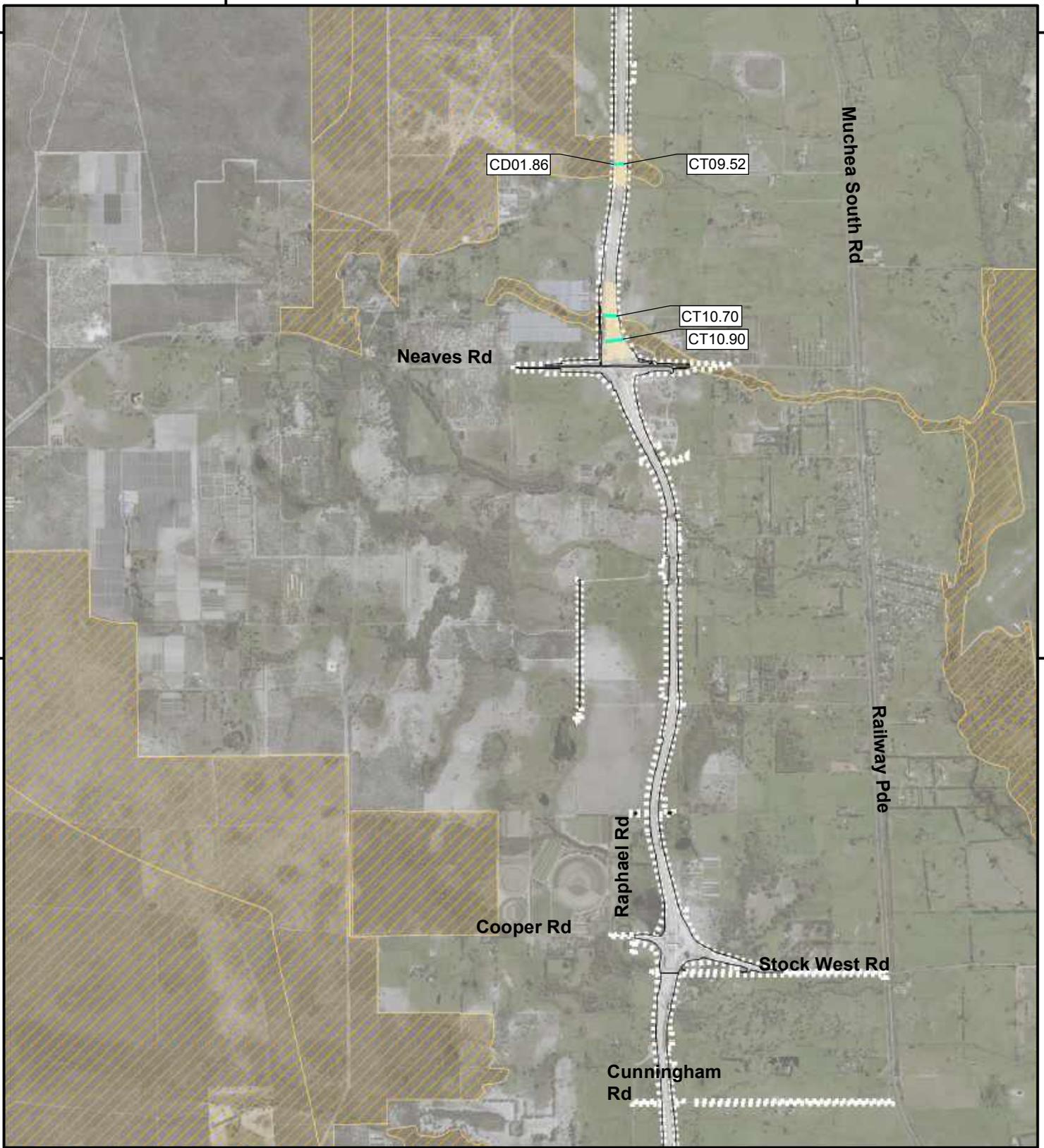
**Legend**

|  |   |                        |
|--|---|------------------------|
|  | As Constructed Footprint                        | <b>Fauna Underpass</b> |
|  | Development Envelope                            |                        |
|  | Bush Forever                                    |                        |
|  | Sections including fauna fencing (1,800mm high) |                        |
|  | Fauna Bridge                                    |                        |



|                  |                            |  |
|------------------|----------------------------|--|
| ACKNOWLEDGEMENT  |                            |  |
|                  |                            |  |
| DRAWN AS         | PROJECT BGE-0104           |  |
| REVIEWED         | DATE 30/07/2020            |  |
| APPROVED         | DATUM GDA 1994 MGA Zone 50 |  |
| 1:42,500 (at A4) |                            |  |
| 0 0.25 0.5 1 Km  |                            |  |

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 P:\C112-17 MRWA ETS PANEL CONTRACT\BGE-PXXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Map\Report Maps\Figure 3 - Location of fauna underpasses, bridges and fencing - AsCon.mxd



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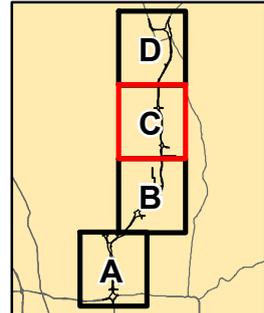
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**Legend**

|  |   |                        |
|--|---|------------------------|
|  | As Constructed Footprint                        | <b>Fauna Underpass</b> |
|  | Development Envelope                            |                        |
|  | Bush Forever                                    |                        |
|  | Sections including fauna fencing (1,800mm high) |                        |



|                  |                            |  |
|------------------|----------------------------|--|
| ACKNOWLEDGEMENT  |                            |  |
|                  |                            |  |
| DRAWN AS         | PROJECT BGE-0104           |  |
| REVIEWED         | DATE 30/07/2020            |  |
| APPROVED         | DATUM GDA 1994 MGA Zone 50 |  |
| 1:42,500 (at A4) |                            |  |
| 0 0.25 0.5 1 Km  |                            |  |

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 P:\C112-17 MRWA ETS PANEL CONTRACT\BGE-PXXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Map\Report Maps\Figure 3 - Location of fauna underpasses, bridges and fencing - AsCon.mxd



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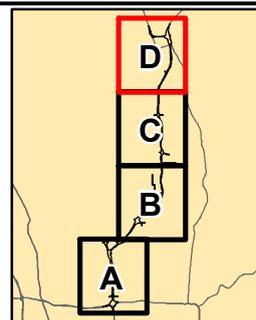
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**Legend**

- As Constructed Footprint
- Development Envelope
- Bush Forever
- Bridge
- Sections including fauna fencing (1,800mm high)

**Fauna Underpass**

- Dual Use Culvert

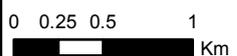


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|----------|----------------------------|
| DRAWN AS | PROJECT BGE-0104           |
| REVIEWED | DATE 30/07/2020            |
| APPROVED | DATUM GDA 1994 MGA Zone 50 |

1:42,500 (at A4)



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### 3.4 Culverts and Bridges

Culverts and bridges have been installed along the alignment in order to minimise impacts to hydrological regimes of surface water from the proposal.

The as constructed culvert design and locations are summarised in Table 6 and depicted in Figure 4. Most culverts are a box culvert design, and some provide for dual use; i.e. cross-highway drainage as well as the movement of fauna under the highway. Figure 4 demonstrates that all culverts and bridges have been constructed within the Development Envelope.

**Table 6: Summary of as-constructed Culvert Type and Locations**

| Culvert No. | Location                          | Type                             | Length (m) |
|-------------|-----------------------------------|----------------------------------|------------|
| E1.13       | Marshall Road                     | Culvert                          | 18         |
| A049        | Marshall Road                     | Culvert                          | 345        |
| 68          | Marshall Road                     | Culvert                          | 83         |
| DU1         | Hepburn Ave                       | Dual use drainage/ fauna culvert | 194        |
| FU1         | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 39         |
| FU1.3       | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 22         |
| DU2.5       | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 22         |
| DU2.3       | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 22         |
| DU2         | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 7          |
| FU2         | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 40         |
| FU2.3       | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 24         |
| FU3         | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 28         |
| FU3.3       | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 40         |
| 32          | Cullacarbardee Bushland           | Culvert                          | 65         |
| 30          | Cullacarbardee Bushland           | Dual use drainage/ fauna culvert | 12         |
| 33          | Whiteman Park                     | Culvert                          | 17         |
| 34          | Whiteman Park                     | Culvert                          | 35         |
| 35          | Whiteman Park                     | Culvert                          | 45         |
| 47          | Whiteman Park                     | Dual use drainage/ fauna culvert | 77         |
| 29          | Lexia                             | Culvert                          | 78         |
| 27          | Lexia                             | Culvert                          | 51         |
| 87          | Ellenbrook                        | Dual use drainage/ fauna culvert | 18         |
| 50          | Ellenbrook                        | Dual use drainage/ fauna culvert | 83         |
| 30          | Ellenbrook                        | Culvert                          | 74         |
| CT20.64     | North of Maralla Road, Bullsbrook | Dual use drainage/ fauna culvert | 53         |
| CT20.65     | North of Maralla Road, Bullsbrook | Culvert                          | 51         |
| CT20.29     | North of Maralla Road, Bullsbrook | Culvert                          | 42         |
| CP20.28     | North of Maralla Road, Bullsbrook | Culvert                          | 12         |
| CT19.78     | North of Maralla Road, Bullsbrook | Culvert                          | 32         |
| CT19.65     | North of Maralla Road, Bullsbrook | Dual use drainage/ fauna culvert | 44         |
| CP19.27     | North of Maralla Road, Bullsbrook | Culvert                          | 10         |
| CT19.27     | North of Maralla Road, Bullsbrook | Culvert                          | 41         |

| Culvert No. | Location                             | Type    | Length (m) |
|-------------|--------------------------------------|---------|------------|
| CP19.23     | North of Maralla Road, Bullsbrook    | Culvert | 8          |
| CT19.23     | North of Maralla Road, Bullsbrook    | Culvert | 40         |
| CT18.78     | South of Warbrook Road, Bullsbrook   | Culvert | 38         |
| CP18.78     | South of Warbrook Road, Bullsbrook   | Culvert | 7          |
| CP18.62     | South of Warbrook Road, Bullsbrook   | Culvert | 10         |
| CT18.62     | South of Warbrook Road, Bullsbrook   | Culvert | 50         |
| CP18.46     | Warbrook Road, Bullsbrook            | Culvert | 8          |
| CT18.46     | Warbrook Road, Bullsbrook            | Culvert | 48         |
| CP18.07     | North of Warbrook Road, Bullsbrook   | Culvert | 7          |
| CT18.05     | North of Warbrook Road, Bullsbrook   | Culvert | 65         |
| CT17.85A    | South of Cunningham Road, Bullsbrook | Culvert | 47         |
| CP17.85     | South of Cunningham Road, Bullsbrook | Culvert | 22         |
| CT17.76     | South of Cunningham Road, Bullsbrook | Culvert | 12         |
| CT17.75     | South of Cunningham Road, Bullsbrook | Culvert | 53         |
| CP17.75     | South of Cunningham Road, Bullsbrook | Culvert | 41         |
| CP17.56     | South of Cunningham Road, Bullsbrook | Culvert | 9          |
| CT17.53B    | South of Cunningham Road, Bullsbrook | Culvert | 22         |
| CT17.53A    | South of Cunningham Road, Bullsbrook | Culvert | 29         |
| CT17.51     | South of Cunningham Road, Bullsbrook | Culvert | 25         |
| CT17.45A    | South of Cunningham Road, Bullsbrook | Culvert | 16         |
| CT17.45B    | South of Cunningham Road, Bullsbrook | Culvert | 55         |
| CT17.45     | South of Cunningham Road, Bullsbrook | Culvert | 8          |
| CT17.44     | South of Cunningham Road, Bullsbrook | Culvert | 13         |
| CT17.34B    | South of Cunningham Road, Bullsbrook | Culvert | 71         |
| CP17.34     | South of Cunningham Road, Bullsbrook | Culvert | 8          |
| CT17.33     | South of Cunningham Road, Bullsbrook | Culvert | 16         |
| CT17.24     | South of Cunningham Road, Bullsbrook | Culvert | 65         |
| CP17.24     | South of Cunningham Road, Bullsbrook | Culvert | 10         |
| CC15.13     | Cunningham Road, Bullsbrook          | Culvert | 28         |
| CT16.84     | North of Cunningham Road, Bullsbrook | Culvert | 49         |
| CP16.84     | North of Cunningham Road, Bullsbrook | Culvert | 10         |
| CP16.57     | South of Stock Road, Bullsbrook      | Culvert | 8          |
| CT16.57     | South of Stock Road, Bullsbrook      | Culvert | 53         |
| CP16.30     | South of Stock Road, Bullsbrook      | Culvert | 13         |
| CT16.30     | South of Stock Road, Bullsbrook      | Culvert | 99         |
| CO00.01     | Stock Road, Bullsbrook               | Culvert | 22         |
| CO00.03     | Stock Road, Bullsbrook               | Culvert | 23         |
| CP16.00     | Stock Road, Bullsbrook               | Culvert | 12         |
| CS15.99     | Stock Road, Bullsbrook               | Culvert | 54         |
| CT15.87     | Stock Road, Bullsbrook               | Culvert | 85         |
| CS15.77     | Stock Road, Bullsbrook               | Culvert | 34         |

| Culvert No. | Location                                     | Type                             | Length (m) |
|-------------|--|----------------------------------|------------|
| CT15.03     | North of Stock Road, Bullsbrook              | Culvert                          | 43         |
| CP15.03     | North of Stock Road, Bullsbrook              | Culvert                          | 8          |
| CP14.75     | North of Stock Road, Bullsbrook              | Culvert                          | 8          |
| CT14.75     | North of Stock Road, Bullsbrook              | Culvert                          | 37         |
| CP14.58     | North of Stock Road, Bullsbrook              | Culvert                          | 10         |
| CP00.38     | West of PDNH, North of Stock Road Bullsbrook | Culvert                          | 9          |
| CP00.48     | West of PDNH, North of Stock Road Bullsbrook | Culvert                          | 11         |
| CP14.26     | North of Stock Road, Bullsbrook              | Culvert                          | 7          |
| CT14.26     | North of Stock Road, Bullsbrook              | Culvert                          | 40         |
| CP00.87     | West of PDNH, North of Stock Road Bullsbrook | Culvert                          | 12         |
| CG00.02     | North of Stock Road, Bullsbrook              | Culvert                          | 18         |
| CG00.09     | North of Stock Road, Bullsbrook              | Culvert                          | 11         |
| CG00.01     | North of Stock Road, Bullsbrook              | Culvert                          | 11         |
| CP01.12     | West of PDNH, North of Stock Road Bullsbrook | Culvert                          | 12         |
| CP13.72     | Bullsbrook                                   | Culvert                          | 9          |
| CT13.72     | Bullsbrook                                   | Culvert                          | 45         |
| CT13.18     | Bullsbrook                                   | Culvert                          | 34         |
| CP13.18     | Bullsbrook                                   | Culvert                          | 7          |
| CP01.97     | West of PDNH, North of Stock Road Bullsbrook | Culvert                          | 13         |
| CP12.90     | Bullsbrook                                   | Culvert                          | 11         |
| CT12.90     | Bullsbrook                                   | Culvert                          | 38         |
| CT12.74     | Bullsbrook                                   | Culvert                          | 41         |
| CP12.74     | Bullsbrook                                   | Culvert                          | 17         |
| CP12.37     | Bullsbrook                                   | Culvert                          | 16         |
| CT12.37     | Bullsbrook                                   | Culvert                          | 48         |
| CP11.90     | South of Neaves Road, Bullsbrook             | Culvert                          | 11         |
| CT11.90     | South of Neaves Road, Bullsbrook             | Culvert                          | 46         |
| CT11.80     | South of Neaves Road, Bullsbrook             | Culvert                          | 52         |
| CP11.80     | South of Neaves Road, Bullsbrook             | Culvert                          | 9          |
| CT11.47     | South of Neaves Road, Bullsbrook             | Culvert                          | 101        |
| CD00.01     | Neaves Road, Bullsbrook                      | Culvert                          | 18         |
| CT10.90     | North of Neaves Road, Bullsbrook             | Dual use drainage/ fauna culvert | 137        |
| CD00.65     | North of Neaves Road, Bullsbrook             | Culvert                          | 17         |
| CT10.70     | North of Neaves Road, Bullsbrook             | Dual use drainage/ fauna culvert | 94         |
| CP10.65     | North of Neaves Road, Bullsbrook             | Culvert                          | 8          |
| CD00.77     | North of Neaves Road, Bullsbrook             | Culvert                          | 14         |
| CP09.81     | West of Muchea South Road, Bullsbrook        | Culvert                          | 8          |
| CT09.81     | West of Muchea South Road, Bullsbrook        | Culvert                          | 35         |
| CD01.57     | West of Muchea South Road, Bullsbrook        | Culvert                          | 14         |
| CT09.70     | West of Muchea South Road, Bullsbrook        | Culvert                          | 36         |
| CD01.68     | West of Muchea South Road, Bullsbrook        | Culvert                          | 12         |

| Culvert No. | Location                              | Type                             | Length (m) |
|-------------|---------------------------------------|----------------------------------|------------|
| CP09.70     | West of Muchea South Road, Bullsbrook | Culvert                          | 11         |
| CD01.86     | West of Muchea South Road, Bullsbrook | Dual use drainage/ fauna culvert | 15         |
| CT09.52     | West of Muchea South Road, Bullsbrook | Dual use drainage/ fauna culvert | 40         |
| CP09.52     | West of Muchea South Road, Bullsbrook | Culvert                          | 10         |
| CD02.11     | West of Muchea South Road, Bullsbrook | Culvert                          | 16         |
| CT09.27     | West of Muchea South Road, Bullsbrook | Culvert                          | 35         |
| CP09.27     | West of Muchea South Road, Bullsbrook | Culvert                          | 7          |
| CP09.08     | West of Muchea South Road, Bullsbrook | Culvert                          | 10         |
| CT09.08     | West of Muchea South Road, Bullsbrook | Culvert                          | 40         |
| CD02.30     | West of Muchea South Road, Bullsbrook | Culvert                          | 17         |
| CP08.65     | West of Muchea South Road, Bullsbrook | Culvert                          | 10         |
| CT08.63     | West of Muchea South Road, Bullsbrook | Culvert                          | 43         |
| CD02.75     | West of Muchea South Road, Bullsbrook | Culvert                          | 18         |
| CD03.10     | West of Muchea South Road, Bullsbrook | Culvert                          | 16         |
| CT08.27     | West of Muchea South Road, Bullsbrook | Culvert                          | 42         |
| CP08.26     | West of Muchea South Road, Bullsbrook | Culvert                          | 12         |
| CD03.20     | West of Muchea South Road, Bullsbrook | Culvert                          | 16         |
| CD03.36     | West of Muchea South Road, Bullsbrook | Culvert                          | 13         |
| CP07.82     | West of Muchea South Road, Bullsbrook | Culvert                          | 7          |
| CT07.83     | West of Muchea South Road, Bullsbrook | Culvert                          | 53         |
| CD03.55     | West of Muchea South Road, Bullsbrook | Culvert                          | 14         |
| CP07.72     | West of Muchea South Road, Bullsbrook | Culvert                          | 8          |
| CP07.50     | West of Muchea South Road, Bullsbrook | Culvert                          | 7          |
| CT07.50     | West of Muchea South Road, Bullsbrook | Culvert                          | 42         |
| CT07.27     | West of Muchea South Road, Bullsbrook | Culvert                          | 38         |
| CP07.22     | West of Muchea South Road, Bullsbrook | Culvert                          | 12         |
| CT06.88     | West of Muchea South Road, Bullsbrook | Culvert                          | 36         |
| CP06.88     | West of Muchea South Road, Bullsbrook | Culvert                          | 7          |
| CT06.41     | West of Muchea South Road, Bullsbrook | Culvert                          | 42         |
| CP06.36     | West of Muchea South Road, Bullsbrook | Culvert                          | 14         |
| CP06.22     | West of Muchea South Road, Bullsbrook | Culvert                          | 6          |
| CT06.10     | West of Muchea South Road, Bullsbrook | Culvert                          | 95         |
| CX05.50     | East of Muchea South Road, Muchea     | Culvert                          | 12         |
| CT05.50     | East of Muchea South Road, Muchea     | Culvert                          | 68         |
| CP05.20     | East of Muchea South Road, Muchea     | Culvert                          | 8          |
| CT05.20     | East of Muchea South Road, Muchea     | Culvert                          | 38         |
| CX05.20     | East of Muchea South Road, Muchea     | Culvert                          | 16         |
| CP04.95     | East of Muchea South Road, Muchea     | Culvert                          | 10         |
| CX04.95     | East of Muchea South Road, Muchea     | Culvert                          | 14         |
| CT04.95     | East of Muchea South Road, Muchea     | Culvert                          | 49         |
| CP04.77     | East of Muchea South Road, Muchea     | Culvert                          | 8          |

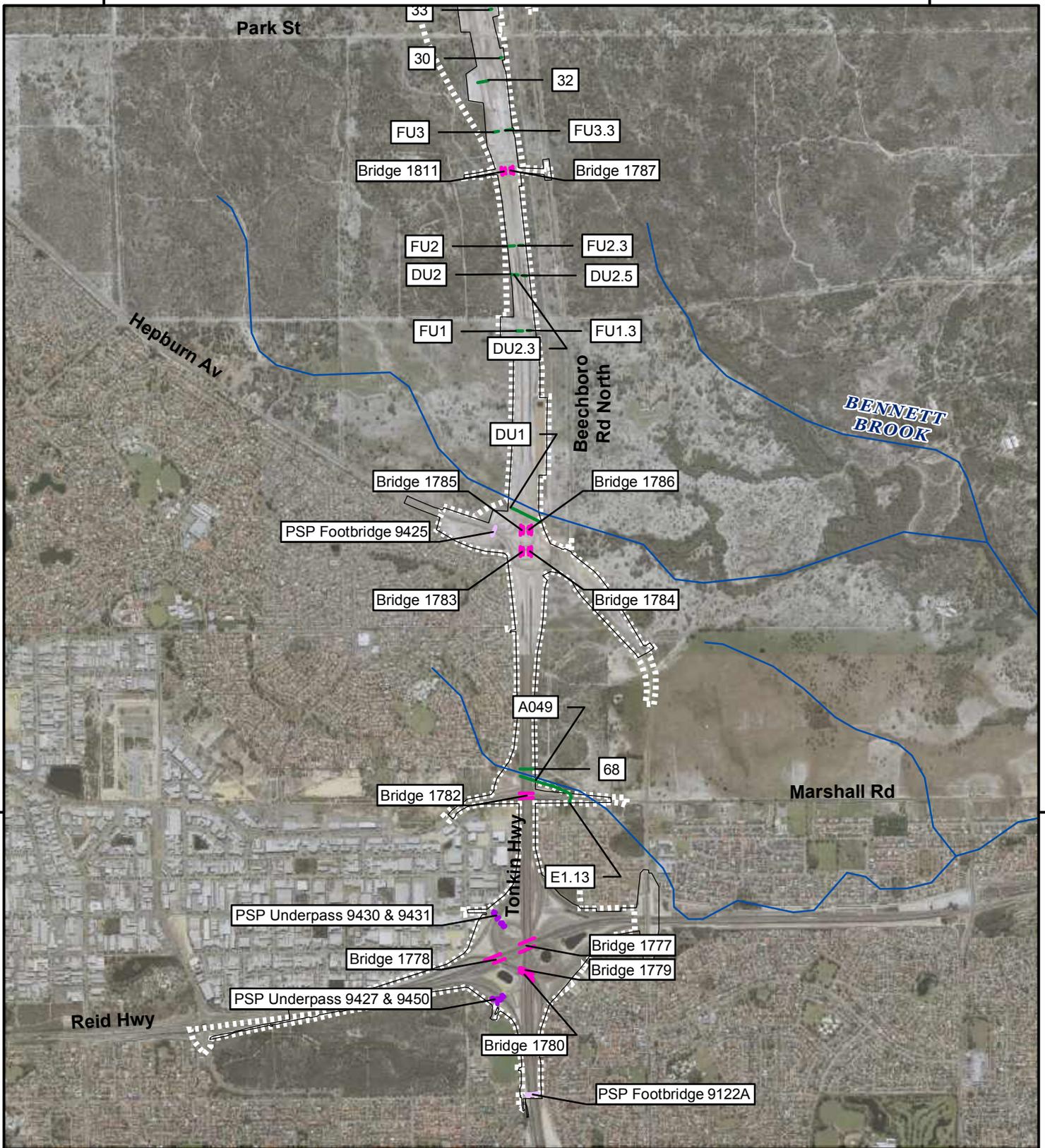
| Culvert No. | Location                          | Type                            | Length (m) |
|-------------|-----------------------------------|---------------------------------|------------|
| CT04.77     | East of Muchea South Road, Muchea | Culvert                         | 44         |
| CP04.65     | East of Muchea South Road, Muchea | Culvert                         | 12         |
| CT04.65     | East of Muchea South Road, Muchea | Culvert                         | 44         |
| CT04.56     | East of Muchea South Road, Muchea | Culvert                         | 56         |
| CP04.18     | East of Ellen Brook, Muchea       | Culvert                         | 7          |
| CT04.18     | East of Ellen Brook, Muchea       | Culvert                         | 45         |
| CP03.89     | East of Ellen Brook, Muchea       | Culvert                         | 10         |
| CT03.89     | East of Ellen Brook, Muchea       | Culvert                         | 53         |
| CT03.64     | East of Ellen Brook, Muchea       | Culvert                         | 43         |
| CP03.64     | East of Ellen Brook, Muchea       | Culvert                         | 7          |
| CT03.52     | East of Ellen Brook, Muchea       | Culvert                         | 36         |
| CP03.52     | East of Ellen Brook, Muchea       | Culvert                         | 7          |
| CT03.20     | East of Ellen Brook, Muchea       | Culvert                         | 38         |
| CP03.20     | East of Ellen Brook, Muchea       | Culvert                         | 10         |
| CT03.14     | East of Ellen Brook, Muchea       | Culvert                         | 41         |
| CP03.14     | East of Ellen Brook, Muchea       | Culvert                         | 12         |
| CT03.11     | East of Ellen Brook, Muchea       | Culvert                         | 43         |
| CP03.11     | East of Ellen Brook, Muchea       | Culvert                         | 8          |
| CT02.89     | East of Ellen Brook, Muchea       | Culvert                         | 35         |
| CP02.89     | East of Ellen Brook, Muchea       | Culvert                         | 8          |
| CA00.01     | East of Ellen Brook, Muchea       | Culvert                         | 5          |
| CT02.60     | East of Ellen Brook, Muchea       | Culvert                         | 47         |
| CP02.60     | East of Ellen Brook, Muchea       | Culvert                         | 13         |
| CX02.39     | East of Ellen Brook, Muchea       | Culvert                         | 22         |
| CT02.39     | East of Ellen Brook, Muchea       | Culvert                         | 89         |
| CX02.33     | Brand Hwy, Muchea                 | Culvert                         | 13         |
| CT02.28     | Brand Hwy, Muchea                 | Culvert                         | 112        |
| CT02.20     | Brand Hwy, Muchea                 | Culvert                         | 95         |
| WC02.12     | Brand Hwy, Muchea                 | Culvert                         | 99         |
| CT02.00     | Brand Hwy, Muchea                 | Culvert                         | 104        |
| CA00.59     | Muchea                            | Culvert                         | 5          |
| CT01.41     | Muchea                            | Dual use drainage/fauna culvert | 102        |
| CG00.11     | Muchea                            | Culvert                         | 26         |
| CB02.87     | Muchea                            | Culvert                         | 37         |
| CB02.33     | Muchea                            | Culvert                         | 38         |
| CB00.33     | Muchea                            | Culvert                         | 67         |
| CB02.03     | Muchea                            | Culvert                         | 47         |
| CB01.94     | Muchea                            | Culvert                         | 44         |
| CB03.42     | Muchea                            | Culvert                         | 26         |
| CB01.92     | Muchea                            | Culvert                         | 24         |
| CT00.97     | Muchea                            | Culvert                         | 90         |

| Culvert No. | Location | Type    | Length (m) |
|-------------|----------|---------|------------|
| CB00.89A    | Muchea   | Culvert | 23         |
| CB00.89B    | Muchea   | Culvert | 25         |
| CB00.09     | Muchea   | Culvert | 40         |
| CB00.78     | Muchea   | Culvert | 14         |
| CT00.69E    | Muchea   | Culvert | 17         |
| CT00.69     | Muchea   | Culvert | 20         |
| CT00.69B    | Muchea   | Culvert | 120        |
| CT00.69A    | Muchea   | Culvert | 26         |
| CB03.77     | Muchea   | Culvert | 43         |
| CT00.62     | Muchea   | Culvert | 14         |
| CB00.48     | Muchea   | Culvert | 24         |
| CT00.53A    | Muchea   | Culvert | 24         |
| CT00.53C    | Muchea   | Culvert | 22         |
| CT00.53B    | Muchea   | Culvert | 70         |
| CB03.97     | Muchea   | Culvert | 62         |
| CB00.28     | Muchea   | Culvert | 10         |
| CT00.28B    | Muchea   | Culvert | 22         |
| CT00.28A    | Muchea   | Culvert | 86         |
| CB04.16A    | Muchea   | Culvert | 39         |
| CB04.22     | Muchea   | Culvert | 34         |
| CB01.61     | Muchea   | Culvert | 15         |
| CB03.97     | Muchea   | Culvert | 62         |
| CB00.28     | Muchea   | Culvert | 10         |
| CT00.28B    | Muchea   | Culvert | 22         |

The bridge locations are summarised in Table 7 and depicted in Figure 4. The bridge design drawings can be found in Appendix A.

Table 7: Summary of as-constructed Bridge Locations and Dimensions

| Bridge No. | Location  | Type           | Width (m) | Length (m) |
|------------|---|----------------|-----------|------------|
| 9122A      | PSP Footbridge South of Reid Highway/Tonkin Highway interchange | Footbridge     | 5         | 90         |
| 1777       | Reid Highway/Tonkin Highway interchange                         | Traffic bridge | 50        | 82         |
| 1778       |   |                | 56        | 87         |
| 1779       |   |                | 10        | 74         |
| 1780       |   |                | 19        | 87         |
| 9427       | PSP underpasses at Reid Highway/Tonkin Highway interchange      | Underpass      | 10        | 17         |
| 9450       |   |                | 10        | 19         |
| 9430       |   |                | 10        | 14         |
| 9431       |   |                | 10        | 31         |
| 1782       | Marshall Road over PDNH   | Traffic bridge | 28        | 74         |
| 1783       | Hepburn Avenue over PDNH  | Traffic bridge | 16        | 26         |
| 1784       |   |                | 16        | 26         |
| 1785       |   |                | 16        | 25         |
| 1786       |   |                | 16        | 25         |
| 9425       | Hepburn Avenue west of PDNH                                     | Footbridge     | 4         | 60         |
| 1787       | PDNH over Baal Street   | Traffic bridge | 16        | 23         |
| 1811       | PDNH over Baal Street   | Traffic Bridge | 21        | 23         |
| 1788       | PDNH over Gngangara Road  | Traffic bridge | 68        | 120        |
| 9426       | Gngangara Road east of PDNH                                     | Footbridge     | 5         | 98         |
| 9443       | PSP underpass North of Gngangara Road                           | Underpass      | 10        | 80         |
| 1789       | The Promenade over PDNH   | Traffic bridge | 14        | 37         |
| 1790       |   |                | 10        | 37         |
| 9432       | PSP underpass at The Promenade                                  | Underpass      | 13        | 56         |
| 1815       | Maralla Road Bushland   | Fauna Bridge   | 12        | 48         |
| 1801       | PDNH over Stock Road  | Traffic bridge | 29        | 21         |
| 1802       |   |                | 27        | 21         |
| 9438       | Stock Road East of PDNH   | Underpass      | 10        | 46         |
| 1793       | PDNH over Neaves Road   | Traffic bridge | 27        | 20         |
| 1794       |   |                | 27        | 20         |
| 1795       | PDNH over Muchea South Road, railway and Almeria Parade         | Traffic bridge | 44        | 127        |
| 9437       | Neaves Road East of PDNH  | Footbridge     | 5         | 82         |
| 1796       | PDNH over Ellen Brook   | Traffic bridge | 32        | 62         |
| 1797       | PDNH over Brand Highway   | Traffic bridge | 36        | 32         |
| 1798       | Brand Highway Deviation over Ellen Brook                        | Traffic bridge | 30        | 45         |
| 1799       | Brand Highway Deviation over Brand Highway and the Railway      | Traffic bridge | 17        | 137        |
| 1803       | PDNH over Brand Highway Deviation                               | Traffic bridge | 27        | 22         |
| 1804       |   |                | 27        | 27         |



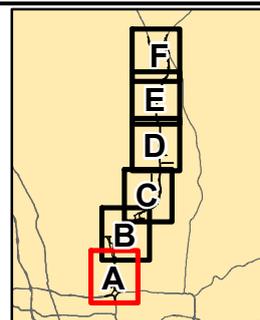
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**Legend**

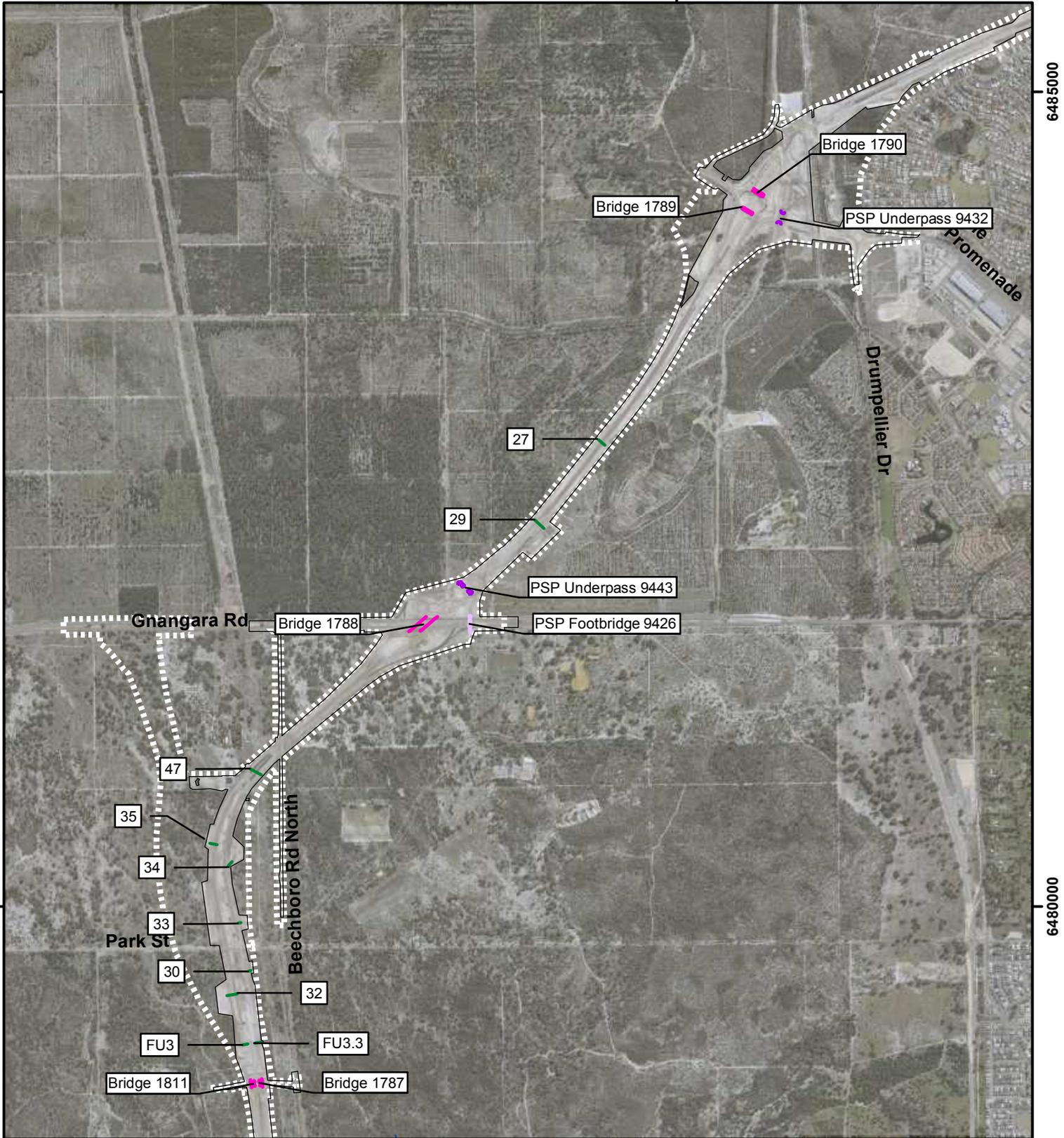
- Culvert
- Watercourse
- Traffic Bridge
- Development Envelope
- Footbridge
- As Constructed Footprint
- Underpass



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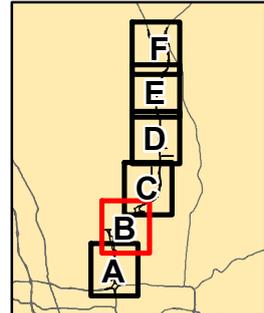
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### Legend

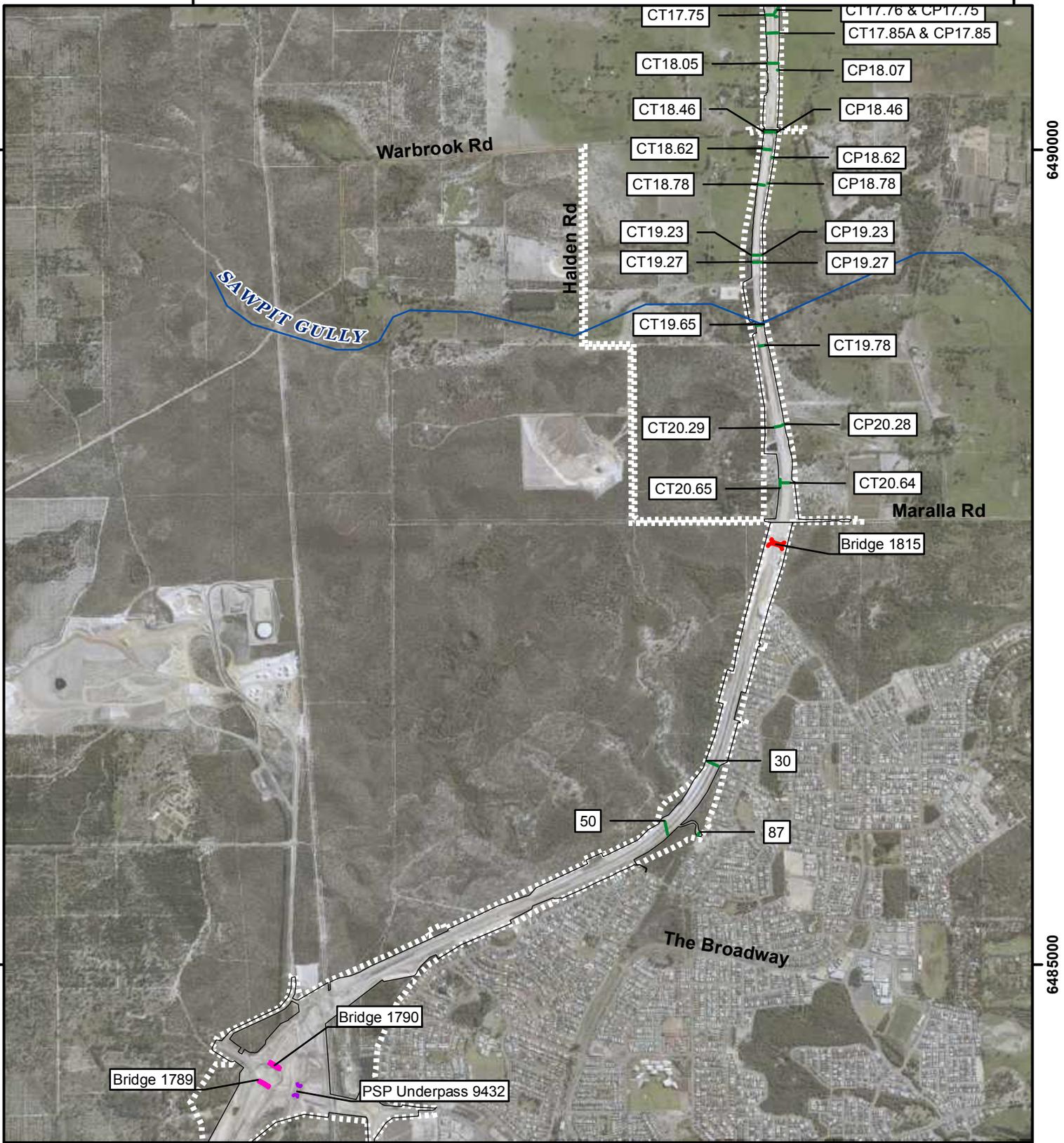
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|  Traffic Bridge |  Development Envelope     |
|  Footbridge     |  As Constructed Footprint |
|  Underpass      |  |



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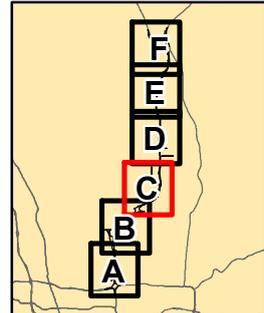
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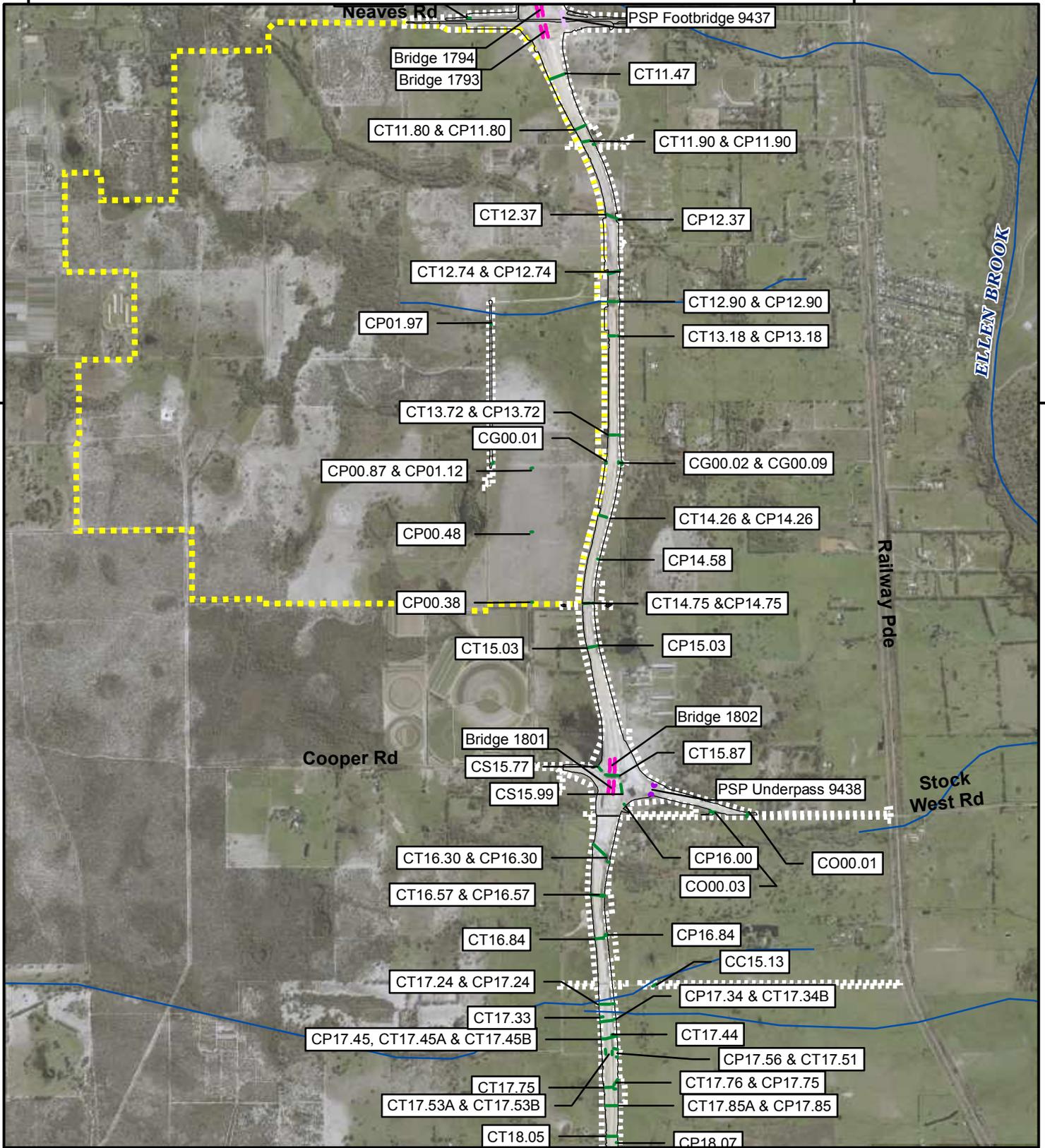
**Legend**

- Culvert
- Watercourse
- Traffic Bridge
- Underpass
- Fauna Bridge
- Development Envelope
- As Constructed Footprint



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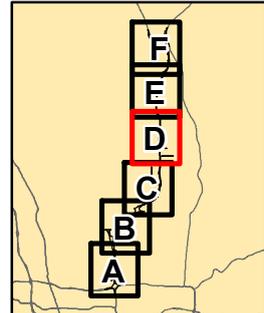


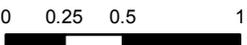
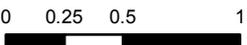
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### Legend

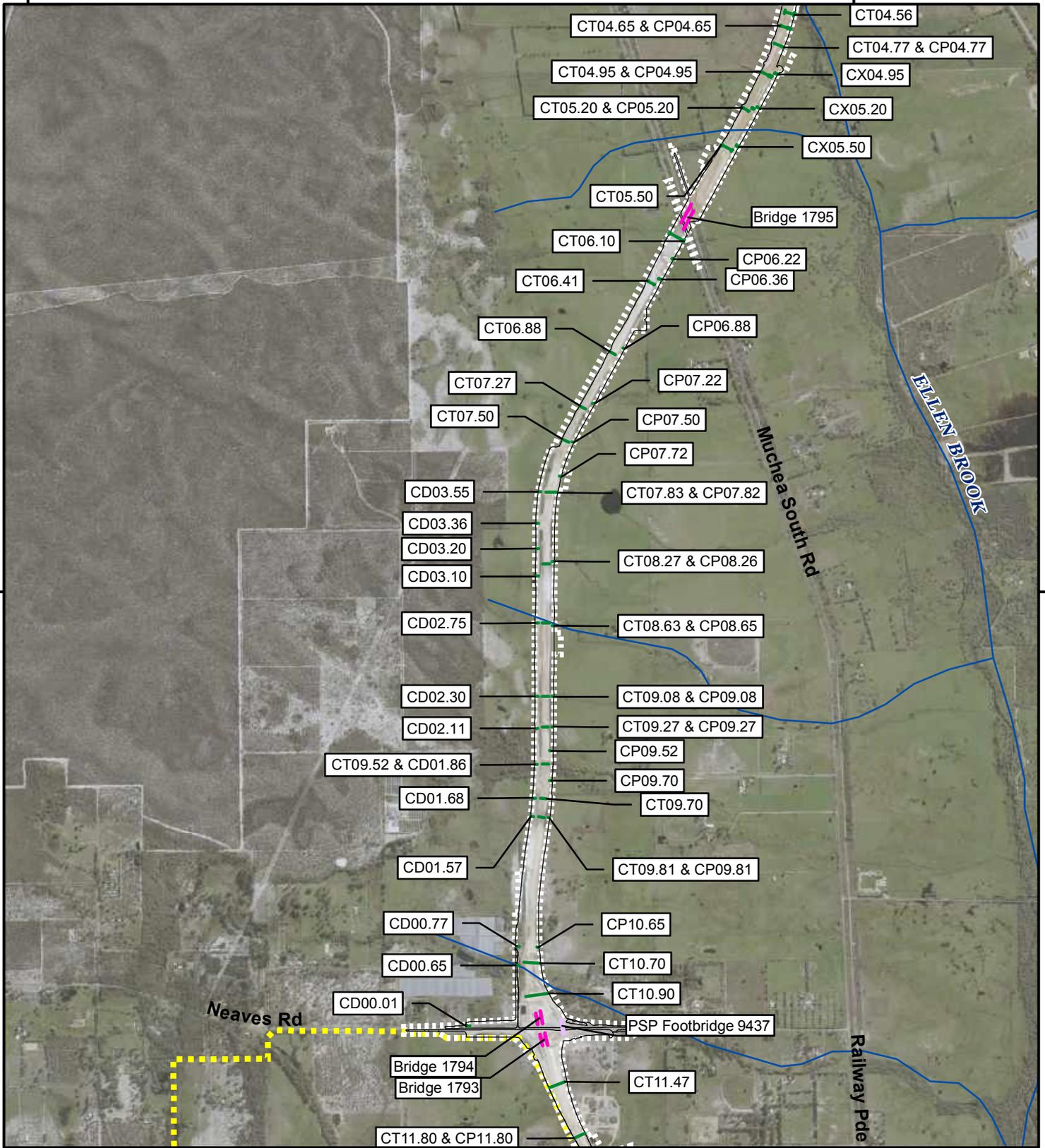
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|  Traffic Bridge |  Development Envelope     |
|  Footbridge     |  As Constructed Footprint |
|  Underpass      |  Commonwealth Land        |



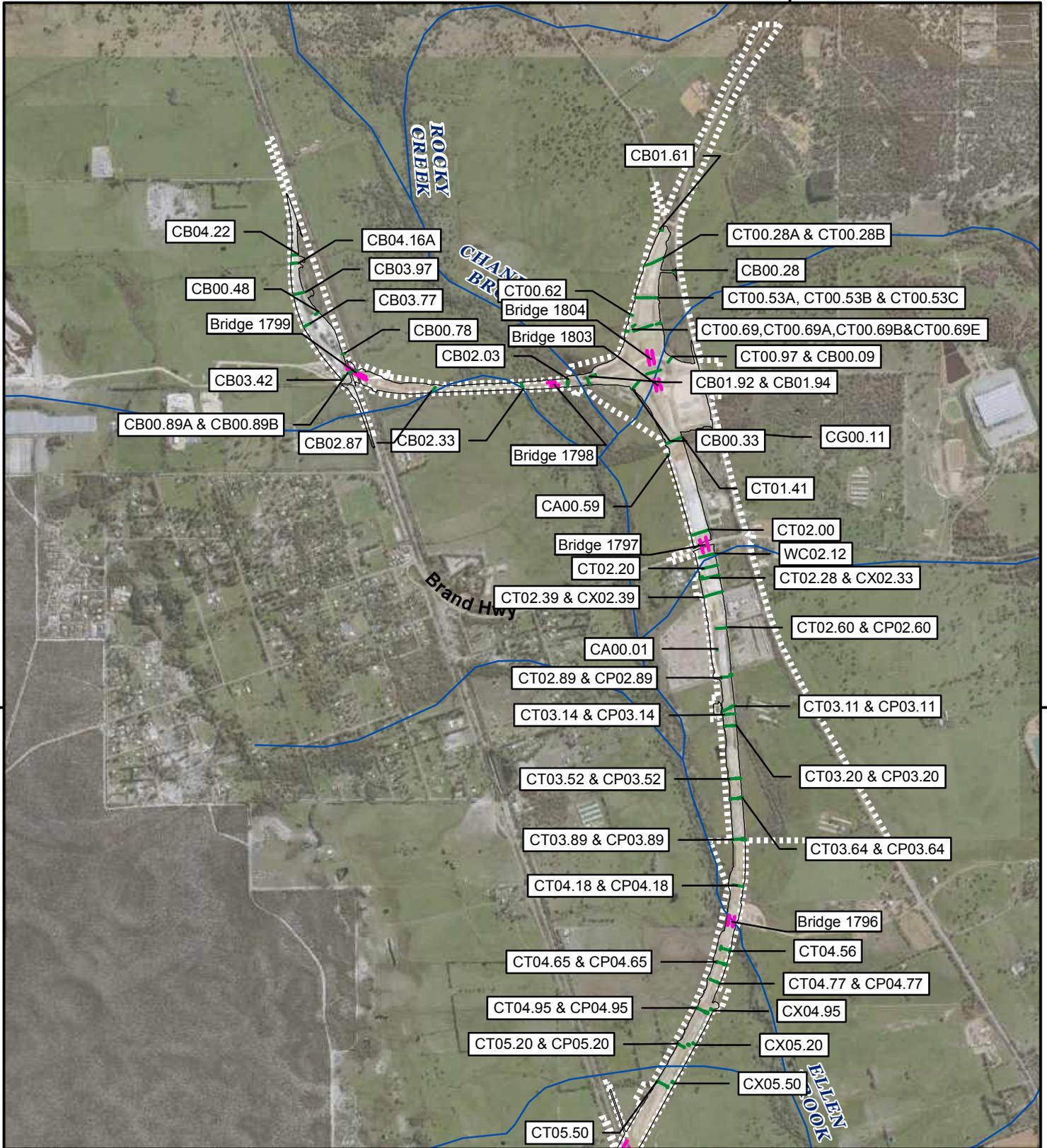
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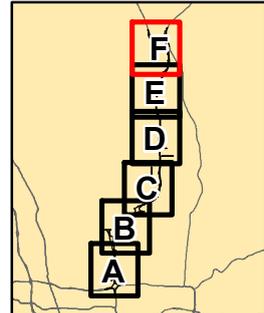


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|--|----------------------------|--|--|----------|------------------|----------|----------------|----------|
| <h3>Legend</h3> <ul style="list-style-type: none"> <li><span style="color: green;">—</span> Culvert</li> <li><span style="color: blue;">—</span> Watercourse</li> <li><span style="color: magenta;">—</span> Traffic Bridge</li> <li><span style="border: 1px dashed gray; padding: 2px;"> </span> Development Envelope</li> <li><span style="color: purple;">—</span> Footbridge</li> <li><span style="border: 1px solid gray; padding: 2px;"> </span> As Constructed Footprint</li> <li><span style="border: 2px dashed yellow; padding: 2px;"> </span> Commonwealth Land</li> </ul>   |                            |  | <b>ACKNOWLEDGEMENT</b><br>   |          |                  |          |                |          |
| <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p><small>PIC112-17 MRWA ETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil &amp; Water/GIS/Maps/Report Maps/Figure 4 - Location of culverts and bridges - AsCon.mxd</small></p> |                            |  | <table border="1"> <tr> <td>DRAWN AS</td> <td>PROJECT BGE-0104</td> </tr> <tr> <td>REVIEWED</td> <td>DATE 4/08/2020</td> </tr> <tr> <td>APPROVED</td> <td>DATUM GDA 1994 MGA Zone 50</td> </tr> </table> | DRAWN AS | PROJECT BGE-0104 | REVIEWED | DATE 4/08/2020 | APPROVED |
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| <p>1:32,500 (at A4)</p>  |                            |  |  |          |                  |          |                |          |



**Legend**

- Culvert
- Watercourse
- Traffic Bridge
- Development Envelope
- As Constructed Footprint



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### 3.5 Bio-retention Swales and Infiltration Basins

Bio-retention swales, bio-retention basins, infiltration and detention basins, have been installed along the alignment in order to minimise impacts from the proposal to the quality of groundwater and surface water within the vicinity of Ellen Brook and within the GUWPCA.

Table 8 and Figure 5 show the location of all types of swales and basins in the vicinity of Ellen Brook and within the GUWPCA.

**Note: the basin and swale locations are consistent between the Infrastructure Plan and the Condition Environmental Management Plan – Inland Waters Environmental Quality (Hydrological Processes).**

Table 8 shows the as-constructed basin and swale dimensions. All swale and basin locations as proposed in the Infrastructure Plan / CEMP have been constructed along the alignment. In addition to this, there has been a significant amount of drainage features constructed along the alignment.

**Table 8: Summary of as-constructed Basins and Swales**

| Basin/ Swale No. | Location                | Type                | Area (m <sup>2</sup> ) | Length (m) |
|------------------|-------------------------|---------------------|------------------------|------------|
| S01              | Ballajura               | Bio Retention Swale |                        | 100        |
| BASIN HB06       | Ballajura               | Detention Basin     | 2324                   |            |
| S02              | Ballajura               | Bio Retention Swale |                        | 250        |
| BASIN BEECH 1    | Ballajura               | Detention Basin     | 587                    |            |
| S03              | Ballajura               | Bio Retention Bund  |                        | 5          |
| BASIN HB12       | Ballajura               | Detention Basin     | 210                    |            |
| S04              | Ballajura               | Bio Retention Swale |                        | 266        |
| BASIN HB12A      | Ballajura               | Detention Basin     | 1703                   |            |
| S05              | Ballajura               | Bio Retention Bund  |                        | 20         |
| S06              | Ballajura               | Bio Retention Bund  |                        | 152        |
| BASIN HB07       | Ballajura               | Detention Basin     | 2210                   |            |
| S07              | Ballajura               | Bio Retention Bund  |                        | 30         |
| BASIN HB09       | Ballajura               | Detention Basin     | 10213                  |            |
| S08              | Ballajura               | Bio Retention Bund  |                        | 39         |
| S09              | Ballajura               | Bio Retention Bund  |                        | 44         |
| BASIN HB11       | Ballajura               | Detention Basin     | 1433                   |            |
| BASIN HB10       | Hepburn Ave Interchange | Detention Basin     | 3713                   |            |
| BASIN HB08       | Hepburn Ave Interchange | Detention Basin     | 5990                   |            |
| BASIN HB26       | Hepburn Ave Interchange | Detention Basin     | 429                    |            |
| BASIN HB14       | Hepburn Ave Interchange | Detention Basin     | 2211                   |            |
| BASIN HB13       | Hepburn Ave Interchange | Detention Basin     | 1632                   |            |
| BASIN HB25       | Hepburn Ave Interchange | Detention Basin     | 3686                   |            |
| BASIN HB19       | Hepburn Ave Interchange | Detention Basin     | 334                    |            |
| BASIN HB20       | Hepburn Ave Interchange | Detention Basin     | 597                    |            |
| BASIN HB24       | Hepburn Ave Interchange | Detention Basin     | 1792                   |            |
| BASIN HB18       | Hepburn Ave Interchange | Detention Basin     | 2125                   |            |
| BASIN HEP5       | Hepburn Ave Interchange | Detention Basin     | 2456                   |            |
| BASIN HEP1       | Ballajura               | Detention Basin     | 14120                  |            |

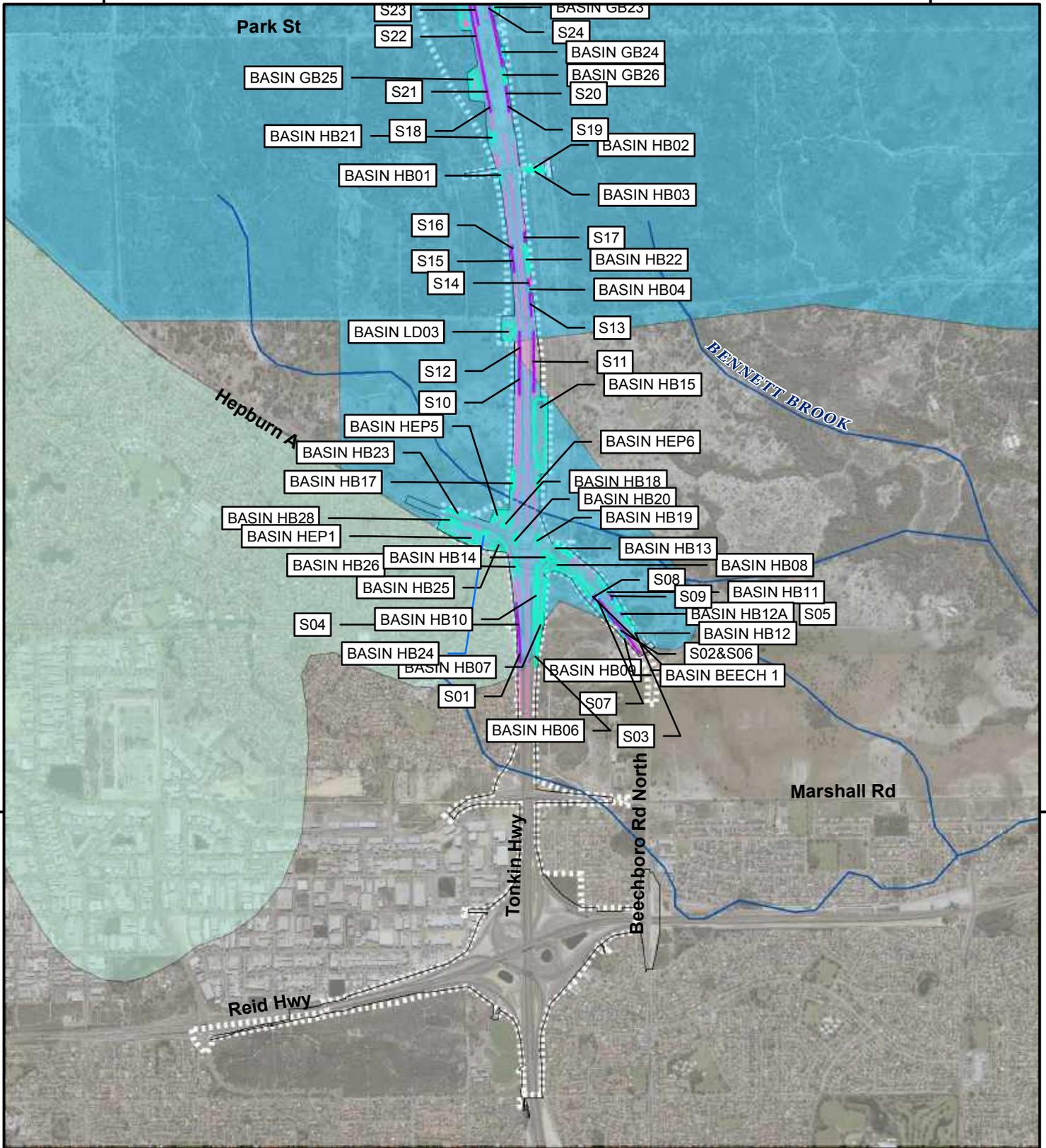
| Basin/ Swale No.          | Location    | Type                | Area (m <sup>2</sup> ) | Length (m) |
|---------------------------|-------------|---------------------|------------------------|------------|
| BASIN HB28                | Ballajura   | Detention Basin     | 445                    |            |
| BASIN HB23                | Ballajura   | Detention Basin     | 646                    |            |
| BASIN HEP6                | Cullabardee | Detention Basin     | 650                    |            |
| BASIN HB17                | Cullabardee | Detention Basin     | 1215                   |            |
| BASIN HB15                | Cullabardee | Detention Basin     | 26099                  |            |
| S10                       | Cullabardee | Bio Retention Swale |                        | 185        |
| S11                       | Cullabardee | Bio Retention Swale |                        | 364        |
| S12                       | Cullabardee | Bio Retention Swale |                        | 197        |
| BASIN LD03                | Cullabardee | Detention Basin     | 5929                   |            |
| S13                       | Cullabardee | Bio Retention Swale |                        | 145        |
| BASIN HB04                | Cullabardee | Detention Basin     | 186                    |            |
| S14                       | Cullabardee | Bio Retention Swale |                        | 43         |
| S15                       | Cullabardee | Bio Retention Swale |                        | 137        |
| BASIN HB22                | Cullabardee | Detention Basin     | 887                    |            |
| S16                       | Cullabardee | Bio Retention Swale |                        | 28         |
| S17                       | Cullabardee | Bio Retention Swale |                        | 62         |
| BASIN HB01                | Cullabardee | Detention Basin     | 109                    |            |
| BASIN HB03                | Cullabardee | Detention Basin     | 302                    |            |
| BASIN HB02                | Cullabardee | Detention Basin     | 346                    |            |
| BASIN HB21                | Cullabardee | Detention Basin     | 1180                   |            |
| S18                       | Whiteman    | Bio Retention Swale |                        | 55         |
| S19                       | Whiteman    | Bio Retention Swale |                        | 69         |
| S20                       | Whiteman    | Bio Retention Swale |                        | 91         |
| S21                       | Whiteman    | Bio Retention Swale |                        | 140        |
| BASIN GB25                | Whiteman    | Detention Basin     | 7250                   |            |
| BASIN GB26                | Whiteman    | Detention Basin     | 674                    |            |
| BASIN GB24                | Whiteman    | Detention Basin     | 355                    |            |
| S22                       | Whiteman    | Bio Retention Swale |                        | 546        |
| S23                       | Whiteman    | Bio Retention Swale |                        | 187        |
| S24                       | Whiteman    | Bio Retention Swale |                        | 718        |
| BASIN GB23                | Whiteman    | Detention Basin     | 1244                   |            |
| BASIN GB22                | Whiteman    | Detention Basin     | 17480                  |            |
| S25                       | Whiteman    | Bio Retention Swale |                        | 246        |
| BASIN GB21                | Whiteman    | Detention Basin     | 4202                   |            |
| BASIN GB20                | Whiteman    | Detention Basin     | 790                    |            |
| LANDSCAPE DEPRESSION LD01 | Whiteman    | Detention Basin     | 11206                  |            |
| BASIN GB19                | Whiteman    | Detention Basin     | 1584                   |            |
| BASIN GB18                | Whiteman    | Detention Basin     | 1568                   |            |
| BASIN GB16                | Whiteman    | Detention Basin     | 4119                   |            |
| BASIN GB17                | Whiteman    | Detention Basin     | 555                    |            |
| S26                       | Whiteman    | Bio Retention Swale |                        | 134        |

| Basin/ Swale No.           | Location                        | Type                | Area (m <sup>2</sup> ) | Length (m) |
|----------------------------|---------------------------------|---------------------|------------------------|------------|
| S27                        | Whiteman                        | Bio Retention Swale |                        | 141        |
| S28                        | Whiteman                        | Bio Retention Swale |                        | 200        |
| BASIN GB15                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 643                    |            |
| BASIN GB12                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 3256                   |            |
| BASIN GB10                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 1027                   |            |
| BASIN GB14                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 745                    |            |
| BASIN GB11                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 2491                   |            |
| BASIN GB13                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 61                     |            |
| BASIN GB06                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 201                    |            |
| BASIN GB09                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 933                    |            |
| BASIN GB08                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 4080                   |            |
| BASIN GB05                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 5398                   |            |
| BASIN GB07                 | Lexia/Gnangara Rd Interchange   | Detention Basin     | 2131                   |            |
| COMBINED BASIN GB02 & GB04 | Lexia                           | Detention Basin     | 6314                   |            |
| BASIN GB03                 | Lexia                           | Detention Basin     | 15821                  |            |
| BASIN GB01                 | Lexia                           | Detention Basin     | 2293                   |            |
| BASIN PR29                 | Lexia                           | Detention Basin     | 415                    |            |
| BASIN PR30                 | Lexia                           | Detention Basin     | 408                    |            |
| S29                        | Lexia                           | Bio Retention Bund  |                        | 7          |
| S30                        | Lexia                           | Bio Retention Bund  |                        | 92         |
| S31                        | Lexia                           | Bio Retention Bund  |                        | 134        |
| BASIN PR28                 | Lexia                           | Detention Basin     | 1164                   |            |
| BASIN PR27                 | Lexia                           | Detention Basin     | 999                    |            |
| S32                        | Lexia                           | Bio Retention Swale |                        | 36         |
| S33                        | Lexia                           | Bio Retention Swale |                        | 350        |
| S34                        | Lexia                           | Bio Retention Swale |                        | 514        |
| S35                        | Lexia                           | Bio Retention Bund  |                        | 117        |
| BASIN PR26                 | Lexia                           |                     | 1466                   |            |
| S36                        | Lexia                           | Bio Retention Swale |                        | 0          |
| S37                        | Lexia                           | Bio Retention Swale |                        | 98         |
| S38                        | Lexia                           | Bio Retention Swale |                        | 13         |
| S39                        | Lexia                           | Bio Retention Swale |                        | 60         |
| BASIN PR25                 | Lexia/The Promenade Interchange | Detention Basin     | 439                    |            |
| S40                        | Lexia/The Promenade Interchange | Bio Retention Bund  |                        | 62         |
| BASIN PR24                 | Lexia/The Promenade Interchange | Detention Basin     | 1433                   |            |
| BASIN PR23                 | Lexia/The Promenade Interchange | Detention Basin     | 10931                  |            |
| BASIN PR17                 | Lexia/The Promenade Interchange | Detention Basin     | 1439                   |            |
| BASIN PR18                 | Lexia/The Promenade Interchange | Detention Basin     | 557                    |            |
| BASIN PR21                 | Lexia/The Promenade Interchange | Detention Basin     | 4613                   |            |
| BASIN PR22                 | Lexia/The Promenade Interchange | Detention Basin     | 1957                   |            |
| BASIN PR20                 | Lexia/The Promenade Interchange | Detention Basin     | 1531                   |            |

| Basin/ Swale No.              | Location                        | Type               | Area (m <sup>2</sup> ) | Length (m) |
|-------------------------------|---------------------------------|--------------------|------------------------|------------|
| BASIN PR19                    | Lexia/The Promenade Interchange | Detention Basin    | 5841                   |            |
| BASIN PR16                    | Lexia/The Promenade Interchange | Detention Basin    | 889                    |            |
| BASIN PR15                    | Lexia/The Promenade Interchange | Detention Basin    | 1005                   |            |
| BASIN PR11                    | Lexia/The Promenade Interchange | Detention Basin    | 2768                   |            |
| S41                           | Lexia/The Promenade Interchange | Bio Retention Bund |                        | 8          |
| COMBINED BASIN PR09 & PR12    | Lexia/The Promenade Interchange | Detention Basin    | 9490                   |            |
| BASIN PR14                    | Lexia/The Promenade Interchange | Detention Basin    | 1184                   |            |
| BASIN PR13                    | Lexia/The Promenade Interchange | Detention Basin    | 890                    |            |
| BASIN PR10                    | Lexia/The Promenade Interchange | Detention Basin    | 2576                   |            |
| BASIN PR08                    | Ellenbrook                      | Detention Basin    | 7440                   |            |
| BASIN PR07                    | Ellenbrook                      | Detention Basin    | 2230                   |            |
| BASIN PR05                    | Ellenbrook                      | Detention Basin    | 3415                   |            |
| BASIN PR06                    | Ellenbrook                      | Detention Basin    | 3242                   |            |
| BASIN PR04                    | Ellenbrook                      | Detention Basin    | 3318                   |            |
| BASIN PR03                    | Ellenbrook                      | Detention Basin    | 5053                   |            |
| BASIN PR02                    | Ellenbrook                      | Detention Basin    | 2022                   |            |
| BASIN PR01                    | Ellenbrook                      | Detention Basin    | 1331                   |            |
| BASIN PR31                    | Ellenbrook                      | Detention Basin    | 4603                   |            |
| BASIN PR32                    | Bullsbrook                      | Detention Basin    | 1295                   |            |
| Infiltration Basin-N0-N-20.41 | Bullsbrook                      | Infiltration Basin | 2448                   |            |
| Bioretention Basin N0-N-20.32 | Bullsbrook                      | Bioretention Basin | 194                    |            |
| Bioretention Basin S0-S-20.32 | Bullsbrook                      | Bioretention Basin | 108                    |            |
| Infiltration Basin-N0-N-20.25 | Bullsbrook                      | Infiltration Basin | 122                    |            |
| Bioretention Basin S0-S-20.25 | Bullsbrook                      | Bioretention Basin | 166                    |            |
| Infiltration Basin-N0-N-20.20 | Bullsbrook                      | Infiltration Basin | 412                    |            |
| Infiltration Basin-N0-N-20.10 | Bullsbrook                      | Infiltration Basin | 1294                   |            |
| Infiltration Basin-N0-N-19.77 | Bullsbrook                      | Infiltration Basin | 1380                   |            |
| Bioretention Basin N0-N-19.70 | Bullsbrook                      | Bioretention Basin | 201                    |            |
| Bioretention Basin N0-N-19.62 | Bullsbrook                      | Bioretention Basin | 216                    |            |
| Infiltration Basin-N0-N-19.50 | Bullsbrook                      | Infiltration Basin | 5062                   |            |
| Infiltration Basin-S0-S-19.50 | Bullsbrook                      | Infiltration Basin | 681                    |            |
| Bioretention Basin S0-S-19.30 | Bullsbrook                      | Bioretention Basin | 177                    |            |
| Bioretention Basin N0-N-19.35 | Bullsbrook                      | Bioretention Basin | 127                    |            |
| Bioretention Basin N0-N-19.25 | Bullsbrook                      | Bioretention Basin | 220                    |            |
| Bioretention Basin N0-N-19.25 | Bullsbrook                      | Bioretention Basin | 246                    |            |
| Bioretention Basin S0-S-19.20 | Bullsbrook                      | Bioretention Basin | 490                    |            |
| Bioretention Basin N0-N-19.15 | Bullsbrook                      | Bioretention Basin | 554                    |            |
| Detention Basin S0-S-18.85    | Bullsbrook                      | Detention Basin    | 589                    |            |
| Detention Basin N0-N-18.90    | Bullsbrook                      | Detention Basin    | 494                    |            |
| Detention Basin S0-S-10.70    | Bullsbrook                      | Detention Basin    | 251                    |            |
| Detention Basin N0-N-18.70    | Bullsbrook                      | Detention Basin    | 173                    |            |

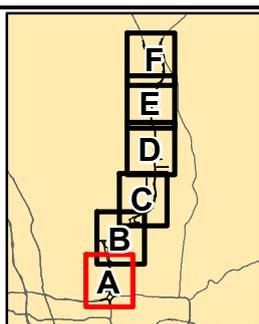
| Basin/ Swale No.               | Location                         | Type               | Area (m <sup>2</sup> ) | Length (m) |
|--------------------------------|----------------------------------|--------------------|------------------------|------------|
| Detention Basin N0-N-18.50     | Bullsbrook                       | Detention Basin    | 138                    |            |
| Detention Basin S0-S-18.55     | Bullsbrook                       | Detention Basin    | 1019                   |            |
| Detention Basin S0-S-16.58     | Bullsbrook                       | Detention Basin    | 306                    |            |
| Detention Basin S0-S-16.42     | Bullsbrook                       | Detention Basin    | 359                    |            |
| Detention Basin C2-E-00.34     | Bullsbrook                       | Detention Basin    | 738                    |            |
| Detention Basin C3-E-00.52     | Bullsbrook/Stock Rd Interchange  | Detention Basin    | 1314                   |            |
| Infiltration Basin 05-E-00.63  | Bullsbrook/Stock Rd Interchange  | Infiltration Basin | 632                    |            |
| Infiltration Basin 05-E-00.55  | Bullsbrook/Stock Rd Interchange  | Infiltration Basin | 454                    |            |
| Infiltration Basin 05-W-0.55   | Bullsbrook/Stock Rd Interchange  | Infiltration Basin | 413                    |            |
| Infiltration Basin 05-W-00.35  | Bullsbrook/Stock Rd Interchange  | Infiltration Basin | 163                    |            |
| Detention Basin C1-W-00.65     | Bullsbrook/Stock Rd Interchange  | Detention Basin    | 449                    |            |
| Detention Basin C4-W-00.10     | Bullsbrook/Stock Rd Interchange  | Detention Basin    | 864                    |            |
| Detention Basin S0-S-15.22     | Bullsbrook                       | Detention Basin    | 230                    |            |
| Detention Basin N0-N-15.16     | Bullsbrook                       | Detention Basin    | 232                    |            |
| Bioretention Basin S0-S-15.05  | Bullsbrook                       | Bioretention Basin | 402                    |            |
| Bioretention Basin S0-S-15.01  | Bullsbrook                       | Bioretention Basin | 268                    |            |
| Bioretention Basin S0-S-14.73  | Bullsbrook                       | Bioretention Basin | 261                    |            |
| Bioretention Basin S0-S-14.45  | Bullsbrook                       | Bioretention Basin | 123                    |            |
| Bioretention Basin S0-S-14.50  | Bullsbrook                       | Bioretention Basin | 130                    |            |
| Detention Basin S0-S-11.78     | Bullsbrook                       | Detention Basin    | 74                     |            |
| Detention Basin N0-N-11.73     | Bullsbrook                       | Detention Basin    | 454                    |            |
| Detention Basin S0-S-11.71     | Bullsbrook                       | Detention Basin    | 69                     |            |
| Detention Basin S0-S-11.66     | Bullsbrook                       | Detention Basin    | 90                     |            |
| Detention Basin MW-W-00.22     | Bullsbrook                       | Detention Basin    | 65                     |            |
| Detention Basin MW-W-00.62     | Bullsbrook                       | Detention Basin    | 178                    |            |
| Detention Basin M0-S-00.13     | Bullsbrook/Neaves Rd Interchange | Detention Basin    | 799                    |            |
| Bioretention Basin JB-S-00.24  | Bullsbrook/Neaves Rd Interchange | Bioretention Basin | 96                     |            |
| Detention Basin M0-W-00.36     | Bullsbrook/Neaves Rd Interchange | Detention Basin    | 2560                   |            |
| Detention Basin M0-E-00.09     | Bullsbrook/Neaves Rd Interchange | Detention Basin    | 2832                   |            |
| Bioretention Basin J1-N-0.1.17 | Bullsbrook/Neaves Rd Interchange | Bioretention Basin | 219                    |            |
| Bioretention Basin M1-E-00.13  | Bullsbrook/Neaves Rd Interchange | Bioretention Basin | 415                    |            |
| Bioretention Basin M4-W-00.14  | Bullsbrook/Neaves Rd Interchange | Bioretention Basin | 248                    |            |
| Detention Basin S0-S-10.60     | Bullsbrook                       | Detention Basin    | 357                    |            |
| Detention Basin N0-N-6.27      | Muchea                           | Detention Basin    | 143                    |            |
| Detention Basin N0-N-5.65      | Muchea                           | Detention Basin    | 982                    |            |
| Detention Basin N0-N-5.40      | Muchea                           | Detention Basin    | 429                    |            |
| Detention Basin N0-N-5.02      | Muchea                           | Detention Basin    | 457                    |            |
| Detention Basin N0-N-4.90      | Muchea                           | Detention Basin    | 145                    |            |
| Detention Basin N0-N-4.80      | Muchea                           | Detention Basin    | 402                    |            |
| Detention Basin N0-N-4.70      | Muchea                           | Detention Basin    | 312                    |            |
| Detention Basin N0-N-4.60      | Muchea                           | Detention Basin    | 618                    |            |

| Basin/ Swale No.           | Location                     | Type            | Area (m <sup>2</sup> ) | Length (m) |
|----------------------------|------------------------------|-----------------|------------------------|------------|
| Detention Basin N0-N-4.25  | Muchea                       | Detention Basin | 189                    |            |
| Detention Basin N0-N-4.05  | Muchea                       | Detention Basin | 165                    |            |
| Detention Basin S0-S-3.75  | Muchea                       | Detention Basin | 285                    |            |
| Detention Basin N0-N-3.75  | Muchea                       | Detention Basin | 234                    |            |
| Detention Basin S0-S-3.57  | Muchea                       | Detention Basin | 127                    |            |
| Detention Basin N0-N-3.57  | Muchea                       | Detention Basin | 159                    |            |
| Detention Basin S0-S-3.45  | Muchea                       | Detention Basin | 134                    |            |
| Detention Basin N0-N-3.45  | Muchea                       | Detention Basin | 269                    |            |
| Detention Basin N0-N-3.25  | Muchea                       | Detention Basin | 214                    |            |
| Detention Basin S0-S-3.25  | Muchea                       | Detention Basin | 285                    |            |
| Detention Basin N0-N-3.17  | Muchea                       | Detention Basin | 255                    |            |
| Detention Basin N0-N-3.05  | Muchea                       | Detention Basin | 143                    |            |
| Detention Basin S0-N-3.05  | Muchea                       | Detention Basin | 140                    |            |
| Detention Basin S0-N-3.05  | Muchea                       | Detention Basin | 107                    |            |
| Detention Basin N0-N-02.43 | Muchea                       | Detention Basin | 791                    |            |
| Detention Basin N0-N-02.22 | Muchea                       | Detention Basin | 133                    |            |
| Detention Basin B7-W-00.00 | Muchea                       | Detention Basin | 702                    |            |
| Detention Basin B7-W-00.27 | Muchea/Brand Hwy Interchange | Detention Basin | 377                    |            |
| Detention Basin B0-R-00.17 | Muchea/Brand Hwy Interchange | Detention Basin | 231                    |            |
| Detention Basin B0-R-00.37 | Muchea/Brand Hwy Interchange | Detention Basin | 176                    |            |
| Detention Basin BD-W-01.80 | Muchea/Brand Hwy Interchange | Detention Basin | 2036                   |            |
| Detention Basin B0-R-00.06 | Muchea/Brand Hwy Interchange | Detention Basin | 112                    |            |
| Detention Basin B0-R-00.64 | Muchea/Brand Hwy Interchange | Detention Basin | 274                    |            |
| Detention Basin D4-N-00.03 | Muchea                       | Detention Basin | 157                    |            |
| Detention Basin CS-S-00.54 | Muchea                       | Detention Basin | 166                    |            |
| Detention Basin B4-N-00.35 | Muchea                       | Detention Basin | 96                     |            |
| Detention Basin B1-S-00.38 | Muchea                       | Detention Basin | 183                    |            |
| Detention Basin B4-N-00.64 | Muchea                       | Detention Basin | 181                    |            |
| Detention Basin BD-W-02.50 | Muchea                       | Detention Basin | 120                    |            |
| Detention Basin BD-E-02.50 | Muchea                       | Detention Basin | 122                    |            |
| Detention Basin BD-W-01.50 | Muchea                       | Detention Basin | 170                    |            |



**Legend**

- Bioretention Swale
- Infiltration & Detention Basins
- Swale
- Watercourse
- As Constructed Footprint
- Development Envelope
- Public Drinking Water Source Areas
- Priority 1
- Priority 3

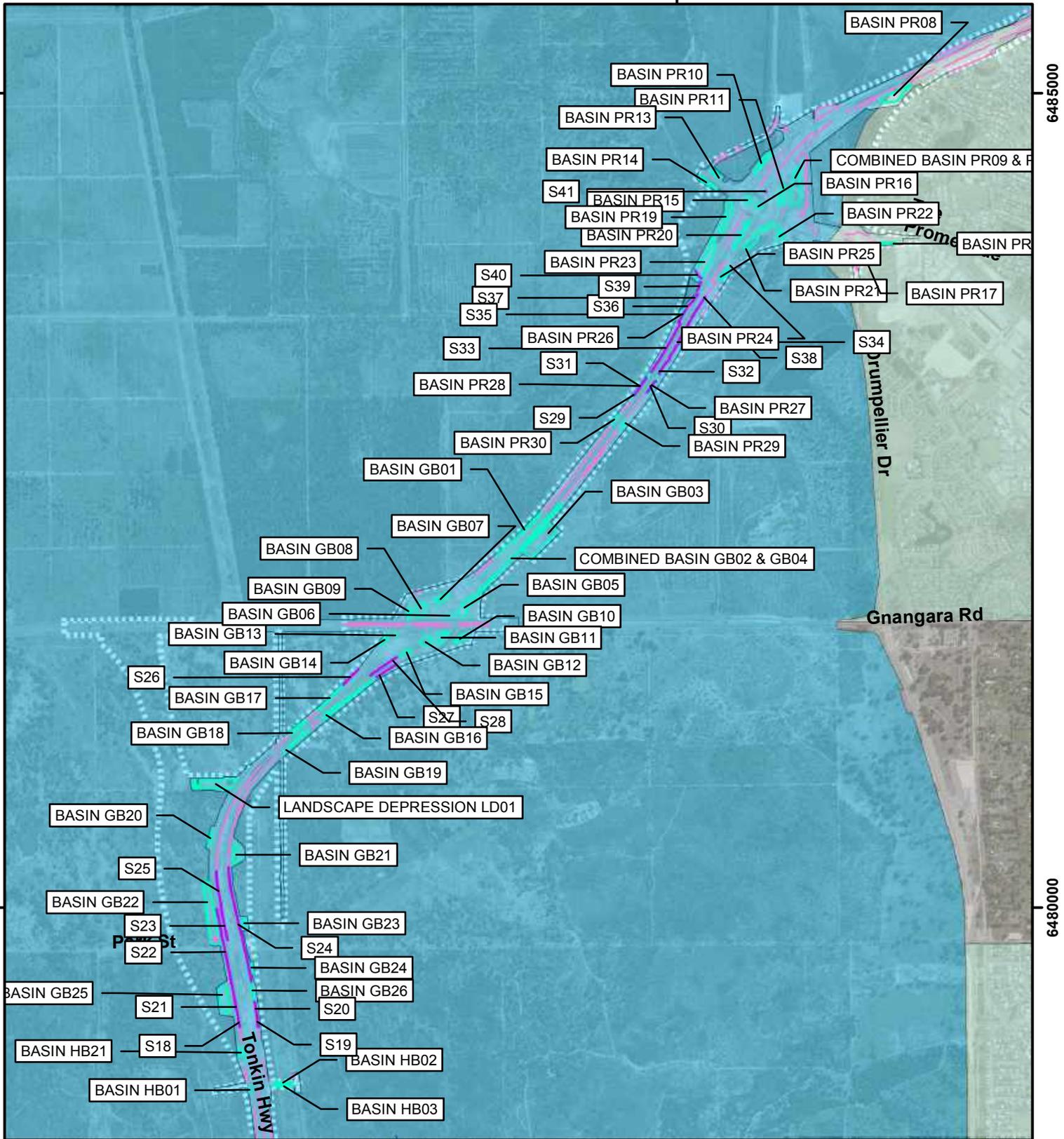


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| APPROVED         | DATUM GDA 1994 MGA Zone 50 |  |
| 1:32,500 (at A4) |                            |  |
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BRB = Bio-Rentention Basin; IB = Infiltration Basin; DB = Detention Basin

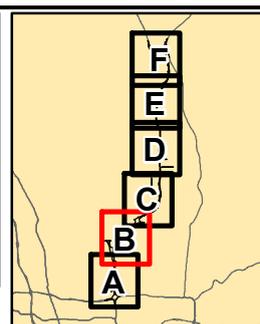
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PIC112-17 MRWA ETS PANEL CONTRACT\BGE-PXXXX - P5A\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil & Water\GIS\Map\Report Maps\Figure 5 - Location of swales and basins - AsCon.mxd



**Legend**

- Bioretention Swale
- Infiltration & Detention Basins
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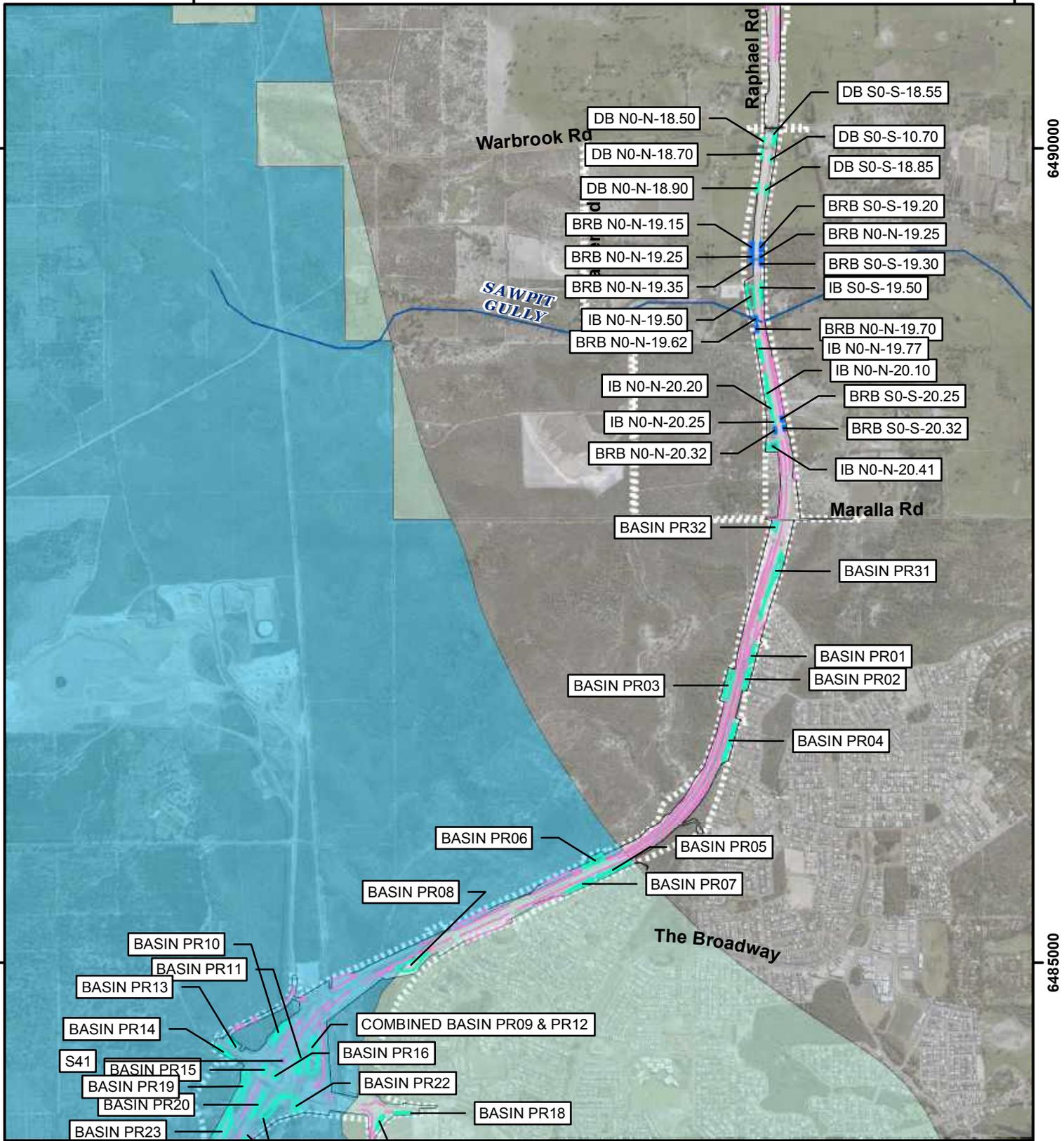


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| REVIEWED         | DATE 4/08/2020             |  |
| APPROVED         | DATUM GDA 1994 MGA Zone 50 |  |
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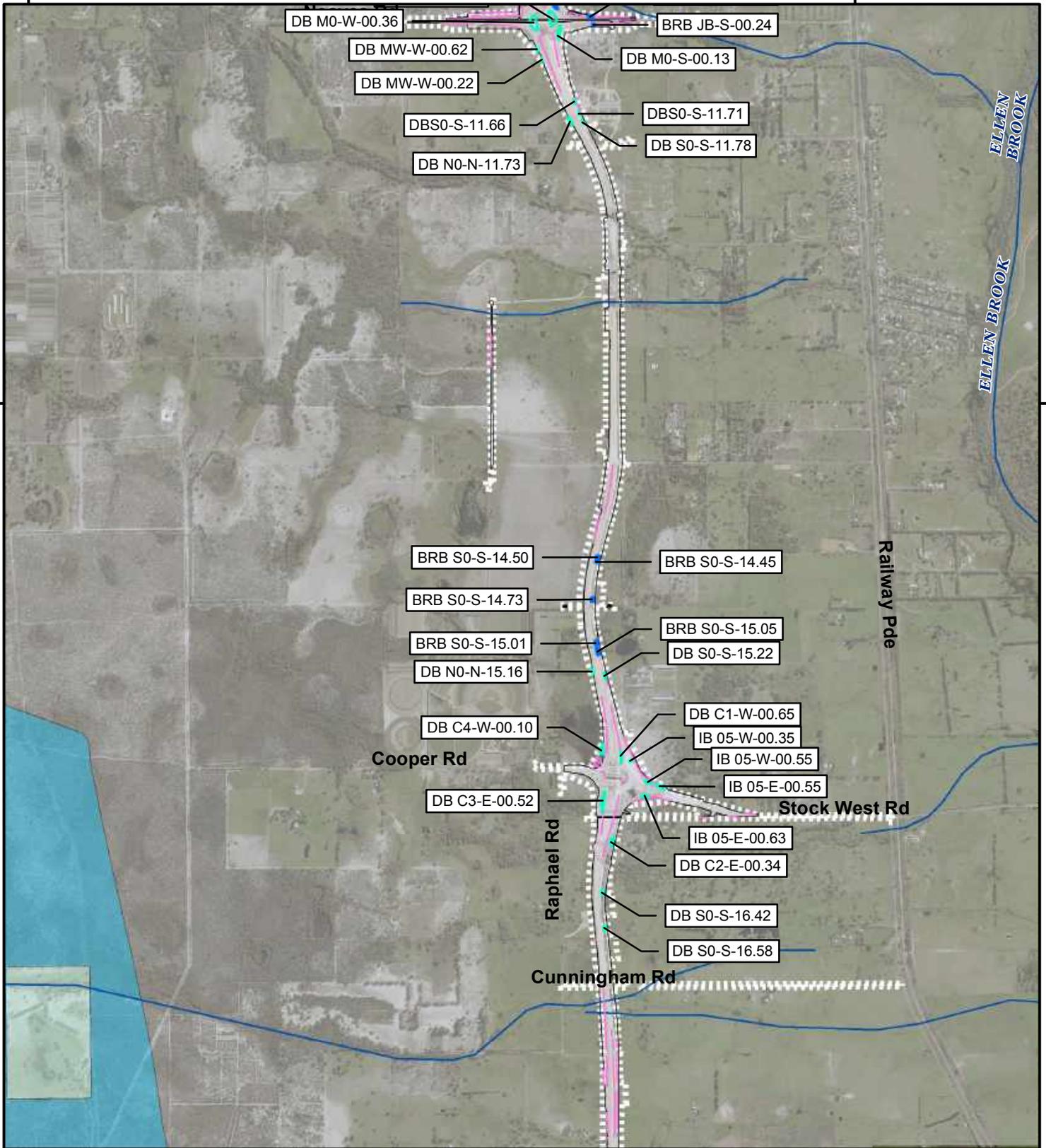
PIC112-17 MRWA ETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil & Water/GIS/Map/Report Maps/Figure 5 - Location of swales and basins - AsCon.mxd



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| Legend   |   | ACKNOWLEDGEMENT   |                      |  |       |    |         |          |          |  |      |           |          |  |       |
|--|---|---|----------------------|--|-------|----|---------|----------|----------|--|------|-----------|----------|--|-------|
| <ul style="list-style-type: none"> <li><span style="color: blue;">—</span> Bioretention Basin</li> <li><span style="color: magenta;">—</span> Bioretention Swale</li> <li><span style="color: cyan;">—</span> Infiltration &amp; Detention Basins</li> <li><span style="color: pink;">—</span> Swale</li> <li><span style="color: blue;">—</span> Watercourse</li> </ul>   | <ul style="list-style-type: none"> <li><span style="border: 1px solid gray; display: inline-block; width: 20px; height: 10px;"></span> As Constructed Footprint</li> <li><span style="border: 1px dashed gray; display: inline-block; width: 20px; height: 10px;"></span> Development Envelope</li> <li><span style="background-color: lightblue; display: inline-block; width: 20px; height: 10px;"></span> Priority 1</li> <li><span style="background-color: lightcyan; display: inline-block; width: 20px; height: 10px;"></span> Priority 3</li> </ul> |   |                      | <table border="1"> <tr> <td>DRAWN</td> <td>AS</td> <td>PROJECT</td> <td>BGE-0104</td> </tr> <tr> <td>REVIEWED</td> <td></td> <td>DATE</td> <td>4/08/2020</td> </tr> <tr> <td>APPROVED</td> <td></td> <td>DATUM</td> <td>GDA 1994 MGA Zone 50</td> </tr> </table> | DRAWN | AS | PROJECT | BGE-0104 | REVIEWED |  | DATE | 4/08/2020 | APPROVED |  | DATUM |
| DRAWN  | AS  | PROJECT   | BGE-0104             |  |       |    |         |          |          |  |      |           |          |  |       |
| REVIEWED   |   | DATE  | 4/08/2020            |  |       |    |         |          |          |  |      |           |          |  |       |
| APPROVED   |   | DATUM   | GDA 1994 MGA Zone 50 |  |       |    |         |          |          |  |      |           |          |  |       |
| <p>BRB = Bio-Rentention Basin; IB = Infiltration Basin; DB = Detention Basin</p> <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p><small>PR1C112-17 MRWA ETS PANEL CONTRACT\BGE-PXXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil &amp; Water\GIS\Map\Report Maps\Figure 5 - Location of swales and basins - AsCon.mxd</small></p> |   | <table border="1"> <tr> <td colspan="2">1:32,500 (at A4)</td> <td rowspan="2"> </td> </tr> <tr> <td colspan="2"> </td> </tr> </table> | 1:32,500 (at A4)     |  |       |    |         |          |          |  |      |           |          |  |       |
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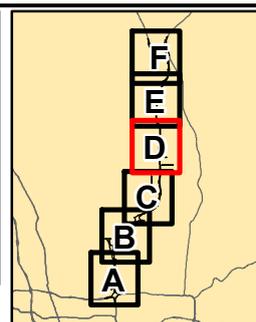
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**Legend**

- Bioretention Basin
- Infiltration & Detention Basins
- Swale
- Watercourse
- As Constructed Footprint
- Development Envelope
- Priority 1
- Priority 3

**Public Drinking Water Source Areas**



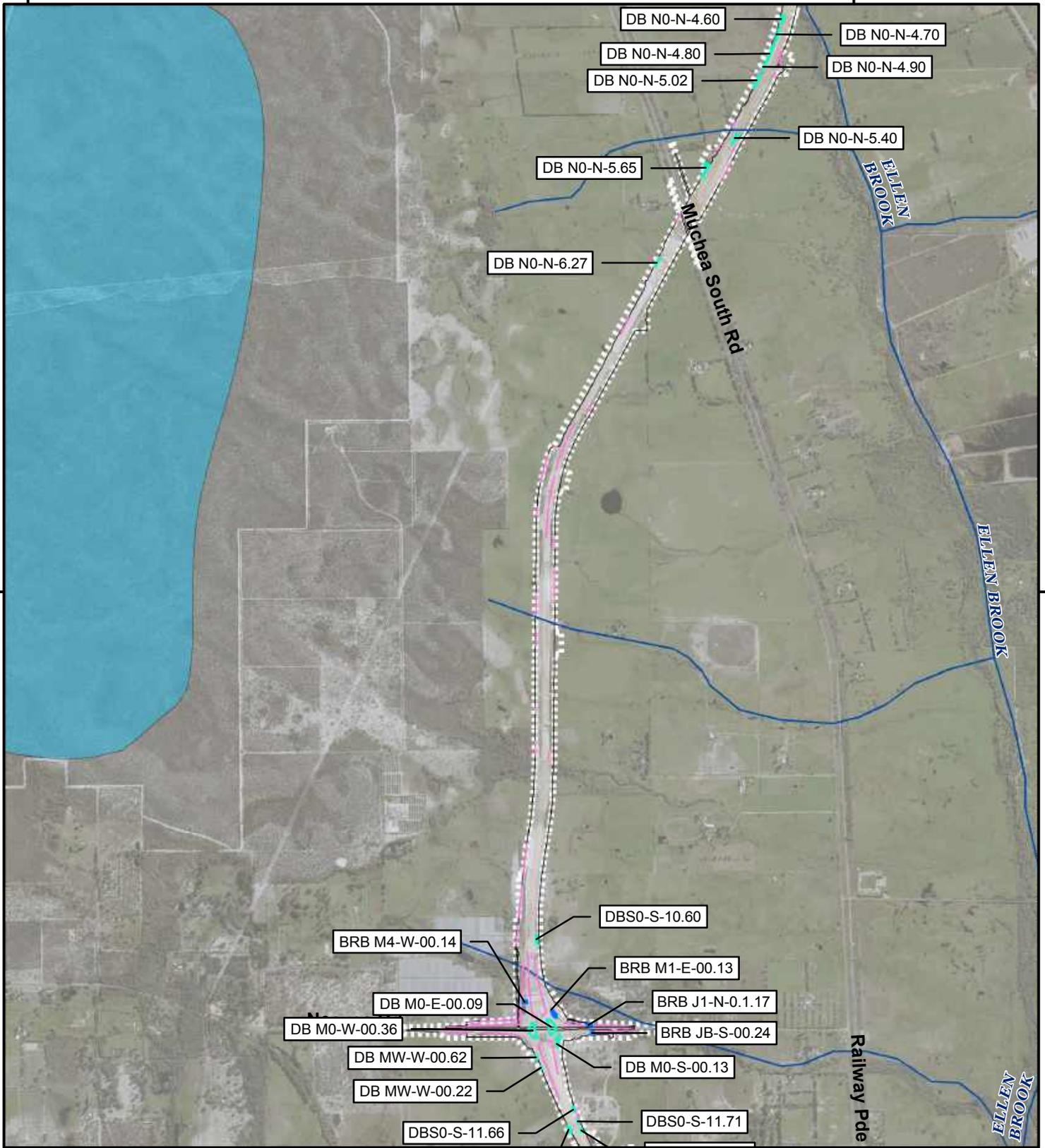
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| APPROVED        | DATUM GDA 1994 MGA Zone 50 |  |

BRB = Bio-Retention Basin; IB = Infiltration Basin; DB = Detention Basin

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1:32,500 (at A4)

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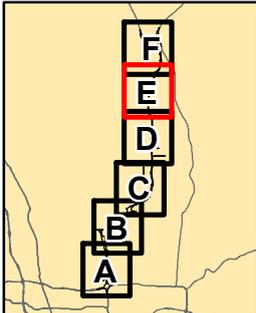


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| Legend |                                    |
|--------|------------------------------------|
|        | Bioretention Basin                 |
|        | Infiltration & Detention Basins    |
|        | Swale                              |
|        | Watercourse                        |
|        | As Constructed Footprint           |
|        | Development Envelope               |
|        | Public Drinking Water Source Areas |
|        | Priority 1                         |



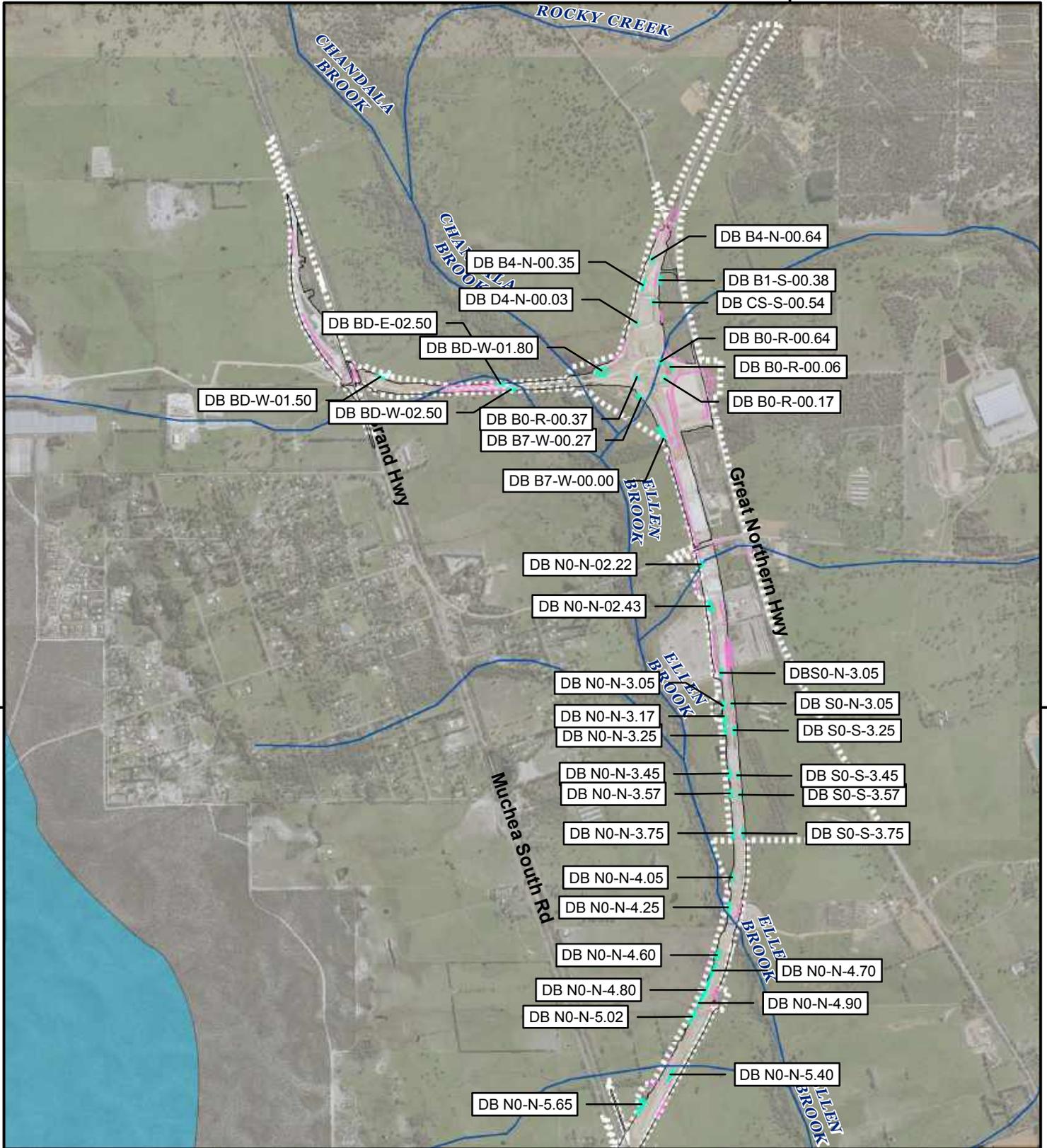
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1:32,500 (at A4)

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|   |   |                         |  |          |                  |          |                |          |
|---|---|-------------------------|--|----------|------------------|----------|----------------|----------|
| <b>Legend</b>   |   |                         | ACKNOWLEDGEMENT<br>  |          |                  |          |                |          |
| <ul style="list-style-type: none"> <li><span style="color: cyan;">—</span> Infiltration &amp; Detention Basins</li> <li><span style="color: magenta;">—</span> Swale</li> <li><span style="color: blue;">—</span> Watercourse</li> </ul>  | <ul style="list-style-type: none"> <li><span style="border: 1px solid gray; display: inline-block; width: 20px; height: 10px;"></span> As Constructed Footprint</li> <li><span style="border: 1px dashed gray; display: inline-block; width: 20px; height: 10px;"></span> Development Envelope</li> <li><span style="background-color: lightblue; display: inline-block; width: 20px; height: 10px;"></span> Priority 1</li> </ul> <p><b>Public Drinking Water Source Areas</b></p> |                         | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DRAWN AS</td> <td style="width: 50%;">PROJECT BGE-0104</td> </tr> <tr> <td>REVIEWED</td> <td>DATE 4/08/2020</td> </tr> <tr> <td>APPROVED</td> <td>DATUM GDA 1994 MGA Zone 50</td> </tr> </table> | DRAWN AS | PROJECT BGE-0104 | REVIEWED | DATE 4/08/2020 | APPROVED |
| DRAWN AS  | PROJECT BGE-0104  |                         |  |          |                  |          |                |          |
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| <p>BRB = Bio-Rentention Basin; IB = Infiltration Basin; DB = Detention Basin</p> <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p><small>P:\C112-17 MRWA ETS PANEL CONTRACT\BGE-PXXX - PSAs\BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT\100 DRAWINGS\102 Civil &amp; Water\GIS\Map\Report Maps\Figure 5 - Location of swales and basins - AsCon.mxd</small></p> |   | <p>1:32,500 (at A4)</p> | <p>N</p>   |          |                  |          |                |          |

### 3.6 Noise Walls

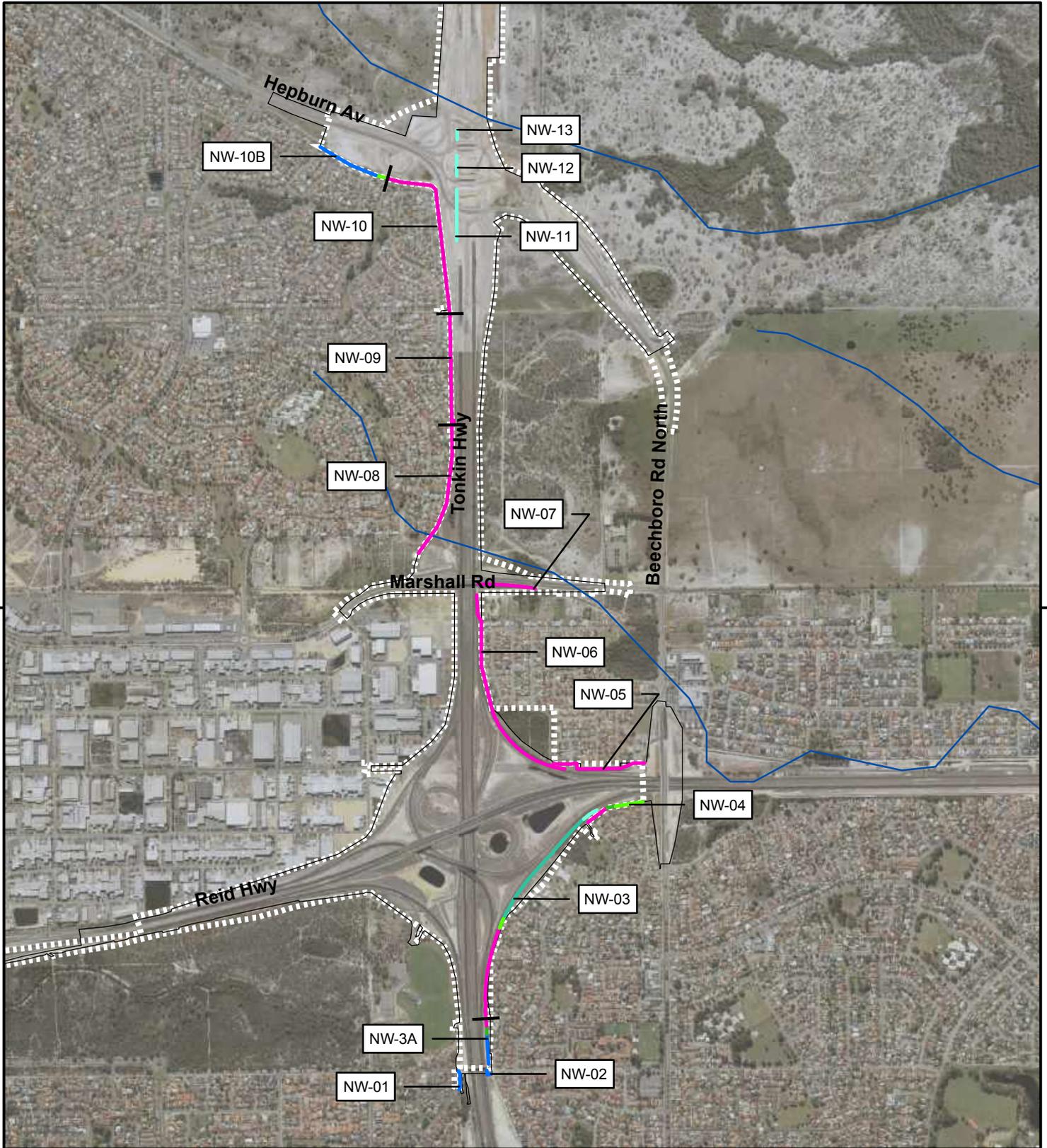
Noise walls have been installed to mitigate existing noise sensitive receptors south of Maralla Road and have been installed within the Development Envelope. The locations, lengths and heights of the noise walls are shown in Figure 7 and are also detailed in Table 9. Noise walls have been constructed to a maximum height of 5.5 m. As shown in table 9, NW-01, NW-02 and NW-10B have been constructed lower than the proposed height in the Infrastructure Plan/ CEMP Noise. Detailed design has resulted in refinements in wall heights required in order to meet the noise target and in some instances, this has resulted in a lower wall height.

**Note:** the same noise wall figures are provided in both the Infrastructure Plan and the Condition Environmental Management Plan Amenity (Noise), hence all noise wall locations and heights are consistent between these documents. Table 9 compares the as constructed heights against both the Infrastructure Plan and the CEMP.

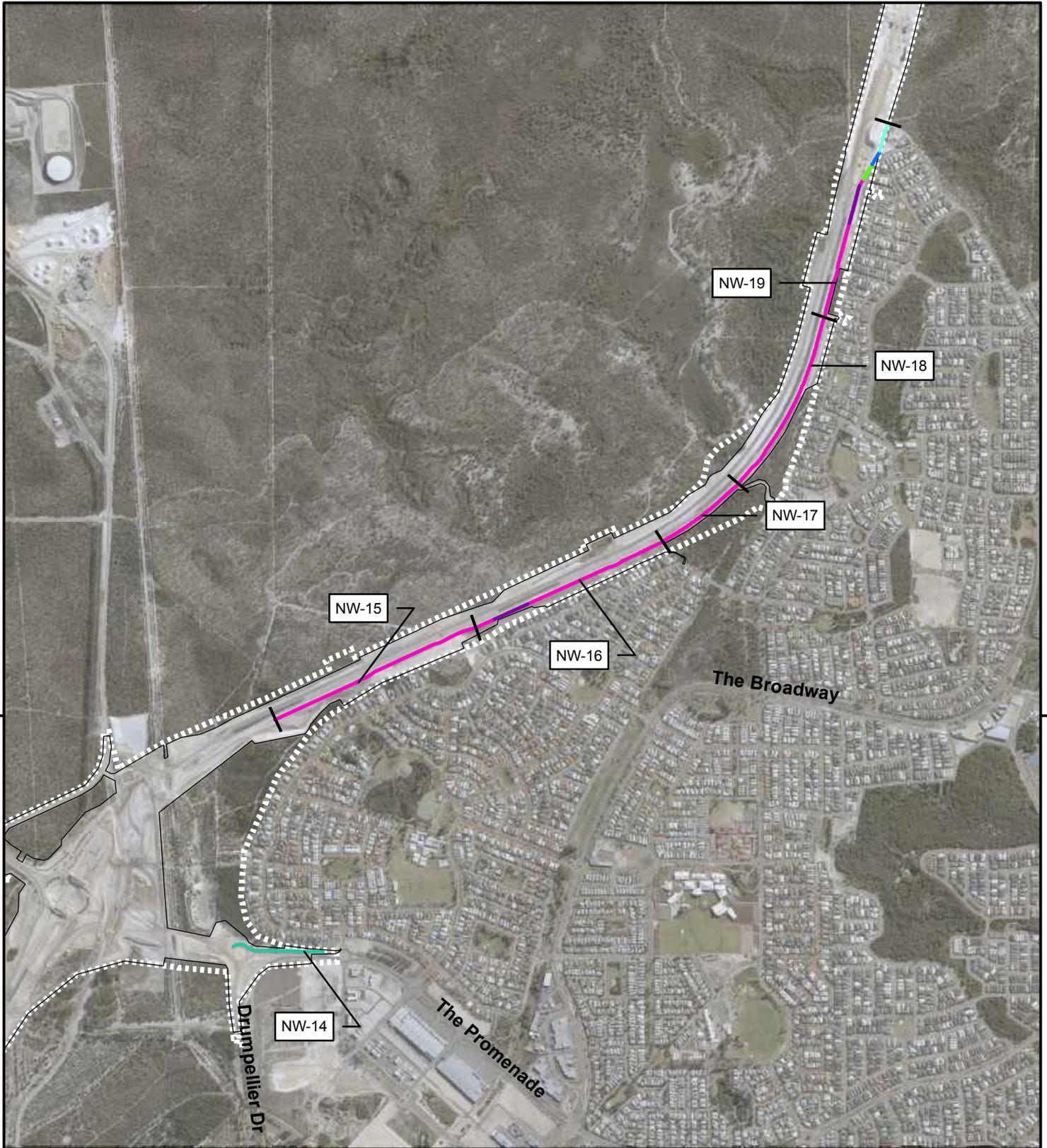
Table 9: Summary of Noise Wall Heights

| Ascon label   | Length (m)   | Ascon Height (m)         | Infrastructure Plan/CEMP Noise Height (m) |
|---------------|--|--------------------------|---|
| <b>NW-01</b>  | <b>74.3</b>  | <b>3.0</b>               | <b>5.0</b>                                |
| <b>NW-02</b>  | <b>34.4</b>  | <b>3.0</b>               | <b>5.0</b>                                |
| NW-03         | CHA 0-60<br>CHA 60-536<br>CHA 536-576<br>CHA 576-915 | 2.5<br>3.5<br>4.0<br>5.0 | 4.5                                       |
| NW-3A         | CHA 0-40<br>CHA 40-60<br>CHA 60-174                  | 5.0<br>4.5<br>3.0        | 5.0                                       |
| NW-04         | CHA 212-390<br>CHA 390-420<br>CHA 420-513            | 4.0<br>4.5<br>5.0        | 4.5                                       |
| NW-05         | 364  | 5.0                      | 5.0                                       |
| NW-06         | 800  | 5.0                      | 5.0                                       |
| NW-07         | 212.2  | 5.0                      | 3.0                                       |
| NW-08         | 516  | 5.0                      | 5.0                                       |
| NW-09         | 409  | 5.0                      | 5.0                                       |
| NW-10         | 652  | 5.0                      | 5.0                                       |
| <b>NW-10B</b> | <b>CHA 280-512</b><br><b>CHA 512-547</b>             | <b>3.0</b><br><b>4.0</b> | <b>5.0</b>                                |
| NW-11         | 193.1  | 2.5                      | 3.0                                       |
| NW-12         | 75.4   | 2.5                      | 3.0                                       |
| NW-13         | 37.2   | 2.5                      | 3.0                                       |
| NW-14         | 342  | 3.5                      | 4.0                                       |
| NW-15         | 671.5  | 5.0                      | 5.0                                       |
| NW-16         | CHA 0-544<br>CHA 544-676<br>CHA 676-905              | 5.0<br>5.5<br>5.0        | 5.0                                       |

| Ascon label | Length (m)  | Ascon Height (m) | Infrastructure Plan/CEMP Noise Height (m) |
|-------------|-------------|------------------|---|
| NW-17       | 352.2       | 5.0              | 5.0                                       |
| NW-18       | 720.1       | 5.0              | 5.0                                       |
| NW-19       | CHA 0-122   | 2.5              | 5.0                                       |
|             | CHA 122-170 | 3.0              |   |
|             | CHA 170-234 | 4.0              |   |
|             | CHA 234-262 | 5.0              |   |
|             | CHA 262-406 | 5.5              |   |
|             | CHA 406-765 | 5.0              |   |



|  |                            |                         |  |          |                  |          |
|--|----------------------------|-------------------------|--|----------|------------------|----------|
| <h3>Legend</h3> <p><b>Noise Wall Height</b></p> <ul style="list-style-type: none"> <li><span style="color: lightgreen;">—</span> 2.5m    <span style="color: yellowgreen;">—</span> 4.0m</li> <li><span style="color: blue;">—</span> 3.0m    <span style="color: green;">—</span> 4.5m</li> <li><span style="color: teal;">—</span> 3.5m    <span style="color: magenta;">—</span> 5.0m</li> </ul> <ul style="list-style-type: none"> <li><span style="color: blue;">—</span> Watercourse</li> <li><span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> As Constructed Footprint</li> <li><span style="border: 1px dashed black; display: inline-block; width: 20px; height: 10px;"></span> Development Envelope</li> </ul> |                            |                         | <b>ACKNOWLEDGEMENT</b><br>   |          |                  |          |
|  |                            |                         | <table border="1"> <tr> <td>DRAWN AS</td> <td>PROJECT BGE-0104</td> </tr> <tr> <td>REVIEWED</td> <td>DATE 2/08/2020</td> </tr> <tr> <td>APPROVED</td> <td>DATUM GDA 1994 MGA Zone 50</td> </tr> </table> | DRAWN AS | PROJECT BGE-0104 | REVIEWED |
| DRAWN AS   | PROJECT BGE-0104           |                         |  |          |                  |          |
| REVIEWED   | DATE 2/08/2020             |                         |  |          |                  |          |
| APPROVED   | DATUM GDA 1994 MGA Zone 50 |                         |  |          |                  |          |
| <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p>PIC112-17 MRWA ETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil &amp; Water/GIS/Maps/Report Maps/Figure 6 - Location of Noise Walls - AsCon.mxd</p>   |                            | <p>1:20,000 (at A4)</p> |  |          |                  |          |



|   |                            |                         |  |  |          |                  |          |
|---|----------------------------|-------------------------|--|--|----------|------------------|----------|
| <h3>Legend</h3> <p><b>Noise Wall Height</b></p> <ul style="list-style-type: none"> <li><span style="color: lightgreen;">—</span> 2.5m</li> <li><span style="color: blue;">—</span> 3.0m</li> <li><span style="color: teal;">—</span> 3.5m</li> <li><span style="color: yellowgreen;">—</span> 4.0m</li> <li><span style="color: magenta;">—</span> 5.0m</li> <li><span style="color: purple;">—</span> 5.5m</li> </ul> <ul style="list-style-type: none"> <li><span style="color: blue;">—</span> Watercourse</li> <li><span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> As Constructed Footprint</li> <li><span style="border: 1px dashed black; display: inline-block; width: 20px; height: 10px;"></span> Development Envelope</li> </ul> |                            |                         | <b>ACKNOWLEDGEMENT</b><br>   |  |          |                  |          |
|   |                            |                         | <table border="1"> <tr> <td>DRAWN AS</td> <td>PROJECT BGE-0104</td> </tr> <tr> <td>REVIEWED</td> <td>DATE 2/08/2020</td> </tr> <tr> <td>APPROVED</td> <td>DATUM GDA 1994 MGA Zone 50</td> </tr> </table> |  | DRAWN AS | PROJECT BGE-0104 | REVIEWED |
| DRAWN AS  | PROJECT BGE-0104           |                         |  |  |          |                  |          |
| REVIEWED  | DATE 2/08/2020             |                         |  |  |          |                  |          |
| APPROVED  | DATUM GDA 1994 MGA Zone 50 |                         |  |  |          |                  |          |
| <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p>PIC112-17 MRWA ETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT100 DRAWINGS\102 Civil &amp; Water\GIS\Maps\Report Maps\Figure 6 - Location of Noise Walls - AsCon.mxd</p>   |                            | <p>1:20,000 (at A4)</p> |  |  |          |                  |          |

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## 4 REFERENCES

BG&E 2015. Drainage Strategy. NorthLink WA Perth Darwin National Highway. May. Report prepared for NorthLink WA by BG&E Pty Limited.

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## 5 NON-COMPLIANCES

Appendix B shows where construction (Clearance Footprint) has occurred outside the Development Envelope. There are ninety-four locations where the Clearance Footprint is outside the Development Envelope. An analysis of these ninety-four locations show that the vast majority (90) are minor discrepancies, most likely due to differences between desktop survey that established the Development Envelope and the ground survey undertaken by surveyors.

There are four locations where works have occurred outside the Development Envelope that is not associated with errors in spatial data. These four areas are listed as follows:

- Area 14 – works required to tie in with new works on Hepburn Avenue. No clearing of native vegetation occurred.
- Area 18 and 20 – works required on Gngangara Road to remove the signalised intersection and also to slightly realign Gngangara Road to the west of Tonkin Highway. No clearing of native vegetation occurred.
- Area 91 – works required along the original Brand Highway in order to tie the new works into the existing road. No clearing of native vegetation occurred.

This information was submitted to Department of Water and Environment (DWER) on 15 June 2020.

Response letter from DWER can be found in Appendix C stating that due to the nature of exceedances that occurred, no enforcement action will be taken.

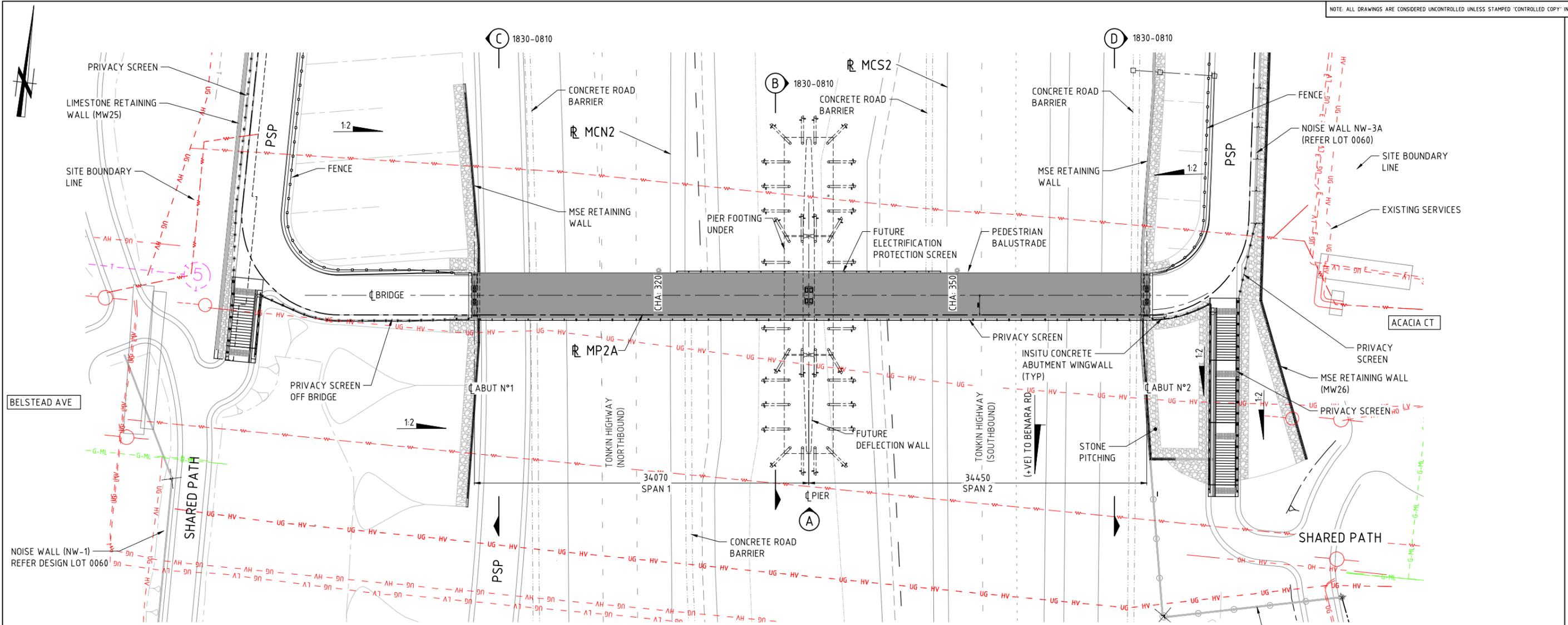
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APPENDIX A

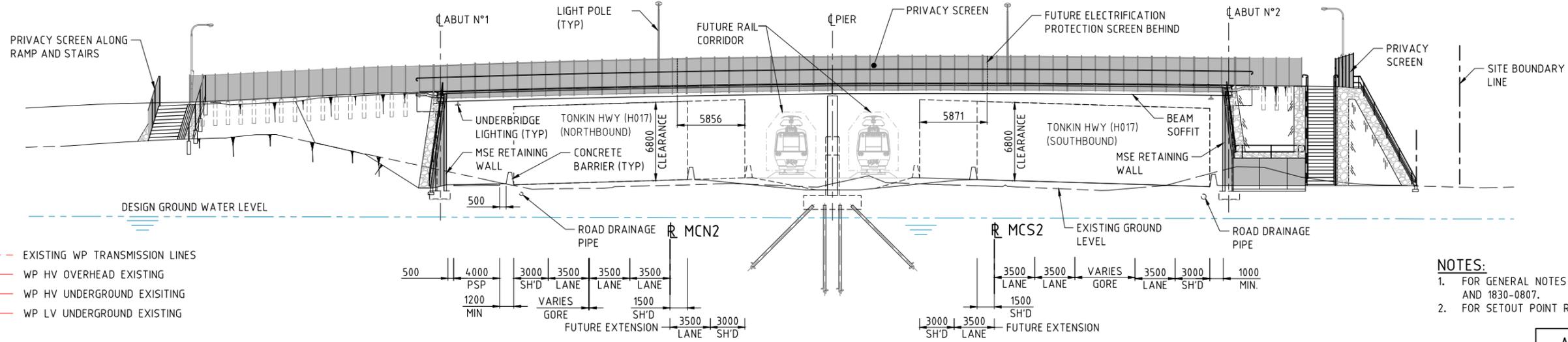
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# Bridge Drawings





PLAN - BRIDGE 9122A  
1:200



ELEVATION (A)  
1:200

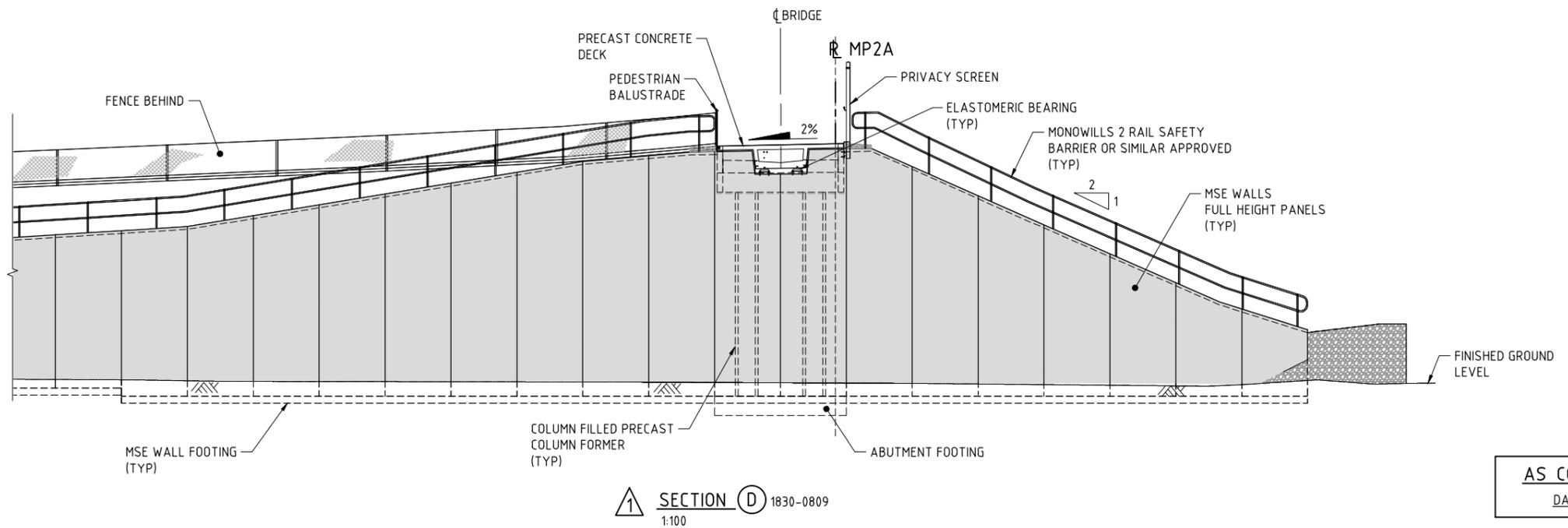
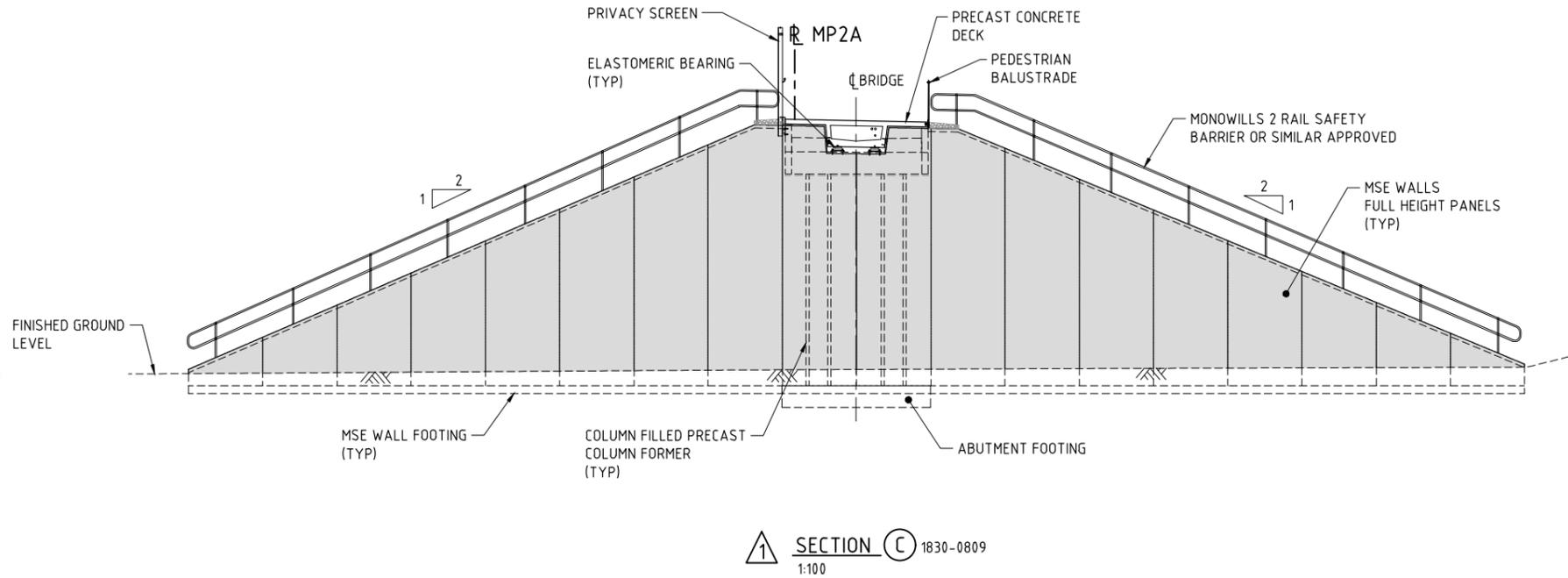
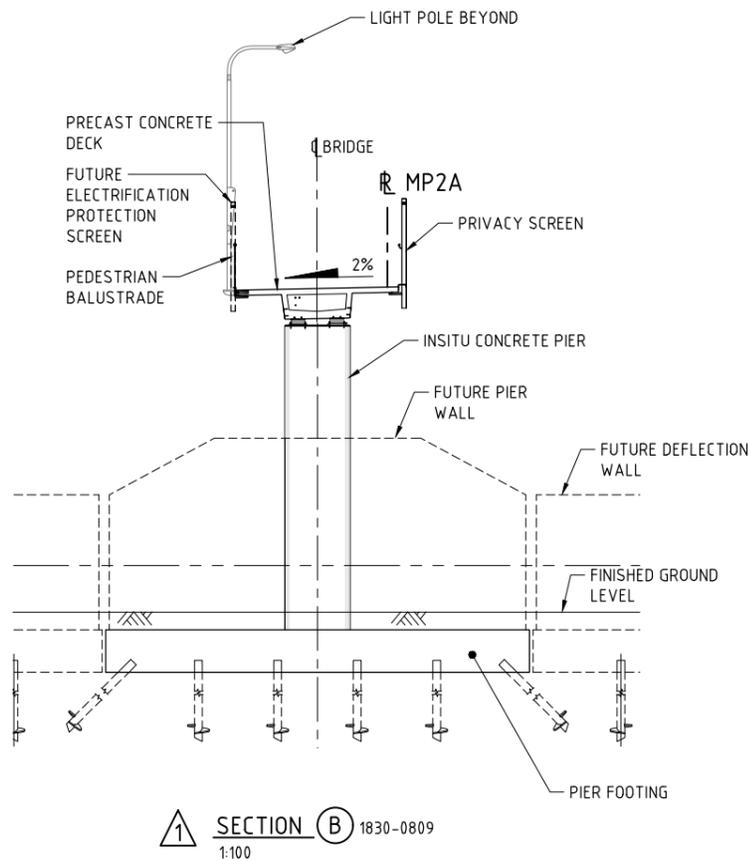
- LEGEND**
- POWER**
- WP TRANSMISSION LINES
  - OH - HV --- WP HV OVERHEAD EXISTING
  - UG - HV --- WP HV UNDERGROUND EXISTING
  - UG - LV --- WP LV UNDERGROUND EXISTING
- GAS**
- G-ML --- ATCO ML GAS MAIN EXISTING

- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-0806 AND 1830-0807.
  - FOR SETOUT POINT REFER DRG 1830-0812.

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

AS CONSTRUCTED  
DATE 31/01/19

|   |  |  |  |
|---|--|--|--|
| <p>Ref Date: Sunday, 30 October 2016 3:21:51 PM<br/>K:\NP001678-Northlink-Stage-2-TW-E-OurDrawings\Current\Bridges\Drawn\Drawings\ML2\155-FB-9122A-18300809.dwg Sunday, 30 October 2016 3:21:51 PM<br/>Printed by: Feely, Apollonia</p> |  | <p>LOCAL AUTHORITY (109) CITY OF SWAN<br/>MWA DRAWING NUMBER 1830-0809<br/>PROJECT TITLE NORTHLINK WA CENTRAL SECTION<br/>DRAWING TITLE TONKIN HIGHWAY (H017) PEDESTRIAN FOOTBRIDGE No. 9122A GENERAL ARRANGEMENT SHEET 1<br/>DRAWING No. NL2-AAJ-DRG-0155-BR-0010</p> |  |
| <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAPPING SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAIN ROADS PROJECT ZONE: PCG94<br/>HEIGHT DATUM: AHD</p>   |  | <p>DESIGNER<br/><b>AAJV</b><br/><b>AECOM</b> <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 28.02.18 DATE</p>  |  |
| <p>1 AS CONSTRUCTED - NO CHANGES<br/>0 ISSUED FOR CONSTRUCTION</p> <p>AMENDMENTS</p>  |  | <p>DESIGNED J. NGUI 27.01.17<br/>CHECKED P. DOBSON 27.01.17<br/>DRAWING STATUS IFC</p> <p>VERIFIED L. TINLIN 07.03.18</p>  |  |
| <p>CONTRACT MANAGER G. XANTHIS 14.03.18 DATE<br/>PROJECT DIRECTOR R. ARNOTT 15.03.18 DATE</p>   |  | <p>CONTRACTOR<br/><b>Great Northern CONNECT</b><br/>INFRASTRUCTURE DELIVERY DIRECTORATE</p>  |  |



THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 31/01/19

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 Printed by: Alex Christianson  
 Plot Date: Sunday, 30 October 2016 3:15:51 PM

| AMENDMENTS |                         | METADATA        |               |
|------------|-------------------------|-----------------|---------------|
| No.        | DESCRIPTION             | APPROVED & DATE | HEIGHT DATUM: |
| 1          | VOID FORMER UPDATED     | M.N.K. 31.01.19 | AHD           |
| 0          | ISSUED FOR CONSTRUCTION | M.N.K. 19.03.18 |               |

DESIGNER  
**AAJV**  
**AECOM** & **ARCADIS**

DESIGN MANAGER D. SULLIVAN 28.02.18 DATE

|                |            |          |
|----------------|------------|----------|
| DRAWN          | J. BUI     | 27.01.17 |
| DESIGNED       | J. NGUI    | 27.01.17 |
| CHECKED        | P. DOBSON  | 27.01.17 |
| APPROVED       | M. KAKULAS | 27.01.17 |
| DRAWING STATUS | IFC        |          |

VERIFIER  
**GHD**

VERIFIED L. TINLIN  
DATE 07.03.18

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS  
PROJECT DIRECTOR R. ARNOTT

INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                     |
|---------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-0810  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>PEDESTRIAN FOOTBRIDGE No. 9122A<br>GENERAL ARRANGEMENT<br>SHEET 2 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0155-BR-0011   |                                |                     |

SCALE  
 1:100  
 SHEET A1

**DRAWING INDEX**

| PROJECT DRG No.          | MRWA DRG No. | DRAWING TITLE                                | PROJECT DRG No.               | MRWA DRG No. | DRAWING TITLE   |
|--------------------------|--------------|--|-------------------------------|--------------|---|
| <b>GENERAL</b>           |              |  |                               |              |   |
| NL2-AAJ-DRG-0100-BR-0001 | 1830-0421    | LOCALITY PLAN                                | NL2-AAJ-DRG-0100-BR-0057      | 1830-0458    | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 1                              |
| NL2-AAJ-DRG-0100-BR-0002 | 1830-0422    | INDEX  | NL2-AAJ-DRG-0100-BR-0058      | 1830-0459    | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 2                              |
| NL2-AAJ-DRG-0100-BR-0005 | 1830-0423    | GENERAL NOTES - SHEET 1                      | NL2-AAJ-DRG-0100-BR-0060      | 1830-0460    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1                             |
| NL2-AAJ-DRG-0100-BR-0006 | 1830-0424    | GENERAL NOTES - SHEET 2                      | NL2-AAJ-DRG-0100-BR-0061      | 1830-0461    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2                             |
| NL2-AAJ-DRG-0100-BR-0010 | 1830-0425    | GENERAL ARRANGEMENT - SHEET 1                | NL2-AAJ-DRG-0100-BR-0062      | 1830-0462    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 3                             |
| NL2-AAJ-DRG-0100-BR-0011 | 1830-0426    | GENERAL ARRANGEMENT - SHEET 2                | NL2-AAJ-DRG-0100-BR-0063      | 1830-0463    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 4                             |
| NL2-AAJ-DRG-0100-BR-0012 | 1830-0427    | GENERAL ARRANGEMENT - SHEET 3                | NL2-AAJ-DRG-0100-BR-0070      | 1830-0464    | DECK CONCRETE DETAILS - SHEET 1   |
| <b>SUBSTRUCTURE</b>      |              |  |                               |              |   |
| NL2-AAJ-DRG-0100-BR-0015 | 1830-0428    | BORE INFORMATION - SHEET 1                   | NL2-AAJ-DRG-0100-BR-0071      | 1830-0465    | DECK CONCRETE DETAILS - SHEET 2   |
| NL2-AAJ-DRG-0100-BR-0016 | 1830-0429    | BORE INFORMATION - SHEET 2                   | NL2-AAJ-DRG-0100-BR-0072      | 1830-0466    | DECK CONCRETE DETAILS - SHEET 3   |
| NL2-AAJ-DRG-0100-BR-0017 | 1830-0430    | GEOMETRIC DATA                               | NL2-AAJ-DRG-0100-BR-0073      | 1830-0467    | DECK REINFORCEMENT DETAILS - SHEET 1  |
| NL2-AAJ-DRG-0100-BR-0020 | 1830-0431    | ABUTMENT - MSE WALL LAYOUT                   | NL2-AAJ-DRG-0100-BR-0074      | 1830-0468    | DECK REINFORCEMENT DETAILS - SHEET 2  |
| NL2-AAJ-DRG-0100-BR-0021 | 1830-0432    | ABUTMENT No.1 - MSE WALL                     | NL2-AAJ-DRG-0100-BR-0075      | 1830-0469    | DIAPHRAGM DETAILS   |
| NL2-AAJ-DRG-0100-BR-0022 | 1830-0433    | ABUTMENT No. 2 - MSE WALL                    | NL2-AAJ-DRG-0100-BR-0076      | 1830-0470    | CONTINUITY STITCH REINFORCEMENT DETAILS                                       |
| NL2-AAJ-DRG-0100-BR-0023 | 1830-0434    | ABUTMENT - MSE WALL TYPICAL DETAILS          | NL2-AAJ-DRG-0100-BR-0090      | 1830-0471    | APPROACH SLAB CONCRETE DETAILS  |
| NL2-AAJ-DRG-0100-BR-0024 | 1830-0435    | COLUMN FORMER DETAILS                        | NL2-AAJ-DRG-0100-BR-0091      | 1830-0472    | APPROACH SLAB REINFORCEMENT DETAILS   |
| NL2-AAJ-DRG-0100-BR-0025 | 1830-0436    | ABUTMENT No.1 - CONCRETE DETAILS             | NL2-AAJ-DRG-0100-BR-0100      | 1830-0473    | EXPANSION JOINT DETAILS   |
| NL2-AAJ-DRG-0100-BR-0026 | 1830-0437    | ABUTMENT No. 2 - CONCRETE DETAILS            | NL2-AAJ-DRG-0100-BR-0105      | 1830-0474    | COVER PLATE DETAILS - SHEET 1   |
| NL2-AAJ-DRG-0100-BR-0027 | 1830-0438    | ABUTMENT - TYPICAL CONCRETE DETAILS          | NL2-AAJ-DRG-0100-BR-0106      | 1830-0475    | COVER PLATE DETAILS - SHEET 2   |
| NL2-AAJ-DRG-0100-BR-0028 | 1830-0439    | WING WALL DETAILS                            | NL2-AAJ-DRG-0100-BR-0110      | 1830-0476    | BARRIER LAYOUT  |
| NL2-AAJ-DRG-0100-BR-0029 | 1830-0440    | WING WALL REINFORCEMENT DETAILS              | NL2-AAJ-DRG-0100-BR-0111      | 1830-0477    | PRECAST BARRIER CONCRETE DETAILS  |
| NL2-AAJ-DRG-0100-BR-0030 | 1830-0441    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1   | NL2-AAJ-DRG-0100-BR-0112      | 1830-0478    | BARRIER CONNECTION DETAILS  |
| NL2-AAJ-DRG-0100-BR-0031 | 1830-0442    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2   | NL2-AAJ-DRG-0100-BR-0115      | 1830-0479    | BARRIER DETAILS   |
| NL2-AAJ-DRG-0100-BR-0032 | 1830-0443    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 3   | NL2-AAJ-DRG-0100-BR-0116      | 1830-0480    | BARRIER TRANSITION DETAILS - SHEET 1  |
| NL2-AAJ-DRG-0100-BR-0033 | 1830-0444    | COLUMN REINFORCEMENT DETAILS                 | NL2-AAJ-DRG-0100-BR-0117      | 1830-0481    | BARRIER TRANSITION DETAILS - SHEET 2  |
| NL2-AAJ-DRG-0100-BR-0035 | 1830-0445    | PIER - CONCRETE DETAILS - SHEET 1            | NL2-AAJ-DRG-0100-BR-0135      | 1830-0482    | LIGHTING AND ELECTRICAL LAYOUT  |
| NL2-AAJ-DRG-0100-BR-0036 | 1830-0446    | PIER - CONCRETE DETAILS - SHEET 2            | NL2-AAJ-DRG-0100-BR-0136      | 1830-0483    | LIGHTING AND ELECTRICAL DETAILS   |
| NL2-AAJ-DRG-0100-BR-0037 | 1830-0447    | PIER - REINFORCEMENT DETAILS - SHEET 1       | NL2-AAJ-DRG-0100-BR-0137      | 1830-0484    | LIGHTPOLE CONTROL BOX DETAILS   |
| NL2-AAJ-DRG-0100-BR-0038 | 1830-0448    | PIER - REINFORCEMENT DETAILS - SHEET 2       | NL2-AAJ-DRG-0100-BR-0138      | 1830-0485    | LIGHTING POLE TO BARRIER BRACKET DETAILS                                      |
| NL2-AAJ-DRG-0100-BR-0040 | 1830-0449    | FUTURE PIER WALL DETAILS - SHEET 1           | NL2-AAJ-DRG-0100-BR-0139      | 1830-0486    | LUMINAIRE BRACKET DETAILS   |
| NL2-AAJ-DRG-0100-BR-0041 | 1830-0450    | FUTURE PIER WALL DETAILS - SHEET 2           | NL2-AAJ-DRG-0100-BR-0140      | 1830-0487    | EARTHING & BONDING DETAILS - SHEET 1  |
| <b>SUPERSTRUCTURE</b>    |              |  |                               |              |   |
| NL2-AAJ-DRG-0100-BR-0045 | 1830-0451    | BEARING DETAILS - SHEET 1                    | NL2-AAJ-DRG-0100-BR-0141      | 1830-0488    | EARTHING & BONDING DETAILS - SHEET 2  |
| NL2-AAJ-DRG-0100-BR-0046 | 1830-0452    | BEARING DETAILS - SHEET 2                    | NL2-AAJ-DRG-0100-BR-0142      | 1830-0489    | EARTHING & BONDING DETAILS - SHEET 3  |
| NL2-AAJ-DRG-0100-BR-0047 | 1830-0453    | BEARING DETAILS - SHEET 3                    | NL2-AAJ-DRG-0100-BR-0145      | 1830-0490    | ELECTRIFICATION PROTECTION SCREEN DETAILS - SHEET 1                           |
| NL2-AAJ-DRG-0100-BR-0050 | 1830-0454    | PRECAST TEEROFF BEAMS LAYOUT                 | NL2-AAJ-DRG-0100-BR-0146      | 1830-0491    | ELECTRIFICATION PROTECTION SCREEN DETAILS - SHEET 2                           |
| NL2-AAJ-DRG-0100-BR-0052 | 1830-0455    | PRECAST TEEROFF BEAM TYPICAL DETAILS         | NL2-AAJ-DRG-0100-BR-0155      | 1830-0492    | DESIGN SUMMARY SHEET - SHEET 1  |
| NL2-AAJ-DRG-0100-BR-0053 | 1830-0456    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1 | NL2-AAJ-DRG-0100-BR-0156      | 1830-0493    | DESIGN SUMMARY SHEET - SHEET 2  |
| NL2-AAJ-DRG-0100-BR-0054 | 1830-0457    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2 | <b>MRWA STANDARD DRAWINGS</b> |              |   |
|                          |              |  | -                             | 0530-1457-3  | ROAD-SIDE SLIP-BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET 2 |
|                          |              |  | -                             | 0630-1902    | BRIDGE LIGHT POLE BASE - SHEET 2  |

**AS CONSTRUCTED**  
DATE 23/11/18

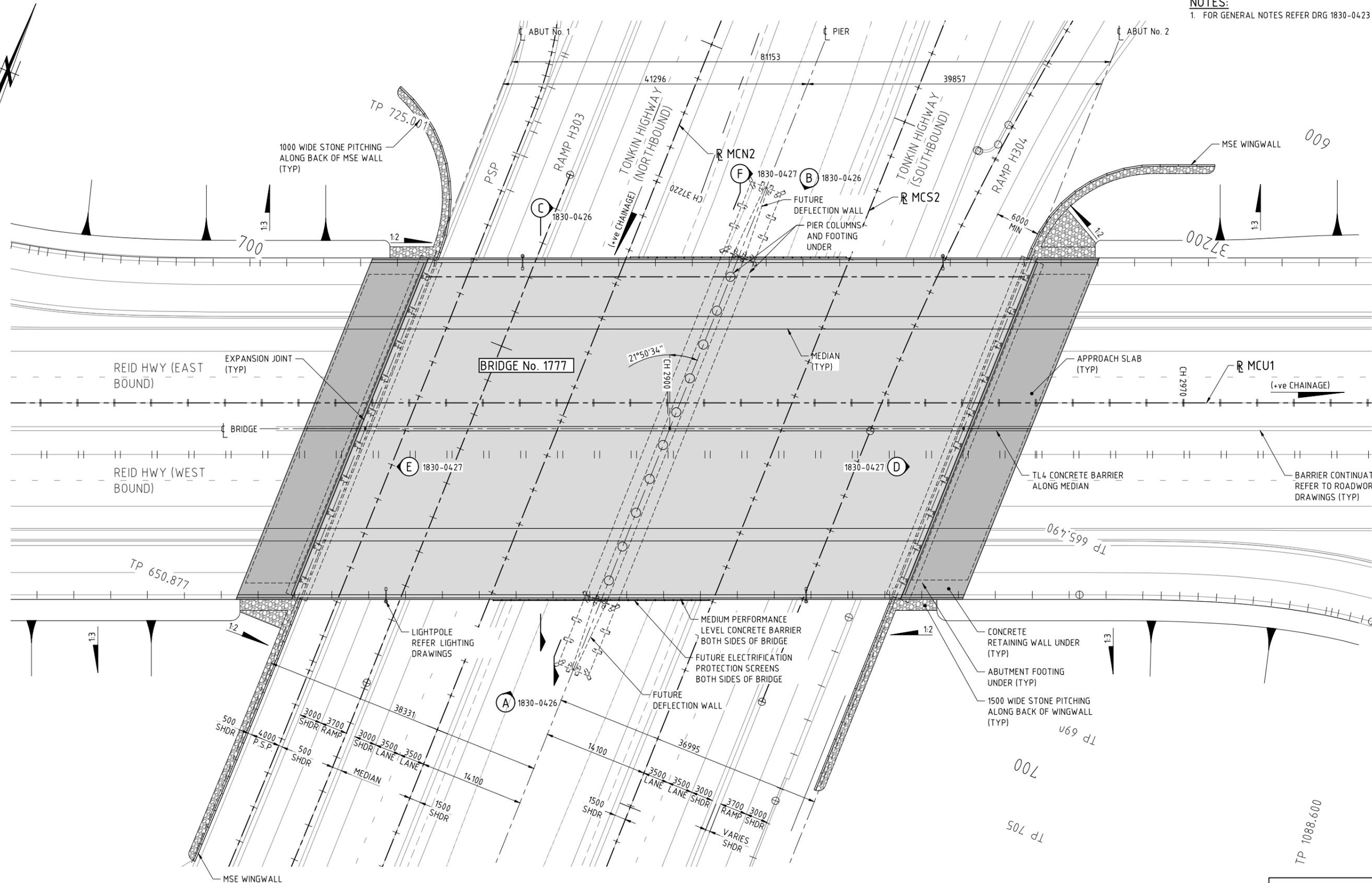
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

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|   |  |  |   |  |  |  |  |
|---|--|--|---|--|--|--|--|
| <b>METADATA</b><br>GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  | DESIGNER<br><br>DESIGN MANAGER D. SULLIVAN 14.08.17 DATE | DRAWN F. ALPAPARA 26.05.17<br>DESIGNED N. KEAGE 26.05.17<br>CHECKED M. KAKULAS 26.05.17<br>APPROVED M. KAKULAS 26.05.17<br>DRAWING STATUS IFC | VERIFIER<br><br>VERIFIED G. JOYNSON 18.08.17 DATE | CONSTRUCTOR<br> | <br>CONTRACT MANAGER G. XANTHIS 23.08.17 DATE<br>PROJECT DIRECTOR R. ARNOTT 23.08.17 DATE | LOCAL AUTHORITY (109) CITY OF SWAN<br>MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION<br>MRWA DRAWING NUMBER 1830-0422<br>PROJECT TITLE NORTHLINK WA CENTRAL SECTION<br>DRAWING TITLE TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1777 INDEX<br>DRAWING No. NL2-AAJ-DRG-0100-BR-0002 |
|---|--|--|---|--|--|--|--|

SCALE SHEET A1

NOTES:  
1. FOR GENERAL NOTES REFER DRG 1830-0423 AND 0424.



PLAN - BRIDGE 1777 (REID / TONKIN INTERCHANGE)  
1:250

AS CONSTRUCTED  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

K:\MPO\1777-Northlink\_Stage\_2-TIM\E-OurDrawings\Current\Bridges\CON\Drawings\NL2\submitted\18\_10\_18\18-B-1777-NON-1830-0425.dwg Sunday, 30 October 2016 3:21:51 PM  
 Printed by: Arnie Gray, Dones  
 Plot Date: Sunday, 30 October 2016 3:21:51 PM

| AMENDMENTS  |                             | METADATA        |          | DESIGNER   |  | DRAWN       |          | CHECKED    |  | APPROVED   |  | DRAWING STATUS |  | VERIFIED   |  | CONTRACTOR                  |  | LOCAL AUTHORITY    |  | MIRIA DRAWING NUMBER |  | PROJECT TITLE                |  | DRAWING TITLE  |  | DRAWING No.              |  |
|-------------|-----------------------------|-----------------|----------|--|--|-------------|----------|------------|--|------------|--|----------------|--|------------|--|-----------------------------|--|--------------------|--|----------------------|--|------------------------------|--|--|--|--------------------------|--|
| 1           | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 23.11.18 | AAJV<br>AECOM<br>ARCADIS                                 |  | P. MORRISON | 14.02.17 | M. KAKULAS |  | M. KAKULAS |  | IFC            |  | G. JOYNSON |  | Great Northern CONNECT      |  | (109) CITY OF SWAN |  | 1830-0425            |  | NORTHLINK WA CENTRAL SECTION |  | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1777<br>GENERAL ARRANGEMENT - SHEET 1 |  | NL2-AAJ-DRG-0100-BR-0010 |  |
| 0           | ISSUED FOR CONSTRUCTION     | M.N.K.          | 25.08.17 | AECOM and Arcadis to Design Northlink WA Central Section |  | N. KEAGE    |          | M. KAKULAS |  | M. KAKULAS |  | IFC            |  | G. JOYNSON |  | mainroads WESTERN AUSTRALIA |  | (109) CITY OF SWAN |  | 1830-0425            |  | NORTHLINK WA CENTRAL SECTION |  | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1777<br>GENERAL ARRANGEMENT - SHEET 1 |  | NL2-AAJ-DRG-0100-BR-0010 |  |
| DESCRIPTION |                             | APPROVED & DATE |          | MAIN ROADS PROJECT ZONE: PCG94                           |  | DATE        |          | DATE       |  | DATE       |  | DATE           |  | DATE       |  | DATE                        |  | DATE               |  | DATE                 |  | DATE                         |  | DATE   |  | DATE                     |  |
| AMENDMENTS  |                             | APPROVED & DATE |          | MAIN ROADS PROJECT ZONE: PCG94                           |  | DATE        |          | DATE       |  | DATE       |  | DATE           |  | DATE       |  | DATE                        |  | DATE               |  | DATE                 |  | DATE                         |  | DATE   |  | DATE                     |  |
| AMENDMENTS  |                             | APPROVED & DATE |          | MAIN ROADS PROJECT ZONE: PCG94                           |  | DATE        |          | DATE       |  | DATE       |  | DATE           |  | DATE       |  | DATE                        |  | DATE               |  | DATE                 |  | DATE                         |  | DATE   |  | DATE                     |  |

SCALE  
1:250  
SHEET A1





**DRAWING INDEX**

**DRAWING NUMBER**

**MRWA DRG No.**

**DRAWING DESCRIPTION**

**GENERAL**

|                          |           |                               |
|--------------------------|-----------|-------------------------------|
| NL2-AAJ-DRG-0110-BR-0001 | 1830-0495 | LOCALITY PLAN                 |
| NL2-AAJ-DRG-0110-BR-0002 | 1830-0496 | INDEX                         |
| NL2-AAJ-DRG-0110-BR-0005 | 1830-0497 | GENERAL NOTES - SHEET 1       |
| NL2-AAJ-DRG-0110-BR-0006 | 1830-0498 | GENERAL NOTES - SHEET 2       |
| NL2-AAJ-DRG-0110-BR-0010 | 1830-0499 | GENERAL ARRANGEMENT - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0011 | 1830-0500 | GENERAL ARRANGEMENT - SHEET 2 |
| NL2-AAJ-DRG-0110-BR-0012 | 1830-0501 | GENERAL ARRANGEMENT - SHEET 3 |

**SUBSTRUCTURES**

|                          |           |  |
|--------------------------|-----------|--|
| NL2-AAJ-DRG-0110-BR-0015 | 1830-0502 | BORE INFORMATION - SHEET 1                 |
| NL2-AAJ-DRG-0110-BR-0016 | 1830-0503 | BORE INFORMATION - SHEET 2                 |
| NL2-AAJ-DRG-0110-BR-0017 | 1830-0504 | GEOMETRIC DATA - SHEET 1                   |
| NL2-AAJ-DRG-0110-BR-0020 | 1830-0505 | ABUTMENT - MSE WALL LAYOUT                 |
| NL2-AAJ-DRG-0110-BR-0021 | 1830-0506 | ABUTMENT - MSE WALL - SHEET 1              |
| NL2-AAJ-DRG-0110-BR-0022 | 1830-0507 | ABUTMENT - MSE WALL - SHEET 2              |
| NL2-AAJ-DRG-0110-BR-0023 | 1830-0508 | ABUTMENT - MSE WALL - TYPICAL DETAILS      |
| NL2-AAJ-DRG-0110-BR-0024 | 1830-0509 | ABUTMENT No. 1 - CONCRETE DETAILS          |
| NL2-AAJ-DRG-0110-BR-0025 | 1830-0510 | ABUTMENT No. 2 - CONCRETE DETAILS          |
| NL2-AAJ-DRG-0110-BR-0026 | 1830-0511 | ABUTMENT - TYPICAL CONCRETE DETAILS        |
| NL2-AAJ-DRG-0110-BR-0027 | 1830-0512 | COLUMN FORMER DETAILS                      |
| NL2-AAJ-DRG-0110-BR-0028 | 1830-0513 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0029 | 1830-0514 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0110-BR-0030 | 1830-0515 | COLUMN REINFORCEMENT DETAILS               |

|                          |           |                                 |
|--------------------------|-----------|---------------------------------|
| NL2-AAJ-DRG-0110-BR-0032 | 1830-0516 | WING WALL DETAILS               |
| NL2-AAJ-DRG-0110-BR-0033 | 1830-0517 | WING WALL REINFORCEMENT DETAILS |

|                          |           |  |
|--------------------------|-----------|--|
| NL2-AAJ-DRG-0110-BR-0035 | 1830-0518 | PIER - CONCRETE DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0110-BR-0036 | 1830-0519 | PIER - CONCRETE DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0110-BR-0037 | 1830-0520 | PIER - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0038 | 1830-0521 | PIER - REINFORCEMENT DETAILS - SHEET 2 |

**SUPERSTRUCTURE**

|                          |           |                           |
|--------------------------|-----------|---------------------------|
| NL2-AAJ-DRG-0110-BR-0045 | 1830-0522 | BEARING DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0046 | 1830-0523 | BEARING DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0110-BR-0047 | 1830-0524 | BEARING DETAILS - SHEET 3 |

|                          |           |                             |
|--------------------------|-----------|-----------------------------|
| NL2-AAJ-DRG-0110-BR-0050 | 1830-0525 | PRECAST TEEROFF BEAM LAYOUT |
|--------------------------|-----------|-----------------------------|

|                          |           |  |
|--------------------------|-----------|--|
| NL2-AAJ-DRG-0110-BR-0052 | 1830-0526 | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0053 | 1830-0527 | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2 |

**DRAWING NUMBER**

**MRWA DRG No.**

**DRAWING DESCRIPTION**

|                          |           |   |
|--------------------------|-----------|---|
| NL2-AAJ-DRG-0110-BR-0057 | 1830-0528 | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 1  |
| NL2-AAJ-DRG-0110-BR-0058 | 1830-0529 | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 2  |
| NL2-AAJ-DRG-0110-BR-0059 | 1830-0530 | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 3  |
| NL2-AAJ-DRG-0110-BR-0060 | 1830-0531 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0061 | 1830-0532 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0110-BR-0062 | 1830-0533 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 3 |
| NL2-AAJ-DRG-0110-BR-0063 | 1830-0534 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 4 |
| NL2-AAJ-DRG-0110-BR-0070 | 1830-0535 | DECK CONCRETE DETAILS - SHEET 1                   |
| NL2-AAJ-DRG-0110-BR-0071 | 1830-0536 | DECK CONCRETE DETAILS - SHEET 2                   |
| NL2-AAJ-DRG-0110-BR-0072 | 1830-0537 | DECK CONCRETE DETAILS - SHEET 3                   |
| NL2-AAJ-DRG-0110-BR-0073 | 1830-0538 | DECK REINFORCEMENT DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0110-BR-0074 | 1830-0539 | DECK REINFORCEMENT DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0110-BR-0075 | 1830-0540 | DECK REINFORCEMENT DETAILS - SHEET 3              |
| NL2-AAJ-DRG-0110-BR-0076 | 1830-0541 | CONTINUITY STITCH REINFORCEMENT DETAILS           |

|                          |           |                                     |
|--------------------------|-----------|-------------------------------------|
| NL2-AAJ-DRG-0110-BR-0090 | 1830-0542 | APPROACH SLAB CONCRETE DETAILS      |
| NL2-AAJ-DRG-0110-BR-0091 | 1830-0543 | APPROACH SLAB REINFORCEMENT DETAILS |

|                          |           |                         |
|--------------------------|-----------|-------------------------|
| NL2-AAJ-DRG-0110-BR-0100 | 1830-0544 | EXPANSION JOINT DETAILS |
|--------------------------|-----------|-------------------------|

|                          |           |                               |
|--------------------------|-----------|-------------------------------|
| NL2-AAJ-DRG-0110-BR-0105 | 1830-0545 | COVER PLATE DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0106 | 1830-0546 | COVER PLATE DETAILS - SHEET 2 |

|                          |           |                                  |
|--------------------------|-----------|----------------------------------|
| NL2-AAJ-DRG-0110-BR-0110 | 1830-0547 | BARRIER LAYOUT                   |
| NL2-AAJ-DRG-0110-BR-0111 | 1830-0548 | PRECAST BARRIER CONCRETE DETAILS |
| NL2-AAJ-DRG-0110-BR-0112 | 1830-0549 | BARRIER CONNECTION DETAILS       |

|                          |           |                                      |
|--------------------------|-----------|--------------------------------------|
| NL2-AAJ-DRG-0110-BR-0115 | 1830-0550 | BARRIER DETAILS                      |
| NL2-AAJ-DRG-0110-BR-0116 | 1830-0551 | BARRIER TRANSITION DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0117 | 1830-0552 | BARRIER TRANSITION DETAILS - SHEET 2 |

|                          |           |   |
|--------------------------|-----------|---|
| NL2-AAJ-DRG-0110-BR-0135 | 1830-0553 | LIGHTING AND ELECTRICAL LAYOUT          |
| NL2-AAJ-DRG-0110-BR-0136 | 1830-0554 | LIGHTING AND ELECTRICAL DETAILS         |
| NL2-AAJ-DRG-0110-BR-0137 | 1830-0555 | LIGHT POLE CONTROL BOX DETAILS          |
| NL2-AAJ-DRG-0110-BR-0138 | 1830-0556 | LIGHTING POLE TO BARRIER BRACKET DETAIL |
| NL2-AAJ-DRG-0110-BR-0139 | 1830-0557 | LUMINAIRE BRACKET DETAILS               |

|                          |           |                                |
|--------------------------|-----------|--------------------------------|
| NL2-AAJ-DRG-0110-BR-0155 | 1830-0558 | DESIGN SUMMARY SHEET - SHEET 1 |
| NL2-AAJ-DRG-0110-BR-0156 | 1830-0559 | DESIGN SUMMARY SHEET - SHEET 2 |

**MRWA STANDARD DRAWINGS**

|   |             |   |
|---|-------------|---|
| - | 0530-1457-3 | ROAD-SIDE SLIP-BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET 2 |
| - | 0630-1901   | BRIDGE LIGHT POLE BASE - SHEET 1  |
| - | 0630-1902   | BRIDGE LIGHT POLE BASE - SHEET 2  |

**AS CONSTRUCTED**  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV** & **AECOM** & **ARCADIS**

DESIGN MANAGER: D. SULLIVAN

DATE: 09.10.17

|                 |            |          |
|-----------------|------------|----------|
| DRAWN:          | A. HAWTON  | 11.07.17 |
| DESIGNED:       | T. SMITH   | 11.07.17 |
| CHECKED:        | N. KEAGE   | 11.07.17 |
| APPROVED:       | M. KAKULAS | 11.07.17 |
| DRAWING STATUS: | IFC        |          |

VERIFIER: **GHD**

VERIFIED: G. JOYNSON

DATE: 19.10.17

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS

PROJECT DIRECTOR: R. ARNOTT

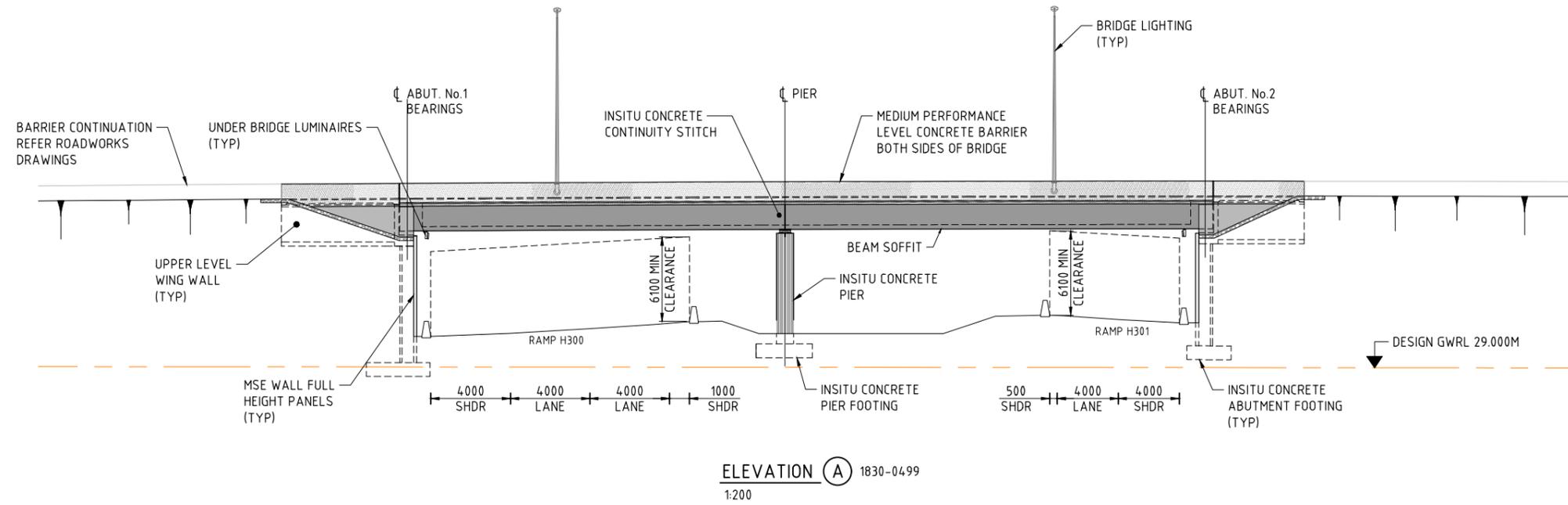
26.10.17 DATE

31.10.17 DATE

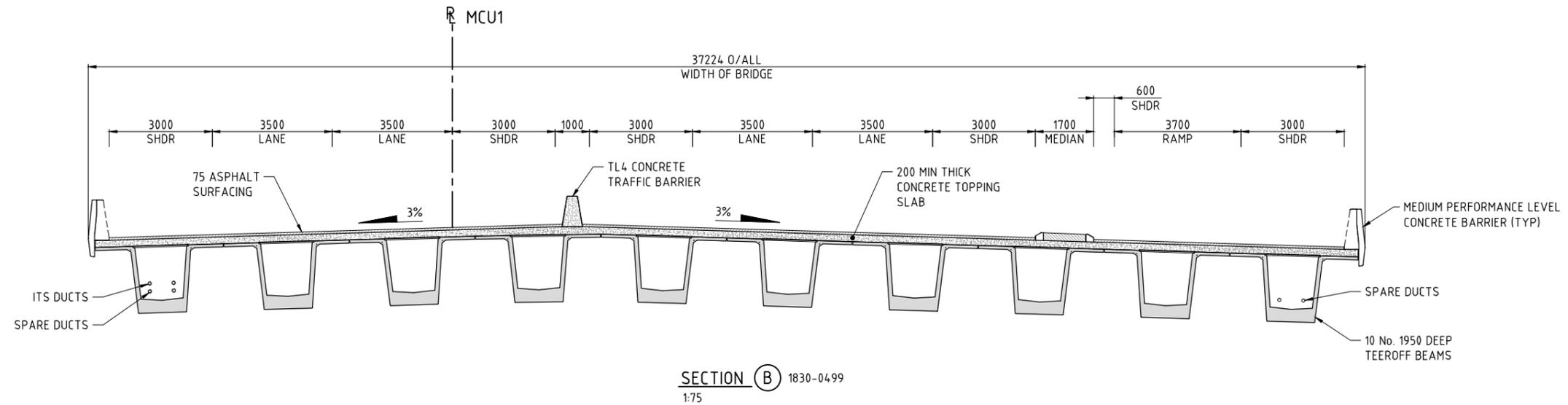
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|---------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MRWA DRAWING NUMBER | 1830-0496   |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1778 INDEX |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0110-BR-0002  |                                |                     |
| REV                 | 1   |                                |                     |



- NOTES:**  
 1. FOR GENERAL NOTES REFER DRGS 1830-0497 AND 1830-0498.



**ELEVATION A** 1830-0499  
1:200



**SECTION B** 1830-0499  
1:75

**AS CONSTRUCTED**  
DATE 23/11/18

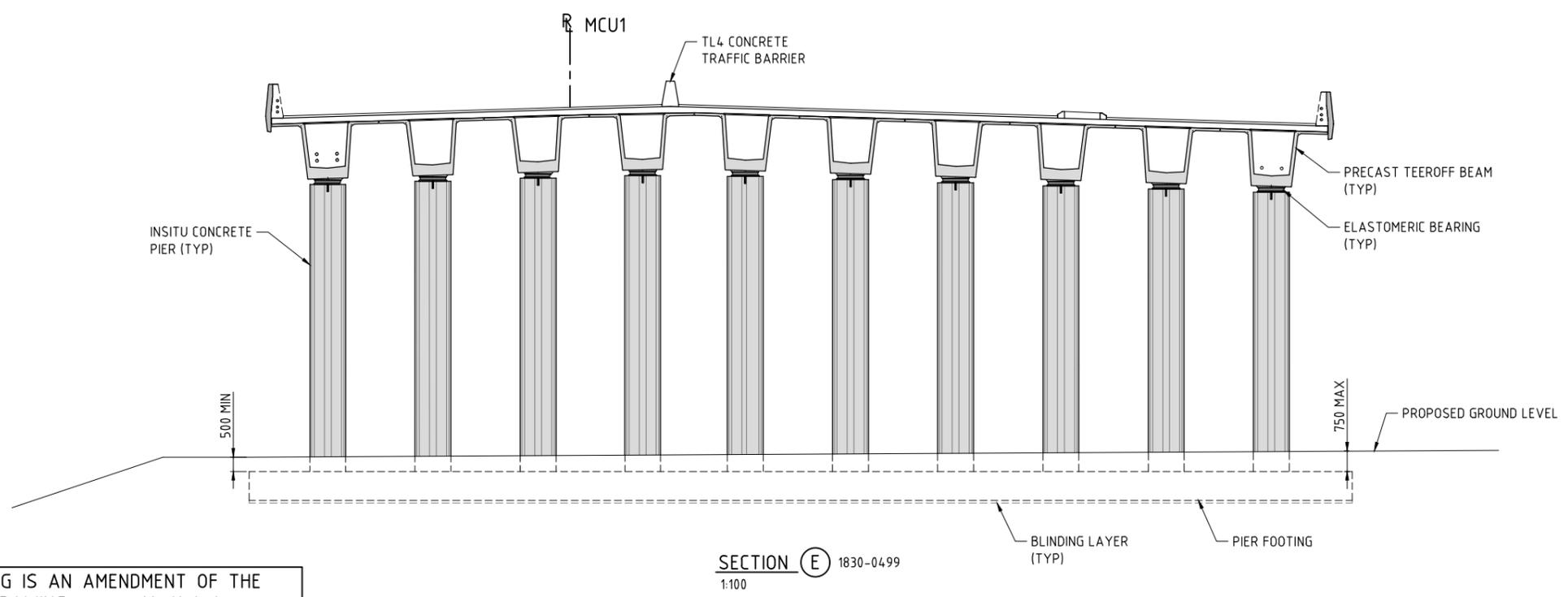
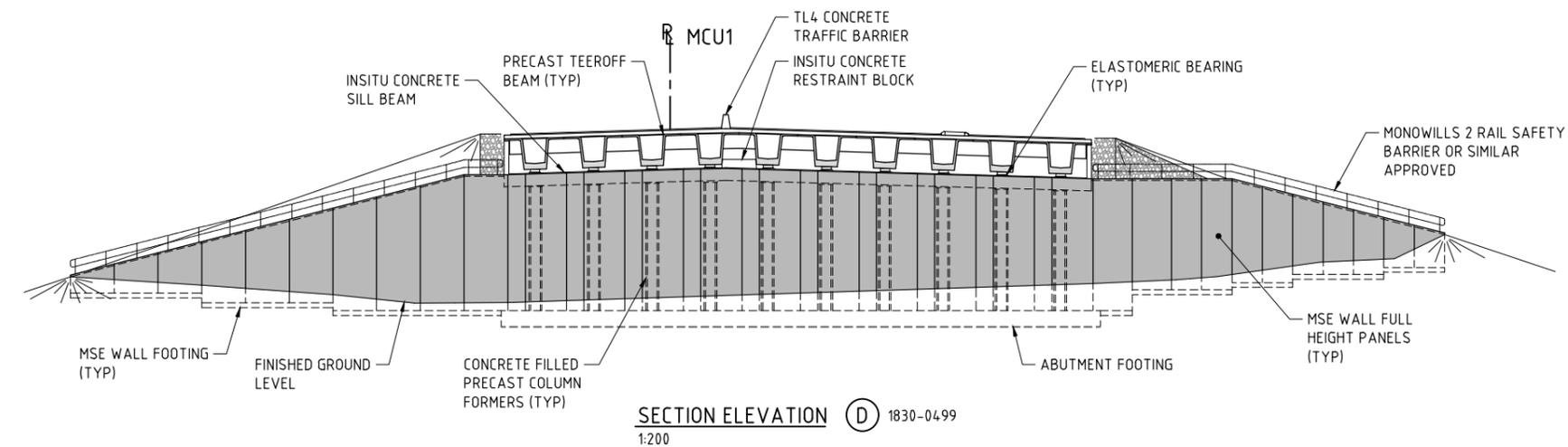
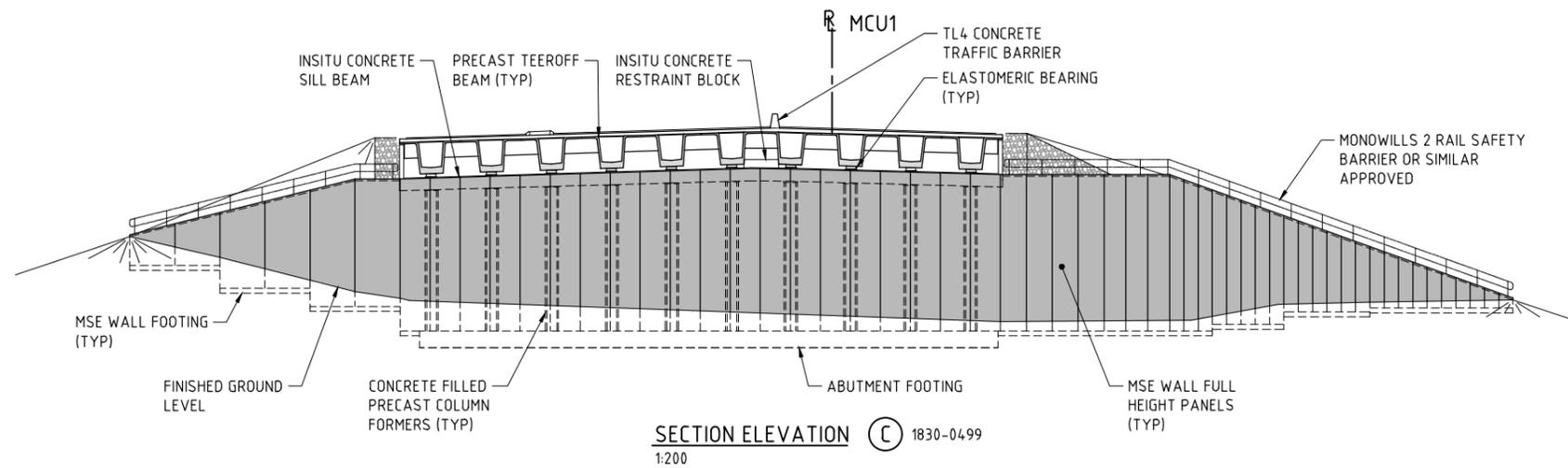
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

PATH: K:\WP01018-Arch\Drawings\Stage\_2\_Traffic\Drawings\Current\Bridges\Northlink\1830-0499.dwg LAST SAVED BY: Admin\225 DATE: 18 September 2018 7:53 AM

| AMENDMENTS |                             | METADATA        |          | DESIGNER           |  | DRAWN    |          | CHECKED    |  | APPROVED   |  | DRAWING STATUS |  | VERIFIED   |  | CONTRACTOR                  |  | LOCAL AUTHORITY     |  | DRAWING NUMBER |  | PROJECT TITLE                |  | DRAWING TITLE   |  | DRAWING No.              |  |
|------------|-----------------------------|-----------------|----------|--------------------|--|----------|----------|------------|--|------------|--|----------------|--|------------|--|-----------------------------|--|---------------------|--|----------------|--|------------------------------|--|---|--|--------------------------|--|
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 23.11.18 | AAJV AECOM ARCADIS |  | T. HAM   | 02.03.17 | M. KAKULAS |  | M. KAKULAS |  | IFC            |  | G. JOYNSON |  | Great Northern CONNECT      |  | (109) CITY OF SWAN  |  | 1830-0500      |  | NORTHLINK WA CENTRAL SECTION |  | TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1778 GENERAL ARRANGEMENT - SHEET 2 |  | NL2-AAJ-DRG-0110-BR-0011 |  |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K.          | 01.11.17 | D. SULLIVAN        |  |          |          |            |  |            |  |                |  | GHD        |  | mainroads WESTERN AUSTRALIA |  | METROPOLITAN REGION |  |                |  |                              |  |   |  | REV 1                    |  |
| DATE       |                             | APPROVED & DATE |          | DATE               |  | DATE     |          | DATE       |  | DATE       |  | DATE           |  | DATE       |  | DATE                        |  | DATE                |  | DATE           |  | DATE                         |  | DATE  |  | DATE                     |  |
|            |                             |                 |          | 09.10.17           |  | 19.10.17 |          |            |  |            |  |                |  | 26.10.17   |  | 31.10.17                    |  |                     |  |                |  |                              |  |   |  |                          |  |



**NOTES:**  
 1. FOR GENERAL NOTES REFER DRGS 1830-0497 AND 1830-0498.



**AS CONSTRUCTED**  
 DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
 M. Kakulas

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV**  
**AECOM** **ARCADIS**

DESIGN MANAGER D. SULLIVAN 09.10.17 DATE

|                |            |          |
|----------------|------------|----------|
| DRAWN          | A. HAWTON  | 11.07.17 |
| DESIGNED       | T. SMITH   | 11.07.17 |
| CHECKED        | N. KEAGE   | 11.07.17 |
| APPROVED       | M. KAKULAS | 11.07.17 |
| DRAWING STATUS | IFC        |          |

VERIFIER  
**GHD**

VERIFIED G. JOYNSON  
 DATE 19.10.17

CONSTRUCTOR  
**Great Northern CONNECT**

**mainroads WESTERN AUSTRALIA**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER G. XANTHIS 26.10.17 DATE  
 PROJECT DIRECTOR R. ARNOTT 31.10.17 DATE

|                    |  |                                |                     |
|--------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-0501  |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1778<br>GENERAL ARRANGEMENT - SHEET 3 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0110-BR-0012   |                                |                     |

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**DRAWING INDEX**

DRAWING NUMBER

MRWA DRG No.

DRAWING DESCRIPTION

DRAWING NUMBER

MRWA DRG No.

DRAWING DESCRIPTION

**GENERAL**

NL2-AAJ-DRG-0120-BR-0001  
NL2-AAJ-DRG-0120-BR-0002

1830-0561  
1830-0562

LOCALITY PLAN  
INDEX

NL2-AAJ-DRG-0120-BR-0005  
NL2-AAJ-DRG-0120-BR-0006

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1830-0564

GENERAL NOTES - SHEET 1  
GENERAL NOTES - SHEET 2

NL2-AAJ-DRG-0120-BR-0010  
NL2-AAJ-DRG-0120-BR-0011  
NL2-AAJ-DRG-0120-BR-0012

1830-0565  
1830-0566  
1830-0567

GENERAL ARRANGEMENT - SHEET 1  
GENERAL ARRANGEMENT - SHEET 2  
GENERAL ARRANGEMENT - SHEET 3

**SUBSTRUCTURES**

NL2-AAJ-DRG-0120-BR-0015  
NL2-AAJ-DRG-0120-BR-0016  
NL2-AAJ-DRG-0120-BR-0017

1830-0568  
1830-0569  
1830-0570

BORE INFORMATION - SHEET 1  
BORE INFORMATION - SHEET 2  
GEOMETRIC DATA

NL2-AAJ-DRG-0120-BR-0020  
NL2-AAJ-DRG-0120-BR-0021  
NL2-AAJ-DRG-0120-BR-0023  
NL2-AAJ-DRG-0120-BR-0024  
NL2-AAJ-DRG-0120-BR-0025  
NL2-AAJ-DRG-0120-BR-0026  
NL2-AAJ-DRG-0120-BR-0027  
NL2-AAJ-DRG-0120-BR-0028  
NL2-AAJ-DRG-0120-BR-0029  
NL2-AAJ-DRG-0120-BR-0030  
NL2-AAJ-DRG-0120-BR-0031  
NL2-AAJ-DRG-0120-BR-0032  
NL2-AAJ-DRG-0120-BR-0033

1830-0571  
1830-0572  
1830-0573  
1830-0574  
1830-0575  
1830-0576  
1830-0577  
1830-0578  
1830-0579  
1830-0580  
1830-0581  
1830-0582  
1830-0583

ABUTMENT - MSE WALL LAYOUT  
ABUTMENT - MSE WALL ELEVATIONS  
ABUTMENT - MSE WALL - TYPICAL DETAILS  
COLUMN FORMER DETAILS  
ABUTMENT - CONCRETE DETAILS - SHEET 1  
ABUTMENT - CONCRETE DETAILS - SHEET 2  
ABUTMENT - TYPICAL CONCRETE DETAILS  
WING WALL DETAILS  
WING WALL REINFORCEMENT DETAILS  
ABUTMENT - REINFORCEMENT DETAILS - SHEET 1  
ABUTMENT - REINFORCEMENT DETAILS - SHEET 2  
ABUTMENT - REINFORCEMENT DETAILS - SHEET 3  
COLUMN REINFORCEMENT DETAILS

NL2-AAJ-DRG-0120-BR-0035  
NL2-AAJ-DRG-0120-BR-0036  
NL2-AAJ-DRG-0120-BR-0037  
NL2-AAJ-DRG-0120-BR-0038

1830-0584  
1830-0585  
1830-0586  
1830-0587

PIER - CONCRETE DETAILS - SHEET 1  
PIER - CONCRETE DETAILS - SHEET 2  
PIER - REINFORCEMENT DETAILS - SHEET 1  
PIER - REINFORCEMENT DETAILS - SHEET 2

NL2-AAJ-DRG-0120-BR-0040  
NL2-AAJ-DRG-0120-BR-0041

1830-0588  
1830-0589

FUTURE PIER WALL DETAILS  
FUTURE PIER WALL REINFORCEMENT DETAILS

**SUPERSTRUCTURE**

NL2-AAJ-DRG-0120-BR-0045  
NL2-AAJ-DRG-0120-BR-0046  
NL2-AAJ-DRG-0120-BR-0047

1830-0590  
1830-0591  
1830-0592

BEARING DETAILS - SHEET 1  
BEARING DETAILS - SHEET 2  
BEARING DETAILS - SHEET 3

NL2-AAJ-DRG-0120-BR-0050

1830-0593

PRECAST TEEROFF BEAM LAYOUT

NL2-AAJ-DRG-0120-BR-0052  
NL2-AAJ-DRG-0120-BR-0053  
NL2-AAJ-DRG-0120-BR-0054  
NL2-AAJ-DRG-0120-BR-0055  
NL2-AAJ-DRG-0120-BR-0056  
NL2-AAJ-DRG-0120-BR-0057

1830-0594  
1830-0595  
1830-0596  
1830-0597  
1830-0598  
1830-0599

PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1  
PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2  
PRECAST TEEROFF - CONCRETE DETAILS - SHEET 3  
PRECAST TEEROFF - CONCRETE DETAILS - SHEET 4  
PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 1  
PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 2

**MRWA STANDARD DRAWINGS**

NL2-AAJ-DRG-0120-BR-0090  
NL2-AAJ-DRG-0120-BR-0091  
  
NL2-AAJ-DRG-0120-BR-0100  
  
NL2-AAJ-DRG-0120-BR-0105  
NL2-AAJ-DRG-0120-BR-0106  
  
NL2-AAJ-DRG-0120-BR-0110  
NL2-AAJ-DRG-0120-BR-0111  
NL2-AAJ-DRG-0120-BR-0112  
NL2-AAJ-DRG-0120-BR-0115  
NL2-AAJ-DRG-0120-BR-0116  
  
NL2-AAJ-DRG-0120-BR-0135  
NL2-AAJ-DRG-0120-BR-0136  
NL2-AAJ-DRG-0120-BR-0137  
NL2-AAJ-DRG-0120-BR-0138  
NL2-AAJ-DRG-0120-BR-0139  
  
NL2-AAJ-DRG-0120-BR-0140  
NL2-AAJ-DRG-0120-BR-0141  
  
NL2-AAJ-DRG-0120-BR-0145  
NL2-AAJ-DRG-0120-BR-0146  
  
NL2-AAJ-DRG-0120-BR-0155  
NL2-AAJ-DRG-0120-BR-0156

1830-0600  
1830-0601  
1830-0602  
1830-0603  
1830-0604  
1830-0605  
  
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1830-0633

PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 3  
PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 4  
PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1  
PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2  
PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 3  
PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 4  
  
DECK CONCRETE DETAILS - SHEET 1  
DECK CONCRETE DETAILS - SHEET 2  
DECK CONCRETE DETAILS - SHEET 3  
DECK REINFORCEMENT DETAILS - SHEET 1  
DECK REINFORCEMENT DETAILS - SHEET 2  
DIAPHRAGM DETAILS  
CONTINUITY STITCH REINFORCEMENT DETAILS  
  
APPROACH SLAB CONCRETE DETAILS  
APPROACH SLAB REINFORCEMENT DETAILS  
  
EXPANSION JOINT DETAILS  
  
COVER PLATE DETAILS - SHEET 1  
COVER PLATE DETAILS - SHEET 2  
  
PRECAST BARRIER LAYOUT AND DETAILS  
PRECAST BARRIER CONCRETE DETAILS  
PRECAST BARRIER CONNECTION DETAILS  
INSITU BARRIER LAYOUT AND DETAILS - SHEET 1  
INSITU BARRIER LAYOUT AND DETAILS - SHEET 2  
  
UNDER BRIDGE LIGHTING DETAILS  
LIGHTPOLE TO BARRIER FIXING DETAILS  
BARRIER ELECTRICAL JUNCTION BOX DETAILS - SHEET 1  
BARRIER ELECTRICAL JUNCTION BOX DETAILS - SHEET 2  
LUMINAIRE BRACKET DETAILS  
  
EARTHING & BONDING DETAILS - SHEET 1  
EARTHING & BONDING DETAILS - SHEET 2  
  
FUTURE ELECTRIFICATION PROTECTION SCREEN SHEET - 1  
FUTURE ELECTRIFICATION PROTECTION SCREEN SHEET - 2  
  
DESIGN SUMMARY SHEET - SHEET 1  
DESIGN SUMMARY SHEET - SHEET 2  
  
BRIDGE LIGHT POLE BASE - SHEET 1  
BRIDGE LIGHT POLE BASE - SHEET 2  
ROAD-SIDE SLIP BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET 2

Path: K:\WP014\18-Northlink\_Stage\_2\_Tonkin-Corridor\Drawings\Current\Bridges\Northlink\NL2\Submitted to LO102-B\TTS\DWG\1830-0562.dwg LAST SAVED BY: jdm2278 DATE: 16 September 2018 2:53 PM

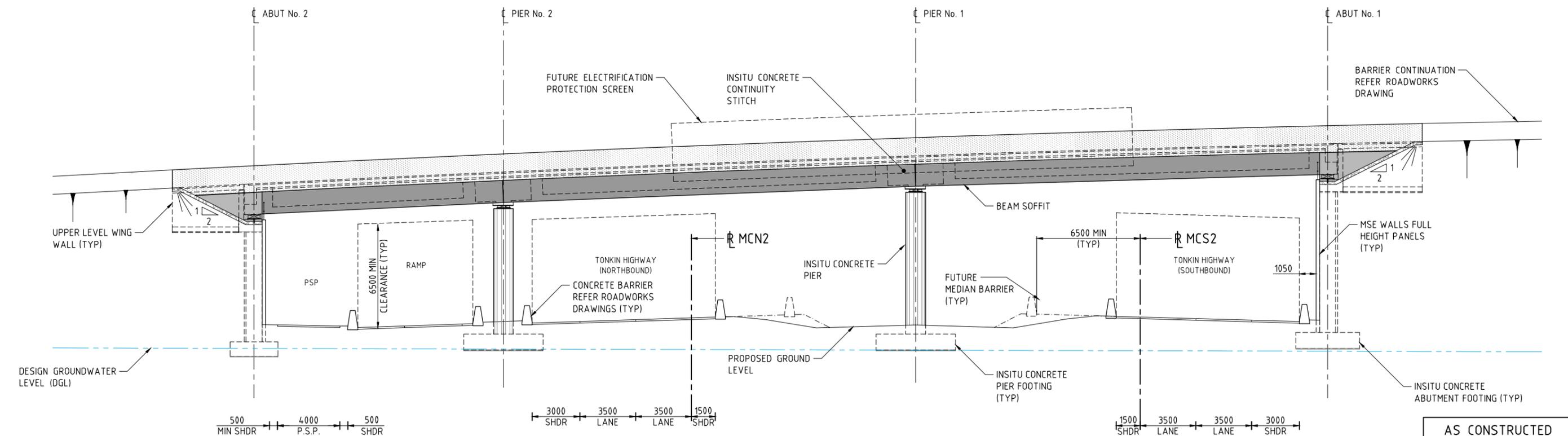
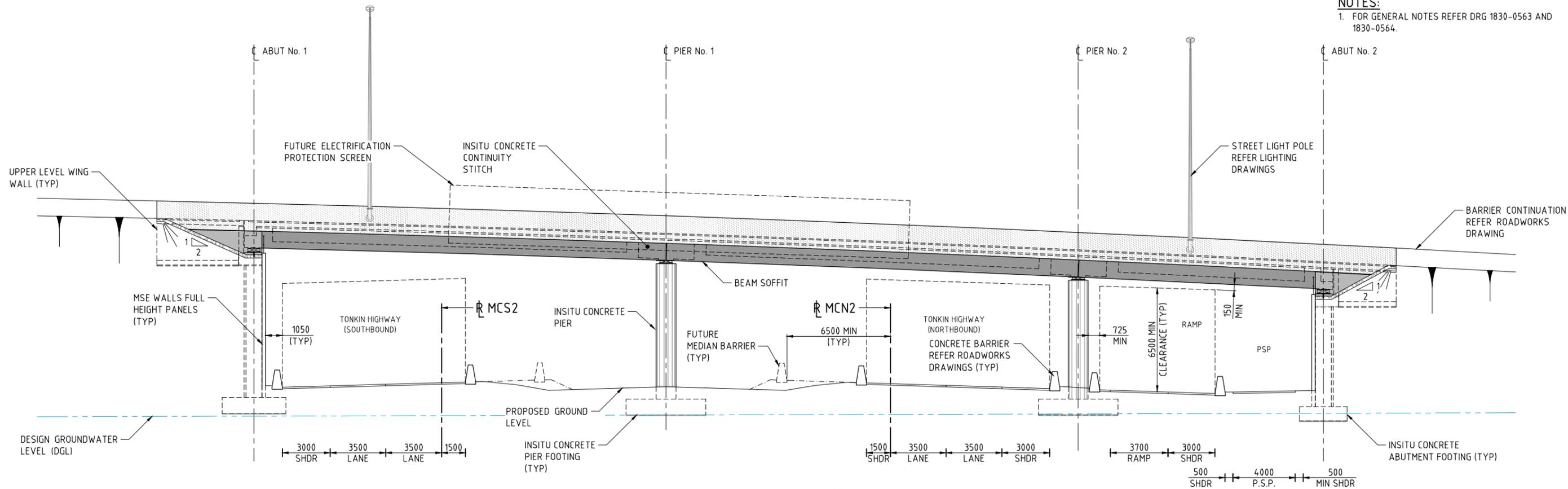
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 23/11/18

|  |  |  |   |  |   |   |  |  |   |  |  |                           |
|--|--|--|---|--|---|---|--|--|---|--|--|---------------------------|
| <p>1 AS CONSTRUCTED - NO CHANGES<br/>0 ISSUED FOR CONSTRUCTION</p> |  | <p>M.N.K. 23.11.18<br/>M.N.K. 24.01.18</p> | <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAPPING SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAIN ROADS PROJECT ZONE: PCG94<br/>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER<br/><b>AAJV</b><br/><b>AECOM</b> &amp; <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 08.12.17 DATE</p> | <p>DRAWN W. DRUMMY 25.07.17<br/>DESIGNED S. SERGEEV 25.07.17<br/>CHECKED M. KAKULAS 25.07.17<br/>APPROVED M. KAKULAS 25.07.17</p> <p>DRAWING STATUS IFC</p> | <p>VERIFIER G. JOYNSON<br/>DATE 22.12.17</p> | <p>CONSTRUCTOR<br/><b>Great Northern CONNECT</b></p> | <p>CONTRACT MANAGER G. XANTHIS<br/>PROJECT DIRECTOR R. ARNOTT</p> | <p>16.01.18 DATE<br/>16.01.18 DATE</p> | <p>LOCAL AUTHORITY (109) CITY OF SWAN<br/>MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION</p> <p>MRWA DRAWING NUMBER 1830-0562</p> <p>PROJECT TITLE NORTHLINK WA CENTRAL SECTION</p> <p>DRAWING TITLE TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1779 INDEX</p> <p>DRAWING No. NL2-AAJ-DRG-0120-BR-0002</p> | <p>SCALE<br/>SHEET A1</p> |
|--|--|--|---|--|---|---|--|--|---|--|--|---------------------------|



**NOTES:**  
 1. FOR GENERAL NOTES REFER DRG 1830-0563 AND 1830-0564.



THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
 M. Kakulas

**AS CONSTRUCTED**  
 DATE 23/11/18

| AMENDMENTS |                             |
|------------|-----------------------------|
| No.        | DESCRIPTION                 |
| 1          | AS CONSTRUCTED - NO CHANGES |
| 0          | ISSUED FOR CONSTRUCTION     |

| METADATA                 |                    |
|--------------------------|--------------------|
| DESIGNER                 | AAJV AECOM ARCADIS |
| GROUND SURVEY STANDARD:  |                    |
| DATE OF CAPTURE:         |                    |
| MAPPING SURVEY STANDARD: |                    |
| DATE OF CAPTURE:         |                    |
| MAIN ROADS PROJECT ZONE: | PCG94              |
| HEIGHT DATUM:            | AHD                |

|                |             |          |                     |
|----------------|-------------|----------|---------------------|
| DESIGN MANAGER | D. SULLIVAN | DATE     | 08.12.17            |
| DRAWING STATUS | IFC         | DESIGNED | P. MALONEY 01.02.17 |
|                |             | CHECKED  | S. SERGEEV 01.02.17 |
|                |             | APPROVED | M. KAKULAS 01.02.17 |

|          |            |      |          |
|----------|------------|------|----------|
| VERIFIER | G. JOYNSON | DATE | 22.12.17 |
|----------|------------|------|----------|



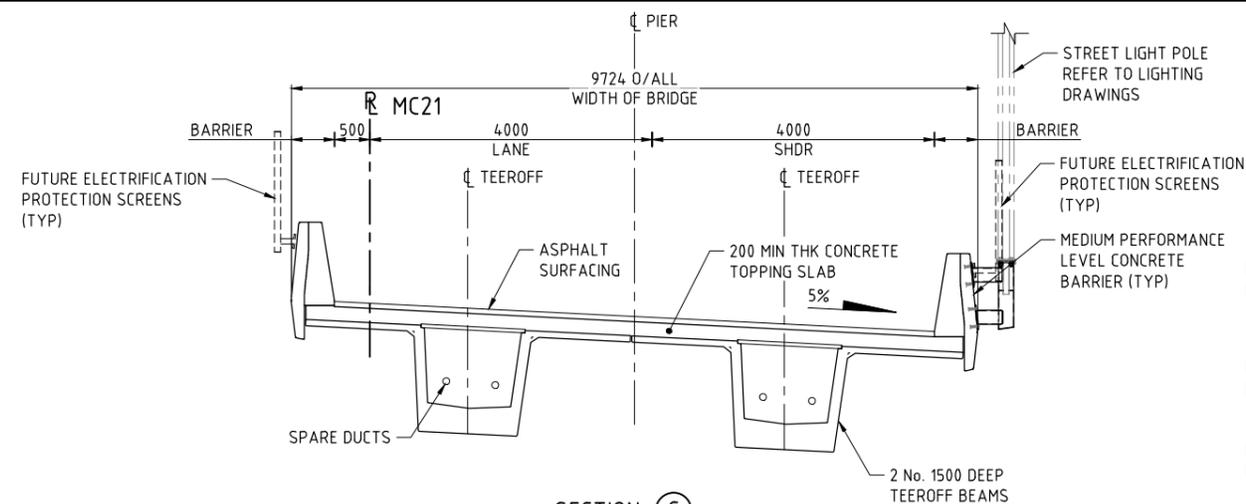
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|------------------|------------|------|----------|
| CONTRACT MANAGER | G. XANTHIS | DATE | 16.01.18 |
| PROJECT DIRECTOR | R. ARNOTT  | DATE | 16.01.18 |

|                    |   |                                |                              |
|--------------------|---|--------------------------------|------------------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION          |
| MWA DRAWING NUMBER | 1830-0566   | PROJECT TITLE                  | NORTHLINK WA CENTRAL SECTION |
| DRAWING TITLE      | TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1779 GENERAL ARRANGEMENT - SHEET 2 | DRAWING No.                    | NL2-AAJ-DRG-0120-BR-0011     |

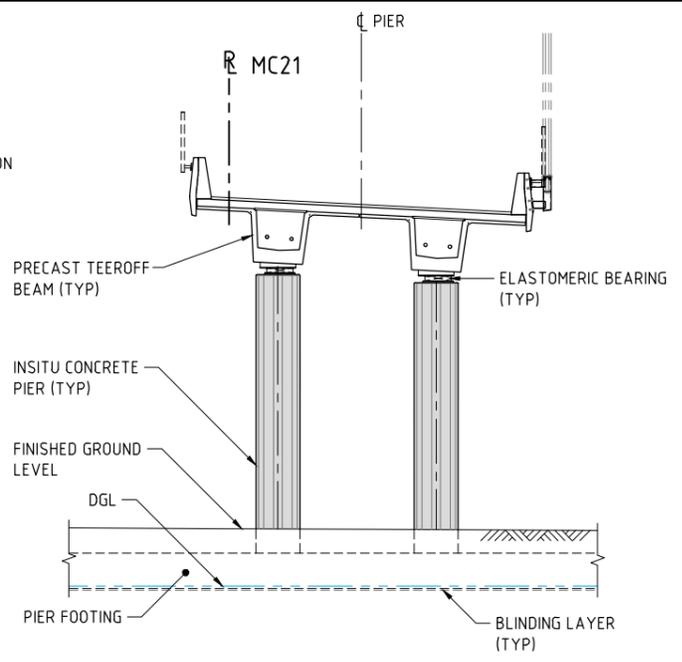
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SCALE 1:125  
 SHEET A1

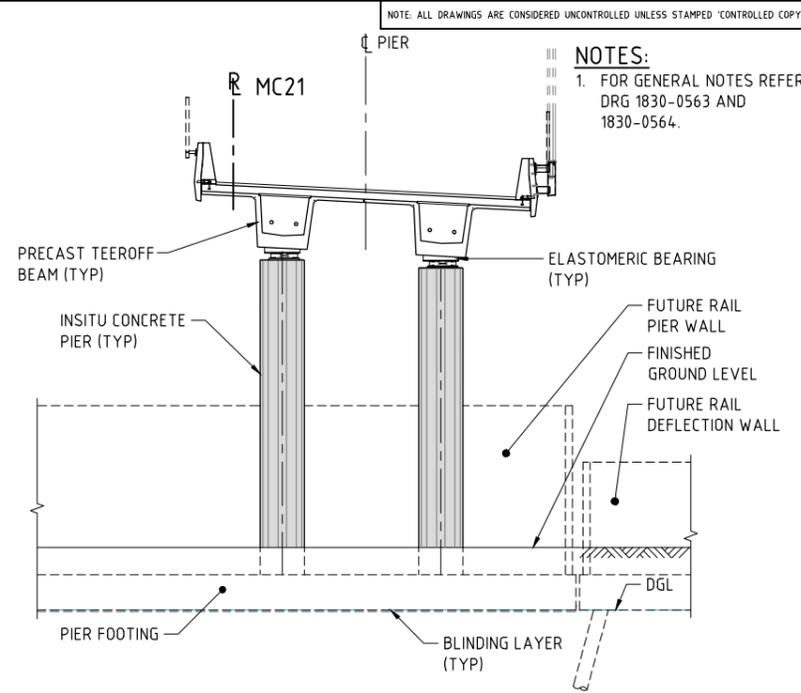
NOTES:  
1. FOR GENERAL NOTES REFER DRG 1830-0563 AND 1830-0564.



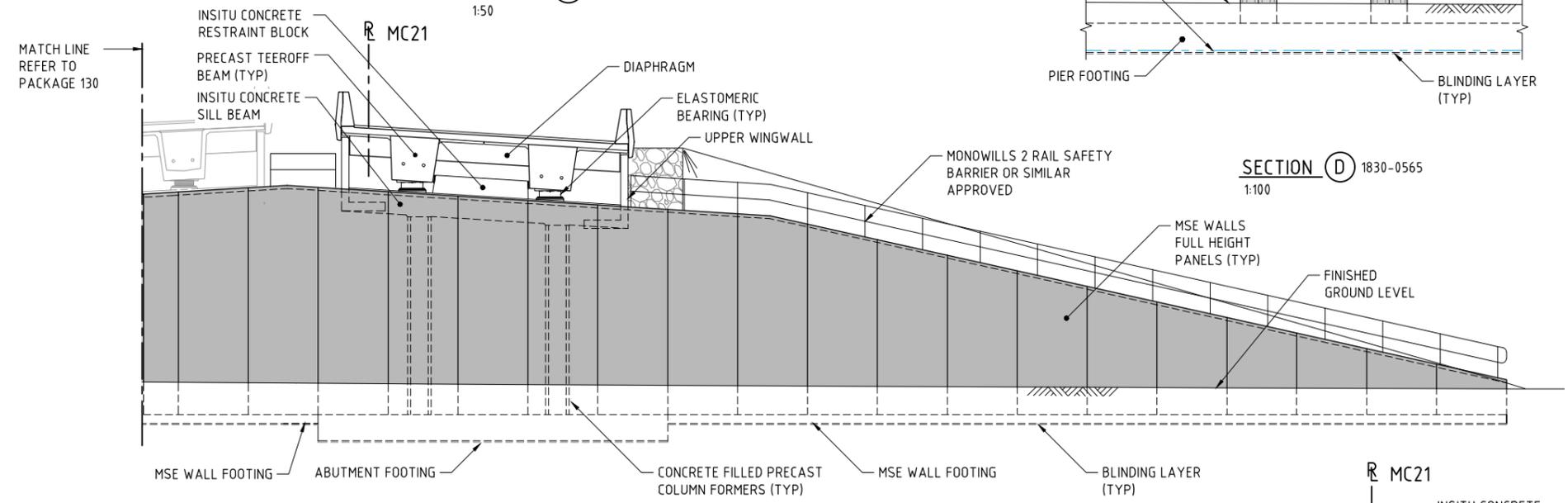
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1:50



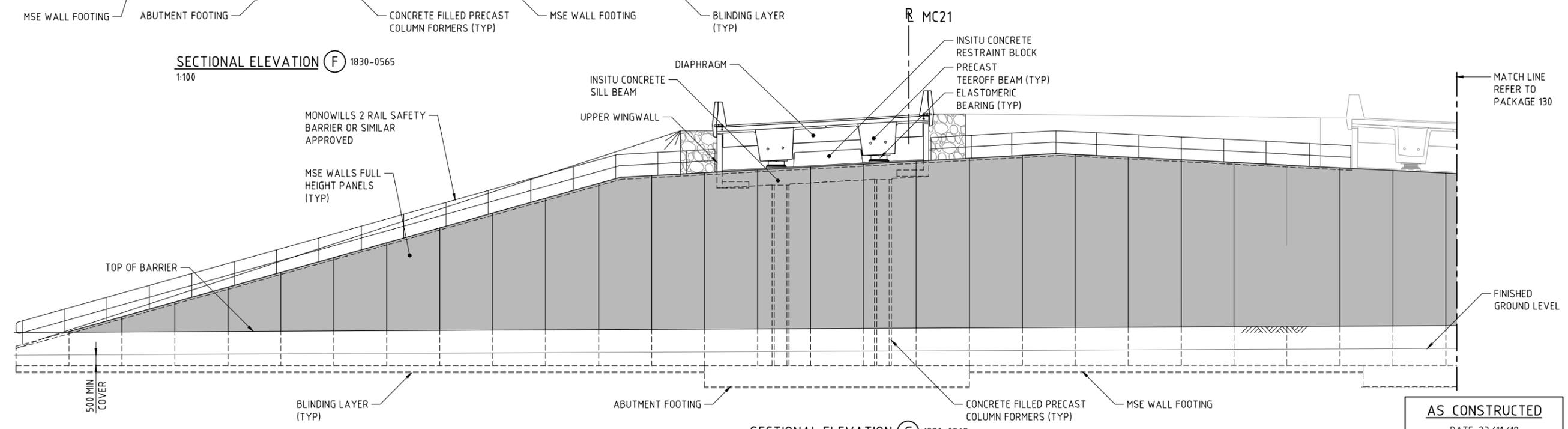
SECTION D 1830-0565  
1:100



SECTION E 1830-0565  
1:100



SECTIONAL ELEVATION F 1830-0565  
1:100



SECTIONAL ELEVATION G 1830-0565  
1:100

AS CONSTRUCTED  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

METADATA

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV AECOM ARCADIS**

DESIGN MANAGER D. SULLIVAN 08.12.17 DATE

|                |            |          |
|----------------|------------|----------|
| DRAWN          | P. MALONEY | 01.02.17 |
| DESIGNED       | S. SERGEEV | 01.02.17 |
| CHECKED        | M. KAKULAS | 01.02.17 |
| APPROVED       | M. KAKULAS | 01.02.17 |
| DRAWING STATUS | IFC        |          |

VERIFIER  
**GHD**

VERIFIED G. JOYNSON DATE 22.12.17

CONSTRUCTOR  
**Great Northern CONNECT**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER G. XANTHIS 16.01.18 DATE  
PROJECT DIRECTOR R. ARNOTT 16.01.18 DATE

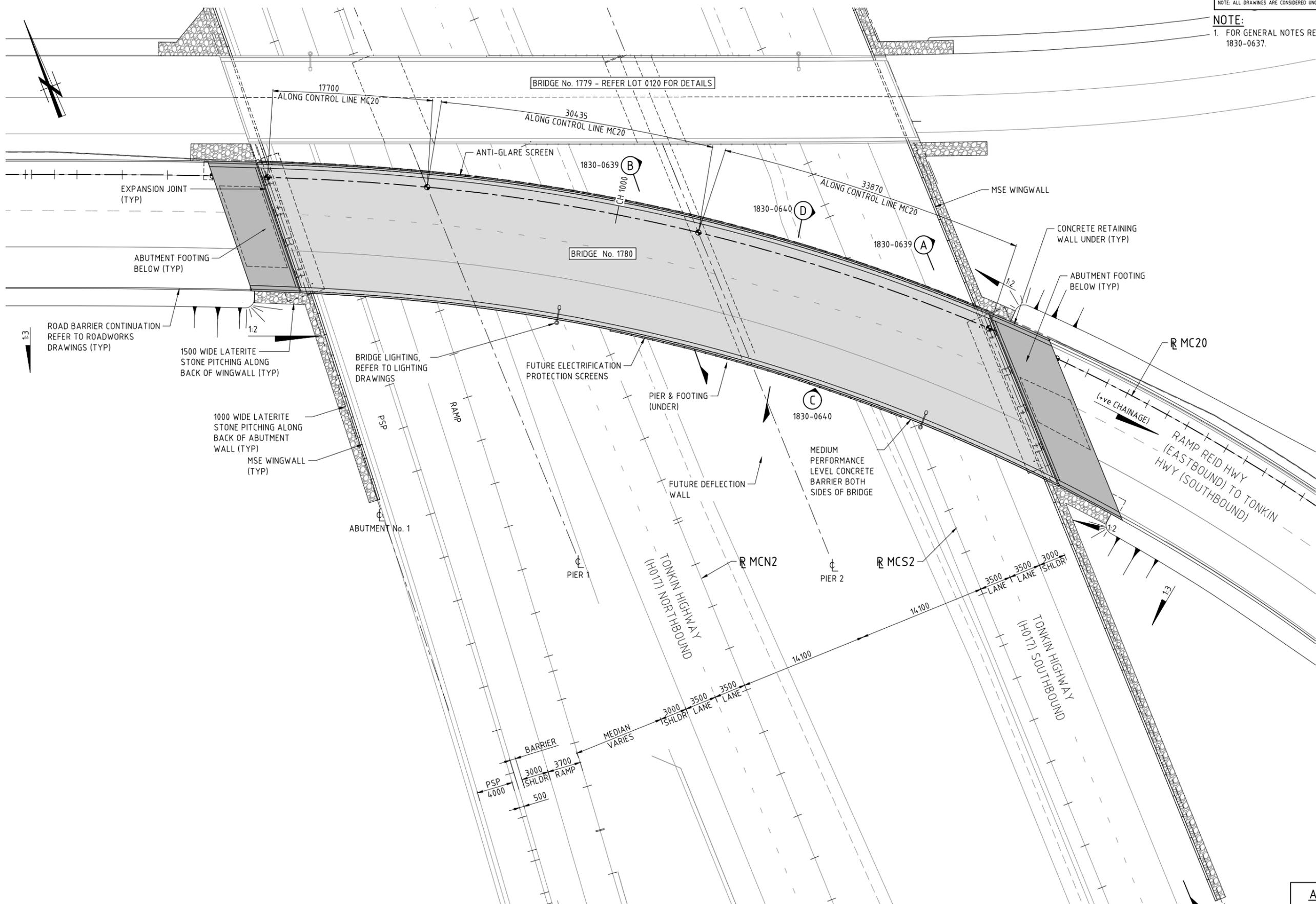
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| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIBA DRAWING NUMBER | 1830-0567  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1779<br>GENERAL ARRANGEMENT - SHEET 3 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0120-BR-0012   |                                |                     |

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NOTE: ALL DRAWINGS ARE CONSIDERED UNCONTROLLED UNLESS STAMPED 'CONTROLLED COPY' IN RED  
 1. FOR GENERAL NOTES REFER DRG 1830-0636 AND 1830-0637.



PLAN - BRIDGE No. 1780 (REID / TONKIN INTERCHANGE)  
 SCALE 1:200

AS CONSTRUCTED  
 DATE 23/11/18

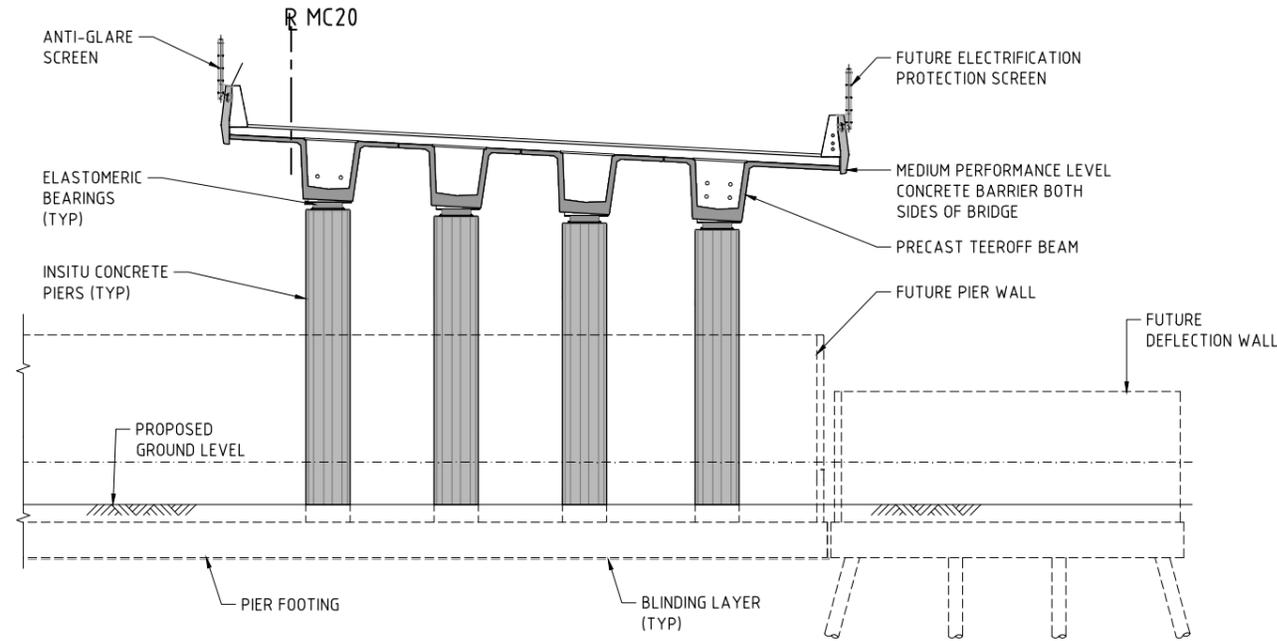
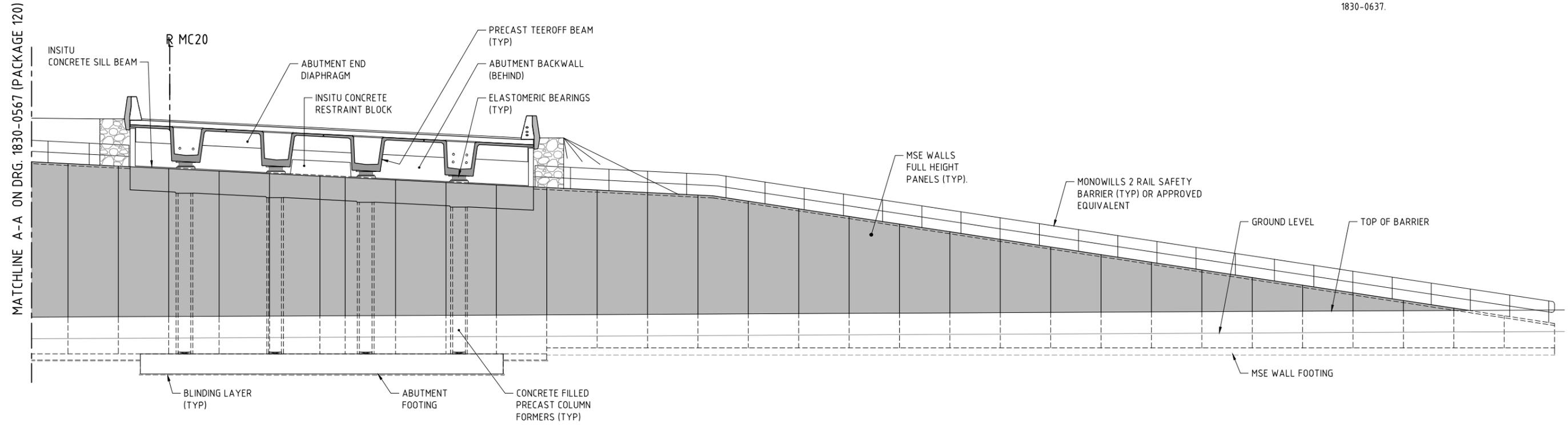
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

| METADATA   |                             | DESIGNER                 | DRAWN   | DESIGNED                               | CHECKED   | APPROVED             | DRAWING STATUS                                | VERIFIED             | CONSTRUCTOR                         | LOCAL AUTHORITY   | MIRWA DRAWING NUMBER | PROJECT TITLE                | DRAWING TITLE  | DRAWING No.              |       |
|--|-----------------------------|--------------------------|---|--|---|----------------------|---|----------------------|-------------------------------------|---|----------------------|------------------------------|--|--------------------------|-------|
| 1  | AS CONSTRUCTED - NO CHANGES | M.N.K.                   | P. MORRISON   | W. GALLAGER                            | N. KEAGE  | M. KAKULAS           | IFC   | G. JOYNSON           | Great Northern CONNECT              | (109) CITY OF SWAN  | 1830-0638            | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1780 GENERAL ARRANGEMENT-SHEET 1          | NL2-AAJ-DRG-0130-BR-0010 |       |
| 0  | ISSUED FOR CONSTRUCTION     | M.N.K.                   |   |  |   |                      |   |                      | mainroads WESTERN AUSTRALIA         | METROPOLITAN REGION   |                      |                              |  | REV 1                    |       |
| GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |                             | AAJV<br>AECOM<br>ARCADIS | DESIGNED: W. GALLAGER 01.02.17<br>CHECKED: N. KEAGE 01.02.17<br>APPROVED: M. KAKULAS 01.02.17 | VERIFIED: G. JOYNSON<br>DATE: 22.12.17 | CONTRACT MANAGER: G. XANTHIS<br>PROJECT DIRECTOR: R. ARNOTT | 23.11.18<br>24.01.18 | DESIGN MANAGER: D. SULLIVAN<br>DATE: 18.12.17 | 16.01.18<br>16.01.18 | INFRASTRUCTURE DELIVERY DIRECTORATE | (109) CITY OF SWAN<br>MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN REGION | 1830-0638            | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1780<br>GENERAL ARRANGEMENT-SHEET 1 | NL2-AAJ-DRG-0130-BR-0010 | REV 1 |

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SCALE 1:200  
 SHEET A1

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG 1830-0636 AND 1830-0637.



**AS CONSTRUCTED**  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN 18.12.17 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | P. MORRISON | 01.02.17 |
| DESIGNED       | W. GALLAGER | 01.02.17 |
| CHECKED        | N. KEAGE    | 01.02.17 |
| APPROVED       | M. KAKULAS  | 01.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER: **GHD**

VERIFIED: G. JOYNSON  
DATE 22.12.17

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS  
PROJECT DIRECTOR: R. ARNOTT

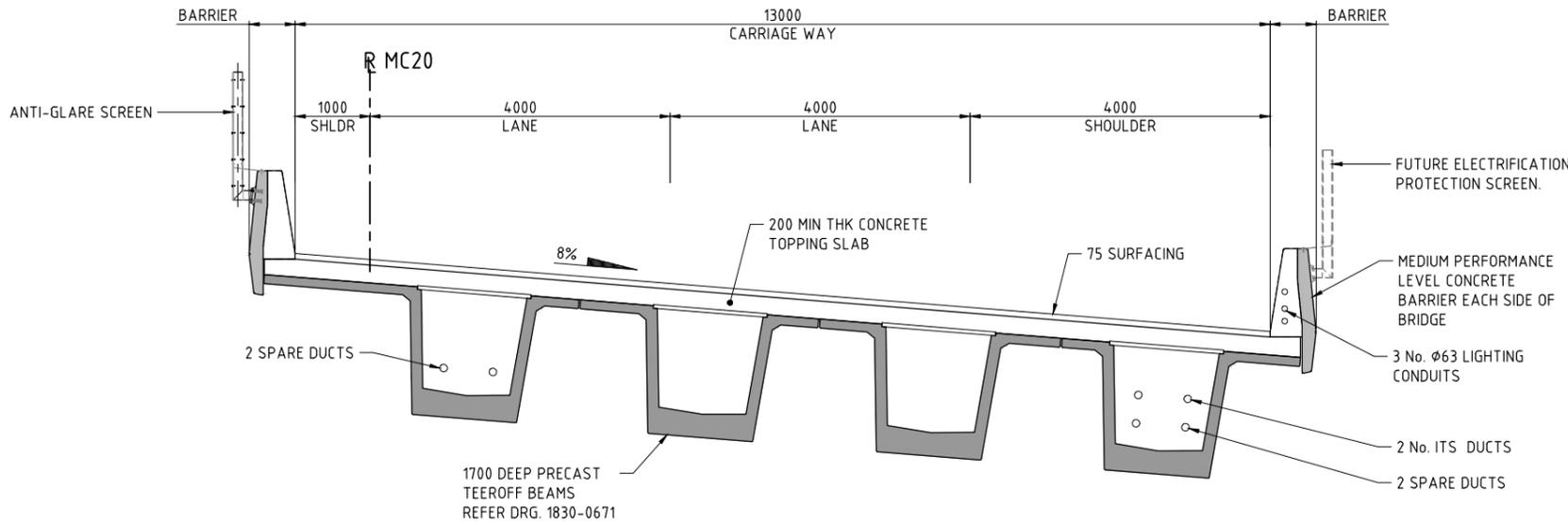
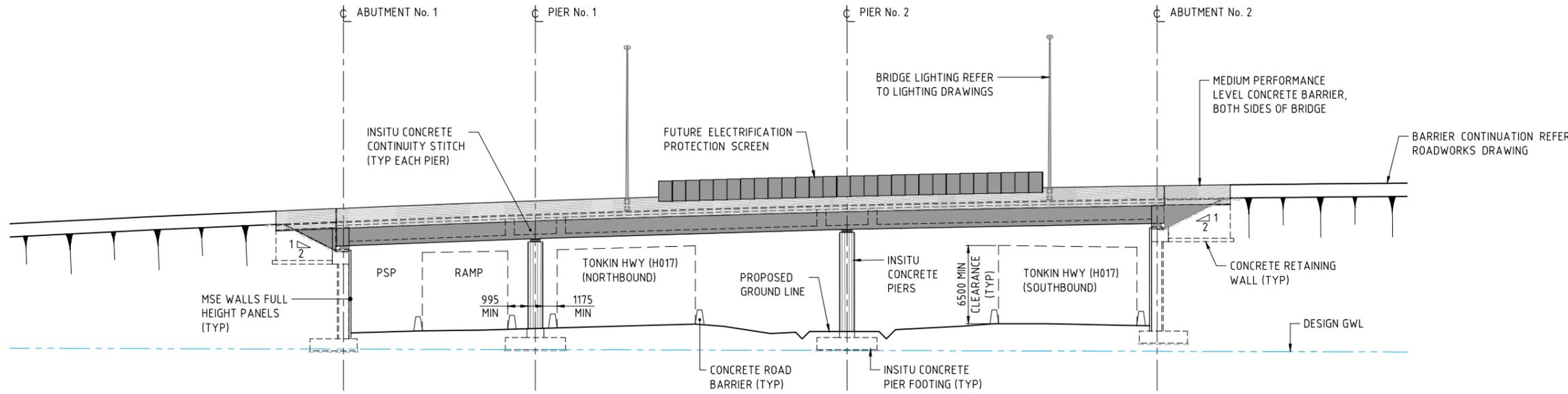
INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                     |
|---------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-0639  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>BRIDGE No. 1780<br>GENERAL ARRANGEMENT-SHEET 2 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0130-BR-0011   |                                |                     |

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SCALE 1:100  
SHEET A1

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG 1830-0636 AND 1830-0637.



**AS CONSTRUCTED**  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

| No.        | DESCRIPTION                 | APPROVED & DATE |
|------------|-----------------------------|-----------------|
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K. 23.11.18 |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 24.01.18 |
| AMENDMENTS |                             |                 |

| METADATA                 |                    |
|--------------------------|--------------------|
| DESIGNER                 | AAJV AECOM ARCADIS |
| GROUND SURVEY STANDARD:  |                    |
| DATE OF CAPTURE:         |                    |
| MAPPING SURVEY STANDARD: |                    |
| DATE OF CAPTURE:         |                    |
| MAIN ROADS PROJECT ZONE: | PCG94              |
| HEIGHT DATUM:            | AHD                |

|                |             |          |          |
|----------------|-------------|----------|----------|
| DESIGN MANAGER | D. SULLIVAN | 18.12.17 | DATE     |
| DRAWN          | P. MORRISON | 01.02.17 | VERIFIED |
| DESIGNED       | W. GALLAGER | 01.02.17 | GHD      |
| CHECKED        | N. KEAGE    | 01.02.17 |          |
| APPROVED       | M. KAKULAS  | 01.02.17 |          |
| DRAWING STATUS | IFC         |          |          |
| VERIFIED       | G. JOYNSON  | 22.12.17 | DATE     |

|                  |            |          |      |
|------------------|------------|----------|------|
| CONTRACT MANAGER | G. XANTHIS | 16.01.18 | DATE |
| PROJECT DIRECTOR | R. ARNOTT  | 16.01.18 | DATE |



|                      |   |                                |                     |
|----------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY      | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRWA DRAWING NUMBER | 1830-0640   |                                |                     |
| PROJECT TITLE        | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE        | TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE BRIDGE No. 1780 GENERAL ARRANGEMENT-SHEET 3 |                                |                     |
| DRAWING No.          | NL2-AAJ-DRG-0130-BR-0012  |                                |                     |

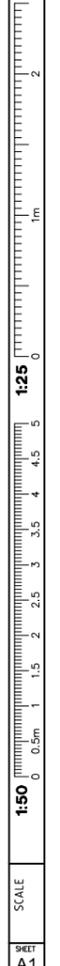
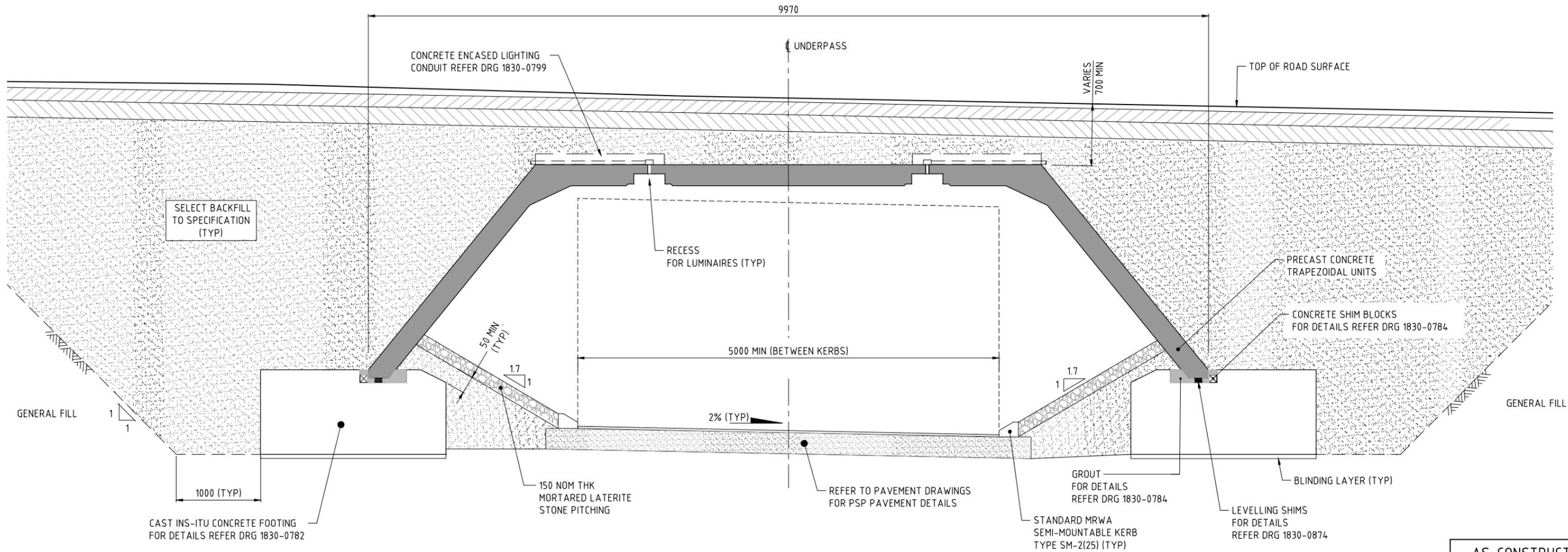
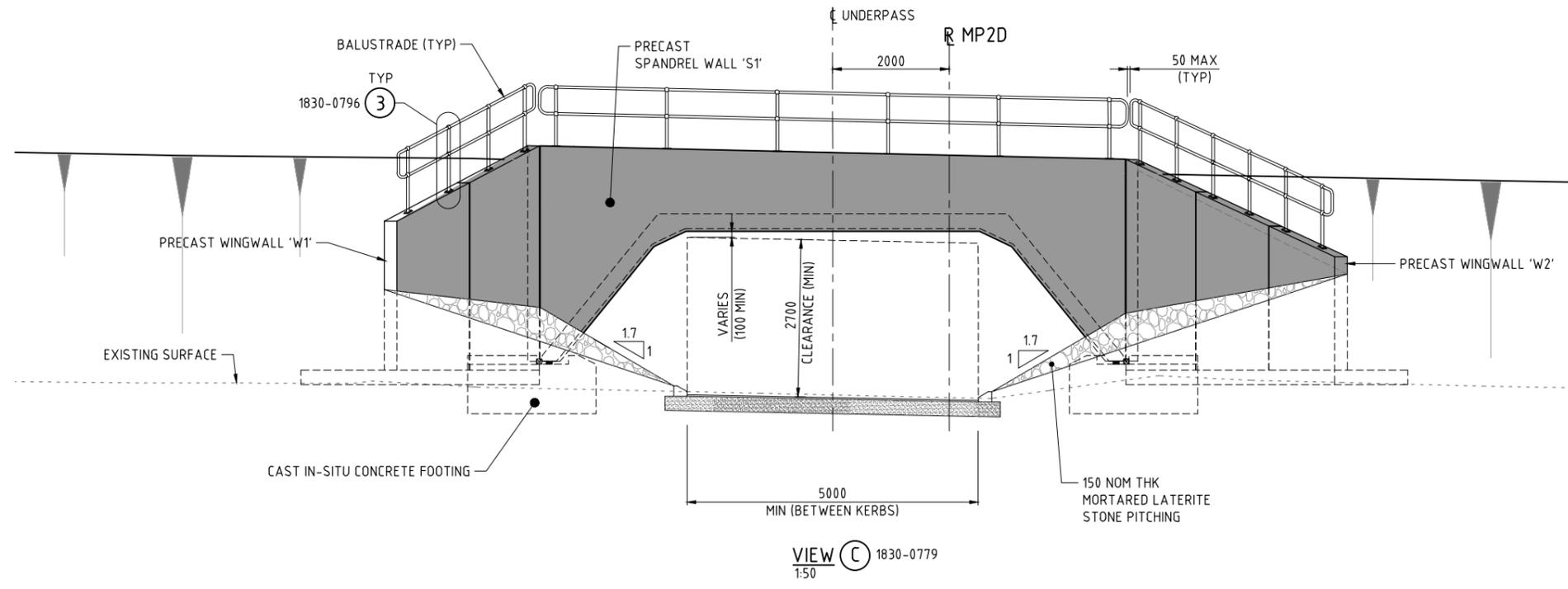
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- NOTES:**
1. FOR GENERAL NOTES REFER DRG 1830-0778.
  2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG 1830-0779.
  3. BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS 1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURER'S SPECIFICATION FOR FURTHER DETAILS.
  4. BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.



**AS CONSTRUCTED**  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

| AMENDMENTS |                             |
|------------|-----------------------------|
| No.        | DESCRIPTION                 |
| 2          | AS CONSTRUCTED - NO CHANGES |
| 1          | WING WALL W1 AMENDED        |
| 0          | ISSUED FOR CONSTRUCTION     |

**METADATA**

DESIGNER: **AAJV AECOM ARCADIS**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGN MANAGER: D. SULLIVAN 14.08.17 DATE

DRAWN: P. MORRISON 07.02.17  
DESIGNED: M. CHOWDHURY 07.02.17  
CHECKED: P. DOBSON 07.02.17  
APPROVED: M. KAKULAS 07.02.17

VERIFIER: **GHD**  
VERIFIED: G. JOYNSON 17.08.17 DATE

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS 23.08.17 DATE  
PROJECT DIRECTOR: R. ARNOTT 23.08.17 DATE

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE

LOCAL AUTHORITY: (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA

MWA DRAWING NUMBER: **1830-0780**

PROJECT TITLE: **NORTHLINK WA CENTRAL SECTION**

DRAWING TITLE: TONKIN HIGHWAY (H017)  
REID / TONKIN INTERCHANGE  
UNDERPASS No. 9427  
GENERAL ARRANGEMENT - SHEET 2

DRAWING No.: **NL2-AAJ-DRG-0150-UP-0011** REV 2

PATH: K:\WP01518-Arch\Drawings\1830-0779-UP-0011-1830-0780.dwg LAST SAVED BY: Admin1235 DATE: 9 August 2019 10:35 AM



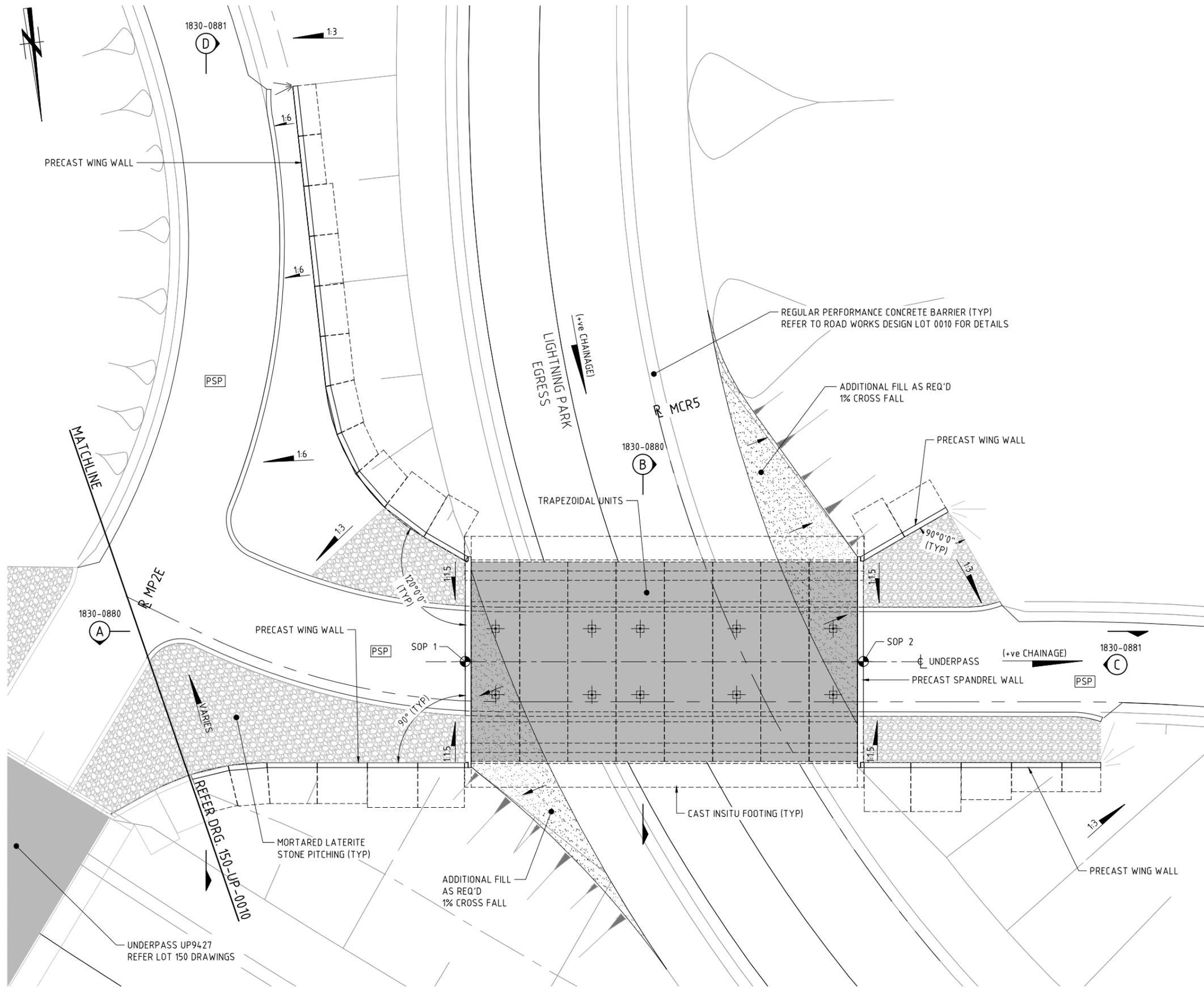
- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-0878.
  - STONE PITCHING BATTER GRADE TO BE 1:1.5 INSIDE UNDERPASS AND EXTEND 2.0m FROM SPANDREL WALL, THEN TRANSITION TO 1:3 SLOPE TO END OF WING WALLS.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 - ROCK PROTECTION.
  - FOR SETOUT POINTS TABLE REFER DRG 1830-0883.

**DESIGN INFORMATION SUMMARY:**

- DESIGNED IN ACCORDANCE WITH AS 5100-2004 'BRIDGE DESIGN CODE' UNO.
- TRAFFIC LOADS - 100% SM1600, HLP400 AND GROUP 2 VEHICLE 4 AND 5 AS DETAILED IN MAIN ROADS DOCUMENT 3912/02-2. HLP AND GROUP 2 VEHICLES SHALL BE POSITIONED ±1.0m FROM THE CENTERLINE OF CARRIAGEWAY.
- DESIGN LIFE - 100YRS.
- EMBANKMENT LIVE LOAD  
2.5kPa. (STEEPER THAN 1:4)  
5.0kPa. (ELSEWHERE)
- SURCHARGE (ADJACENT TO SPANDREL WALL) 10kPa.
- WIND SPEED - ULS V2000 48m/s  
SLS V20 37m/s.
- EARTHQUAKE LOADING PARAMETERS  
ACCELERATION COEFFICIENT, Z 0.09  
SITE FACTOR, S 1.25  
SUB SOIL CLASS Ce  
SPECTRAL SHAPE FACTOR Ch (T) 3.68  
BRIDGE CLASSIFICATION TYPE 2  
IMPORTANCE FACTOR 1.0  
BRIDGE EARTHQUAKE DESIGN CATEGORY BEDC-2
- DIFFERENTIAL SETTLEMENT ALLOWANCE 20mm.

**GEOTECHNICAL SUMMARY**

- BULK SOIL UNIT WEIGHT 18kN/m<sup>3</sup> (DRY)  
20kN/m<sup>3</sup> (SATURATED)
- ANGLE OF INTERNAL FRICTION 33° - 38° (SUB SURFACE)  
36° (SELECT BACKFILL)
- COHESION NIL
- GEOTECHNICAL STRENGTH REDUCTION FACTOR 0.55



PLAN - UNDERPASS No. 9450 (REID HIGHWAY INTERCHANGE)

1:100

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 23/11/18

PATH: K:\WP01218-Arch\Drawings\Current\Drawings\1830-0880-UP-150-UP-0010.dwg LAST SAVED BY: Admin1235 DATE: 7 August 2019 4:06 PM

| METADATA                       |                 |
|--------------------------------|-----------------|
| 1 AS CONSTRUCTED - NO CHANGES  | M.N.K. 23.11.18 |
| 0 ISSUED FOR CONSTRUCTION      | M.N.K. 25.01.18 |
| No. DESCRIPTION                | APPROVED & DATE |
| AMENDMENTS                     |                 |
| GROUND SURVEY STANDARD:        |                 |
| DATE OF CAPTURE:               |                 |
| MAPPING SURVEY STANDARD:       |                 |
| DATE OF CAPTURE:               |                 |
| MAIN ROADS PROJECT ZONE: PCG94 |                 |
| HEIGHT DATUM: AHD              |                 |

DESIGNER: AAJV AECOM ARCADIS

DESIGN: R. BULLINGHAM 12.09.17  
 DESIGNED: T. SMITH 12.09.17  
 CHECKED: P. DOBSON 12.09.17  
 APPROVED: M. KAKULAS 12.09.17

DESIGN MANAGER: D. SULLIVAN 22.12.17

VERIFIER: GHD  
 VERIFIED: L. TINLIN  
 DATE: 18.01.18

CONSTRUCTOR: Great Northern CONNECT

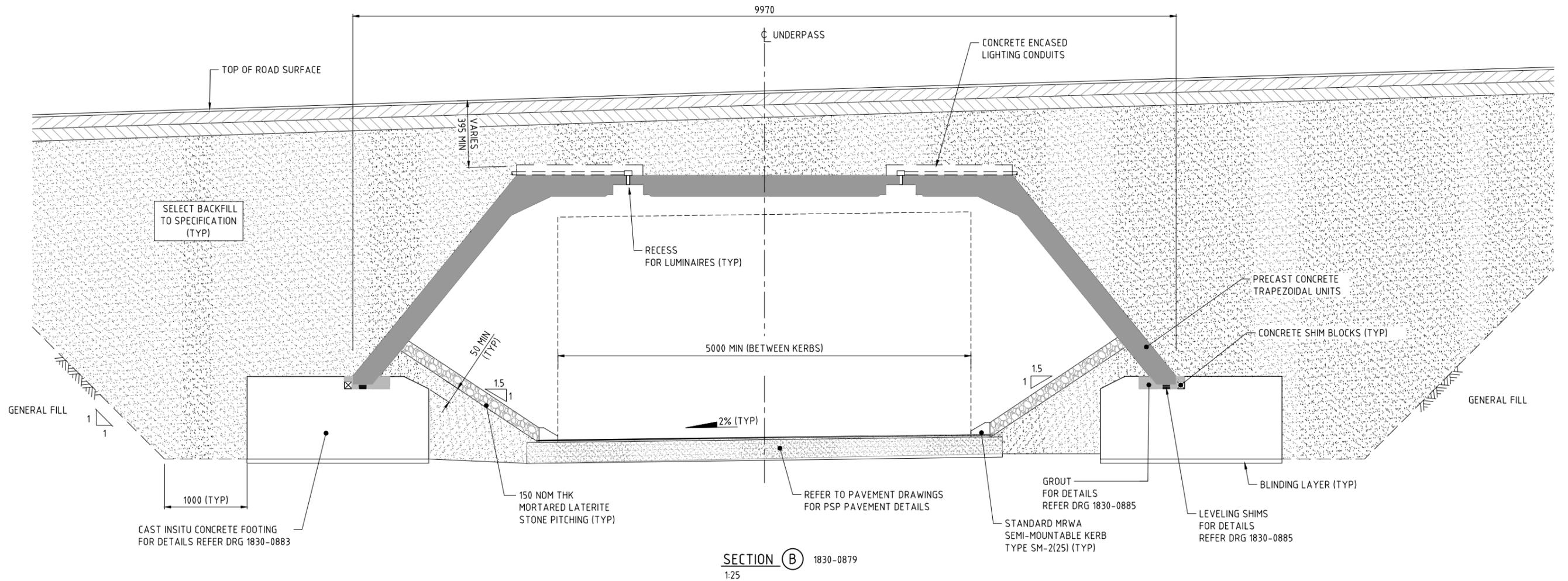
INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER: G. XANTHIS  
 PROJECT DIRECTOR: R. ARNOTT

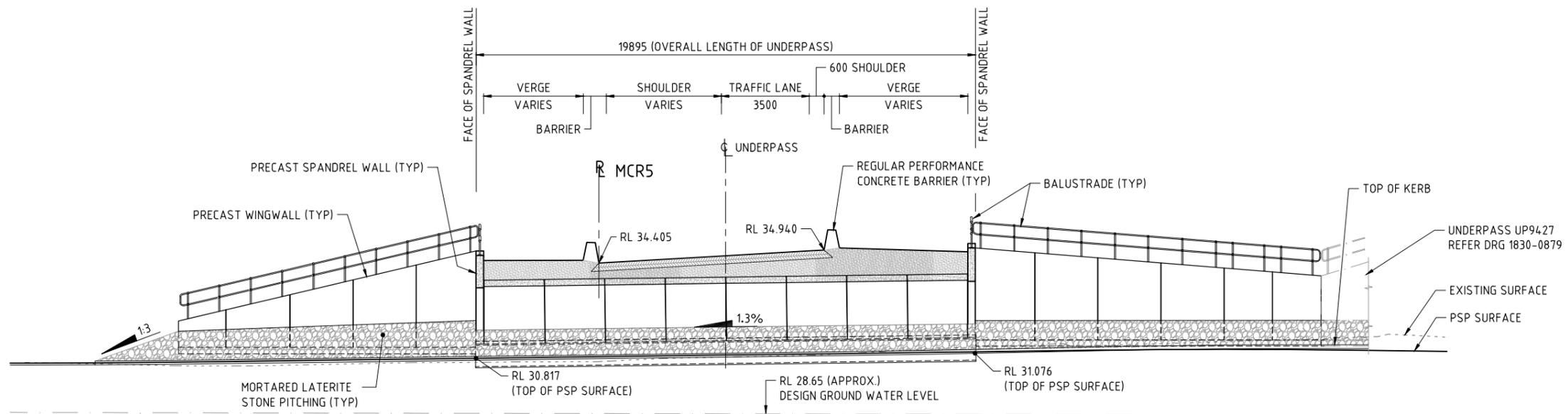
23.01.18 DATE  
 23.01.18 DATE

|   |   |
|---|---|
| LOCAL AUTHORITY: (112) CITY OF BAYSWATER  | MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN REGION |
| MWA DRAWING NUMBER: 1830-0879   |   |
| PROJECT TITLE: NORTHLINK WA CENTRAL SECTION   |   |
| DRAWING TITLE: TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE UNDERPASS No. 9450 GENERAL ARRANGEMENT - SHEET 1 |   |
| DRAWING No. NL2-AAJ-DRG-0160-UP-0010  | REV 1   |

SCALE 1:100



SECTION B 1830-0879  
1:25



SECTION A 1830-0879  
1:100

NOTE - ROAD LEVELS SHOWN ARE APPROXIMATE OVER THE UNDERPASS SOUTH EDGE

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 23/11/18

| No.        | DESCRIPTION                 | APPROVED & DATE |
|------------|-----------------------------|-----------------|
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K. 23.11.18 |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 25.01.18 |
| AMENDMENTS |                             |                 |

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV**, **AECOM**, **ARCADIS**

DESIGN MANAGER: D. SULLIVAN, 22.12.17 DATE

| ROLE           | NAME          | DATE     |
|----------------|---------------|----------|
| DRAWN          | R. BULLINGHAM | 12.09.17 |
| DESIGNED       | T. SMITH      | 12.09.17 |
| CHECKED        | P. DOBSON     | 12.09.17 |
| APPROVED       | M. KAKULAS    | 12.09.17 |
| DRAWING STATUS | IFC           |          |

VERIFIER: **GHD**, L. TINLIN, 18.01.18

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS, 23.01.18 DATE

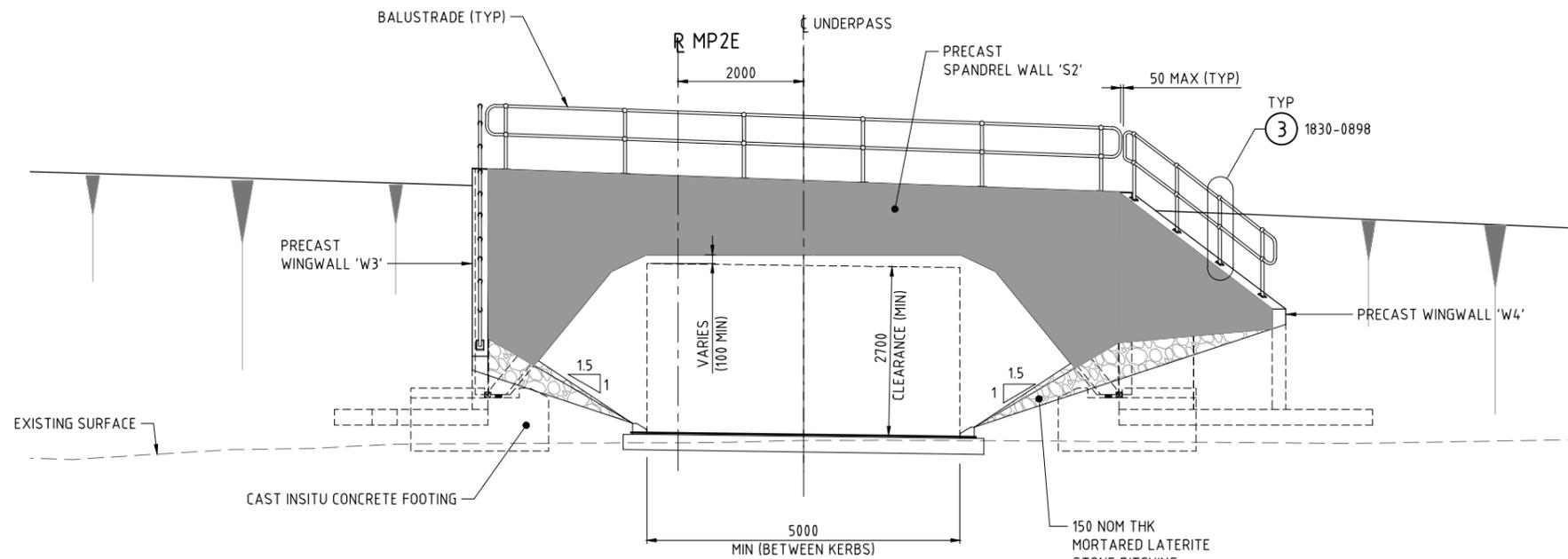
PROJECT DIRECTOR: R. ARNOTT, 23.01.18 DATE

INFRASTRUCTURE DELIVERY DIRECTORATE

|                      |   |                                |                     |
|----------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY      | (112) CITY OF BAYSWATER   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRWA DRAWING NUMBER | 1830-0880   |                                |                     |
| PROJECT TITLE        | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE        | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>UNDERPASS No. 9450<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.          | NL2-AAJ-DRG-0160-UP-0011  |                                |                     |

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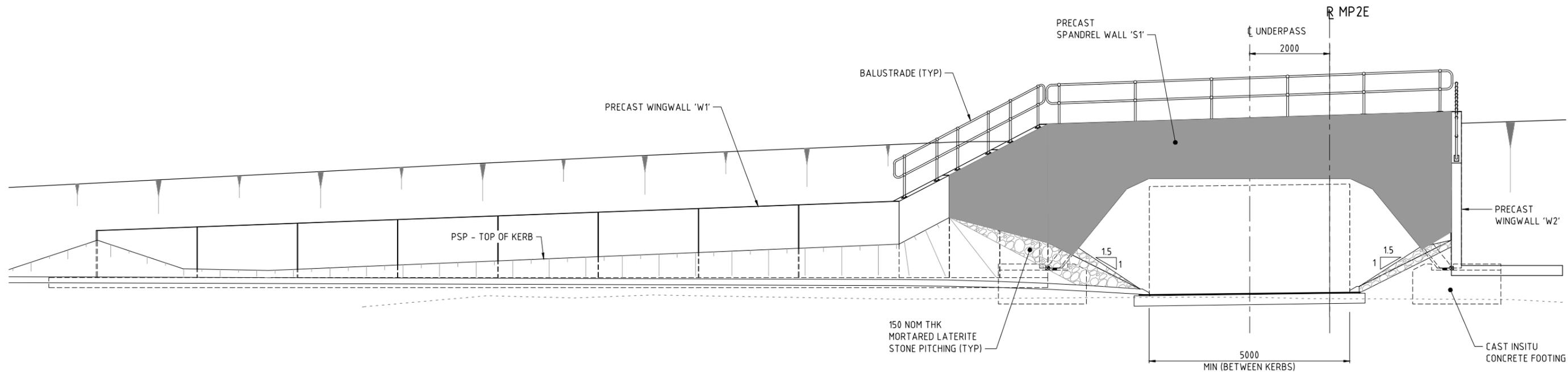
SCALE: 1:100, 1:25



VIEW C 1830-0879  
1:50

**NOTES:**

1. FOR GENERAL NOTES REFER DRG 1830-0878.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG 1830-0879.
3. BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURER'S SPECIFICATION FOR FURTHER DETAILS.
4. BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.



SECTION ELEVATION D 1830-0879  
1:50

AS CONSTRUCTED  
DATE 23/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|     |                             |                 |          |
|-----|-----------------------------|-----------------|----------|
| 1   | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 23.11.18 |
| 0   | ISSUED FOR CONSTRUCTION     | M.N.K.          | 25.01.18 |
| No. | DESCRIPTION                 | APPROVED & DATE |          |
|     | AMENDMENTS                  |                 |          |

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER  
**AAJV AECOM ARCADIS**  
DESIGN MANAGER D. SULLIVAN 22.12.17 DATE

DRAWN R. BULLINGHAM 19.09.17  
DESIGNED T. SMITH 19.09.17  
CHECKED P. DOBSON 02.10.17  
APPROVED M. KAKULAS 02.10.17  
DRAWING STATUS IFC

VERIFIER  
**GHD**  
VERIFIED L. TINLIN  
DATE 18.01.18

CONSTRUCTOR  
**Great Northern CONNECT**

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE  
CONTRACT MANAGER G. XANTHIS 23.01.18 DATE  
PROJECT DIRECTOR R. ARNOTT 23.01.18 DATE

LOCAL AUTHORITY (112) CITY OF BAYSWATER MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION  
MWA DRAWING NUMBER 1830-0881  
PROJECT TITLE NORTHLINK WA CENTRAL SECTION  
DRAWING TITLE TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE UNDERPASS No. 9450 GENERAL ARRANGEMENT - SHEET 3  
DRAWING No. NL2-AAJ-DRG-0160-UP-0012 REV 1

PATH: K:\WP01618-Arch\Drawings\_Stage\_2\_Tin\K-CorDrawings\Current\Bridges\Tonkin\1830-0881.dwg LAST SAVED BY: Admin225 DATE: 7 August 2018 4:28 PM

SCALE 1:50  
SHEET A1

**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRAWING NUMBER | DRAWING DESCRIPTION                              |
|--------------------------|---------------------|--|
| NL2-AAJ-DRG-0140-UP-0001 | 1830-0720           | LOCALITY PLAN                                    |
| NL2-AAJ-DRG-0140-UP-0002 | 1830-0721           | INDEX  |
| NL2-AAJ-DRG-0140-UP-0005 | 1830-0722           | GENERAL NOTES                                    |
| NL2-AAJ-DRG-0140-UP-0010 | 1830-0723           | GENERAL ARRANGEMENT - SHEET 1                    |
| NL2-AAJ-DRG-0140-UP-0011 | 1830-0724           | GENERAL ARRANGEMENT - SHEET 2                    |
| NL2-AAJ-DRG-0140-UP-0013 | 1830-0725           | BOREHOLE DATA                                    |
| NL2-AAJ-DRG-0140-UP-0015 | 1830-0726           | FOOTING CONCRETE DETAILS                         |
| NL2-AAJ-DRG-0140-UP-0020 | 1830-0727           | FOOTING REINFORCEMENT DETAILS                    |
| NL2-AAJ-DRG-0140-UP-0025 | 1830-0728           | TRAPEZOIDAL UNIT LAYOUT AND DETAILS              |
| NL2-AAJ-DRG-0140-UP-0030 | 1830-0729           | TRAPEZOIDAL UNIT CONCRETE DETAILS                |
| NL2-AAJ-DRG-0140-UP-0035 | 1830-0730           | TRAPEZOIDAL UNIT REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0140-UP-0036 | 1830-0731           | TRAPEZOIDAL UNIT REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0140-UP-0040 | 1830-0732           | SPANDREL WALL LAYOUT AND DETAILS                 |
| NL2-AAJ-DRG-0140-UP-0045 | 1830-0733           | SPANDREL WALL CONCRETE DETAILS                   |
| NL2-AAJ-DRG-0140-UP-0046 | 1830-0734           | SPANDREL WALL REINFORCEMENT DETAILS              |
| NL2-AAJ-DRG-0140-UP-0050 | 1830-0735           | SPANDREL INSTALLATION BRACKET DETAILS            |
| NL2-AAJ-DRG-0140-UP-0074 | 1830-0736           | WING WALL LAYOUT                                 |
| NL2-AAJ-DRG-0140-UP-0075 | 1830-0737           | WING WALL CONCRETE DETAILS - SHEET 1             |
| NL2-AAJ-DRG-0140-UP-0076 | 1830-0738           | WING WALL CONCRETE DETAILS - SHEET 2             |
| NL2-AAJ-DRG-0140-UP-0077 | 1830-0739           | WING WALL CONCRETE DETAILS - SHEET 3             |
| NL2-AAJ-DRG-0140-UP-0078 | 1830-0740           | WING WALL CONCRETE DETAILS - SHEET 4             |
| NL2-AAJ-DRG-0140-UP-0080 | 1830-0741           | WING WALL REINFORCEMENT DETAILS - SHEET 1        |
| NL2-AAJ-DRG-0140-UP-0081 | 1830-0742           | WING WALL REINFORCEMENT DETAILS - SHEET 2        |
| NL2-AAJ-DRG-0140-UP-0090 | 1830-0743           | LUMINAIRE DETAILS                                |
| NL2-AAJ-DRG-0140-UP-0100 | 1830-0744           | DESIGN SUMMARY - SHEET 1 (TO FOLLOW)             |
| NL2-AAJ-DRG-0140-UP-0101 | 1830-0745           | DESIGN SUMMARY - SHEET 2 (TO FOLLOW)             |

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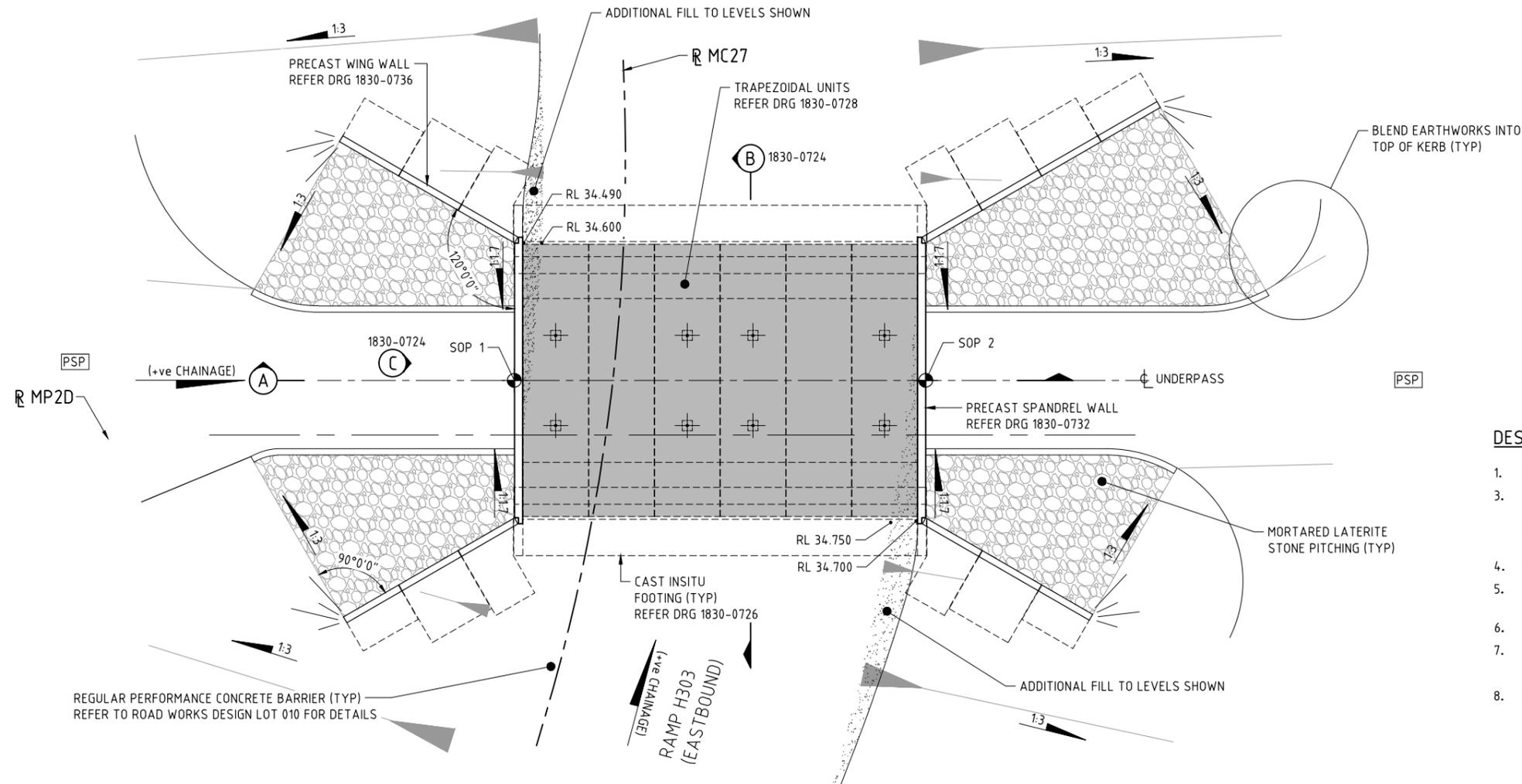
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. **M. Kakulas**

**AS CONSTRUCTED**  
DATE 16/05/19

|   |  |  |  |   |  |   |  |   |  |   |  |   |  |  |  |
|---|--|--|--|---|--|---|--|---|--|---|--|---|--|--|--|
| <b>METADATA</b><br>GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  |  |  | DRAWN: R. BULLINGHAM 05.05.17<br>DESIGNED: M. CHOWDHURY 28.04.17<br>CHECKED: P. DOBSON 28.04.17<br>APPROVED: M. KAKULAS 28.04.17<br>DRAWING STATUS: IFC<br>VERIFIER: G. LEE<br>DATE: 03.10.17 |  |  |  |  |  |  |  |  |  | LOCAL AUTHORITY: (109) CITY OF SWAN<br>MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN REGION<br>MRWA DRAWING NUMBER: <b>1830-0721</b><br>PROJECT TITLE: <b>NORTHLINK WA CENTRAL SECTION</b><br>DRAWING TITLE: <b>TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE UNDERPASS No. 9430 INDEX</b><br>DRAWING No: <b>NL2-AAJ-DRG-0140-UP-0002</b> |  |
| 1 AS CONSTRUCTED - NO CHANGES<br>0 ISSUED FOR CONSTRUCTION<br>M.N.K. 08.02.19<br>M.N.K. 18.10.17<br>APPROVED & DATE:  |  | DESIGN MANAGER: D.SULLIVAN<br>DATE: 28.09.17   |  | CONTRACT MANAGER: G. XANTHIS<br>PROJECT DIRECTOR: R. ARNOTT<br>DATE: 12.10.17<br>DATE: 13.10.17   |  | SCALE: A1<br>SHEET: 1   |  |   |  |   |  |   |  |  |  |

**NOTES:**

- FOR GENERAL NOTES REFER DRG 1830-0722.
- STONE PITCHING BATTER GRADE TO BE 1:1.7 INSIDE UNDERPASS AND EXTEND 2.0m FROM SPANDREL WALL, THEN TRANSITION TO 1:3 SLOPE TO END OF WING WALLS.
- STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 - ROCK PROTECTION.
- FOR SETOUT POINTS TABLE REFER DRG 1830-0726.



**PLAN - UNDERPASS No. 9430 (REID HIGHWAY INTERCHANGE)**

1:100

**DESIGN INFORMATION SUMMARY:**

- DESIGNED IN ACCORDANCE WITH AS 5100-2004 'BRIDGE DESIGN CODE' UNO.
- TRAFFIC LOADS - 100% SM1600 HLP400 AND GROUP 2 VEHICLE 4 AND GROUP 2 VEHICLE 5 HEAVY LOAD PLATFORM VEHICLES DETAILED IN MAIN ROADS DOCUMENT 3912/02-2. HLP VEHICLES SHALL BE POSITIONED ±1.0m FROM THE CENTERLINE OF CARRIAGEWAY.
- DESIGN LIFE - 100YRS.
- EMBANKMENT LIVE LOAD
 

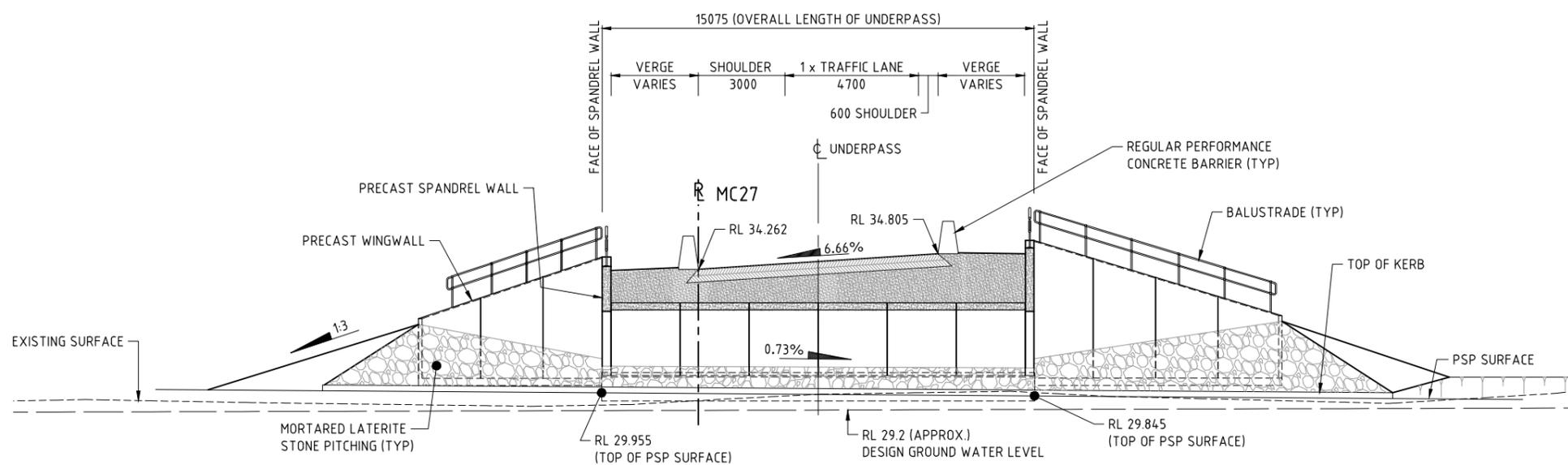
|                            |
|----------------------------|
| 2.5kPa. (STEEPER THAN 1:4) |
| 5.0kPa. (ELSEWHERE)        |
- SURCHARGE ADJACENT TO SPANDREL WALL 10kPa.
- WIND SPEED -
 

|           |        |
|-----------|--------|
| ULS V2000 | 48m/s  |
| SLS V20   | 37m/s. |
- EARTHQUAKE LOADING PARAMETERS
 

|                                   |            |
|-----------------------------------|------------|
| ACCELERATION COEFFICIENT, Z       | 0.09       |
| SITE FACTOR, S                    | 1.25       |
| SUB SOIL CLASS                    | Ce         |
| SPECTRAL SHAPE FACTOR Ch (T)      | 3.68 (1.3) |
| BRIDGE CLASSIFICATION             | TYPE 2     |
| IMPORTANCE FACTOR                 | 1.0        |
| BRIDGE EARTHQUAKE DESIGN CATEGORY | BEDC-2     |
- DIFFERENTIAL SETTLEMENT ALLOWANCE 20mm.

**GEOTECHNICAL SUMMARY**

- BULK SOIL UNIT WEIGHT 18kN/m<sup>3</sup> (DRY)  
20kN/m<sup>3</sup> (SATURATED)
- ANGLE OF INTERNAL FRICTION 36°
- COHESION NIL
- GEOTECHNICAL STRENGTH REDUCTION FACTOR 0.55



**SECTION A**

1:100

NOTE - ROAD LEVELS SHOWN ARE APPROXIMATE OVER THE UNDERPASS CENTRELINE

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**AS CONSTRUCTED**  
DATE 16/05/19

**METADATA**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D.SULLIVAN 28.09.17 DATE

DRAWN: R. BULLINGHAM 05.05.17  
DESIGNED: M. CHOWDHURY 16.02.17  
CHECKED: P. DOBSON 16.02.17  
APPROVED: M. KAKULAS 16.02.17

DRAWING STATUS: IFC

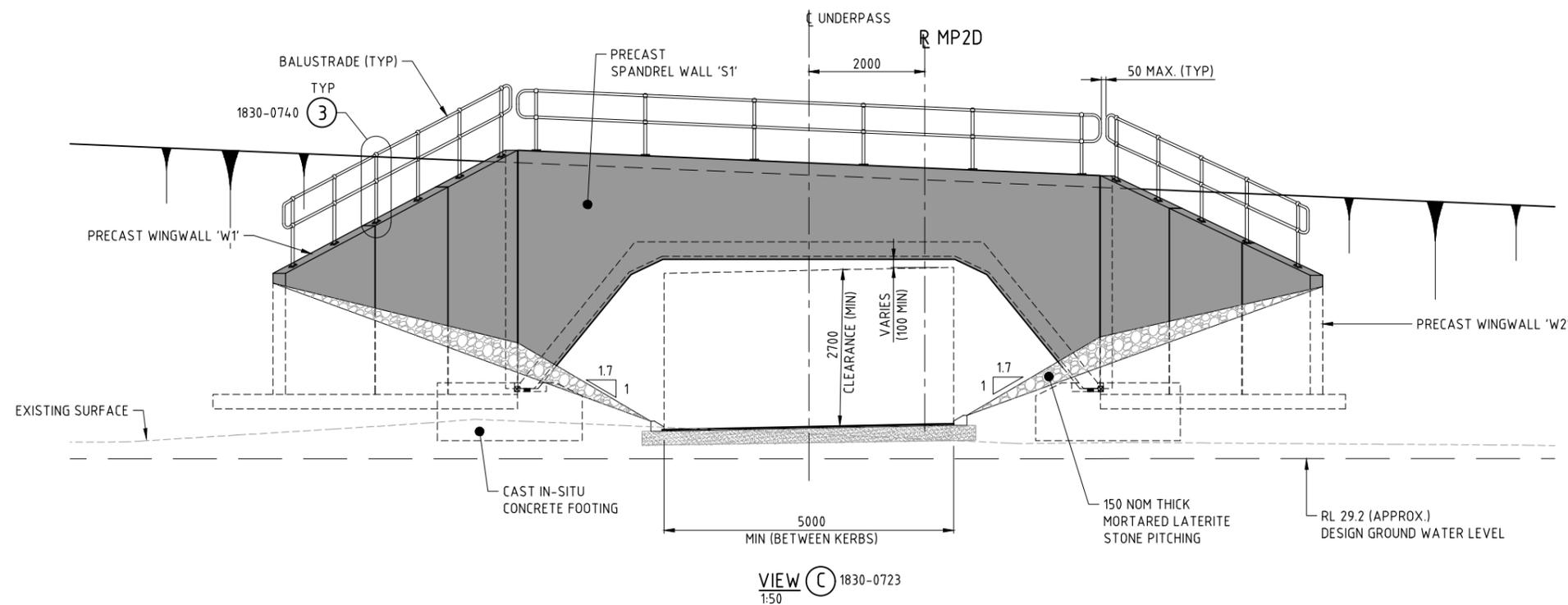
VERIFIER: **GHD**  
VERIFIED: G. LEE  
DATE: 03.10.17

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS  
PROJECT DIRECTOR: R. ARNOTT

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE

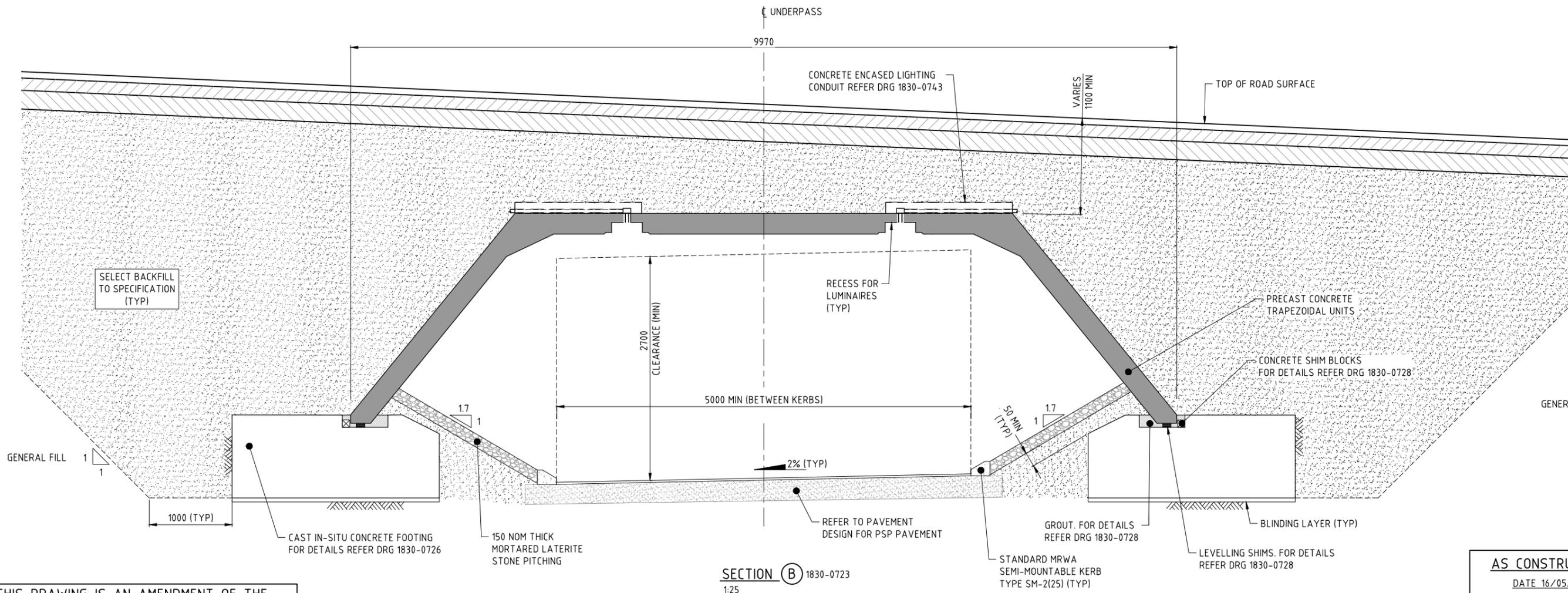
LOCAL AUTHORITY: (109) CITY OF SWAN  
MIRA DRAWING NUMBER: 1830-0723  
PROJECT TITLE: NORTHLINK WA CENTRAL SECTION  
DRAWING TITLE: TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE UNDERPASS No. 9430 GENERAL ARRANGEMENT - SHEET 1  
DRAWING No: NL2-AAJ-DRG-0140-UP-0010



VIEW C 1830-0723  
1:50

NOTES:

1. FOR GENERAL NOTES REFER DRG 1830-0722.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG 1830-0723.
3. BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURER'S SPECIFICATION FOR FURTHER DETAILS.
4. BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.



SECTION B 1830-0723  
1:25

AS CONSTRUCTED  
DATE 16/05/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

METADATA

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD



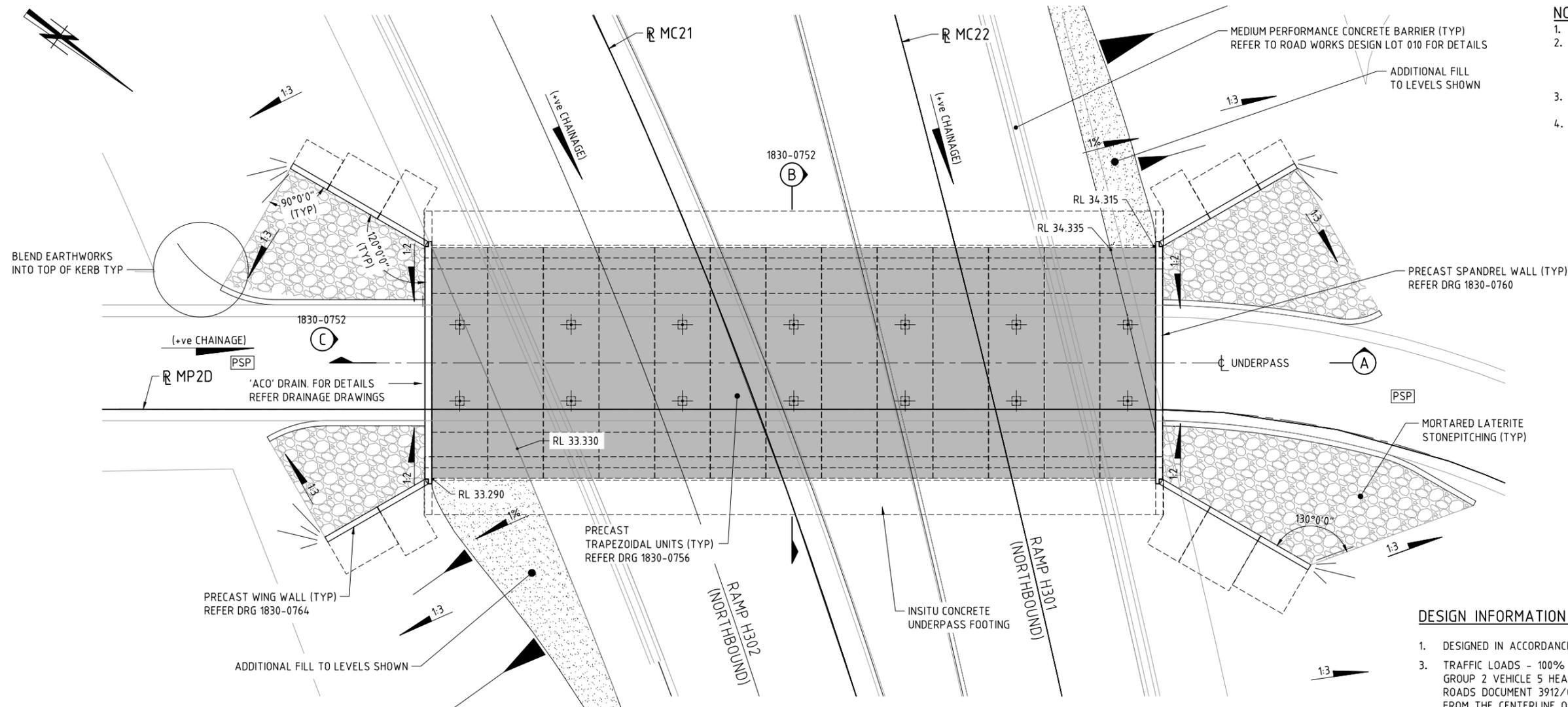
|                |              |          |          |        |          |
|----------------|--------------|----------|----------|--------|----------|
| DRAWN          | P. MORRISON  | 16.02.17 | VERIFIER | G. LEE | 03.10.17 |
| DESIGNED       | M. CHOWDHURY | 16.02.17 |          |        |          |
| CHECKED        | P. DOBSON    | 16.02.17 |          |        |          |
| APPROVED       | M. KAKULAS   | 16.02.17 |          |        |          |
| DRAWING STATUS | IFC          |          |          |        |          |



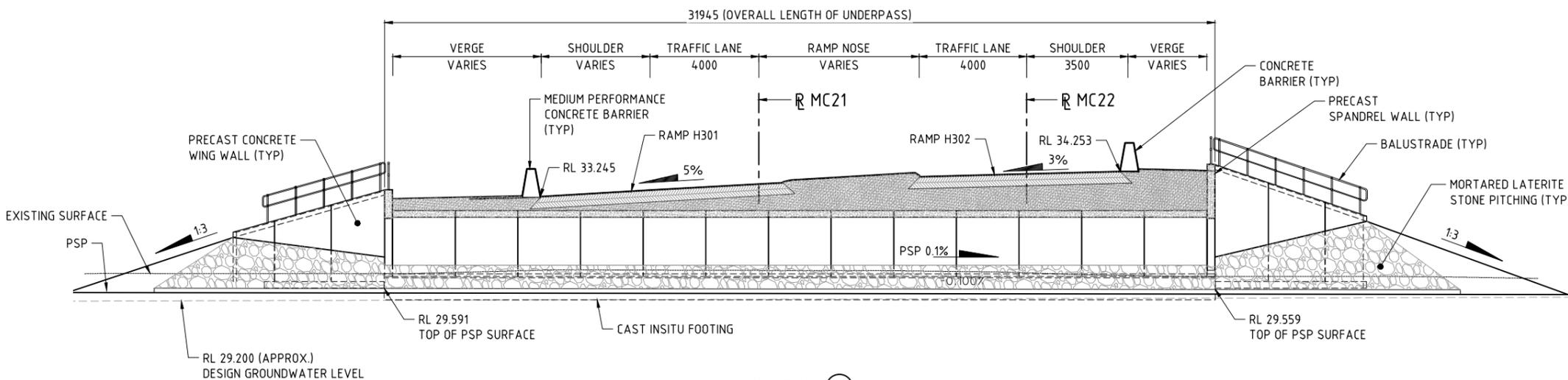
|                      |   |                                |                     |
|----------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY      | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| M/RWA DRAWING NUMBER | 1830-0724   |                                |                     |
| PROJECT TITLE        | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE        | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>UNDERPASS No. 9430<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.          | NL2-AAJ-DRG-0140-UP-0011  |                                |                     |

PATH: K:\WP01\18-Northlink\_Stage\_2\_Think-C-Our-Designs\Current\Bridges\1830-0724-Reg\_LAST\_SAVED\_BY: Farnes548 DATE: 13 August 2019 5:08 PM





PLAN - UNDERPASS No. 94-31 (REID HIGHWAY INTERCHANGE)  
1:100



SECTION A  
1:100

- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-0750.
  - STONE PITCHING BATTER GRADE TO BE 1:2 INSIDE UNDERPASS AND EXTEND 2.0m FROM SPANDREL WALL, THEN TRANSITION TO 1:3 SLOPE TO END OF WING WALLS.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 - ROCK PROTECTION.
  - FOR SETOUT POINTS TABLE REFER DRG 1830-0754.

**DESIGN INFORMATION SUMMARY:**

- DESIGNED IN ACCORDANCE WITH AS 5100-2004 'BRIDGE DESIGN CODE' UNO.
- TRAFFIC LOADS - 100% SM1600 HLP400 AND GROUP 2 VEHICLE 4 AND GROUP 2 VEHICLE 5 HEAVY LOAD PLATFORM VEHICLES DETAILED IN MAIN ROADS DOCUMENT 3912/02-2 . HLP VEHICLES SHALL BE POSITIONED ±1.0m FROM THE CENTERLINE OF CARRIAGEWAY.
- DESIGN LIFE - 100YRS.
- EMBANKMENT LIVE LOAD  
2.5kPa. (STEEPER THAN 1:4)  
5.0kPa. (ELSEWHERE)
- SURCHARGE ADJACENT TO SPANDREL WALL 10kPa.
- WIND SPEED - ULS V2000 48m/s  
SLS V20 37m/s.
- EARTHQUAKE LOADING PARAMETERS  
ACCELERATION COEFFICIENT, Z 0.09  
SITE FACTOR, S 1.25  
SUB SOIL CLASS Ce  
SPECTRAL SHAPE FACTOR Ch (T) 3.68 (1.3)  
BRIDGE CLASSIFICATION TYPE 2  
IMPORTANCE FACTOR 1.0  
BRIDGE EARTHQUAKE DESIGN CATEGORY BEDC-2
- DIFFERENTIAL SETTLEMENT ALLOWANCE 20mm.

**GEOTECHNICAL SUMMARY**

- BULK SOIL UNIT WEIGHT 18kN/m<sup>3</sup> (DRY)  
20kN/m<sup>3</sup> (SATURATED)
- ANGLE OF INTERNAL FRICTION 36°
- COHESION NIL
- GEOTECHNICAL STRENGTH REDUCTION FACTOR 0.55

**AS CONSTRUCTED**  
DATE 16/05/19

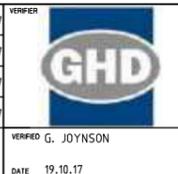
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

**METADATA**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD



DESIGNER: R. BULLINGHAM 16.02.17  
DESIGNED: M. CHOWDHURY 16.02.17  
CHECKED: P. DOBSON 16.02.17  
APPROVED: M. KAKULAS 16.02.17  
DRAWING STATUS: IFC  
DESIGN MANAGER: D. SULLIVAN 13.10.17 DATE

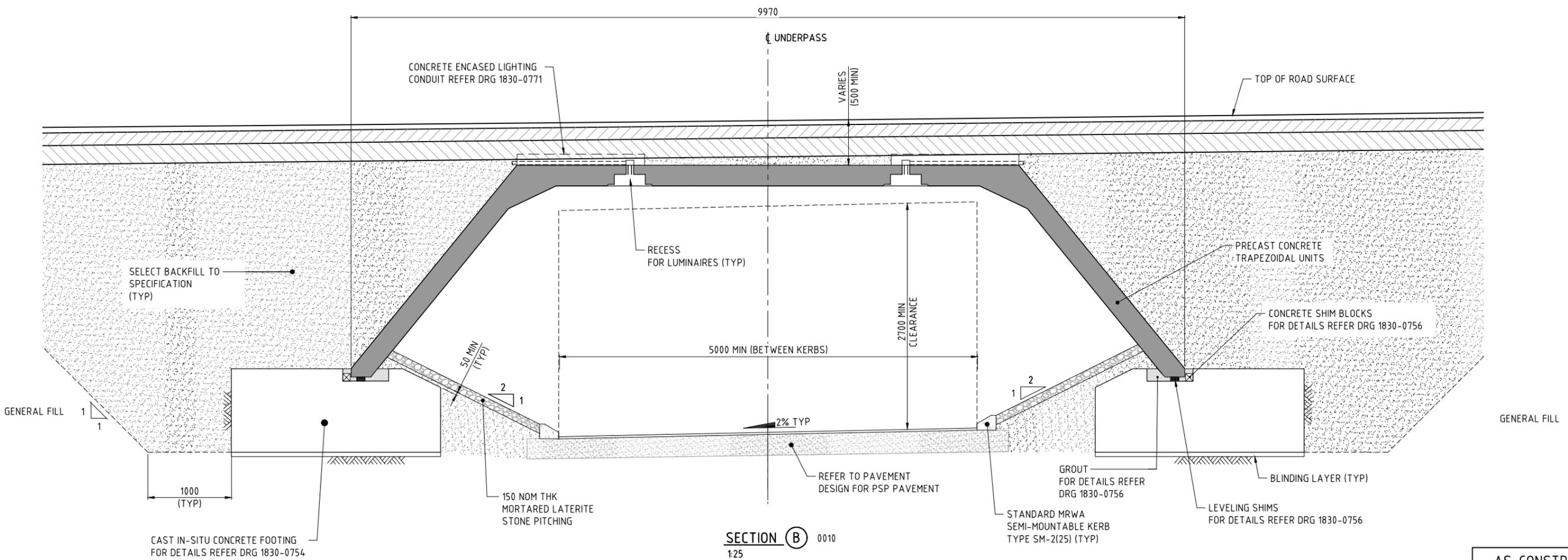
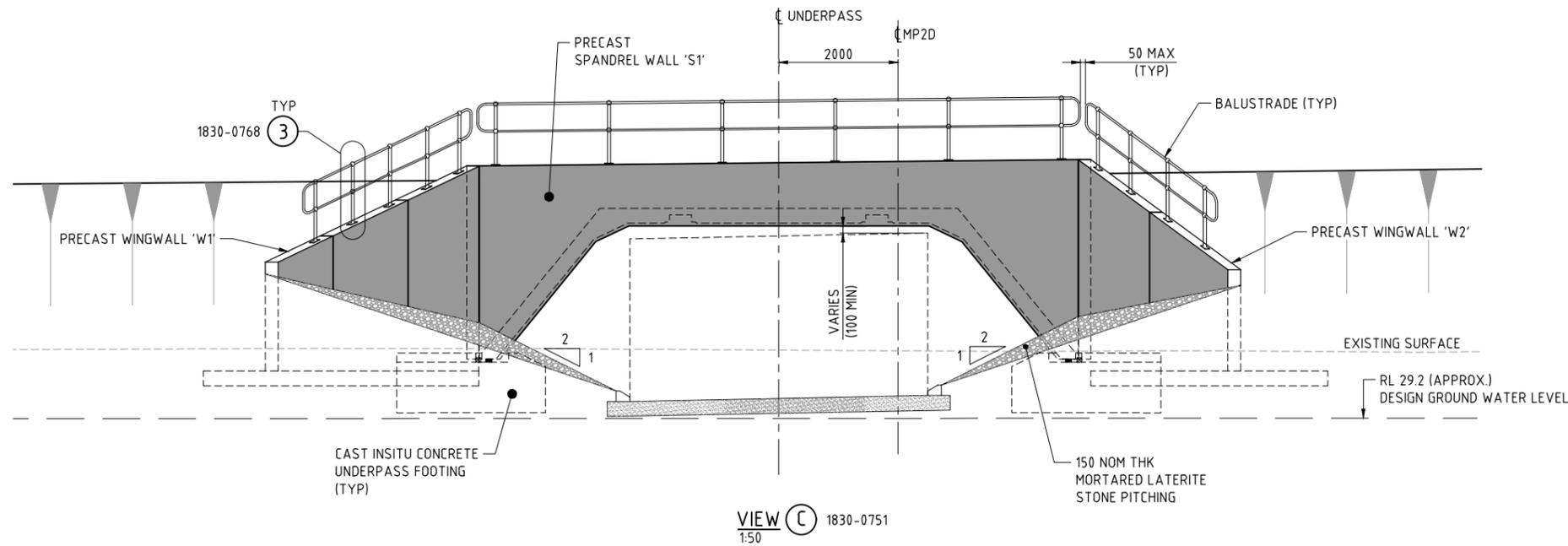


CONTRACT MANAGER: G. XANTHIS 26.10.17 DATE  
PROJECT DIRECTOR: R. ARNOTT 31.10.17 DATE



|                     |   |                                |                     |
|---------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-0751   |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>REID / TONKIN INTERCHANGE<br>UNDERPASS No. 9431<br>GENERAL ARRANGEMENT - SHEET 1 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0145-UP-0010  |                                |                     |

- NOTES:**
1. FOR GENERAL NOTES REFER DRG 1830-0750.
  2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG 1830-0751.
  3. BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS 1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURER'S SPECIFICATION FOR FURTHER DETAILS.
  4. BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.



**AS CONSTRUCTED**  
DATE 16/05/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

**METADATA**

|                                |  |                   |  |
|--------------------------------|--|-------------------|--|
| GROUND SURVEY STANDARD:        |  | M.N.K. 16.05.19   |  |
| DATE OF CAPTURE:               |  | M.N.K. 02.11.17   |  |
| MAPPING SURVEY STANDARD:       |  | DATE OF CAPTURE:  |  |
| MAIN ROADS PROJECT ZONE: PCG94 |  | HEIGHT DATUM: AHD |  |
| AMENDMENTS                     |  |                   |  |

DESIGNER  
**AAJV AECOM ARCADIS**  
DESIGN MANAGER D. SULLIVAN 13.10.17 DATE

DRAWN P. MORRISON 16.02.17  
DESIGNED M. CHOWDHURY 16.02.17  
CHECKED P. DOBSON 16.02.17  
APPROVED M. KAKULAS 16.02.17  
DRAWING STATUS IFC

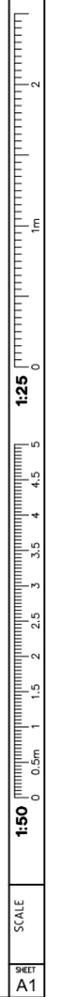
VERIFIER G. JOYNSON 19.10.17 DATE

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS 26.10.17 DATE  
PROJECT DIRECTOR R. ARNOTT 31.10.17 DATE  
**INFRASTRUCTURE DELIVERY DIRECTORATE**

LOCAL AUTHORITY (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION  
MIRWA DRAWING NUMBER 1830-0752  
PROJECT TITLE NORTHLINK WA CENTRAL SECTION  
DRAWING TITLE TONKIN HIGHWAY (H017) REID / TONKIN INTERCHANGE UNDERPASS No. 9431 GENERAL ARRANGEMENT - SHEET 2  
DRAWING No. NL2-AAJ-DRG-0145-UP-0011

PATH: K:\WP04178-Northlink\_Stage\_2\_Tonkin-Highway\Drawings\Current\Drawings\1830-0752.dwg LAST SAVED BY: Admin1235 DATE: 8 August 2018 4:23 PM



SHEET A1



**NOTE:**

- FOR GENERAL NOTES REFER DRGS 1830-0910 AND 1830-0911.

**LEGEND**

**POWER**

- OH — HV — WP HV OVERHEAD PROPOSED
- UG — HV — WP HV UNDERGROUND EXISTING
- UG — LV — WP LV UNDERGROUND EXISTING

**COMMUNICATIONS**

- NFO — NFO — NEXTGEN FIBRE OPTIC EXISTING
- T — T — TELSTRA CABLE EXISTING
- X — XT — X — X — TX — X — TELSTRA CABLE TO BE REMOVED

**WATER CORPORATION**

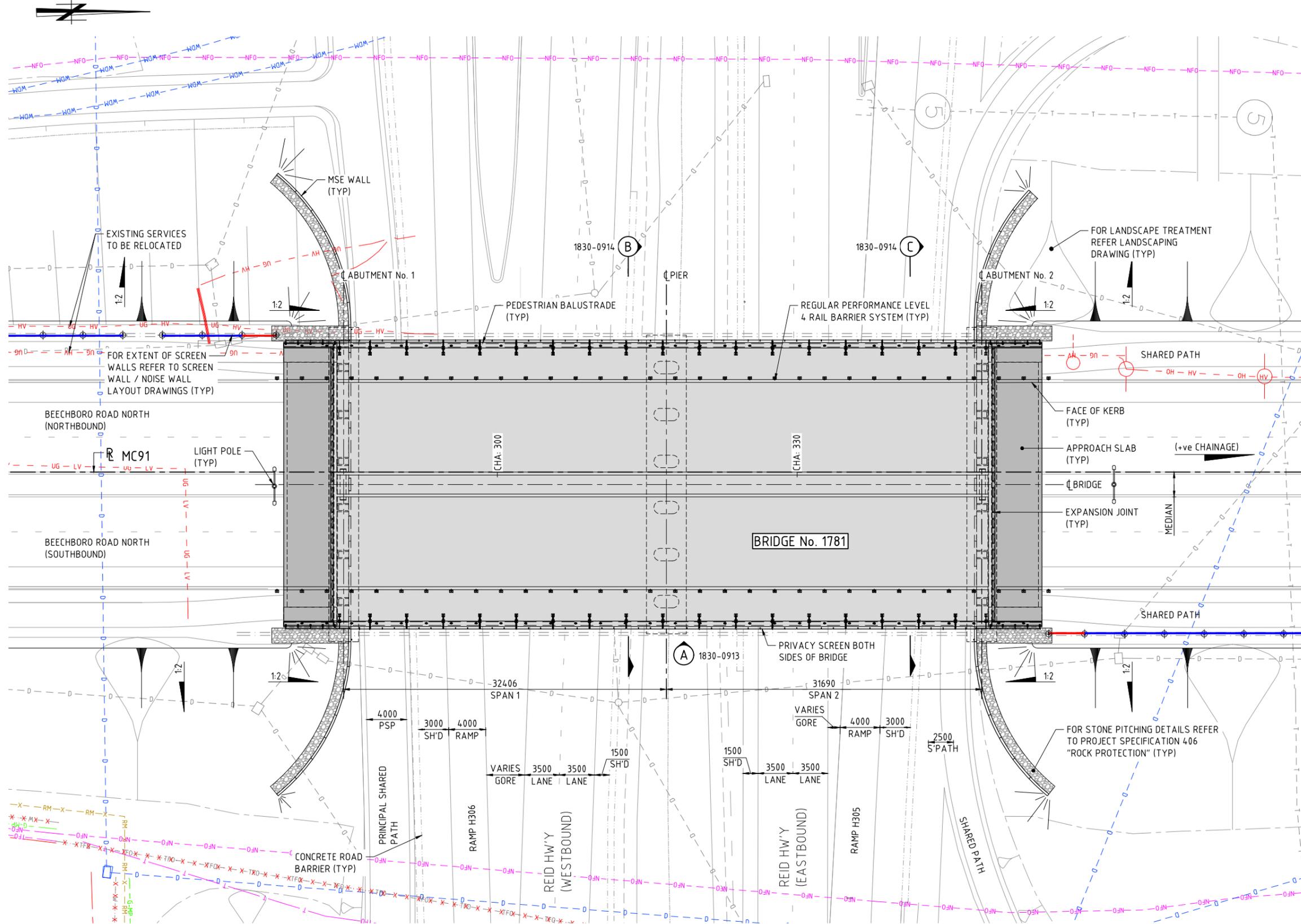
- WDM — WDM — WC WATER DISTRIBUTION MAIN EXISTING
- RM — RM — WC SEWER RISING MAIN EXISTING

**GAS**

- G-MP — ATCO MP GAS MAIN EXISTING

**DRAINAGE**

- D — D — LGA DRAINAGE PIPE EXISTING



PLAN - BRIDGE 1781 (BEECHBORO ROAD NORTH GRADE SEPARATION)

1:200

AS CONSTRUCTED

DATE 30/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

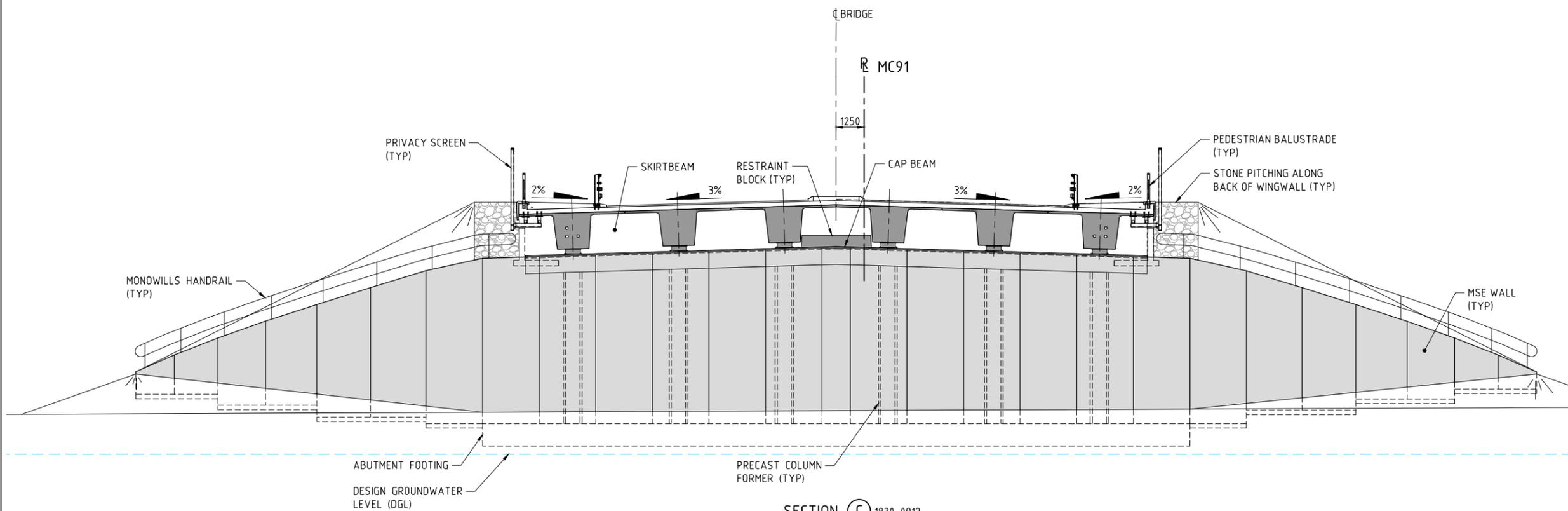
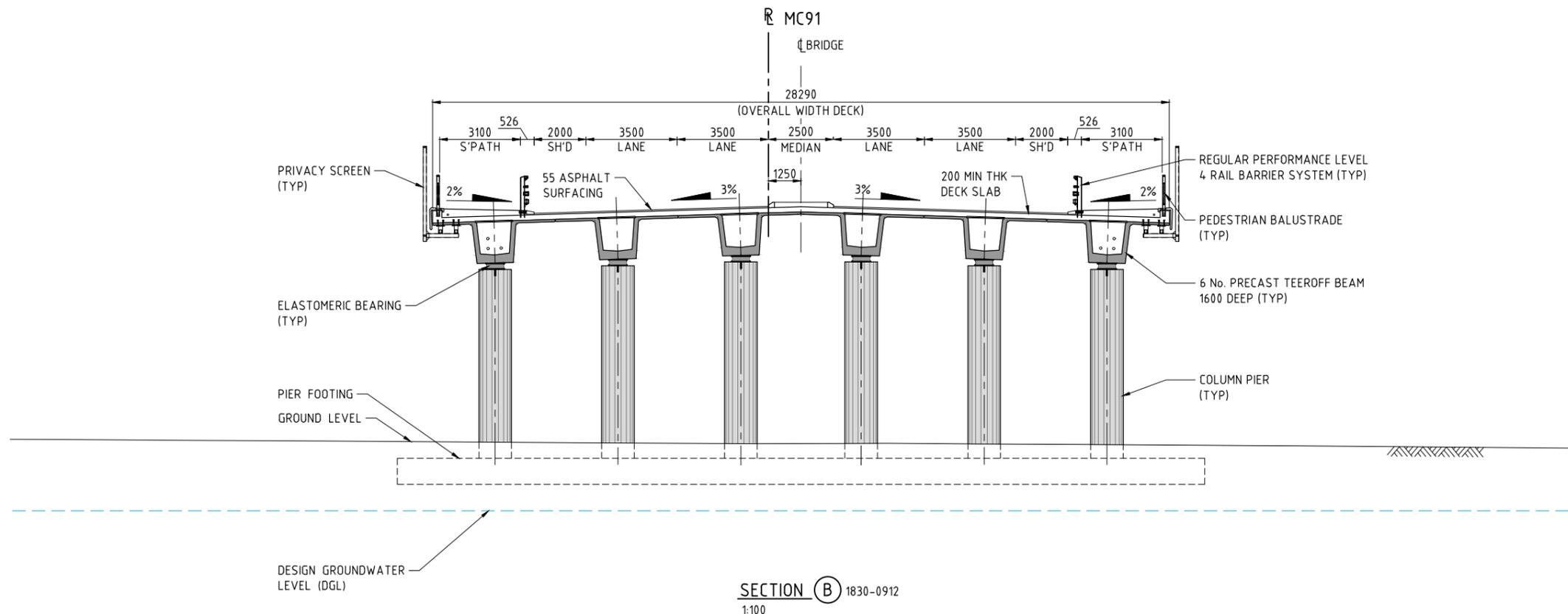
|   |  |  |  |   |  |   |  |   |  |   |  |  |  |
|---|--|--|--|---|--|---|--|---|--|---|--|--|--|
| <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAPPING SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAIN ROADS PROJECT ZONE: PCG94<br/>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER</p> <p><b>AAJV</b><br/><b>AECOM</b> <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 02.02.18 DATE</p> |  | <p>DRAWN F. ALPAPARA 19.09.17<br/>DESIGNED S. SERGEEV 19.09.17<br/>CHECKED M. KAKULAS 19.09.17<br/>APPROVED M. KAKULAS 19.09.17</p> <p>DRAWING STATUS IFC</p> |  | <p>VERIFIER</p> <p><b>GHD</b></p> <p>VERIFIED L. TINLIN 08.02.18 DATE</p> |  | <p>CONSTRUCTOR</p> <p><b>Great Northern CONNECT</b></p> |  | <p>CONTRACT MANAGER G. XANTHIS 14.02.18 DATE<br/>PROJECT DIRECTOR R. ARNOTT 20.02.18 DATE</p> <p><b>mainroads WESTERN AUSTRALIA</b><br/>INFRASTRUCTURE DELIVERY DIRECTORATE</p> |  | <p>LOCAL AUTHORITY (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION</p> <p>MWA DRAWING NUMBER 1830-0912</p> <p>PROJECT TITLE NORTHLINK WA CENTRAL SECTION</p> <p>DRAWING TITLE TONKIN HIGHWAY (H017) BEECHBORO ROAD BRIDGE No. 1781 GENERAL ARRANGEMENT - SHEET 1</p> <p>DRAWING No. NL2-AAJ-DRG-0170-BR-0010</p> |  |
| <p>1 AS CONSTRUCTED - NO CHANGES<br/>0 ISSUED FOR CONSTRUCTION</p> <p>No. DESCRIPTION APPROVED &amp; DATE</p> <p>AMENDMENTS</p>   |  | <p>REVISIONS</p>   |  |   |  |   |  |   |  |   |  |  |  |

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SCALE 1:200  
 SHEET A1



**NOTE:**  
1. FOR GENERAL NOTES REFER DRGS 1830-0910 AND 1830-0911.



**AS CONSTRUCTED**  
DATE 30/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

| AMENDMENTS |                             | METADATA |          | DESIGNER |          | DRAWN       |          | CHECKED    |          | APPROVED   |          | DRAWING STATUS |           | VERIFIED |                             | CONSTRUCTOR        |                | LOCAL AUTHORITY              |   | DRAWING NUMBER           |   | PROJECT TITLE  |                              | DRAWING TITLE   |                          | DRAWING No. |  |
|------------|-----------------------------|----------|----------|----------|----------|-------------|----------|------------|----------|------------|----------|----------------|-----------|----------|-----------------------------|--------------------|----------------|------------------------------|---|--------------------------|---|----------------|------------------------------|---|--------------------------|-------------|--|
| No.        | DESCRIPTION                 | M.N.K.   | DATE     | DESIGNER | DATE     | DRAWN       | DATE     | CHECKED    | DATE     | APPROVED   | DATE     | DRAWING STATUS | VERIFIED  | DATE     | CONSTRUCTOR                 | LOCAL AUTHORITY    | DRAWING NUMBER | PROJECT TITLE                | DRAWING TITLE   | DRAWING No.              | LOCAL AUTHORITY                                       | DRAWING NUMBER | PROJECT TITLE                | DRAWING TITLE   | DRAWING No.              |             |  |
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K.   | 30.01.19 | AAJV     | 19.09.17 | F. ALPAPARA | 19.09.17 | M. KAKULAS | 19.09.17 | M. KAKULAS | 21.02.18 | IFC            | L. TINLIN | 08.02.18 | Great Northern CONNECT      | (109) CITY OF SWAN | 1830-0914      | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>BEECHBORO ROAD<br>BRIDGE No. 1781<br>GENERAL ARRANGEMENT - SHEET 3 | NL2-AAJ-DRG-0170-BR-0012 | MAIN ROADS RESPONSIBILITY AREA<br>METROPOLITAN REGION | 1830-0914      | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>BEECHBORO ROAD<br>BRIDGE No. 1781<br>GENERAL ARRANGEMENT - SHEET 3 | NL2-AAJ-DRG-0170-BR-0012 |             |  |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K.   | 21.02.18 | AECOM    | 19.09.17 | S. SERGEEV  | 19.09.17 | M. KAKULAS | 19.09.17 | M. KAKULAS | 21.02.18 | IFC            | L. TINLIN | 08.02.18 | mainroads WESTERN AUSTRALIA | (109) CITY OF SWAN | 1830-0914      | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>BEECHBORO ROAD<br>BRIDGE No. 1781<br>GENERAL ARRANGEMENT - SHEET 3 | NL2-AAJ-DRG-0170-BR-0012 | MAIN ROADS RESPONSIBILITY AREA<br>METROPOLITAN REGION | 1830-0914      | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>BEECHBORO ROAD<br>BRIDGE No. 1781<br>GENERAL ARRANGEMENT - SHEET 3 | NL2-AAJ-DRG-0170-BR-0012 |             |  |
| AMENDMENTS |                             | METADATA |          | DESIGNER |          | DRAWN       |          | CHECKED    |          | APPROVED   |          | DRAWING STATUS |           | VERIFIED |                             | CONSTRUCTOR        |                | LOCAL AUTHORITY              |   | DRAWING NUMBER           |   | PROJECT TITLE  |                              | DRAWING TITLE   |                          | DRAWING No. |  |
| AMENDMENTS |                             | METADATA |          | DESIGNER |          | DRAWN       |          | CHECKED    |          | APPROVED   |          | DRAWING STATUS |           | VERIFIED |                             | CONSTRUCTOR        |                | LOCAL AUTHORITY              |   | DRAWING NUMBER           |   | PROJECT TITLE  |                              | DRAWING TITLE   |                          | DRAWING No. |  |
| AMENDMENTS |                             | METADATA |          | DESIGNER |          | DRAWN       |          | CHECKED    |          | APPROVED   |          | DRAWING STATUS |           | VERIFIED |                             | CONSTRUCTOR        |                | LOCAL AUTHORITY              |   | DRAWING NUMBER           |   | PROJECT TITLE  |                              | DRAWING TITLE   |                          | DRAWING No. |  |

**DRAWING INDEX**

DRAWING NUMBER

MRWA DRG No.

DRAWING DESCRIPTION

DRAWING NUMBER

MRWA DRG No.

DRAWING DESCRIPTION

**GENERAL**

|                          |           |                               |
|--------------------------|-----------|-------------------------------|
| NL2-AAJ-DRG-0180-BR-0001 | 1830-0975 | LOCALITY PLAN                 |
| NL2-AAJ-DRG-0180-BR-0002 | 1830-0976 | INDEX                         |
| NL2-AAJ-DRG-0180-BR-0005 | 1830-0977 | GENERAL NOTES - SHEET 1       |
| NL2-AAJ-DRG-0180-BR-0006 | 1830-0978 | GENERAL NOTES - SHEET 2       |
| NL2-AAJ-DRG-0180-BR-0010 | 1830-0979 | GENERAL ARRANGEMENT - SHEET 1 |
| NL2-AAJ-DRG-0180-BR-0011 | 1830-0980 | GENERAL ARRANGEMENT - SHEET 2 |
| NL2-AAJ-DRG-0180-BR-0012 | 1830-0981 | GENERAL ARRANGEMENT - SHEET 3 |

**SUBSTRUCTURE**

|                          |           |  |
|--------------------------|-----------|--|
| NL2-AAJ-DRG-0180-BR-0015 | 1830-0982 | BORE INFORMATION - SHEET 1                 |
| NL2-AAJ-DRG-0180-BR-0016 | 1830-0983 | BORE INFORMATION - SHEET 2                 |
| NL2-AAJ-DRG-0180-BR-0017 | 1830-0984 | GEOMETRIC DATA                             |
| NL2-AAJ-DRG-0180-BR-0020 | 1830-0985 | ABUTMENT - MSE WALL LAYOUT                 |
| NL2-AAJ-DRG-0180-BR-0021 | 1830-0986 | ABUTMENT No. 1 - MSE WALL                  |
| NL2-AAJ-DRG-0180-BR-0022 | 1830-0987 | ABUTMENT No. 2 - MSE WALL                  |
| NL2-AAJ-DRG-0180-BR-0023 | 1830-0988 | ABUTMENT - MSE WALL TYPICAL DETAILS        |
| NL2-AAJ-DRG-0180-BR-0024 | 1830-0989 | COLUMN FORMER DETAILS                      |
| NL2-AAJ-DRG-0180-BR-0025 | 1830-0990 | ABUTMENT No. 1 - CONCRETE DETAILS          |
| NL2-AAJ-DRG-0180-BR-0026 | 1830-0991 | ABUTMENT No. 2 - CONCRETE DETAILS          |
| NL2-AAJ-DRG-0180-BR-0027 | 1830-0992 | ABUTMENT - TYPICAL CONCRETE DETAILS        |
| NL2-AAJ-DRG-0180-BR-0028 | 1830-0993 | WINGWALL DETAILS                           |
| NL2-AAJ-DRG-0180-BR-0029 | 1830-0994 | WING WALL REINFORCEMENT DETAILS            |
| NL2-AAJ-DRG-0180-BR-0030 | 1830-0995 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0180-BR-0031 | 1830-0996 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0180-BR-0033 | 1830-0997 | COLUMN REINFORCEMENT DETAILS               |
| NL2-AAJ-DRG-0180-BR-0035 | 1830-0998 | PIER - CONCRETE DETAILS - SHEET 1          |
| NL2-AAJ-DRG-0180-BR-0036 | 1830-0999 | PIER - CONCRETE DETAILS - SHEET 2          |
| NL2-AAJ-DRG-0180-BR-0037 | 1830-1000 | PIER - REINFORCEMENT DETAILS - SHEET 1     |
| NL2-AAJ-DRG-0180-BR-0038 | 1830-1001 | PIER - REINFORCEMENT DETAILS - SHEET 2     |
| NL2-AAJ-DRG-0180-BR-0040 | 1830-1002 | FUTURE PIER WALL DETAILS - SHEET 1         |
| NL2-AAJ-DRG-0180-BR-0041 | 1830-1003 | FUTURE PIER WALL DETAILS - SHEET 2         |

**SUPERSTRUCTURE**

|                          |           |   |
|--------------------------|-----------|---|
| NL2-AAJ-DRG-0180-BR-0045 | 1830-1004 | BEARING DETAILS - SHEET 1                         |
| NL2-AAJ-DRG-0180-BR-0046 | 1830-1005 | BEARING DETAILS - SHEET 2                         |
| NL2-AAJ-DRG-0180-BR-0050 | 1830-1006 | PRECAST TEEROFF BEAM LAYOUT                       |
| NL2-AAJ-DRG-0180-BR-0051 | 1830-1007 | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0180-BR-0052 | 1830-1008 | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0180-BR-0053 | 1830-1009 | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 3      |
| NL2-AAJ-DRG-0180-BR-0057 | 1830-1010 | PRECAST TEEROFF - PRESTRESSING DETAILS            |
| NL2-AAJ-DRG-0180-BR-0060 | 1830-1011 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0180-BR-0061 | 1830-1012 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0180-BR-0062 | 1830-1013 | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 3 |
| NL2-AAJ-DRG-0180-BR-0070 | 1830-1014 | DECK CONCRETE DETAILS - SHEET 1                   |
| NL2-AAJ-DRG-0180-BR-0071 | 1830-1015 | DECK CONCRETE DETAILS - SHEET 2                   |

**MRWA STANDARD DRAWINGS**

|   |              |  |
|---|--------------|--|
| - | 0430-1314    | PRECAST PARAPET PANELS                     |
| - | 0530-1087-1  | BRIDGE BALUSTRADE FOR PSP - SHEET No 1     |
| - | 0530-1307-1  | BRIDGE BALUSTRADE FOR PSP - SHEET No 2     |
| - | 0630-1901    | BRIDGE LIGHT POLE BASE - SHEET No 1        |
| - | 0630-1902    | BRIDGE LIGHT POLE BASE - SHEET No 2        |
| - | 200331-019-1 | 'THRIEBEAM' FABRICATION DETAILS            |
| - | 200331-021-3 | GENERAL ARRANGEMENT                        |
| - | 200331-022-3 | 'W' BEAM TO CONCRETE BARRIER CONNECTION    |
| - | 200331-022-3 | GENERAL ARRANGEMENT                        |
| - | 200331-022-3 | 'THRIEBEAM' TO CONCRETE BARRIER CONNECTION |

**AS CONSTRUCTED**

DATE 21/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV** & **AECOM** & **ARCADIS**

DESIGN MANAGER: D. SULLIVAN

DATE: 02.02.18

|                 |             |          |
|-----------------|-------------|----------|
| DRAWN:          | F. ALPAPARA | 11.09.17 |
| DESIGNED:       | T. SMITH    | 11.09.17 |
| CHECKED:        | N. KEAGE    | 11.09.17 |
| APPROVED:       | M.KAKULAS   | 11.09.17 |
| DRAWING STATUS: | IFC         |          |

VERIFIER: **GHD**

DATE: 06.02.18

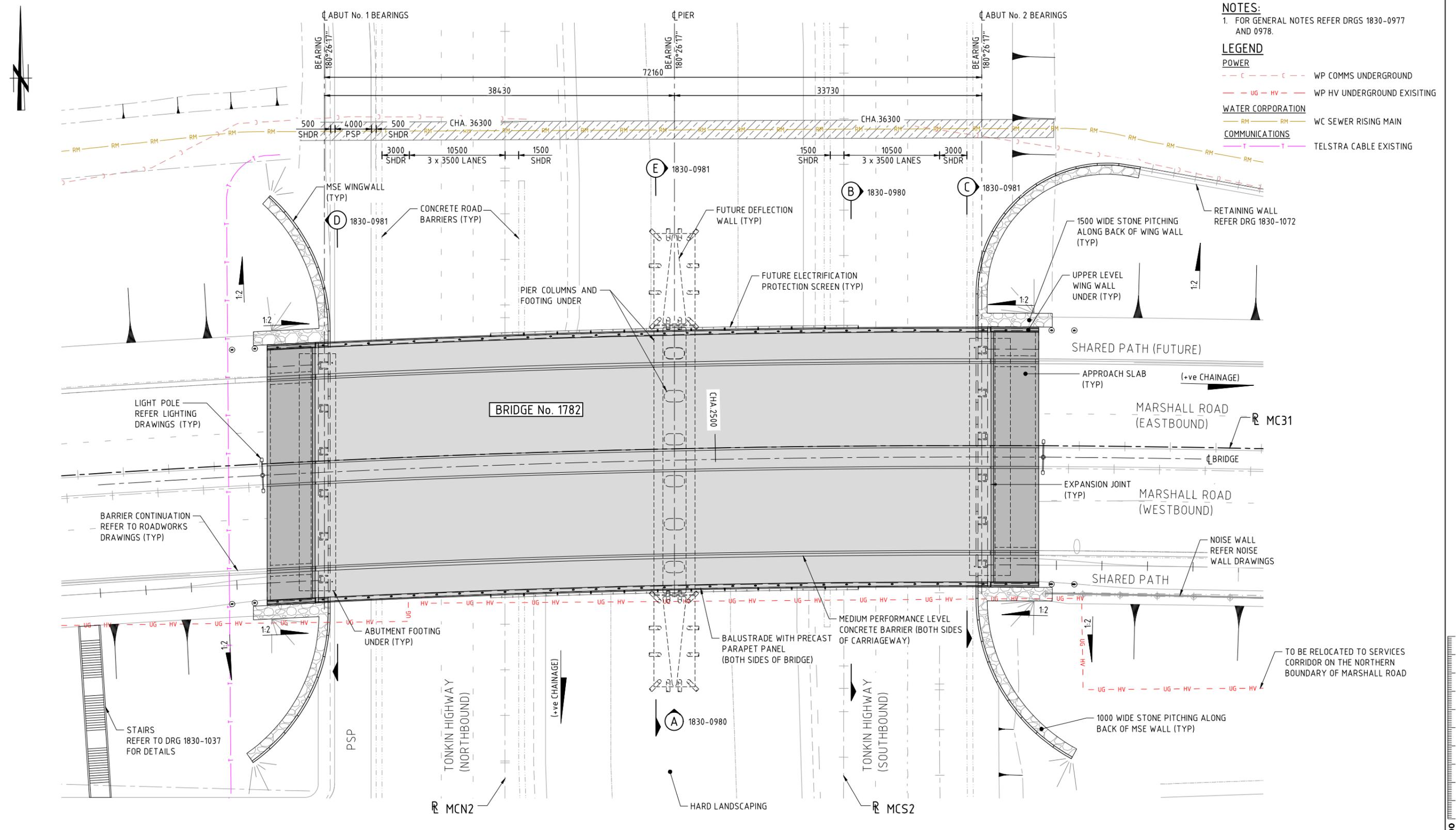
CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS

PROJECT DIRECTOR: R. ARNOTT

INFRASTRUCTURE DELIVERY DIRECTORATE

|                      |  |                                 |                     |
|----------------------|--|---------------------------------|---------------------|
| LOCAL AUTHORITY:     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA: | METROPOLITAN REGION |
| MRWA DRAWING NUMBER: | 1830-0976  |                                 |                     |
| PROJECT TITLE:       | NORTHLINK WA CENTRAL SECTION                                       |                                 |                     |
| DRAWING TITLE:       | TONKIN HIGHWAY (H017)<br>MARSHALL ROAD<br>BRIDGE No. 1782<br>INDEX |                                 |                     |
| DRAWING No.:         | NL2-AAJ-DRG-0180-BR-0002   |                                 |                     |
| REV                  | 1  | DATE                            | 20.02.18            |



- NOTES:**  
 1. FOR GENERAL NOTES REFER DRGS 1830-0977 AND 0978.
- LEGEND**
- POWER**
    - WP COMMS UNDERGROUND
    - WP HV UNDERGROUND EXISTING
  - WATER CORPORATION**
    - WC SEWER RISING MAIN
  - COMMUNICATIONS**
    - TELSTRA CABLE EXISTING

PLAN - BRIDGE 1782 (MARSHALL ROAD GRADE SEPARATION)  
 1:200

AS CONSTRUCTED  
 DATE 21/11/18

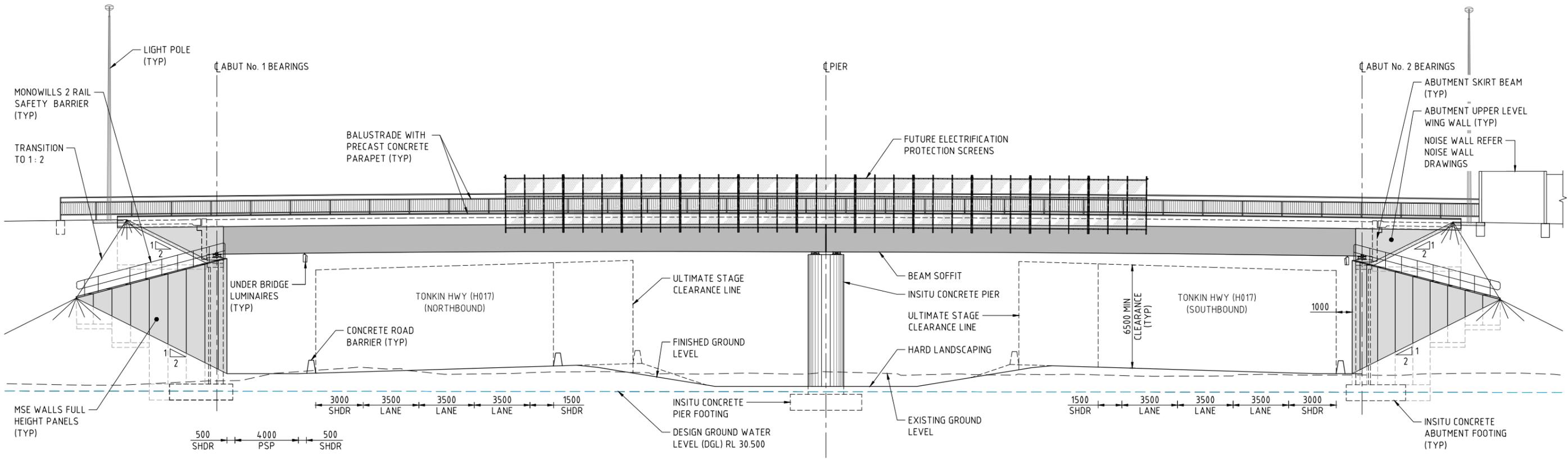
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
 M. Kakulas

| AMENDMENTS |                             | METADATA        |                                | DESIGNER                   |          | DRAWN              |          | VERIFIED            |          | CONTRACTOR                          |                  | LOCAL AUTHORITY   |                     |
|------------|-----------------------------|-----------------|--------------------------------|----------------------------|----------|--------------------|----------|---------------------|----------|-------------------------------------|------------------|---|---------------------|
| No.        | DESCRIPTION                 | APPROVED & DATE | DATE OF CAPTURE                | DESIGNER                   | DATE     | DESIGNER           | DATE     | VERIFIER            | DATE     | CONTRACTOR                          | CONTRACT MANAGER | DATE  | (109) CITY OF SWAN  |
| 2          | AS CONSTRUCTED - NO CHANGES | M.N.K. 21.11.18 | DATE OF CAPTURE:               | AAJV                       | 07.03.17 | F. ALPAPARA        | 07.03.17 | GHD                 | 06.02.18 | Great Northern CONNECT              | G. XANTHIS       | 14.02.18  | (109) CITY OF SWAN  |
| 1          | BEARING DIRECTION AMENDED   | M.N.K. 20.04.18 | MAPPING SURVEY STANDARD:       | AECOM                      | 07.03.17 | T. SMITH           | 07.03.17 |                     |          | mainroads WESTERN AUSTRALIA         | R. ARNOTT        | 20.02.18  | METROPOLITAN REGION |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 21.02.18 | DATE OF CAPTURE:               | ARCADIS                    | 07.03.17 | N. KEAGE           | 07.03.17 |                     |          | INFRASTRUCTURE DELIVERY DIRECTORATE |                  |   |                     |
| AMENDMENTS |                             |                 | MAIN ROADS PROJECT ZONE: PCG94 | DESIGN MANAGER D. SULLIVAN |          | DRAWING STATUS IFC |          | VERIFIED G. JOYNSON |          | PROJECT DIRECTOR R. ARNOTT          |                  | PROJECT TITLE NORTHLINK WA CENTRAL SECTION  |                     |
|            |                             |                 | HEIGHT DATUM: AHD              | DATE 02.02.18              |          | DATE 06.02.18      |          |                     |          |                                     |                  | DRAWING TITLE TONKIN HIGHWAY (H017) MARSHALL ROAD BRIDGE No. 1782 GENERAL ARRANGEMENT - SHEET 1 |                     |
|            |                             |                 |                                |                            |          |                    |          |                     |          |                                     |                  | DRAWING No. NL2-AAJ-DRG-0180-BR-0010  |                     |

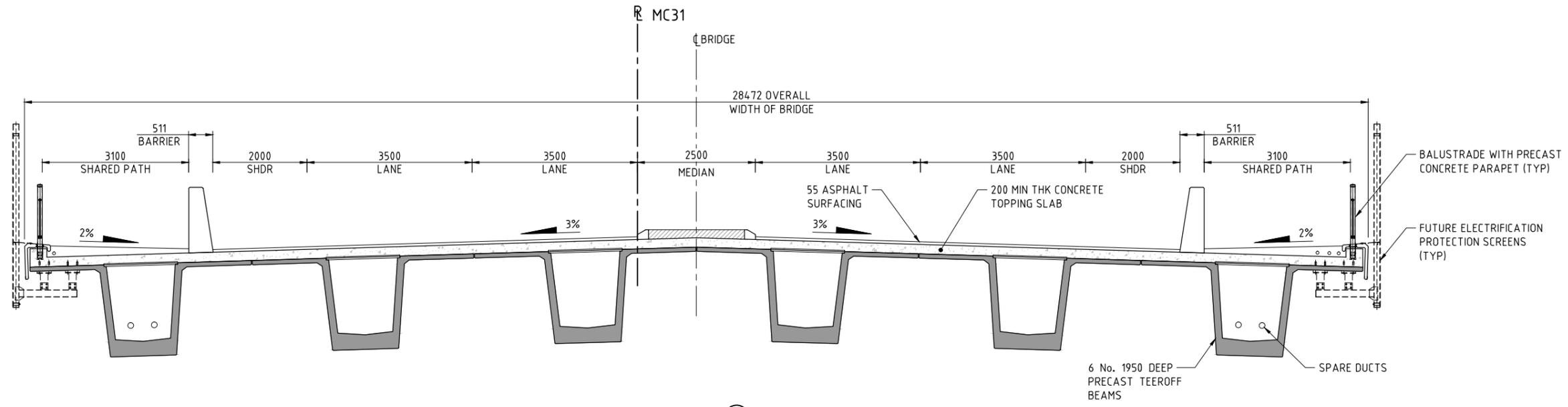
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SCALE 1:200  
 SHEET A1

- NOTES:**  
 1. FOR GENERAL NOTES REFER DRGS 1830-0977 AND 0978.



**ELEVATION (A)** 1830-0979  
1:125



**SECTION (B)** 1830-0979  
1:50

**AS CONSTRUCTED**  
DATE 21/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV**  
**AECOM** **ARCADIS**

DESIGN MANAGER D. SULLIVAN 02.02.18 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 07.03.17 |
| DESIGNED       | T. SMITH    | 07.03.17 |
| CHECKED        | N. KEAGE    | 07.03.17 |
| APPROVED       | M.KAKULAS   | 07.03.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER  
**GHD**  
 VERIFIED G. JOYNSON  
 DATE 06.02.18

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS 14.02.18 DATE  
 PROJECT DIRECTOR R. ARNOTT 20.02.18 DATE  
**INFRASTRUCTURE DELIVERY DIRECTORATE**

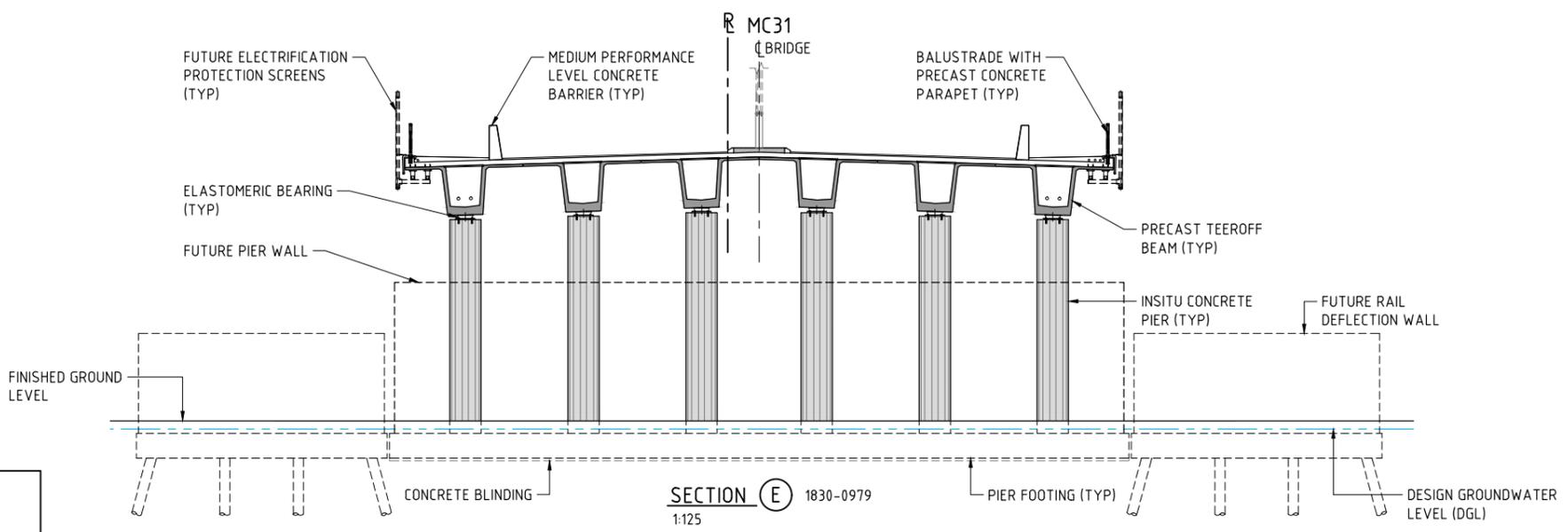
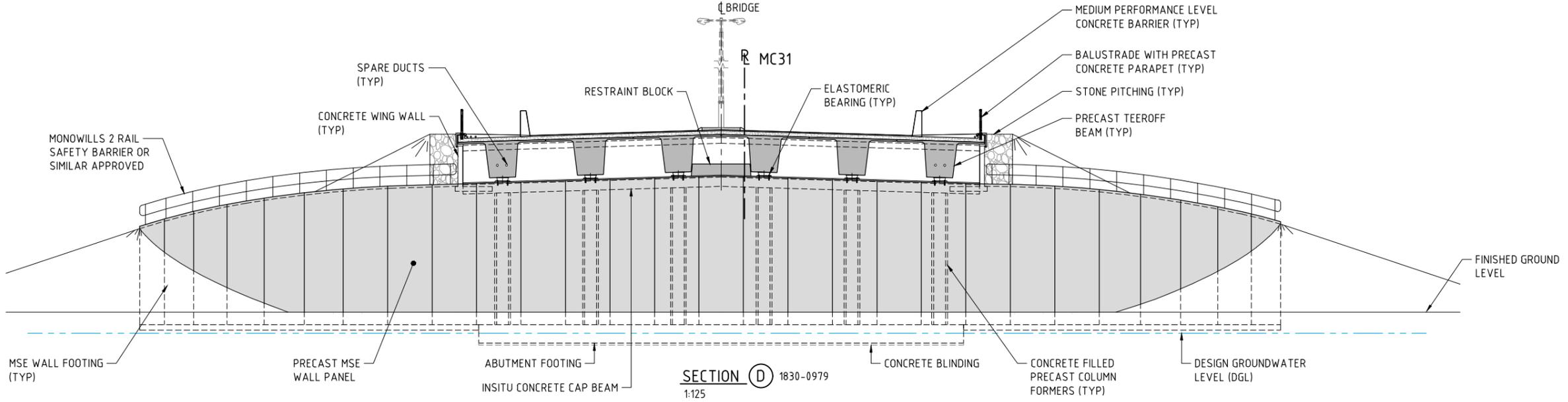
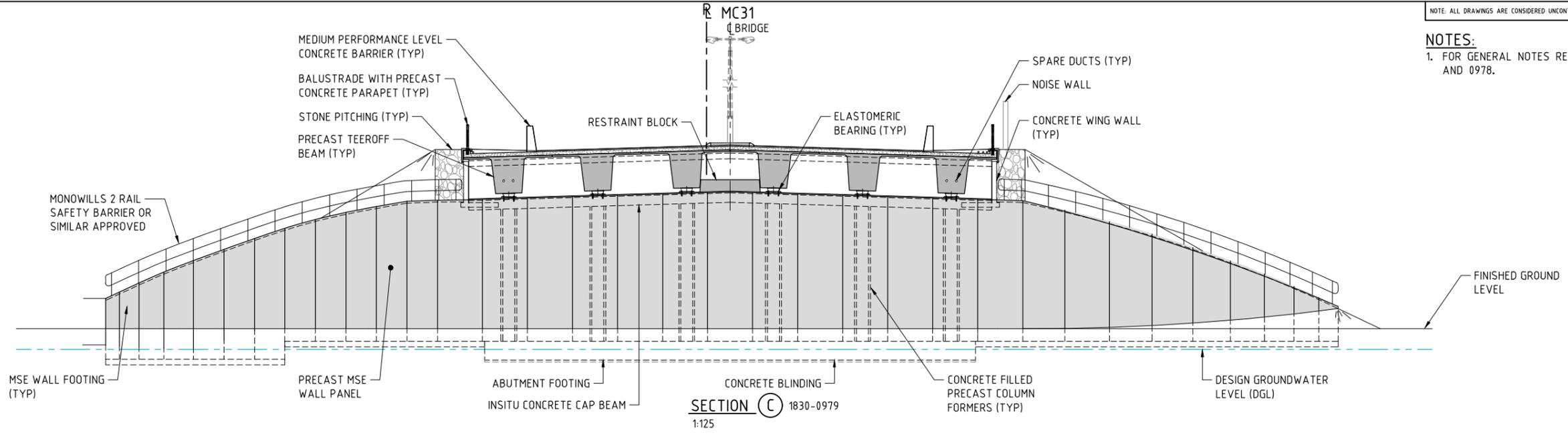
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| LOCAL AUTHORITY    | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-0980  |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>MARSHALL ROAD<br>BRIDGE No. 1782<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0180-BR-0011   |                                |                     |

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SHEET A1

**NOTES:**  
 1. FOR GENERAL NOTES REFER DRGS 1830-0977 AND 0978.



**AS CONSTRUCTED**  
 DATE 21/11/18

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
 M. Kakulas

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN

DATE: 02.02.18

|                 |             |          |
|-----------------|-------------|----------|
| DESIGNED:       | F. ALPAPARA | 07.03.17 |
| CHECKED:        | T. SMITH    | 07.03.17 |
| APPROVED:       | N. KEAGE    | 07.03.17 |
| APPROVED:       | M.KAKULAS   | 07.03.17 |
| DRAWING STATUS: | IFC         |          |

VERIFIER: **GHD**

VERIFIED: G. JOYNSON

DATE: 06.02.18

CONSTRUCTOR: **Great Northern CONNECT**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER: G. XANTHIS

PROJECT DIRECTOR: R. ARNOTT

DATE: 14.02.18

DATE: 20.02.18

|                       |  |                                 |                              |
|-----------------------|--|---------------------------------|------------------------------|
| LOCAL AUTHORITY:      | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA: | METROPOLITAN REGION          |
| MIRWA DRAWING NUMBER: | 1830-0981  | PROJECT TITLE:                  | NORTHLINK WA CENTRAL SECTION |
| DRAWING TITLE:        | TONKIN HIGHWAY (H017)<br>MARSHALL ROAD<br>BRIDGE No. 1782<br>GENERAL ARRANGEMENT - SHEET 3 | DRAWING No.:                    | NL2-AAJ-DRG-0180-BR-0012     |

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**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION           |
|--------------------------|--------------|-------------------------------|
| <b>GENERAL</b>           |              |                               |
| NL2-AAJ-DRG-0200-BR-0001 | 1830-1131    | LOCALITY PLAN                 |
| NL2-AAJ-DRG-0200-BR-0002 | 1830-1132    | INDEX                         |
| NL2-AAJ-DRG-0200-BR-0005 | 1830-1133    | GENERAL NOTES - SHEET 1       |
| NL2-AAJ-DRG-0200-BR-0006 | 1830-1134    | GENERAL NOTES - SHEET 2       |
| NL2-AAJ-DRG-0200-BR-0010 | 1830-1135    | GENERAL ARRANGEMENT - SHEET 1 |
| NL2-AAJ-DRG-0200-BR-0011 | 1830-1136    | GENERAL ARRANGEMENT - SHEET 2 |
| NL2-AAJ-DRG-0200-BR-0012 | 1830-1137    | GENERAL ARRANGEMENT - SHEET 3 |
| NL2-AAJ-DRG-0200-BR-0013 | 1830-1138    | GENERAL ARRANGEMENT - SHEET 4 |

**SUBSTRUCTURE**

|                          |           |  |
|--------------------------|-----------|--|
| NL2-AAJ-DRG-0200-BR-0015 | 1830-1139 | BORE INFORMATION - SHEET 1                 |
| NL2-AAJ-DRG-0200-BR-0016 | 1830-1140 | BORE INFORMATION - SHEET 2                 |
| NL2-AAJ-DRG-0200-BR-0017 | 1830-1141 | GEOMETRIC DATA                             |
| NL2-AAJ-DRG-0200-BR-0020 | 1830-1142 | ABUTMENT - MSE WALL LAYOUT                 |
| NL2-AAJ-DRG-0200-BR-0021 | 1830-1143 | ABUTMENT No. 1 - MSE WALL                  |
| NL2-AAJ-DRG-0200-BR-0022 | 1830-1144 | ABUTMENT No. 2 - MSE WALL                  |
| NL2-AAJ-DRG-0200-BR-0023 | 1830-1145 | ABUTMENT - MSE WALL TYPICAL DETAILS        |
| NL2-AAJ-DRG-0200-BR-0024 | 1830-1146 | ABUTMENT No 1 - CONCRETE DETAILS           |
| NL2-AAJ-DRG-0200-BR-0025 | 1830-1147 | ABUTMENT No 2 - CONCRETE DETAILS           |
| NL2-AAJ-DRG-0200-BR-0026 | 1830-1148 | ABUTMENT TYPICAL CONCRETE DETAILS          |
| NL2-AAJ-DRG-0200-BR-0027 | 1830-1149 | COLUMN FORMER DETAILS                      |
| NL2-AAJ-DRG-0200-BR-0028 | 1830-1150 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0200-BR-0029 | 1830-1151 | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0200-BR-0030 | 1830-1152 | COLUMN REINFORCEMENT                       |
| NL2-AAJ-DRG-0200-BR-0032 | 1830-1153 | WINGWALL DETAILS                           |
| NL2-AAJ-DRG-0200-BR-0033 | 1830-1154 | WINGWALL REINFORCEMENT DETAILS             |
| NL2-AAJ-DRG-0200-BR-0035 | 1830-1155 | RETAINING WALL DETAILS - SHEET 1           |
| NL2-AAJ-DRG-0200-BR-0036 | 1830-1156 | RETAINING WALL DETAILS - SHEET 2           |
| NL2-AAJ-DRG-0200-BR-0037 | 1830-1157 | RETAINING WALL REINFORCEMENT DETAILS       |

**SUPERSTRUCTURE**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                               |
|--------------------------|--------------|---|
| NL2-AAJ-DRG-0200-BR-0045 | 1830-1158    | BEARING DETAILS - SHEET 1                         |
| NL2-AAJ-DRG-0200-BR-0046 | 1830-1159    | BEARING DETAILS - SHEET 2                         |
| NL2-AAJ-DRG-0200-BR-0050 | 1830-1160    | PRECAST TEEROFF BEAM LAYOUT                       |
| NL2-AAJ-DRG-0200-BR-0052 | 1830-1161    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0200-BR-0053 | 1830-1162    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0200-BR-0057 | 1830-1163    | PRECAST TEEROFF - PRESTRESSING DETAILS            |
| NL2-AAJ-DRG-0200-BR-0060 | 1830-1164    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0200-BR-0061 | 1830-1165    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0200-BR-0070 | 1830-1166    | DECK CONCRETE DETAILS - SHEET 1                   |
| NL2-AAJ-DRG-0200-BR-0071 | 1830-1167    | DECK CONCRETE DETAILS - SHEET 2                   |
| NL2-AAJ-DRG-0200-BR-0073 | 1830-1168    | DECK REINFORCEMENT DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0200-BR-0074 | 1830-1169    | DECK REINFORCEMENT DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0200-BR-0090 | 1830-1170    | APPROACH SLAB CONCRETE DETAILS                    |
| NL2-AAJ-DRG-0200-BR-0091 | 1830-1171    | APPROACH SLAB REINFORCEMENT DETAILS               |
| NL2-AAJ-DRG-0200-BR-0100 | 1830-1172    | EXPANSION JOINT DETAILS                           |
| NL2-AAJ-DRG-0200-BR-0105 | 1830-1173    | COVER PLATE DETAILS - SHEET 1                     |
| NL2-AAJ-DRG-0200-BR-0106 | 1830-1174    | COVER PLATE DETAILS - SHEET 2                     |
| NL2-AAJ-DRG-0200-BR-0110 | 1830-1175    | PRECAST BARRIER LAYOUT AND DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0200-BR-0111 | 1830-1176    | PRECAST BARRIER LAYOUT AND DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0200-BR-0115 | 1830-1177    | INSITU BARRIER LAYOUT AND DETAILS                 |
| NL2-AAJ-DRG-0200-BR-0116 | 1830-1178    | BARRIER TRANSITION DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0200-BR-0117 | 1830-1179    | BARRIER TRANSITION DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0200-BR-0135 | 1830-1180    | LIGHTING AND ELECTRICAL LAYOUT                    |
| NL2-AAJ-DRG-0200-BR-0136 | 1830-1181    | LIGHTING AND ELECTRICAL DETAILS                   |
| NL2-AAJ-DRG-0200-BR-0137 | 1830-1182    | LUMINAIRE BRACKET DETAIL                          |
| NL2-AAJ-DRG-0200-BR-0145 | 1830-1183    | PRIVACY SCREEN WALL DETAILS - SHEET 1             |
| NL2-AAJ-DRG-0200-BR-0146 | 1830-1184    | PRIVACY SCREEN WALL DETAILS - SHEET 2             |
| NL2-AAJ-DRG-0200-BR-0155 | 1830-1185    | DESIGN SUMMARY - SHEET 1 (TO FOLLOW)              |
| NL2-AAJ-DRG-0200-BR-0156 | 1830-1186    | DESIGN SUMMARY - SHEET 2 (TO FOLLOW)              |

**MRWA STANDARD DRAWING**

|   |           |                                  |
|---|-----------|----------------------------------|
| - | 0630-1901 | BRIDGE LIGHT POLE BASE - SHEET 1 |
| - | 0630-1902 | BRIDGE LIGHT POLE BASE - SHEET 2 |

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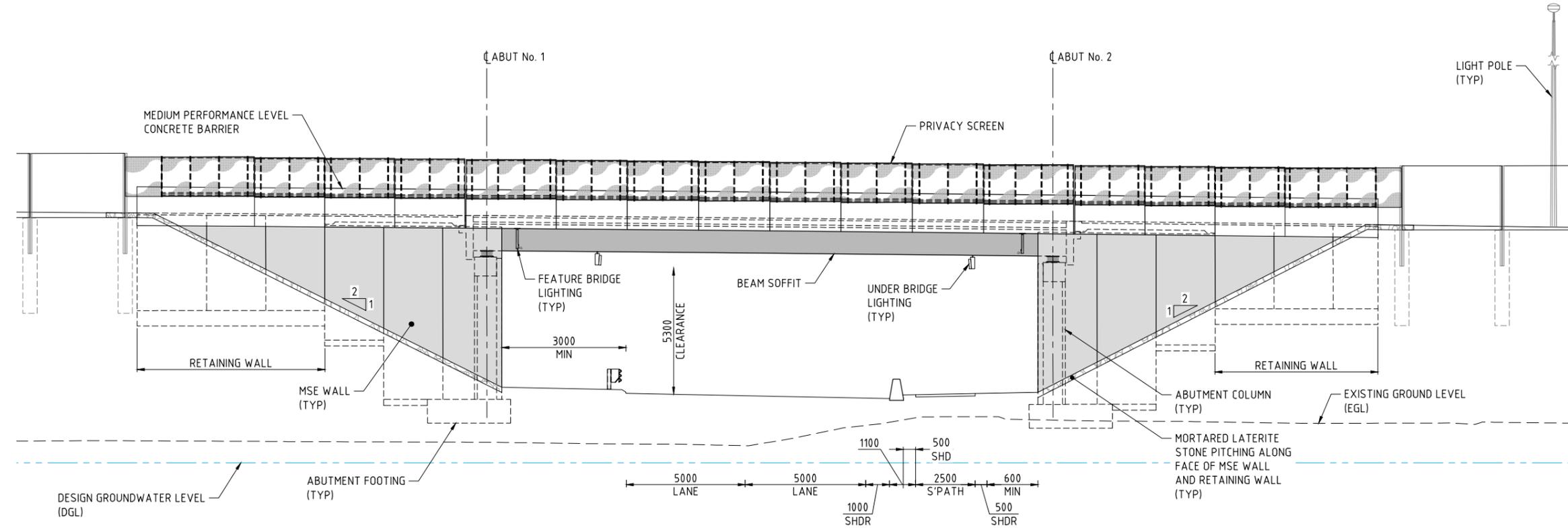
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DATE 26/02/19

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|---|--|---|--|--|--|--|---|---|---|---|
| <p>1 AS CONSTRUCTED - NO CHANGES</p> <p>0 ISSUED FOR CONSTRUCTION</p> |  | <p>M.N.K. 19.03.19</p> <p>M.N.K. 09.05.18</p> | <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAPPING SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAIN ROADS PROJECT ZONE: PCG94</p> <p>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER</p> <p><b>AAJV</b> <small>A Joint Venture between AECOM and Arcadis to design the Link WA Central Section</small></p> <p><b>AECOM</b> <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 12.04.18 DATE</p> | <p>DRAWN F. ALPAPARA 27.11.17</p> <p>DESIGNED X. LAM 27.11.17</p> <p>CHECKED S. SERGEEV 27.11.17</p> <p>APPROVED M. KAKULAS 27.11.17</p> <p>DRAWING STATUS IFC</p> | <p>VERIFIER</p> <p><b>GHD</b></p> <p>VERIFIED L. TINLIN DATE 19.04.18</p> | <p>CONSTRUCTOR</p> <p><b>Great Northern CONNECT</b></p> | <p><b>mainroads</b> WESTERN AUSTRALIA</p> <p>INFRASTRUCTURE DELIVERY DIRECTORATE</p> <p>CONTRACT MANAGER G. XANTHIS 01.05.18 DATE</p> <p>PROJECT DIRECTOR R. ARNOTT 01.05.18 DATE</p> | <p>LOCAL AUTHORITY (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION</p> <p>MRWA DRAWING NUMBER <b>1830-1132</b></p> <p>PROJECT TITLE <b>NORTHLINK WA CENTRAL SECTION</b></p> <p>DRAWING TITLE <b>TONKIN HIGHWAY (H017) HEPBURN AVENUE BRIDGE No's. 1783 AND 1784 INDEX</b></p> <p>DRAWING No: <b>NL2-AAJ-DRG-0200-BR-0002</b> REV <b>1</b></p> |
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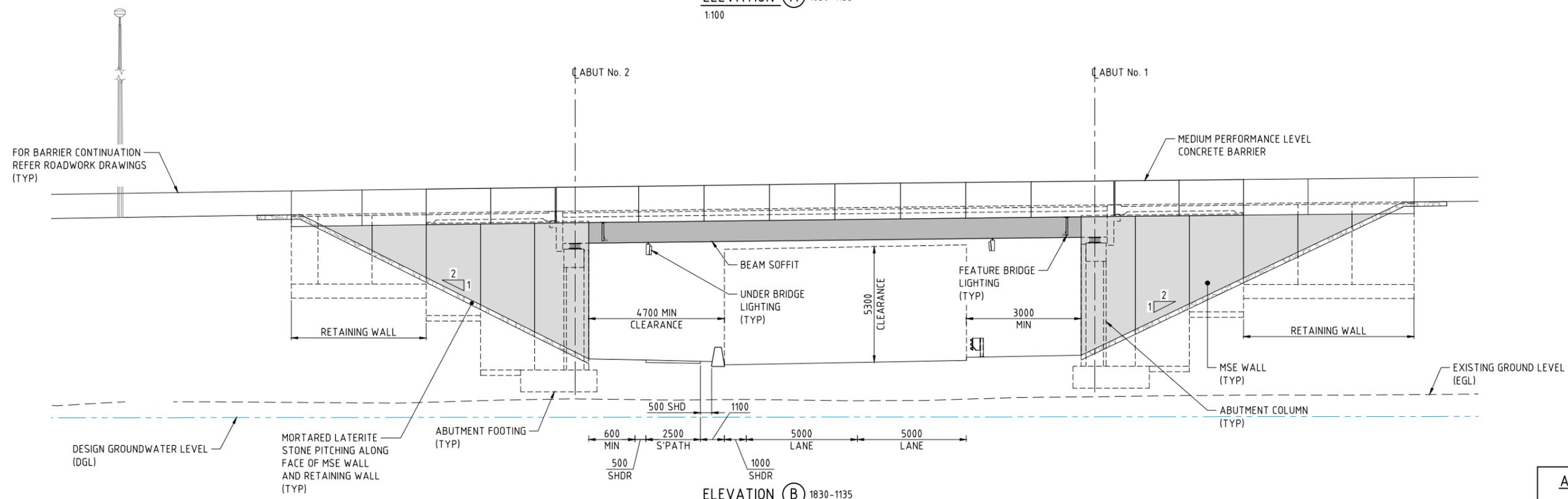
SCALE SHEET A1



- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-1133 & 1134.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406.



**ELEVATION (A)** 1830-1135  
1:100



**ELEVATION (B)** 1830-1135  
1:100

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**AS CONSTRUCTED**  
DATE 26/02/19

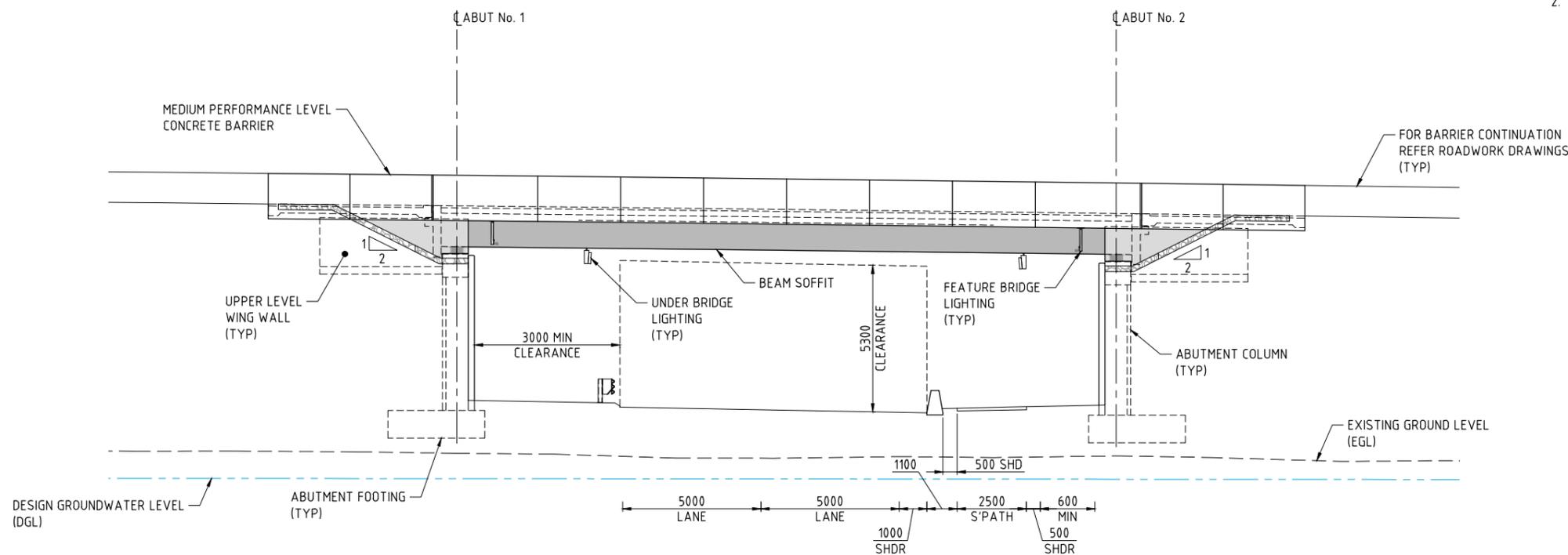
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| AMENDMENTS  |                             | METADATA        |          | DESIGNER                 |  | DRAWN       |          | VERIFIED  |  | CONSTRUCTOR                    |  | LOCAL AUTHORITY    |  | MIRWA DRAWING NUMBER |  | PROJECT TITLE                |  | DRAWING TITLE  |  | DRAWING No.              |  |
|-------------|-----------------------------|-----------------|----------|--------------------------|--|-------------|----------|-----------|--|--------------------------------|--|--------------------|--|----------------------|--|------------------------------|--|--|--|--------------------------|--|
| 1           | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 19.03.19 | AAJV<br>AECOM<br>ARCADIS |  | F. ALPAPARA | 17.02.17 | GHD       |  | Great Northern CONNECT         |  | (109) CITY OF SWAN |  | 1830-1136            |  | NORTHLINK WA CENTRAL SECTION |  | TONKIN HIGHWAY (H017)<br>HEPBURN AVENUE<br>BRIDGE No's. 1783 AND 1784<br>GENERAL ARRANGEMENT - SHEET 2 |  | NL2-AAJ-DRG-0200-BR-0011 |  |
| 0           | ISSUED FOR CONSTRUCTION     | M.N.K.          | 09.05.18 | D. SULLIVAN              |  | X. LAM      | 17.02.17 | L. TINLIN |  | mainroads<br>WESTERN AUSTRALIA |  | (109) CITY OF SWAN |  | 1830-1136            |  | NORTHLINK WA CENTRAL SECTION |  | HEPBURN AVENUE<br>BRIDGE No's. 1783 AND 1784<br>GENERAL ARRANGEMENT - SHEET 2                          |  | REV 1                    |  |
| DESCRIPTION |                             | APPROVED & DATE |          | DATE                     |  | DATE        |          | DATE      |  | DATE                           |  | DATE               |  | DATE                 |  | DATE                         |  | DATE   |  | DATE                     |  |
| AMENDMENTS  |                             |                 |          | 12.04.18                 |  | 17.02.17    |          | 19.04.18  |  | 01.05.18                       |  | 01.05.18           |  | 01.05.18             |  | 01.05.18                     |  | 01.05.18   |  | 01.05.18                 |  |

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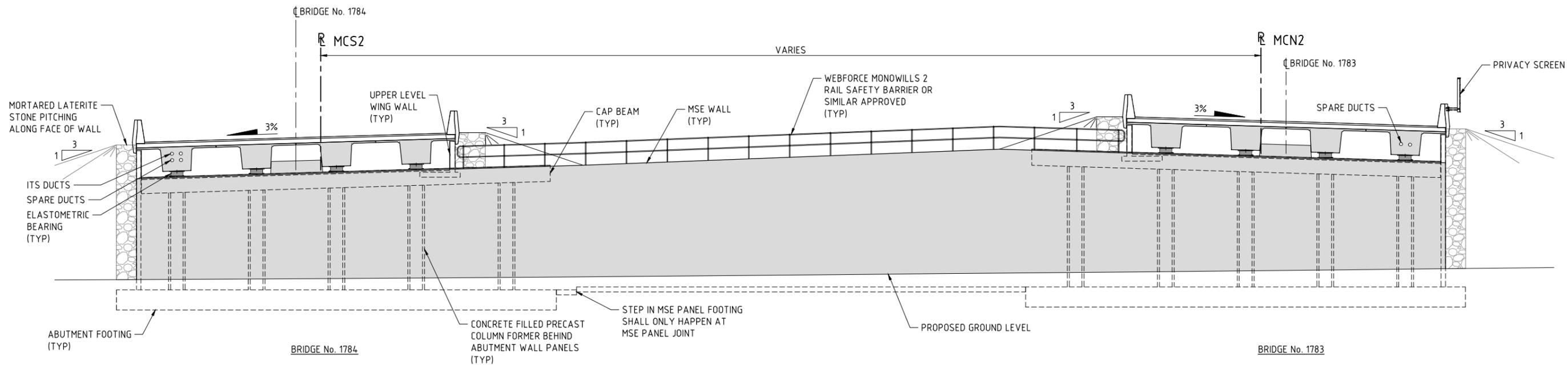
**NOTES:**

- FOR GENERAL NOTES REFER DRG 1830-1133 & 1134.
- STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 4.06.



**ELEVATION C** 1830-1135

1:100  
 BRIDGE No. 1783 - AS SHOWN  
 BRIDGE No. 1784 - SIMILAR



**SECTION D** 1830-1135

1:100  
 ABUTMENT No. 2 - AS SHOWN  
 ABUTMENT No. 1 - SIMILAR

**AS CONSTRUCTED**  
 DATE 26/02/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV**  
**AECOM** **ARCADIS**  
 DESIGN MANAGER D. SULLIVAN 12.04.18 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 17.02.17 |
| DESIGNED       | X. LAM      | 17.02.17 |
| CHECKED        | S. SERGEEV  | 17.02.17 |
| APPROVED       | M. KAKULAS  | 17.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER  
**GHD**  
 VERIFIED L. TINLIN  
 DATE 19.04.18

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS 01.05.18 DATE  
 PROJECT DIRECTOR R. ARNOTT 01.05.18 DATE  
**mainroads WESTERN AUSTRALIA**  
 INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                               |                     |
|---------------------|--|-------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-1137  |                               |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                               |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>HEPBURN AVENUE<br>BRIDGE No's. 1783 AND 1784<br>GENERAL ARRANGEMENT - SHEET 3 |                               |                     |
| DRAWING No.         | NL2-AAJ-DRG-0200-BR-0012   |                               |                     |

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SCALE 1:100  
 SHEET A1



**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                          |
|--------------------------|--------------|--|
| <b>GENERAL</b>           |              |  |
| NL2-AAJ-DRG-0210-BR-0001 | 1830-1189    | LOCALITY PLAN                                |
| NL2-AAJ-DRG-0210-BR-0002 | 1830-1190    | INDEX  |
| NL2-AAJ-DRG-0210-BR-0005 | 1830-1191    | GENERAL NOTES - SHEET 1                      |
| NL2-AAJ-DRG-0210-BR-0006 | 1830-1192    | GENERAL NOTES - SHEET 2                      |
| NL2-AAJ-DRG-0210-BR-0010 | 1830-1193    | GENERAL ARRANGEMENT - SHEET 1                |
| NL2-AAJ-DRG-0210-BR-0011 | 1830-1194    | GENERAL ARRANGEMENT - SHEET 2                |
| NL2-AAJ-DRG-0210-BR-0012 | 1830-1195    | GENERAL ARRANGEMENT - SHEET 3                |
| NL2-AAJ-DRG-0210-BR-0013 | 1830-1196    | GENERAL ARRANGEMENT - SHEET 4                |
| <b>SUBSTRUCTURE</b>      |              |  |
| NL2-AAJ-DRG-0210-BR-0015 | 1830-1197    | BORE INFORMATION - SHEET 1                   |
| NL2-AAJ-DRG-0210-BR-0016 | 1830-1198    | BORE INFORMATION - SHEET 2                   |
| NL2-AAJ-DRG-0210-BR-0017 | 1830-1199    | GEOMETRIC DATA                               |
| NL2-AAJ-DRG-0210-BR-0020 | 1830-1200    | ABUTMENT - MSE WALL LAYOUT                   |
| NL2-AAJ-DRG-0210-BR-0021 | 1830-1201    | ABUTMENT No. 1 - MSE WALL                    |
| NL2-AAJ-DRG-0210-BR-0022 | 1830-1202    | ABUTMENT No. 2 - MSE WALL                    |
| NL2-AAJ-DRG-0210-BR-0023 | 1830-1203    | ABUTMENT - MSE WALL TYPICAL DETAILS          |
| NL2-AAJ-DRG-0210-BR-0024 | 1830-1204    | ABUTMENT No 1 - CONCRETE DETAILS             |
| NL2-AAJ-DRG-0210-BR-0025 | 1830-1205    | ABUTMENT No 2 - CONCRETE DETAILS             |
| NL2-AAJ-DRG-0210-BR-0026 | 1830-1206    | ABUTMENT TYPICAL CONCRETE DETAILS            |
| NL2-AAJ-DRG-0210-BR-0027 | 1830-1207    | COLUMN FORMER DETAILS                        |
| NL2-AAJ-DRG-0210-BR-0028 | 1830-1208    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1   |
| NL2-AAJ-DRG-0210-BR-0029 | 1830-1209    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2   |
| NL2-AAJ-DRG-0210-BR-0030 | 1830-1210    | COLUMN REINFORCEMENT                         |
| NL2-AAJ-DRG-0210-BR-0032 | 1830-1211    | WING WALL DETAILS                            |
| NL2-AAJ-DRG-0210-BR-0033 | 1830-1212    | WING WALL REINFORCEMENT DETAILS              |
| NL2-AAJ-DRG-0210-BR-0035 | 1830-1213    | RETAINING WALL DETAILS - SHEET 1             |
| NL2-AAJ-DRG-0210-BR-0036 | 1830-1214    | RETAINING WALL DETAILS - SHEET 2             |
| NL2-AAJ-DRG-0210-BR-0037 | 1830-1215    | RETAINING WALL REINFORCEMENT DETAILS         |
| <b>SUPERSTRUCTURE</b>    |              |  |
| NL2-AAJ-DRG-0210-BR-0045 | 1830-1216    | BEARING DETAILS - SHEET 1                    |
| NL2-AAJ-DRG-0210-BR-0046 | 1830-1217    | BEARING DETAILS - SHEET 2                    |
| NL2-AAJ-DRG-0210-BR-0050 | 1830-1218    | PRECAST TEEROFF BEAM LAYOUT                  |
| NL2-AAJ-DRG-0210-BR-0052 | 1830-1219    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1 |

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                               |
|--------------------------|--------------|---|
| NL2-AAJ-DRG-0210-BR-0053 | 1830-1220    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0210-BR-0057 | 1830-1221    | PRECAST TEEROFF - PRESTRESSING DETAILS            |
| NL2-AAJ-DRG-0210-BR-0060 | 1830-1222    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0210-BR-0061 | 1830-1223    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0210-BR-0070 | 1830-1224    | DECK CONCRETE DETAILS - SHEET 1                   |
| NL2-AAJ-DRG-0210-BR-0071 | 1830-1225    | DECK CONCRETE DETAILS - SHEET 2                   |
| NL2-AAJ-DRG-0210-BR-0073 | 1830-1226    | DECK REINFORCEMENT DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0210-BR-0074 | 1830-1227    | DECK REINFORCEMENT DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0210-BR-0090 | 1830-1228    | APPROACH SLAB CONCRETE DETAILS                    |
| NL2-AAJ-DRG-0210-BR-0091 | 1830-1229    | APPROACH SLAB REINFORCEMENT DETAILS               |
| NL2-AAJ-DRG-0210-BR-0100 | 1830-1230    | EXPANSION JOINT DETAILS                           |
| NL2-AAJ-DRG-0210-BR-0105 | 1830-1231    | COVER PLATE DETAILS - SHEET 1                     |
| NL2-AAJ-DRG-0210-BR-0106 | 1830-1232    | COVER PLATE DETAILS - SHEET 2                     |
| NL2-AAJ-DRG-0210-BR-0110 | 1830-1233    | PRECAST BARRIER LAYOUT AND DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0210-BR-0111 | 1830-1234    | PRECAST BARRIER LAYOUT AND DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0210-BR-0115 | 1830-1235    | INSITU BARRIER LAYOUT AND DETAILS                 |
| NL2-AAJ-DRG-0210-BR-0116 | 1830-1236    | BARRIER TRANSITION DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0210-BR-0117 | 1830-1237    | BARRIER TRANSITION DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0210-BR-0135 | 1830-1238    | LIGHTING AND ELECTRICAL LAYOUT                    |
| NL2-AAJ-DRG-0210-BR-0136 | 1830-1239    | LIGHTING AND ELECTRICAL DETAILS                   |
| NL2-AAJ-DRG-0210-BR-0137 | 1830-1240    | LUMINAIRE BRACKET DETAILS                         |
| NL2-AAJ-DRG-0210-BR-0145 | 1830-1241    | PRIVACY SCREEN WALL DETAILS - SHEET 1             |
| NL2-AAJ-DRG-0210-BR-0146 | 1830-1242    | PRIVACY SCREEN WALL DETAILS - SHEET 2             |
| NL2-AAJ-DRG-0210-BR-0155 | 1830-1243    | DESIGN SUMMARY - SHEET 1 (TO FOLLOW)              |
| NL2-AAJ-DRG-0210-BR-0156 | 1830-1244    | DESIGN SUMMARY - SHEET 2 (TO FOLLOW)              |

**MRWA STANDARD DRAWING**

|   |             |                                  |
|---|-------------|----------------------------------|
| - | 0430-0747-1 | JUNCTION BOX DETAILS             |
| - | 0630-1901   | BRIDGE LIGHT POLE BASE - SHEET 1 |
| - | 0630-1902   | BRIDGE LIGHT POLE BASE - SHEET 2 |

**AS CONSTRUCTED**

DATE 26/02/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER  
**AAJV AECOM ARCADIS**  
DESIGN MANAGER D. SULLIVAN 28.02.18 DATE

DRAWN F. ALPAPARA 04.09.17  
DESIGNED X. LAM 04.09.17  
CHECKED S. SERGEEV 04.09.17  
APPROVED M. KAKULAS 04.09.17  
DRAWING STATUS IFC

VERIFIER  
**GHD**  
VERIFIED G. JOYNSON  
DATE 02.03.18

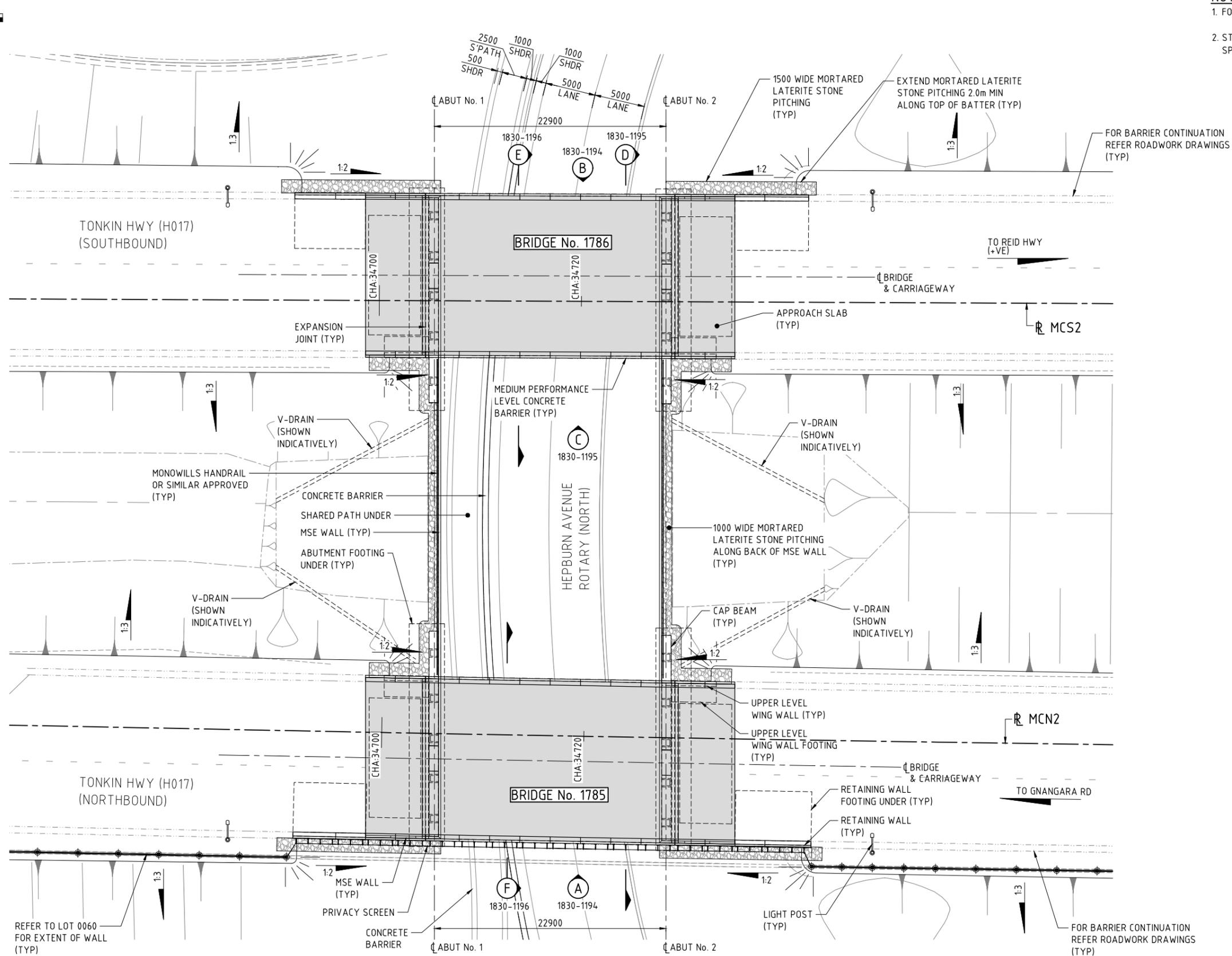
CONSTRUCTOR  
**Great Northern CONNECT**

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE  
CONTRACT MANAGER G. XANTHIS 14.03.18 DATE  
PROJECT DIRECTOR R. ARNOTT 15.03.18 DATE

LOCAL AUTHORITY (109) CITY OF SWAN  
MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION  
MRWA DRAWING NUMBER 1830-1190  
PROJECT TITLE NORTHLINK WA CENTRAL SECTION  
DRAWING TITLE TONKIN HIGHWAY (H017) HEPBURN AVENUE BRIDGE No's 1785 & 1786 INDEX  
DRAWING No NL2-AAJ-DRG-0210-BR-0002  
REV 1

**NOTES:**

- FOR GENERAL NOTES REFER DRG 1830-1191 & 1192.
- STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406.



BRIDGE No. 1785 & 1786 - PLAN  
1:200

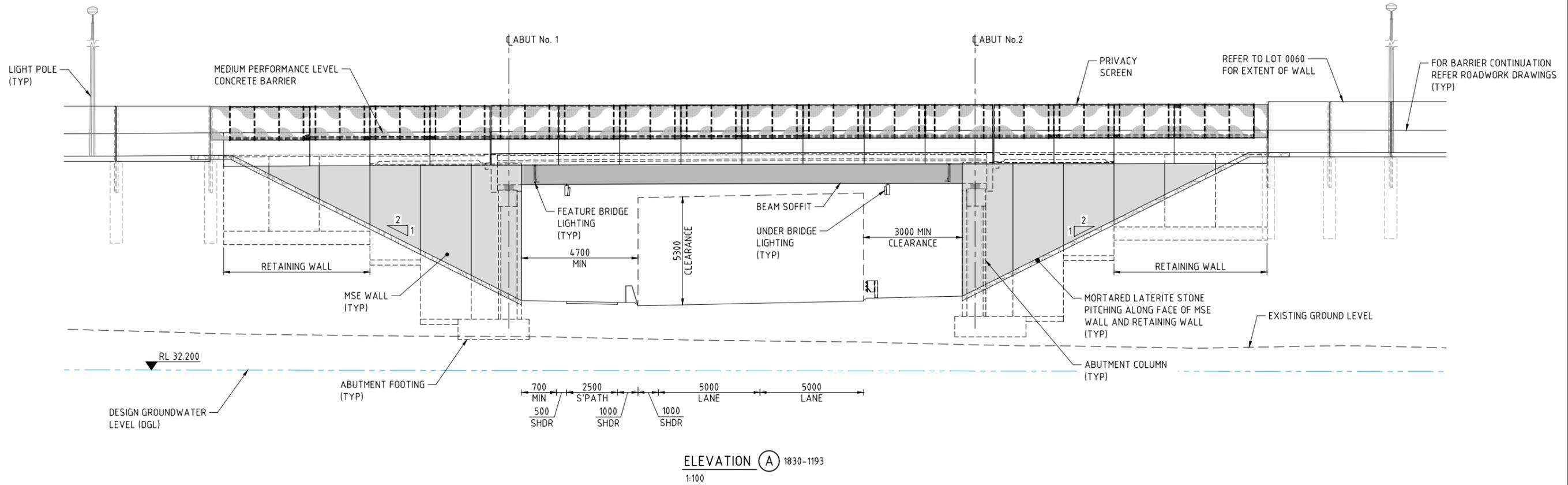
AS CONSTRUCTED  
DATE 26/02/19

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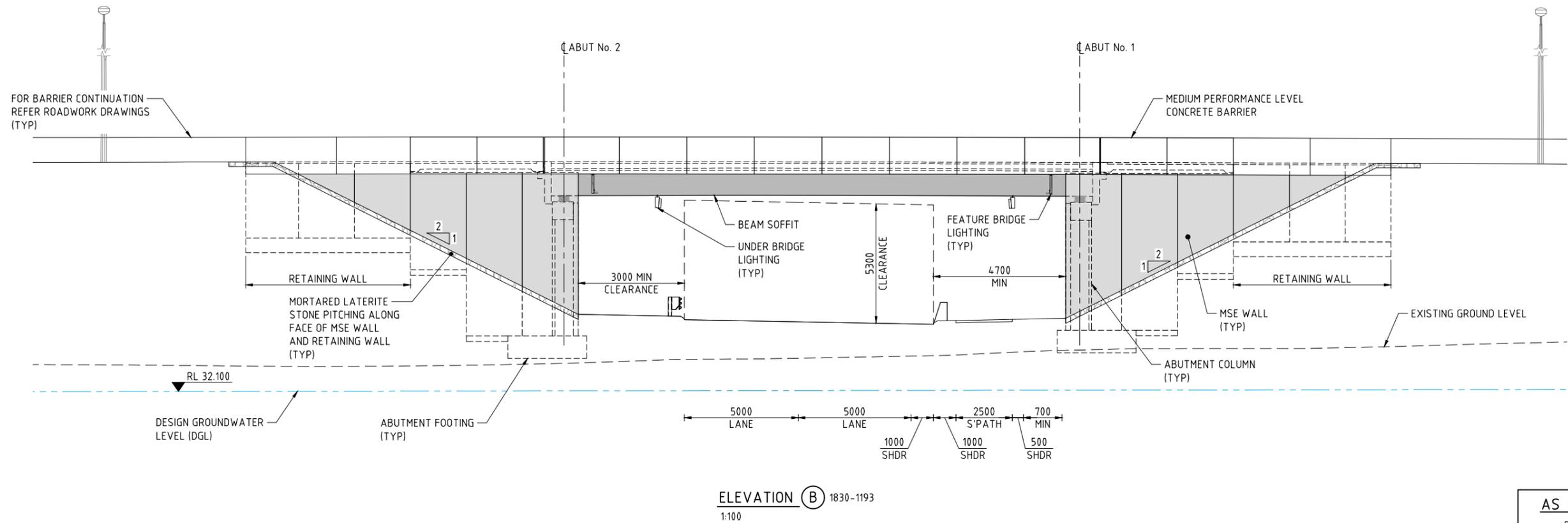
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| AMENDMENTS |                             | METADATA        |                                | DESIGNER |             | DRAWN    |          | VERIFIED |          | CONTRACTOR                          |                     | LOCAL AUTHORITY               |                          |
|------------|-----------------------------|-----------------|--------------------------------|----------|-------------|----------|----------|----------|----------|-------------------------------------|---------------------|-------------------------------|--------------------------|
| No.        | DESCRIPTION                 | APPROVED & DATE | DATE OF CAPTURE:               | DESIGNER | DATE        | DESIGNER | DATE     | VERIFIED | DATE     | CONTRACTOR                          | LOCAL AUTHORITY     | PROJECT TITLE                 | MIRWA DRAWING NUMBER     |
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K. 29.03.19 | MAPPING SURVEY STANDARD:       | AAJV     | F. ALPAPARA | 13.02.17 | 13.02.17 | GHD      | 02.03.18 | Great Northern CONNECT              | (109) CITY OF SWAN  | NORTHLINK WA CENTRAL SECTION  | 1830-1193                |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 19.03.18 | DATE OF CAPTURE:               | AECOM    | X. LAM      | 13.02.17 | 13.02.17 |          |          | mainroads WESTERN AUSTRALIA         | METROPOLITAN REGION | TONKIN HIGHWAY (H017)         |                          |
|            |                             |                 | MAIN ROADS PROJECT ZONE: PCG94 | ARCADIS  | S. SERGEEV  | 13.02.17 | 13.02.17 |          |          | INFRASTRUCTURE DELIVERY DIRECTORATE |                     | HEPBURN AVENUE                |                          |
|            |                             |                 | HEIGHT DATUM: AHD              |          | M. KAKULAS  | 13.02.17 | 13.02.17 |          |          |                                     |                     | BRIDGE No's 1785 & 1786       |                          |
|            |                             |                 |                                |          | D. SULLIVAN | 28.02.18 | 28.02.18 |          |          |                                     |                     | GENERAL ARRANGEMENT - SHEET 1 |                          |
|            |                             |                 |                                |          |             |          |          |          |          |                                     |                     |                               | NL2-AAJ-DRG-0210-BR-0010 |

NOTE: ALL DRAWINGS ARE CONSIDERED UNCONTROLLED UNLESS STAMPED 'CONTROLLED COPY' IN RED  
 NOTE:  
 1. FOR GENERAL NOTES REFER DRG 1830-1191 & 1192.



ELEVATION (A) 1830-1193  
 1:100



ELEVATION (B) 1830-1193  
 1:100

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

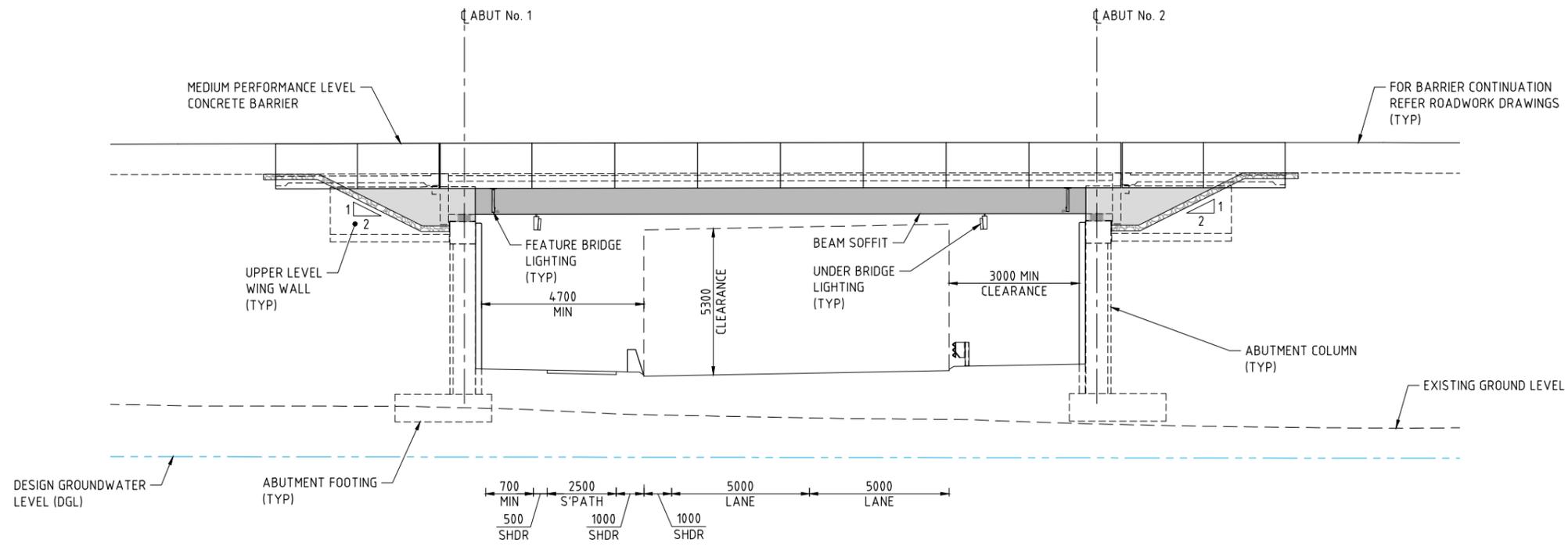
AS CONSTRUCTED  
 DATE 26/02/19

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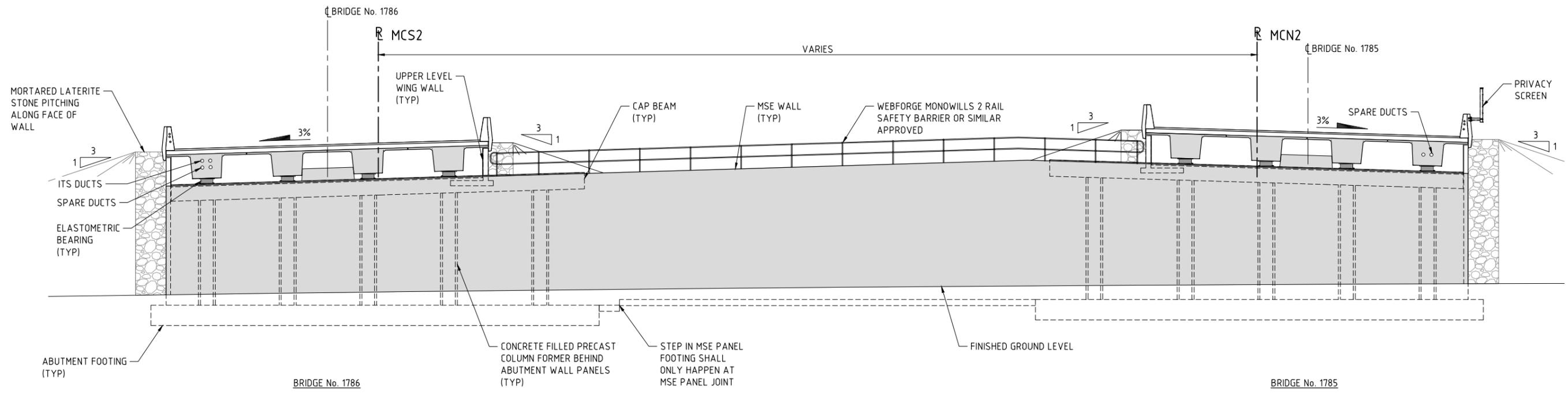
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|-------------|-----------------------------|-----------------|----------|--------------------------|--|-------------|----------|------------------|--|------------------|------------|----------|----------|----------------|--|---------------|-----|-------------------------------------|--------------------|---------------------|-----------|---------------------|------------------------------|---------------|---|---------------|--------------------------|-------------|--|
| 1           | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 29.03.19 | AAJV<br>AECOM<br>ARCADIS |  | F. ALPAPARA | 13.02.17 | X. LAM           |  | 13.02.17         | S. SERGEEV |          | 13.02.17 | M. KAKULAS     |  | 13.02.17      | GHD |                                     | (109) CITY OF SWAN |                     | 1830-1194 |                     | NORTHLINK WA CENTRAL SECTION |               | TONKIN HIGHWAY (H017)<br>HEPBURN AVENUE<br>BRIDGE No's 1785 & 1786<br>GENERAL ARRANGEMENT - SHEET 2 |               | NL2-AAJ-DRG-0210-BR-0011 |             |  |
| 0           | ISSUED FOR CONSTRUCTION     | M.N.K.          | 19.03.18 | D. SULLIVAN              |  | G. JOYNSON  |          | G. XANTHIS       |  | 14.03.18         | R. ARNOTT  |          | 15.03.18 | IFC            |  | DATE 02.03.18 |     | INFRASTRUCTURE DELIVERY DIRECTORATE |                    | METROPOLITAN REGION |           |                     |                              |               |   |               |                          |             |  |
| DESCRIPTION |                             | APPROVED & DATE |          | DESIGN MANAGER           |  | VERIFIED    |          | CONTRACT MANAGER |  | PROJECT DIRECTOR |            | DATE     |          | DATE           |  | DATE          |     | DATE                                |                    | DATE                |           | DATE                |                              | DATE          |   | DATE          |                          | DATE        |  |
| AMENDMENTS  |                             |                 |          | 28.02.18                 |  | 02.03.18    |          | 14.03.18         |  | 15.03.18         |            | 02.03.18 |          |                |  |               |     |                                     |                    |                     |           |                     |                              |               |   |               |                          |             |  |

SCALE 1:100 SHEET A1

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG 1830-1191 & 1192.



**ELEVATION C** 1830-1193  
1:100  
1786 - AS SHOWN  
1785 - SIMILAR



**SECTION D** 1830-1193  
1:100  
ABUTMENT No. 2 - AS SHOWN  
ABUTMENT No. 1 - SIMILAR

**AS CONSTRUCTED**  
DATE 26/02/19

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**METADATA**

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| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN 28.02.18 DATE

|                 |             |          |
|-----------------|-------------|----------|
| DRAWN:          | F. ALPAPARA | 13.02.17 |
| DESIGNED:       | X. LAM      | 13.02.17 |
| CHECKED:        | S. SERGEEV  | 13.02.17 |
| APPROVED:       | M. KAKULAS  | 13.02.17 |
| DRAWING STATUS: | IFC         |          |

VERIFIER: **GHD**

VERIFIED: G. JOYNSON 02.03.18 DATE

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: G. XANTHIS 14.03.18 DATE

PROJECT DIRECTOR: R. ARNOTT 15.03.18 DATE

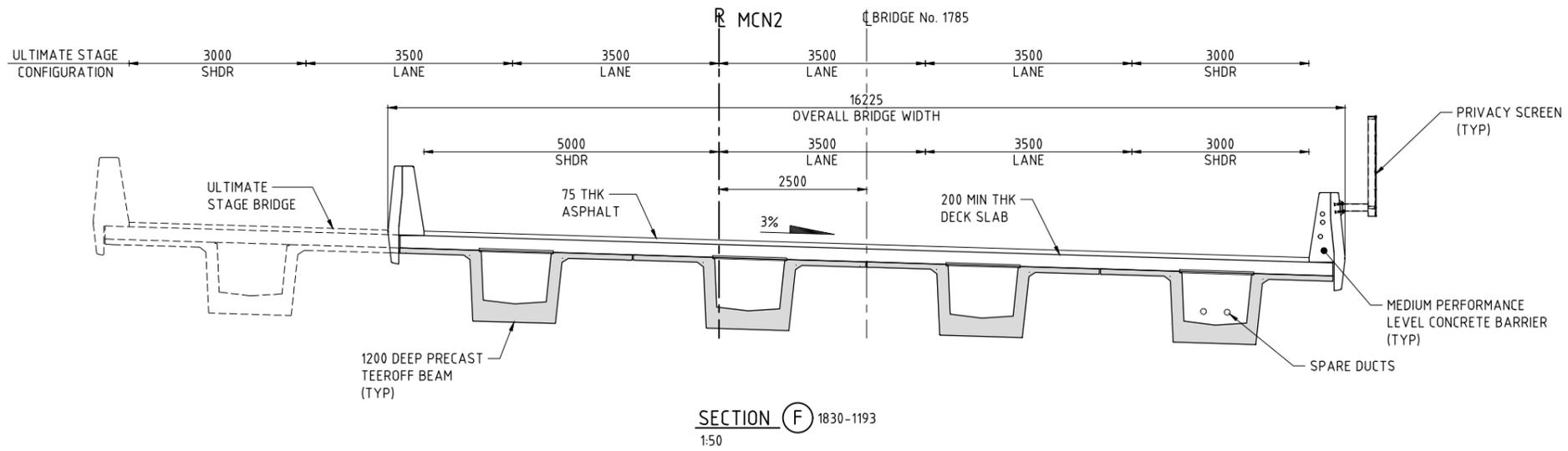
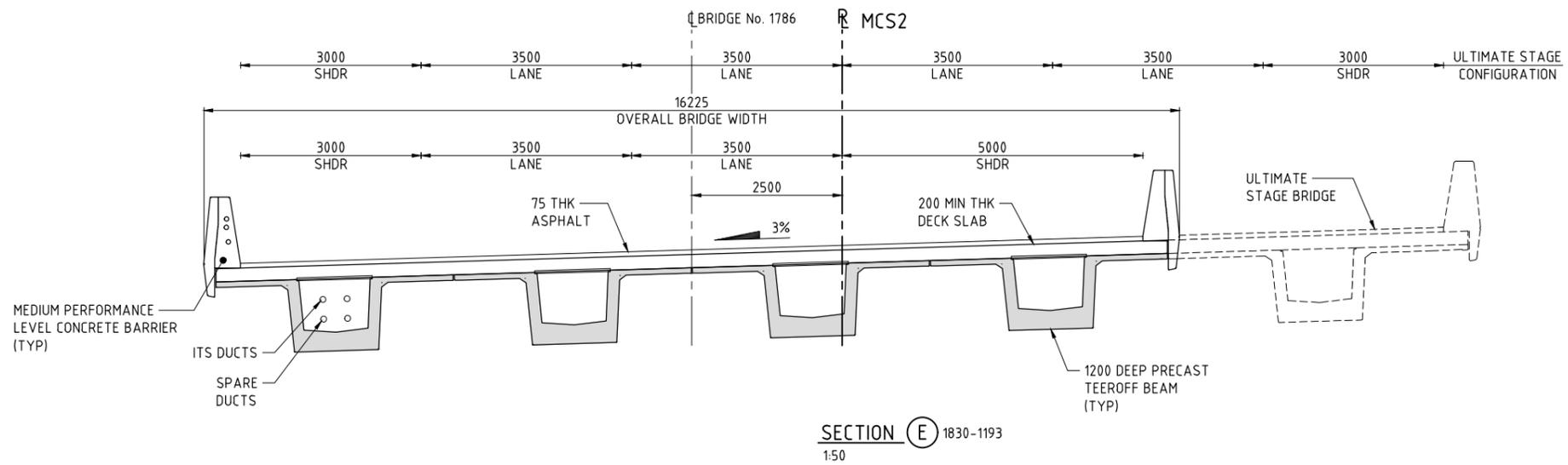
INFRASTRUCTURE DELIVERY DIRECTORATE

|                       |   |                                 |                     |
|-----------------------|---|---------------------------------|---------------------|
| LOCAL AUTHORITY:      | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA: | METROPOLITAN REGION |
| MIRWA DRAWING NUMBER: | 1830-1195   |                                 |                     |
| PROJECT TITLE:        | NORTHLINK WA CENTRAL SECTION  |                                 |                     |
| DRAWING TITLE:        | TONKIN HIGHWAY (H017)<br>HEPBURN AVENUE<br>BRIDGE No's 1785 & 1786<br>GENERAL ARRANGEMENT - SHEET 3 |                                 |                     |
| DRAWING No:           | NL2-AAJ-DRG-0210-BR-0012  |                                 |                     |

SCALE: 1:100

SHEET: A1

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG 1830-1191 & 1192.



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**AS CONSTRUCTED**  
DATE 26/02/19

| No.        | DESCRIPTION                 | APPROVED & DATE |
|------------|-----------------------------|-----------------|
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K. 29.03.19 |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 19.03.18 |
| AMENDMENTS |                             |                 |

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV AECOM ARCADIS**  
DESIGN MANAGER D. SULLIVAN 28.02.18 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 13.02.17 |
| DESIGNED       | X. LAM      | 13.02.17 |
| CHECKED        | S. SERGEEV  | 13.02.17 |
| APPROVED       | M. KAKULAS  | 13.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER  
**GHD**  
VERIFIED G. JOYNSON  
DATE 02.03.18

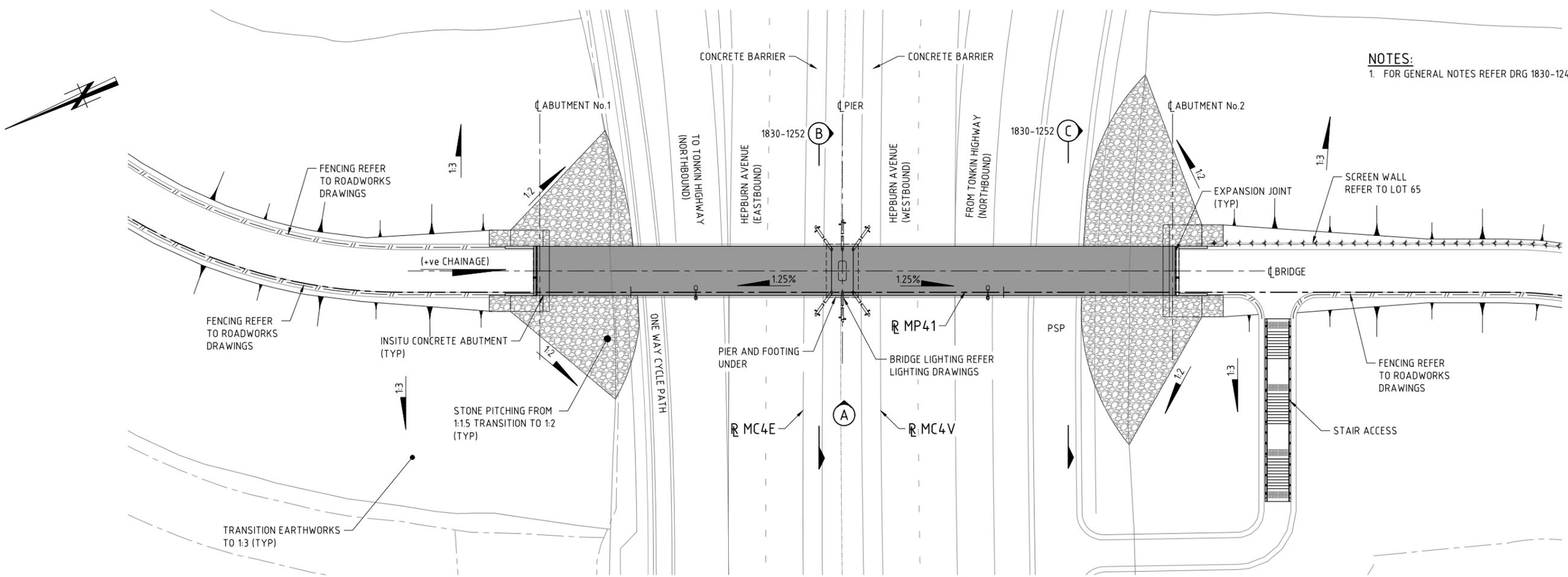
CONSTRUCTOR  
**Great Northern CONNECT**

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE  
CONTRACT MANAGER G. XANTHIS 14.03.18 DATE  
PROJECT DIRECTOR R. ARNOTT 15.03.18 DATE

|                     |   |                                |                     |
|---------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-1196   |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>HEPBURN AVENUE<br>BRIDGE No's 1785 & 1786<br>GENERAL ARRANGEMENT - SHEET 4 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0210-BR-0013  |                                |                     |

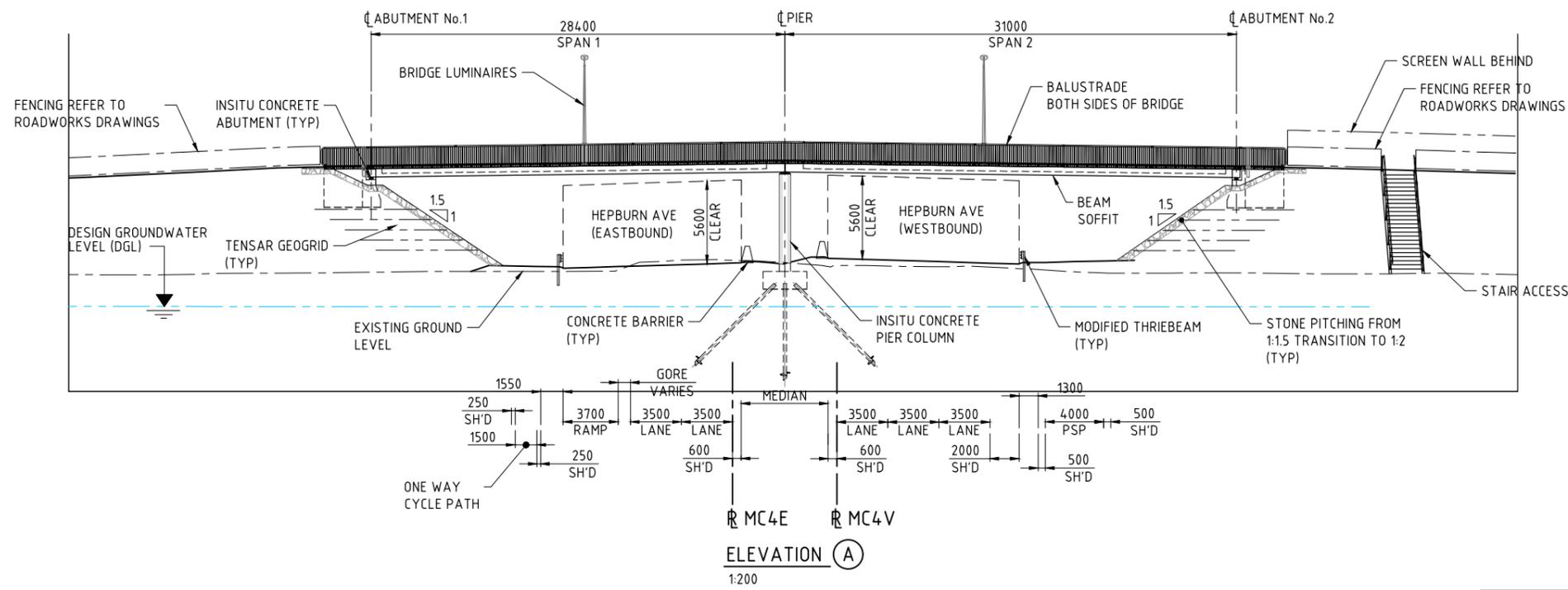






**NOTES:**  
1. FOR GENERAL NOTES REFER DRG 1830-1249 & 1250

**FOOTBRIDGE No. 9425 - PLAN**  
1:200



**ELEVATION (A)**  
1:200

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**AS CONSTRUCTED**  
DATE 26/02/19

| No.        | DESCRIPTION                 | APPROVED & DATE |
|------------|-----------------------------|-----------------|
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K. 25.03.19 |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K. 20.04.18 |
| AMENDMENTS |                             |                 |

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV** A Joint Venture between AECOM and Arcadis to design NorthLink WA Central Section  
**AECOM** **ARCADIS**

DESIGN MANAGER D. SULLIVAN 23.03.18 DATE

DRAWN T. HAM 24.02.17  
DESIGNED J. NGUI 24.02.17  
CHECKED N. KEAGE 24.02.17  
APPROVED M. KAKULAS 24.02.17  
DRAWING STATUS IFC

VERIFIED G. JOYNSON 27.03.18

CONSTRUCTOR  
**GHD**  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS 17.04.18 DATE  
PROJECT DIRECTOR R. ARNOTT 17.04.18 DATE

INFRASTRUCTURE DELIVERY DIRECTORATE

LOCAL AUTHORITY (109) CITY OF SWAN  
MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION

MFWA DRAWING NUMBER 1830-1251

PROJECT TITLE NORTHLINK WA CENTRAL SECTION

DRAWING TITLE TONKIN HIGHWAY (H017) HEBURN AVENUE INTERCHANGE PEDESTRIAN FOOTBRIDGE No. 9425 GENERAL ARRANGEMENT - SHEET 1

DRAWING No. NL2-AAJ-DRG-0220-BR-0010

SCALE 1:200

SHEET A1

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**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                          |
|--------------------------|--------------|--|
| <b>GENERAL</b>           |              |  |
| NL2-AAJ-DRG-0230-BR-0001 | 1830-1281    | LOCALITY PLAN                                |
| NL2-AAJ-DRG-0230-BR-0002 | 1830-1282    | INDEX  |
| NL2-AAJ-DRG-0230-BR-0005 | 1830-1283    | GENERAL NOTES - SHEET 1                      |
| NL2-AAJ-DRG-0230-BR-0006 | 1830-1284    | GENERAL NOTES - SHEET 2                      |
| NL2-AAJ-DRG-0230-BR-0010 | 1830-1285    | GENERAL ARRANGEMENT - SHEET 1                |
| NL2-AAJ-DRG-0230-BR-0011 | 1830-1286    | GENERAL ARRANGEMENT - SHEET 2                |
| NL2-AAJ-DRG-0230-BR-0012 | 1830-1287    | GENERAL ARRANGEMENT - SHEET 3                |
| NL2-AAJ-DRG-0230-BR-0015 | 1830-1288    | BORE INFORMATION - SHEET 1                   |
| NL2-AAJ-DRG-0230-BR-0016 | 1830-1289    | BORE INFORMATION - SHEET 2                   |
| NL2-AAJ-DRG-0230-BR-0017 | 1830-1290    | GEOMETRIC DATA                               |
| <b>SUBSTRUCTURE</b>      |              |  |
| NL2-AAJ-DRG-0230-BR-0020 | 1830-1291    | ABUTMENT - MSE WALL LAYOUT                   |
| NL2-AAJ-DRG-0230-BR-0021 | 1830-1292    | ABUTMENT No.1 - MSE WALL                     |
| NL2-AAJ-DRG-0230-BR-0022 | 1830-1293    | ABUTMENT No. 2 - MSE WALL                    |
| NL2-AAJ-DRG-0230-BR-0023 | 1830-1294    | ABUTMENT - MSE WALL TYPICAL DETAILS          |
| NL2-AAJ-DRG-0230-BR-0024 | 1830-1295    | COLUMN FORMER DETAILS                        |
| NL2-AAJ-DRG-0230-BR-0025 | 1830-1296    | ABUTMENT No.1 - CONCRETE DETAILS             |
| NL2-AAJ-DRG-0230-BR-0026 | 1830-1297    | ABUTMENT No. 2 - CONCRETE DETAILS            |
| NL2-AAJ-DRG-0230-BR-0027 | 1830-1298    | ABUTMENT - TYPICAL CONCRETE DETAILS          |
| NL2-AAJ-DRG-0230-BR-0028 | 1830-1299    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1   |
| NL2-AAJ-DRG-0230-BR-0029 | 1830-1300    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2   |
| NL2-AAJ-DRG-0230-BR-0030 | 1830-1301    | COLUMN REINFORCEMENT DETAILS                 |
| NL2-AAJ-DRG-0230-BR-0032 | 1830-1302    | WING WALL DETAILS                            |
| NL2-AAJ-DRG-0230-BR-0033 | 1830-1303    | WING WALL REINFORCEMENT DETAILS              |
| NL2-AAJ-DRG-0230-BR-0035 | 1830-1304    | RETAINING WALL DETAILS - SHEET 1             |
| NL2-AAJ-DRG-0230-BR-0036 | 1830-1305    | RETAINING WALL DETAILS - SHEET 2             |
| NL2-AAJ-DRG-0230-BR-0037 | 1830-1306    | RETAINING WALL REINFORCEMENT DETAILS         |
| <b>SUPERSTRUCTURE</b>    |              |  |
| NL2-AAJ-DRG-0230-BR-0045 | 1830-1307    | BEARING DETAILS - SHEET 1                    |
| NL2-AAJ-DRG-0230-BR-0046 | 1830-1308    | BEARING DETAILS - SHEET 2                    |
| NL2-AAJ-DRG-0230-BR-0050 | 1830-1309    | PRECAST TEEROFF BEAM LAYOUT                  |
| NL2-AAJ-DRG-0230-BR-0052 | 1830-1310    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0230-BR-0053 | 1830-1311    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0230-BR-0057 | 1830-1312    | PRECAST TEEROFF - PRESTRESSING DETAILS       |
| NL2-AAJ-DRG-0230-BR-0060 | 1830-1313    | PRECAST TEEROFF - REINFORCEMENT DETAILS      |
| NL2-AAJ-DRG-0230-BR-0070 | 1830-1314    | DECK CONCRETE DETAILS - SHEET 1              |

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                                |
|--------------------------|--------------|--|
| NL2-AAJ-DRG-0230-BR-0071 | 1830-1315    | DECK CONCRETE DETAILS - SHEET 2                    |
| NL2-AAJ-DRG-0230-BR-0073 | 1830-1316    | DECK REINFORCEMENT DETAILS - SHEET 1               |
| NL2-AAJ-DRG-0230-BR-0074 | 1830-1317    | DECK REINFORCEMENT DETAILS - SHEET 2               |
| NL2-AAJ-DRG-0230-BR-0090 | 1830-1318    | APPROACH SLAB CONCRETE DETAILS                     |
| NL2-AAJ-DRG-0230-BR-0091 | 1830-1319    | APPROACH SLAB REINFORCEMENT DETAILS                |
| NL2-AAJ-DRG-0230-BR-0100 | 1830-1320    | EXPANSION JOINT DETAILS - SHEET 1                  |
| NL2-AAJ-DRG-0230-BR-0101 | 1830-1321    | EXPANSION JOINT DETAILS - SHEET 2                  |
| NL2-AAJ-DRG-0230-BR-0105 | 1830-1322    | COVER PLATE DETAILS - SHEET 1                      |
| NL2-AAJ-DRG-0230-BR-0106 | 1830-1323    | COVER PLATE DETAILS - SHEET 2                      |
| NL2-AAJ-DRG-0230-BR-0107 | 1830-1324    | COVER PLATE DETAILS - SHEET 3                      |
| NL2-AAJ-DRG-0230-BR-0110 | 1830-1325    | BARRIER LAYOUT                                     |
| NL2-AAJ-DRG-0230-BR-0111 | 1830-1326    | PRECAST BARRIER CONCRETE DETAILS                   |
| NL2-AAJ-DRG-0230-BR-0112 | 1830-1327    | BARRIER CONNECTION DETAILS                         |
| NL2-AAJ-DRG-0230-BR-0113 | 1830-1328    | BARRIER DETAILS                                    |
| NL2-AAJ-DRG-0230-BR-0114 | 1830-1329    | BARRIER TRANSITION DETAILS                         |
| NL2-AAJ-DRG-0230-BR-0115 | 1830-1330    | MEDIAN BARRIER TRANSITION DETAILS                  |
| NL2-AAJ-DRG-0230-BR-0116 | 1830-1331    | PATH BARRIER TRANSITION DETAILS                    |
| NL2-AAJ-DRG-0230-BR-0117 | 1830-1332    | PRECAST PARAPET & BALUSTRADE LAYOUT                |
| NL2-AAJ-DRG-0230-BR-0118 | 1830-1333    | PRECAST PARAPET DETAILS                            |
| NL2-AAJ-DRG-0230-BR-0119 | 1830-1334    | PEDESTRIAN BALUSTRADE DETAILS                      |
| NL2-AAJ-DRG-0230-BR-0135 | 1830-1335    | ELECTRICAL LAYOUT                                  |
| NL2-AAJ-DRG-0230-BR-0136 | 1830-1336    | ELECTRICAL DETAILS                                 |
| NL2-AAJ-DRG-0230-BR-0137 | 1830-1337    | LUMINAIRE BRACKET DETAILS                          |
| NL2-AAJ-DRG-0230-BR-0140 | 1830-1338    | STAIRS PLAN & PROFILE                              |
| NL2-AAJ-DRG-0230-BR-0141 | 1830-1339    | STAIRS REINFORCEMENT                               |
| NL2-AAJ-DRG-0230-BR-0142 | 1830-1340    | STAIRS DETAILS & HANDRAIL                          |
| NL2-AAJ-DRG-0230-BR-0155 | 1830-1341    | BRIDGE 1787 - DESIGN SUMMARY - SHEET 1 (TO FOLLOW) |
| NL2-AAJ-DRG-0230-BR-0156 | 1830-1342    | BRIDGE 1787 - DESIGN SUMMARY - SHEET 2 (TO FOLLOW) |
| NL2-AAJ-DRG-0230-BR-0157 | 1830-1343    | BRIDGE 1811 - DESIGN SUMMARY - SHEET 1 (TO FOLLOW) |
| NL2-AAJ-DRG-0230-BR-0158 | 1830-1344    | BRIDGE 1811 - DESIGN SUMMARY - SHEET 2 (TO FOLLOW) |

**MRWA STANDARD DRAWINGS**

|   |               |  |
|---|---------------|--|
| - | 0430-1314     | PRECAST PARAPET PANELS                 |
| - | 0530-1087-1   | BRIDGE BALUSTRADE FOR PSP - SHEET No 1 |
| - | 0530-1307-1   | BRIDGE BALUSTRADE FOR PSP - SHEET No 2 |
| - | 630-1901      | BRIDGE LIGHT POLE BASE - SHEET No. 1   |
| - | 630-1902      | BRIDGE LIGHT POLE BASE - SHEET No. 2   |
| - | 200448-3008-4 | PSP LIGHTING POLE DETAIL               |

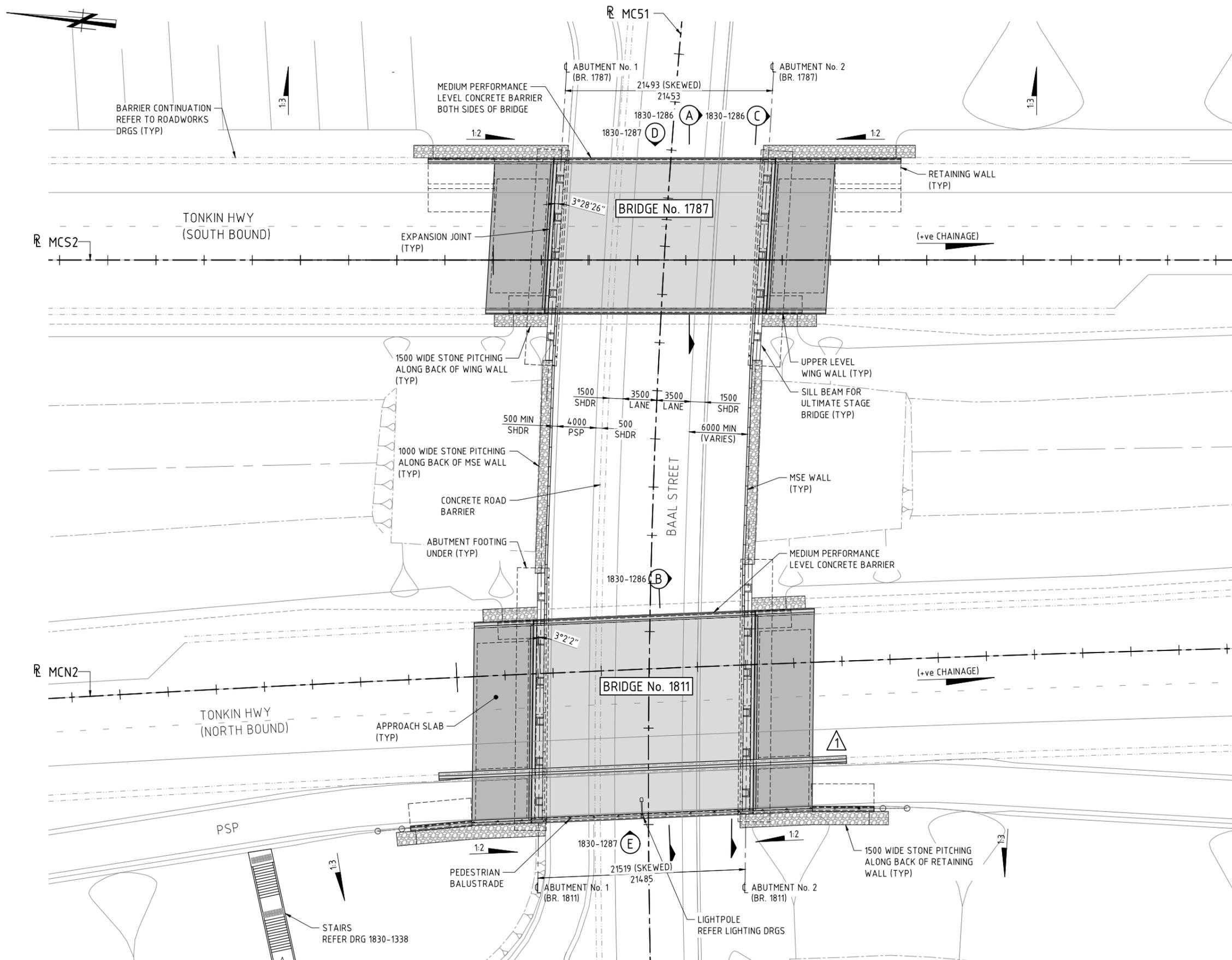
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**AS CONSTRUCTED**  
DATE 21/01/19

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|---|--|---|--|--|--|---|---|---|--|---|---|
| <p>1 AS CONSTRUCTED - NO CHANGES</p> <p>0 ISSUED FOR CONSTRUCTION</p> |  | <p>M.N.K. 19.03.19</p> <p>M.N.K. 08.02.18</p> | <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAPPING SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAIN ROADS PROJECT ZONE: PCG94</p> <p>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER</p> <p><b>AAJV</b> &amp; <b>AECOM</b> &amp; <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 24.01.18 DATE</p> | <p>DRAWN A. HAWTON 28.02.17</p> <p>DESIGNED P. DOBSON 28.02.17</p> <p>CHECKED M. KAKULAS 28.02.17</p> <p>APPROVED M. KAKULAS 28.02.17</p> <p>DRAWING STATUS IFC</p> | <p>VERIFIER G. JOYNSON</p> <p>DATE 30.01.18</p> | <p>CONSTRUCTOR</p> <p><b>Great Northern CONNECT</b></p> | <p>CONTRACT MANAGER G. XANTHIS</p> <p>PROJECT DIRECTOR R. ARNOTT</p> | <p>LOCAL AUTHORITY (109) CITY OF SWAN</p> <p>MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION</p> <p>MRWA DRAWING NUMBER 1830-1282</p> <p>PROJECT TITLE NORTHLINK WA CENTRAL SECTION</p> <p>DRAWING TITLE TONKIN HIGHWAY (H017) BAAL STREET BRIDGE No's. 1787 &amp; 1811 INDEX</p> <p>DRAWING No NL2-AAJ-DRG-0230-BR-0002</p> | <p>SCALE</p> <p>SHEET A1</p> <p>REV 1</p> |
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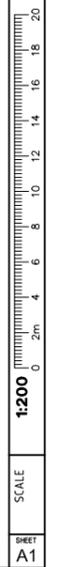
NOTES:  
1. FOR GENERAL NOTES REFER DRG 1830-1283 & 1284.



BRIDGE No. 1787 & 1811 - PLAN  
1:200

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M. Kakulas

AS CONSTRUCTED  
DATE 21/01/19



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| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 1          | BARRIER PROFILE UPDATED | M.N.K. 19.03.19 |
| 0          | ISSUED FOR CONSTRUCTION | M.N.K. 08.02.18 |
| AMENDMENTS |                         |                 |

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV**  
**AECOM** **ARCADIS**

DESIGN MANAGER D. SULLIVAN 24.01.18 DATE

| DESIGNED   | DATE     | VERIFIED   | DATE     |
|------------|----------|------------|----------|
| T. HAM     | 28.02.17 | G. JOYNSON | 30.01.18 |
| P. DOBSON  | 28.02.17 |            |          |
| M. KAKULAS | 28.02.17 |            |          |
| M. KAKULAS | 28.02.17 |            |          |

VERIFIED G. JOYNSON  
DATE 30.01.18

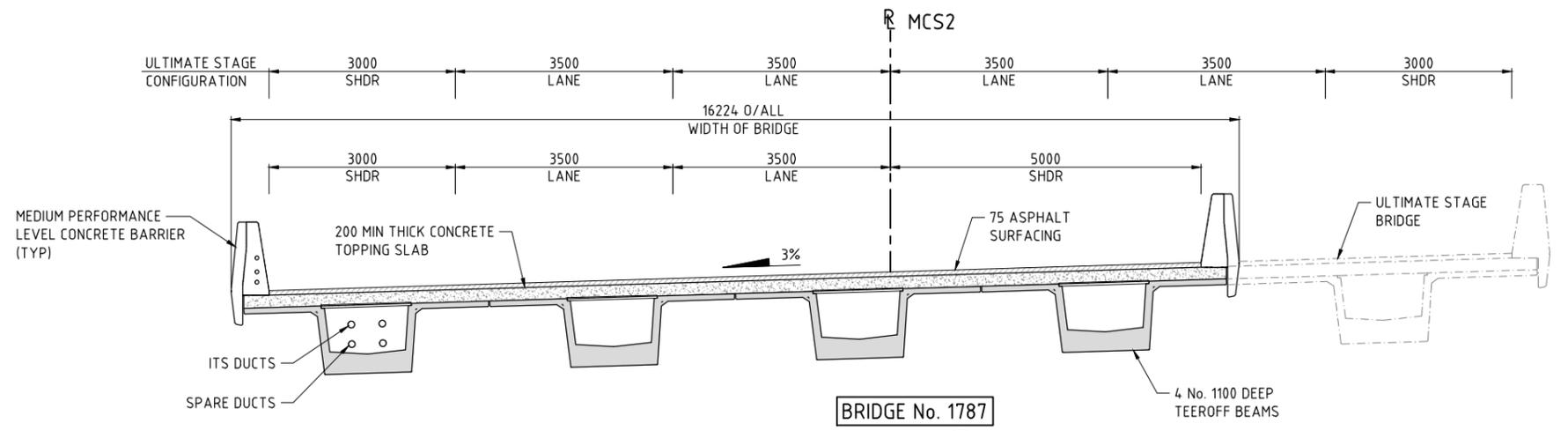
CONSTRUCTOR

INFRASTRUCTURE DELIVERY DIRECTORATE

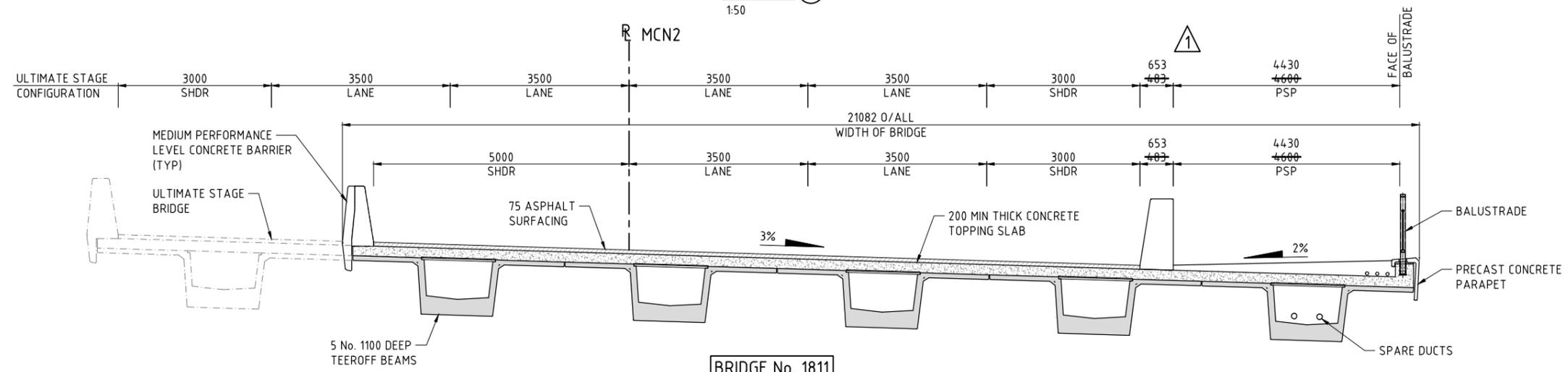
CONTRACT MANAGER G. XANTHIS  
PROJECT DIRECTOR R. ARNOTT

|                    |   |                                |                     |
|--------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-1285   |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>BAAL STREET<br>BRIDGE No's. 1787 & 1811<br>GENERAL ARRANGEMENT - SHEET 1 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0230-BR-0010  |                                |                     |

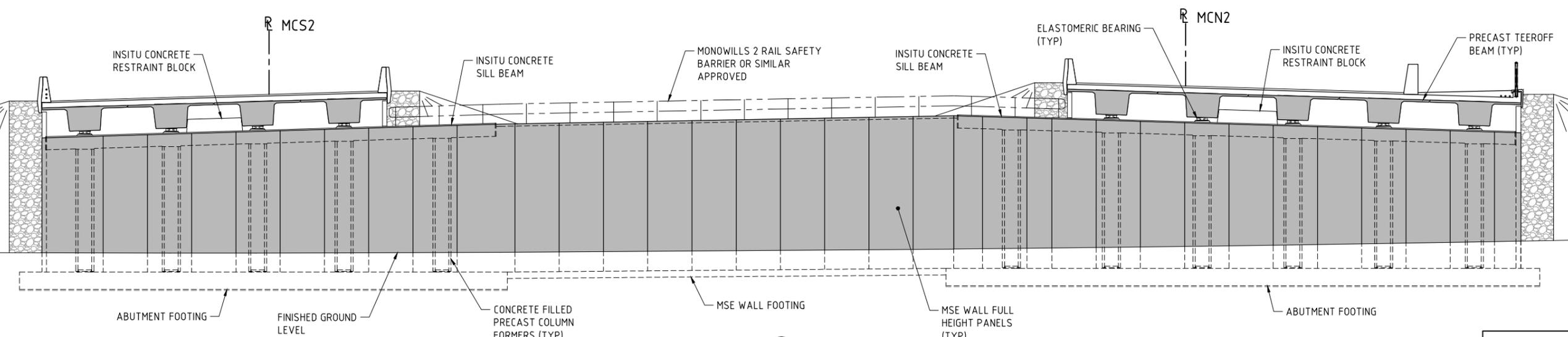
**NOTES:**  
1. FOR GENERAL NOTES REFER DRG 1830-1283 & 1284.



**BRIDGE No. 1787**  
**SECTION (A)** 1830-1285  
1:50



**BRIDGE No. 1811**  
**SECTION (B)** 1830-1285  
1:50



**SECTION (C)** 1830-1285  
1:100

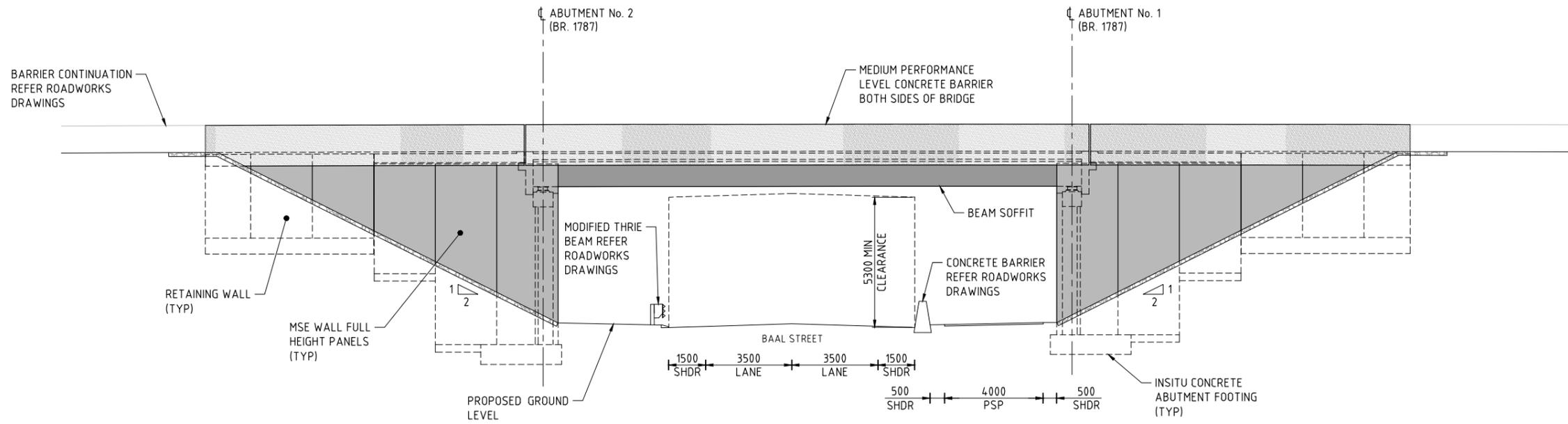
**AS CONSTRUCTED**  
DATE 21/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

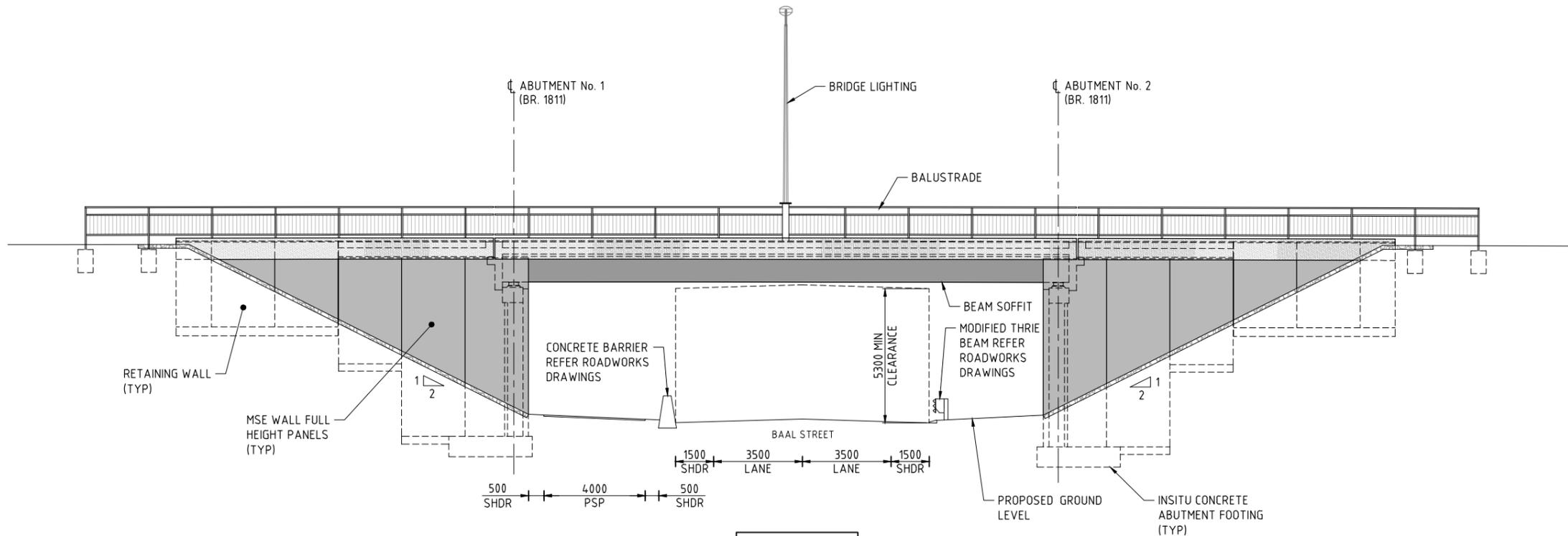
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| AMENDMENTS          |                           | METADATA                 |          | DESIGNER             |          | DRAWN               |          | VERIFIED       |          | CONSTRUCTOR            |                             | LOCAL AUTHORITY   |                    | MIRA DRAWING NUMBER |  |
|---------------------|---------------------------|--------------------------|----------|----------------------|----------|---------------------|----------|----------------|----------|------------------------|-----------------------------|---|--------------------|---------------------|--|
| No.                 | DESCRIPTION               | M.N.K.                   | DATE     | DESIGNER             | DATE     | DRAWN               | DATE     | VERIFIED       | DATE     | CONSTRUCTOR            | LOGO                        | LOGO  | (109) CITY OF SWAN | 1830-1286           |  |
| 1                   | BARRIER DIMENSION AMENDED | M.N.K.                   | 19.03.19 | AAJV                 | 28.02.17 | T. HAM              | 28.02.17 | GHD            | 30.01.18 | Great Northern CONNECT | mainroads WESTERN AUSTRALIA | INFRASTRUCTURE DELIVERY DIRECTORATE   | 1830-1286          |                     |  |
| 0                   | ISSUED FOR CONSTRUCTION   | M.N.K.                   | 08.02.18 | AECOM                | 28.02.17 | P. DOBSON           | 28.02.17 |                |          |                        |                             |   | 1830-1286          |                     |  |
| APPROVED & DATE     |                           | DATE OF CAPTURE:         |          | CHECKED              |          | CHECKED             |          | DRAWING STATUS |          | CONTRACT MANAGER       |                             | PROJECT TITLE   |                    |                     |  |
| M. Kakulas 24.01.18 |                           | 19.03.19                 |          | M. KAKULAS 28.02.17  |          | M. KAKULAS 28.02.17 |          | IFC            |          | G. XANTHIS 06.02.18    |                             | NORTHLINK WA CENTRAL SECTION  |                    |                     |  |
| HEIGHT DATUM: AHD   |                           | MAPPING SURVEY STANDARD: |          | APPROVED & DATE      |          | APPROVED            |          | DATE           |          | PROJECT DIRECTOR       |                             | DRAWING TITLE   |                    |                     |  |
| AHD                 |                           | MIRA                     |          | D. SULLIVAN 24.01.18 |          | M. KAKULAS 28.02.17 |          | 30.01.18       |          | R. ARNOTT 06.02.18     |                             | TONKIN HIGHWAY (H017)<br>BAAL STREET<br>BRIDGE No's. 1787 & 1811<br>GENERAL ARRANGEMENT - SHEET 2 |                    |                     |  |
|                     |                           | DATE OF CAPTURE:         |          | DATE                 |          | DATE                |          | DATE           |          | DATE                   |                             | DRAWING No.   |                    |                     |  |
|                     |                           | 19.03.19                 |          | 24.01.18             |          | 28.02.17            |          | 30.01.18       |          | 06.02.18               |                             | NL2-AAJ-DRG-0230-BR-0011  |                    |                     |  |
|                     |                           | 08.02.18                 |          |                      |          |                     |          |                |          |                        |                             | REV 1   |                    |                     |  |

**NOTES:**  
1. FOR GENERAL NOTES REFER DRG 1830-1283 & 1284.



**BRIDGE No. 1787**  
ELEVATION (D) 1830-1285  
1:100



**BRIDGE No. 1811**  
ELEVATION (E) 1830-1285  
1:100

**AS CONSTRUCTED**  
DATE 21/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER  
**AAJV AECOM ARCADIS**  
DESIGN MANAGER D. SULLIVAN 24.01.18 DATE

|                |            |          |
|----------------|------------|----------|
| DRAWN          | T. HAM     | 28.02.17 |
| DESIGNED       | P. DOBSON  | 28.02.17 |
| CHECKED        | M. KAKULAS | 28.02.17 |
| APPROVED       | M. KAKULAS | 28.02.17 |
| DRAWING STATUS | IFC        |          |

VERIFIER  
**GHD**  
VERIFIED G. JOYNSON  
DATE 30.01.18

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER G. XANTHIS  
PROJECT DIRECTOR R. ARNOTT  
INFRASTRUCTURE DELIVERY DIRECTORATE  
06.02.18 DATE  
06.02.18 DATE

|                      |   |                                |                     |
|----------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY      | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRWA DRAWING NUMBER | 1830-1287   |                                |                     |
| PROJECT TITLE        | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE        | TONKIN HIGHWAY (H017)<br>BAAL STREET<br>BRIDGE No's. 1787 & 1811<br>GENERAL ARRANGEMENT - SHEET 3 |                                |                     |
| DRAWING No.          | NL2-AAJ-DRG-0230-BR-0012  |                                |                     |

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SCALE 1:100  
SHEET A1

**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                          | DRAWING NUMBER                | MRWA DRG No. | DRAWING DESCRIPTION                               | DRAWING NUMBER | MRWA DRG No. | DRAWING DESCRIPTION                  |
|--------------------------|--------------|--|-------------------------------|--------------|---|----------------|--------------|--------------------------------------|
| <b>GENERAL</b>           |              |  | <b>MRWA STANDARD DRAWINGS</b> |              |   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0001 | 1830-1362    | LOCALITY PLAN                                | NL2-AAJ-DRG-0300-BR-0054      | 1830-1396    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 2      |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0002 | 1830-1363    | INDEX  | NL2-AAJ-DRG-0300-BR-0057      | 1830-1397    | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 1  | 0530-1457-3    |              | BRIDGE LIGHT POLE BASE - SHEET No. 2 |
| NL2-AAJ-DRG-0300-BR-0005 | 1830-1364    | GENERAL NOTES - SHEET 1                      | NL2-AAJ-DRG-0300-BR-0058      | 1830-1398    | PRECAST TEEROFF - PRESTRESSING DETAILS - SHEET 2  | 0630-1902      |              | BRIDGE MOUNTED LIGHT POLE DETAILS    |
| NL2-AAJ-DRG-0300-BR-0006 | 1830-1365    | GENERAL NOTES - SHEET 2                      | NL2-AAJ-DRG-0300-BR-0060      | 1830-1399    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0010 | 1830-1366    | GENERAL ARRANGEMENT - SHEET 1                | NL2-AAJ-DRG-0300-BR-0061      | 1830-1400    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0011 | 1830-1367    | GENERAL ARRANGEMENT - SHEET 2                | NL2-AAJ-DRG-0300-BR-0062      | 1830-1401    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 3 |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0012 | 1830-1368    | GENERAL ARRANGEMENT - SHEET 3                | NL2-AAJ-DRG-0300-BR-0063      | 1830-1402    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 4 |                |              |                                      |
| <b>SUBSTRUCTURES</b>     |              |  | NL2-AAJ-DRG-0300-BR-0064      | 1830-1403    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 5 |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0015 | 1830-1369    | BORE INFORMATION - SHEET 1                   | NL2-AAJ-DRG-0300-BR-0070      | 1830-1404    | DECK CONCRETE DETAILS - SHEET 1                   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0016 | 1830-1370    | BORE INFORMATION - SHEET 2                   | NL2-AAJ-DRG-0300-BR-0071      | 1830-1405    | DECK CONCRETE DETAILS - SHEET 2                   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0017 | 1830-1371    | GEOMETRIC DATA                               | NL2-AAJ-DRG-0300-BR-0072      | 1830-1406    | DECK CONCRETE DETAILS - SHEET 3                   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0020 | 1830-1372    | ABUTMENT - MSE WALL LAYOUT                   | NL2-AAJ-DRG-0300-BR-0073      | 1830-1407    | DECK REINFORCEMENT DETAILS - SHEET 1              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0021 | 1830-1373    | ABUTMENT No.1 - MSE WALL                     | NL2-AAJ-DRG-0300-BR-0074      | 1830-1408    | DECK REINFORCEMENT DETAILS - SHEET 2              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0022 | 1830-1374    | ABUTMENT No. 2 - MSE WALL                    | NL2-AAJ-DRG-0300-BR-0075      | 1830-1409    | DIAPHRAGM DETAILS                                 |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0023 | 1830-1375    | ABUTMENT - MSE WALL TYPICAL DETAILS          | NL2-AAJ-DRG-0300-BR-0076      | 1830-1410    | CONTINUITY STITCH REINFORCEMENT DETAILS           |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0024 | 1830-1376    | COLUMN FORMER DETAILS                        | NL2-AAJ-DRG-0300-BR-0090      | 1830-1411    | APPROACH SLAB CONCRETE DETAILS                    |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0025 | 1830-1377    | ABUTMENT No.1 - CONCRETE DETAILS             | NL2-AAJ-DRG-0300-BR-0091      | 1830-1412    | APPROACH SLAB REINFORCEMENT DETAILS               |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0026 | 1830-1378    | ABUTMENT No. 2 - CONCRETE DETAILS            | NL2-AAJ-DRG-0300-BR-0100      | 1830-1413    | EXPANSION JOINT DETAILS                           |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0027 | 1830-1379    | ABUTMENT - TYPICAL CONCRETE DETAILS          | NL2-AAJ-DRG-0300-BR-0105      | 1830-1414    | COVER PLATE DETAILS - SHEET 1                     |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0028 | 1830-1380    | WING WALL DETAILS                            | NL2-AAJ-DRG-0300-BR-0106      | 1830-1415    | COVER PLATE DETAILS - SHEET 2                     |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0029 | 1830-1381    | WING WALL REINFORCEMENT DETAILS              | NL2-AAJ-DRG-0300-BR-0110      | 1830-1416    | BARRIER LAYOUT                                    |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0030 | 1830-1382    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1   | NL2-AAJ-DRG-0300-BR-0111      | 1830-1417    | PRECAST BARRIER CONCRETE DETAILS                  |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0031 | 1830-1383    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2   | NL2-AAJ-DRG-0300-BR-0112      | 1830-1418    | BARRIER CONNECTION DETAILS                        |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0032 | 1830-1384    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 3   | NL2-AAJ-DRG-0300-BR-0115      | 1830-1419    | BARRIER DETAILS                                   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0033 | 1830-1385    | COLUMN REINFORCEMENT DETAILS                 | NL2-AAJ-DRG-0300-BR-0116      | 1830-1420    | BARRIER TRANSITION DETAILS - SHEET 1              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0035 | 1830-1386    | PIER - CONCRETE DETAILS - SHEET 1            | NL2-AAJ-DRG-0300-BR-0117      | 1830-1421    | BARRIER TRANSITION DETAILS - SHEET 2              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0036 | 1830-1387    | PIER - CONCRETE DETAILS - SHEET 2            | NL2-AAJ-DRG-0300-BR-0135      | 1830-1422    | LIGHTING AND ELECTRICAL LAYOUT                    |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0037 | 1830-1388    | PIER - REINFORCEMENT DETAILS - SHEET 1       | NL2-AAJ-DRG-0300-BR-0136      | 1830-1423    | LIGHTING AND ELECTRICAL DETAILS                   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0038 | 1830-1389    | PIER - REINFORCEMENT DETAILS - SHEET 2       | NL2-AAJ-DRG-0300-BR-0137      | 1830-1424    | LIGHTPOLE CONTROL BOX DETAILS                     |                |              |                                      |
| <b>SUPERSTRUCTURE</b>    |              |  | NL2-AAJ-DRG-0300-BR-0138      | 1830-1425    | LIGHTPOLE BARRIER CONNECTION DETAIL               |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0045 | 1830-1390    | BEARING DETAILS - SHEET 1                    | NL2-AAJ-DRG-0300-BR-0139      | 1830-1426    | LUMINAIRE BRACKET DETAILS                         |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0046 | 1830-1391    | BEARING DETAILS - SHEET 2                    | NL2-AAJ-DRG-0300-BR-0155      | 1830-1427    | DESIGN SUMMARY - SHEET 1 (TO FOLLOW)              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0047 | 1830-1392    | BEARING DETAILS - SHEET 3                    | NL2-AAJ-DRG-0300-BR-0156      | 1830-1428    | DESIGN SUMMARY - SHEET 2 (TO FOLLOW)              |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0050 | 1830-1393    | PRECAST TEEROFF BEAMS LAYOUT                 |                               |              |   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0052 | 1830-1394    | PRECAST TEEROFF BEAM TYPICAL DETAILS         |                               |              |   |                |              |                                      |
| NL2-AAJ-DRG-0300-BR-0053 | 1830-1395    | PRECAST TEEROFF - CONCRETE DETAILS - SHEET 1 |                               |              |   |                |              |                                      |

**AS CONSTRUCTED**  
DATE 01/03/19

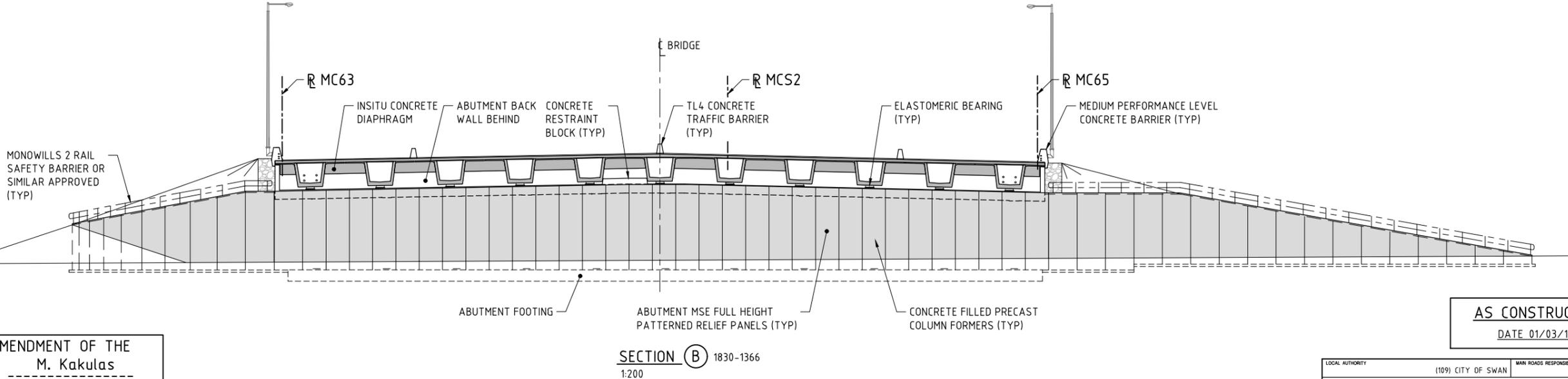
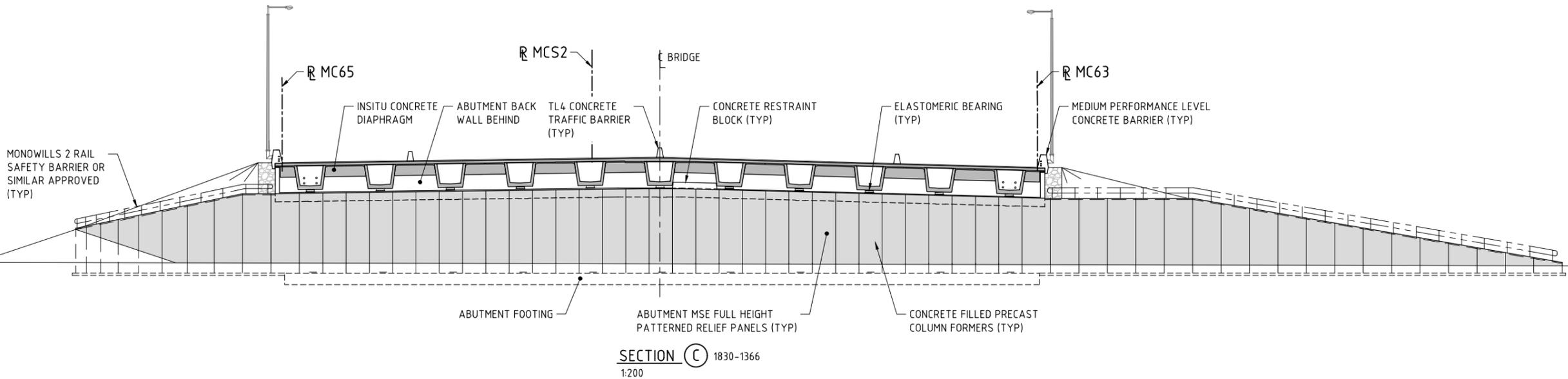
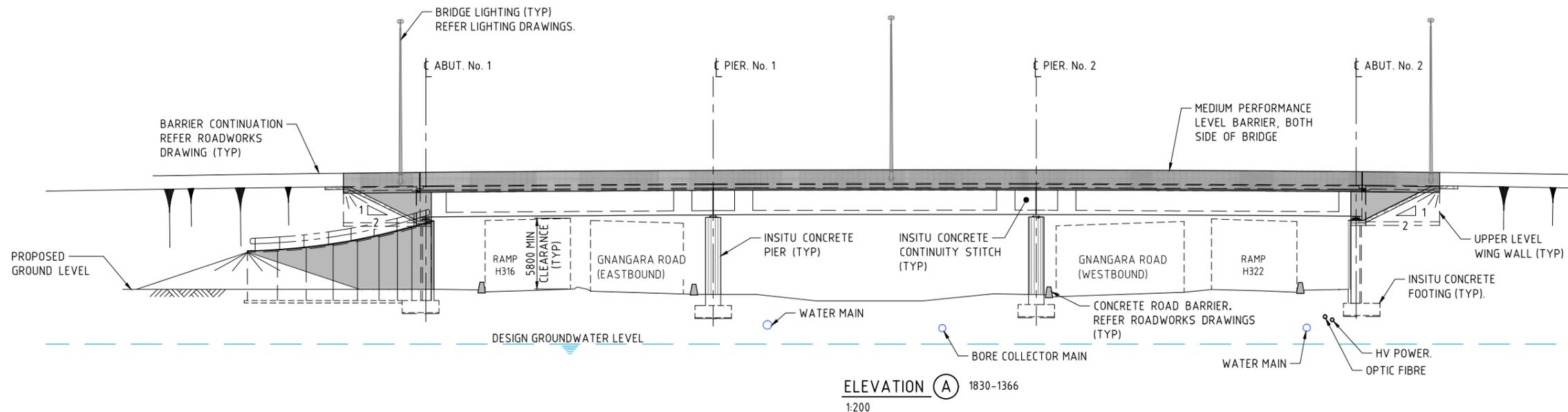
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| <b>METADATA</b><br>GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  | DESIGNER<br><br>DESIGN MANAGER D. SULLIVAN 07.03.18 DATE | DRAWN P. MORRISON 10.10.17<br>DESIGNED N. KEAGE 10.10.17<br>CHECKED M. KAKULAS 10.10.17<br>APPROVED M. KAKULAS 10.10.17<br>DRAWING STATUS IFC<br>VERIFIER L. TINLIN DATE 12.03.18 | CONSTRUCTOR<br><br>INFRASTRUCTURE DELIVERY DIRECTORATE<br>CONTRACT MANAGER G. XANTHIS<br>PROJECT DIRECTOR R. ARNOTT | LOCAL AUTHORITY (109) CITY OF SWAN<br>MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION<br>MRWA DRAWING NUMBER 1830-1363<br>PROJECT TITLE NORTHLINK WA CENTRAL SECTION<br>DRAWING TITLE TONKIN HIGHWAY (H017) TONKIN / GNANGARA ROAD INTERCHANGE BRIDGE No. 1788 INDEX<br>DRAWING No. NL2-AAJ-DRG-0300-BR-0002 REV 1 |
|---|--|--|---|--|---|

SCALE  
A1





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DATE 01/03/19

| AMENDMENTS |                             | APPROVED & DATE |      |
|------------|-----------------------------|-----------------|------|
| No.        | DESCRIPTION                 | M.N.K.          | DATE |
| 1          | AS CONSTRUCTED - NO CHANGES | 19.03.19        |      |
| 0          | ISSUED FOR CONSTRUCTION     | 21.03.18        |      |

**METADATA**

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN

DATE: 07.03.18

**VERIFIER**

VERIFIED: L. TINLIN

DATE: 12.03.18

**CONSTRUCTOR**

**Great Northern CONNECT**

**INFRASTRUCTURE DELIVERY DIRECTORATE**

CONTRACT MANAGER: G. XANTHIS

PROJECT DIRECTOR: R. ARNOTT

DATE: 20.03.18

|                     |   |                                |                     |
|---------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-1367   |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>TONKIN / GNANGARA ROAD INTERCHANGE<br>BRIDGE No. 1788<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0300-BR-0011  |                                |                     |

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SCALE 1:200

SHEET A1



**DRAWING INDEX**

| DRAWING NUMBER                | MRWA DRG No. | DRAWING DESCRIPTION                          |
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| <b>GENERAL</b>                |              |  |
| NL2-AAJ-DRG-0330-BR-0001      | 1830-1469    | LOCALITY PLAN                                |
| NL2-AAJ-DRG-0330-BR-0002      | 1830-1470    | INDEX  |
| NL2-AAJ-DRG-0330-BR-0005      | 1830-1471    | GENERAL NOTES - SHEET 1                      |
| NL2-AAJ-DRG-0330-BR-0006      | 1830-1472    | GENERAL NOTES - SHEET 2                      |
| NL2-AAJ-DRG-0330-BR-0010      | 1830-1473    | GENERAL ARRANGEMENT - SHEET 1                |
| NL2-AAJ-DRG-0330-BR-0011      | 1830-1474    | GENERAL ARRANGEMENT - SHEET 2                |
| NL2-AAJ-DRG-0330-BR-0015      | 1830-1475    | BORE INFORMATION                             |
| NL2-AAJ-DRG-0330-BR-0017      | 1830-1476    | GEOMETRIC DATA                               |
| <b>SUBSTRUCTURE</b>           |              |  |
| NL2-AAJ-DRG-0330-BR-0020      | 1830-1477    | ABUTMENT CONCRETE DETAILS - SHEET 1          |
| NL2-AAJ-DRG-0330-BR-0021      | 1830-1478    | ABUTMENT CONCRETE DETAILS - SHEET 2          |
| NL2-AAJ-DRG-0330-BR-0022      | 1830-1479    | ABUTMENT CONCRETE DETAILS - SHEET 3          |
| NL2-AAJ-DRG-0330-BR-0030      | 1830-1480    | ABUTMENT REINFORCEMENT DETAILS               |
| NL2-AAJ-DRG-0330-BR-0035      | 1830-1481    | PIER CONCRETE DETAILS                        |
| NL2-AAJ-DRG-0330-BR-0036      | 1830-1482    | SCREW PILE LAYOUT                            |
| NL2-AAJ-DRG-0330-BR-0037      | 1830-1483    | SCREW PILE DETAILS                           |
| NL2-AAJ-DRG-0330-BR-0038      | 1830-1484    | PIER FOOTING REINFORCEMENT DETAILS           |
| NL2-AAJ-DRG-0330-BR-0039      | 1830-1485    | PIER COLUMN REINFORCEMENT DETAILS            |
| <b>SUPERSTRUCTURE</b>         |              |  |
| NL2-AAJ-DRG-0330-BR-0045      | 1830-1486    | BEARING DETAILS - SHEET 1                    |
| NL2-AAJ-DRG-0330-BR-0046      | 1830-1487    | BEARING DETAILS - SHEET 2                    |
| NL2-AAJ-DRG-0330-BR-0050      | 1830-1488    | PRECAST BEAM LAYOUT & DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0330-BR-0051      | 1830-1489    | PRECAST BEAM LAYOUT & DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0330-BR-0052      | 1830-1490    | PRECAST BEAM LAYOUT & DETAILS - SHEET 3      |
| NL2-AAJ-DRG-0330-BR-0053      | 1830-1491    | PRECAST BEAM PRESTRESSING DETAILS - SHEET 1  |
| NL2-AAJ-DRG-0330-BR-0054      | 1830-1492    | PRECAST BEAM PRESTRESSING DETAILS - SHEET 2  |
| NL2-AAJ-DRG-0330-BR-0060      | 1830-1493    | PRECAST BEAM REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0330-BR-0061      | 1830-1494    | PRECAST BEAM REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0330-BR-0062      | 1830-1495    | PRECAST BEAM REINFORCEMENT DETAILS - SHEET 3 |
| NL2-AAJ-DRG-0330-BR-0063      | 1830-1496    | LINK SLAB CONCRETE AND REINFORCEMENT DETAILS |
| NL2-AAJ-DRG-0330-BR-0100      | 1830-1497    | EXPANSION JOINT DETAILS                      |
| NL2-AAJ-DRG-0330-BR-0125      | 1830-1498    | BALUSTRADE DETAILS - SHEET 1                 |
| NL2-AAJ-DRG-0330-BR-0135      | 1830-1499    | LIGHT POLE TO BARRIER CONNECTION DETAILS     |
| <b>MRWA STANDARD DRAWINGS</b> |              |  |
|                               | 0630-1901    | BRIDGE LIGHT POLE BASE - SHEET 1             |
|                               | 0630-1902    | BRIDGE LIGHT POLE BASE - SHEET 2             |

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DATE 01/03/19

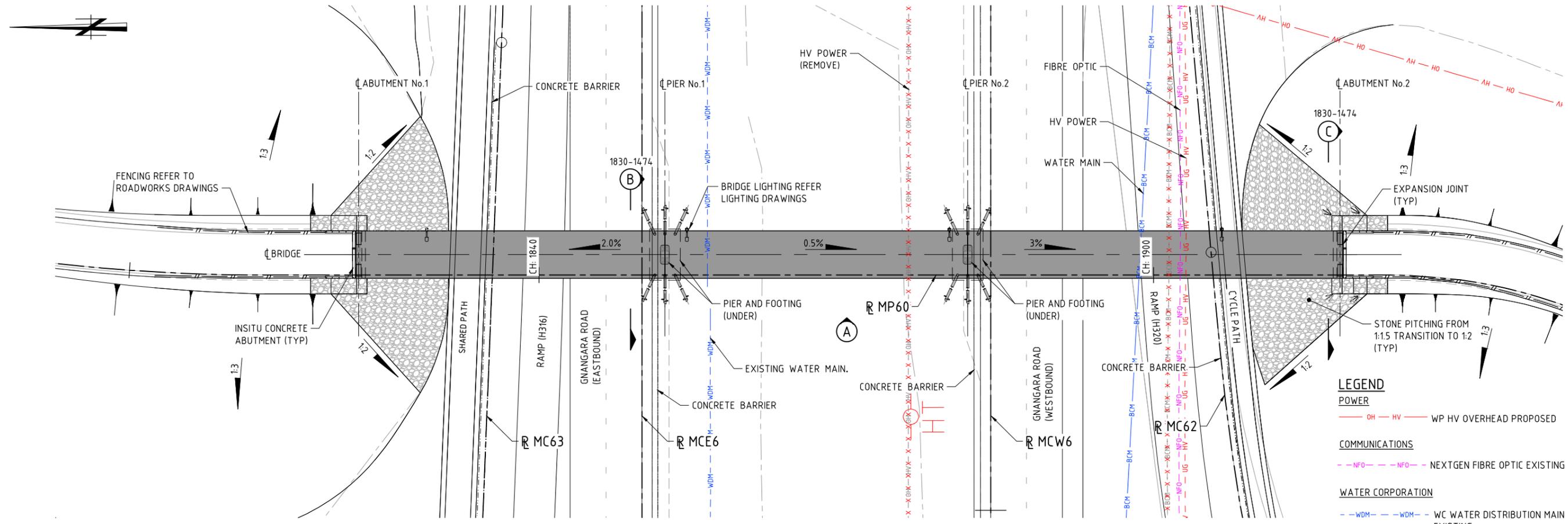
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SCALE  
SHEET A1

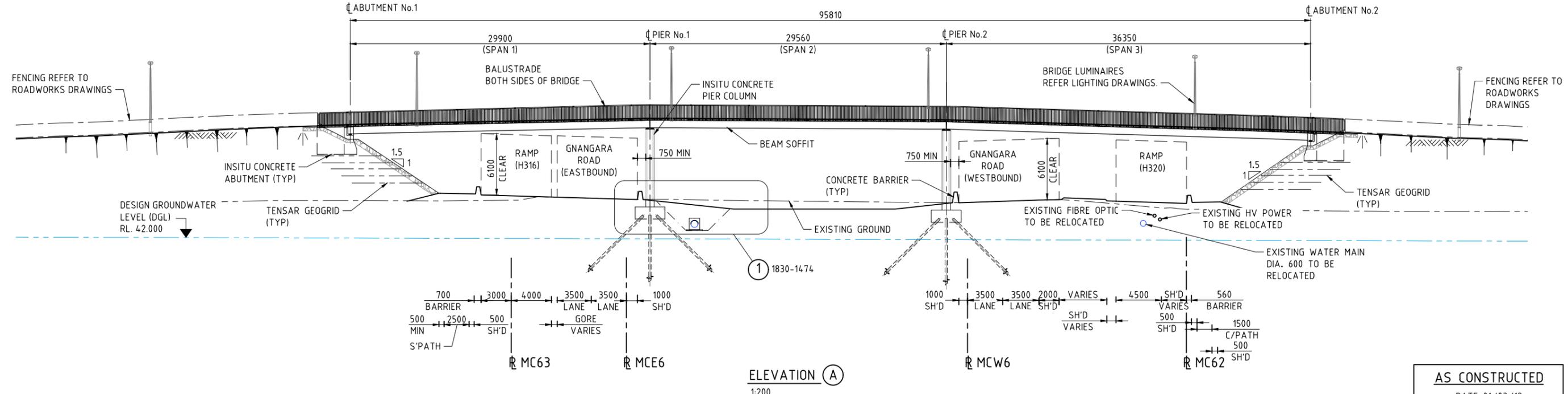
**NOTES:**  
1. FOR GENERAL NOTES REFER 1830-1471 & 1472.



**FOOTBRIDGE No. 9426 - PLAN**  
1:200

**LEGEND**

|  |           |                                     |
|--|-----------|-------------------------------------|
|  | OH - HV   | WP HV OVERHEAD PROPOSED             |
|  | NFO - NFO | NEXTGEN FIBRE OPTIC EXISTING        |
|  | WDM - WDM | WC WATER DISTRIBUTION MAIN EXISTING |
|  | BMC - BMC | BW BORE COLLECTOR MAIN PROPOSED     |
|  | BMC - BMC | BW BORE COLLECTOR MAIN EXISTING     |



**ELEVATION (A)**  
1:200

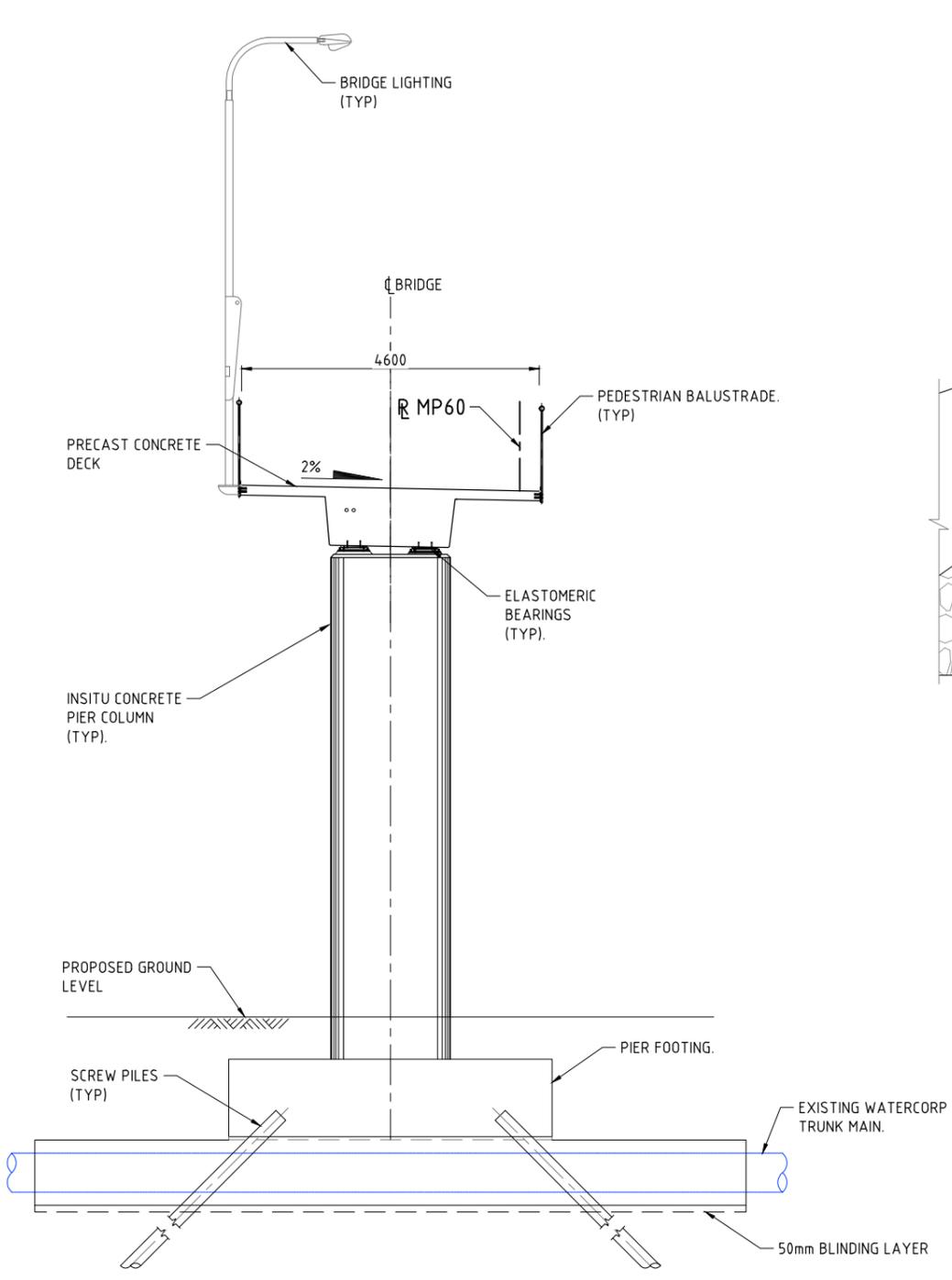
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**AS CONSTRUCTED**  
DATE 01/03/19

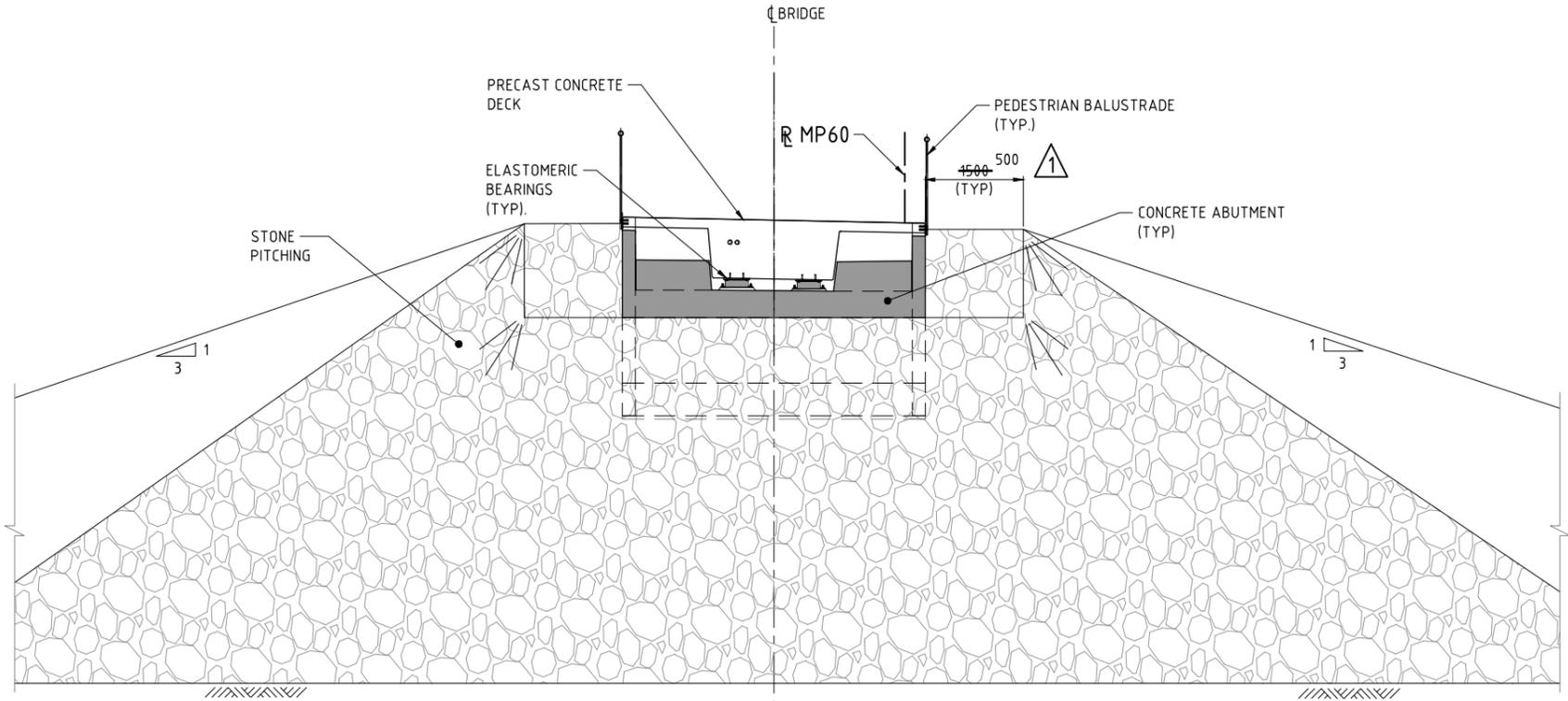
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| <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAPPING SURVEY STANDARD:<br/>DATE OF CAPTURE:<br/>MAIN ROADS PROJECT ZONE: PCG94<br/>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER<br/><b>AAJV AECOM ARCADIS</b></p> <p>DESIGN MANAGER: D. SULLIVAN<br/>DATE: 23.03.18</p> |  | <p>DRAWN: P. MALONEY 30.03.17<br/>DESIGNED: J. NGUI 30.03.17<br/>CHECKED: S. SERGEEV 30.03.17<br/>APPROVED: M. KAKULAS 30.03.17</p> <p>DRAWING STATUS: IFC</p> |  | <p>VERIFIER: G. JOYNSON<br/>DATE: 27.03.18</p> |  | <p>CONTRACTOR: <b>Great Northern CONNECT</b></p> |  | <p>CONTRACT MANAGER: G. XANTHIS<br/>PROJECT DIRECTOR: R. ARNOTT</p> |  | <p>LOCAL AUTHORITY: (109) CITY OF SWAN<br/>MRA DRAWING NUMBER: 1830-1473<br/>PROJECT TITLE: NORTHLINK WA CENTRAL SECTION<br/>DRAWING TITLE: TONKIN HIGHWAY (H017) TONKIN / GNANGARA INTERCHANGE PEDESTRIAN FOOTBRIDGE No. 9426 GENERAL ARRANGEMENT - SHEET 1<br/>DRAWING No: NL2-AAJ-DRG-0330-BR-0010</p> |  |
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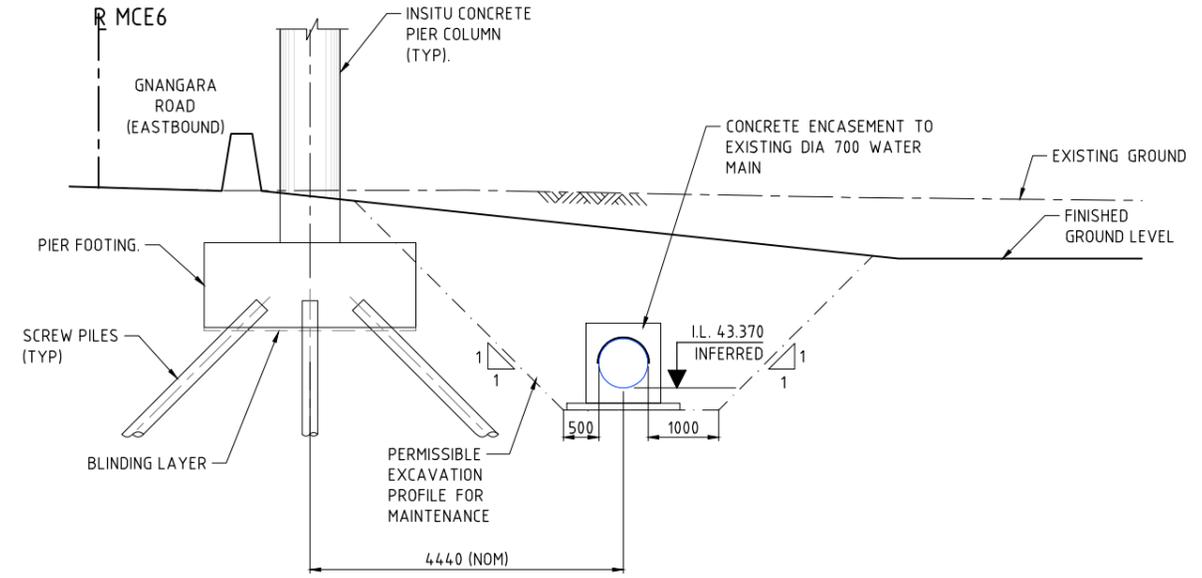
NOTE:  
1. FOR GENERAL NOTES REFER DRG 1830-1471 & 1472.



**SECTION B** 1830-1473  
1:50  
PIER No. 1 - AS SHOWN  
PIER No. 2 - SIMILAR



**SECTION C** 1830-1473  
1:50  
ABUTMENT No. 2 - AS SHOWN  
ABUTMENT No. 1 - SIMILAR



**DETAIL 1** 1830-1473  
1:50

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DATE 01/03/19

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| AMENDMENTS |                            | METADATA        |                          | DESIGNER           |      | DRAWN      |          | VERIFIED |      | CONTRACTOR                          |                  | LOCAL AUTHORITY     |           | MWA DRAWING NUMBER             |  |
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| No.        | DESCRIPTION                | APPROVED & DATE | DATE OF CAPTURE:         | DESIGN MANAGER     | DATE | DATE       | DATE     | DATE     | DATE | CONTRACT MANAGER                    | PROJECT DIRECTOR | (109) CITY OF SWAN  | 1830-1474 | PROJECT TITLE                  |  |
| 1          | VERGE WIDTH CHANGED TO 500 | MNK 01.03.19    | MAPPING SURVEY STANDARD: | AAJV AECOM ARCADIS |      | J. BUI     | 20.10.17 | GHD      |      | Great Northern CONNECT              |                  | METROPOLITAN REGION |           | NORTHLINK WA CENTRAL SECTION   |  |
| 0          | ISSUED FOR CONSTRUCTION    | MNK 20.04.18    | DATE OF CAPTURE:         | D. SULLIVAN        |      | J. NGUI    | 20.10.17 | GHD      |      | INFRASTRUCTURE DELIVERY DIRECTORATE |                  |                     |           | TONKIN / GNANGARA INTERCHANGE  |  |
|            |                            |                 | MAIN ROADS PROJECT ZONE: | 23.03.18 DATE      |      | S. SERGEEV | 20.10.17 | GHD      |      | INFRASTRUCTURE DELIVERY DIRECTORATE |                  |                     |           | PEDESTRIAN FOOTBRIDGE No. 9426 |  |
|            |                            |                 | HEIGHT DATUM:            | IFC                |      | M. KAKULAS | 20.10.17 | GHD      |      | INFRASTRUCTURE DELIVERY DIRECTORATE |                  |                     |           | GENERAL ARRANGEMENT - SHEET 2  |  |
|            |                            |                 |                          | 27.03.18 DATE      |      |            |          | GHD      |      | INFRASTRUCTURE DELIVERY DIRECTORATE |                  |                     |           | NL2-AAJ-DRG-0330-BR-0011       |  |

SCALE  
1:50  
SHEET A1

**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                              | DRAWING NUMBER           | MRWA DRG No. | DRAWING DESCRIPTION                            |
|--------------------------|--------------|--|--------------------------|--------------|--|
| NL2-AAJ-DRG-0310-UP-0001 | 1830-1431    | LOCALITY PLAN                                    | NL2-AAJ-DRG-0310-UP-0060 | 1830-1452    | SKYLIGHT DETAIL                                |
| NL2-AAJ-DRG-0310-UP-0002 | 1830-1432    | INDEX  |                          |              |  |
| NL2-AAJ-DRG-0310-UP-0005 | 1830-1433    | GENERAL NOTES                                    | NL2-AAJ-DRG-0310-UP-0065 | 1830-1453    | RETAINING WALL LAYOUT                          |
| NL2-AAJ-DRG-0310-UP-0010 | 1830-1434    | GENERAL ARRANGEMENT - SHEET 1                    | NL2-AAJ-DRG-0310-UP-0066 | 1830-1454    | RETAINING WALL CONCRETE DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0310-UP-0011 | 1830-1435    | GENERAL ARRANGEMENT - SHEET 2                    | NL2-AAJ-DRG-0310-UP-0067 | 1830-1455    | RETAINING WALL CONCRETE DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0310-UP-0012 | 1830-1436    | GENERAL ARRANGEMENT - SHEET 3                    | NL2-AAJ-DRG-0310-UP-0070 | 1830-1456    | RETAINING WALL REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0310-UP-0013 | 1830-1437    | BOREHOLE DATA                                    | NL2-AAJ-DRG-0310-UP-0071 | 1830-1457    | RETAINING WALL REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0310-UP-0015 | 1830-1438    | FOOTING CONCRETE DETAILS                         | NL2-AAJ-DRG-0310-UP-0074 | 1830-1458    | WING WALL LAYOUT                               |
| NL2-AAJ-DRG-0310-UP-0020 | 1830-1439    | FOOTING REINFORCEMENT DETAILS                    | NL2-AAJ-DRG-0310-UP-0075 | 1830-1459    | WING WALL CONCRETE DETAILS - SHEET 1           |
| NL2-AAJ-DRG-0310-UP-0025 | 1830-1440    | TRAPEZOIDAL UNIT LAYOUT AND DETAILS              | NL2-AAJ-DRG-0310-UP-0076 | 1830-1460    | WING WALL CONCRETE DETAILS - SHEET 2           |
| NL2-AAJ-DRG-0310-UP-0030 | 1830-1441    | TRAPEZOIDAL UNIT CONCRETE DETAILS - SHEET 1      | NL2-AAJ-DRG-0310-UP-0077 | 1830-1461    | WING WALL CONCRETE DETAILS - SHEET 3           |
| NL2-AAJ-DRG-0310-UP-0031 | 1830-1442    | TRAPEZOIDAL UNIT CONCRETE DETAILS - SHEET 2      | NL2-AAJ-DRG-0310-UP-0080 | 1830-1462    | WING WALL REINFORCEMENT DETAILS - SHEET 1      |
| NL2-AAJ-DRG-0310-UP-0035 | 1830-1443    | TRAPEZOIDAL UNIT REINFORCEMENT DETAILS - SHEET 1 | NL2-AAJ-DRG-0310-UP-0081 | 1830-1463    | WING WALL REINFORCEMENT DETAILS - SHEET 2      |
| NL2-AAJ-DRG-0310-UP-0036 | 1830-1444    | TRAPEZOIDAL UNIT REINFORCEMENT DETAILS - SHEET 2 | NL2-AAJ-DRG-0310-UP-0090 | 1830-1464    | LUMINAIRE DETAILS                              |
| NL2-AAJ-DRG-0310-UP-0040 | 1830-1445    | SPANDREL WALL LAYOUT - SHEET 1                   | NL2-AAJ-DRG-0310-UP-0100 | 1830-1465    | DESIGN SUMMARY - SHEET 1                       |
| NL2-AAJ-DRG-0310-UP-0041 | 1830-1446    | SPANDREL WALL LAYOUT - SHEET 2                   | NL2-AAJ-DRG-0310-UP-0101 | 1830-1466    | DESIGN SUMMARY - SHEET 2                       |
| NL2-AAJ-DRG-0310-UP-0045 | 1830-1447    | SPANDREL WALL CONCRETE DETAILS - SHEET 1         |                          |              |  |
| NL2-AAJ-DRG-0310-UP-0046 | 1830-1448    | SPANDREL WALL CONCRETE DETAILS - SHEET 2         |                          |              |  |
| NL2-AAJ-DRG-0310-UP-0050 | 1830-1449    | SPANDREL INSTALLATION BRACKET DETAILS            |                          |              |  |
| NL2-AAJ-DRG-0310-UP-0055 | 1830-1450    | SPANDREL WALL REINFORCEMENT DETAILS - SHEET 1    |                          |              |  |
| NL2-AAJ-DRG-0310-UP-0056 | 1830-1451    | SPANDREL WALL REINFORCEMENT DETAILS - SHEET 2    |                          |              |  |

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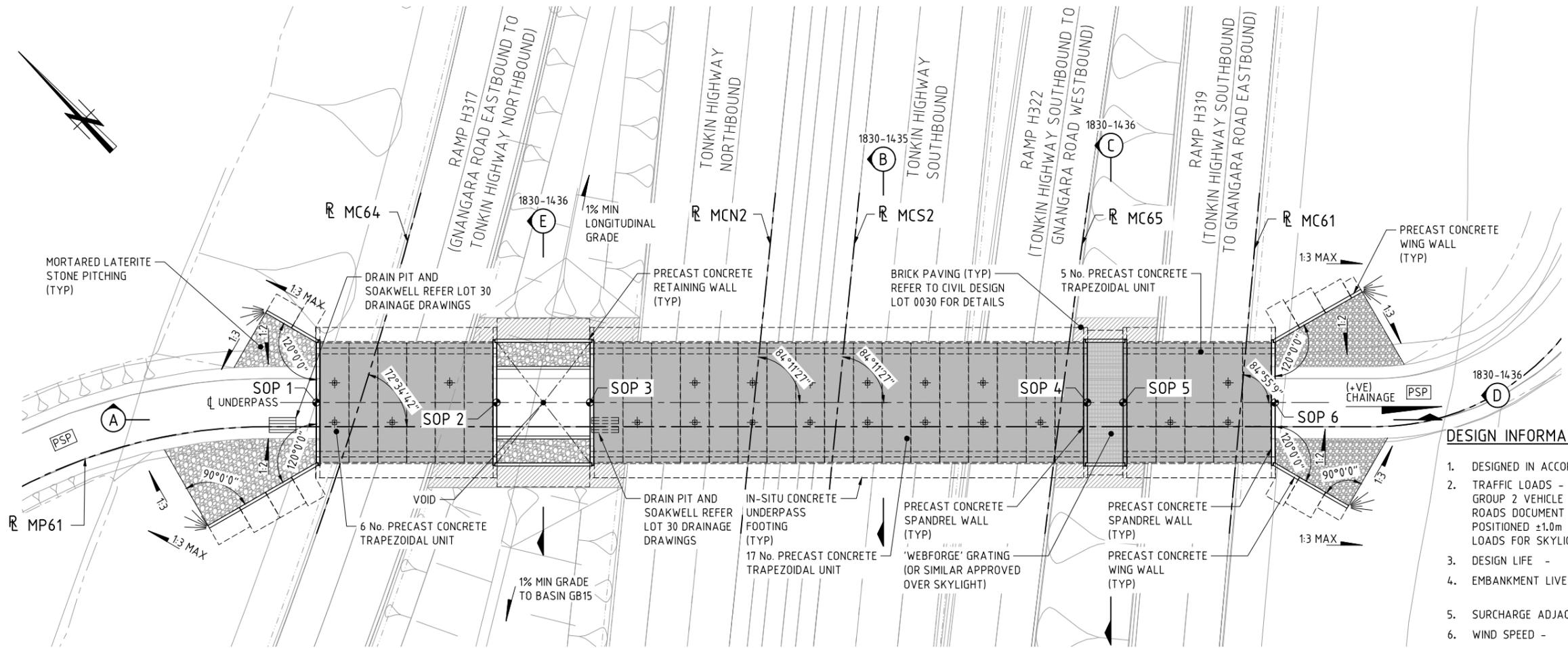
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**AS CONSTRUCTED**  
DATE 01/03/19

|   |  |   |  |  |  |   |  |   |   |  |
|---|--|---|--|--|--|---|--|---|---|--|
| <p>1 AS CONSTRUCTED - NO CHANGES</p> <p>0 ISSUED FOR CONSTRUCTION</p> |  | <p>M.N.K. 27.02.19</p> <p>M.N.K. 25.01.18</p> | <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAPPING SURVEY STANDARD:</p> <p>DATE OF CAPTURE:</p> <p>MAIN ROADS PROJECT ZONE: PCG94</p> <p>HEIGHT DATUM: AHD</p> |  | <p>DESIGNER</p> <p><b>AAJV</b> &amp; <b>AECOM</b> &amp; <b>ARCADIS</b></p> <p>DESIGN MANAGER D. SULLIVAN 22.12.17 DATE</p> | <p>DRAWN F. ALPAPARA 01.09.17</p> <p>DESIGNED M. CHOWDHURY 01.09.17</p> <p>CHECKED P. DOBSON 01.09.17</p> <p>APPROVED M. KAKULAS 01.09.17</p> <p>DRAWING STATUS IFC</p> | <p>VERIFIER</p> <p><b>GHD</b></p> <p>VERIFIED L. TINLIN 12.01.18</p> | <p>CONSTRUCTOR</p> <p><b>Great Northern CONNECT</b></p> | <p><b>mainroads</b> WESTERN AUSTRALIA</p> <p>INFRASTRUCTURE DELIVERY DIRECTORATE</p> <p>CONTRACT MANAGER G. XANTHIS 23.01.18 DATE</p> <p>PROJECT DIRECTOR R. ARNOTT 23.01.18 DATE</p> | <p>LOCAL AUTHORITY (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION</p> <p>MWA DRAWING NUMBER <b>1830-1432</b></p> <p>PROJECT TITLE <b>NORTHLINK WA CENTRAL SECTION</b></p> <p>DRAWING TITLE <b>TONKIN HIGHWAY (H017) TONKIN / GNANGARA ROAD INTERCHANGE UNDERPASS No. 9443 INDEX</b></p> <p>DRAWING No. <b>NL2-AAJ-DRG-0310-UP-0002</b> REV <b>1</b></p> |
|---|--|---|--|--|--|---|--|---|---|--|

SCALE SHEET A1

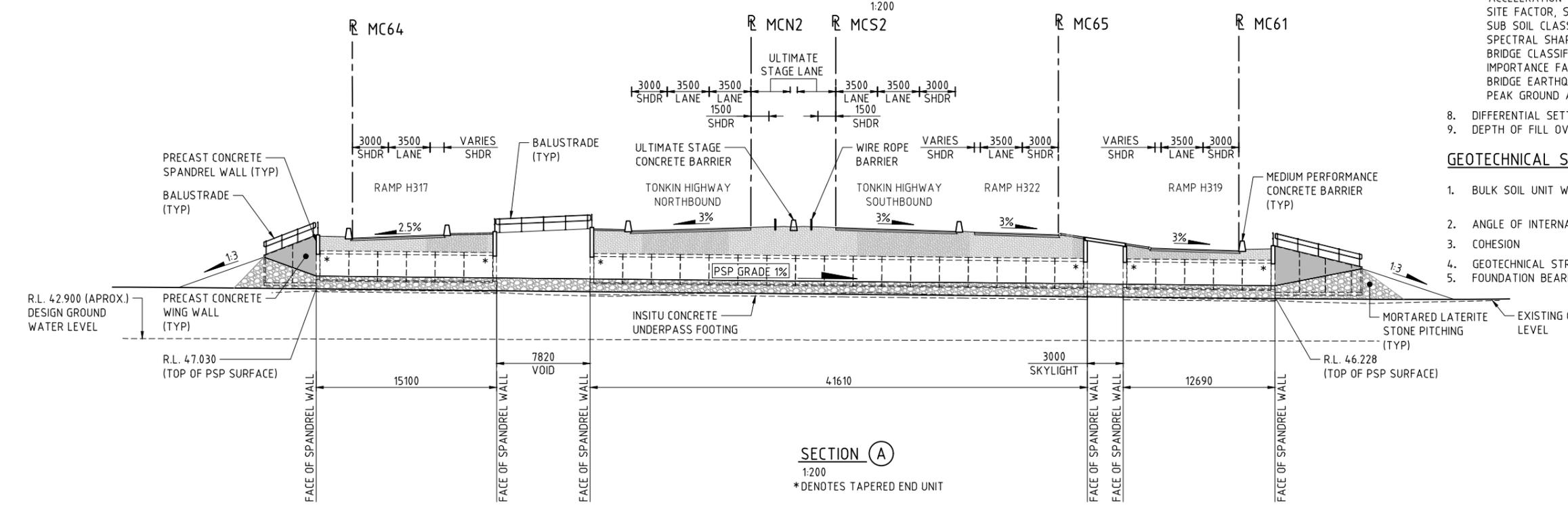
- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-1433.
  - STONE PITCHING BATTER GRADE TO BE 1:2 INSIDE UNDERPASS AND EXTEND 2.0m FROM SPANDREL WALL, THEN TRANSITION TO 1:3 SLOPE TO END OF WING WALLS.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 - ROCK PROTECTION.
  - FOR SETOUT POINTS TABLE REFER DRG 1830-1438.



**PLAN - UNDERPASS No. 9443  
(GNANGARA ROAD INTERCHANGE)**

- DESIGN INFORMATION SUMMARY:**
- DESIGNED IN ACCORDANCE WITH AS 5100-2004 'BRIDGE DESIGN CODE' UNO.
  - TRAFFIC LOADS - 100% SM1600, HLP400 AND GROUP 2 VEHICLE 4 AND GROUP 2 VEHICLE 5 HEAVY LOAD PLATFORM VEHICLES DETAILED IN MAIN ROADS DOCUMENT 3912/02-2 . HLP AND GROUP 2 VEHICLES SHALL BE POSITIONED ±1.0m FROM THE CENTERLINE OF CARRIAGEWAY. W80 AND A160 LOADS FOR SKYLIGHT.
  - DESIGN LIFE - 100YRS.
  - EMBANKMENT LIVE LOAD - 2.5kPa. (STEEPER THAN 1:4) 5.0kPa. (ELSEWHERE)
  - SURCHARGE ADJACENT TO SPANDREL WALL - 10kPa.
  - WIND SPEED - ULS V2000 48m/s SLS V20 37m/s.
  - EARTHQUAKE LOADING PARAMETERS  
ACCELERATION COEFFICIENT, Z 0.09  
SITE FACTOR, S 1.25  
SUB SOIL CLASS Ce  
SPECTRAL SHAPE FACTOR Ch (T) 3.68 (1.3)  
BRIDGE CLASSIFICATION TYPE 2  
IMPORTANCE FACTOR 1.0  
BRIDGE EARTHQUAKE DESIGN CATEGORY BEQC-2  
PEAK GROUND ACCELERATION (PGA) 0.2g
  - DIFFERENTIAL SETTLEMENT ALLOWANCE 20mm.  
DEPTH OF FILL OVER STRUCTURE VARIES 805mm MIN, 2450mm MAX

- GEOTECHNICAL SUMMARY**
- BULK SOIL UNIT WEIGHT 18kN/m<sup>3</sup> (DRY) 20kN/m<sup>3</sup> (SATURATED)
  - ANGLE OF INTERNAL FRICTION 36°
  - COHESION NIL
  - GEOTECHNICAL STRENGTH REDUCTION FACTOR 0.50
  - FOUNDATION BEARING PRESSURE 400kPa (ULS)



**SECTION (A)**  
1:200  
\* DENOTES TAPERED END UNIT

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**AS CONSTRUCTED**  
DATE 01/03/19

| METADATA                |            |
|-------------------------|------------|
| DESIGNER                | M. KAKULAS |
| DATE OF CAPTURE         | 25.01.18   |
| MAPPING SURVEY STANDARD |            |
| DATE OF CAPTURE         | 25.01.18   |
| MAIN ROADS PROJECT ZONE | PCG94      |
| HEIGHT DATUM            | AHD        |

AAJV AECOM ARCADIS

|                |              |      |          |
|----------------|--------------|------|----------|
| DESIGNER       | F. ALPAPARA  | DATE | 04.04.17 |
| DESIGNED       | M. CHOWDHURY | DATE | 04.04.17 |
| CHECKED        | P. DOBSON    | DATE | 04.04.17 |
| APPROVED       | M. KAKULAS   | DATE | 04.04.17 |
| DESIGN MANAGER | D. SULLIVAN  | DATE | 22.12.17 |

GHD

Great Northern CONNECT

INFRASTRUCTURE DELIVERY DIRECTORATE

|                    |  |                                |                     |
|--------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-1434  |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>TONKIN / GNANGARA ROAD INTERCHANGE<br>UNDERPASS No. 9443<br>GENERAL ARRANGEMENT - SHEET 1 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0310-UP-0010   |                                |                     |

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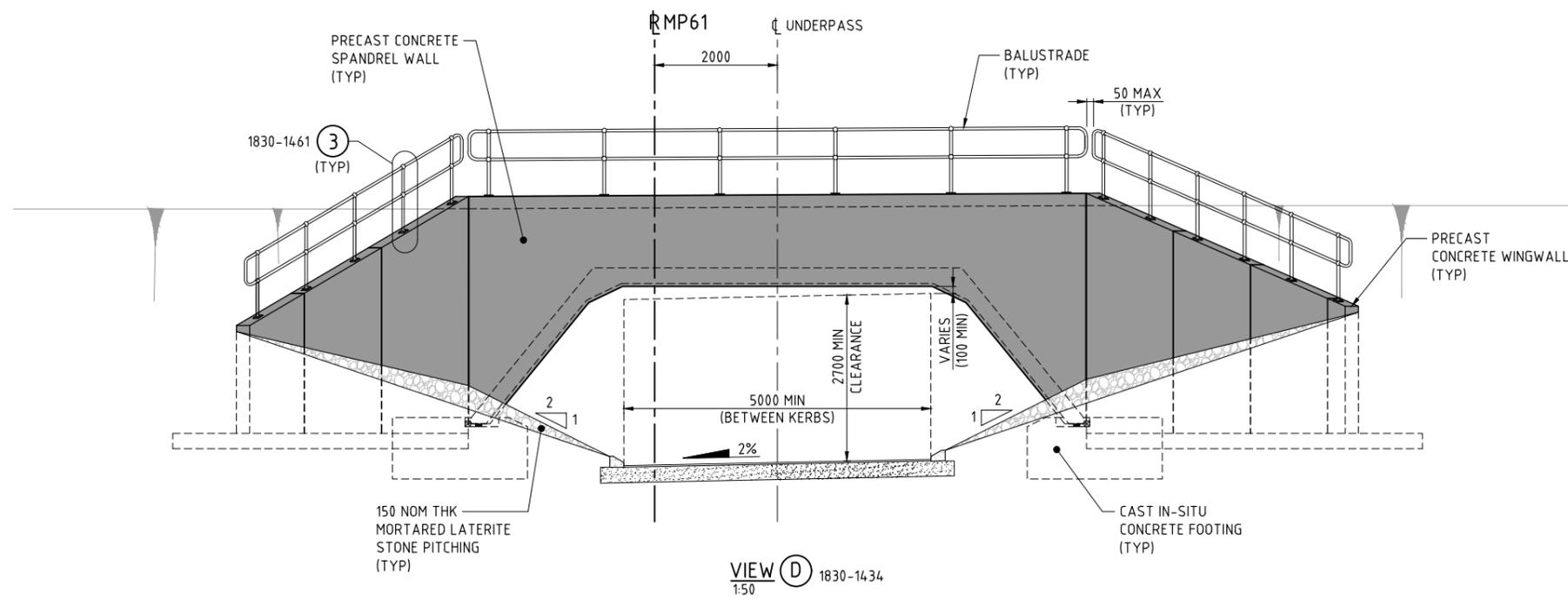
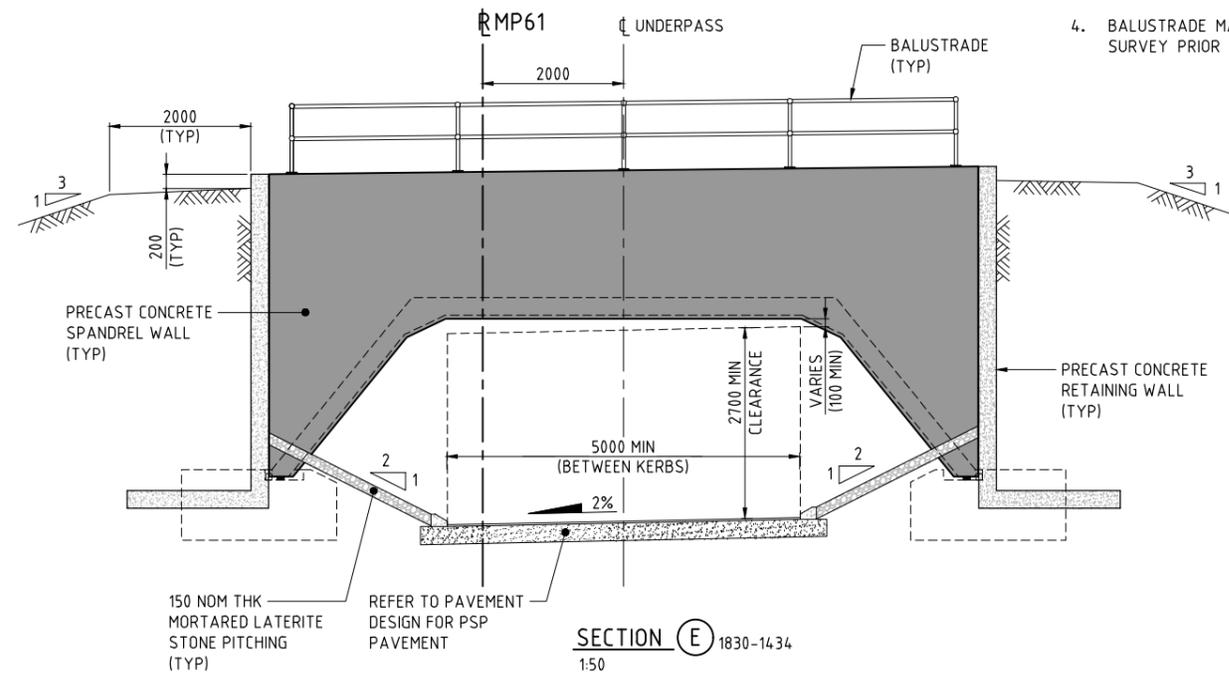
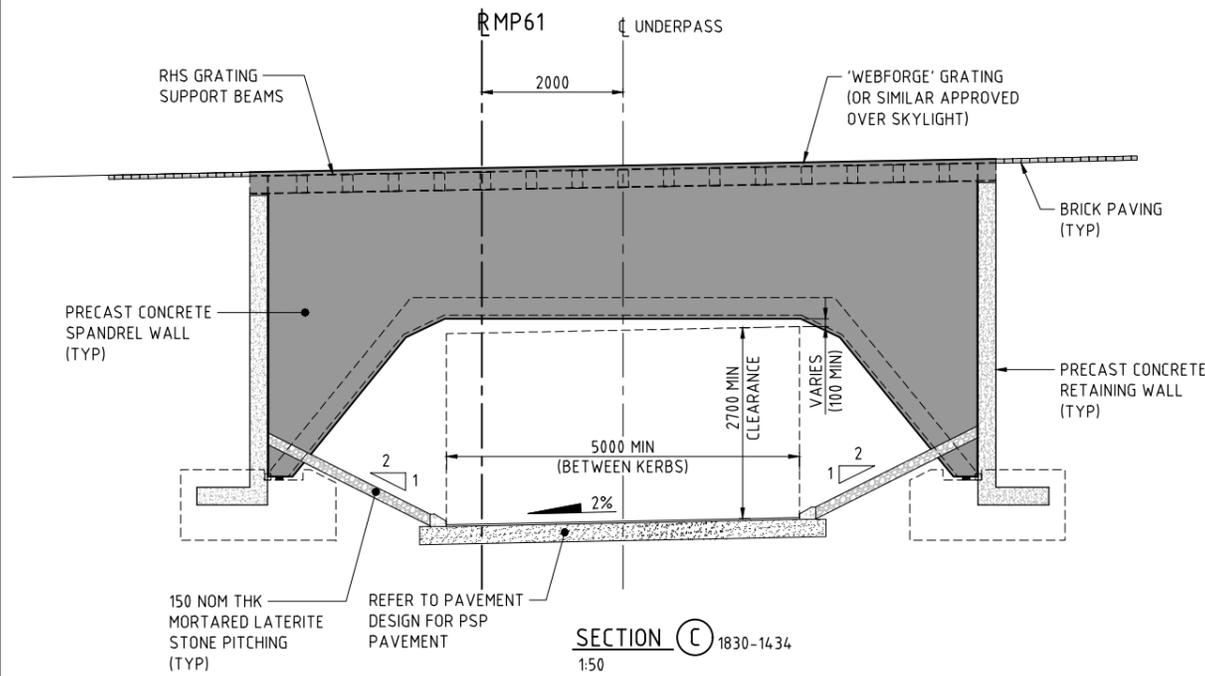
SCALE 1:200

SHEET A1



**NOTES:**

1. FOR GENERAL NOTES REFER DRG 1830-1433.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG 1830-1434.
3. BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURER'S SPECIFICATION FOR FURTHER DETAILS.
4. BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.



**AS CONSTRUCTED**  
DATE 01/03/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|     |                             |                 |          |
|-----|-----------------------------|-----------------|----------|
| 1   | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 27.02.19 |
| 0   | ISSUED FOR CONSTRUCTION     | M.N.K.          | 25.01.18 |
| No. | DESCRIPTION                 | APPROVED & DATE |          |
|     | AMENDMENTS                  |                 |          |

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER: **AAJV AECOM ARCADIS**  
DESIGN MANAGER: D. SULLIVAN  
DATE: 22.12.17

|                |              |          |
|----------------|--------------|----------|
| DRAWN          | F. ALPAPARA  | 04.04.17 |
| DESIGNED       | M. CHOWDHURY | 04.04.17 |
| CHECKED        | P. DOBSON    | 04.04.17 |
| APPROVED       | M. KAKULAS   | 04.04.17 |
| DRAWING STATUS | IFC          |          |

VERIFIER: **GHD**  
L. TINLIN  
DATE: 12.01.18

CONSTRUCTOR: **Great Northern CONNECT**

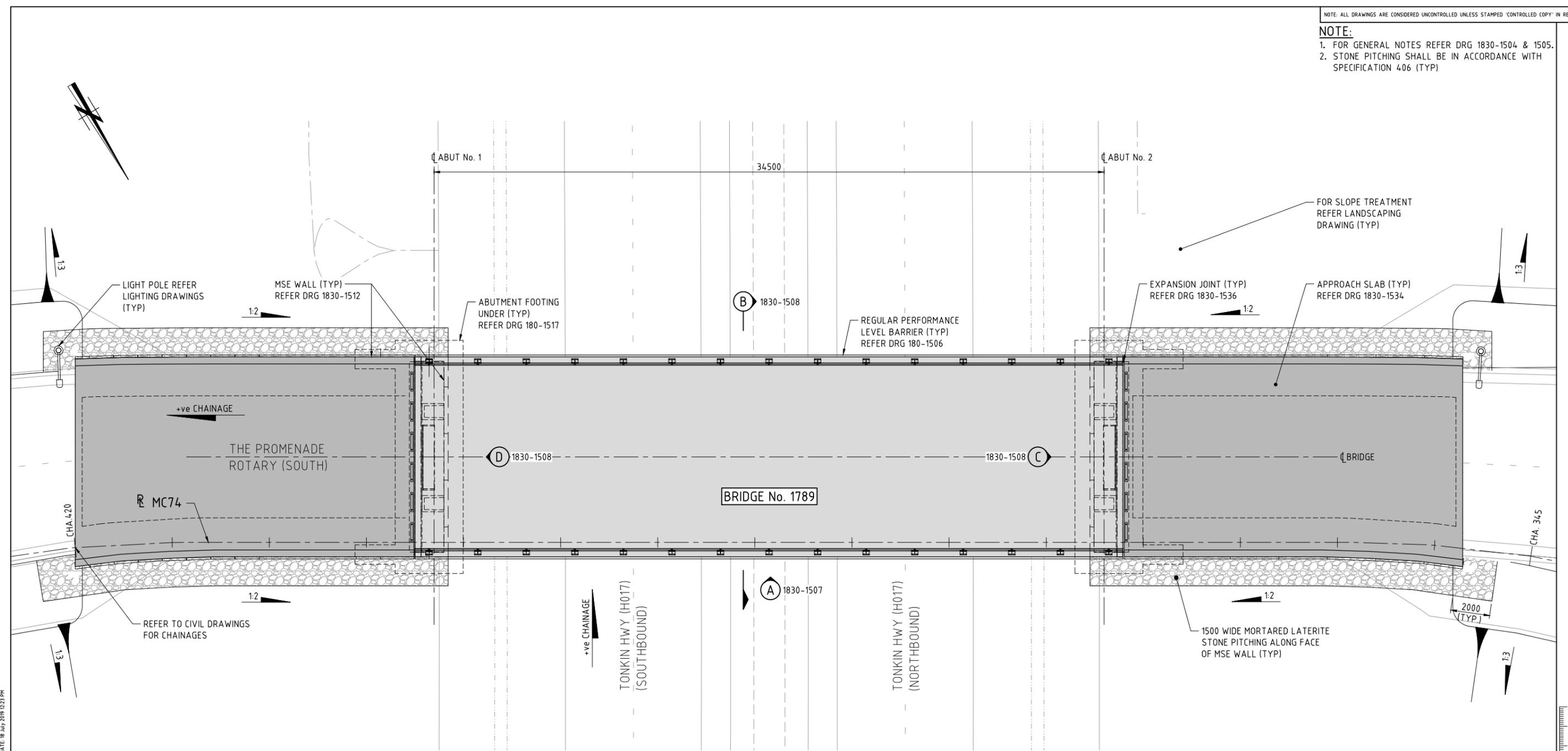
CONTRACT MANAGER: G. XANTHIS  
PROJECT DIRECTOR: R. ARNOTT  
INFRASTRUCTURE DELIVERY DIRECTORATE  
DATE: 23.01.18

|                    |  |                                |                     |
|--------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-1436  |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>UNDERPASS No. 9443<br>GENERAL ARRANGEMENT - SHEET 3 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0310-UP-0012   |                                |                     |

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- NOTE:**
- FOR GENERAL NOTES REFER DRG 1830-1504 & 1505.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 (TYP)



PLAN - BRIDGE No. 1789  
1:100

PATH: K:\WP01518-Northlink\_Stage\_2\_Think\Drawings\Bridges\Tonkin\Drawings\1830-1506.dwg LAST SAVED BY: Family548 DATE: 18 July 2019 12:23 PM

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 22/01/19

| AMENDMENTS |                             | APPROVED & DATE |          |
|------------|-----------------------------|-----------------|----------|
| No.        | DESCRIPTION                 | M.N.K.          | DATE     |
| 1          | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 27.02.19 |
| 0          | ISSUED FOR CONSTRUCTION     | M.N.K.          | 10.01.18 |

**METADATA**

DESIGNER: **AAJV AECOM ARCADIS**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 09.02.17 |
| DESIGNED       | X. LAM      | 09.02.17 |
| CHECKED        | S. SERGEEV  | 09.02.17 |
| APPROVED       | M. KAKULAS  | 09.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER: **GHD**

DATE: 08.12.17

CONSTRUCTOR: **Great Northern CONNECT**

CONTRACT MANAGER: **G. XANTHIS**

PROJECT DIRECTOR: **R. ARNOTT**

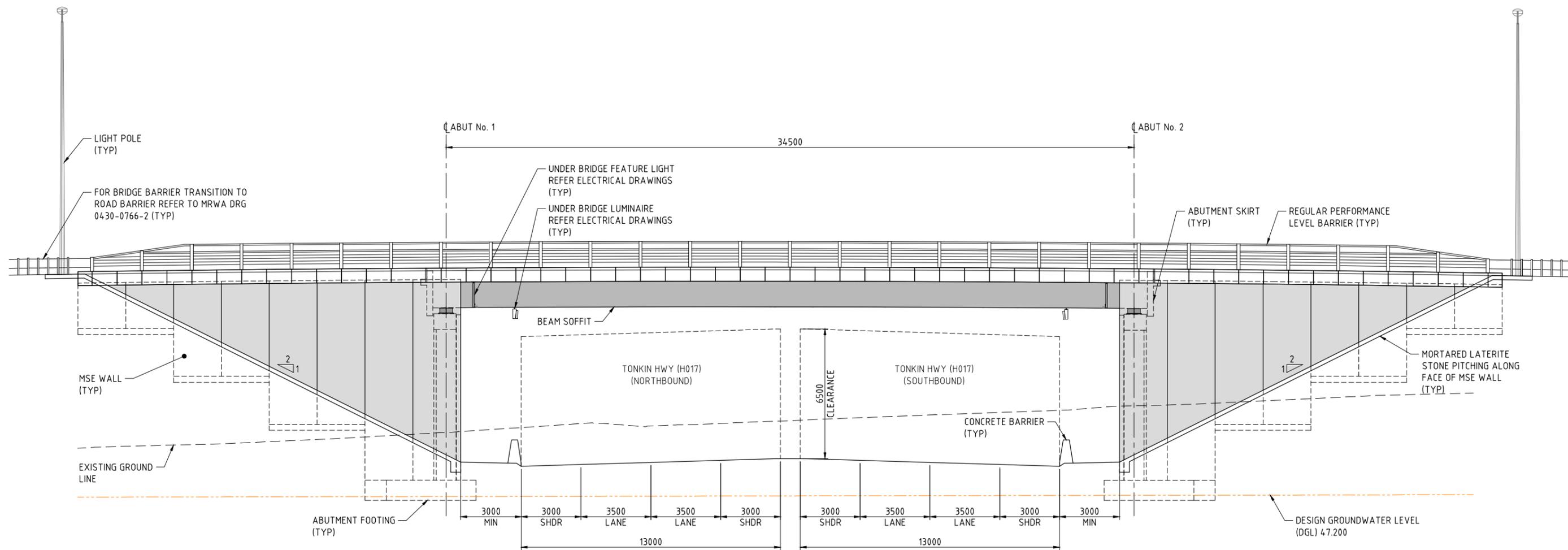
INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                     |
|---------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-1506  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>BRIDGE No. 1789<br>GENERAL ARRANGEMENT - SHEET 1 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0400-BR-0010   |                                |                     |

SCALE  
1:100  
SHEET A1

**NOTE:**

1. FOR GENERAL NOTES REFER DRG 1830-1504 & 1505.
2. STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 (TYP)



ELEVATION (A) 1830-1506  
1:100

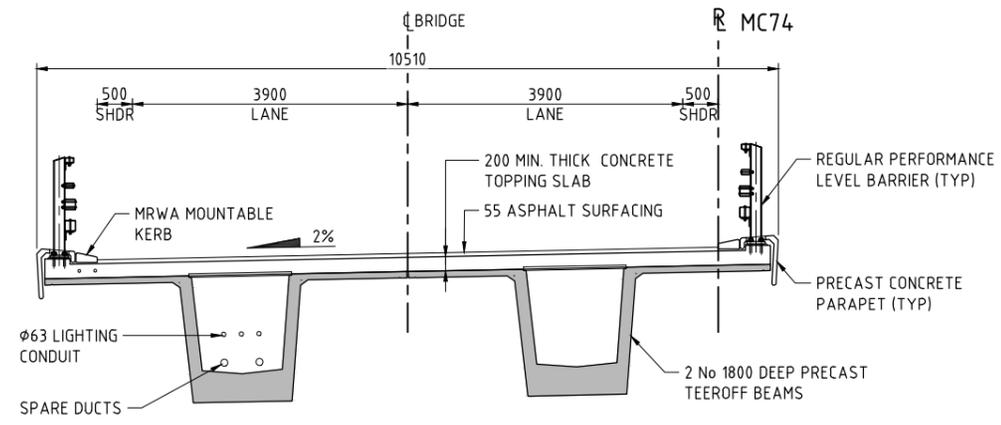
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SCALE  
SHEET A1

AS CONSTRUCTED  
DATE 22/01/19

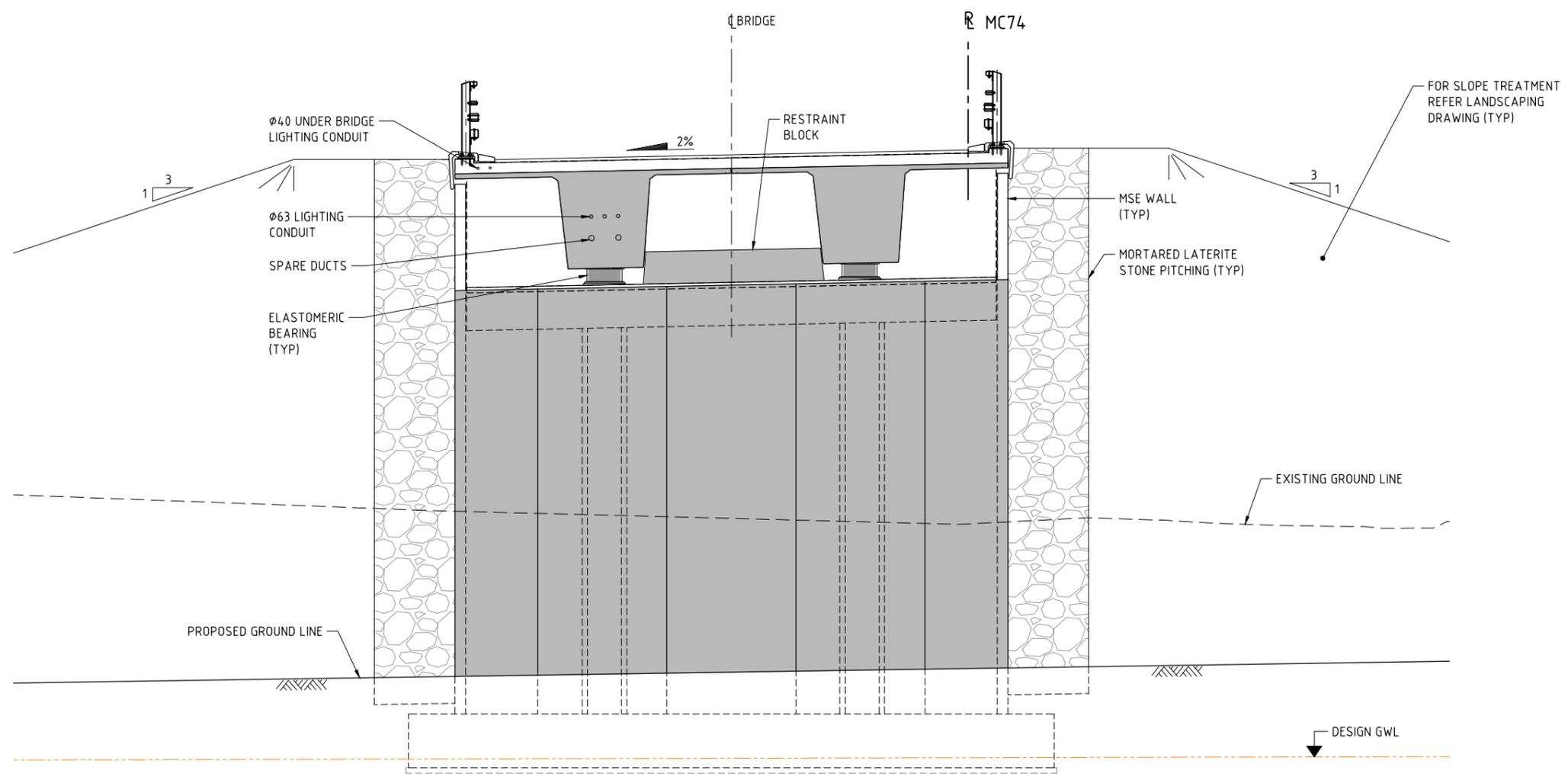
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

| AMENDMENTS  |                             | METADATA        |          | DESIGNER           |  | DRAWN       |          | VERIFIED   |  | CONSTRUCTOR                 |  | LOCAL AUTHORITY    |  | MIRWA DRAWING NUMBER |  | PROJECT TITLE   |  | DRAWING TITLE   |  | DRAWING No.              |  |
|-------------|-----------------------------|-----------------|----------|--------------------|--|-------------|----------|------------|--|-----------------------------|--|--------------------|--|----------------------|--|---|--|---|--|--------------------------|--|
| 1           | AS CONSTRUCTED - NO CHANGES | M.N.K.          | 27.02.19 | AAJV AECOM ARCADIS |  | F. ALPAPARA | 09.02.17 | GHD        |  | Great Northern CONNECT      |  | (109) CITY OF SWAN |  | 1830-1507            |  | NORTHLINK WA CENTRAL SECTION  |  | TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE BRIDGE No. 1789 GENERAL ARRANGEMENT - SHEET 2 |  | NL2-AAJ-DRG-0400-BR-0011 |  |
| 0           | ISSUED FOR CONSTRUCTION     | M.N.K.          | 10.01.18 | D. SULLIVAN        |  | X. LAM      | 09.02.17 | G. JOYNSON |  | mainroads WESTERN AUSTRALIA |  | (109) CITY OF SWAN |  | 1830-1507            |  | NORTHLINK WA CENTRAL SECTION  |  | TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE BRIDGE No. 1789 GENERAL ARRANGEMENT - SHEET 2 |  | NL2-AAJ-DRG-0400-BR-0011 |  |
| DESCRIPTION |                             | APPROVED & DATE |          | DESIGN MANAGER     |  | CHECKED     |          | DATE       |  | CONTRACT MANAGER            |  | PROJECT DIRECTOR   |  | DATE                 |  | PROJECT TITLE   |  | DRAWING TITLE   |  | DRAWING No.              |  |
| AMENDMENTS  |                             |                 |          | D. SULLIVAN        |  | S. SERGEEV  |          | 08.12.17   |  | G. XANTHIS                  |  | R. ARNOTT          |  | 12.12.17             |  | THE PROMENADE INTERCHANGE BRIDGE No. 1789 GENERAL ARRANGEMENT - SHEET 2 |  | TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE BRIDGE No. 1789 GENERAL ARRANGEMENT - SHEET 2 |  | NL2-AAJ-DRG-0400-BR-0011 |  |

- NOTE:**
- FOR GENERAL NOTES REFER DRG 1830-1504 & 1505.
  - STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 (TYP)



**SECTION B** 1830-1506  
1:50



**SECTION C** 1830-1506  
1:50

**SECTION D** 1830-1506  
1:50  
SIMILAR BUT OPPOSITE HAND

**AS CONSTRUCTED**  
DATE 22/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

|                                |                 |
|--------------------------------|-----------------|
| GROUND SURVEY STANDARD:        |                 |
| DATE OF CAPTURE:               |                 |
| MAPPING SURVEY STANDARD:       |                 |
| DATE OF CAPTURE:               |                 |
| MAIN ROADS PROJECT ZONE: PCG94 |                 |
| HEIGHT DATUM: AHD              |                 |
| 1 AS CONSTRUCTED - NO CHANGES  | M.N.K. 27.02.19 |
| 0 ISSUED FOR CONSTRUCTION      | M.N.K. 10.01.18 |
| No.                            | DESCRIPTION     |
|                                | APPROVED & DATE |
|                                | AMENDMENTS      |

DESIGNER  
**AAJV** & Joint Venture between **AECOM** and **ARCADIS**  
DESIGN MANAGER D. SULLIVAN 01.12.17 DATE

DRAWN F. ALPAPARA 09.02.17  
DESIGNED X. LAM 09.02.17  
CHECKED S. SERGEEV 09.02.17  
APPROVED M. KAKULAS 09.02.17  
DRAWING STATUS IFC

VERIFIER **GHD**  
VERIFIED G. JOYNSON  
DATE 08.12.17

CONSTRUCTOR  
**Great Northern CONNECT**

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE  
CONTRACT MANAGER G. XANTHIS 12.12.17 DATE  
PROJECT DIRECTOR R. ARNOTT 12.12.17 DATE

|                                    |  |
|------------------------------------|--|
| LOCAL AUTHORITY (109) CITY OF SWAN | MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION   |
| MIRWA DRAWING NUMBER               | 1830-1508  |
| PROJECT TITLE                      | NORTHLINK WA CENTRAL SECTION   |
| DRAWING TITLE                      | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>BRIDGE No. 1789<br>GENERAL ARRANGEMENT - SHEET 3 |
| DRAWING No.                        | NL2-AAJ-DRG-0400-BR-0012   |
| REV                                | 1  |

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**DRAWING INDEX**

| PROJECT DRG No.          | MRWA DRG No. | DRAWING DESCRIPTION                               |
|--------------------------|--------------|---|
| <b>GENERAL</b>           |              |   |
| NL2-AAJ-DRG-0400-BR-1001 | 1830-1550    | LOCALITY PLAN                                     |
| NL2-AAJ-DRG-0400-BR-1002 | 1830-1551    | INDEX   |
| NL2-AAJ-DRG-0400-BR-1005 | 1830-1552    | GENERAL NOTES - SHEET 1                           |
| NL2-AAJ-DRG-0400-BR-1006 | 1830-1553    | GENERAL NOTES - SHEET 2                           |
| NL2-AAJ-DRG-0400-BR-1010 | 1830-1554    | GENERAL ARRANGEMENT - SHEET 1                     |
| NL2-AAJ-DRG-0400-BR-1011 | 1830-1555    | GENERAL ARRANGEMENT - SHEET 2                     |
| NL2-AAJ-DRG-0400-BR-1012 | 1830-1556    | GENERAL ARRANGEMENT - SHEET 3                     |
| <b>SUBSTRUCTURES</b>     |              |   |
| NL2-AAJ-DRG-0400-BR-1015 | 1830-1557    | BORE INFORMATION - SHEET 1                        |
| NL2-AAJ-DRG-0400-BR-1016 | 1830-1558    | BORE INFORMATION - SHEET 2                        |
| NL2-AAJ-DRG-0400-BR-1017 | 1830-1559    | GEOMETRIC DATA                                    |
| NL2-AAJ-DRG-0400-BR-1020 | 1830-1560    | ABUTMENT - MSE WALL LAYOUT                        |
| NL2-AAJ-DRG-0400-BR-1021 | 1830-1561    | ABUTMENT No. 1 - MSE WALL                         |
| NL2-AAJ-DRG-0400-BR-1022 | 1830-1562    | ABUTMENT No. 2 - MSE WALL                         |
| NL2-AAJ-DRG-0400-BR-1023 | 1830-1563    | ABUTMENT - MSE WALL - TYPICAL SECTIONS            |
| NL2-AAJ-DRG-0400-BR-1024 | 1830-1564    | COLUMN FORMER DETAILS                             |
| NL2-AAJ-DRG-0400-BR-1025 | 1830-1565    | ABUTMENT No. 1 - CONCRETE DETAILS                 |
| NL2-AAJ-DRG-0400-BR-1026 | 1830-1566    | ABUTMENT No. 2 - CONCRETE DETAILS                 |
| NL2-AAJ-DRG-0400-BR-1027 | 1830-1567    | ABUTMENT - CONCRETE DETAILS                       |
| NL2-AAJ-DRG-0400-BR-1030 | 1830-1568    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 1        |
| NL2-AAJ-DRG-0400-BR-1031 | 1830-1569    | ABUTMENT - REINFORCEMENT DETAILS - SHEET 2        |
| NL2-AAJ-DRG-0400-BR-1033 | 1830-1570    | COLUMN REINFORCEMENT DETAILS                      |
| <b>SUPERSTRUCTURE</b>    |              |   |
| NL2-AAJ-DRG-0400-BR-1045 | 1830-1571    | BEARING DETAILS - SHEET 1                         |
| NL2-AAJ-DRG-0400-BR-1046 | 1830-1572    | BEARING DETAILS - SHEET 2                         |
| NL2-AAJ-DRG-0400-BR-1050 | 1830-1573    | PRECAST TEEROFF BEAM LAYOUT - SHEET 1             |
| NL2-AAJ-DRG-0400-BR-1052 | 1830-1574    | PRECAST TEEROFF BEAM - TYPICAL DETAILS            |
| NL2-AAJ-DRG-0400-BR-1053 | 1830-1575    | PRECAST TEEROFF BEAM - CONCRETE DETAILS           |
| NL2-AAJ-DRG-0400-BR-1057 | 1830-1576    | PRECAST TEEROFF - PRESTRESSING DETAILS            |
| NL2-AAJ-DRG-0400-BR-1060 | 1830-1577    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0400-BR-1061 | 1830-1578    | PRECAST TEEROFF - REINFORCEMENT DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0400-BR-1070 | 1830-1579    | DECK CONCRETE DETAILS - SHEET 1                   |
| NL2-AAJ-DRG-0400-BR-1071 | 1830-1580    | DECK CONCRETE DETAILS - SHEET 2                   |
| NL2-AAJ-DRG-0400-BR-1073 | 1830-1581    | DECK REINFORCEMENT DETAILS - SHEET 1              |

| PROJECT DRG No.          | MRWA DRG No. | DRAWING DESCRIPTION                        |
|--------------------------|--------------|--|
| NL2-AAJ-DRG-0400-BR-1074 | 1830-1582    | DECK REINFORCEMENT DETAILS - SHEET 2       |
| NL2-AAJ-DRG-0400-BR-1090 | 1830-1583    | APPROACH SLAB CONCRETE DETAILS             |
| NL2-AAJ-DRG-0400-BR-1091 | 1830-1584    | APPROACH SLAB REINFORCEMENT DETAILS        |
| NL2-AAJ-DRG-0400-BR-1100 | 1830-1585    | EXPANSION JOINT DETAILS                    |
| NL2-AAJ-DRG-0400-BR-1105 | 1830-1586    | COVER PLATE DETAILS - SHEET 1              |
| NL2-AAJ-DRG-0400-BR-1106 | 1830-1587    | COVER PLATE DETAILS - SHEET 2              |
| NL2-AAJ-DRG-0400-BR-1110 | 1830-1588    | BARRIER LAYOUT                             |
| NL2-AAJ-DRG-0400-BR-1111 | 1830-1589    | BARRIER DETAILS - SHEET 1                  |
| NL2-AAJ-DRG-0400-BR-1112 | 1830-1590    | BARRIER DETAILS - SHEET 2                  |
| NL2-AAJ-DRG-0400-BR-1113 | 1830-1591    | BARRIER DETAILS - SHEET 3                  |
| NL2-AAJ-DRG-0400-BR-1114 | 1830-1592    | BARRIER DETAILS - SHEET 4                  |
| NL2-AAJ-DRG-0400-BR-1115 | 1830-1593    | PRECAST CONCRETE PARAPET DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0400-BR-1116 | 1830-1594    | PRECAST CONCRETE PARAPET DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0400-BR-1135 | 1830-1595    | LIGHTING AND ELECTRICAL LAYOUT             |
| NL2-AAJ-DRG-0400-BR-1136 | 1830-1596    | LIGHTING AND ELECTRICAL DETAILS            |
| NL2-AAJ-DRG-0400-BR-1137 | 1830-1597    | LUMINAIRE BRACKET DETAILS                  |
| NL2-AAJ-DRG-0400-BR-1155 | 1830-1598    | DESIGN SUMMARY - SHEET 1                   |
| NL2-AAJ-DRG-0400-BR-1156 | 1830-1599    | DESIGN SUMMARY - SHEET 2                   |

**MRWA STANDARD DRAWINGS**

|   |             |  |
|---|-------------|--|
| - | 0430-0760   | REGULAR PERFORMANCE LEVEL BARRIER - RAIL ELEVATION & DETAILS             |
| - | 0430-0761-1 | REGULAR PERFORMANCE LEVEL BARRIER - TRANSITION RAIL ELEVATIONS           |
| - | 0430-0761-2 | REGULAR PERFORMANCE LEVEL BARRIER - GUARDRAIL POST DETAILS               |
| - | 0430-0763   | REGULAR PERFORMANCE LEVEL BARRIER - FIXED SPLICE ASSEMBLY DETAILS        |
| - | 0430-0764-1 | REGULAR PERFORMANCE LEVEL BARRIER - EXPANSION SPLICE ASSEMBLY DETAILS    |
| - | 0430-0765-2 | REGULAR PERFORMANCE LEVEL BARRIER - TWO RAIL BARRIER TRANSITION          |
| - | 0430-0766-2 | REGULAR PERFORMANCE LEVEL BARRIER - THREE & FOUR RAIL BARRIER TRANSITION |
| - | 0430-0767   | REGULAR PERFORMANCE LEVEL BARRIER - TOP RAIL DETAILS                     |
| - | 0430-1213-1 | REGULAR PERFORMANCE LEVEL BARRIER - INSTALLATION DETAILS                 |
| - | 0430-1314   | PRECAST PARAPET PANELS   |
| - | 9331-0376-3 | KERB TYPES   |
| - | 0530-1087-1 | BRIDGE BALUSTRADE FOR PSP - SHEET 1                                      |
| - | 0530-1307-1 | BRIDGE BALUSTRADE FOR PSP - SHEET 2                                      |

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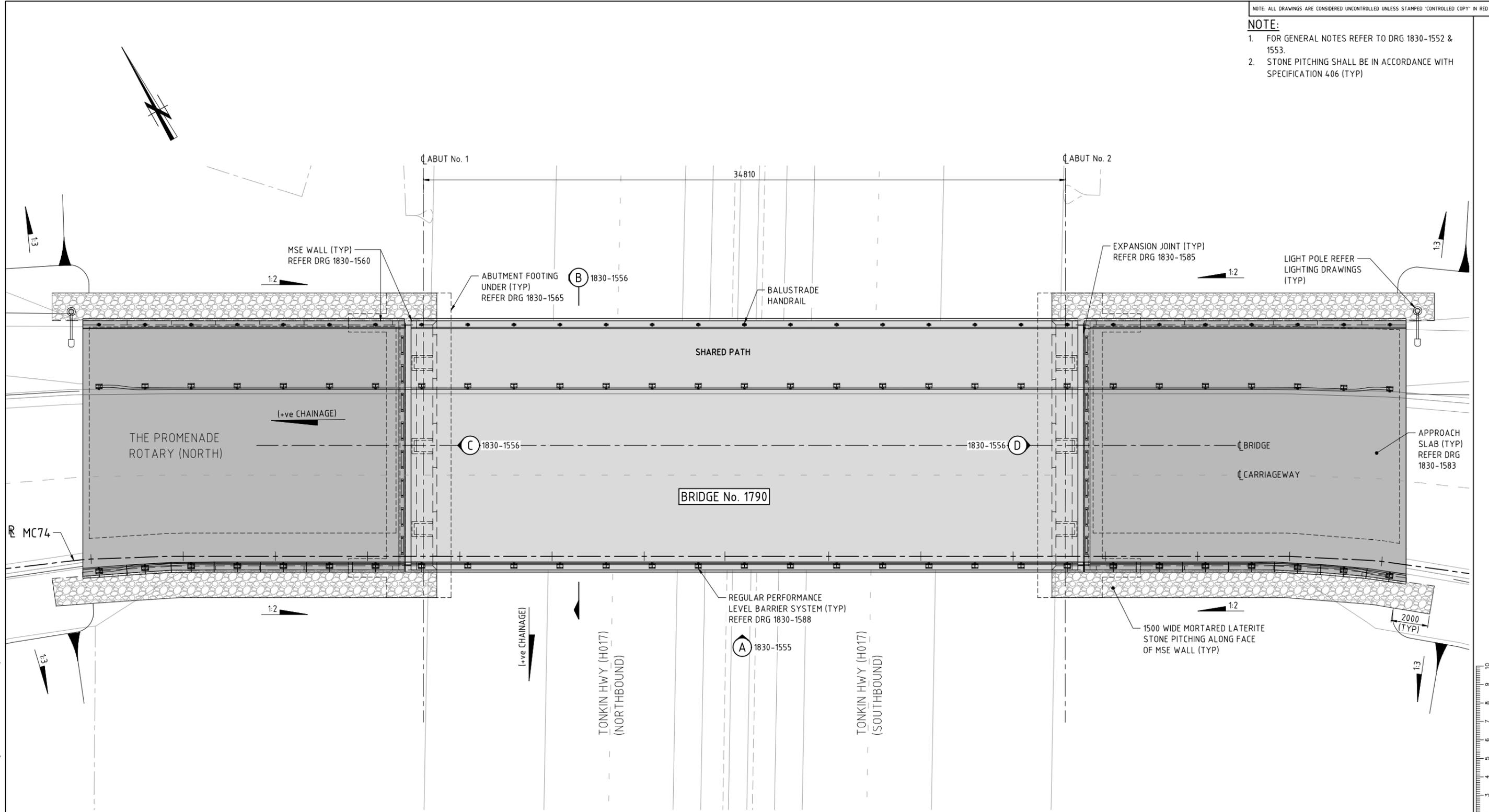
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**AS CONSTRUCTED**  
DATE 22/01/19

| METADATA   |  | DESIGNER                                 | DRAWN                | DESIGNED  | CHECKED             | APPROVED                            | DRAWING STATUS | VERIFIER                    | CONSTRUCTOR | LOCAL AUTHORITY                           | MRWA DRAWING NUMBER | PROJECT TITLE                | DRAWING TITLE  | DRAWING No.              |
|--|--|--|----------------------|---|---------------------|-------------------------------------|----------------|-----------------------------|-------------|---|---------------------|------------------------------|--|--------------------------|
| GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  |  | F. ALPAPARA 09.02.17 | X. LAM 09.02.17   | S. SERGEEV 09.02.17 | M. KAKULAS 09.02.17                 | IFC            |                             |             | (109) CITY OF SWAN<br>METROPOLITAN REGION | 1830-1551           | NORTHLINK WA CENTRAL SECTION | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>BRIDGE No. 1790<br>INDEX | NL2-AAJ-DRG-0400-BR-1002 |
| 1 AS CONSTRUCTED - NO CHANGES<br>0 ISSUED FOR CONSTRUCTION   |  | M.N.K. 27.02.19<br>M.N.K. 10.01.18       |                      |   |                     |                                     |                | G. JOYNSON<br>DATE 08.12.17 |             |   |                     |                              |  |                          |
| No. DESCRIPTION APPROVED & DATE  |  | DESIGN MANAGER D. SULLIVAN 01.12.17 DATE |                      | CONTRACT MANAGER G. XANTHIS 12.12.17 DATE<br>PROJECT DIRECTOR R. ARNOTT 12.12.17 DATE |                     | INFRASTRUCTURE DELIVERY DIRECTORATE |                |                             |             | SHEET A1                                  |                     | REV 1                        |  |                          |

**NOTE:**

- FOR GENERAL NOTES REFER TO DRG 1830-1552 & 1553.
- STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 (TYP)



PLAN - BRIDGE No. 1790

1:100

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THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 22/01/19

| METADATA                       |                 |
|--------------------------------|-----------------|
| 1 AS CONSTRUCTED - NO CHANGES  | M.N.K. 27.02.19 |
| 0 ISSUED FOR CONSTRUCTION      | M.N.K. 10.01.18 |
| DESCRIPTION                    | APPROVED & DATE |
| AMENDMENTS                     |                 |
| GROUND SURVEY STANDARD:        |                 |
| DATE OF CAPTURE:               |                 |
| MAPPING SURVEY STANDARD:       |                 |
| DATE OF CAPTURE:               |                 |
| MAIN ROADS PROJECT ZONE: PCG94 |                 |
| HEIGHT DATUM: AHD              |                 |

DESIGNER

**AAJV** A Joint Venture between  
**AECOM** and **ARCADIS**

DESIGN MANAGER D. SULLIVAN 01.12.17 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 09.02.17 |
| DESIGNED       | X. LAM      | 09.02.17 |
| CHECKED        | S. SERGEEV  | 09.02.17 |
| APPROVED       | M. KAKULAS  | 09.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER

**GHD**

VERIFIED G. JOYNSON  
DATE 08.12.17

CONSTRUCTOR

**Great Northern CONNECT**

**mainroads**  
WESTERN AUSTRALIA

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER G. XANTHIS  
PROJECT DIRECTOR R. ARNOTT

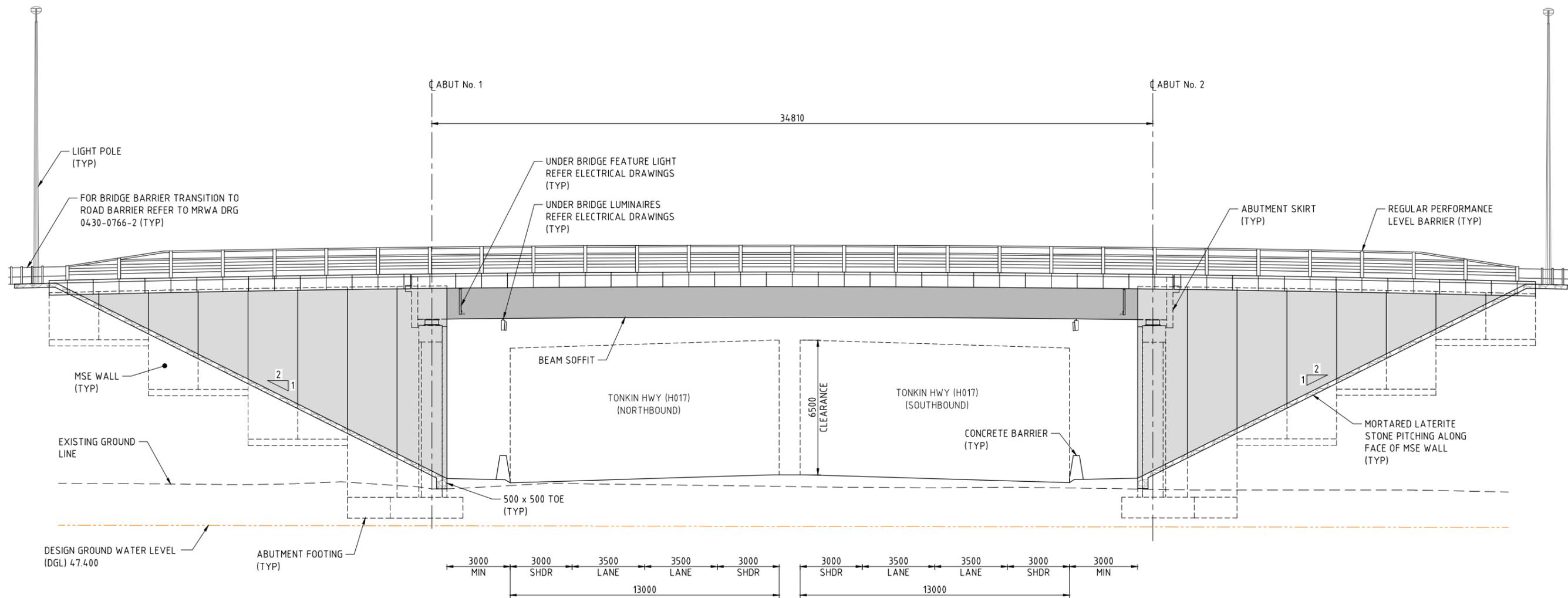
12.12.17 DATE  
12.12.17 DATE

|                     |  |                                |                     |
|---------------------|--|--------------------------------|---------------------|
| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MIRA DRAWING NUMBER | 1830-1554  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>BRIDGE No. 1790<br>GENERAL ARRANGEMENT - SHEET 1 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0400-BR-1010   |                                |                     |
| REV                 | 1  |                                |                     |

SCALE  
1:100  
0 1m 2 3 4 5 6 7 8 9 10  
SHEET A1

**NOTE:**

1. FOR GENERAL NOTES REFER TO 1830-1552 & 1553.
2. STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 4.06 (TYP)



ELEVATION (A) BR-1010  
1:100

1:100 SCALE

AS CONSTRUCTED  
DATE 22/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

| AMENDMENTS |                             |
|------------|-----------------------------|
| No.        | DESCRIPTION                 |
| 1          | AS CONSTRUCTED - NO CHANGES |
| 0          | ISSUED FOR CONSTRUCTION     |

| METADATA                 |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER  
**AAJV**  
**AECOM** **ARCADIS**

DESIGN MANAGER D. SULLIVAN 01.12.17 DATE

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | F. ALPAPARA | 09.02.17 |
| DESIGNED       | X. LAM      | 09.02.17 |
| CHECKED        | S. SERGEEV  | 09.02.17 |
| APPROVED       | M. KAKULAS  | 09.02.17 |
| DRAWING STATUS | IFC         |          |

VERIFIER  
**GHD**

VERIFIED G. JOYNSON  
DATE 08.12.17

CONSTRUCTOR  
**Great Northern CONNECT**

CONTRACT MANAGER  
**mainroads WESTERN AUSTRALIA**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER G. XANTHIS 12.12.17 DATE  
PROJECT DIRECTOR R. ARNOTT 12.12.17 DATE

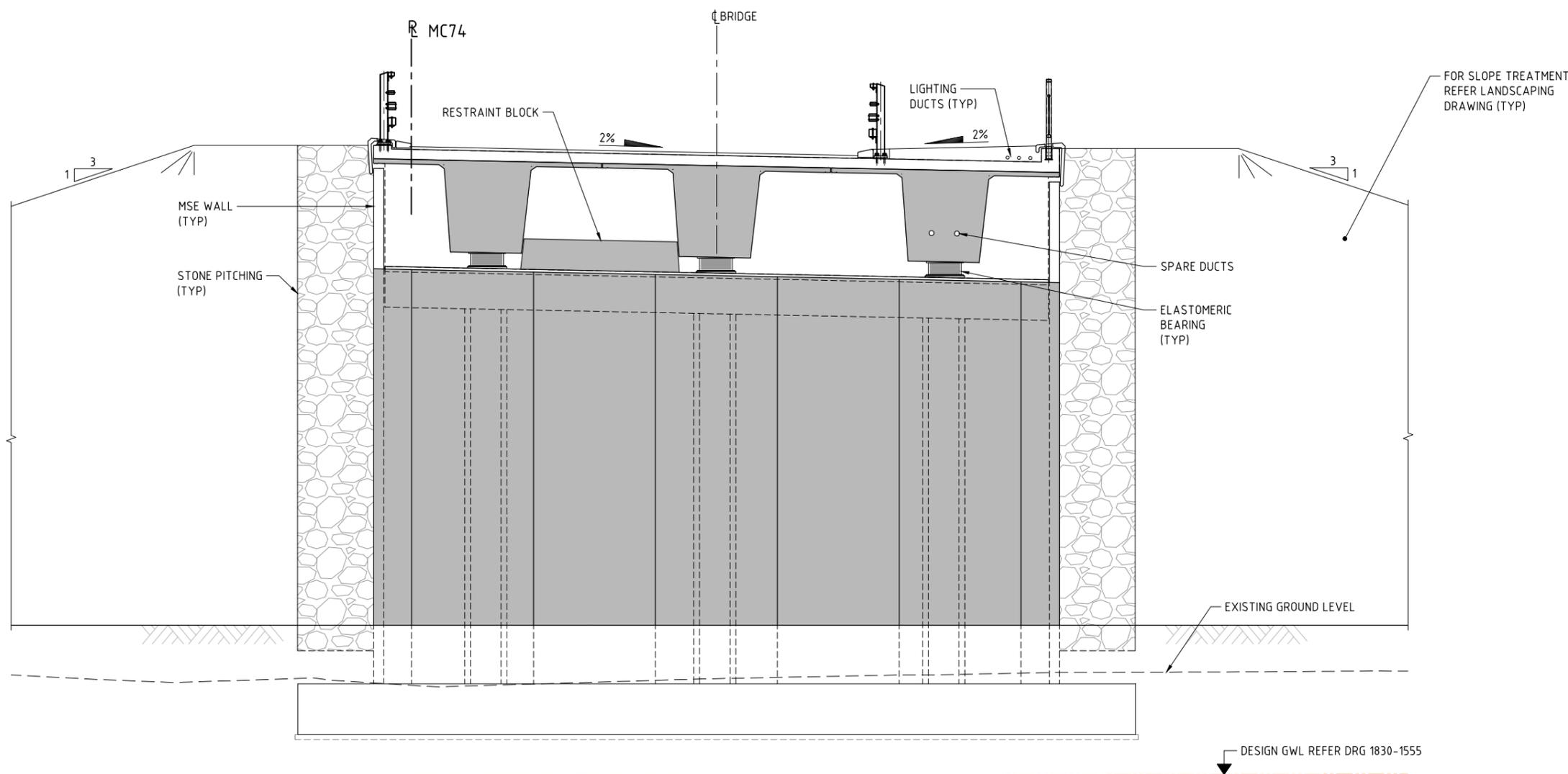
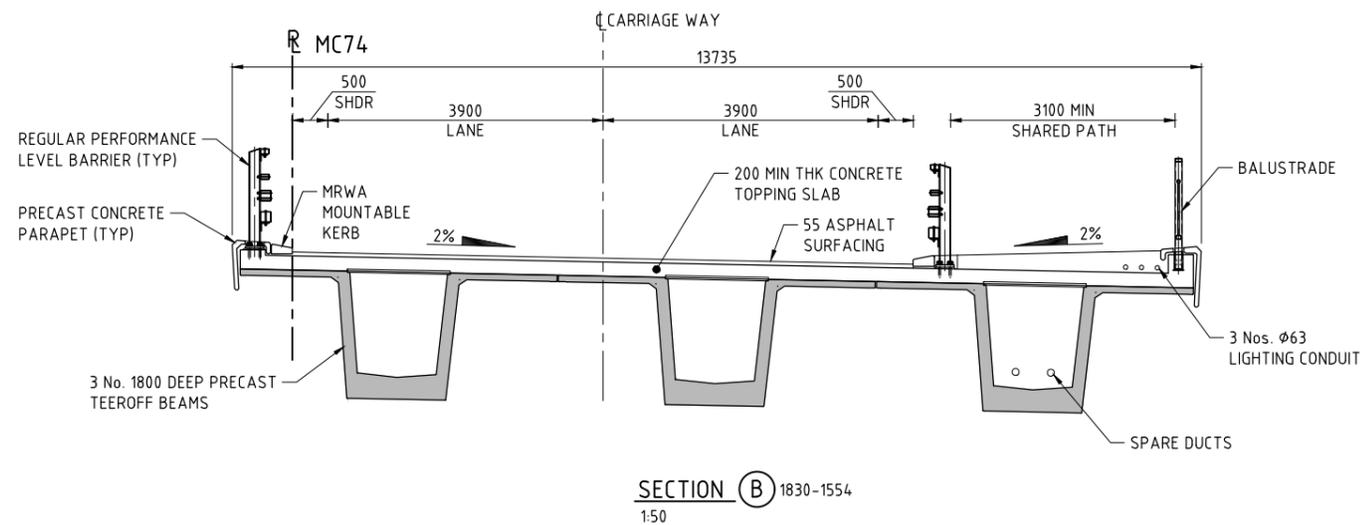
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| LOCAL AUTHORITY     | (109) CITY OF SWAN   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MRWA DRAWING NUMBER | 1830-1555  |                                |                     |
| PROJECT TITLE       | NORTHLINK WA CENTRAL SECTION   |                                |                     |
| DRAWING TITLE       | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>BRIDGE No. 1790<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.         | NL2-AAJ-DRG-0400-BR-1011   |                                |                     |

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SHEET A1

**NOTE:**

1. FOR GENERAL NOTES REFER TO 1830-1552 & 1553.
2. STONE PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 4.06 (TYP)



ELEVATION (C) 1830-1554  
1:50  
ELEVATION (D) SIMILAR BUT OPPOSITE HAND  
1:50

AS CONSTRUCTED  
DATE 22/01/19

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

**METADATA**

GROUND SURVEY STANDARD:  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD:  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN 01.12.17 DATE

DRAWN: F. ALPAPARA 09.02.17  
DESIGNED: X. LAM 09.02.17  
CHECKED: S. SERGEEV 09.02.17  
APPROVED: M. KAKULAS 09.02.17

VERIFIER: G. JOYNSON 08.12.17 DATE

CONSTRUCTOR: **Great Northern CONNECT**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER: G. XANTHIS 12.12.17 DATE  
PROJECT DIRECTOR: R. ARNOTT 12.12.17 DATE

LOCAL AUTHORITY: (109) CITY OF SWAN  
MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN REGION

MIRA DRAWING NUMBER: 1830-1556

PROJECT TITLE: NORTHLINK WA CENTRAL SECTION

DRAWING TITLE: TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE BRIDGE No. 1790 GENERAL ARRANGEMENT - SHEET 3

DRAWING No: NL2-AAJ-DRG-0400-BR-1012

**DRAWING INDEX**

| DRAWING NUMBER           | MRWA DRG No. | DESCRIPTION                                |
|--------------------------|--------------|--|
| NL2-AAJ-DRG-0410-UP-0001 | 1830-1602    | LOCALITY PLAN                              |
| NL2-AAJ-DRG-0410-UP-0002 | 1830-1603    | INDEX                                      |
| NL2-AAJ-DRG-0410-UP-0005 | 1830-1604    | GENERAL NOTES                              |
| NL2-AAJ-DRG-0410-UP-0010 | 1830-1605    | GENERAL ARRANGEMENT - SHEET 1              |
| NL2-AAJ-DRG-0410-UP-0011 | 1830-1606    | GENERAL ARRANGEMENT - SHEET 2              |
| NL2-AAJ-DRG-0410-UP-0012 | 1830-1607    | GENERAL ARRANGEMENT - SHEET 3              |
| NL2-AAJ-DRG-0410-UP-0013 | 1830-1608    | BOREHOLE DATA                              |
| NL2-AAJ-DRG-0410-UP-0015 | 1830-1609    | FOOTING CONCRETE DETAILS                   |
| NL2-AAJ-DRG-0410-UP-0020 | 1830-1610    | FOOTING REINFORCEMENT DETAILS              |
| NL2-AAJ-DRG-0410-UP-0025 | 1830-1611    | PRECAST UNITS - LAYOUT AND DETAILS         |
| NL2-AAJ-DRG-0410-UP-0030 | 1830-1612    | SPANDREL WALL LAYOUT AND DETAILS - SHEET 1 |
| NL2-AAJ-DRG-0410-UP-0031 | 1830-1613    | SPANDREL WALL LAYOUT AND DETAILS - SHEET 2 |
| NL2-AAJ-DRG-0410-UP-0032 | 1830-1614    | MSE WALL - TYPICAL DETAILS                 |
| NL2-AAJ-DRG-0410-UP-0040 | 1830-1615    | WING WALL LAYOUT                           |
| NL2-AAJ-DRG-0410-UP-0041 | 1830-1616    | WING WALL CONCRETE DETAILS                 |
| NL2-AAJ-DRG-0410-UP-0045 | 1830-1617    | SKYLIGHT DETAILS                           |
| NL2-AAJ-DRG-0410-UP-0050 | 1830-1618    | BALUSTRADE LAYOUT                          |
| NL2-AAJ-DRG-0410-UP-0060 | 1830-1619    | LUMINAIRE DETAILS                          |
| NL2-AAJ-DRG-0410-UP-0065 |              | DESIGN SUMMARY & LOADING RATING            |
| MRWA STANDARD DRAWINGS   |              |  |
| -                        | 0530-1087-1  | BRIDGE BALUSTRADE FOR PSP - SHEET 1        |
| -                        | 0530-1307-1  | BRIDGE BALUSTRADE FOR PSP - SHEET 2        |

**AS CONSTRUCTED**  
DATE 01/03/19

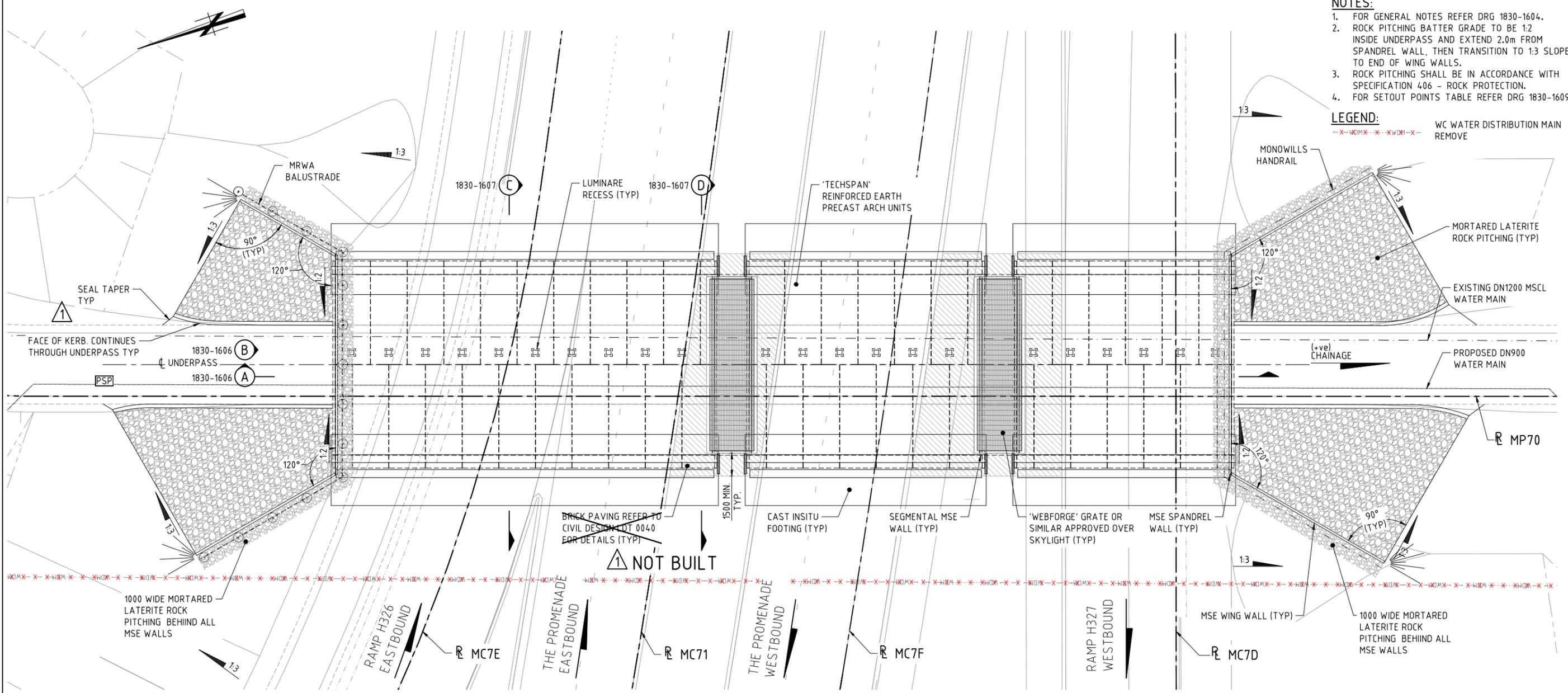
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|---|--|---|--|---|--|--|---|
| <b>METADATA</b><br>GROUND SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD:<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  | DESIGNER<br><br>DESIGNER: D. SULLIVAN<br>DATE: 16.01.19 | DRAWN: F. ALPAPARA 01.12.17<br>DESIGNED: T. SMITH 01.12.17<br>CHECKED: M. KAKULAS 01.12.17<br>APPROVED: M. KAKULAS 30.08.17<br>DRAWING STATUS: IFC | VERIFIER<br><br>VERIFIER: G. JOYNSON<br>DATE: 21.01.19 | CONSTRUCTOR<br> | <br>INFRASTRUCTURE DELIVERY DIRECTORATE<br>CONTRACT MANAGER: G. XANTHIS<br>PROJECT DIRECTOR: A. MAGNO | LOCAL AUTHORITY: (109) CITY OF SWAN<br>MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN REGION<br>MRWA DRAWING NUMBER: 1830-1603<br>PROJECT TITLE: NORTHLINK WA CENTRAL SECTION<br>DRAWING TITLE: TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE UNDERPASS No. 9432 INDEX<br>DRAWING No: NL2-AAJ-DRG-0410-UP-0002<br>DATE: 05.02.19<br>SCALE: A1<br>REV: 1 |
| AMENDMENTS<br>No. DESCRIPTION APPROVED & DATE<br>1 AS CONSTRUCTED - NO CHANGES M.N.K. 20.03.19<br>0 ISSUED FOR CONSTRUCTION M.N.K. 13.02.19                           |  |   |  |   |  |  |   |

- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-1604.
  - ROCK PITCHING BATTER GRADE TO BE 1:2 INSIDE UNDERPASS AND EXTEND 2.0m FROM SPANDREL WALL, THEN TRANSITION TO 1:3 SLOPE TO END OF WING WALLS.
  - ROCK PITCHING SHALL BE IN ACCORDANCE WITH SPECIFICATION 406 - ROCK PROTECTION.
  - FOR SETOUT POINTS TABLE REFER DRG 1830-1609.

**LEGEND:**  
 -X-WDMX-X-XWDX-X- WC WATER DISTRIBUTION MAIN REMOVE



**DESIGN INFORMATION SUMMARY:**

- DESIGNED IN ACCORDANCE WITH AS 5100-2004 'BRIDGE DESIGN CODE' UNO.
- TRAFFIC LOADS - 100% SM1600, HLP400 AND GROUP 2 VEHICLE 4 AND GROUP 2 VEHICLE 5 HEAVY LOAD PLATFORM VEHICLES DETAILED IN MAIN ROADS DOCUMENT 3912/02-2. HLP AND GROUP 2 VEHICLES SHALL BE POSITIONED ±1.0m FROM THE CENTERLINE OF CARRIAGEWAY. W80 AND A160 LOADS FOR SKYLIGHT.
- DESIGN LIFE 100YRS.
- EMBANKMENT LIVE LOAD 2.5kPa (STEEPER THAN 1:4)  
5.0kPa (ELSEWHERE)
- SURCHARGE ADJACENT TO SPANDREL WALL 10kPa VERGE  
20kPa MEDIAN/ISLAND
- WIND SPEED - ULS V2000 48m/s  
SLS V20 37m/s
- EARTHQUAKE LOADING PARAMETERS  
ACCELERATION COEFFICIENT, Z 0.09  
SITE FACTOR, S 1.25  
SUB SOIL CLASS Ce  
SPECTRAL SHAPE FACTOR Ch (T) 3.68 (1.3)  
BRIDGE CLASSIFICATION TYPE 2  
IMPORTANCE FACTOR 1.0  
BRIDGE EARTHQUAKE DESIGN CATEGORY BEDC-2  
PEAK GROUND ACCELERATION (PGA) 0.2g

- DIFFERENTIAL SETTLEMENT ALLOWANCE 20mm
- DEPTH OF FILL OVER STRUCTURE 1370mm MIN, 2100mm MAX
- MAXIMUM APPLIED BEARING PRESSURE (BASED ON MYERHOF DISTRIBUTION) 135kPa

**GEOTECHNICAL SUMMARY:**

- BULK SOIL UNIT WEIGHT 18kN/m<sup>3</sup> (DRY)  
20kN/m<sup>3</sup> (SATURATED)
- ANGLE OF INTERNAL FRICTION 36° (SELECT BACKFILL)  
35° (EXISTING SUB-SURFACE)
- COHESION NIL
- GEOTECHNICAL STRENGTH REDUCTION FACTOR 0.50

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 01/03/19

| AMENDMENTS |                               | METADATA                       |                   |
|------------|-------------------------------|--------------------------------|-------------------|
| No.        | DESCRIPTION                   | APPROVED & DATE                | DATE OF CAPTURE   |
| 1          | BRICK PAVING NOT BUILT        | M.N.K. 20.03.19                | DATE OF CAPTURE:  |
| 0          | KERB AND SEAL TAPER CLARIFIED | M.N.K. 13.02.19                | DATE OF CAPTURE:  |
|            |                               | APPROVED & DATE                | DATE OF CAPTURE:  |
|            |                               | MAIN ROADS PROJECT ZONE: PCG94 | HEIGHT DATUM: AHD |

DESIGNER  
  
 DESIGN MANAGER D. SULLIVAN 16.01.19 DATE

|                |               |          |
|----------------|---------------|----------|
| DRAWN          | R. BULLINGHAM | 30.08.17 |
| DESIGNED       | P. DOBSON     | 30.08.17 |
| CHECKED        | M. KAKULAS    | 30.08.17 |
| APPROVED       | M. KAKULAS    | 30.08.17 |
| DRAWING STATUS | IFC           |          |

VERIFIED G. JOYNSON  
  
 DATE 21.01.19

CONSTRUCTOR

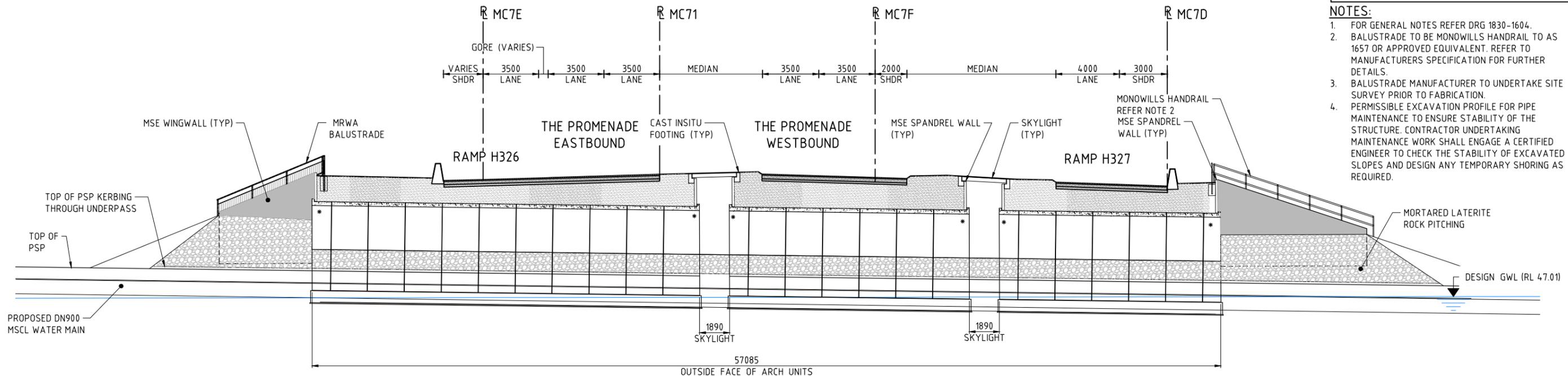
CONTRACT MANAGER G. XANTHIS  
  
 INFRASTRUCTURE DELIVERY DIRECTORATE  
 PROJECT DIRECTOR A. MAGNO 05.02.19 DATE

LOCAL AUTHORITY (109) CITY OF SWAN MAIN ROADS RESPONSIBILITY AREA METROPOLITAN REGION  
 MWA DRAWING NUMBER 1830-1605  
 PROJECT TITLE NORTHLINK WA CENTRAL SECTION  
 DRAWING TITLE TONKIN HIGHWAY (H017) THE PROMENADE INTERCHANGE UNDERPASS No. 9432 GENERAL ARRANGEMENT - SHEET 1  
 DRAWING No. NL2-AAJ-DRG-0410-UP-0010

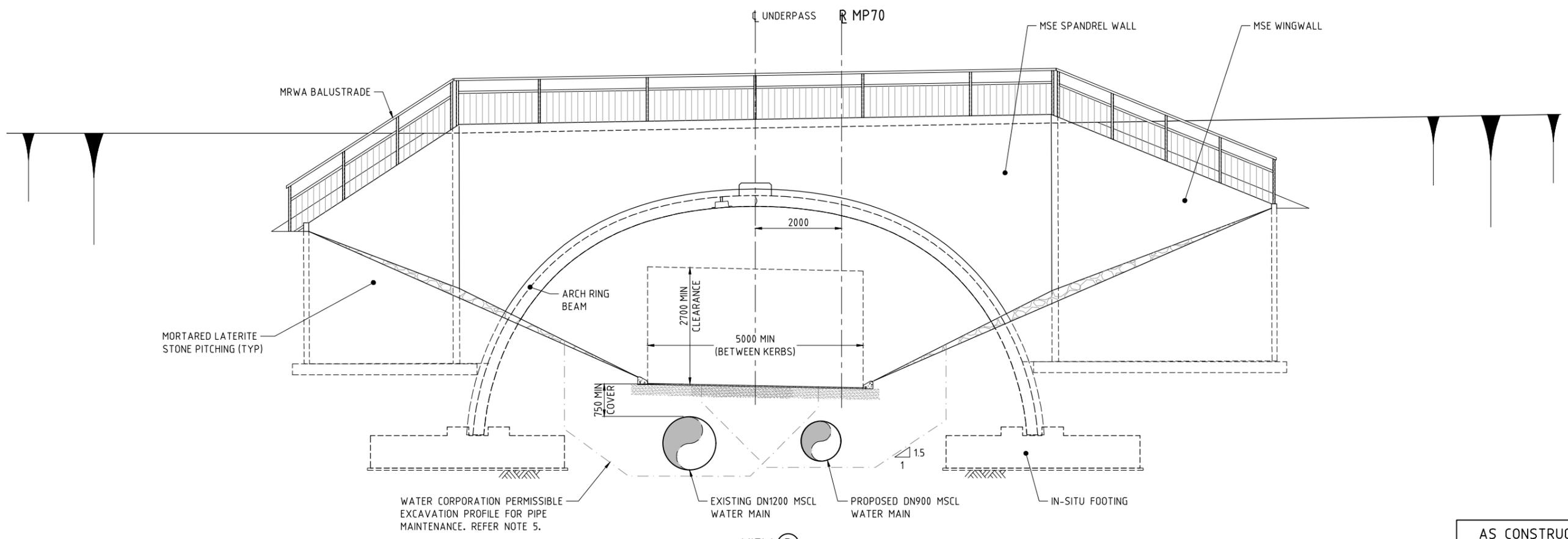
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SCALE 1:125 SHEET A1

- NOTES:**
- FOR GENERAL NOTES REFER DRG 1830-1604.
  - BALUSTRADE TO BE MONOWILLS HANDRAIL TO AS 1657 OR APPROVED EQUIVALENT. REFER TO MANUFACTURERS SPECIFICATION FOR FURTHER DETAILS.
  - BALUSTRADE MANUFACTURER TO UNDERTAKE SITE SURVEY PRIOR TO FABRICATION.
  - PERMISSIBLE EXCAVATION PROFILE FOR PIPE MAINTENANCE TO ENSURE STABILITY OF THE STRUCTURE. CONTRACTOR UNDERTAKING MAINTENANCE WORK SHALL ENGAGE A CERTIFIED ENGINEER TO CHECK THE STABILITY OF EXCAVATED SLOPES AND DESIGN ANY TEMPORARY SHORING AS REQUIRED.



**SECTION (A) 1830-1605**  
1:125  
\* DENOTES TAPERED END UNIT



**VIEW (B) 1830-1605**  
1:50

**AS CONSTRUCTED**  
DATE 01/03/19

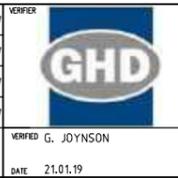
THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING.  
M. Kakulas

**METADATA**

|                                |  |                            |  |
|--------------------------------|--|----------------------------|--|
| GROUND SURVEY STANDARD:        |  | M.N.K. 20.03.19            |  |
| DATE OF CAPTURE:               |  | M.N.K. 13.02.19            |  |
| MAPPING SURVEY STANDARD:       |  | DATE OF CAPTURE:           |  |
| MAIN ROADS PROJECT ZONE: PCG94 |  | HEIGHT DATUM: AHD          |  |
| DESIGNER                       |  | DESIGN MANAGER D. SULLIVAN |  |
| DATE 16.01.19                  |  | DATE                       |  |



|                |               |          |
|----------------|---------------|----------|
| DESIGNER       | R. BULLINGHAM | 30.08.17 |
| DESIGNED       | P. DOBSON     | 30.08.17 |
| CHECKED        | M. KAKULAS    | 30.08.17 |
| APPROVED       | M. KAKULAS    | 30.08.17 |
| DRAWING STATUS | IFC           |          |



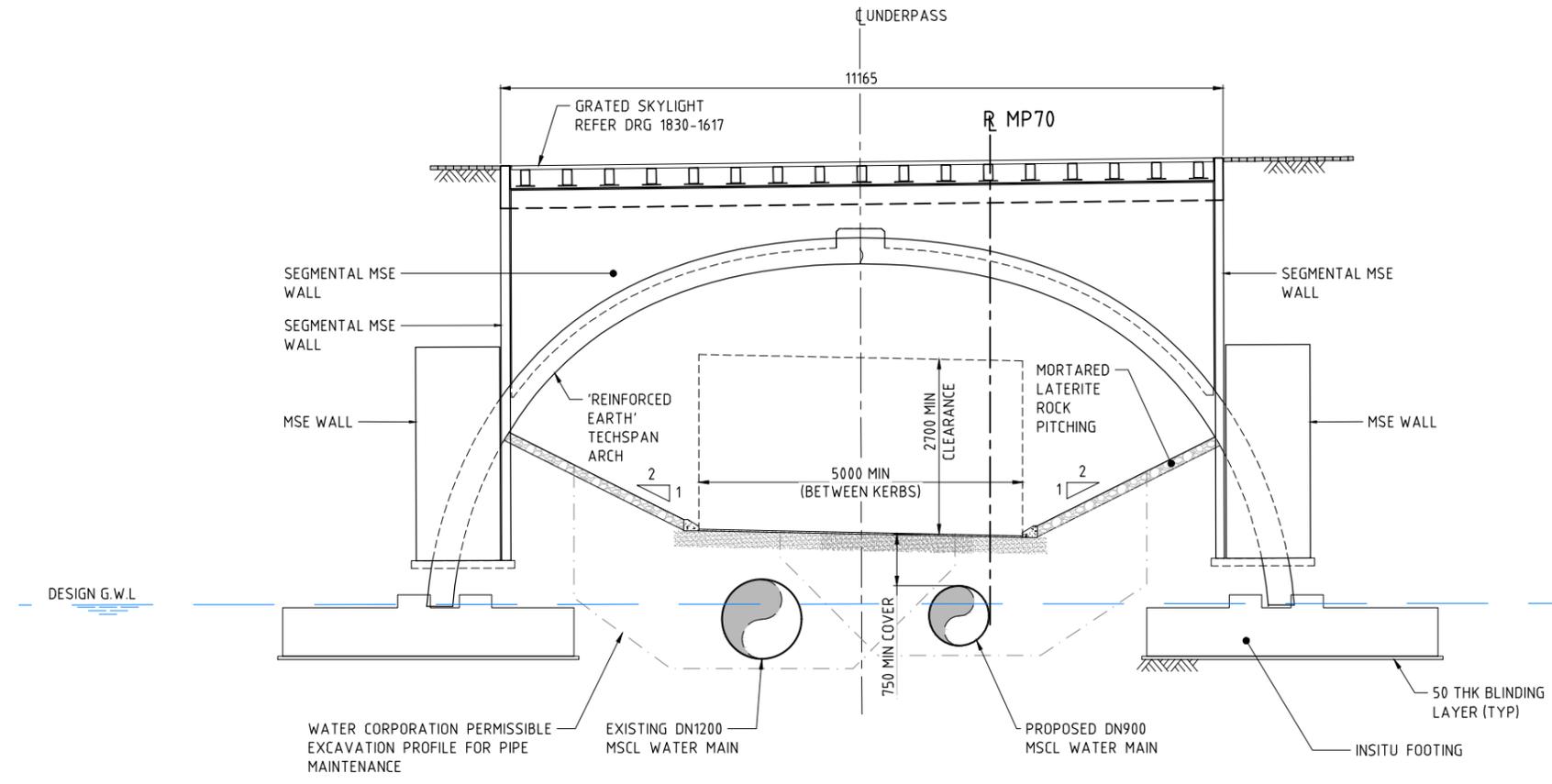
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| CONTRACT MANAGER | G. XANTHIS | 05.02.19 |
| PROJECT DIRECTOR | A. MAGNO   | 05.02.19 |

|                    |   |                                |                     |
|--------------------|---|--------------------------------|---------------------|
| LOCAL AUTHORITY    | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN REGION |
| MWA DRAWING NUMBER | 1830-1606   |                                |                     |
| PROJECT TITLE      | NORTHLINK WA CENTRAL SECTION  |                                |                     |
| DRAWING TITLE      | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>UNDERPASS No. 9432<br>GENERAL ARRANGEMENT - SHEET 2 |                                |                     |
| DRAWING No.        | NL2-AAJ-DRG-0410-UP-0011  |                                |                     |

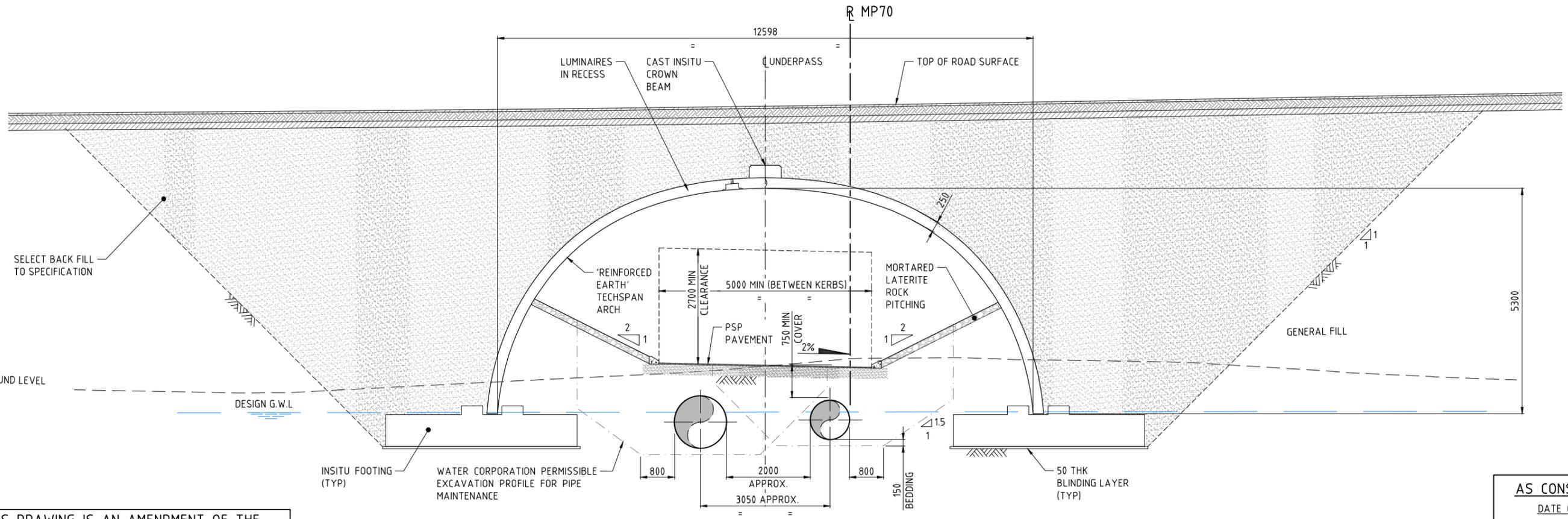
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NOTE:  
1. FOR GENERAL NOTES REFER DRG 1830-1604.



SECTION D 1830-1605  
1:50



SECTION C 1830-1605  
1:50

THIS DRAWING IS AN AMENDMENT OF THE APPROVED DRAWING. M. Kakulas

AS CONSTRUCTED  
DATE 01/03/19

**METADATA**

|                          |       |
|--------------------------|-------|
| GROUND SURVEY STANDARD:  |       |
| DATE OF CAPTURE:         |       |
| MAPPING SURVEY STANDARD: |       |
| DATE OF CAPTURE:         |       |
| MAIN ROADS PROJECT ZONE: | PCG94 |
| HEIGHT DATUM:            | AHD   |

DESIGNER: **AAJV AECOM ARCADIS**

DESIGN MANAGER: D. SULLIVAN

|          |               |          |
|----------|---------------|----------|
| DRW      | R. BULLINGHAM | 30.08.17 |
| DESIGNED | P. DOBSON     | 30.08.17 |
| CHECKED  | M. KAKULAS    | 30.08.17 |
| APPROVED | M. KAKULAS    | 30.08.17 |
| DATE     | 16.01.19      |          |

VERIFIED: **GHD**

VERIFIED: G. JOYNSON

DATE: 21.01.19

CONSTRUCTOR: **Great Northern CONNECT**

INFRASTRUCTURE DELIVERY DIRECTORATE

CONTRACT MANAGER: G. XANTHIS

PROJECT DIRECTOR: A. MAGNO

|                     |   |                                 |                              |
|---------------------|---|---------------------------------|------------------------------|
| LOCAL AUTHORITY:    | (109) CITY OF SWAN  | MAIN ROADS RESPONSIBILITY AREA: | METROPOLITAN REGION          |
| MWA DRAWING NUMBER: | 1830-1607   | PROJECT TITLE:                  | NORTHLINK WA CENTRAL SECTION |
| DRAWING TITLE:      | TONKIN HIGHWAY (H017)<br>THE PROMENADE INTERCHANGE<br>UNDERPASS No. 9432<br>GENERAL ARRANGEMENT - SHEET 3 | DRAWING No.:                    | NL2-AAJ-DRG-0410-UP-0012     |

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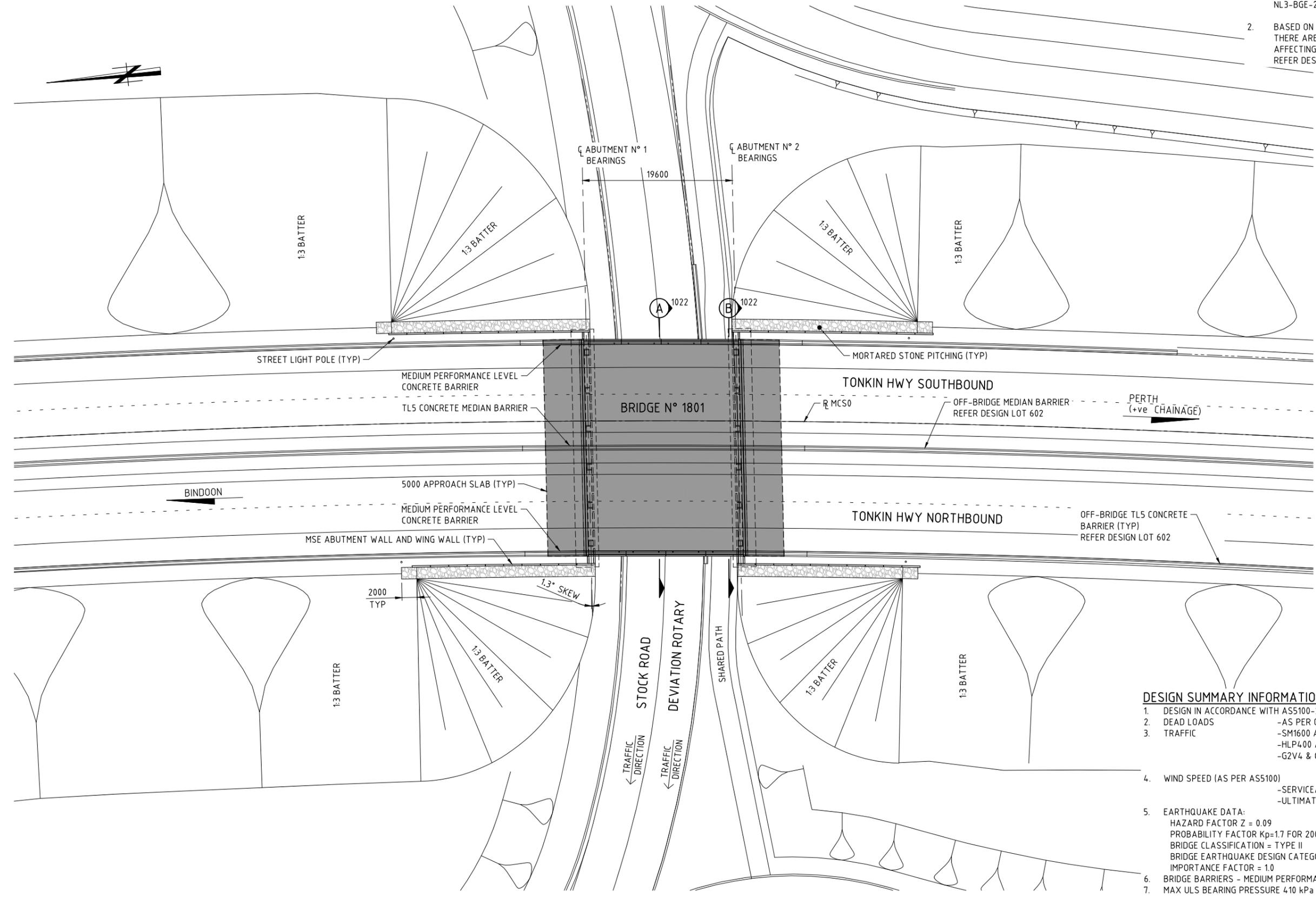


SHEET A1



**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-1005.
- BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 602.



**BRIDGE N° 1801 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS -AS PER CODE.
- TRAFFIC -SM1600 AS PER CODE  
-HLP400 AS PER CODE  
-G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM
- WIND SPEED (AS PER AS5100)  
-SERVICEABILITY V20 = 37m/s  
-ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:  
HAZARD FACTOR Z = 0.09  
PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.  
BRIDGE CLASSIFICATION = TYPE II  
BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2  
IMPORTANCE FACTOR = 1.0
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL
- MAX ULS BEARING PRESSURE 410 kPa  
MAX SLS BEARING PRESSURE 300 kPa
- FATIGUE ROUTE FACTOR RF=1 No.
- HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 3022

1:250  
SCALE  
A  
1

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
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P /+61 8 6364 3300  
E /info@bgeeng.com  
bgeeng.com



|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 19.02.18 |
| DESIGNED       | J. JAMESON  | 19.02.18 |
| CHECKED        | P. THOMPSON | 19.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 23.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 23.03.18 |

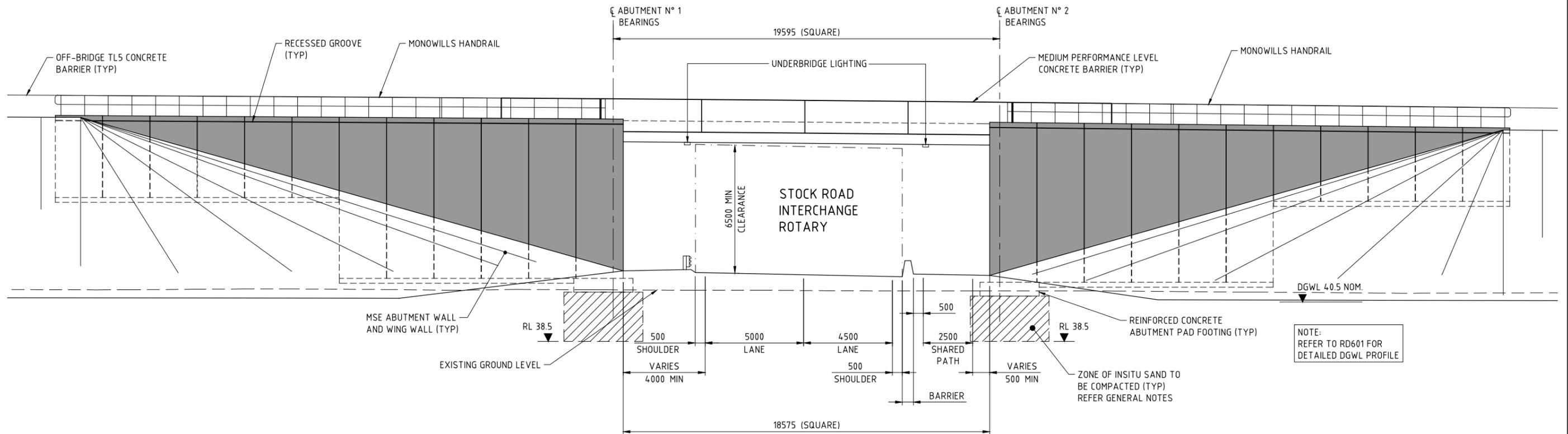
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|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 27.03.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 28.03.18 |

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (15.90 SLK)<br>BRIDGE N° 1801 OVER STOCK ROAD WEST INTERCHANGE<br>GENERAL ARRANGEMENT PLAN |                                |                          |
| DRAWING No.         | NL3-BGE-210-ST-DG-1020   |                                | REV 0                    |

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-1005.



**BRIDGE N° 1801 ELEVATION**  
1:100

NOTE:  
REFER TO RD601 FOR  
DETAILED DGWL PROFILE

1:100  
SCALE  
A  
1

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

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P /+61 8 6364 3300  
E /info@bgeeng.com  
bgeeng.com—



|          |             |          |
|----------|-------------|----------|
| DRAWN    | K. TAYLOR   | 19.02.18 |
| DESIGNED | J. JAMESON  | 19.02.18 |
| CHECKED  | P. THOMPSON | 19.02.18 |
| APPROVED | C. RAMM     | 02.03.18 |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

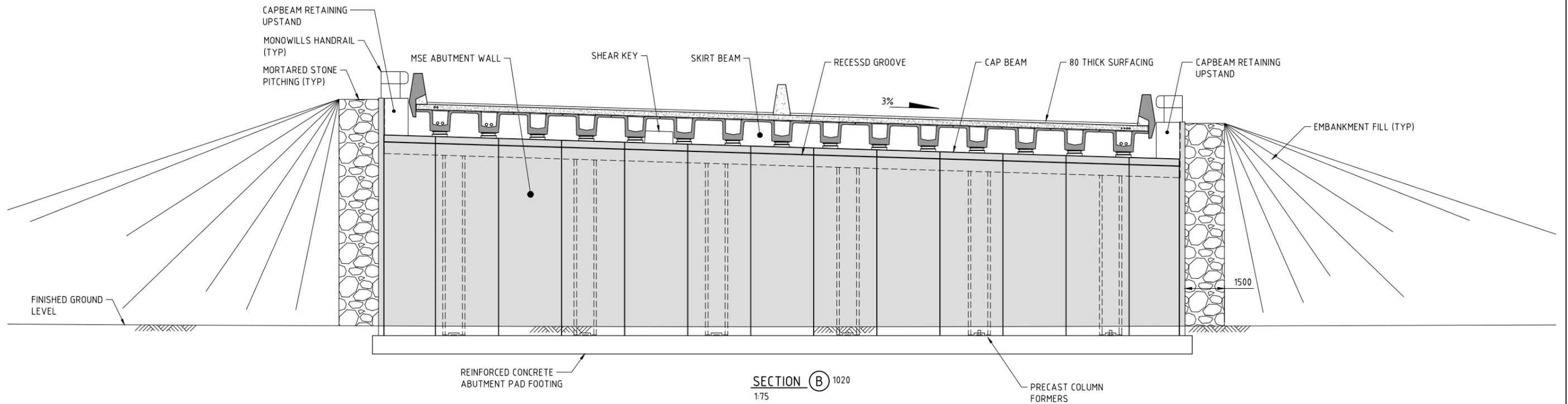
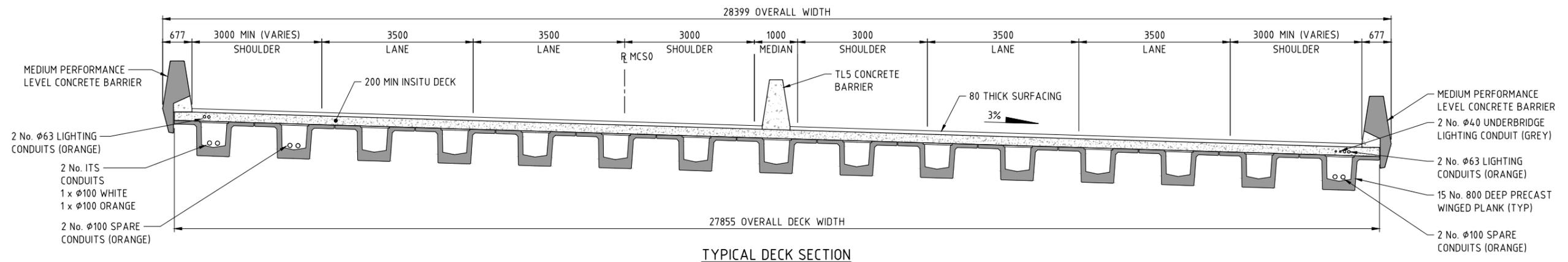
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|----------|-----------|----------|
| VERIFIED | R. DENHAM | 21.03.18 |
|----------|-----------|----------|

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 23.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 23.03.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 27.03.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 28.03.18 |

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (15.90 SLK)<br>BRIDGE N° 1801 OVER STOCK ROAD WEST INTERCHANGE<br>GENERAL ARRANGEMENT ELEVATION |                                |                          |
| DRAWING No.         | NL3-BGE-210-ST-DG-1021  |                                |                          |
| REV                 | 0   |                                |                          |

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-1005.



1:75  
1:50  
SCALE  
A  
1

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

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bgeeng.com

BG & E

BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 19.02.18 |
| DESIGNED       | J. JAMESON  | 19.02.18 |
| CHECKED        | P. THOMPSON | 19.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

**CPB CONTRACTORS**

**mainroads WESTERN AUSTRALIA**  
INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  | PROJECT TITLE                  | NORTHLINK WA STAGE 3     |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (15.90 SLK) BRIDGE N° 1801 OVER STOCK ROAD WEST INTERCHANGE GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.         | NL3-BGE-210-ST-DG-1022   | REV                            | 0                        |

|     |                         |                 |
|-----|-------------------------|-----------------|
| 0   | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| No. | DESCRIPTION             | APPROVED & DATE |
|     | AMENDMENTS              |                 |

**NORTHLINK STAGE 3  
DRAWING INDEX**

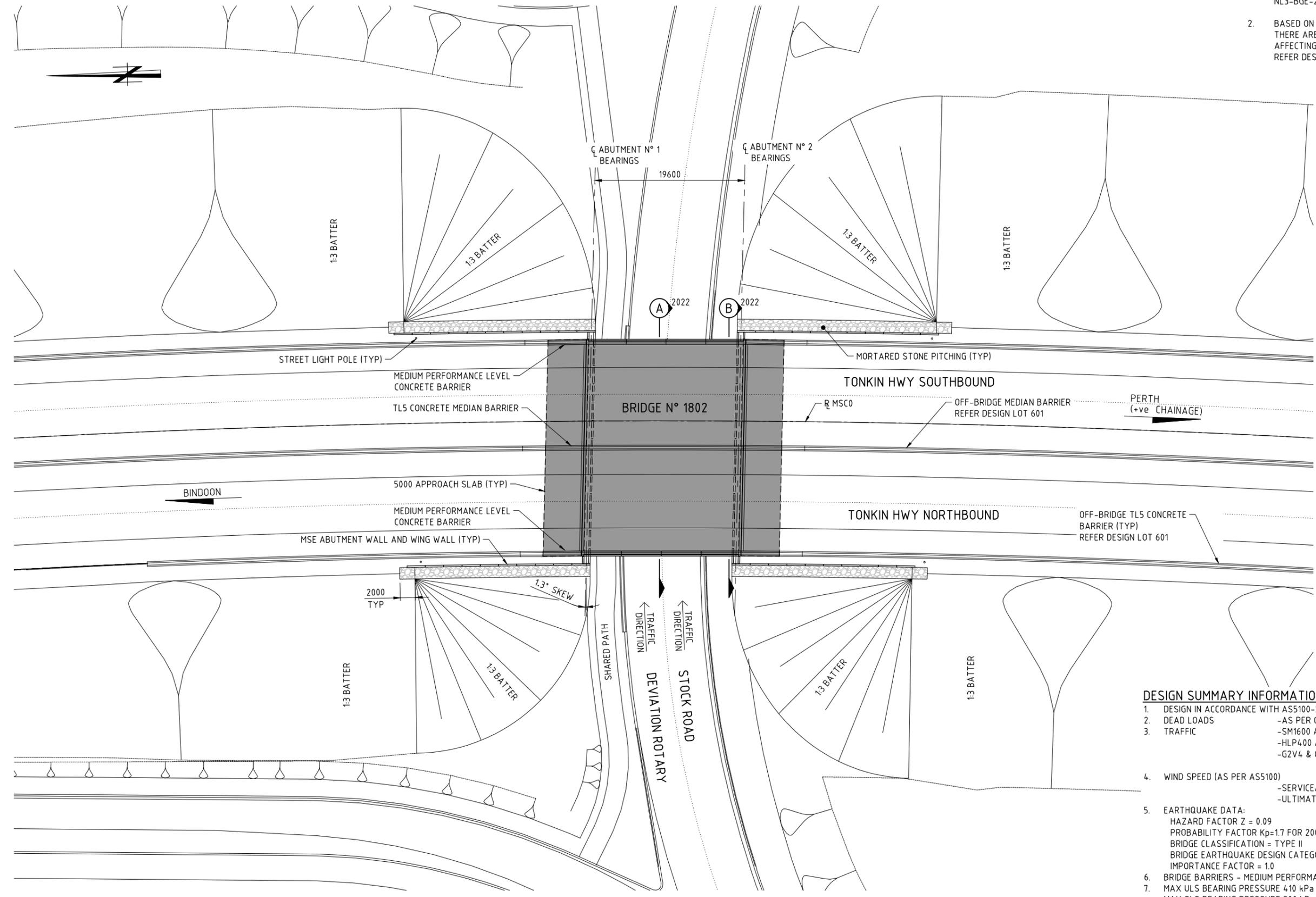
| DRG N°                 | DRAWING TITLE   | DRG N°                 | DRAWING TITLE                                   | MRWA REFERENCE DRAWINGS                                       |
|------------------------|---|------------------------|---|---|
| <b>GENERAL</b>         |   |                        |   |   |
| NL3-BGE-210-ST-DG-2000 | COVER SHEET   | NL3-BGE-210-ST-DG-2315 | DECK REINFORCEMENT PLAN                         | 9230-0921-6 LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS |
| NL3-BGE-210-ST-DG-2001 | INDEX SHEET   | NL3-BGE-210-ST-DG-2320 | DECK REINFORCEMENT ELEVATION                    |   |
|                        |   | NL3-BGE-210-ST-DG-2330 | DECK REINFORCEMENT SECTIONS AND DETAILS         |   |
| NL3-BGE-210-ST-DG-2005 | GENERAL NOTES   |                        |   |   |
| NL3-BGE-210-ST-DG-2008 | CONSTRUCTION NOTES  | NL3-BGE-210-ST-DG-2340 | DECK WATERPROOFING PLAN AND DETAILS             |   |
|                        |   | NL3-BGE-210-ST-DG-2350 | APPROACH SLAB CONCRETE PLAN AND DETAILS         |   |
| NL3-BGE-210-ST-DG-2010 | DESIGN SUMMARY SHEET 1 OF 3                                     | NL3-BGE-210-ST-DG-2355 | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS   |   |
| NL3-BGE-210-ST-DG-2011 | DESIGN SUMMARY SHEET 2 OF 3                                     |                        |   |   |
| NL3-BGE-210-ST-DG-2012 | DESIGN SUMMARY SHEET 3 OF 3                                     | NL3-BGE-210-ST-DG-2360 | EXPANSION JOINT PLAN AND SECTIONS               |   |
| NL3-BGE-210-ST-DG-2020 | GENERAL ARRANGEMENT PLAN  | NL3-BGE-210-ST-DG-2365 | COVER PLATE PLAN AND SECTIONS                   |   |
| NL3-BGE-210-ST-DG-2021 | GENERAL ARRANGEMENT ELEVATION                                   | NL3-BGE-210-ST-DG-2366 | COVER PLATE DETAILS                             |   |
| NL3-BGE-210-ST-DG-2022 | GENERAL ARRANGEMENT SECTIONS                                    |                        |   |   |
| NL3-BGE-210-ST-DG-2040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                     | NL3-BGE-210-ST-DG-2370 | BARRIER LAYOUT PLAN AND DETAILS                 |   |
| NL3-BGE-210-ST-DG-2041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                     | NL3-BGE-210-ST-DG-2375 | BARRIER SECTIONS AND DETAILS                    |   |
| NL3-BGE-210-ST-DG-2050 | GEOMETRIC DATA  | NL3-BGE-210-ST-DG-2380 | PRECAST PANEL PLANS AND ELEVATIONS – SHEET 1    |   |
|                        |   | NL3-BGE-210-ST-DG-2381 | PRECAST PANEL PLANS AND ELEVATIONS – SHEET 2    |   |
|                        |   | NL3-BGE-210-ST-DG-2385 | PRECAST PANEL REINFORCEMENT DETAILS             |   |
|                        |   | NL3-BGE-210-ST-DG-2395 | INSITU BARRIER STITCH ELEVATION AND DETAILS     |   |
|                        |   | NL3-BGE-210-ST-DG-2400 | INSITU TRANSITION BARRIER ELEVATION AND DETAILS |   |
|                        |   | NL3-BGE-210-ST-DG-2401 | INSITU TRANSITION BARRIER REINFORCEMENT DETAILS |   |
|                        |   | NL3-BGE-210-ST-DG-2430 | SERVICES LAYOUT PLAN AND SECTIONS               |   |
|                        |   | NL3-BGE-210-ST-DG-2431 | SERVICES SECTION AND DETAILS                    |   |
|                        |   | NL3-BGE-210-ST-DG-2450 | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS   |   |
| <b>SUB-STRUCTURE</b>   |   |                        |   |   |
| NL3-BGE-210-ST-DG-2080 | ABUTMENT N° 1 MSE WALL PLAN AND ELEVATION                       |                        |   |   |
| NL3-BGE-210-ST-DG-2081 | ABUTMENT N° 2 MSE WALL PLAN AND ELEVATION                       |                        |   |   |
| NL3-BGE-210-ST-DG-2082 | ABUTMENT MSE WALL DETAILS                                       |                        |   |   |
| NL3-BGE-210-ST-DG-2100 | ABUTMENT N° 1 FOOTING CONCRETE PLAN AND SECTIONS                |                        |   |   |
| NL3-BGE-210-ST-DG-2105 | ABUTMENT N° 2 FOOTING CONCRETE PLAN AND SECTIONS                |                        |   |   |
| NL3-BGE-210-ST-DG-2110 | ABUTMENT N° 1 AND N° 2 FOOTING REINFORCEMENT PLAN AND SECTIONS  |                        |   |   |
| NL3-BGE-210-ST-DG-2115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS        |                        |   |   |
| NL3-BGE-210-ST-DG-2120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS |                        |   |   |
| NL3-BGE-210-ST-DG-2125 | ABUTMENT N° 1 CAP BEAM CONCRETE PLAN, ELEVATION AND SECTIONS    |                        |   |   |
| NL3-BGE-210-ST-DG-2127 | ABUTMENT N° 2 CAP BEAM CONCRETE PLAN, ELEVATION AND SECTIONS    |                        |   |   |
| NL3-BGE-210-ST-DG-2130 | ABUTMENT N° 1 AND N° 2 CAPBEAM REINFORCEMENT PLAN AND SECTIONS  |                        |   |   |
| NL3-BGE-210-ST-DG-2190 | BEARINGS PLAN AND NOTES   |                        |   |   |
| NL3-BGE-210-ST-DG-2191 | BEARINGS SECTIONS AND DETAILS                                   |                        |   |   |
| <b>SUPER-STRUCTURE</b> |   |                        |   |   |
| NL3-BGE-210-ST-DG-2200 | PRECAST PLANK LAYOUT PLAN AND DETAILS                           |                        |   |   |
| NL3-BGE-210-ST-DG-2210 | PRECAST PLANK CONCRETE PLAN AND SECTIONS                        |                        |   |   |
| NL3-BGE-210-ST-DG-2220 | PRECAST PLANK CONCRETE SECTIONS AND DETAILS                     |                        |   |   |
| NL3-BGE-210-ST-DG-2240 | PRECAST PLANK PRESTRESS LAYOUT AND NOTES                        |                        |   |   |
| NL3-BGE-210-ST-DG-2250 | PRECAST PLANK REINFORCEMENT PLAN AND SECTION                    |                        |   |   |
| NL3-BGE-210-ST-DG-2260 | PRECAST PLANK REINFORCEMENT SECTIONS                            |                        |   |   |
| NL3-BGE-210-ST-DG-2270 | PRECAST PLANK REINFORCEMENT ABUTMENT & INTERNAL DIAPHRAGMS      |                        |   |   |
| NL3-BGE-210-ST-DG-2300 | DECK CONCRETE PLAN AND DETAILS                                  |                        |   |   |
| NL3-BGE-210-ST-DG-2310 | DECK CONCRETE PLAN AND ELEVATIONS                               |                        |   |   |
| NL3-BGE-210-ST-DG-2311 | DECK CONCRETE SECTIONS AND DETAILS                              |                        |   |   |

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|                           |  |                 |  |  |  |   |  |   |  |   |  |   |  |   |  |   |  |  |  |   |  |
|---------------------------|--|-----------------|--|--|--|---|--|---|--|---|--|---|--|---|--|---|--|--|--|---|--|
|                           |  | <b>METADATA</b> |  | Perth Office—<br>484 Murray St, Perth WA 6000<br>P /+61 8 6364 3300<br>E / info@bgeeng.com<br>bgeeng.com |  |  |  | DRAWN: K. TAYLOR 23.02.18<br>DESIGNED: J. JAMESON 23.02.18<br>CHECKED: P. THOMPSON 23.02.18<br>APPROVED: C. RAMM 20.03.18 |  | Keliogg Brown & Root Pty Ltd<br><br>ABN 91 007 660 317<br>Level 15, 300 Murray St, Perth<br>Western Australia 6000 |  |  |  |  |  | LOCAL AUTHORITY: CITY OF SWAN (109)    MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT<br>MRWA DRAWING NUMBER: |  | PROJECT TITLE: <b>NORTHLINK WA STAGE 3</b>             |  | DRAWING TITLE: <b>TONKIN HIGHWAY H017 (15.76 SLK) BRIDGE N° 1802 OVER STOCK ROAD WEST INTERCHANGE INDEX SHEET</b> |  |
| 0 ISSUED FOR CONSTRUCTION |  | PDT 10.04.18    |  | DATE OF CAPTURE: 67-08-43  |  | DATE OF CAPTURE: 67-08-43   |  | DRAWING STATUS: IFC   |  | VERIFIED: R. DENHAM 26.03.18<br>DATE:   |  | PROJECT MANAGER: S. NICOLAY 27.03.18<br>DATE:   |  | PROJECT MANAGER: Y. SIDDIQUI 28.03.18<br>DATE:  |  | PROJECT DIRECTOR: R. ARNOTT 29.03.18<br>DATE:   |  | DRAWING No: <b>NL3-BGE-210-ST-DG-2001</b> REV <b>0</b> |  |   |  |
| AMENDMENTS                |  | APPROVED & DATE |  | MAIN ROADS PROJECT ZONE: PCG94   |  | HEIGHT DATUM: AHD   |  | BG&E DOC No: P17077   |  |   |  |   |  |   |  |   |  |  |  |   |  |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-2005.
- BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT RD 602.



**BRIDGE N° 1802 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS - AS PER CODE.
- TRAFFIC - SM1600 AS PER CODE.  
-HLP400 AS PER CODE  
-G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM
- WIND SPEED (AS PER AS5100)  
-SERVICEABILITY V20 = 37m/s  
-ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:  
HAZARD FACTOR Z = 0.09  
PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.  
BRIDGE CLASSIFICATION = TYPE II  
BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2  
IMPORTANCE FACTOR = 1.0
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL  
MAX ULS BEARING PRESSURE 410 kPa  
MAX SLS BEARING PRESSURE 300 kPa
- FATIGUE ROUTE FACTOR RF=1 No.
- HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 3022

1:250  
SCALE  
A  
1

**METADATA**

|                          |              |
|--------------------------|--------------|
| GROUND SURVEY STANDARD:  | 67-08-43     |
| DATE OF CAPTURE:         |              |
| MAPPING SURVEY STANDARD: | 67-08-43     |
| DATE OF CAPTURE:         | PDT 10.04.18 |
| MAIN ROADS PROJECT ZONE: | PCG94        |
| HEIGHT DATUM:            | AHD          |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P /+61 8 6364 3300  
E /info@bgeeng.com  
bgeeng.com—



|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 23.02.18 |
| DESIGNED       | J. JAMESON  | 23.02.18 |
| CHECKED        | P. THOMPSON | 23.02.18 |
| APPROVED       | C. RAMM     | 20.03.18 |
| DRAWING STATUS | IFC         |          |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 27.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 26.03.18 |

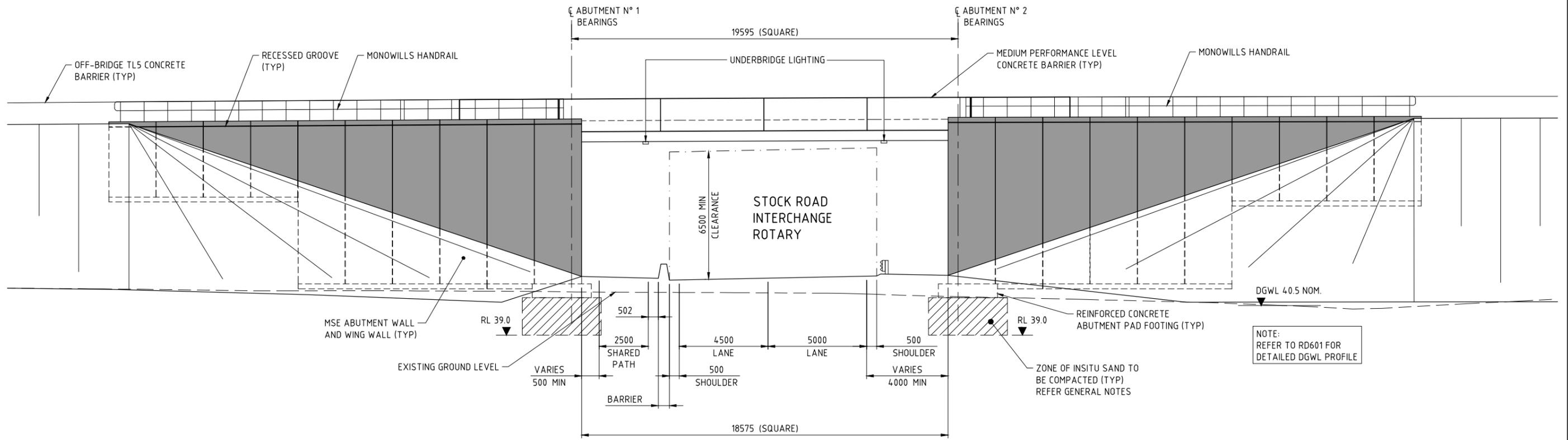
|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 28.03.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 29.03.18 |

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (15.76 SLK)<br>BRIDGE N° 1802 OVER STOCK ROAD WEST INTERCHANGE<br>GENERAL ARRANGEMENT PLAN |                                |                          |
| DRAWING No.         | NL3-BGE-210-ST-DG-2020   |                                |                          |
| REV                 | 0  |                                |                          |

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-2005.

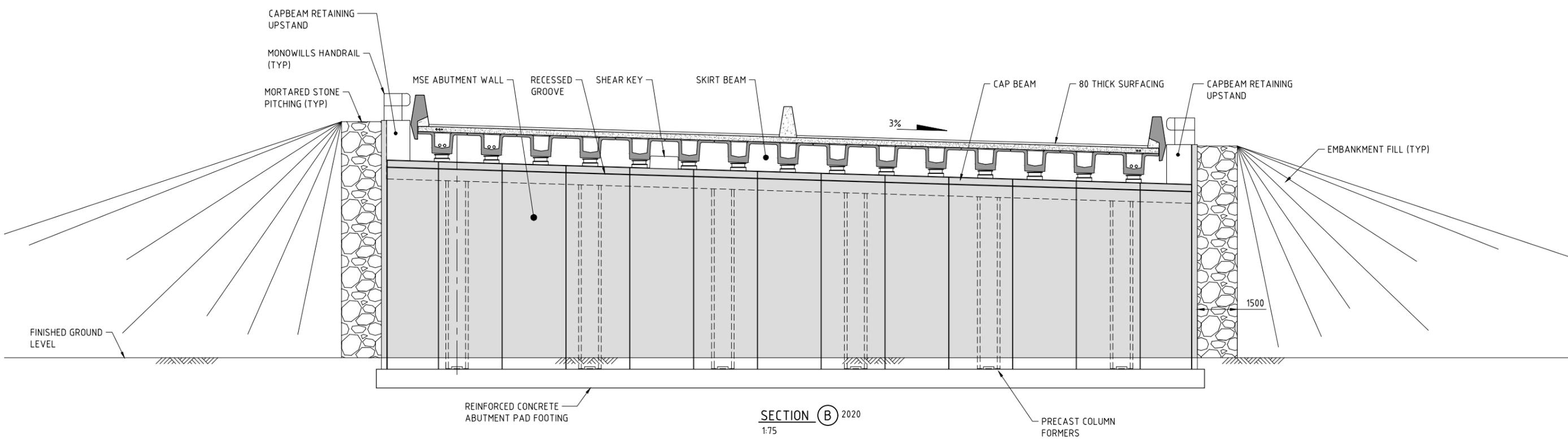
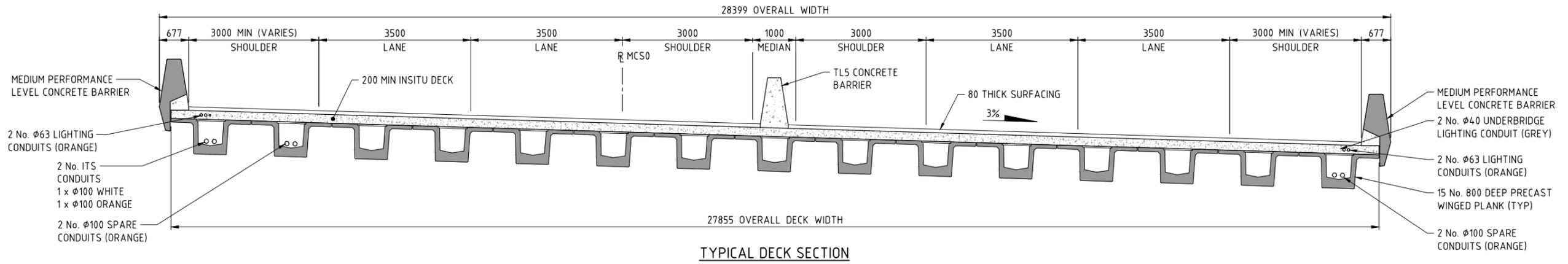


**BRIDGE N° 1802 ELEVATION**  
1:100

SCALE 1:100 A 1

|  |                   |   |                            |  |  |  |  |  |
|--|-------------------|---|----------------------------|--|--|--|--|--|
| <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD: 67-08-43<br/>         DATE OF CAPTURE:<br/>         MAPPING SURVEY STANDARD: 67-08-43<br/>         DATE OF CAPTURE:<br/>         MAIN ROADS PROJECT ZONE: PCG94<br/>         HEIGHT DATUM: AHD</p> |                   | <p><b>Perth Office—</b><br/>         484 Murray St, Perth WA 6000<br/>         P /+61 8 6364 3300<br/>         E / info@bgeeng.com<br/>         bgeeng.com—</p> |                            | <p>DRAWN: K. TAYLOR 22.11.17<br/>         DESIGNED: J. JAMESON 22.11.17<br/>         CHECKED: P. THOMPSON 22.11.17<br/>         APPROVED: C. RAMM 20.03.18</p> | <p><b>Kellogg Brown &amp; Root Pty Ltd</b><br/> <b>KBR</b><br/>         ABN 91 007 660 317<br/>         Level 15, 300 Murray St, Perth<br/>         Western Australia 6000</p> |  | <p>INFRASTRUCTURE DELIVERY DIRECTORATE</p> | <p>LOCAL AUTHORITY: CITY OF SWAN (109) MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT</p> <p>MRWA DRAWING NUMBER</p> <p>PROJECT TITLE: <b>NORTHLINK WA STAGE 3</b></p> <p>DRAWING TITLE: TONKIN HIGHWAY H017 (15.76 SLK) BRIDGE N° 1802 OVER STOCK ROAD WEST INTERCHANGE GENERAL ARRANGEMENT ELEVATION</p> <p>DRAWING No: NL3-BGE-210-ST-DG-2021 REV 0</p> |
| <p>0 ISSUED FOR CONSTRUCTION PDT 10.04.18</p>  | <p>AMENDMENTS</p> | <p>BG&amp;E DOC No: P17077</p>  | <p>DRAWING STATUS: IFC</p> | <p>VERIFIED: R. DENHAM 26.03.18</p>  | <p>PROJECT MANAGER: S. NICOLAY 27.03.18<br/>         DESIGN MANAGER: A. WHITESIDE 26.03.18</p>   | <p>PROJECT MANAGER: Y. SIDDIQUI 28.03.18<br/>         PROJECT DIRECTOR: R. ARNOTT 29.03.18</p> |  |  |

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-210-ST-DG-2005.



1:75  
1:50  
SCALE  
A  
1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 10.04.18    |
| No.                      | DESCRIPTION     |
|                          | APPROVED & DATE |
|                          | AMENDMENTS      |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

**Perth Office—**  
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BG&E

DRAWN: K. TAYLOR 22.11.17  
DESIGNED: J. JAMESON 22.11.17  
CHECKED: P. THOMPSON 22.11.17  
APPROVED: C. RAMM 20.03.18

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

CPB CONTRACTORS

PROJECT MANAGER: S. NICOLAY 27.03.18  
DESIGN MANAGER: A. WHITESIDE 26.03.18

VERIFIED: R. DENHAM 26.03.18

PROJECT MANAGER: Y. SIDDIQUI 28.03.18  
PROJECT DIRECTOR: R. ARNOTT 29.03.18

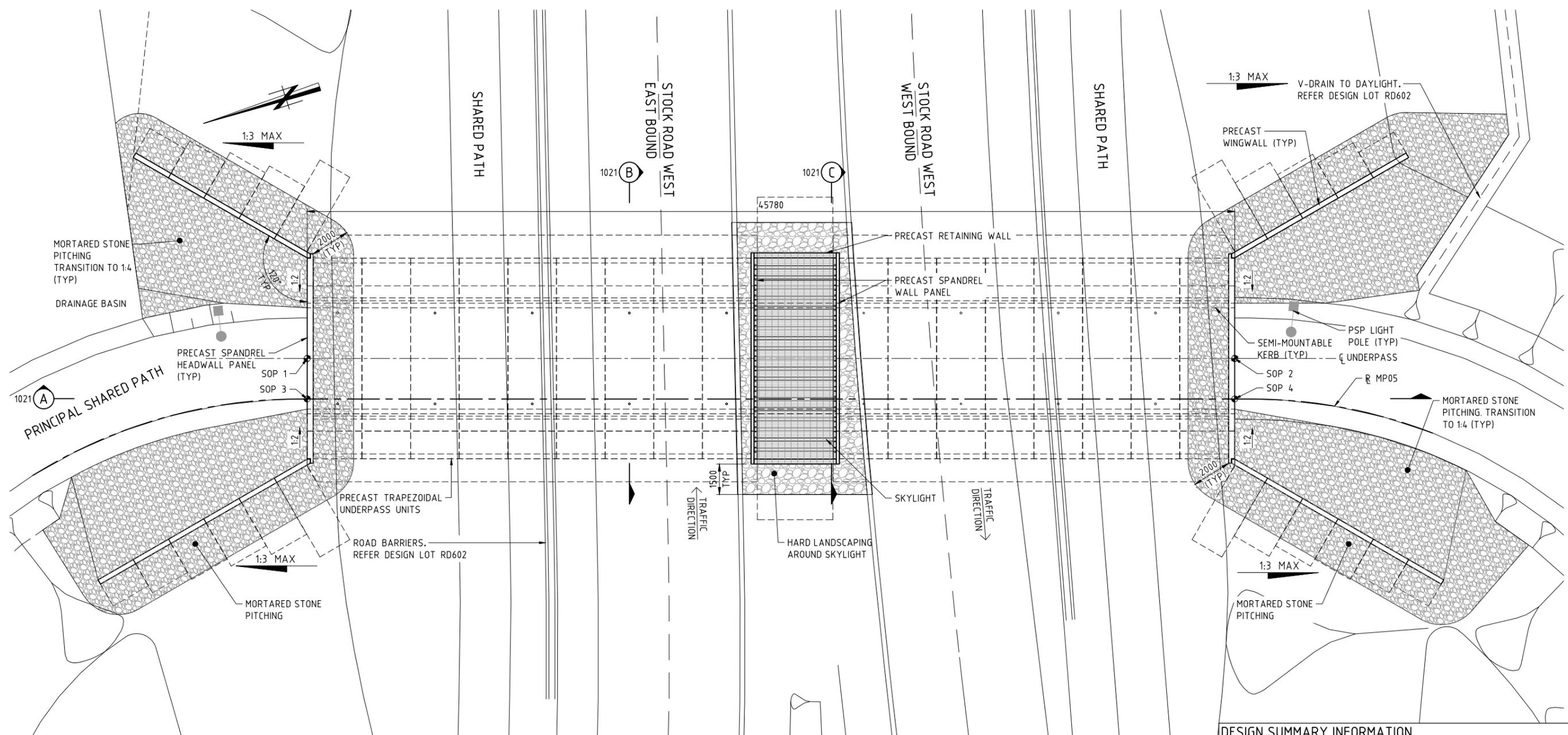
**mainroads**  
WESTERN AUSTRALIA

INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (15.76 SLK)<br>BRIDGE N° 1802 OVER STOCK ROAD WEST INTERCHANGE<br>GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.         | NL3-BGE-210-ST-DG-2022   |                                |                          |
| REV                 | 0  |                                |                          |



NOTE:  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-211-ST-DG-1005.



| UNDERPASS SETOUT POINTS |             |              |          |
|-------------------------|-------------|--------------|----------|
| SETOUT POINT            | EASTING (m) | NORTHING (m) | RL (TOS) |
| SOP 1                   | 65930.690   | 291698.515   | 40.026   |
| SOP 2                   | 65916.894   | 291654.863   | 39.888   |
| SOP 3                   | 65928.783   | 291699.118   | 40.066   |
| SOP 4                   | 65914.987   | 291655.466   | 39.928   |

UNDERPASS N° 9438 PLAN  
1:100

| DESIGN SUMMARY INFORMATION |  |
|----------------------------|--|
| 1.                         | DESIGN IN ACCORDANCE WITH ASS100-2004 BRIDGE DESIGN CODE.  |
| 2.                         | DEAD LOADS -AS PER CODE.   |
| 3.                         | TRAFFIC -SM1600 AS PER CODE.<br>-HLP4.00 AS PER CODE<br>-G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM  |
| 4.                         | EARTHQUAKE DATA:<br>HAZARD FACTOR Z = 0.09<br>PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.<br>BRIDGE CLASSIFICATION = TYPE II<br>BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2<br>IMPORTANCE FACTOR = 1.0 |
| 5.                         | MAX ULS BEARING PRESSURE 242kPa.<br>MAX SLS BEARING PRESSURE 200kPa.   |
| 6.                         | MAX SOIL OVER BURDEN = 1250mm<br>MIN SOIL OVERBURDEN = 650mm   |
| 7.                         | FATIGUE ROUTE FACTOR RF = 1  |
| 8.                         | N° HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 2399  |

| METADATA                 |              |
|--------------------------|--------------|
| GROUND SURVEY STANDARD:  | 67-08-43     |
| DATE OF CAPTURE:         |              |
| MAPPING SURVEY STANDARD: | 67-08-43     |
| DATE OF CAPTURE:         | PDT 14.02.18 |
| MAIN ROADS PROJECT ZONE: | PCG94        |
| HEIGHT DATUM:            | AHD          |

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BG&E

|                |                  |          |
|----------------|------------------|----------|
| DRAWN          | K. TAYLOR        | 14.02.18 |
| DESIGNED       | C.KANDANARACHCHI | 14.02.18 |
| CHECKED        | P. THOMPSON      | 14.02.18 |
| APPROVED       | P. THOMPSON      | 12.04.18 |
| DRAWING STATUS | IFC              |          |

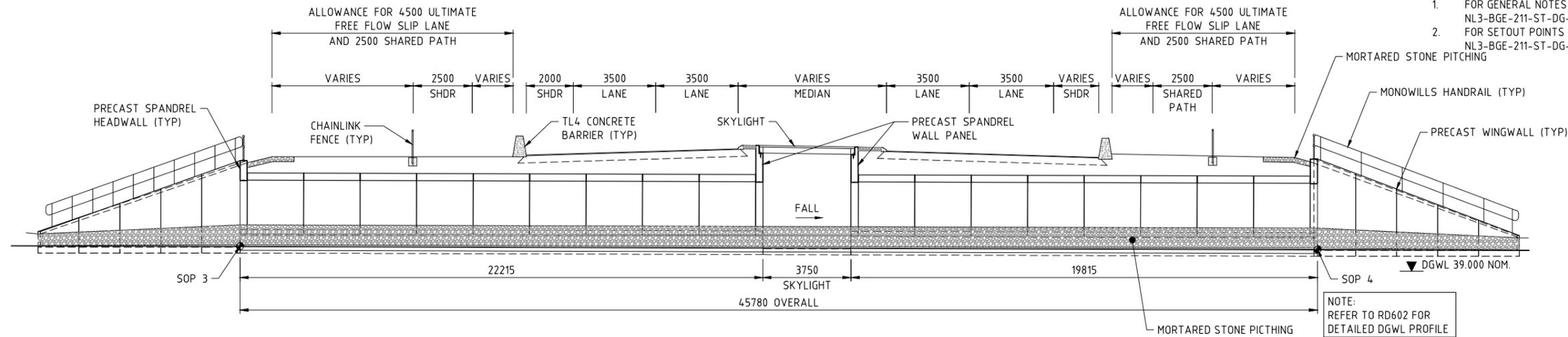
**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

CPB CONTRACTORS

INFRASTRUCTURE DELIVERY DIRECTORATE

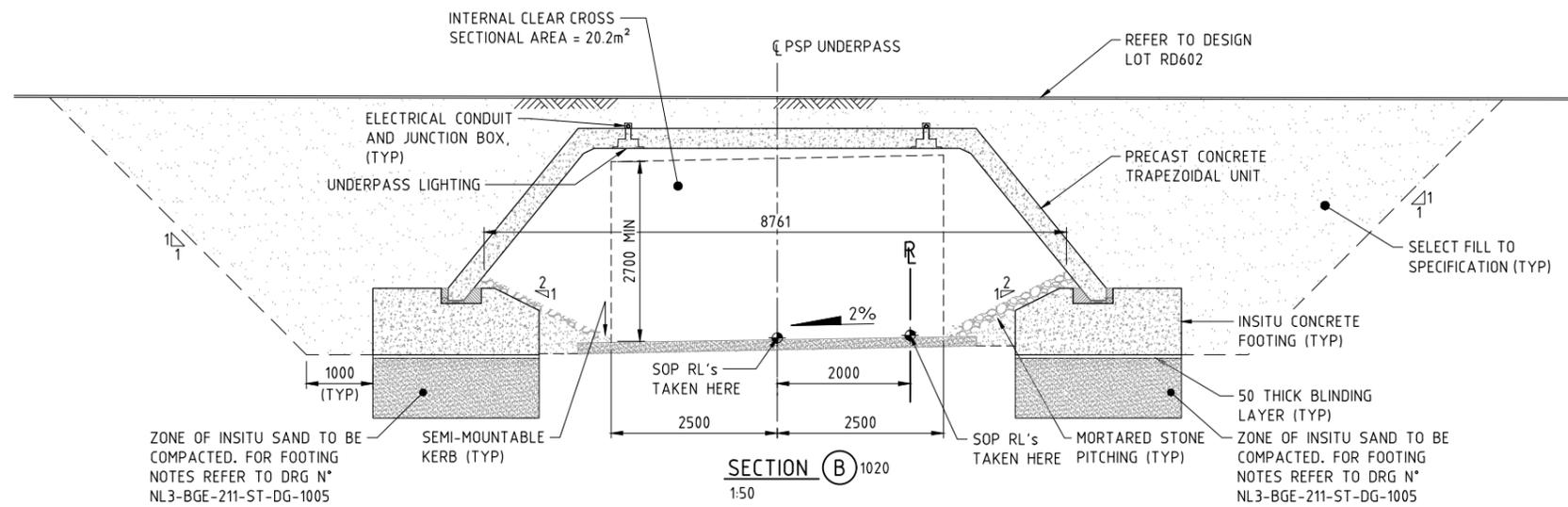
|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017<br>UNDERPASS N° 9438 UNDER STOCK ROAD WEST<br>GENERAL ARRANGEMENT PLAN |                                |                          |
| DRAWING No.         | NL3-BGE-211-ST-DG-1020   |                                |                          |
| REV                 | 0  |                                |                          |

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A 1

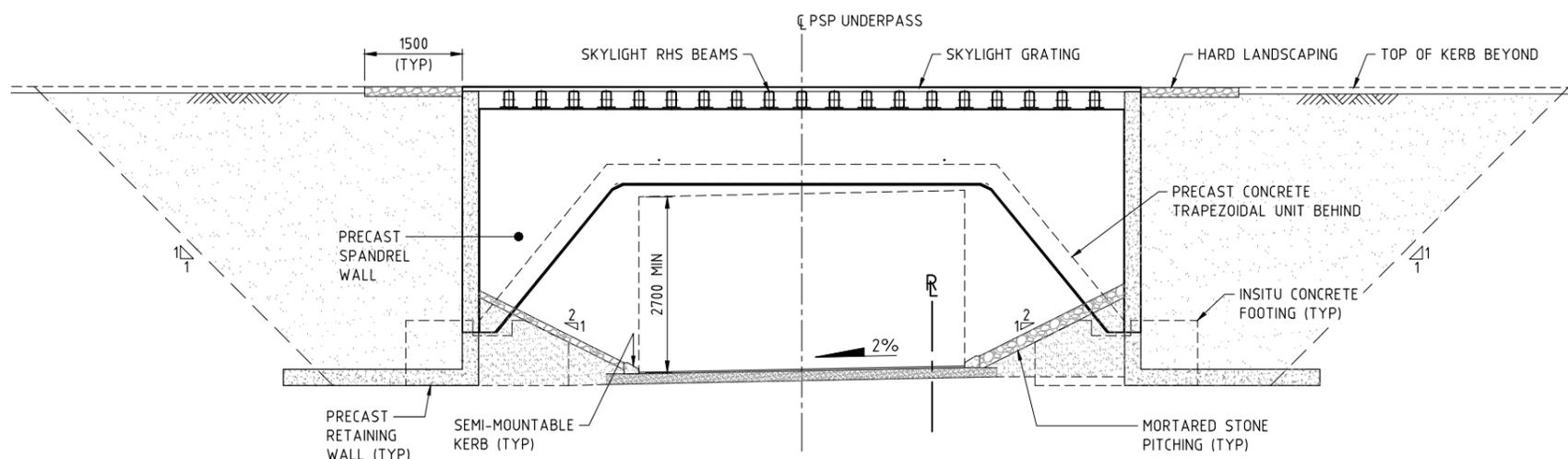


- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-211-ST-DG-1005.
  - FOR SETOUT POINTS REFER DRG N° NL3-BGE-211-ST-DG-1020.

**SECTION (A) 1020**  
1:100



**SECTION (B) 1020**  
1:50



**SECTION (C) 1020**  
1:50



**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

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bgeeng.com



BG&E Doc No: P17077

|                 |                  |          |
|-----------------|------------------|----------|
| DRAWN:          | K. TAYLOR        | 14.02.18 |
| DESIGNED:       | C.KANDANARACHCHI | 14.02.18 |
| CHECKED:        | P. THOMPSON      | 14.02.18 |
| APPROVED:       | P. THOMPSON      | 12.04.18 |
| DRAWING STATUS: | IFC              |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



|           |           |          |
|-----------|-----------|----------|
| VERIFIED: | R. DENHAM | 16.04.18 |
|-----------|-----------|----------|

|                  |              |          |
|------------------|--------------|----------|
| PROJECT MANAGER: | S. NICOLAY   | 17.04.18 |
| DESIGN MANAGER:  | A. WHITESIDE | 17.04.18 |



INFRASTRUCTURE DELIVERY DIRECTORATE



|                   |             |          |
|-------------------|-------------|----------|
| PROJECT MANAGER:  | Y. SIDDIQUI | 19.04.18 |
| PROJECT DIRECTOR: | R. ARNOTT   | 19.04.18 |

LOCAL AUTHORITY: CITY OF SWAN (109) MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT

MRWA DRAWING NUMBER

PROJECT TITLE: **NORTHLINK WA STAGE 3**

DRAWING TITLE: **TONKIN HIGHWAY H017 UNDERPASS N° 9438 UNDER STOCK ROAD WEST GENERAL ARRANGEMENT SECTIONS**

DRAWING No: **NL3-BGE-211-ST-DG-1021** REV: **0**

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 14.02.18    |
| AMENDMENTS |                         |                 |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| DRG N°                 | DRAWING TITLE   | DRG N°                         | DRAWING TITLE                                   | MRWA REFERENCE DRAWINGS                                       |
|------------------------|---|--------------------------------|---|---|
| <b>GENERAL</b>         |   | <b>SUPER-STRUCTURE (CON'T)</b> |   | 9230-0921-6 LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS |
| NL3-BGE-220-ST-DG-1000 | COVER SHEET   | NL3-BGE-220-ST-DG-1310         | DECK CONCRETE PLANS AND ELEVATION               |   |
| NL3-BGE-220-ST-DG-1001 | INDEX SHEET   | NL3-BGE-220-ST-DG-1311         | DECK CONCRETE SECTIONS AND DETAILS              |   |
| NL3-BGE-220-ST-DG-1005 | GENERAL NOTES   | NL3-BGE-220-ST-DG-1315         | DECK REINFORCEMENT PLAN                         |   |
| NL3-BGE-220-ST-DG-1008 | CONSTRUCTION NOTES  | NL3-BGE-220-ST-DG-1320         | DECK REINFORCEMENT ELEVATION                    |   |
| NL3-BGE-220-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                     | NL3-BGE-220-ST-DG-1330         | DECK REINFORCEMENT SECTIONS AND DETAILS         |   |
| NL3-BGE-220-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                     | NL3-BGE-220-ST-DG-1340         | DECK WATERPROOFING PLAN AND DETAILS             |   |
| NL3-BGE-220-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                     | NL3-BGE-220-ST-DG-1350         | APPROACH SLAB CONCRETE PLAN AND DETAILS         |   |
| NL3-BGE-220-ST-DG-1020 | GENERAL ARRANGEMENT PLAN  | NL3-BGE-220-ST-DG-1355         | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS   |   |
| NL3-BGE-220-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                                   | NL3-BGE-220-ST-DG-1360         | EXPANSION JOINT PLAN AND SECTIONS               |   |
| NL3-BGE-220-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                    | NL3-BGE-220-ST-DG-1365         | COVER PLATE PLAN AND SECTIONS                   |   |
| NL3-BGE-220-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                     | NL3-BGE-220-ST-DG-1366         | COVER PLATE DETAILS                             |   |
| NL3-BGE-220-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                     | NL3-BGE-220-ST-DG-1370         | BARRIER LAYOUT PLAN AND DETAILS                 |   |
| NL3-BGE-220-ST-DG-1050 | GEOMETRIC DATA  | NL3-BGE-220-ST-DG-1375         | BARRIER SECTIONS AND DETAILS                    |   |
| <b>SUB-STRUCTURE</b>   |   | NL3-BGE-220-ST-DG-1380         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 1    |   |
| NL3-BGE-220-ST-DG-1080 | ABUTMENT N° 1 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-220-ST-DG-1381         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 2    |   |
| NL3-BGE-220-ST-DG-1081 | ABUTMENT N° 2 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-220-ST-DG-1382         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 3    |   |
| NL3-BGE-220-ST-DG-1082 | ABUTMENT MSE WALL DETAILS                                       | NL3-BGE-220-ST-DG-1385         | PRECAST PANEL REINFORCEMENT DETAILS             |   |
| NL3-BGE-220-ST-DG-1100 | ABUTMENT N° 1 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-220-ST-DG-1395         | INSITU BARRIER STITCH ELEVATION AND DETAILS     |   |
| NL3-BGE-220-ST-DG-1105 | ABUTMENT N° 2 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-220-ST-DG-1400         | INSITU TRANSITION BARRIER ELEVATION AND DETAILS |   |
| NL3-BGE-220-ST-DG-1110 | ABUTMENT N° 1 AND N° 2 FOOTING REINFORCEMENT PLAN AND SECTIONS  | NL3-BGE-220-ST-DG-1401         | INSITU TRANSITION BARRIER REINFORCEMENT DETAILS |   |
| NL3-BGE-220-ST-DG-1115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS        | NL3-BGE-220-ST-DG-1430         | SERVICES LAYOUT PLAN AND SECTIONS               |   |
| NL3-BGE-220-ST-DG-1120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS | NL3-BGE-220-ST-DG-1431         | SERVICES SECTIONS AND DETAILS                   |   |
| NL3-BGE-220-ST-DG-1125 | ABUTMENT N° 1 CAP BEAM CONCRETE PLAN, ELEVATION AND SECTIONS    | NL3-BGE-220-ST-DG-1450         | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS   |   |
| NL3-BGE-220-ST-DG-1127 | ABUTMENT N° 2 CAP BEAM CONCRETE PLAN AND ELEVATION              |                                |   |   |
| NL3-BGE-220-ST-DG-1130 | ABUTMENT N° 1 & N° 2 CAPBEAM REINFORCEMENT PLAN AND SECTIONS    |                                |   |   |
| NL3-BGE-220-ST-DG-1190 | BEARINGS PLAN AND NOTES   |                                |   |   |
| NL3-BGE-220-ST-DG-1191 | BEARINGS SECTIONS AND DETAILS                                   |                                |   |   |
| <b>SUPER-STRUCTURE</b> |   |                                |   |   |
| NL3-BGE-220-ST-DG-1200 | PRECAST PLANK LAYOUT PLAN AND DETAILS                           |                                |   |   |
| NL3-BGE-220-ST-DG-1210 | PRECAST PLANK CONCRETE PLAN AND SECTIONS                        |                                |   |   |
| NL3-BGE-220-ST-DG-1220 | PRECAST PLANK CONCRETE SECTIONS AND DETAILS                     |                                |   |   |
| NL3-BGE-220-ST-DG-1240 | PRECAST PLANK PRESTRESS LAYOUT AND NOTES                        |                                |   |   |
| NL3-BGE-220-ST-DG-1250 | PRECAST PLANK REINFORCEMENT PLAN AND SECTION                    |                                |   |   |
| NL3-BGE-220-ST-DG-1260 | PRECAST PLANK REINFORCEMENT SECTIONS                            |                                |   |   |
| NL3-BGE-220-ST-DG-1270 | PRECAST PLANK REINFORCEMENT ABUTMENT & INTERNAL DIAPHRAGMS      |                                |   |   |
| NL3-BGE-220-ST-DG-1300 | DECK CONCRETE PLAN AND DETAILS                                  |                                |   |   |

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (11.17 SLK)<br>BRIDGE N° 1793 OVER NEAVES ROAD INTERCHANGE<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-220-ST-DG-1001  | REV                            | 0                        |

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
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bgeeng.com—



BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 02.02.18 |
| DESIGNED       | H. ALGUIRE  | 02.02.18 |
| CHECKED        | P. THOMPSON | 02.02.18 |
| APPROVED       | C. RAMM     | 12.02.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

|          |           |          |
|----------|-----------|----------|
| VERIFIED | R. DENHAM | 14.02.18 |
|----------|-----------|----------|

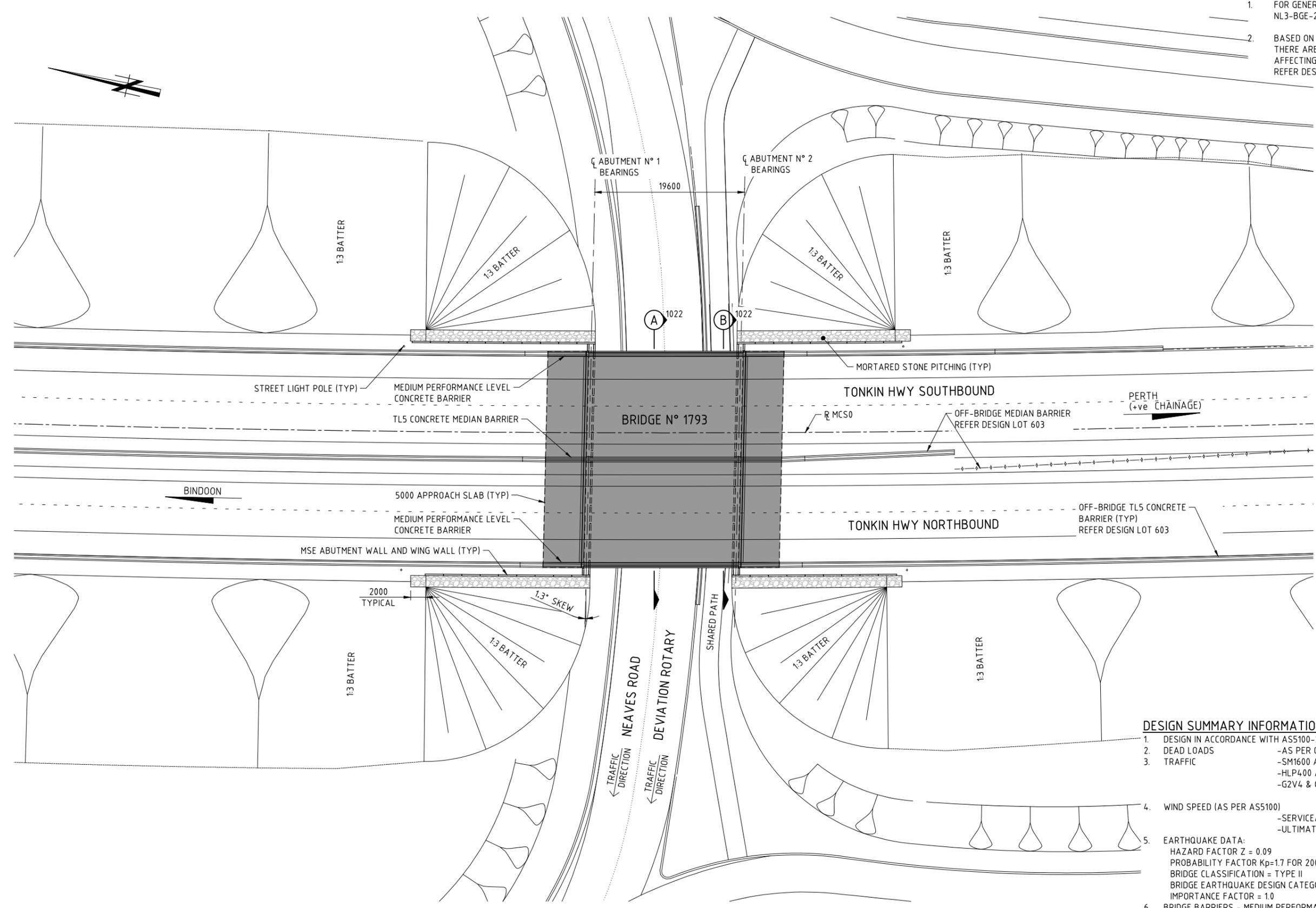
|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 15.02.18 |
| DESIGN MANAGER  | A. WHITESIDE | 15.02.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 19.02.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 20.02.18 |

SCALE  
**A  
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**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-220-ST-DG-1005.
- BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 603.



**BRIDGE N° 1793 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS - AS PER CODE.
- TRAFFIC - SM1600 AS PER CODE, HLP400 AS PER CODE, G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM.
- WIND SPEED (AS PER AS5100) - SERVICEABILITY V20 = 37m/s, ULTIMATE V2000 = 48m/s.
- EARTHQUAKE DATA: HAZARD FACTOR Z = 0.09, PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL, BRIDGE CLASSIFICATION = TYPE II, BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2, IMPORTANCE FACTOR = 1.0.
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL.
- MAX ULS BEARING PRESSURE 410 kPa, MAX SLS BEARING PRESSURE 300 kPa.
- FATIGUE ROUTE FACTOR RF=1 No. HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 2661.

1:250  
SCALE  
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**METADATA**

GROUND SURVEY STANDARD: 67-08-43  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD: 67-08-43  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

**Perth Office—**  
484 Murray St, Perth WA 6000  
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E /info@bgeeng.com  
bgeeng.com—



DRAWN: K. TAYLOR 02.02.18  
DESIGNED: H. ALGUIRE 02.02.18  
CHECKED: P. THOMPSON 02.02.18  
APPROVED: C. RAMM 12.02.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

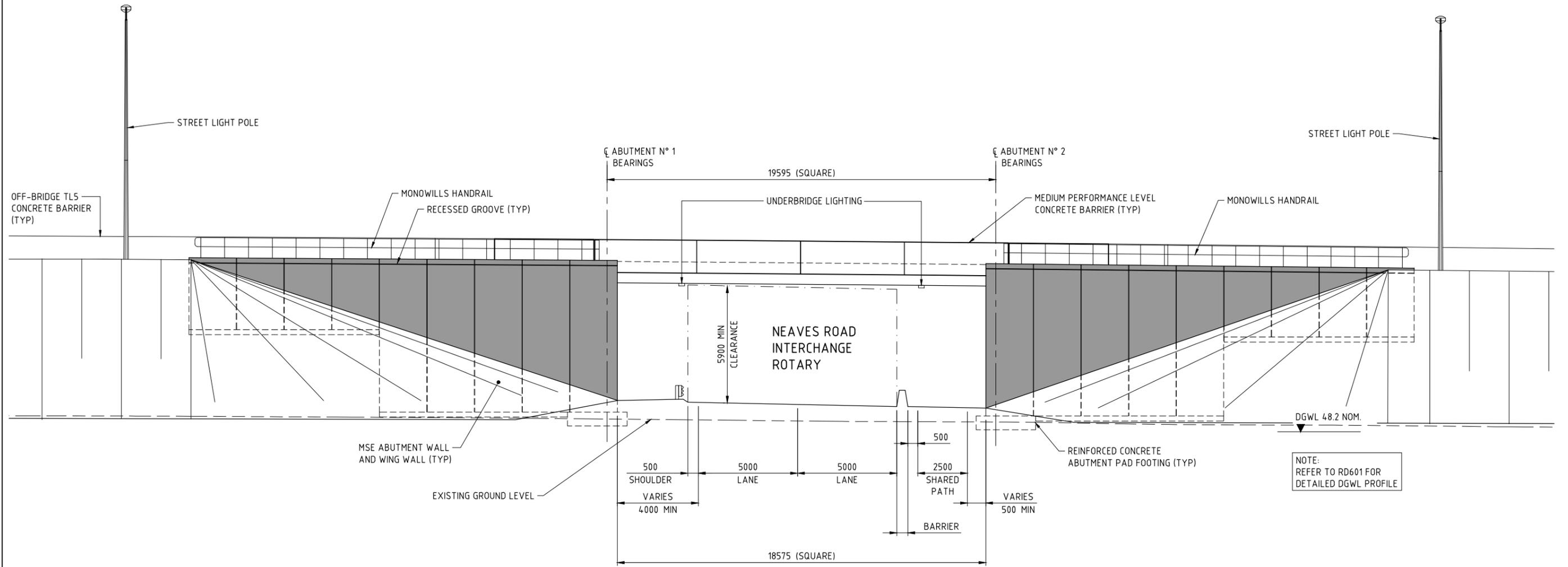
PROJECT MANAGER: S. NICOLAY 15.02.18  
DESIGN MANAGER: A. WHITESIDE 15.02.18

PROJECT MANAGER: Y. SIDDIQUI 19.02.18  
PROJECT DIRECTOR: R. ARNOTT 20.02.18

|   |  |
|---|--|
| CITY OF SWAN (109)   METROPOLITAN / WHEATBELT |  |
| MRWA DRAWING NUMBER                           |  |
| PROJECT TITLE                                 | <b>NORTHLINK WA STAGE 3</b>  |
| DRAWING TITLE                                 | TONKIN HIGHWAY H017 (11.17 SLK)<br>BRIDGE N° 1793 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT PLAN |
| DRAWING No.                                   | NL3-BGE-220-ST-DG-1020   |
| REV   | 0  |

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

NOTE:  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-220-ST-DG-1005.



BRIDGE N° 1793 ELEVATION  
1:100

NOTE:  
REFER TO RD601 FOR  
DETAILED DGWL PROFILE

1:100  
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|   |  |  |  |   |                                  |   |  |  |
|---|--|--|--|---|----------------------------------|---|--|--|
| <b>METADATA</b><br>GROUND SURVEY STANDARD: 67-08-43<br>DATE OF CAPTURE:<br>MAPPING SURVEY STANDARD: 67-08-43<br>DATE OF CAPTURE:<br>MAIN ROADS PROJECT ZONE: PCG94<br>HEIGHT DATUM: AHD |  | <b>Perth Office—</b><br>484 Murray St, Perth WA 6000<br>P /+61 8 6364 3300<br>E / info@bgeeng.com<br>bgeeng.com—<br>BG&E | DRAWN: K. TAYLOR 02.02.18<br>DESIGNED: H. ALGUIRE 02.02.18<br>CHECKED: P. THOMPSON 02.02.18<br>APPROVED: C. RAMM 12.02.18<br>DRAWING STATUS: IFC | <b>Kellogg Brown &amp; Root Pty Ltd</b><br><b>KBR</b><br>ABN 91 007 660 317<br>Level 15, 300 Murray St, Perth<br>Western Australia 6000 | <b>CPB</b><br><b>CONTRACTORS</b> | <br>INFRASTRUCTURE DELIVERY DIRECTORATE | PROJECT MANAGER: S. NICOLAY 15.02.18<br>DESIGN MANAGER: A. WHITESIDE 15.02.18<br>PROJECT MANAGER: Y. SIDDIQUI 19.02.18<br>PROJECT DIRECTOR: R. ARNOTT 20.02.18 | LOCAL AUTHORITY: CITY OF SWAN (109)<br>MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT<br>PROJECT TITLE: NORTHLINK WA STAGE 3<br>DRAWING TITLE: TONKIN HIGHWAY H017 (11.17 SLK) BRIDGE N° 1793 OVER NEAVES ROAD INTERCHANGE GENERAL ARRANGEMENT ELEVATION<br>DRAWING No: NL3-BGE-220-ST-DG-1021<br>REV: 0 |
|---|--|--|--|---|----------------------------------|---|--|--|



**NORTHLINK STAGE 3  
DRAWING INDEX**

| DRG N°                 | DRAWING TITLE   | DRG N°                         | DRAWING TITLE                                   | MRWA REFERENCE DRAWINGS                                       |
|------------------------|---|--------------------------------|---|---|
| <b>GENERAL</b>         |   | <b>SUPER-STRUCTURE (CON'T)</b> |   | 9230-0921-6 LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS |
| NL3-BGE-220-ST-DG-2001 | INDEX SHEET   | NL3-BGE-220-ST-DG-2315         | DECK REINFORCEMENT PLAN                         |   |
| NL3-BGE-220-ST-DG-2005 | GENERAL NOTES   | NL3-BGE-220-ST-DG-2320         | DECK REINFORCEMENT ELEVATION                    |   |
| NL3-BGE-220-ST-DG-2008 | CONSTRUCTION NOTES  | NL3-BGE-220-ST-DG-2330         | DECK REINFORCEMENT SECTIONS AND DETAILS         |   |
| NL3-BGE-220-ST-DG-2010 | DESIGN SUMMARY SHEET 1 OF 3                                     | NL3-BGE-220-ST-DG-2340         | DECK WATERPROOFING PLAN AND DETAILS             |   |
| NL3-BGE-220-ST-DG-2011 | DESIGN SUMMARY SHEET 2 OF 3                                     | NL3-BGE-220-ST-DG-2350         | APPROACH SLAB CONCRETE PLAN AND DETAILS         |   |
| NL3-BGE-220-ST-DG-2012 | DESIGN SUMMARY SHEET 3 OF 3                                     | NL3-BGE-220-ST-DG-2355         | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS   |   |
| NL3-BGE-220-ST-DG-2020 | GENERAL ARRANGEMENT PLAN  | NL3-BGE-220-ST-DG-2360         | EXPANSION JOINT PLAN AND SECTIONS               |   |
| NL3-BGE-220-ST-DG-2021 | GENERAL ARRANGEMENT ELEVATION                                   | NL3-BGE-220-ST-DG-2365         | COVER PLATE PLAN AND SECTIONS                   |   |
| NL3-BGE-220-ST-DG-2022 | GENERAL ARRANGEMENT SECTIONS                                    | NL3-BGE-220-ST-DG-2366         | COVER PLATE DETAILS                             |   |
| NL3-BGE-220-ST-DG-2040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                     | NL3-BGE-220-ST-DG-2370         | BARRIER LAYOUT PLAN AND DETAILS                 |   |
| NL3-BGE-220-ST-DG-2041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                     | NL3-BGE-220-ST-DG-2375         | BARRIER SECTIONS AND DETAILS                    |   |
| NL3-BGE-220-ST-DG-2050 | GEOMETRIC DATA  | NL3-BGE-220-ST-DG-2380         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 1    |   |
| <b>SUB-STRUCTURE</b>   |   | NL3-BGE-220-ST-DG-2381         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 2    |   |
| NL3-BGE-220-ST-DG-2080 | ABUTMENT N° 1 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-220-ST-DG-2382         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 3    |   |
| NL3-BGE-220-ST-DG-2081 | ABUTMENT N° 2 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-220-ST-DG-2385         | PRECAST PANEL REINFORCEMENT DETAILS             |   |
| NL3-BGE-220-ST-DG-2082 | ABUTMENT MSE WALL DETAILS                                       | NL3-BGE-220-ST-DG-2395         | INSITU BARRIER STITCH ELEVATION AND DETAILS     |   |
| NL3-BGE-220-ST-DG-2100 | ABUTMENT N° 1 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-220-ST-DG-2400         | INSITU TRANSITION BARRIER ELEVATION AND DETAILS |   |
| NL3-BGE-220-ST-DG-2105 | ABUTMENT N° 2 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-220-ST-DG-2401         | INSITU TRANSITION BARRIER REINFORCEMENT DETAILS |   |
| NL3-BGE-220-ST-DG-2110 | ABUTMENT N° 1 AND N° 2 FOOTING REINFORCEMENT PLAN AND SECTIONS  | NL3-BGE-220-ST-DG-2430         | SERVICES LAYOUT PLAN AND SECTIONS               |   |
| NL3-BGE-220-ST-DG-2115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS        | NL3-BGE-220-ST-DG-2431         | SERVICES SECTIONS AND DETAILS                   |   |
| NL3-BGE-220-ST-DG-2120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS | NL3-BGE-220-ST-DG-2450         | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS   |   |
| NL3-BGE-220-ST-DG-2125 | ABUTMENT N° 1 CAP BEAM CONCRETE PLAN, ELEVATION AND SECTIONS    |                                |   |   |
| NL3-BGE-220-ST-DG-2127 | ABUTMENT N° 2 CAP BEAM CONCRETE PLAN AND ELEVATION              |                                |   |   |
| NL3-BGE-220-ST-DG-2130 | ABUTMENT N° 1 AND N° 2 CAP BEAM REINFORCEMENT PLAN AND SECTIONS |                                |   |   |
| NL3-BGE-220-ST-DG-2190 | BEARINGS PLAN AND NOTES   |                                |   |   |
| NL3-BGE-220-ST-DG-2191 | BEARINGS SECTIONS AND DETAILS                                   |                                |   |   |
| <b>SUPER-STRUCTURE</b> |   |                                |   |   |
| NL3-BGE-220-ST-DG-2200 | PRECAST BEAM LAYOUT PLAN AND DETAILS                            |                                |   |   |
| NL3-BGE-220-ST-DG-2210 | PRECAST PLANK CONCRETE PLAN AND SECTIONS                        |                                |   |   |
| NL3-BGE-220-ST-DG-2220 | PRECAST PLANK CONCRETE SECTIONS AND DETAILS                     |                                |   |   |
| NL3-BGE-220-ST-DG-2240 | PRECAST PLANK PRESTRESS LAYOUT AND NOTES                        |                                |   |   |
| NL3-BGE-220-ST-DG-2250 | PRECAST PLANK REINFORCEMENT PLAN AND SECTION                    |                                |   |   |
| NL3-BGE-220-ST-DG-2260 | PRECAST PLANK REINFORCEMENT SECTIONS                            |                                |   |   |
| NL3-BGE-220-ST-DG-2270 | PRECAST PLANK REINFORCEMENT ABUTMENT & INTERNAL DIAPHRAGMS      |                                |   |   |
| NL3-BGE-220-ST-DG-2300 | DECK CONCRETE PLAN AND DETAILS                                  |                                |   |   |
| NL3-BGE-220-ST-DG-2310 | DECK CONCRETE PLANS AND ELEVATION                               |                                |   |   |
| NL3-BGE-220-ST-DG-2311 | DECK CONCRETE SECTIONS AND DETAILS                              |                                |   |   |

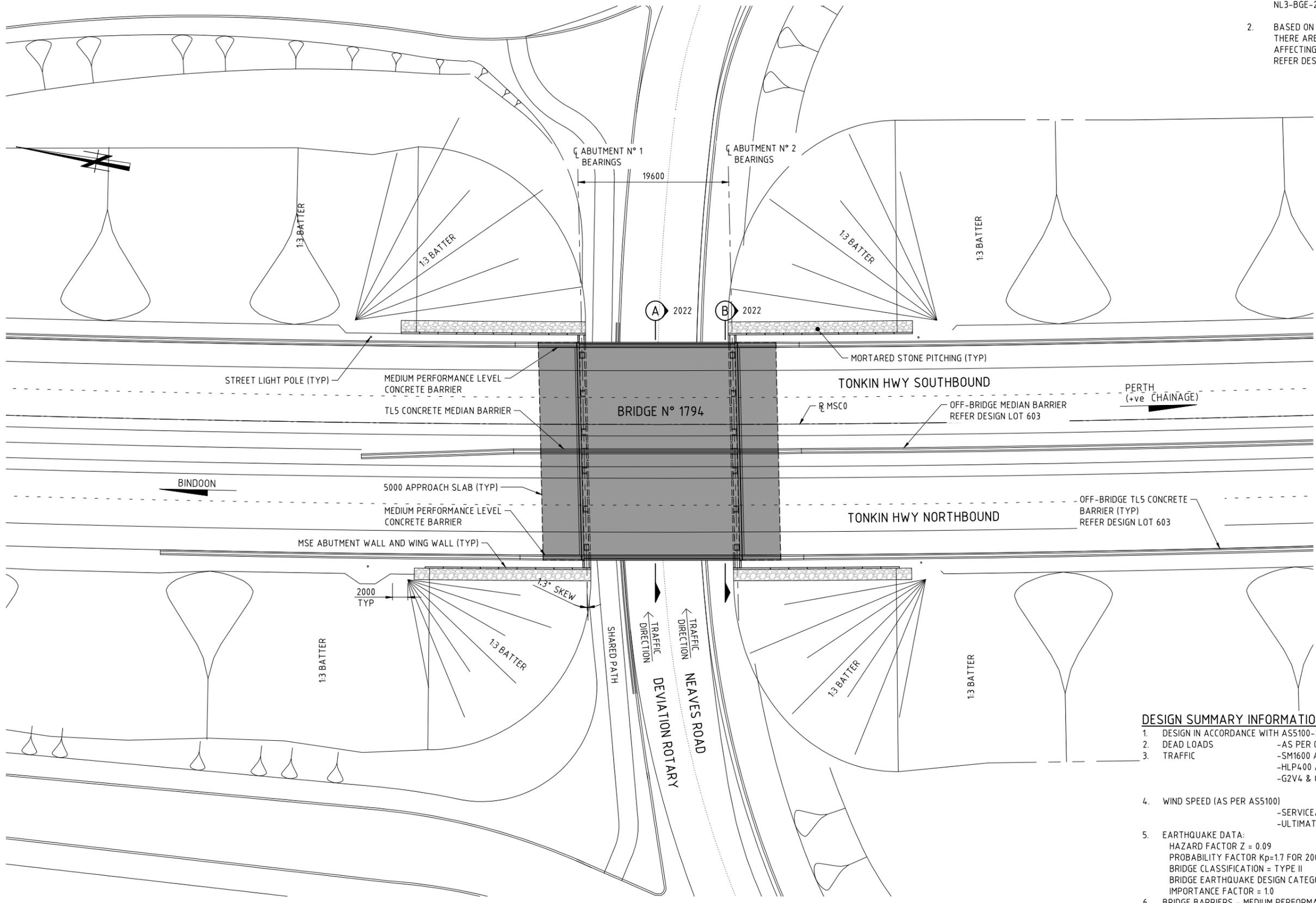
SCALE

**A  
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|                           |  |                 |  |   |  |   |  |   |  |  |  |   |  |   |  |   |  |   |  |
|---------------------------|--|-----------------|--|---|--|---|--|---|--|--|--|---|--|---|--|---|--|---|--|
|                           |  | <b>METADATA</b> |  | <b>Perth Office—</b><br>484 Murray St, Perth WA 6000<br>P /+61 8 6364 3300<br>E /info@bgeeng.com<br>bgeeng.com— |  |  |  | DRAWN K. TAYLOR 07.02.18<br>DESIGNED H. ALGUIRE 07.02.18<br>CHECKED P. THOMPSON 07.02.18<br>APPROVED C. RAMM 14.02.18 |  | <b>Keliogg Brown &amp; Root Pty Ltd</b><br><br>ABN 91 007 660 317<br>Level 15, 300 Murray St, Perth<br>Western Australia 6000 |  |  |  |  |  |  |  | LOCAL AUTHORITY CITY OF SWAN (109) MAIN ROADS RESPONSIBILITY AREA METROPOLITAN / WHEATBELT<br>MRWA DRAWING NUMBER<br>PROJECT TITLE <b>NORTHLINK WA STAGE 3</b><br>DRAWING TITLE <b>TONKIN HIGHWAY H017 (11.04 SLK) BRIDGE N° 1794 OVER NEAVES ROAD INTERCHANGE INDEX SHEET</b><br>DRAWING No. <b>NL3-BGE-220-ST-DG-2001</b> |  |
| 0 ISSUED FOR CONSTRUCTION |  | PDT 10.04.18    |  | DATE OF CAPTURE: 67-08-43   |  | DATE OF CAPTURE: 67-08-43   |  | VERIFIED R. DENHAM 20.02.18   |  | PROJECT MANAGER S. NICOLAY 23.02.18  |  | PROJECT MANAGER Y. SIDDIQUI 26.02.18  |  | DESIGN MANAGER A. WHITESIDE 22.02.18  |  | PROJECT DIRECTOR R. ARNOTT 27.02.18   |  | REV 0   |  |
| AMENDMENTS                |  | APPROVED & DATE |  | MAIN ROADS PROJECT ZONE: PCG94  |  | HEIGHT DATUM: AHD   |  | IFC   |  |  |  |   |  |   |  |   |  |   |  |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-220-ST-DG-2005.
- BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 603.



**BRIDGE N° 1794 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
  - DEAD LOADS - AS PER CODE.
  - TRAFFIC - SM1600 AS PER CODE. -HLP400 AS PER CODE. -G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM
- WIND SPEED (AS PER AS5100)
  - SERVICEABILITY V20 = 37m/s
  - ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:
  - HAZARD FACTOR Z = 0.09
  - PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.
  - BRIDGE CLASSIFICATION = TYPE II
  - BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2
  - IMPORTANCE FACTOR = 1.0
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL
- MAX ULS BEARING PRESSURE 410 kPa
- MAX SLS BEARING PRESSURE 300 kPa
- FATIGUE ROUTE FACTOR RF=1 No. HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 2661

1:250 SCALE  
A 1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         | PDT 10.04.18    |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |
| ISSUED FOR CONSTRUCTION  |                 |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |

**Perth Office—**  
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bgeeng.com—

**BG & E**

BG&E DOC No: P17077

DRAWN: K. TAYLOR 07.02.18  
DESIGNED: H. ALGUIRE 07.02.18  
CHECKED: P. THOMPSON 07.02.18  
APPROVED: C. RAMM 14.02.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

DRAWING STATUS: IFC  
VERIFIED: R. DENHAM 20.02.18  
DATE: 20.02.18

**CPB CONTRACTORS**

PROJECT MANAGER: S. NICOLAY 23.02.18  
DESIGN MANAGER: A. WHITESIDE 22.02.18

**mainroads WESTERN AUSTRALIA**

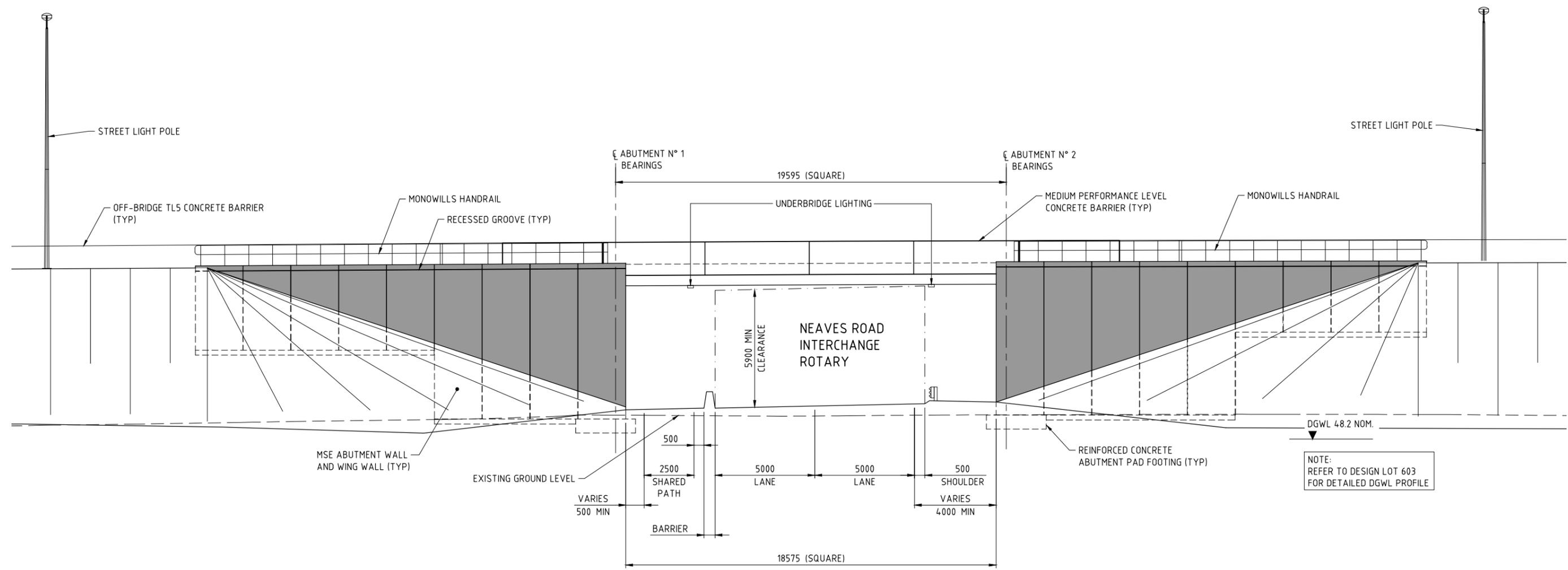
INFRASTRUCTURE DELIVERY DIRECTORATE

PROJECT MANAGER: Y. SIDDIQUI 26.02.18  
PROJECT DIRECTOR: R. ARNOTT 27.02.18

|  |
|--|
| CITY OF SWAN (109)   METROPOLITAN / WHEATBELT  |
| MRWA DRAWING NUMBER  |
| PROJECT TITLE: <b>NORTHLINK WA STAGE 3</b>   |
| DRAWING TITLE: <b>TONKIN HIGHWAY H017 (11.04 SLK) BRIDGE N° 1794 OVER NEAVES ROAD INTERCHANGE GENERAL ARRANGEMENT PLAN</b> |
| DRAWING No: <b>NL3-BGE-220-ST-DG-2020</b>  |
| REV 0  |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-220-ST-DG-2005.



NOTE:  
REFER TO DESIGN LOT 603  
FOR DETAILED DGWL PROFILE

**BRIDGE N° 1794 ELEVATION**  
1:100

15  
14  
13  
12  
11  
10  
9  
8  
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4  
3  
2  
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1:100  
SCALE  
A  
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**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
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bgeeng.com



|          |             |          |
|----------|-------------|----------|
| DRAWN    | K. TAYLOR   | 07.02.18 |
| DESIGNED | H. ALGUIRE  | 07.02.18 |
| CHECKED  | P. THOMPSON | 07.02.18 |
| APPROVED | C. RAMM     | 14.02.18 |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 23.02.18 |
| DESIGN MANAGER  | A. WHITESIDE | 22.02.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 26.02.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 27.02.18 |

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (11.04 SLK)<br>BRIDGE N° 1794 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT ELEVATION |                                |                          |
| DRAWING No.         | NL3-BGE-220-ST-DG-2021  |                                |                          |
| REV                 | 0   |                                |                          |

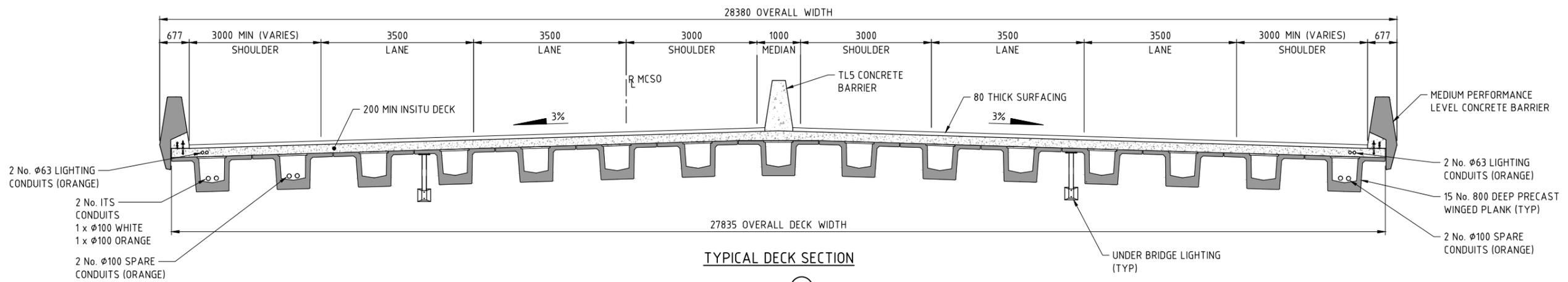
| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

BG&E DOC No: P17077

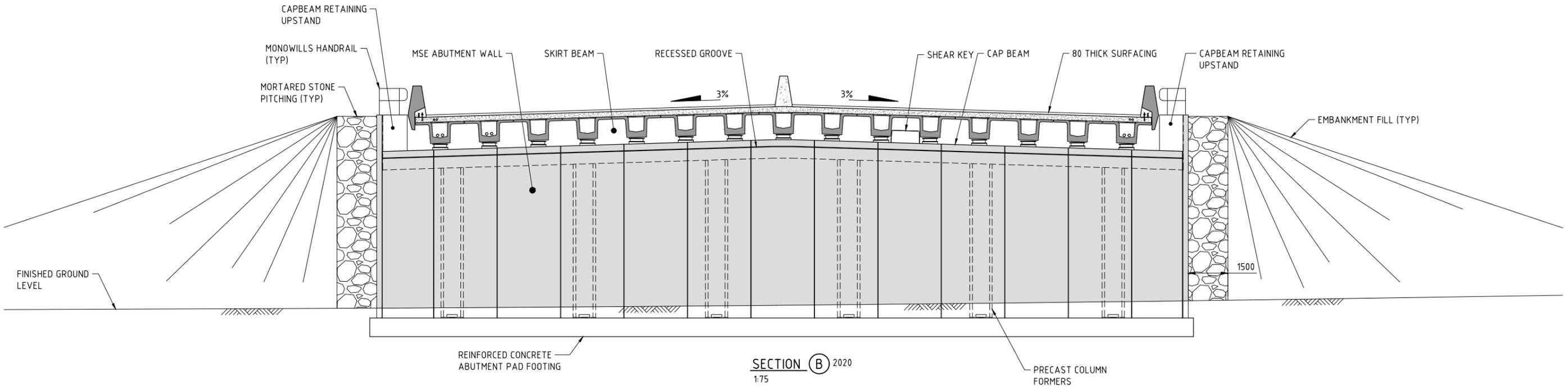
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|          |           |          |
|----------|-----------|----------|
| VERIFIED | R. DENHAM | 20.02.18 |
|----------|-----------|----------|

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-220-ST-DG-2005.



**TYPICAL DECK SECTION**  
**SECTION (A) 2020**  
1:50



**SECTION (B) 2020**  
1:75

SCALE  
1:75  
1:50  
A  
1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 07.02.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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484 Murray St, Perth WA 6000  
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bgeeng.com—

BG&E DOC No: P17077

DRAWN: K. TAYLOR 07.02.18  
DESIGNED: H. ALGUIRE 07.02.18  
CHECKED: P. THOMPSON 07.02.18  
APPROVED: C. RAMM 14.02.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

DRAWING STATUS: IFC  
VERIFIED: R. DENHAM 20.02.18  
DATE: 20.02.18

PROJECT MANAGER: S. NICOLAY 23.02.18  
DESIGN MANAGER: A. WHITESIDE 22.02.18

PROJECT MANAGER: Y. SIDDIQUI 26.02.18  
PROJECT DIRECTOR: R. ARNOTT 27.02.18

INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (11.04 SLK)<br>BRIDGE N° 1794 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.         | NL3-BGE-220-ST-DG-2022   |                                |                          |
| REV                 | 0  |                                |                          |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| DRG No.                | DRAWING TITLE  | DRG No.                      | DRAWING TITLE   | DRG No.                        | DRAWING TITLE                                   |
|------------------------|--|------------------------------|---|--------------------------------|---|
| <b>GENERAL</b>         |  | <b>SUB-STRUCTURE (CON'T)</b> |   | <b>SUPER-STRUCTURE (CON'T)</b> |   |
| NL3-BGE-140-ST-DG-1000 | COVER SHEET  | NL3-BGE-140-ST-DG-1163       | PIER No. 3 CONCRETE PLAN AND SECTIONS                       | NL3-BGE-140-ST-DG-1340         | DECK WATERPROOFING PLAN AND DETAILS             |
| NL3-BGE-140-ST-DG-1001 | INDEX SHEET  |                              |   |                                |   |
| NL3-BGE-140-ST-DG-1005 | GENERAL NOTES  | NL3-BGE-140-ST-DG-1165       | DEFLECTION WALL REINFORCEMENT ELEVATION AND DETAILS         | NL3-BGE-140-ST-DG-1350         | APPROACH SLAB CONCRETE PLANS                    |
| NL3-BGE-140-ST-DG-1008 | CONSTRUCTION NOTES SHEET 1                                       | NL3-BGE-140-ST-DG-1166       | PIER WALL REINFORCEMENT ELEVATION AND DETAILS               | NL3-BGE-140-ST-DG-1351         | APPROACH SLAB CONCRETE SECTIONS AND DETAILS     |
| NL3-BGE-140-ST-DG-1009 | CONSTRUCTION NOTES SHEET 2                                       | NL3-BGE-140-ST-DG-1167       | PIER COLUMN REINFORCEMENT PLAN AND SECTIONS                 |                                |   |
| NL3-BGE-140-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                      | NL3-BGE-140-ST-DG-1190       | BEARINGS PLAN AND NOTES                                     | NL3-BGE-140-ST-DG-1355         | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS   |
| NL3-BGE-140-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                      | NL3-BGE-140-ST-DG-1191       | BEARINGS SCHEDULE   | NL3-BGE-140-ST-DG-1360         | EXPANSION JOINT PLAN AND SECTIONS               |
| NL3-BGE-140-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                      | NL3-BGE-140-ST-DG-1192       | BEARINGS SECTIONS AND DETAILS SHEET 1                       | NL3-BGE-140-ST-DG-1365         | COVER PLATE PLAN AND SECTIONS                   |
| NL3-BGE-140-ST-DG-1020 | GENERAL ARRANGEMENT PLAN   | NL3-BGE-140-ST-DG-1193       | BEARINGS SECTIONS AND DETAILS SHEET 2                       | NL3-BGE-140-ST-DG-1366         | COVER PLATE DETAILS                             |
| NL3-BGE-140-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION AND SECTION                        | <b>SUPER-STRUCTURE</b>       |   | NL3-BGE-140-ST-DG-1370         | BARRIER LAYOUT PLAN AND DETAILS                 |
| NL3-BGE-140-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                     | NL3-BGE-140-ST-DG-1200       | PRECAST BEAM LAYOUT PLAN AND DETAILS                        | NL3-BGE-140-ST-DG-1375         | BARRIER SECTIONS AND DETAILS SHEET 1            |
| NL3-BGE-140-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 3                      | NL3-BGE-140-ST-DG-1210       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 1 OF 8       | NL3-BGE-140-ST-DG-1376         | BARRIER SECTIONS AND DETAILS SHEET 2            |
| NL3-BGE-140-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 3                      | NL3-BGE-140-ST-DG-1211       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 2 OF 8       |                                |   |
| NL3-BGE-140-ST-DG-1042 | SITE INVESTIGATION INFORMATION SHEET 3 OF 3                      | NL3-BGE-140-ST-DG-1212       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 3 OF 8       | NL3-BGE-140-ST-DG-1380         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 1 OF 2 |
| NL3-BGE-140-ST-DG-1050 | GEOMETRIC DATA   | NL3-BGE-140-ST-DG-1213       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 4 OF 8       | NL3-BGE-140-ST-DG-1381         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 2 OF 2 |
| NL3-BGE-140-ST-DG-1070 | ABUTMENT No. 1 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-140-ST-DG-1214       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 5 OF 8       | NL3-BGE-140-ST-DG-1385         | PRECAST PANEL REINFORCEMENT DETAILS SHEET 1     |
| NL3-BGE-140-ST-DG-1071 | ABUTMENT No. 2 MSE WALL PLAN AND ELEVATION                       | NL3-BGE-140-ST-DG-1215       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 6 OF 8       | NL3-BGE-140-ST-DG-1386         | PRECAST PANEL REINFORCEMENT DETAILS SHEET 2     |
| NL3-BGE-140-ST-DG-1072 | ABUTMENT MSE WALL DETAILS  | NL3-BGE-140-ST-DG-1216       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 7 OF 8       |                                |   |
| NL3-BGE-140-ST-DG-1100 | ABUTMENT No. 1 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-140-ST-DG-1217       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 8 OF 8       | NL3-BGE-140-ST-DG-1395         | INSITU BARRIER STITCH ELEVATION AND DETAILS     |
| NL3-BGE-140-ST-DG-1105 | ABUTMENT No. 2 FOOTING CONCRETE PLAN AND SECTIONS                | NL3-BGE-140-ST-DG-1220       | PRECAST BEAM CONCRETE SECTIONS - SHEET 1 OF 2               | NL3-BGE-140-ST-DG-1400         | TRANSITION BARRIER DETAILS SHEET 1              |
| NL3-BGE-140-ST-DG-1110 | ABUTMENT No. 1 AND No. 2 FOOTING REINFORCEMENT PLAN AND SECTIONS | NL3-BGE-140-ST-DG-1221       | PRECAST BEAM CONCRETE SECTIONS - SHEET 2 OF 2               | NL3-BGE-140-ST-DG-1401         | TRANSITION BARRIER DETAILS SHEET 2              |
| NL3-BGE-140-ST-DG-1115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS         | NL3-BGE-140-ST-DG-1222       | PRECAST BEAM CONCRETE SECTIONS AND DETAILS                  | NL3-BGE-140-ST-DG-1405         | TRANSITION BARRIER REINFORCEMENT DETAILS        |
| NL3-BGE-140-ST-DG-1120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS  | NL3-BGE-140-ST-DG-1240       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 1 OF 3      | NL3-BGE-140-ST-DG-1420         | ANTI-THROW SCREEN PLANS AND ELEVATIONS          |
| NL3-BGE-140-ST-DG-1130 | ABUTMENT N° 1 CAP BEAM CONCRETE PLAN AND ELEVATION               | NL3-BGE-140-ST-DG-1241       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 2 OF 3      | NL3-BGE-140-ST-DG-1421         | ANTI-THROW SCREEN DETAILS                       |
| NL3-BGE-140-ST-DG-1131 | ABUTMENT N° 2 CAP BEAM CONCRETE PLAN AND ELEVATION               | NL3-BGE-140-ST-DG-1242       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 3 OF 3      | NL3-BGE-140-ST-DG-1425         | PRECAST PARAPET PANEL DETAILS                   |
| NL3-BGE-140-ST-DG-1132 | ABUTMENT CAP BEAM CONCRETE TYPICAL DETAILS                       | NL3-BGE-140-ST-DG-1243       | PRECAST BEAM POST TENSIONING DETAILS SHEET 1 OF 2           | NL3-BGE-140-ST-DG-1430         | SERVICES LAYOUT PLAN AND SECTIONS               |
| NL3-BGE-140-ST-DG-1135 | ABUTMENT CAP BEAM REINFORCEMENT PLAN AND SECTIONS                | NL3-BGE-140-ST-DG-1244       | PRECAST BEAM POST TENSIONING DETAILS SHEET 2 OF 2           | NL3-BGE-140-ST-DG-1460         | PSP INFILL CONCRETE AND JOINT DETAILS           |
| NL3-BGE-140-ST-DG-1140 | UPPER WINGWALL SETOUT PLAN                                       | NL3-BGE-140-ST-DG-1245       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 1 OF 4 | <b>MRWA REFERENCE DRAWINGS</b> |   |
| NL3-BGE-140-ST-DG-1141 | UPPER WINGWALL CONCRETE PLANS AND ELEVATIONS SHEET 1             | NL3-BGE-140-ST-DG-1246       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 2 OF 4 | 0430-1314                      | PRECAST PARAPET PANELS                          |
| NL3-BGE-140-ST-DG-1142 | UPPER WINGWALL CONCRETE PLANS AND ELEVATIONS SHEET 2             | NL3-BGE-140-ST-DG-1250       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 3 OF 4 |                                |   |
| NL3-BGE-140-ST-DG-1143 | UPPER WINGWALL CONCRETE TYPICAL DETAILS                          | NL3-BGE-140-ST-DG-1251       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 4 OF 4 |                                |   |
| NL3-BGE-140-ST-DG-1145 | UPPER WINGWALL REINFORCEMENT PLAN, ELEVATION AND SECTION         | NL3-BGE-140-ST-DG-1252       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 1 OF 4 |                                |   |
| NL3-BGE-140-ST-DG-1150 | PILE LAYOUT PLAN   | NL3-BGE-140-ST-DG-1253       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 2 OF 4 |                                |   |
| NL3-BGE-140-ST-DG-1151 | PILE REINFORCEMENT ELEVATIONS AND SECTIONS                       | NL3-BGE-140-ST-DG-1260       | PRECAST BEAM REINFORCEMENT SECTIONS                         |                                |   |
| NL3-BGE-140-ST-DG-1160 | PIER LAYOUT PLANS  | NL3-BGE-140-ST-DG-1270       | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM           |                                |   |
| NL3-BGE-140-ST-DG-1161 | PIER No. 1 CONCRETE PLAN AND SECTIONS                            | NL3-BGE-140-ST-DG-1280       | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM               |                                |   |
| NL3-BGE-140-ST-DG-1162 | PIER No. 2 CONCRETE PLAN AND SECTIONS                            | NL3-BGE-140-ST-DG-1290       | PRECAST BEAM REINFORCEMENT PIER END DIAPHRAGM               |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1295       | PRECAST BEAM CONTINUITY DETAILS                             |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1300       | DECK CONCRETE PLAN  |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1301       | DECK CONCRETE LEVEL TABLES                                  |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1305       | DECK CONCRETE DETAILS AND ELEVATIONS                        |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1310       | DECK CONCRETE SECTIONS AND DETAILS                          |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1320       | DECK REINFORCEMENT PLAN AND DETAILS                         |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1321       | DECK REINFORCEMENT SECTION                                  |                                |   |
|                        |  | NL3-BGE-140-ST-DG-1325       | SKIRT BEAM REINFORCEMENT ELEVATIONS                         |                                |   |

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 04.05.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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BG&E DOC No: P17077

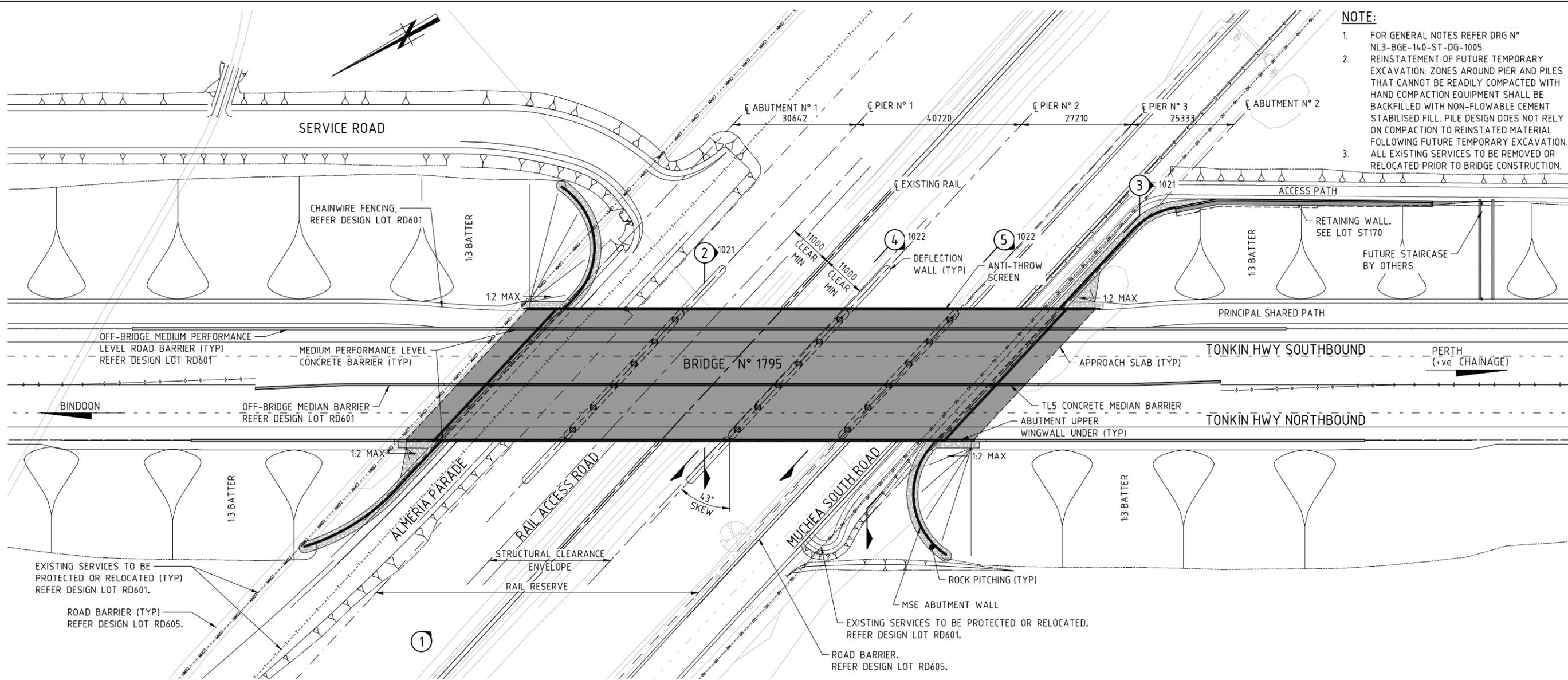
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|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 04.05.18 |
| DESIGNED       | J. deBURGH  | 04.05.18 |
| CHECKED        | P. THOMPSON | 04.05.18 |
| APPROVED       | P. THOMPSON | 07.06.18 |
| DRAWING STATUS | IFC         |          |
| VERIFIED       | R. DENHAM   | 11.06.18 |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
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Level 15, 300 Murray St, Perth  
Western Australia 6000



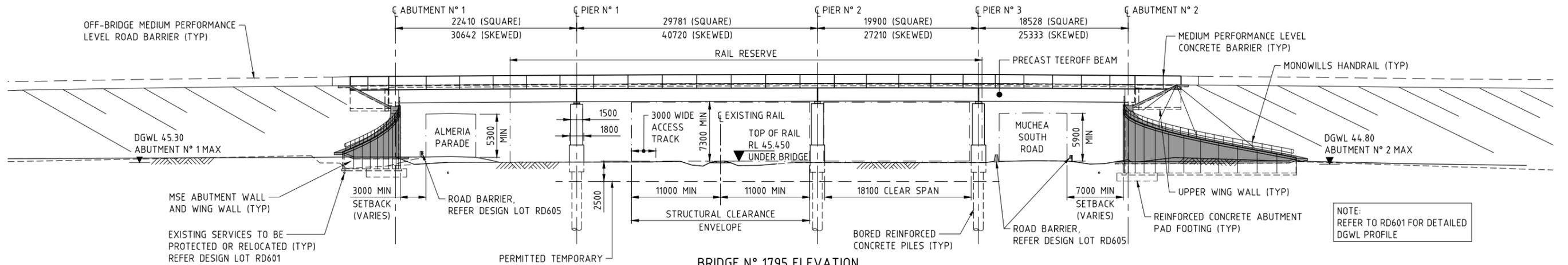

INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (5.89 SLK)<br>BRIDGE N° 1795 OVER MUCHEA SOUTH ROAD<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-140-ST-DG-1001   | REV                            | 0                        |



- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-140-ST-DG-1005.
  - REINSTATEMENT OF FUTURE TEMPORARY EXCAVATION: ZONES AROUND PIER AND PILES THAT CANNOT BE READILY COMPACTED WITH HAND COMPACTION EQUIPMENT SHALL BE BACKFILLED WITH NON-FLOWABLE CEMENT STABILISED FILL. PILE DESIGN DOES NOT RELY ON COMPACTION TO REINSTATED MATERIAL FOLLOWING FUTURE TEMPORARY EXCAVATION.
  - ALL EXISTING SERVICES TO BE REMOVED OR RELOCATED PRIOR TO BRIDGE CONSTRUCTION.

**BRIDGE N° 1795 PLAN**  
1:500



**BRIDGE N° 1795 ELEVATION**  
ELEVATION ①  
1:250

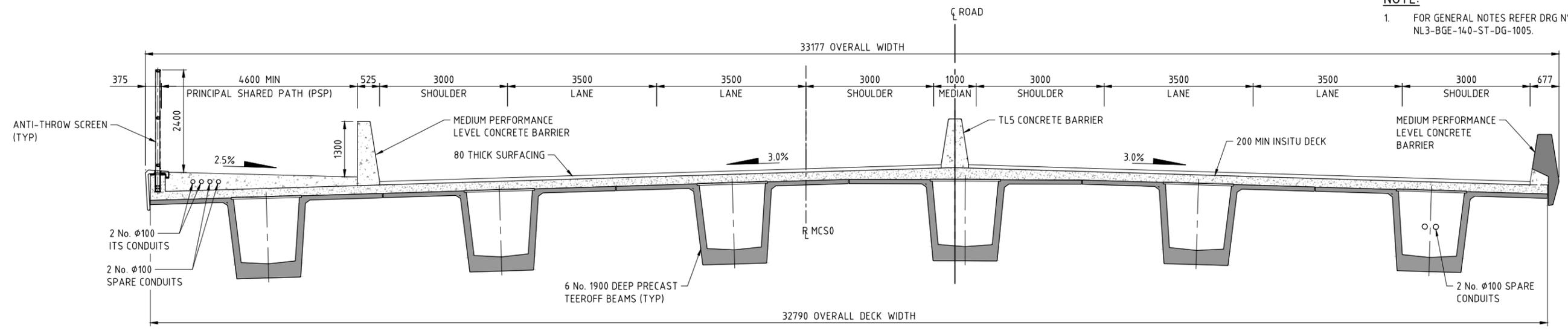
NOTE: REFER TO RD601 FOR DETAILED DGWL PROFILE

| METADATA                          |  | Perth Office—                |  | DRAWN                          |  | DESIGNED                       |  | CHECKED              |  | APPROVED                            |  | DRAWING STATUS                      |  | VERIFIED                            |  | PROJECT MANAGER                     |  | DESIGN MANAGER                      |  | PROJECT MANAGER                     |  | PROJECT DIRECTOR                    |  |
|-----------------------------------|--|------------------------------|--|--------------------------------|--|--------------------------------|--|----------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|
| GROUND SURVEY STANDARD: 67-08-43  |  | 484 Murray St, Perth WA 6000 |  | K. TAYLOR 04.05.18             |  | J. deBURGH 04.05.18            |  | P. THOMPSON 04.05.18 |  | P. THOMPSON 07.06.18                |  | IFC                                 |  | R. DENHAM 11.06.18                  |  | C. SAXON 14.06.18                   |  | A. WHITESIDE 11.06.18               |  | Y. SIDDIQUI 18.06.18                |  | R. ARNOTT 21.06.18                  |  |
| DATE OF CAPTURE:                  |  | P / +61 8 6364 3300          |  | Keliogg Brown & Root Pty Ltd   |  | KBR                            |  | CPB CONTRACTORS      |  | KBR                                 |  |
| MAPPING SURVEY STANDARD: 67-08-43 |  | E / info@bgeeng.com          |  | ABN 91 007 660 317             |  | Level 15, 300 Murray St, Perth |  | WESTERN AUSTRALIA    |  | INFRASTRUCTURE DELIVERY DIRECTORATE |  |
| DATE OF CAPTURE:                  |  | bgeeng.com                   |  | Level 15, 300 Murray St, Perth |  | Western Australia 6000         |  | WESTERN AUSTRALIA    |  | INFRASTRUCTURE DELIVERY DIRECTORATE |  |
| MAIN ROADS PROJECT ZONE: PCG94    |  | BG&E DOC No: P17077          |  | DRAWING STATUS                 |  | VERIFIED                       |  | PROJECT MANAGER      |  | DESIGN MANAGER                      |  | PROJECT MANAGER                     |  | PROJECT DIRECTOR                    |  | PROJECT MANAGER                     |  | PROJECT DIRECTOR                    |  | PROJECT MANAGER                     |  | PROJECT DIRECTOR                    |  |
| HEIGHT DATUM: AHD                 |  |                              |  | IFC                            |  | R. DENHAM 11.06.18             |  | C. SAXON 14.06.18    |  | A. WHITESIDE 11.06.18               |  | Y. SIDDIQUI 18.06.18                |  | R. ARNOTT 21.06.18                  |  |                                     |  |                                     |  |                                     |  |                                     |  |
| ISSUED FOR CONSTRUCTION           |  |                              |  |                                |  |                                |  |                      |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |
| AMENDMENTS                        |  |                              |  |                                |  |                                |  |                      |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |                                     |  |

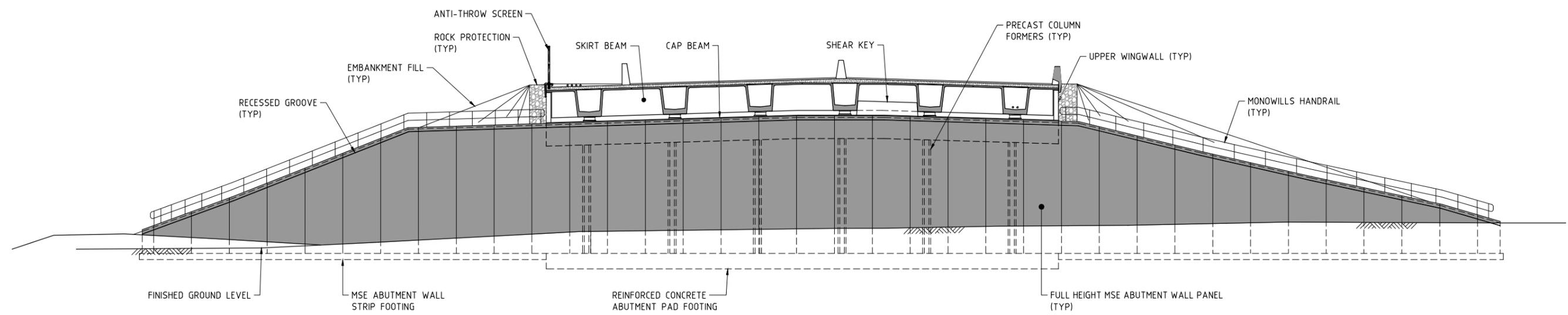
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|-----------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| PROJECT TITLE   | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE   | TONKIN HIGHWAY H017 (5.89 SLK)<br>BRIDGE N° 1795 OVER MUCHEA SOUTH ROAD<br>GENERAL ARRANGEMENT PLAN |                                |                          |
| DRAWING No.     | NL3-BGE-140-ST-DG-1020  |                                |                          |
| REV             | 0   |                                |                          |

SCALE 1:500  
A 1

**NOTE:**  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-140-ST-DG-1005.



**TYPICAL DECK SECTION**  
**SECTION (2) 1020**  
1:50



**ABUTMENT N° 2 ELEVATION**  
**ELEVATION (3) 1020**  
1:125

**DESIGN INFORMATION SUMMARY**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE, EXCEPT FOR COLLISION LOADS AS PER AS5100-2017.
- DEAD LOADS: - AS PER CODE.
- TRAFFIC: - SM1600 AS PER CODE.  
- HLP 400 AS PER CODE.  
- G2V4 / G2V5 SUPERVISED AS PER MRWA DOC. No. 3912/02-2.
- PEDESTRIAN LOAD: - AS PER CODE.
- COLLISION LOAD ON PIERS - AS PER AS5100-2017
- WIND DATA: - WIND REGION A1  
- SERVICEABILITY WIND SPEED V20 = 37m/s.  
- ULTIMATE WIND SPEED V2000 = 48m/s
- EARTHQUAKE DATA: - BRIDGE CLASSIFICATION - TYPE II  
- ACCELERATION COEFFICIENT - Z = 0.09, Kp = 1.7  
- SUB SOIL CLASSIFICATION - Ce  
- STRUCTURAL RESPONSE FACTOR - 5.0  
- IMPORTANCE FACTOR - 1.0
- BRIDGE BARRIERS: - MEDIUM PERFORMANCE LEVEL.
- FOOTING BEARING PRESSURES (BASED ON MEYERHOF DISTRIBUTION)  
SLS = 265kPa  
ULS = 340 kPa
- DIFFERENTIAL SETTLEMENT ALLOWANCE BETWEEN ABUTMENTS AND PIERS = 20mm
- DIFFERENTIAL SETTLEMENT ALLOWANCE BETWEEN PIERS = 10mm.
- FATIGUE ROUTE FACTOR Rf = 1
- N° HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 4791

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
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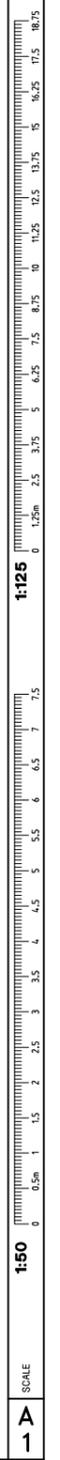
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|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 04.05.18 |
| DESIGNED       | J. deBURGH  | 04.05.18 |
| CHECKED        | P. THOMPSON | 04.05.18 |
| APPROVED       | P. THOMPSON | 07.06.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
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Level 15, 300 Murray St, Perth  
Western Australia 6000



|                 |              |          |                  |             |          |
|-----------------|--------------|----------|------------------|-------------|----------|
| PROJECT MANAGER | C. SAXON     | 14.06.18 | PROJECT MANAGER  | Y. SIDDIQUI | 18.06.18 |
| DESIGN MANAGER  | A. WHITESIDE | 11.06.18 | PROJECT DIRECTOR | R. ARNOTT   | 21.06.18 |

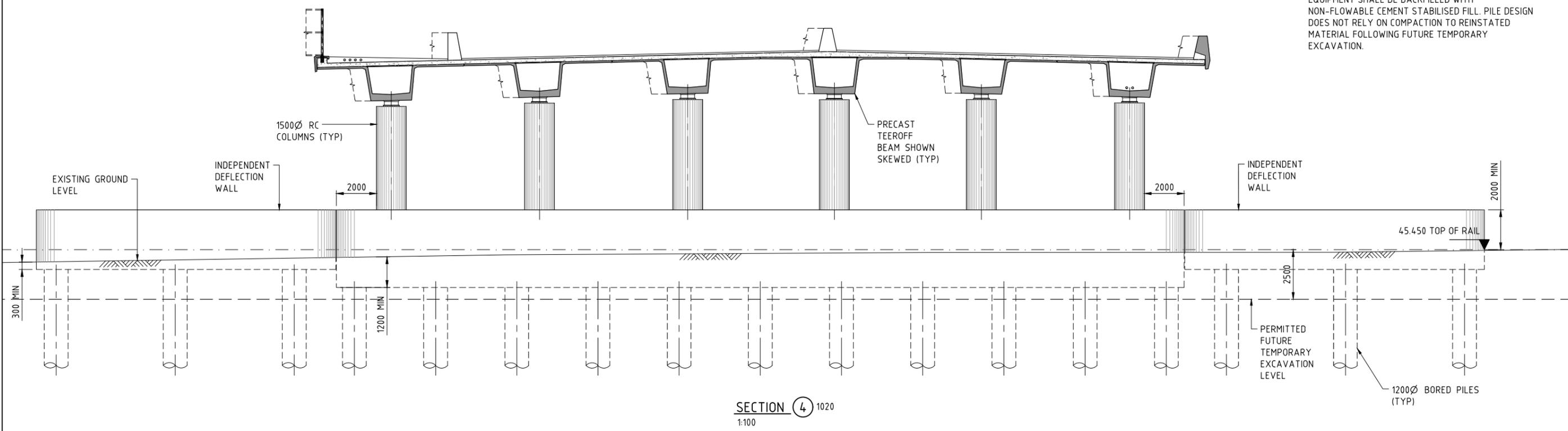
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|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  | PROJECT TITLE                  | NORTHLINK WA STAGE 3     |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (5.89 SLK)<br>BRIDGE N° 1795 OVER MUCHEA SOUTH ROAD<br>GENERAL ARRANGEMENT ELEVATION AND SECTION |                                |                          |
| DRAWING No.         | NL3-BGE-140-ST-DG-1021   |                                |                          |



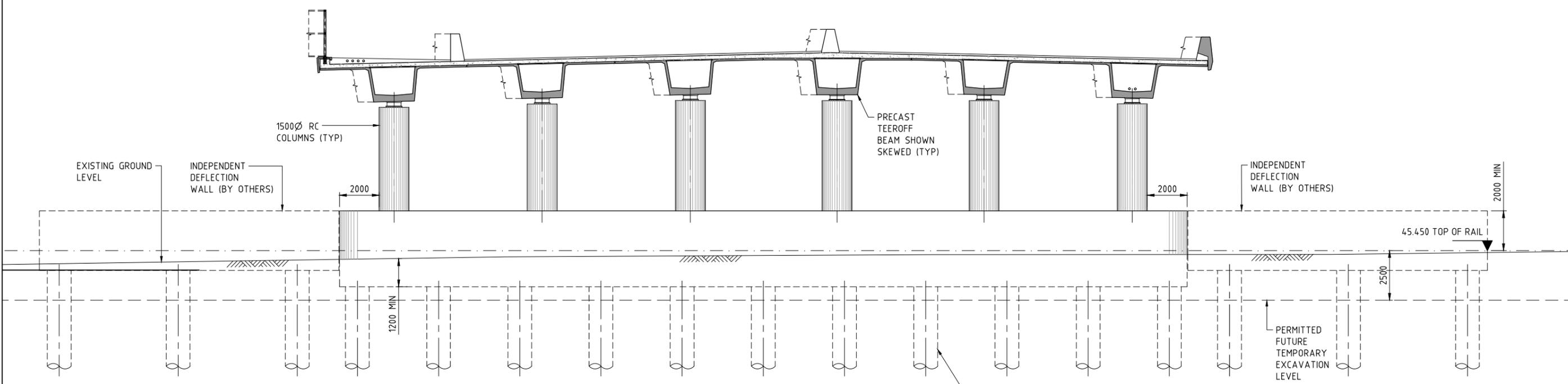
SCALE  
A  
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**NOTES:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-140-ST-DG-1005.
- REINSTATEMENT OF FUTURE TEMPORARY EXCAVATION: ZONES AROUND PIER AND PILES THAT CANNOT BE READILY COMPACTED WITH HAND COMPACTION EQUIPMENT SHALL BE BACKFILLED WITH NON-FLOWABLE CEMENT STABILISED FILL. PILE DESIGN DOES NOT RELY ON COMPACTION TO REINSTATED MATERIAL FOLLOWING FUTURE TEMPORARY EXCAVATION.



SECTION 4 1020  
1:100



SECTION 5 1020  
1:100

SCALE  
A  
1

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P /+61 8 6364 3300  
E /info@bgeeng.com  
bgeeng.com—

DRAWN: K. TAYLOR 04.05.18  
DESIGNED: J. deBURGH 04.05.18  
CHECKED: P. THOMPSON 04.05.18  
APPROVED: P. THOMPSON 07.06.18

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

PROJECT MANAGER: C. SAXON 14.06.18  
DESIGN MANAGER: A. WHITESIDE 11.06.18

PROJECT MANAGER: Y. SIDDIQUI 18.06.18  
PROJECT DIRECTOR: R. ARNOTT 21.06.18

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (5.89 SLK)<br>BRIDGE N° 1795 OVER MUCHEA SOUTH ROAD<br>GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.         | NL3-BGE-140-ST-DG-1022  |                                |                          |
| REV                 | 1   |                                |                          |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| <u>DRG No.</u>         | <u>DRAWING TITLE</u>   |
|------------------------|--|
| <b>GENERAL</b>         |  |
| NL3-BGE-221-ST-DG-1000 | COVER SHEET  |
| NL3-BGE-221-ST-DG-1001 | INDEX SHEET  |
| NL3-BGE-221-ST-DG-1005 | GENERAL NOTES  |
| NL3-BGE-221-ST-DG-1008 | CONSTRUCTION NOTES   |
| NL3-BGE-221-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                  |
| NL3-BGE-221-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                  |
| NL3-BGE-221-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                  |
| NL3-BGE-221-ST-DG-1020 | GENERAL ARRANGEMENT PLAN                                     |
| NL3-BGE-221-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                                |
| NL3-BGE-221-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                 |
| NL3-BGE-221-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 1                  |
| NL3-BGE-221-ST-DG-1050 | GEOMETRIC DATA   |
| <b>SUB-STRUCTURE</b>   |  |
| NL3-BGE-221-ST-DG-1080 | ABUTMENT No. 1 CONCRETE PLAN AND ELEVATIONS                  |
| NL3-BGE-221-ST-DG-1081 | ABUTMENT No. 2 CONCRETE PLAN AND ELEVATIONS                  |
| NL3-BGE-221-ST-DG-1090 | ABUTMENT No. 1 REINFORCEMENT PLAN AND ELEVATION              |
| NL3-BGE-221-ST-DG-1091 | ABUTMENT No. 1 REINFORCEMENT WINGWALL ELEVATIONS AND DETAILS |
| NL3-BGE-221-ST-DG-1095 | ABUTMENT No. 2 REINFORCEMENT PLAN AND ELEVATION              |
| NL3-BGE-221-ST-DG-1096 | ABUTMENT No. 2 REINFORCEMENT WINGWALL ELEVATIONS AND DETAILS |
| NL3-BGE-221-ST-DG-1150 | PIER CONCRETE PLAN AND ELEVATION                             |
| NL3-BGE-221-ST-DG-1155 | PIER REINFORCEMENT ELEVATION AND DETAILS                     |
| <b>SUPER-STRUCTURE</b> |  |
| NL3-BGE-221-ST-DG-1190 | BEARINGS PLAN AND NOTES                                      |
| NL3-BGE-221-ST-DG-1191 | BEARINGS ATTACHMENT PLATE PLANS AND DETAILS                  |
| NL3-BGE-221-ST-DG-1200 | PRECAST BEAM LAYOUT PLAN AND DETAILS                         |
| NL3-BGE-221-ST-DG-1210 | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 1 OF 2        |
| NL3-BGE-221-ST-DG-1211 | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 2 OF 2        |
| NL3-BGE-221-ST-DG-1220 | PRECAST BEAM CONCRETE SECTIONS                               |
| NL3-BGE-221-ST-DG-1221 | PRECAST BEAM CONCRETE SECTIONS AND DETAILS                   |
| NL3-BGE-221-ST-DG-1240 | PRECAST BEAM No.1 PRESTRESS LAYOUT AND NOTES                 |
| NL3-BGE-221-ST-DG-1241 | PRECAST BEAM No.2 PRESTRESS LAYOUT AND NOTES                 |
| NL3-BGE-221-ST-DG-1250 | PRECAST BEAM No.1 REINFORCEMENT PLAN AND ELEVATIONS          |
| NL3-BGE-221-ST-DG-1251 | PRECAST BEAM No.2 REINFORCEMENT PLAN AND ELEVATIONS          |
| NL3-BGE-221-ST-DG-1260 | PRECAST BEAM REINFORCEMENT SECTIONS                          |
| NL3-BGE-221-ST-DG-1270 | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM            |
| NL3-BGE-221-ST-DG-1280 | PRECAST BEAM REINFORCEMENT INTERNAL END DIAPHRAGM            |
| NL3-BGE-221-ST-DG-1290 | PRECAST BEAM REINFORCEMENT PIER END DIAPHRAGM                |
| NL3-BGE-221-ST-DG-1300 | DECK CONCRETE PLAN   |
| NL3-BGE-221-ST-DG-1305 | DECK CONCRETE DETAILS AND ELEVATIONS                         |

| <u>DRG No.</u>                 | <u>DRAWING TITLE</u>                           |
|--------------------------------|--|
| <b>SUPER-STRUCTURE (CON'T)</b> |  |
| NL3-BGE-221-ST-DG-1320         | DECK REINFORCEMENT PLAN                        |
| NL3-BGE-221-ST-DG-1360         | EXPANSION JOINT PLAN AND SECTIONS              |
| NL3-BGE-221-ST-DG-1420         | PEDESTRIAN BALUSTRADE DETAILS SHEET 1 OF 2     |
| NL3-BGE-221-ST-DG-1421         | PEDESTRIAN BALUSTRADE DETAILS SHEET 2 OF 2     |
| NL3-BGE-221-ST-DG-1430         | LIGHTING AND SERVICES LAYOUT PLAN AND SECTIONS |
| NL3-BGE-221-ST-DG-1431         | LIGHTING AND SERVICES DETAILS AND SECTIONS     |

| <b>MRWA REFERENCE DRAWINGS</b> |                                   |
|--------------------------------|-----------------------------------|
| 0730-0406-2                    | BRIDGE ACCESS WAY SHEET N° 1      |
| 0630-1902                      | BRIDGE LIGHT POLE BASE SHEET N° 2 |

**METADATA**

|                          |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
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bgeeng.com—



BG&E DOC No: P17077

|                |             |          |   |
|----------------|-------------|----------|---|
| DRAWN          | A. RAMOS    | 28.02.18 | <b>Keliogg Brown &amp; Root Pty Ltd</b><br><br>ABN 91 007 660 317<br>Level 15, 300 Murray St, Perth<br>Western Australia 6000 |
| DESIGNED       | K. MCINTYRE | 28.02.18 |   |
| CHECKED        | P. THOMPSON | 28.02.18 |   |
| APPROVED       | C. RAMM     | 20.03.18 |   |
| DRAWING STATUS | IFC         |          | VERIFIED R. DENHAM<br>DATE 26.03.18   |



INFRASTRUCTURE DELIVERY DIRECTORATE

|                 |              |          |                  |             |          |
|-----------------|--------------|----------|------------------|-------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 27.03.18 | PROJECT MANAGER  | Y. SIDDIQUI | 28.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 26.03.18 | PROJECT DIRECTOR | R. ARNOTT   | 29.03.18 |

|                 |                    |                                |              |
|-----------------|--------------------|--------------------------------|--------------|
| LOCAL AUTHORITY | CITY OF SWAN (109) | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN |
|-----------------|--------------------|--------------------------------|--------------|

MRWA DRAWING NUMBER

PROJECT TITLE  
**NORTHLINK WA STAGE 3**

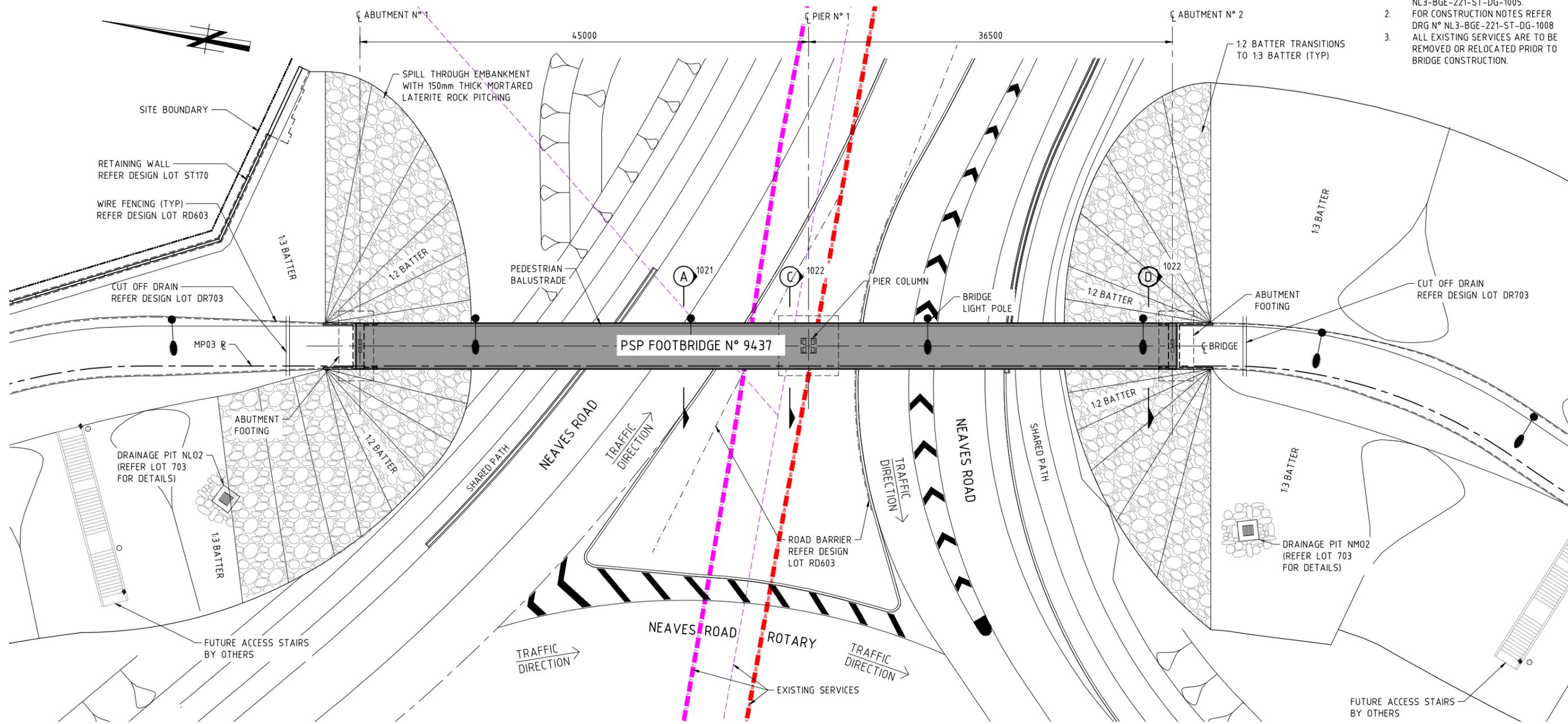
DRAWING TITLE  
NEAVES ROAD (0.55 SLK)  
FOOTBRIDGE N° 9437 OVER NEAVES ROAD INTERCHANGE  
INDEX SHEET

DRAWING No: **NL3-BGE-221-ST-DG-1001** REV 0

SCALE  
**A  
1**

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-221-ST-DG-1005.
- FOR CONSTRUCTION NOTES REFER DRG N° NL3-BGE-221-ST-DG-1008 ALL EXISTING SERVICES ARE TO BE REMOVED OR RELOCATED PRIOR TO BRIDGE CONSTRUCTION.



**FOOTBRIDGE N° 9437 PLAN**  
1:200

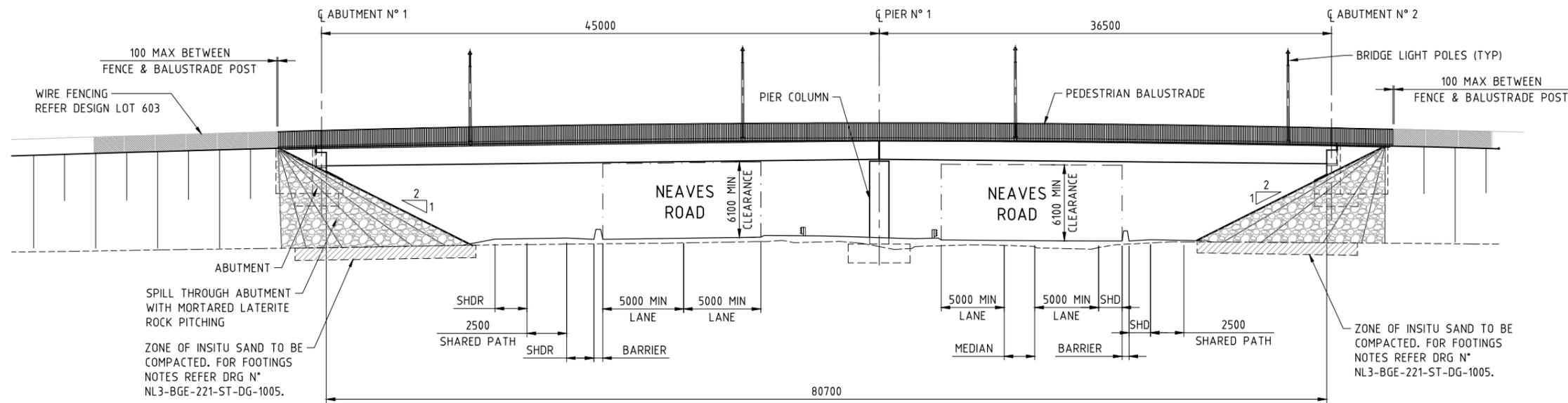
**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS -AS PER CODE.
- TRAFFIC -M TRUCK AS PER MRWA DOC No. 3912/02-02
- PEDESTRIAN LOAD: -AS PER CODE (5kPa MAX.)
- COLLISION LOAD ON PIER: -AS PER CODE (2000kN)
- WIND SPEED (AS PER AS 5100)
  - SERVICEABILITY V20 = 35m/s
  - ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:
  - BRIDGE CLASSIFICATION = TYPE II
  - HAZARD FACTOR Z = 0.09
  - PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.
  - SUB SOIL CLASSIFICATION = Ce
  - STRUCTURAL RESPONSE FACTOR = 3.0
  - IMPORTANCE FACTOR = 1.0
- MAXIMUM SLS BEARING PRESSURE - ABUTMENTS 170 kPa  
- PIER 200 kPa  
MAXIMUM ULS BEARING PRESSURE - 300 kPa

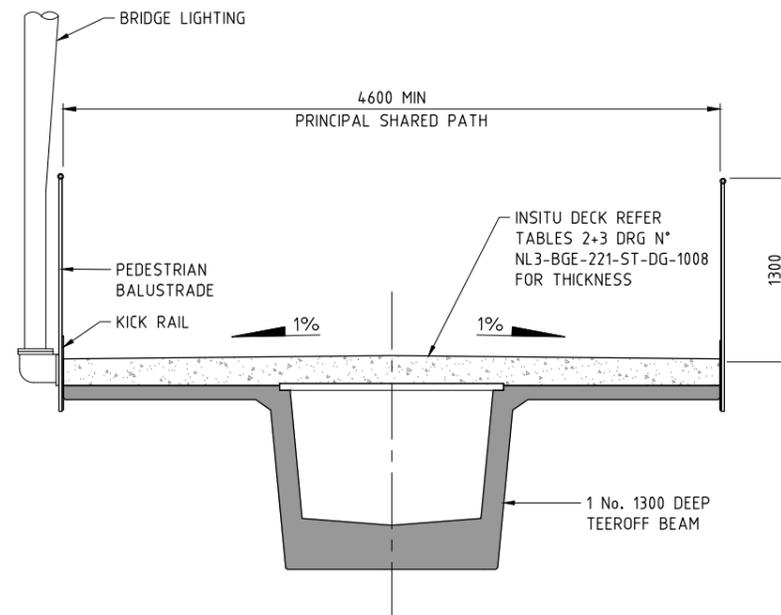
| METADATA                  |              | Perth Office—<br>484 Murray St, Perth WA 6000<br>P /+61 8 6364 3300<br>E /info@bgeeng.com<br>bgeeng.com |                                | DRAWN A. RAMOS 28.02.18<br>DESIGNED K. MCINTYRE 28.02.18<br>CHECKED P. THOMPSON 28.02.18<br>APPROVED C. RAMM 20.03.18 | Keliogg Brown & Root Pty Ltd<br><br>ABN 91 007 660 317<br>Level 15, 300 Murray St, Perth<br>Western Australia 6000 |                    |                             |                                     | LOCAL AUTHORITY CITY OF SWAN (109) MAIN ROADS RESPONSIBILITY AREA METROPOLITAN<br>MRWA DRAWING NUMBER | PROJECT TITLE NORTHLINK WA STAGE 3<br>DRAWING TITLE NEAVES ROAD (0.55 SLK)<br>FOOTBRIDGE N° 9437 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT PLAN |
|---------------------------|--------------|---|--------------------------------|---|--|--------------------|-----------------------------|-------------------------------------|---|---|
| 0 ISSUED FOR CONSTRUCTION | PDT 10.04.18 |   |                                |   |  |                    |                             |                                     |   |   |
| No.                       | DESCRIPTION  | APPROVED & DATE   | MAIN ROADS PROJECT ZONE: PCG94 | HEIGHT DATUM: AHD   | BG&E DOC No: P17077  | DRAWING STATUS IFC | VERIFIED R. DENHAM 26.03.18 | PROJECT MANAGER S. NICOLAY 27.03.18 | PROJECT MANAGER Y. SIDDIQUI 28.03.18  | PROJECT DIRECTOR R. ARNOTT 29.03.18   |

SCALE 1:1000  
A 1

NOTE:  
 1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-221-ST-DG-1005.



FOOTBRIDGE N° 9437 ELEVATION  
 1:200



SECTION A 1020  
 1:25

SCALE  
 1:200  
 1:25  
 A  
 1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 10.04.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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 bgeeng.com—



|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A. RAMOS    | 28.02.18 |
| DESIGNED       | K. MCINTYRE | 28.02.18 |
| CHECKED        | P. THOMPSON | 28.02.18 |
| APPROVED       | C. RAMM     | 20.03.18 |
| DRAWING STATUS | IFC         |          |

Keliogg Brown & Root Pty Ltd  
**KBR**  
 ABN 91 007 660 317  
 Level 15, 300 Murray St, Perth  
 Western Australia 6000

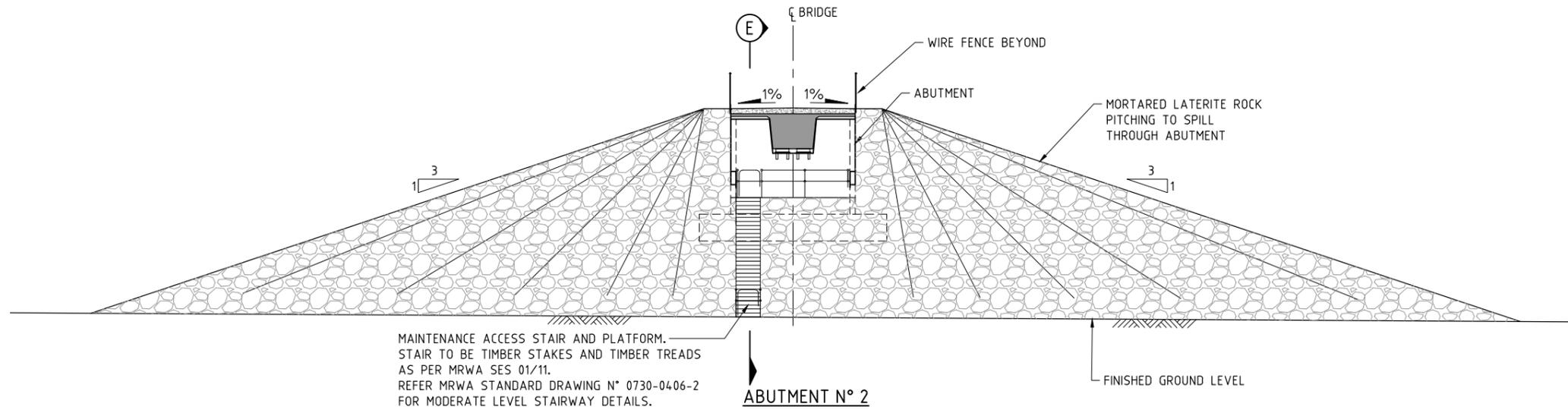


INFRASTRUCTURE DELIVERY DIRECTORATE

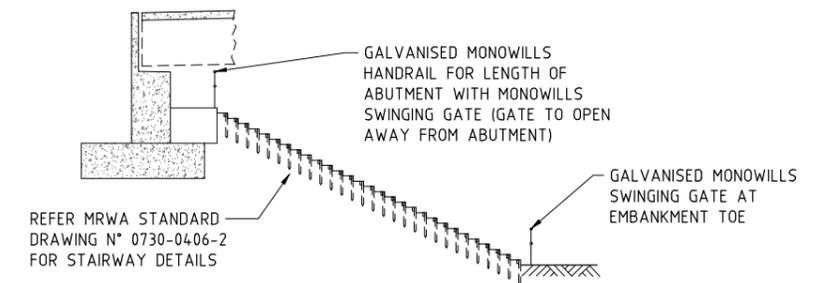
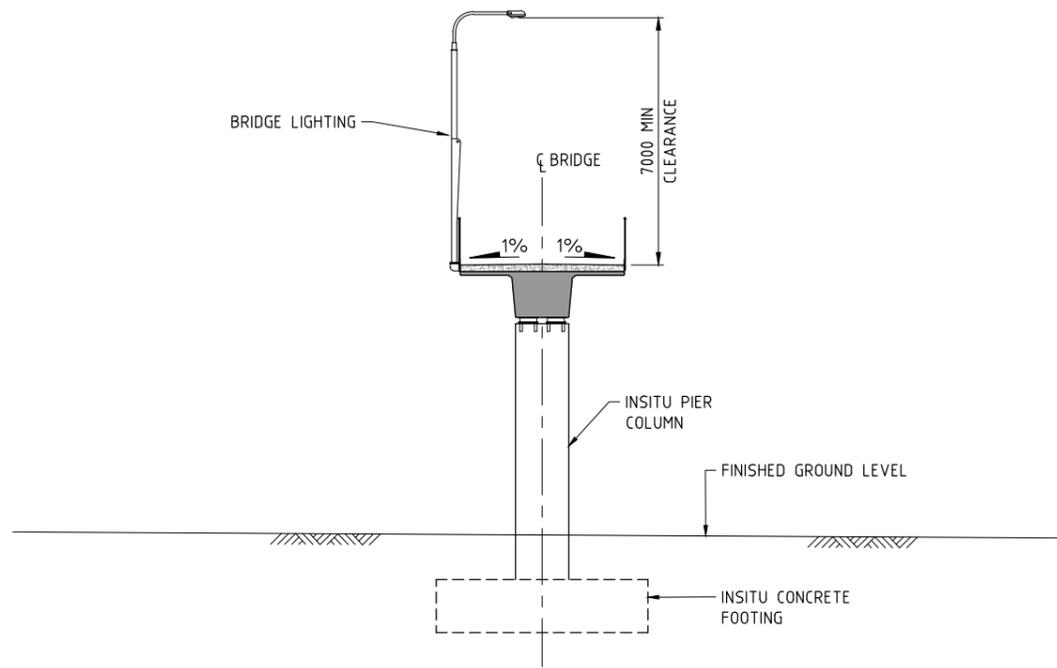
|                 |              |          |                  |             |          |
|-----------------|--------------|----------|------------------|-------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 27.03.18 | PROJECT MANAGER  | Y. SIDDIQUI | 28.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 26.03.18 | PROJECT DIRECTOR | R. ARNOTT   | 29.03.18 |

|                 |  |                                |              |
|-----------------|--|--------------------------------|--------------|
| LOCAL AUTHORITY | CITY OF SWAN (109)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN |
| PROJECT TITLE   | NORTHLINK WA STAGE 3   |                                |              |
| DRAWING TITLE   | NEAVES ROAD (0.55 SLK)<br>FOOTBRIDGE N° 9437 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT ELEVATION |                                |              |
| DRAWING No.     | NL3-BGE-221-ST-DG-1021   | REV                            | 0            |

NOTE:  
 1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-221-ST-DG-1005.



MAINTENANCE ACCESS STAIR AND PLATFORM.  
 STAIR TO BE TIMBER STAKES AND TIMBER TREADS  
 AS PER MRWA SES 01/11.  
 REFER MRWA STANDARD DRAWING N° 0730-0406-2  
 FOR MODERATE LEVEL STAIRWAY DETAILS.



REFER MRWA STANDARD DRAWING N° 0730-0406-2 FOR STAIRWAY DETAILS

SCALE  
 1:1000  
 A  
 1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |
| ISSUED FOR CONSTRUCTION  | PDT 10.04.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |

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|          |             |          |
|----------|-------------|----------|
| DRAWN    | A. RAMOS    | 28.02.18 |
| DESIGNED | K. MCINTYRE | 28.02.18 |
| CHECKED  | P. THOMPSON | 28.02.18 |
| APPROVED | C. RAMM     | 20.03.18 |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
 ABN 91 007 660 317  
 Level 15, 300 Murray St, Perth  
 Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

|          |           |          |
|----------|-----------|----------|
| VERIFIED | R. DENHAM | 26.03.18 |
| DATE     |           |          |

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 27.03.18 |
| DESIGN MANAGER  | A. WHITESIDE | 26.03.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 28.03.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 29.03.18 |

|                     |   |                                |              |
|---------------------|---|--------------------------------|--------------|
| LOCAL AUTHORITY     | CITY OF SWAN (109)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN |
| MRWA DRAWING NUMBER |   |                                |              |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |              |
| DRAWING TITLE       | NEAVES ROAD (0.55 SLK)<br>FOOTBRIDGE N° 9437 OVER NEAVES ROAD INTERCHANGE<br>GENERAL ARRANGEMENT SECTIONS |                                |              |
| DRAWING No.         | NL3-BGE-221-ST-DG-1022  |                                |              |
| REV                 | 0   |                                |              |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| DRG No.                | DRAWING TITLE  |
|------------------------|--|
| <b>GENERAL</b>         |  |
| NL3-BGE-130-ST-DG-1000 | COVER SHEET  |
| NL3-BGE-130-ST-DG-1001 | INDEX SHEET  |
| NL3-BGE-130-ST-DG-1005 | GENERAL NOTES  |
| NL3-BGE-130-ST-DG-1008 | CONSTRUCTION NOTES                                     |
| NL3-BGE-130-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                            |
| NL3-BGE-130-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                            |
| NL3-BGE-130-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                            |
| NL3-BGE-130-ST-DG-1020 | GENERAL ARRANGEMENT PLAN                               |
| NL3-BGE-130-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                          |
| NL3-BGE-130-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                           |
| NL3-BGE-130-ST-DG-1030 | EMBANKMENT DETAILS                                     |
| NL3-BGE-130-ST-DG-1031 | EMBANKMENT SECTIONS                                    |
| NL3-BGE-130-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2            |
| NL3-BGE-130-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2            |
| NL3-BGE-130-ST-DG-1050 | GEOMETRIC DATA   |
| <b>SUB-STRUCTURE</b>   |  |
| NL3-BGE-130-ST-DG-1060 | PILE LAYOUT PLAN AND DETAILS                           |
| NL3-BGE-130-ST-DG-1061 | PILE REINFORCEMENT ELEVATIONS AND SECTIONS             |
| NL3-BGE-130-ST-DG-1070 | PRECAST WINGWALL LAYOUT PLAN AND DETAILS               |
| NL3-BGE-130-ST-DG-1071 | PRECAST WINGWALL SECTION AND DETAILS                   |
| NL3-BGE-130-ST-DG-1075 | PRECAST WINGWALL REINFORCEMENT DETAILS SHEET 1 OF 2    |
| NL3-BGE-130-ST-DG-1077 | PRECAST WINGWALL REINFORCEMENT DETAILS SHEET 2 OF 2    |
| NL3-BGE-130-ST-DG-1080 | ABUTMENT No. 1 CONCRETE PLAN AND ELEVATION             |
| NL3-BGE-130-ST-DG-1085 | ABUTMENT No. 2 CONCRETE PLAN AND ELEVATION             |
| NL3-BGE-130-ST-DG-1086 | ABUTMENT CONCRETE SECTIONS AND DETAILS                 |
| NL3-BGE-130-ST-DG-1090 | ABUTMENT No. 1 REINFORCEMENT PLAN AND ELEVATION        |
| NL3-BGE-130-ST-DG-1091 | ABUTMENT No. 1 REINFORCEMENT SECTIONS AND DETAILS      |
| NL3-BGE-130-ST-DG-1095 | ABUTMENT No. 2 REINFORCEMENT PLAN AND ELEVATION        |
| NL3-BGE-130-ST-DG-1096 | ABUTMENT No. 2 REINFORCEMENT SECTIONS AND DETAILS      |
| NL3-BGE-130-ST-DG-1150 | PIER No. 1 CONCRETE PLAN AND ELEVATION                 |
| NL3-BGE-130-ST-DG-1151 | PIER No. 2 CONCRETE PLAN AND ELEVATION                 |
| NL3-BGE-130-ST-DG-1152 | PIER CONCRETE SECTIONS AND DETAILS                     |
| NL3-BGE-130-ST-DG-1155 | PIER REINFORCEMENT ELEVATION AND DETAILS               |
| NL3-BGE-130-ST-DG-1190 | BEARINGS PLAN AND NOTES                                |
| NL3-BGE-130-ST-DG-1191 | BEARINGS TABLES  |
| NL3-BGE-130-ST-DG-1192 | BEARINGS ATTACHMENT PLATE PLANS AND DETAILS            |
| <b>SUPER-STRUCTURE</b> |  |
| NL3-BGE-130-ST-DG-1200 | PRECAST PLANK LAYOUT PLAN AND DETAILS                  |
| NL3-BGE-130-ST-DG-1210 | PRECAST PLANK CONCRETE PLAN AND ELEVATION SHEET 1 OF 4 |
| NL3-BGE-130-ST-DG-1211 | PRECAST PLANK CONCRETE PLAN AND ELEVATION SHEET 2 OF 4 |
| NL3-BGE-130-ST-DG-1212 | PRECAST PLANK CONCRETE PLAN AND ELEVATION SHEET 3 OF 4 |
| NL3-BGE-130-ST-DG-1213 | PRECAST PLANK CONCRETE PLAN AND ELEVATION SHEET 4 OF 4 |

| DRG No.                       | DRAWING TITLE  |
|-------------------------------|--|
| <b>SUPER-STRUCTURE CONT..</b> |  |
| NL3-BGE-130-ST-DG-1220        | PRECAST PLANK CONCRETE SECTIONS  |
| NL3-BGE-130-ST-DG-1240        | PRECAST PLANK PRESTRESS LAYOUT AND NOTES                               |
| NL3-BGE-130-ST-DG-1250        | PRECAST PLANK REINFORCEMENT PLAN AND ELEVATIONS                        |
| NL3-BGE-130-ST-DG-1260        | PRECAST PLANK REINFORCEMENT SECTIONS                                   |
| NL3-BGE-130-ST-DG-1270        | PRECAST PLANK REINFORCEMENT ABUTMENT, PIER END AND INTERNAL DIAPHRAGMS |
| NL3-BGE-130-ST-DG-1300        | DECK CONCRETE PLAN   |
| NL3-BGE-130-ST-DG-1305        | DECK CONCRETE DETAILS AND ELEVATIONS                                   |
| NL3-BGE-130-ST-DG-1310        | DECK CONCRETE SECTIONS AND DETAILS                                     |
| NL3-BGE-130-ST-DG-1320        | DECK REINFORCEMENT PLAN  |
| NL3-BGE-130-ST-DG-1325        | DECK REINFORCEMENT ELEVATIONS  |
| NL3-BGE-130-ST-DG-1330        | DECK REINFORCEMENT SECTIONS AND DETAILS                                |
| NL3-BGE-130-ST-DG-1340        | DECK WATERPROOFING PLAN AND DETAILS                                    |
| NL3-BGE-130-ST-DG-1345        | DECK WATERPROOFING SECTION AND DETAILS                                 |
| NL3-BGE-130-ST-DG-1350        | APPROACH SLAB CONCRETE PLAN AND SECTIONS                               |
| NL3-BGE-130-ST-DG-1355        | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS                          |
| NL3-BGE-130-ST-DG-1360        | EXPANSION JOINT PLAN AND SECTIONS                                      |
| NL3-BGE-130-ST-DG-1365        | COVER PLATE PLAN AND SECTIONS  |
| NL3-BGE-130-ST-DG-1366        | COVER PLATE DETAILS SHEET 1  |
| NL3-BGE-130-ST-DG-1367        | COVER PLATE DETAILS SHEET 2  |
| NL3-BGE-130-ST-DG-1370        | BARRIER LAYOUT PLAN AND DETAILS  |
| NL3-BGE-130-ST-DG-1375        | BARRIER SECTIONS AND DETAILS SHEET 1 OF 2                              |
| NL3-BGE-130-ST-DG-1376        | BARRIER SECTIONS AND DETAILS SHEET 2 OF 2                              |
| NL3-BGE-130-ST-DG-1380        | PRECAST BARRIER PANEL PLANS AND ELEVATIONS SHEET 1 OF 2                |
| NL3-BGE-130-ST-DG-1381        | PRECAST BARRIER PANEL PLANS AND ELEVATIONS SHEET 2 OF 2                |
| NL3-BGE-130-ST-DG-1385        | PRECAST PANEL REINFORCEMENT DETAILS                                    |
| NL3-BGE-130-ST-DG-1395        | INSITU STITCH POUR DETAILS   |
| NL3-BGE-130-ST-DG-1400        | TRANSITIONAL BARRIERS DETAILS SHEET 1                                  |
| NL3-BGE-130-ST-DG-1401        | TRANSITIONAL BARRIERS DETAILS SHEET 2                                  |
| NL3-BGE-130-ST-DG-1405        | TRANSITIONAL BARRIERS REINFORCEMENT DETAILS                            |
| NL3-BGE-130-ST-DG-1420        | PEDESTRIAN BALUSTRADE DETAILS  |
| NL3-BGE-130-ST-DG-1425        | PRECAST PARAPET PANEL DETAILS  |
| NL3-BGE-130-ST-DG-1430        | SERVICES LAYOUT PLAN AND SECTIONS                                      |

| MRWA REFERENCE DRAWINGS |   |
|-------------------------|---|
| 0430-1314               | PRECAST PARAPET PANEL DETAILS                             |
| 0730-0406-1             | BRIDGE ACCESS WAY SHEET N° 1                              |
| 0730-0407               | BRIDGE ACCESS WAY SHEET N° 2                              |
| 0530-1087-1             | BRIDGE BALUSTRADE FOR PRINCIPAL SHARED PATHS - SHEET N° 1 |
| 0530-1307-1             | BRIDGE BALUSTRADE FOR PRINCIPAL SHARED PATHS - SHEET N° 2 |

| No.        | DESCRIPTION                        | APPROVED & DATE |
|------------|------------------------------------|-----------------|
| 1          | PRECAST FORMER WALL PANELS REMOVED | PDT 17.04.18    |
| 0          | ISSUED FOR CONSTRUCTION            | PDT 03.04.18    |
| AMENDMENTS |                                    |                 |

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
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E / info@bgeeng.com  
bgeeng.com—



BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A.RIECK     | 03.04.18 |
| DESIGNED       | J. JAMESON  | 03.04.18 |
| CHECKED        | P. THOMPSON | 03.04.18 |
| APPROVED       | P. THOMPSON | 02.05.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

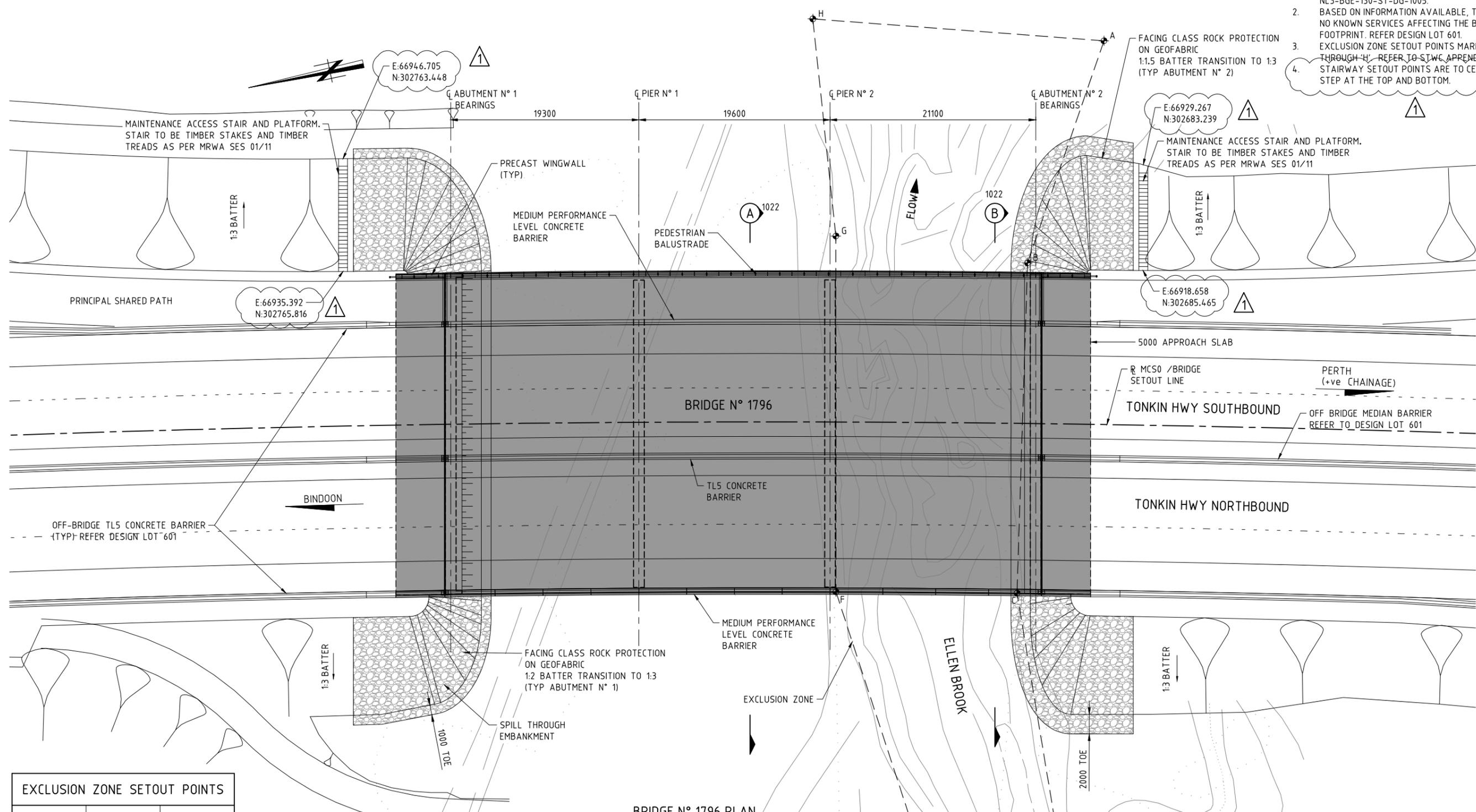
|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 08.05.18 |
| DESIGN MANAGER  | A. WHITESIDE | 07.05.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 09.05.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 09.05.18 |

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (4.36 SLK)<br>BRIDGE N° 1796 OVER ELLEN BROOK<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-130-ST-DG-1001   |                                | REV 1                    |

SCALE  
**A**  
**1**

- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-130-ST-DG-1005.
  - BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 601.
  - EXCLUSION ZONE SETOUT POINTS MARKED 'A' THROUGH 'H' REFER TO STWC APPENDIX 53.
  - STAIRWAY SETOUT POINTS ARE TO CENTRE OF STEP AT THE TOP AND BOTTOM.



**BRIDGE N° 1796 PLAN**  
1:200

| EXCLUSION ZONE SETOUT POINTS |             |              |
|------------------------------|-------------|--------------|
| SOP                          | EASTING (m) | NORTHING (m) |
| A                            | 66848.111   | 302718.155   |
| B                            | 66892.892   | 302723.079   |
| C                            | 66928.589   | 302715.607   |
| D                            | 66950.855   | 302713.361   |
| E                            | 66942.538   | 302684.593   |
| F                            | 66921.861   | 302696.930   |
| G                            | 66888.958   | 302704.930   |
| H                            | 66844.819   | 302706.769   |

SCALE 1:200 A 1

**METADATA**

GROUND SURVEY STANDARD: 67-08-43  
 DATE OF CAPTURE:  
 MAPPING SURVEY STANDARD: 67-08-43  
 DATE OF CAPTURE:  
 MAIN ROADS PROJECT ZONE: PCG94  
 HEIGHT DATUM: AHD

**Perth Office—**  
 484 Murray St, Perth WA 6000  
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 bgeeng.com



DRAWN: A.RIECK 03.04.18  
 DESIGNED: K.McINTYRE 03.04.18  
 CHECKED: P. THOMPSON 03.04.18  
 APPROVED: P. THOMPSON 02.05.18  
 DRAWING STATUS: IFC

**Keliogg Brown & Root Pty Ltd**  
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 Level 15, 300 Murray St, Perth  
 Western Australia 6000



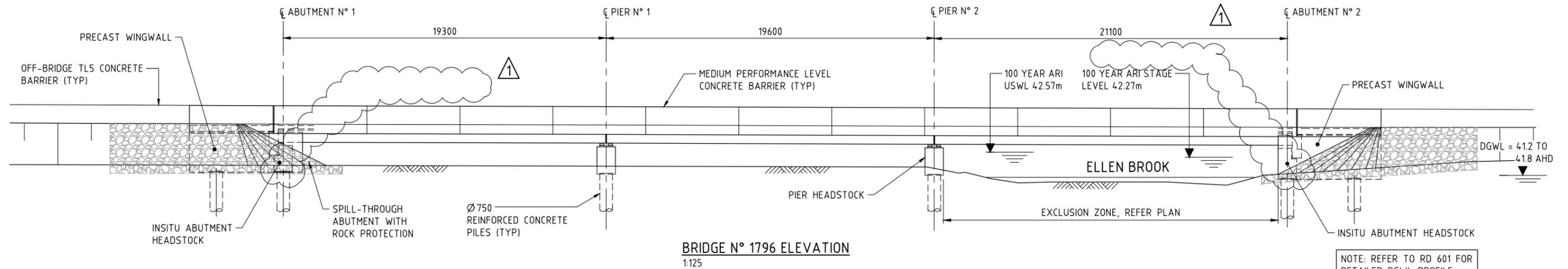
INFRASTRUCTURE DELIVERY DIRECTORATE

|  |  |
|--|--|
| LOCAL AUTHORITY<br>SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA<br>METROPOLITAN / WHEATBELT |
| PROJECT TITLE<br><b>NORTHLINK WA STAGE 3</b>   |  |
| DRAWING TITLE<br>TONKIN HIGHWAY H017 (4.36 SLK)<br>BRIDGE N° 1796 OVER ELLEN BROOK<br>GENERAL ARRANGEMENT PLAN |  |
| DRAWING No.<br>NL3-BGE-130-ST-DG-1020  | REV<br>1   |

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 1          | STAIR COORDINATES ADDED | PDT 06.08.18    |
| 0          | ISSUED FOR CONSTRUCTION | PDT 03.04.18    |
| AMENDMENTS |                         |                 |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-130-ST-DG-1005.



**BRIDGE N° 1796 ELEVATION**  
1:125

NOTE: REFER TO RD 601 FOR DETAILED DGWL PROFILE

**DESIGN INFORMATION SUMMARY**

- DESIGN IN ACCORDANCE WITH ASS100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS: - AS PER CODE.
- TRAFFIC: - SM1600 AS PER CODE.  
- HLP 400 AS PER CODE.  
- G2V4 / G2V5 SUPERVISED AS PER MRWA DOC. No. 3912/02-2.
- PEDESTRIAN LOAD: - AS PER CODE.
- COLLISION LOAD ON PIERS - N/A
- WIND SPEED (AS PER ASS100)  
- SERVICEABILITY V20 = 35m/s.  
- ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:  
- HAZARD FACTOR - Z = 0.09  
- PROBABILITY FACTOR - Kp = 1.7 FOR 2000 YEAR RETURN INTERVAL  
- BRIDGE CLASSIFICATION - TYPE 11  
- BRIDGE EARTHQUAKE DESIGN CATEGORY - BEDC - 2  
- IMPORTANCE FACTOR - 1.0  
- STRUCTURAL RESPONSE FACTOR - 3.0
- FLOOD DATA:

| ARI  | USWL RL. | VELOCITY |
|------|----------|----------|
| 100  | 4.257    | 1.2m/s   |
| 2000 | 4.303    | 2.2m/s   |
- BRIDGE BARRIERS: - MEDIUM PERFORMANCE LEVEL.
- SCOUR LEVEL RL 40.5m AHD, SLS AND ULS, PIER ONLY.
- FATIGUE ROUTE FACTOR Rf = 1 N° HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 4791

SCALE 1:125

A 1

LOCAL AUTHORITY SHIRE OF CHITTERING (502) MAIN ROADS RESPONSIBILITY AREA METROPOLITAN / WHEATBELT

M/RWA DRAWING NUMBER

PROJECT TITLE NORTHLINK WA STAGE 3

DRAWING TITLE TONKIN HIGHWAY H017 (4.36 SLK) BRIDGE N° 1796 OVER ELLEN BROOK GENERAL ARRANGEMENT ELEVATION

DRAWING No. NL3-BGE-130-ST-DG-1021 REV 1

| METADATA                          |                                    |                 |
|-----------------------------------|------------------------------------|-----------------|
| GROUND SURVEY STANDARD: 67-08-43  |                                    |                 |
| DATE OF CAPTURE:                  |                                    |                 |
| MAPPING SURVEY STANDARD: 67-08-43 |                                    |                 |
| DATE OF CAPTURE:                  |                                    |                 |
| MAIN ROADS PROJECT ZONE: PCG94    |                                    |                 |
| HEIGHT DATUM: AHD                 |                                    |                 |
| No.                               | DESCRIPTION                        | APPROVED & DATE |
| 1                                 | PRECAST FORMER WALL PANELS REMOVED | PDT 17.04.18    |
| 0                                 | ISSUED FOR CONSTRUCTION            | PDT 03.04.18    |
| AMENDMENTS                        |                                    |                 |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P /+61 8 6364 3300  
E / info@bgeeng.com  
bgeeng.com—



|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A. RIECK    | 03.04.18 |
| DESIGNED       | K. MCINTYRE | 03.04.18 |
| CHECKED        | P. THOMPSON | 03.04.18 |
| APPROVED       | P. THOMPSON | 02.05.18 |
| DRAWING STATUS | IFC         |          |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000




INFRASTRUCTURE DELIVERY DIRECTORATE

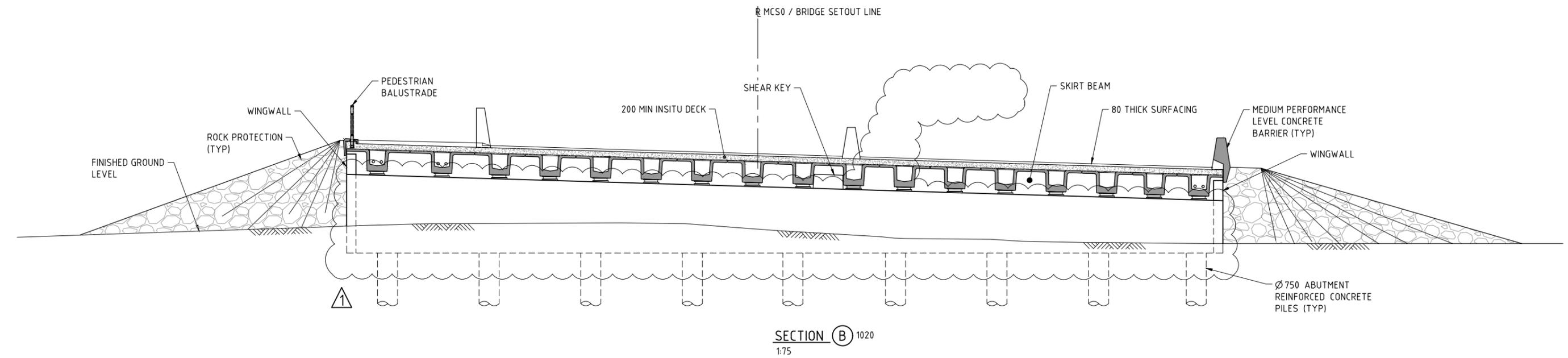
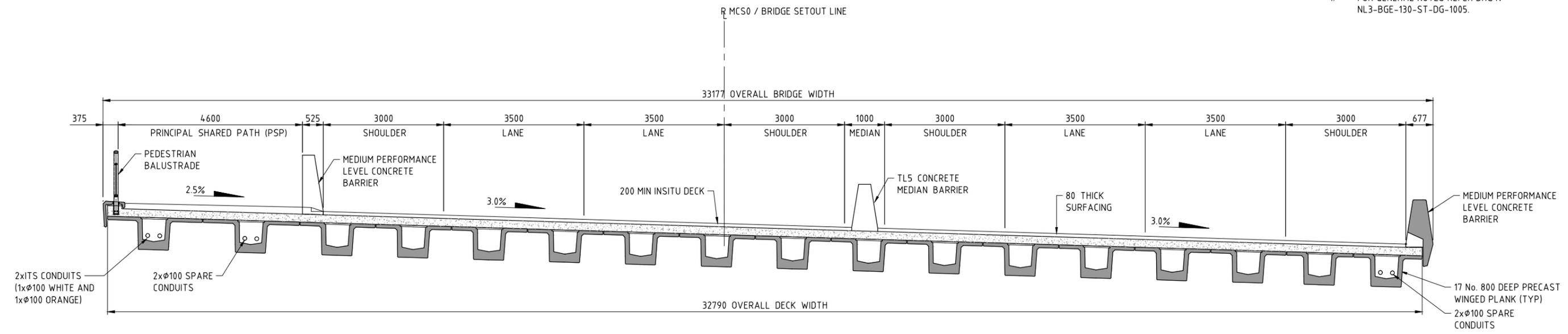
|          |           |          |
|----------|-----------|----------|
| VERIFIED | R. DENHAM | 04.05.18 |
|----------|-----------|----------|

|                 |              |          |
|-----------------|--------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 08.05.18 |
| DESIGN MANAGER  | A. WHITESIDE | 07.05.18 |

|                  |             |          |
|------------------|-------------|----------|
| PROJECT MANAGER  | Y. SIDDIQUI | 09.05.18 |
| PROJECT DIRECTOR | R. ARNOTT   | 09.05.18 |

BG&E DOC No: P17077

NOTE:  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-130-ST-DG-1005.



SCALE  
1:50  
1:75  
A  
1

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
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P / +61 8 6364 3300  
E / info@bgeeng.com  
bgeeng.com—

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A. RIECK    | 03.04.18 |
| DESIGNED       | K. MCINTYRE | 03.04.18 |
| CHECKED        | P. THOMPSON | 03.04.18 |
| APPROVED       | P. THOMPSON | 02.05.18 |
| DRAWING STATUS | IFC         |          |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



|                 |              |          |                  |             |          |
|-----------------|--------------|----------|------------------|-------------|----------|
| PROJECT MANAGER | S. NICOLAY   | 08.05.18 | PROJECT MANAGER  | Y. SIDDIQUI | 09.05.18 |
| DESIGN MANAGER  | A. WHITESIDE | 07.05.18 | PROJECT DIRECTOR | R. ARNOTT   | 09.05.18 |

|                      |   |                                |                          |
|----------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY      | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MIRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE        | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE        | TONKIN HIGHWAY H017 (4.36 SLK)<br>BRIDGE N° 1796 OVER ELLEN BROOK<br>GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.          | NL3-BGE-130-ST-DG-1022  |                                |                          |
| REV                  | 1   |                                |                          |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| <u>DRG No.</u>         | <u>DRAWING TITLE</u>  |
|------------------------|---|
| <b>GENERAL</b>         |   |
| NL3-BGE-150-ST-DG-1000 | COVER SHEET   |
| NL3-BGE-150-ST-DG-1001 | INDEX SHEET   |
| NL3-BGE-150-ST-DG-1005 | GENERAL NOTES   |
| NL3-BGE-150-ST-DG-1008 | CONSTRUCTION NOTES  |
| NL3-BGE-150-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                       |
| NL3-BGE-150-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                       |
| NL3-BGE-150-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                       |
| NL3-BGE-150-ST-DG-1020 | GENERAL ARRANGEMENT PLAN  |
| NL3-BGE-150-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                                     |
| NL3-BGE-150-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                      |
| NL3-BGE-150-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                       |
| NL3-BGE-150-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                       |
| NL3-BGE-150-ST-DG-1050 | GEOMETRIC DATA  |
| <b>SUB-STRUCTURE</b>   |   |
| NL3-BGE-150-ST-DG-1080 | ABUTMENT No. 1 MSE WALL PLAN AND ELEVATION                        |
| NL3-BGE-150-ST-DG-1081 | ABUTMENT No. 2 MSE WALL PLAN AND ELEVATION                        |
| NL3-BGE-150-ST-DG-1082 | ABUTMENT MSE WALL DETAILS   |
| NL3-BGE-150-ST-DG-1100 | ABUTMENT No. 1 FOOTING CONCRETE PLAN AND SECTIONS                 |
| NL3-BGE-150-ST-DG-1105 | ABUTMENT No. 2 FOOTING CONCRETE PLAN AND SECTIONS                 |
| NL3-BGE-150-ST-DG-1110 | ABUTMENT No. 1 AND No. 2 FOOTING REINFORCEMENT PLAN AND SECTIONS  |
| NL3-BGE-150-ST-DG-1115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS          |
| NL3-BGE-150-ST-DG-1120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS   |
| NL3-BGE-150-ST-DG-1125 | ABUTMENT No. 1 CAP BEAM CONCRETE PLAN AND ELEVATION               |
| NL3-BGE-150-ST-DG-1127 | ABUTMENT No. 2 CAP BEAM CONCRETE PLAN AND ELEVATION               |
| NL3-BGE-150-ST-DG-1128 | ABUTMENT No. 1 AND No. 2 CAP BEAM CONCRETE SECTIONS               |
| NL3-BGE-150-ST-DG-1130 | ABUTMENT No. 1 AND No. 2 CAP BEAM REINFORCEMENT PLAN AND SECTIONS |
| NL3-BGE-150-ST-DG-1190 | BEARINGS PLAN AND NOTES   |
| NL3-BGE-150-ST-DG-1191 | BEARINGS SECTIONS AND DETAILS                                     |
| <b>SUPER-STRUCTURE</b> |   |
| NL3-BGE-150-ST-DG-1200 | PRECAST BEAM LAYOUT PLAN AND DETAILS                              |
| NL3-BGE-150-ST-DG-1210 | PRECAST BEAM CONCRETE PLAN AND ELEVATION                          |
| NL3-BGE-150-ST-DG-1211 | PRECAST BEAM CONCRETE PLANS                                       |
| NL3-BGE-150-ST-DG-1220 | PRECAST BEAM CONCRETE SECTIONS                                    |
| NL3-BGE-150-ST-DG-1221 | PRECAST BEAM CONCRETE SECTIONS AND DETAILS                        |
| NL3-BGE-150-ST-DG-1240 | PRECAST BEAM PRESTRESS LAYOUT AND NOTES                           |
| NL3-BGE-150-ST-DG-1250 | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS                    |
| NL3-BGE-150-ST-DG-1260 | PRECAST BEAM REINFORCEMENT SECTIONS                               |
| NL3-BGE-150-ST-DG-1270 | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM                 |
| NL3-BGE-150-ST-DG-1280 | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM                     |

| <u>DRG No.</u>                 | <u>DRAWING TITLE</u>                          |
|--------------------------------|---|
| <b>SUPER-STRUCTURE (CON'T)</b> |   |
| NL3-BGE-150-ST-DG-1300         | DECK CONCRETE PLAN                            |
| NL3-BGE-150-ST-DG-1305         | DECK CONCRETE DETAILS AND ELEVATIONS          |
| NL3-BGE-150-ST-DG-1310         | DECK CONCRETE SECTIONS AND DETAILS            |
| NL3-BGE-150-ST-DG-1315         | DECK REINFORCEMENT PLAN                       |
| NL3-BGE-150-ST-DG-1320         | DECK REINFORCEMENT ELEVATIONS                 |
| NL3-BGE-150-ST-DG-1330         | DECK REINFORCEMENT SECTIONS AND DETAILS       |
| NL3-BGE-150-ST-DG-1340         | DECK WATERPROOFING PLAN AND DETAILS           |
| NL3-BGE-150-ST-DG-1350         | APPROACH SLAB CONCRETE PLAN AND SECTIONS      |
| NL3-BGE-150-ST-DG-1355         | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS |
| NL3-BGE-150-ST-DG-1360         | EXPANSION JOINT PLAN AND SECTIONS             |
| NL3-BGE-150-ST-DG-1365         | COVER PLATE PLAN AND SECTIONS                 |
| NL3-BGE-150-ST-DG-1366         | COVER PLATE DETAILS                           |
| NL3-BGE-150-ST-DG-1370         | BARRIER LAYOUT PLAN AND DETAILS               |
| NL3-BGE-150-ST-DG-1375         | BARRIER SECTIONS AND DETAILS SHEET 1 OF 2     |
| NL3-BGE-150-ST-DG-1376         | BARRIER SECTIONS AND DETAILS SHEET 2 OF 2     |
| NL3-BGE-150-ST-DG-1380         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 1    |
| NL3-BGE-150-ST-DG-1381         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 2    |
| NL3-BGE-150-ST-DG-1385         | PRECAST PANEL REINFORCEMENT DETAILS           |
| NL3-BGE-150-ST-DG-1395         | INSITU BARRIER STITCH ELEVATIONS AND DETAILS  |
| NL3-BGE-150-ST-DG-1400         | TRANSITION BARRIER DETAILS SHEET 1            |
| NL3-BGE-150-ST-DG-1401         | TRANSITION BARRIER DETAILS SHEET 2            |
| NL3-BGE-150-ST-DG-1405         | TRANSITION BARRIER REINFORCEMENT DETAILS      |
| NL3-BGE-150-ST-DG-1420         | PEDESTRIAN BALUSTRADE DETAILS                 |
| NL3-BGE-150-ST-DG-1421         | LIGHT POLE FIXING DETAILS                     |
| NL3-BGE-150-ST-DG-1425         | PRECAST PARAPET PANEL PLAN AND DETAILS        |
| NL3-BGE-150-ST-DG-1430         | SERVICES LAYOUT PLAN AND SECTIONS             |
| NL3-BGE-150-ST-DG-1431         | SERVICES SECTIONS AND DETAILS                 |
| NL3-BGE-150-ST-DG-1450         | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS |

**MRWA REFERENCE DRAWINGS**

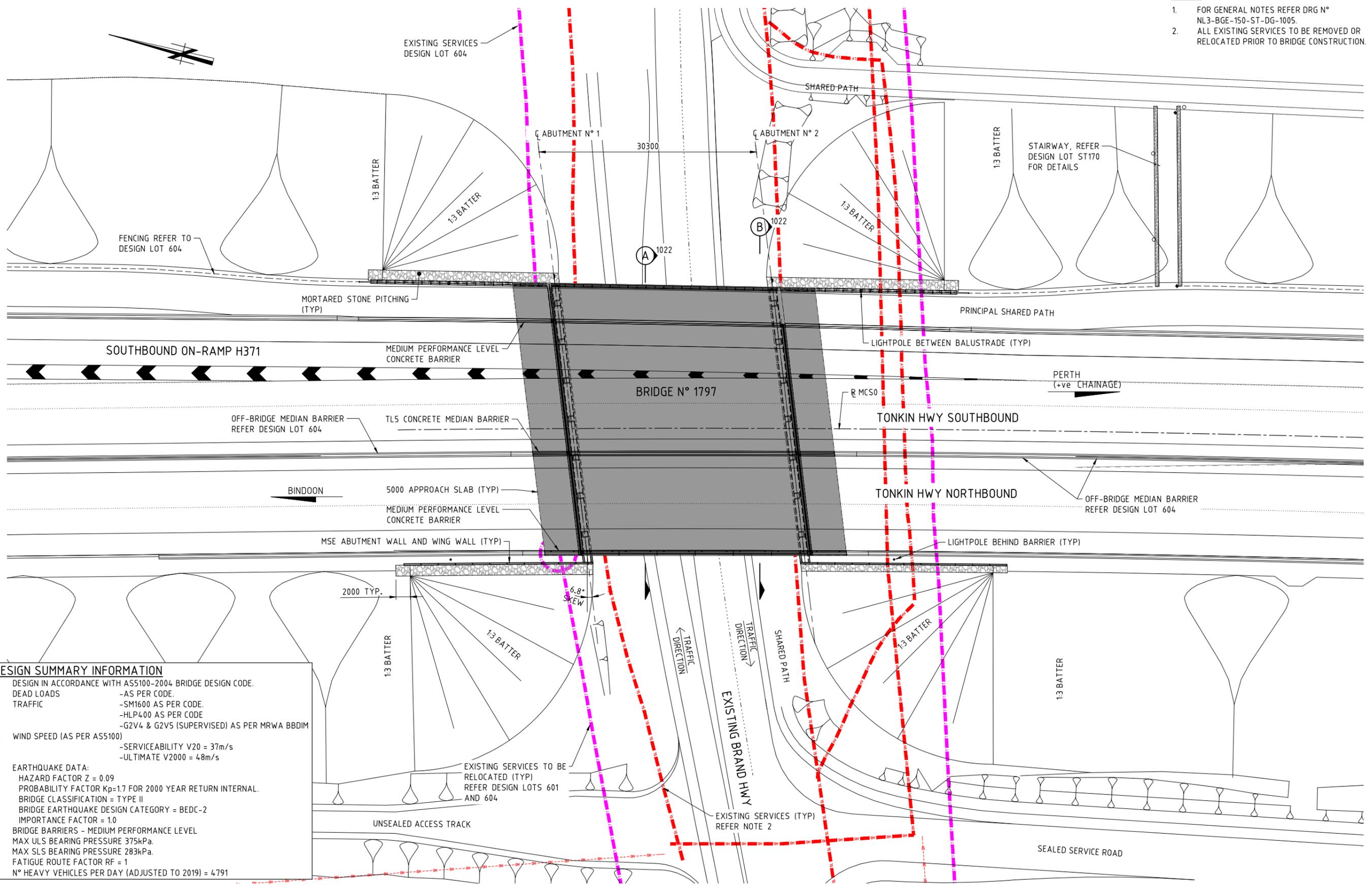
|             |   |
|-------------|---|
| 9230-0921-6 | LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS         |
| 0530-1087-1 | BRIDGE BALUSTRADE FOR PRINCIPAL SHARED PATHS - SHEET N° 1 |
| 0530-1307-1 | BRIDGE BALUSTRADE FOR PRINCIPAL SHARED PATHS - SHEET N° 2 |
| 0630-1901   | BRIDGE LIGHT POLE BASE - SHEET N° 1                       |
| 0430-1314   | PRECAST PARAPET PANELS                                    |

SCALE  
**A  
1**

| <b>METADATA</b>                   |  | Perth Office—                  |  | DRAWN                          |  | DESIGNED                       |  | CHECKED              |  | APPROVED                            |  | DRAWING STATUS |  | VERIFIED           |  | PROJECT MANAGER     |  | PROJECT MANAGER      |  | PROJECT DIRECTOR   |  |
|-----------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|----------------------|--|-------------------------------------|--|----------------|--|--------------------|--|---------------------|--|----------------------|--|--------------------|--|
| GROUND SURVEY STANDARD: 67-08-43  |  | 484 Murray St, Perth WA 6000   |  | K. TAYLOR 20.04.18             |  | C.KANDANARACHCHI 20.4.18       |  | P. THOMPSON 20.04.18 |  | P. THOMPSON 02.05.18                |  | IFC            |  | R. DENHAM 04.05.18 |  | S. NICOLAY 08.05.18 |  | Y. SIDDIQUI 09.05.18 |  | R. ARNOTT 09.05.18 |  |
| DATE OF CAPTURE:                  |  | P / +61 8 6364 3300            |  | KELLOGG BROWN & ROOT PTY LTD   |  | KBR                            |  | CPB CONTRACTORS      |  | INFRASTRUCTURE DELIVERY DIRECTORATE |  |                |  |                    |  |                     |  |                      |  |                    |  |
| MAPPING SURVEY STANDARD: 67-08-43 |  | E / info@bgeeng.com            |  | ABN 91 007 660 317             |  | Level 15, 300 Murray St, Perth |  | WESTERN AUSTRALIA    |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |
| DATE OF CAPTURE:                  |  | bgeeng.com—                    |  | Level 15, 300 Murray St, Perth |  | Western Australia 6000         |  |                      |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |
| PDT 20.04.18                      |  |                                |  |                                |  |                                |  |                      |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |
| ISSUED FOR CONSTRUCTION           |  | MAIN ROADS PROJECT ZONE: PCG94 |  |                                |  |                                |  |                      |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |
| APPROVED & DATE                   |  | HEIGHT DATUM: AHD              |  | BG&E DOC No: P17077            |  |                                |  |                      |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |
| AMENDMENTS                        |  |                                |  |                                |  |                                |  |                      |  |                                     |  |                |  |                    |  |                     |  |                      |  |                    |  |

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (2.06 SLK)<br>BRIDGE N° 1797 OVER BRAND HIGHWAY<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-150-ST-DG-1001   |                                |                          |
| REV                 | 0  |                                |                          |

- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-150-ST-DG-1005.
  - ALL EXISTING SERVICES TO BE REMOVED OR RELOCATED PRIOR TO BRIDGE CONSTRUCTION.



**DESIGN SUMMARY INFORMATION**

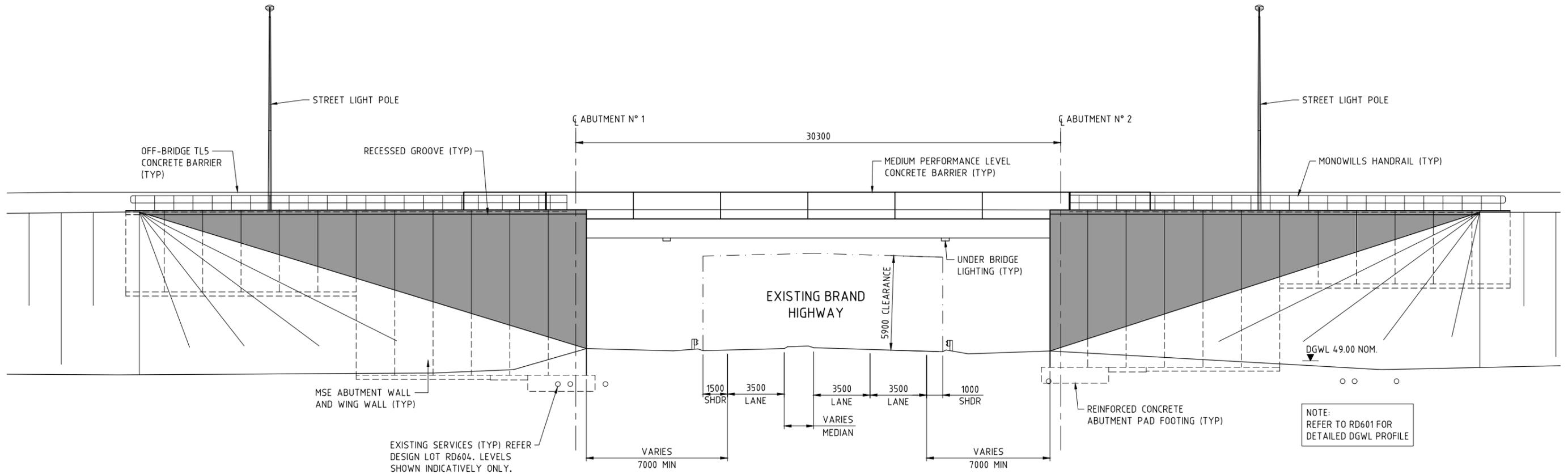
- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
- DEAD LOADS -AS PER CODE.
- TRAFFIC -SM1600 AS PER CODE.  
-HLP4.00 AS PER CODE  
-G2V4 & G2V5 (SUPERVISED) AS PER MRWA BBDIM
- WIND SPEED (AS PER AS5100) -SERVICEABILITY V20 = 37m/s  
-ULTIMATE V20000 = 48m/s
- EARTHQUAKE DATA:  
HAZARD FACTOR Z = 0.09  
PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.  
BRIDGE CLASSIFICATION = TYPE II  
BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2  
IMPORTANCE FACTOR = 1.0
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL
- MAX ULS BEARING PRESSURE 375kPa.  
MAX SLS BEARING PRESSURE 283kPa.
- FATIGUE ROUTE FACTOR RF = 1
- N° HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 4791

**BRIDGE N° 1797 PLAN**  
1:250

SCALE  
1:250  
A 1

| METADATA                          |  | Perth Office—                |  | DRAWN                             |  | KBR                                 |  | PROJECT MANAGER     |  | PROJECT MANAGER      |  | PROJECT TITLE                      |  |
|-----------------------------------|--|------------------------------|--|-----------------------------------|--|-------------------------------------|--|---------------------|--|----------------------|--|------------------------------------|--|
| GROUND SURVEY STANDARD: 67-08-43  |  | 484 Murray St, Perth WA 6000 |  | K. TAYLOR 20.04.18                |  | KBR                                 |  | S. NICOLAY 08.05.18 |  | Y. SIDDIQUI 09.05.18 |  | NORTHLINK WA STAGE 3               |  |
| DATE OF CAPTURE:                  |  | P/+61 8 6364 3300            |  | DESIGNED C.KANDANARACHCHI 20.4.18 |  | ABN 91 007 660 317                  |  | DATE                |  | DATE                 |  | DRAWING TITLE                      |  |
| MAPPING SURVEY STANDARD: 67-08-43 |  | E / info@bgeeng.com          |  | CHECKED P. THOMPSON 20.04.18      |  | Level 15, 300 Murray St, Perth      |  | DATE                |  | DATE                 |  | TONKIN HIGHWAY H017 (2.06 SLK)     |  |
| DATE OF CAPTURE:                  |  | bgeeng.com—                  |  | APPROVED P. THOMPSON 02.05.18     |  | Western Australia 6000              |  | DATE                |  | DATE                 |  | BRIDGE N° 1797 OVER BRAND HIGHWAY  |  |
| MAIN ROADS PROJECT ZONE: PCG94    |  | BG&E DOC No: P17077          |  | DRAWING STATUS                    |  | CONTRACTORS                         |  | DATE                |  | DATE                 |  | GENERAL ARRANGEMENT PLAN           |  |
| HEIGHT DATUM: AHD                 |  |                              |  | IFC                               |  | INFRASTRUCTURE DELIVERY DIRECTORATE |  | DATE                |  | DATE                 |  | DRAWING No: NL3-BGE-150-ST-DG-1020 |  |
| ISSUED FOR CONSTRUCTION           |  |                              |  | VERIFIED R. DENHAM 04.05.18       |  | WESTERN AUSTRALIA                   |  | DATE                |  | DATE                 |  | REV 0                              |  |
| AMENDMENTS                        |  |                              |  | DATE                              |  | PROJECT MANAGER                     |  | DATE                |  | DATE                 |  |                                    |  |
|                                   |  |                              |  | DATE                              |  | SCHEM MANAGER                       |  | DATE                |  | DATE                 |  |                                    |  |
|                                   |  |                              |  | DATE                              |  | PROJECT DIRECTOR                    |  | DATE                |  | DATE                 |  |                                    |  |

- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-150-ST-DG-1005.
  - ALL EXISTING SERVICES TO BE REMOVED OR RELOCATED PRIOR TO BRIDGE CONSTRUCTION.



**BRIDGE N° 1797 ELEVATION**  
1:125

NOTE:  
REFER TO RD601 FOR  
DETAILED DGWL PROFILE

SCALE  
1:125  
0 1.25m 2.5 3.75 5 6.25 7.5 8.75 10 11.25 12.5 13.75 15 16.25 17.5 18.75

A  
1

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 20.04.18    |
| AMENDMENTS |                         |                 |

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P/+61 8 6364 3300  
E/info@bgeeng.com  
bgeeng.com—

BG&E

DRAWN: K. TAYLOR 20.04.18  
DESIGNED: C.KANDANARACHCHI 20.4.18  
CHECKED: P. THOMPSON 20.04.18  
APPROVED: P. THOMPSON 02.05.18

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

CPB  
CONTRACTORS

INFRASTRUCTURE DELIVERY DIRECTORATE

|                 |  |                                |                          |
|-----------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| PROJECT TITLE   | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE   | TONKIN HIGHWAY H017 (2.06 SLK)<br>BRIDGE N° 1797 OVER BRAND HIGHWAY<br>GENERAL ARRANGEMENT ELEVATION |                                |                          |
| DRAWING No.     | NL3-BGE-150-ST-DG-1021   |                                |                          |

|                |     |          |                       |                 |                          |                  |                         |
|----------------|-----|----------|-----------------------|-----------------|--------------------------|------------------|-------------------------|
| DRAWING STATUS | IFC | VERIFIED | R. DENHAM<br>04.05.18 | PROJECT MANAGER | S. NICOLAY<br>08.05.18   | PROJECT MANAGER  | Y. SIDDIQUI<br>09.05.18 |
|                |     |          |                       | SECTION MANAGER | A. WHITESIDE<br>07.05.18 | PROJECT DIRECTOR | R. ARNOTT<br>09.05.18   |

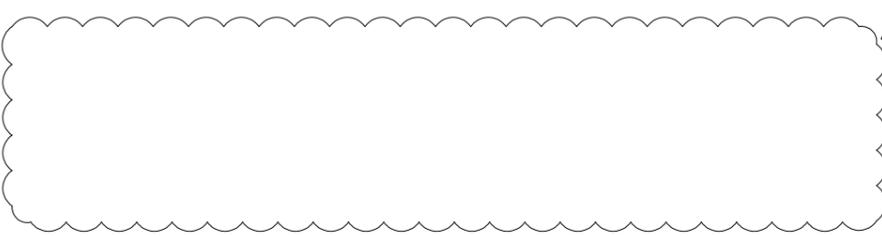


**NORTHLINK STAGE 3  
DRAWING INDEX**

| <u>DRG No.</u>         | <u>DRAWING TITLE</u>                                      |
|------------------------|---|
| <b>GENERAL</b>         |   |
| NL3-BGE-120-ST-DG-1000 | COVER SHEET   |
| NL3-BGE-120-ST-DG-1001 | INDEX SHEET   |
| NL3-BGE-120-ST-DG-1005 | GENERAL NOTES   |
| NL3-BGE-120-ST-DG-1008 | CONSTRUCTION NOTES  |
| NL3-BGE-120-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                               |
| NL3-BGE-120-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                               |
| NL3-BGE-120-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                               |
| NL3-BGE-120-ST-DG-1020 | GENERAL ARRANGEMENT PLAN                                  |
| NL3-BGE-120-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                             |
| NL3-BGE-120-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                              |
| NL3-BGE-120-ST-DG-1030 | EMBANKMENT PLAN   |
| NL3-BGE-120-ST-DG-1031 | EMBANKMENT SECTIONS                                       |
| NL3-BGE-120-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2               |
| NL3-BGE-120-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2               |
| NL3-BGE-120-ST-DG-1050 | GEOMETRIC DATA  |
| <b>SUB-STRUCTURE</b>   |   |
| NL3-BGE-120-ST-DG-1060 | PILE LAYOUT PLAN AND DETAILS                              |
| NL3-BGE-120-ST-DG-1061 | PILE REINFORCEMENT ELEVATIONS AND SECTIONS                |
| NL3-BGE-120-ST-DG-1070 | PRECAST WINGWALL CONCRETE SHEET 1                         |
| NL3-BGE-120-ST-DG-1071 | PRECAST WINGWALL CONCRETE SHEET 2                         |
| NL3-BGE-120-ST-DG-1075 | PRECAST WINGWALL REINFORCEMENT SHEET 1                    |
| NL3-BGE-120-ST-DG-1076 | PRECAST WINGWALL REINFORCEMENT SHEET 2                    |
| NL3-BGE-120-ST-DG-1080 | ABUTMENT No. 1 CONCRETE PLAN AND ELEVATION                |
| NL3-BGE-120-ST-DG-1081 | ABUTMENT No. 1 CONCRETE PART PLAN AND WINGWALL ELEVATIONS |
| NL3-BGE-120-ST-DG-1085 | ABUTMENT No. 2 CONCRETE PLAN AND ELEVATION                |
| NL3-BGE-120-ST-DG-1086 | ABUTMENT No. 2 CONCRETE PART PLAN AND WINGWALL ELEVATIONS |
| NL3-BGE-120-ST-DG-1087 | ABUTMENT CONCRETE SECTION AND DETAILS                     |
| NL3-BGE-120-ST-DG-1090 | ABUTMENT No. 1 REINFORCEMENT PLANS AND ELEVATION          |
| NL3-BGE-120-ST-DG-1091 | ABUTMENT No. 2 REINFORCEMENT PLANS AND ELEVATION          |
| NL3-BGE-120-ST-DG-1092 | ABUTMENT REINFORCEMENT DETAILS SHEET 1 OF 3               |
| NL3-BGE-120-ST-DG-1093 | ABUTMENT REINFORCEMENT DETAILS SHEET 2 OF 3               |
| NL3-BGE-120-ST-DG-1094 | ABUTMENT REINFORCEMENT DETAILS SHEET 3 OF 3               |
| NL3-BGE-120-ST-DG-1140 | INSITU RETAINING WALL CONCRETE SET OUT PLAN AND DETAILS   |
| NL3-BGE-120-ST-DG-1190 | BEARINGS PLAN AND NOTES                                   |
| NL3-BGE-120-ST-DG-1191 | BEARINGS DETAILS  |

| <u>DRG No.</u>               | <u>DRAWING TITLE</u>                                       |
|------------------------------|--|
| <b>SUB-STRUCTURE (CON'T)</b> |  |
| NL3-BGE-120-ST-DG-1192       | BEARINGS TYPICAL SECTIONS                                  |
| NL3-BGE-120-ST-DG-1193       | BEARINGS ATTACHMENT PLATE PLANS AND DETAILS                |
| <b>SUPER-STRUCTURE</b>       |  |
| NL3-BGE-120-ST-DG-1200       | PRECAST BEAM LAYOUT PLAN AND DETAILS                       |
| NL3-BGE-120-ST-DG-1210       | PRECAST BEAM CONCRETE PLAN AND ELEVATION                   |
| NL3-BGE-120-ST-DG-1220       | PRECAST BEAM CONCRETE SECTIONS                             |
| NL3-BGE-120-ST-DG-1221       | PRECAST BEAM CONCRETE DETAILS                              |
| NL3-BGE-120-ST-DG-1240       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES                    |
| NL3-BGE-120-ST-DG-1250       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATION              |
| NL3-BGE-120-ST-DG-1260       | PRECAST BEAM REINFORCEMENT SECTIONS                        |
| NL3-BGE-120-ST-DG-1270       | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM SECTIONS |
| NL3-BGE-120-ST-DG-1271       | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM SECTIONS |
| NL3-BGE-120-ST-DG-1280       | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM              |
| NL3-BGE-120-ST-DG-1300       | DECK CONCRETE PLAN AND DETAILS                             |
| NL3-BGE-120-ST-DG-1305       | DECK CONCRETE DETAILS AND ELEVATIONS                       |
| NL3-BGE-120-ST-DG-1320       | DECK REINFORCEMENT PLAN AND DETAILS                        |
| NL3-BGE-120-ST-DG-1325       | DECK REINFORCEMENT ELEVATIONS AND DETAILS                  |
| NL3-BGE-120-ST-DG-1340       | DECK WATERPROOFING PLAN AND DETAILS                        |
| NL3-BGE-120-ST-DG-1350       | APPROACH SLAB CONCRETE PLAN AND SECTIONS                   |
| NL3-BGE-120-ST-DG-1355       | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS              |
| NL3-BGE-120-ST-DG-1360       | EXPANSION JOINT PLAN AND SECTIONS                          |
| NL3-BGE-120-ST-DG-1365       | COVER PLATE PLAN   |
| NL3-BGE-120-ST-DG-1366       | COVER PLATE DETAILS SHEET 1                                |
| NL3-BGE-120-ST-DG-1367       | COVER PLATE DETAILS SHEET 2                                |
| NL3-BGE-120-ST-DG-1370       | BARRIER LAYOUT PLAN AND SECTION                            |
| NL3-BGE-120-ST-DG-1375       | BARRIER SECTIONS AND DETAILS                               |
| NL3-BGE-120-ST-DG-1380       | PRECAST PARAPET PANEL DETAILS                              |
| NL3-BGE-120-ST-DG-1430       | SERVICES LAYOUT PLAN                                       |
| NL3-BGE-120-ST-DG-1431       | SERVICES SECTIONS AND DETAILS                              |
| NL3-BGE-120-ST-DG-1432       | LIGHT POLE CONNECTION DETAIL                               |

| <b>MRWA REFERENCE DRAWINGS</b> |  |
|--------------------------------|--|
| 0430-0760                      | REGULAR PERFORMANCE LEVEL BARRIER RAIL ELEVATIONS AND DETAILS                    |
| 0430-0761-1                    | REGULAR PERFORMANCE LEVEL BARRIER TRANSITION RAIL ELEVATIONS                     |
| 0430-0762-1                    | REGULAR PERFORMANCE LEVEL BARRIER GUARDRAIL POST DETAILS                         |
| 0430-0763                      | REGULAR PERFORMANCE LEVEL BARRIER FIXED SPLICE ASSEMBLY DETAILS                  |
| 0430-0764-1                    | REGULAR PERFORMANCE LEVEL BARRIER EXPANSION SPLICE ASSEMBLY                      |
| 0430-0765-2                    | REGULAR PERFORMANCE LEVEL BARRIER TWO RAIL BARRIER TRANSITION                    |
| 0430-1314                      | PRECAST PARAPET PANEL DETAILS  |
| 0530-1456-4                    | ROAD-SIDE SLIP BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET N° 1 |
| 0530-1457-3                    | ROAD-SIDE SLIP BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET N° 2 |
| 0730-0406-1                    | BRIDGE ACCESS WAY SHEET N° 1   |
| 0730-0407                      | BRIDGE ACCESS WAY SHEET N° 2   |
| 9331-0376-3                    | KERB TYPES   |

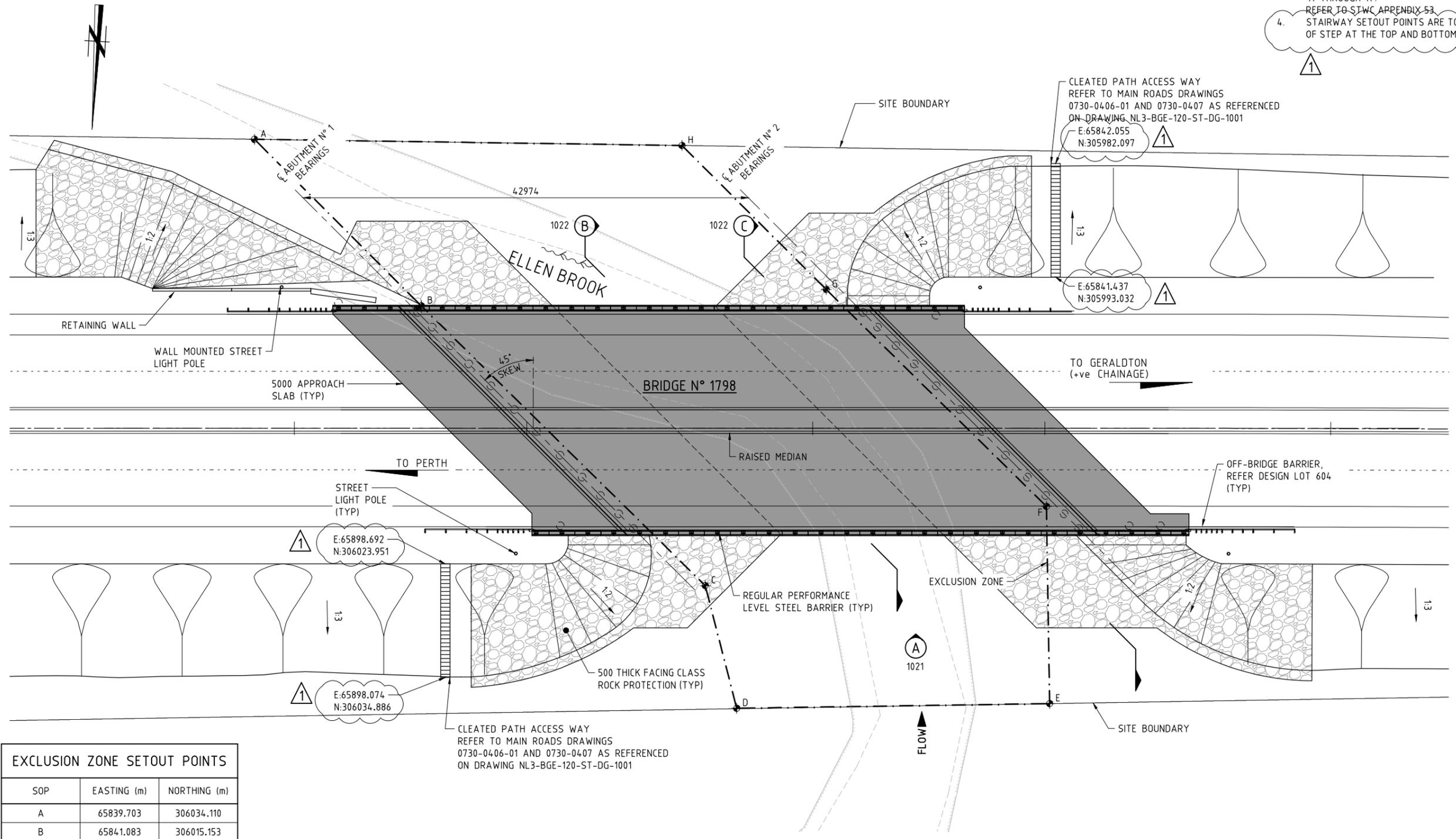


|                        |   |
|------------------------|---|
| NL3-BGE-120-ST-DG-1140 | INSITU RETAINING WALL CONCRETE SET OUT PLAN AND DETAILS |
| NL3-BGE-120-ST-DG-1190 | BEARINGS PLAN AND NOTES                                 |
| NL3-BGE-120-ST-DG-1191 | BEARINGS DETAILS  |

SCALE  
**A  
1**

| <b>METADATA</b>                   |  | <b>Perth Office—</b>         |  | <b>DRG No.</b>                  |  | <b>DRAWING TITLE</b>                                       |  | <b>LOCAL AUTHORITY</b>               |  | <b>MAIN ROADS RESPONSIBILITY AREA</b>   |  |
|-----------------------------------|--|------------------------------|--|---------------------------------|--|--|--|--------------------------------------|--|---|--|
| GROUND SURVEY STANDARD: 67-08-43  |  | 484 Murray St, Perth WA 6000 |  | NL3-BGE-120-ST-DG-1001          |  | INDEX SHEET  |  | SHIRE OF CHITTERING (502)            |  | WHEATBELT                               |  |
| DATE OF CAPTURE:                  |  | P / +61 8 6364 3300          |  | NL3-BGE-120-ST-DG-1192          |  | BEARINGS TYPICAL SECTIONS                                  |  | MRWA DRAWING NUMBER                  |  | NORTHLINK WA STAGE 3                    |  |
| MAPPING SURVEY STANDARD: 67-08-43 |  | E / info@bgeeng.com          |  | NL3-BGE-120-ST-DG-1193          |  | BEARINGS ATTACHMENT PLATE PLANS AND DETAILS                |  | DRAWING TITLE                        |  | BRAND HIGHWAY DEVIATION H004 (2.12 SLK) |  |
| DATE OF CAPTURE:                  |  | bgeeng.com—                  |  | NL3-BGE-120-ST-DG-1200          |  | PRECAST BEAM LAYOUT PLAN AND DETAILS                       |  | DRAWING No.                          |  | NL3-BGE-120-ST-DG-1001                  |  |
| MAIN ROADS PROJECT ZONE: PCG94    |  | BG&E                         |  | NL3-BGE-120-ST-DG-1210          |  | PRECAST BEAM CONCRETE PLAN AND ELEVATION                   |  | DRAWING No.                          |  | REV 1                                   |  |
| HEIGHT DATUM: AHD                 |  | BG&E DOC No: P17077          |  | NL3-BGE-120-ST-DG-1220          |  | PRECAST BEAM CONCRETE SECTIONS                             |  | DRAWING No.                          |  | REV 1                                   |  |
| 1 ISSUED FOR CONSTRUCTION         |  | PDT 18.04.2018               |  | NL3-BGE-120-ST-DG-1221          |  | PRECAST BEAM CONCRETE DETAILS                              |  | DRAWING No.                          |  | REV 1                                   |  |
| 0 ISSUED FOR CONSTRUCTION         |  | PDT 23.03.2018               |  | NL3-BGE-120-ST-DG-1240          |  | PRECAST BEAM PRESTRESS LAYOUT AND NOTES                    |  | DRAWING No.                          |  | REV 1                                   |  |
| No. DESCRIPTION                   |  | APPROVED & DATE              |  | NL3-BGE-120-ST-DG-1250          |  | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATION              |  | DRAWING No.                          |  | REV 1                                   |  |
| AMENDMENTS                        |  |                              |  | NL3-BGE-120-ST-DG-1260          |  | PRECAST BEAM REINFORCEMENT SECTIONS                        |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1270          |  | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM SECTIONS |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1271          |  | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM SECTIONS |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1280          |  | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM              |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1300          |  | DECK CONCRETE PLAN AND DETAILS                             |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1305          |  | DECK CONCRETE DETAILS AND ELEVATIONS                       |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1320          |  | DECK REINFORCEMENT PLAN AND DETAILS                        |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1325          |  | DECK REINFORCEMENT ELEVATIONS AND DETAILS                  |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1340          |  | DECK WATERPROOFING PLAN AND DETAILS                        |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1350          |  | APPROACH SLAB CONCRETE PLAN AND SECTIONS                   |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1355          |  | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS              |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1360          |  | EXPANSION JOINT PLAN AND SECTIONS                          |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1365          |  | COVER PLATE PLAN   |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1366          |  | COVER PLATE DETAILS SHEET 1                                |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1367          |  | COVER PLATE DETAILS SHEET 2                                |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1370          |  | BARRIER LAYOUT PLAN AND SECTION                            |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1375          |  | BARRIER SECTIONS AND DETAILS                               |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1380          |  | PRECAST PARAPET PANEL DETAILS                              |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1430          |  | SERVICES LAYOUT PLAN                                       |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1431          |  | SERVICES SECTIONS AND DETAILS                              |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | NL3-BGE-120-ST-DG-1432          |  | LIGHT POLE CONNECTION DETAIL                               |  | DRAWING No.                          |  | REV 1                                   |  |
|                                   |  |                              |  | DRAWN A. RIECK 23.03.2018       |  | Kelogg Brown & Root Pty Ltd                                |  | PROJECT MANAGER S. NICOLAY 26.04.18  |  | PROJECT MANAGER Y. SIDDIQUI 30.04.18    |  |
|                                   |  |                              |  | DESIGNED B. GIBBENS 23.03.2018  |  | KBR  |  | DESIGN MANAGER A. WHITESIDE 26.04.18 |  | PROJECT DIRECTOR R. ARNOTT 03.05.18     |  |
|                                   |  |                              |  | CHECKED P. THOMPSON 23.03.2018  |  | ABN 91 007 660 317   |  | DATE 26.04.18                        |  | DATE 03.05.18                           |  |
|                                   |  |                              |  | APPROVED P. THOMPSON 20.04.2018 |  | Level 15, 300 Murray St, Perth                             |  | DATE 26.04.18                        |  | DATE 03.05.18                           |  |
|                                   |  |                              |  | DRAWING STATUS IFC              |  | Western Australia 6000                                     |  | DATE 26.04.18                        |  | DATE 03.05.18                           |  |

- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-120-ST-DG-1005.
  - BASED ON INFORMATION AVAILABLE THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTINGS REFER DESIGN LOT 604.
  - EXCLUSION ZONE SETOUT POINTS MARKED 'A' THROUGH 'H'. REFER TO STWC APPENDIX 53.
  - STAIRWAY SETOUT POINTS ARE TO CENTRE OF STEP AT THE TOP AND BOTTOM.



| EXCLUSION ZONE SETOUT POINTS |             |              |
|------------------------------|-------------|--------------|
| SOP                          | EASTING (m) | NORTHING (m) |
| A                            | 65839.703   | 306034.110   |
| B                            | 65841.083   | 306015.153   |
| C                            | 65863.482   | 305995.474   |
| D                            | 65878.162   | 305982.401   |
| E                            | 65919.388   | 305984.127   |
| F                            | 65902.404   | 305999.252   |
| G                            | 65873.524   | 306024.631   |
| H                            | 65869.828   | 306036.260   |

PLAN  
1:200

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAPPING SURVEY STANDARD: | 67-08-43 |
| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P / +61 8 6364 3300  
E / info@bgeeng.com  
bgeeng.com—

DRAWN: A. RIECK 23.03.2018  
DESIGNED: B. GIBBENS 23.03.2018  
CHECKED: P. THOMPSON 23.03.2018  
APPROVED: P. THOMPSON 20.04.2018

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

PROJECT MANAGER: S. NICOLAY 26.04.18  
DESIGN MANAGER: A. WHITESIDE 26.04.18

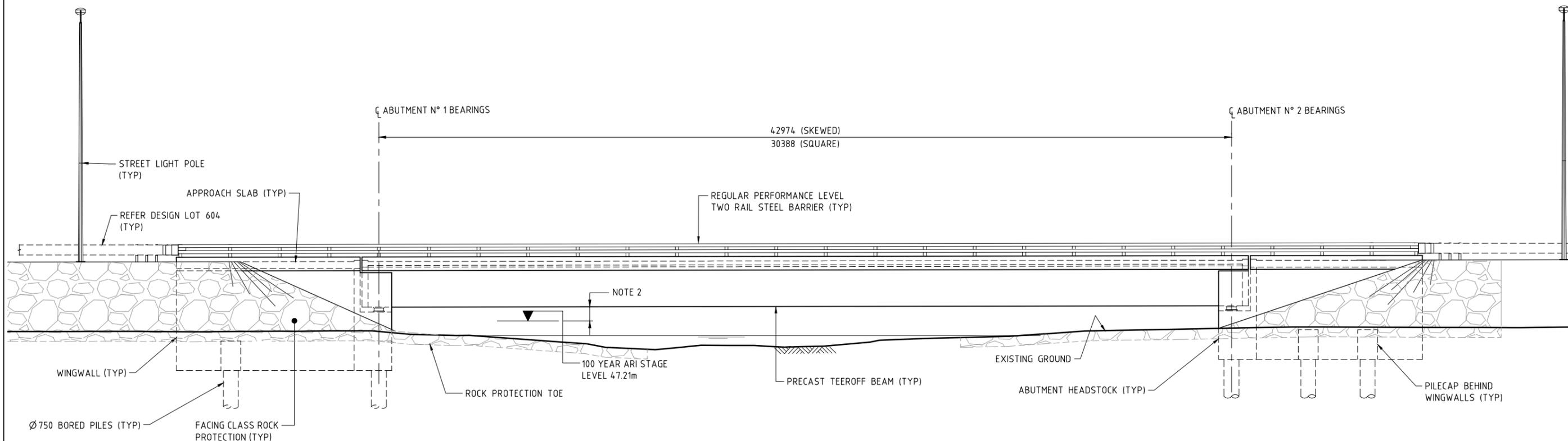
PROJECT MANAGER: Y. SIDDIQUI 30.04.18  
PROJECT DIRECTOR: R. ARNOTT 03.05.18

|                 |  |                                |           |
|-----------------|--|--------------------------------|-----------|
| LOCAL AUTHORITY | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| PROJECT TITLE   | NORTHLINK WA STAGE 3   |                                |           |
| DRAWING TITLE   | BRAND HIGHWAY DEVIATION H004 (2.12 SLK)<br>BRIDGE N° 1798 OVER ELLEN BROOK<br>GENERAL ARRANGEMENT PLAN |                                |           |
| DRAWING No.     | NL3-BGE-120-ST-DG-1020   |                                |           |

SCALE 1:200  
0 2m 4 6 8 10 12 14 16 18 20 22 24 26 28 30  
A 1

**NOTES:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-120-ST-DG-1005.
- CLEARANCE ALLOWS FOR 300 BACKWATER AND 300 FREEBOARD AT BRIDGE SITE. REFER WATERWAYS REPORT FOR BACKWATER DETAILS.



**BRIDGE N° 1798 ELEVATION (A) 1020**  
1:100

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
  - DEAD LOADS: - AS PER CODE.
  - TRAFFIC: - SM1600 AS PER CODE.  
- HLP 400 AS PER CODE.  
- G2V4 / G2V5 SUPERVISED AS PER MRWA DOC. No. 3912/02-2.
  - WIND SPEED (AS PER AS5100)  
- SERVICEABILITY V20 = 37m/s.  
- ULTIMATE V2000 = 48m/s
  - EARTHQUAKE DATA:  
- BRIDGE CLASSIFICATION - TYPE II  
- HAZARD FACTOR - Z = 0.09, Kp = 1.7  
- SUB SOIL CLASSIFICATION - Ce  
- STRUCTURAL RESPONSE FACTOR - 3.0  
- IMPORTANCE FACTOR - 1.0
  - FLOOD DATA:
- | ARI  | USWL  | VELOCITY |
|------|-------|----------|
| 100  | 47.50 | 1.0m/s   |
| 2000 | 48.40 | 2.6m/s   |
- BRIDGE BARRIERS: - REGULAR PERFORMANCE LEVEL.
  - SCOUR DEPTH: - 2000 YEAR ARI - 1.0m  
- 100 YEAR ARI - 0.5m
  - FATIGUE ROUTE FADCTOR = 1.0
  - No. OF HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 2040

SCALE 1:100  
A  
1

| METADATA                 |                |                 |
|--------------------------|----------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43       |                 |
| DATE OF CAPTURE:         |                |                 |
| MAPPING SURVEY STANDARD: | 67-08-43       |                 |
| DATE OF CAPTURE:         |                |                 |
| ISSUED FOR CONSTRUCTION  | PDT 23.03.2018 |                 |
| No.                      | DESCRIPTION    | APPROVED & DATE |
|                          | AMENDMENTS     |                 |
| MAIN ROADS PROJECT ZONE: | PCG94          |                 |
| HEIGHT DATUM:            | AHD            |                 |

**Perth Office—**  
484 Murray St, Perth WA 6000  
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|                |             |            |
|----------------|-------------|------------|
| DRAWN          | A. RIECK    | 23.03.2018 |
| DESIGNED       | B. GIBBENS  | 23.03.2018 |
| CHECKED        | P. THOMPSON | 23.03.2018 |
| APPROVED       | P. THOMPSON | 20.04.2018 |
| DRAWING STATUS | IFC         |            |

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

**CPB CONTRACTORS**

**mainroads**  
WESTERN AUSTRALIA

INFRASTRUCTURE DELIVERY DIRECTORATE

|                    |   |                                |           |
|--------------------|---|--------------------------------|-----------|
| LOCAL AUTHORITY    | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| MRA DRAWING NUMBER |   |                                |           |
| PROJECT TITLE      | NORTHLINK WA STAGE 3  |                                |           |
| DRAWING TITLE      | BRAND HIGHWAY DEVIATION H004 (2.12 SLK)<br>BRIDGE N° 1798 OVER ELLEN BROOK<br>GENERAL ARRANGEMENT ELEVATION |                                |           |
| DRAWING No.        | NL3-BGE-120-ST-DG-1021  |                                | REV 0     |

BG&E DOC No: P17077

|                  |              |          |
|------------------|--------------|----------|
| VERIFIED         | R. DENHAM    | 24.04.18 |
| PROJECT MANAGER  | S. NICOLAY   | 26.04.18 |
| DESIGN MANAGER   | A. WHITESIDE | 26.04.18 |
| PROJECT MANAGER  | Y. SIDDIQUI  | 30.04.18 |
| PROJECT DIRECTOR | R. ARNOTT    | 03.05.18 |



**NORTHLINK STAGE 3  
DRAWING INDEX**

| DRG No.                | DRAWING TITLE   |
|------------------------|---|
| <b>GENERAL</b>         |   |
| NL3-BGE-160-ST-DG-1000 | COVER SHEET   |
| NL3-BGE-160-ST-DG-1001 | INDEX SHEET   |
| NL3-BGE-160-ST-DG-1005 | GENERAL NOTES   |
| NL3-BGE-160-ST-DG-1008 | CONSTRUCTION NOTES SHEET 1                                      |
| NL3-BGE-160-ST-DG-1009 | CONSTRUCTION NOTES SHEET 2                                      |
| NL3-BGE-160-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                     |
| NL3-BGE-160-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                     |
| NL3-BGE-160-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                     |
| NL3-BGE-160-ST-DG-1020 | GENERAL ARRANGEMENT PLAN  |
| NL3-BGE-160-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION AND SECTION                       |
| NL3-BGE-160-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                    |
| NL3-BGE-160-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                     |
| NL3-BGE-160-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                     |
| NL3-BGE-160-ST-DG-1050 | GEOMETRIC DATA  |
| <b>SUB-STRUCTURE</b>   |   |
| NL3-BGE-160-ST-DG-1070 | ABUTMENT No. 1 MSE WALL PLAN AND ELEVATION                      |
| NL3-BGE-160-ST-DG-1071 | ABUTMENT No. 2 MSE WALL PLAN AND ELEVATION                      |
| NL3-BGE-160-ST-DG-1072 | ABUTMENT DETAILS  |
| NL3-BGE-160-ST-DG-1100 | ABUTMENT No. 1 FOOTING CONCRETE PLAN AND SECTIONS               |
| NL3-BGE-160-ST-DG-1105 | ABUTMENT No. 2 FOOTING CONCRETE PLAN AND SECTIONS               |
| NL3-BGE-160-ST-DG-1110 | ABUTMENT No. 1 AND No. 2 FOOTING REINFORCMENT PLAN AND SECTIONS |
| NL3-BGE-160-ST-DG-1115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS        |
| NL3-BGE-160-ST-DG-1120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS |
| NL3-BGE-160-ST-DG-1130 | ABUTMENT N° 1 CAP BEAM CONCRETE PLAN AND ELEVATION              |
| NL3-BGE-160-ST-DG-1131 | ABUTMENT N° 2 CAP BEAM CONCRETE PLAN AND ELEVATION              |
| NL3-BGE-160-ST-DG-1132 | ABUTMENT CAP BEAM CONCRETE TYPICAL DETAILS                      |
| NL3-BGE-160-ST-DG-1135 | ABUTMENT CAP BEAM REINFORCEMENT PLAN AND SECTIONS               |
| NL3-BGE-160-ST-DG-1140 | UPPER WINGWALL SETOUT PLAN                                      |
| NL3-BGE-160-ST-DG-1141 | UPPER WINGWALL CONCRETE PLANS AND ELEVATIONS SHEET 1            |
| NL3-BGE-160-ST-DG-1142 | UPPER WINGWALL CONCRETE PLANS AND ELEVATIONS SHEET 2            |
| NL3-BGE-160-ST-DG-1143 | UPPER WINGWALL CONCRETE TYPICAL DETAILS                         |
| NL3-BGE-160-ST-DG-1145 | UPPER WINGWALL REINFORCEMENT PLAN, ELEVATION AND SECTION        |
| NL3-BGE-160-ST-DG-1150 | PILE LAYOUT PLAN AND DETAILS                                    |
| NL3-BGE-160-ST-DG-1151 | PILE REINFORCEMENT ELEVATIONS AND SECTIONS                      |
| NL3-BGE-160-ST-DG-1160 | PIER LAYOUT PLANS   |
| NL3-BGE-160-ST-DG-1161 | PIER No. 1 CONCRETE PLAN AND SECTIONS                           |
| NL3-BGE-160-ST-DG-1162 | PIER No. 2 CONCRETE PLAN AND SECTIONS                           |
| NL3-BGE-160-ST-DG-1163 | PIER No. 3 CONCRETE PLAN AND SECTIONS                           |
| NL3-BGE-160-ST-DG-1165 | TYPICAL DEFLECTION WALL REINFORCEMENT ELEVATION AND DETAILS     |
| NL3-BGE-160-ST-DG-1166 | TYPICAL PIER WALL REINFORCEMENT ELEVATION AND DETAILS           |
| NL3-BGE-160-ST-DG-1167 | PIER COLUMN REINFORCEMENT ELEVATION, PLAN AND SECTIONS          |

| DRG No.                      | DRAWING TITLE   |
|------------------------------|---|
| <b>SUB-STRUCTURE (CON'T)</b> |   |
| NL3-BGE-160-ST-DG-1190       | BEARINGS PLAN AND NOTES                                     |
| NL3-BGE-160-ST-DG-1191       | BEARINGS SECTIONS AND DETAILS SHEET 1                       |
| NL3-BGE-160-ST-DG-1192       | BEARINGS SECTIONS AND DETAILS SHEET 2                       |
| <b>SUPER-STRUCTURE</b>       |   |
| NL3-BGE-160-ST-DG-1200       | PRECAST BEAM LAYOUT PLAN AND DETAILS                        |
| NL3-BGE-160-ST-DG-1210       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 1 OF 8       |
| NL3-BGE-160-ST-DG-1211       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 2 OF 8       |
| NL3-BGE-160-ST-DG-1212       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 3 OF 8       |
| NL3-BGE-160-ST-DG-1213       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 4 OF 8       |
| NL3-BGE-160-ST-DG-1214       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 5 OF 8       |
| NL3-BGE-160-ST-DG-1215       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 6 OF 8       |
| NL3-BGE-160-ST-DG-1216       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 7 OF 8       |
| NL3-BGE-160-ST-DG-1217       | PRECAST BEAM CONCRETE PLAN AND ELEVATION SHEET 8 OF 8       |
| NL3-BGE-160-ST-DG-1225       | PRECAST BEAM CONCRETE SECTIONS - SHEET 1 OF 2               |
| NL3-BGE-160-ST-DG-1226       | PRECAST BEAM CONCRETE SECTIONS - SHEET 2 OF 2               |
| NL3-BGE-160-ST-DG-1227       | PRECAST BEAM CONCRETE SECTIONS AND DETAILS                  |
| NL3-BGE-160-ST-DG-1240       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 1 OF 3      |
| NL3-BGE-160-ST-DG-1241       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 2 OF 3      |
| NL3-BGE-160-ST-DG-1242       | PRECAST BEAM PRESTRESS LAYOUT AND NOTES - SHEET 3 OF 3      |
| NL3-BGE-160-ST-DG-1245       | PRECAST BEAM POST TENSIONING DETAILS                        |
| NL3-BGE-160-ST-DG-1250       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 1 OF 4 |
| NL3-BGE-160-ST-DG-1251       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 2 OF 4 |
| NL3-BGE-160-ST-DG-1252       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 3 OF 4 |
| NL3-BGE-160-ST-DG-1253       | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATIONS SHEET 4 OF 4 |
| NL3-BGE-160-ST-DG-1260       | PRECAST BEAM REINFORCEMENT SECTIONS                         |
| NL3-BGE-160-ST-DG-1270       | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM           |
| NL3-BGE-160-ST-DG-1271       | PRECAST BEAM REINFORCEMENT DIAPHRAGM SECTIONS               |
| NL3-BGE-160-ST-DG-1280       | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM               |
| NL3-BGE-160-ST-DG-1290       | PRECAST BEAM REINFORCEMENT PIER END DIAPHRAGM               |
| NL3-BGE-160-ST-DG-1295       | PRECAST BEAM CONTINUITY DETAILS                             |
| NL3-BGE-160-ST-DG-1300       | DECK CONCRETE PLAN  |
| NL3-BGE-160-ST-DG-1310       | DECK CONCRETE SECTIONS AND DETAILS                          |
| NL3-BGE-160-ST-DG-1320       | DECK REINFORCEMENT PLAN                                     |
| NL3-BGE-160-ST-DG-1321       | DECK REINFORCEMENT SECTIONS AND DETAILS                     |
| NL3-BGE-160-ST-DG-1322       | DECK REINFORCEMENT ELEVATIONS AND DETAILS                   |
| NL3-BGE-160-ST-DG-1340       | DECK WATERPROOFING PLAN AND DETAILS                         |
| NL3-BGE-160-ST-DG-1350       | APPROACH SLAB CONCRETE PLAN AND SECTIONS                    |
| NL3-BGE-160-ST-DG-1355       | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS               |
| NL3-BGE-160-ST-DG-1360       | EXPANSION JOINT PLAN AND SECTIONS                           |
| NL3-BGE-160-ST-DG-1365       | COVER PLATE PLAN AND SECTIONS                               |
| NL3-BGE-160-ST-DG-1366       | COVER PLATE DETAILS   |
| NL3-BGE-160-ST-DG-1370       | BARRIER LAYOUT PLAN AND DETAILS                             |
| NL3-BGE-160-ST-DG-1375       | BARRIER SECTIONS AND DETAILS                                |
| NL3-BGE-160-ST-DG-1380       | PRECAST PANEL PLANS AND ELEVATIONS SHEET 1 OF 3             |

| DRG No.                        | DRAWING TITLE                                   |
|--------------------------------|---|
| <b>SUPER-STRUCTURE (CON'T)</b> |   |
| NL3-BGE-160-ST-DG-1381         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 2 OF 3 |
| NL3-BGE-160-ST-DG-1382         | PRECAST PANEL PLANS AND ELEVATIONS SHEET 3 OF 3 |
| NL3-BGE-160-ST-DG-1385         | PRECAST PANEL REINFORCEMENT SHEET 1 OF 2        |
| NL3-BGE-160-ST-DG-1386         | PRECAST PANEL REINFORCEMENT SHEET 2 OF 2        |
| NL3-BGE-160-ST-DG-1395         | INSITU BARRIER STITCH ELEVATION AND DETAILS     |
| NL3-BGE-160-ST-DG-1400         | TRANSITION BARRIER DETAILS                      |
| NL3-BGE-160-ST-DG-1405         | TRANSITION BARRIER REINFORCEMENT DETAILS        |
| NL3-BGE-160-ST-DG-1430         | SERVICES LAYOUT PLAN                            |
| NL3-BGE-160-ST-DG-1431         | SERVICES TYPICAL SECTIONS                       |
| NL3-BGE-160-ST-DG-1432         | LIGHT POLE DETAILS                              |
| NL3-BGE-160-ST-DG-1433         | LIGHT POLE JUNCTION BOX DETAILS                 |
| NL3-BGE-160-ST-DG-1450         | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS   |
| NL3-BGE-160-ST-DG-1470         | HARD LANDSCAPING LAYOUT PLAN AND DETAILS        |

**MRWA REFERENCE DRAWINGS**

|             |  |
|-------------|--|
| 0530-1456-4 | ROAD-SIDE SLIP-BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET N° 1 |
| 0530-1456-3 | ROAD-SIDE SLIP-BASE AND BRIDGE MOUNTED OCTAGONAL LIGHT POLE DETAILS - SHEET N° 2 |
| 9230-0921-6 | LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS                                |

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
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| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 12.04.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 12.04.18 |
| DESIGNED       | H. ALGUIRE  | 12.04.18 |
| CHECKED        | P. THOMPSON | 12.04.18 |
| APPROVED       | P. THOMPSON | 07.06.18 |
| DRAWING STATUS | IFC         |          |
| VERIFIED       | R. DENHAM   | 11.06.18 |

**Keliogg Brown & Root Pty Ltd**  
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 Level 15, 300 Murray St, Perth  
 Western Australia 6000



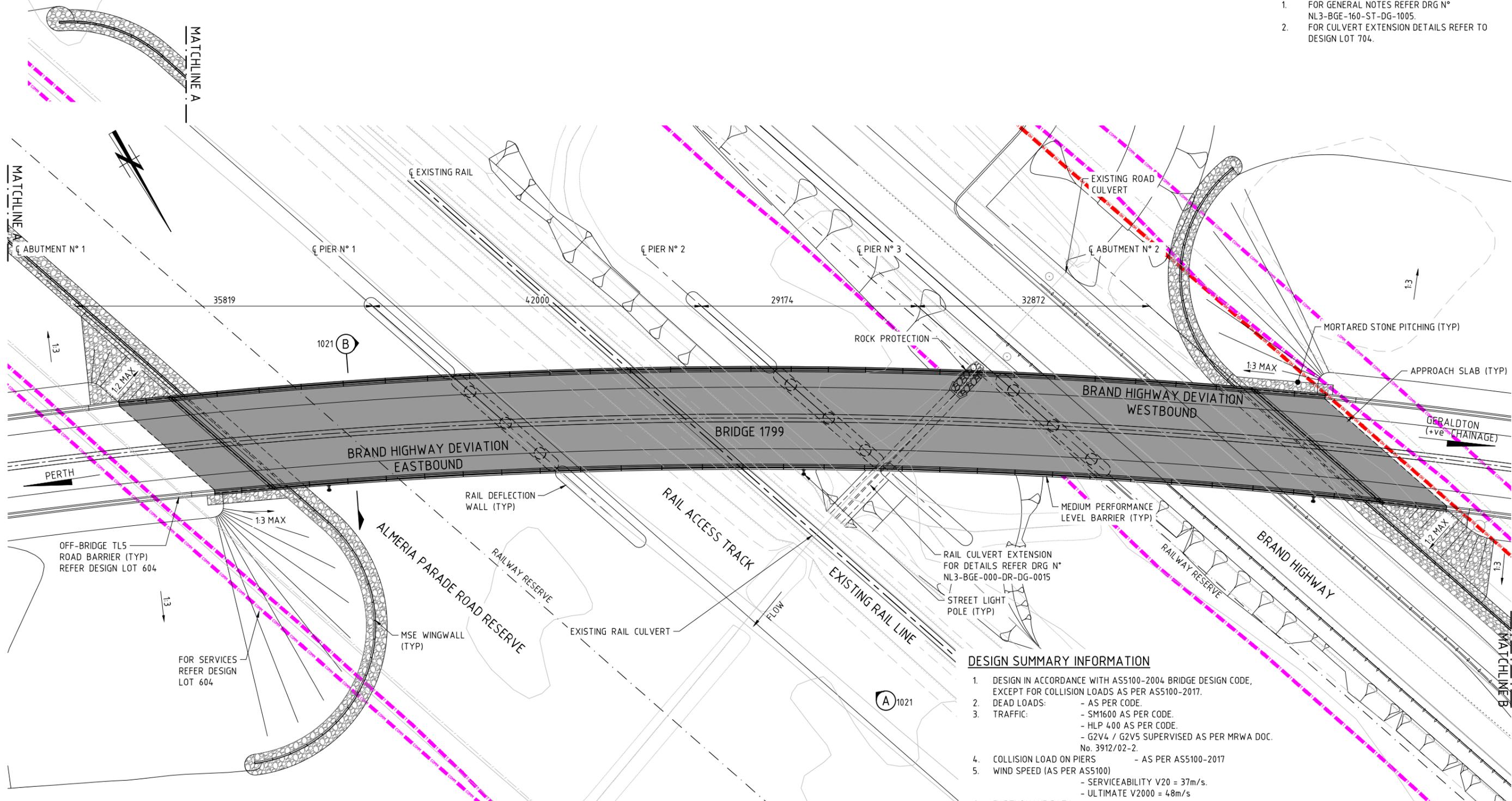

INFRASTRUCTURE DELIVERY DIRECTORATE

|                  |              |          |
|------------------|--------------|----------|
| PROJECT MANAGER  | C. SAXON     | 14.06.18 |
| PROJECT MANAGER  | Y. SIDDIQUI  | 19.06.18 |
| DESIGN MANAGER   | A. WHITESIDE | 11.06.18 |
| PROJECT DIRECTOR | R. ARNOTT    | 28.06.18 |

|                     |  |                                |           |
|---------------------|--|--------------------------------|-----------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |           |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |           |
| DRAWING TITLE       | BRAND HWY DEVIATION H004 (3.28 SLK)<br>BRIDGE N° 1799 OVER EXISTING BRAND HWY AND RAILWAY<br>INDEX SHEET |                                |           |
| DRAWING No.         | NL3-BGE-160-ST-DG-1001   | REV                            | 0         |

SCALE  
**A**  
**1**

- NOTES:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-160-ST-DG-1005.
  - FOR CULVERT EXTENSION DETAILS REFER TO DESIGN LOT 704.



**BRIDGE 1799 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE, EXCEPT FOR COLLISION LOADS AS PER AS5100-2017.
- DEAD LOADS: - AS PER CODE.
- TRAFFIC: - SM1600 AS PER CODE.  
- HLP 400 AS PER CODE.  
- G2V4 / G2V5 SUPERVISED AS PER MRWA DOC. No. 3912/02-2.
- COLLISION LOAD ON PIERS - AS PER AS5100-2017
- WIND SPEED (AS PER AS5100)  
- SERVICEABILITY V20 = 37m/s.  
- ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:  
- BRIDGE CLASSIFICATION - TYPE II  
- ACCELERATION COEFFICIENT - Z = 0.09, Kp = 1.7  
- SUB SOIL CLASSIFICATION - Ce  
- STRUCTURAL RESPONSE FACTOR - 5.0  
- IMPORTANCE FACTOR - 1.0
- BRIDGE BARRIERS: - MEDIUM PERFORMANCE LEVEL.
- FOOTING BEARING PRESSURES (BASED ON MEYERHOF DISTRIBUTION)  
SLS = 300 KPa  
ULS = 435 KPa
- DIFFERENTIAL SETTLEMENT ALLOWANCE BETWEEN ABUTMENTS AND PIERS = 20mm
- DIFFERENTIAL SETTLEMENT ALLOWANCE BETWEEN PIERS = 5mm.
- FATIGUE ROUTE FACTOR Rf = 1
- N° HEAVY VEHICLE PER DAY (ADJUSTED TO 2019) = 2039

| METADATA                 |                 |
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| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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DRAWN: K. TAYLOR 12.04.18  
DESIGNED: H. ALGUIRE 12.04.18  
CHECKED: P. THOMPSON 12.04.18  
APPROVED: P. THOMPSON 07.06.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

DRAWING STATUS: IFC

CPB CONTRACTORS

INFRASTRUCTURE DELIVERY DIRECTORATE

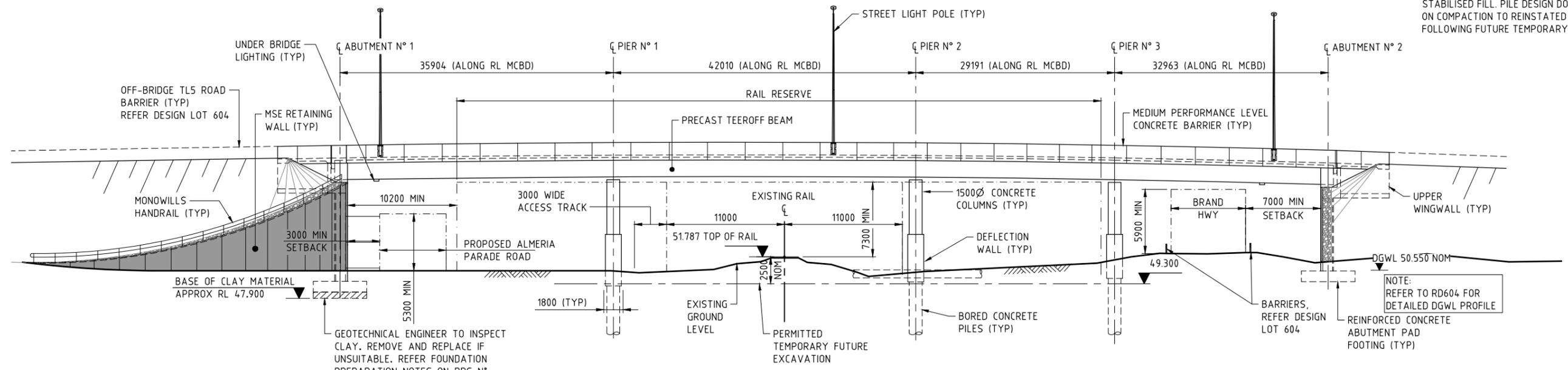
PROJECT MANAGER: C. SAXON 14.06.18  
DESIGN MANAGER: A. WHITESIDE 11.06.18

PROJECT MANAGER: Y. SIDDIQUI 19.06.18  
PROJECT DIRECTOR: R. ARNOTT 28.06.18

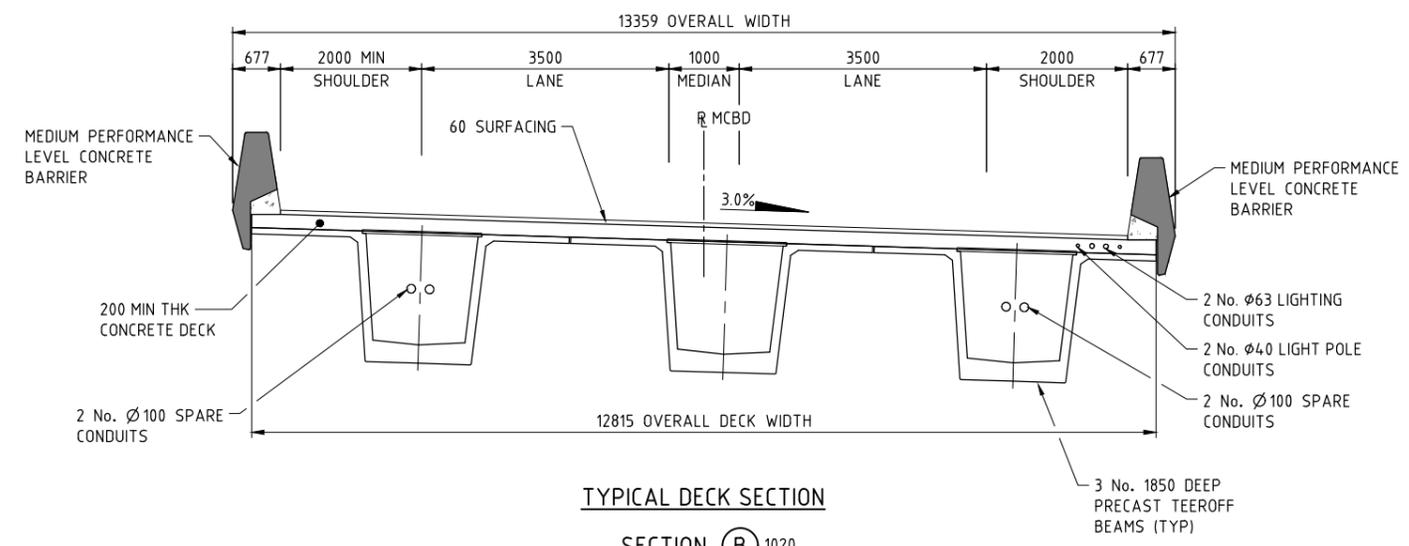
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|---------------------|---|--------------------------------|-----------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |           |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |           |
| DRAWING TITLE       | BRAND HWY DEVIATION H004 (3.28 SLK)<br>BRIDGE N° 1799 OVER EXISTING BRAND HWY AND RAILWAY<br>GENERAL ARRANGEMENT PLAN |                                |           |
| DRAWING No.         | NL3-BGE-160-ST-DG-1020  |                                |           |
| REV                 | 0   |                                |           |

SCALE 1:250  
A 1

- NOTE:**
- FOR GENERAL NOTES REFER DRG N° NL3-BGE-160-ST-DG-1005.
  - REINSTATEMENT OF FUTURE TEMPORARY EXCAVATION: ZONES AROUND PIER AND PILES THAT CANNOT BE READILY COMPACTED WITH HAND COMPACTION EQUIPMENT SHALL BE BACKFILLED WITH NON-FLOWABLE CEMENT STABILISED FILL. PILE DESIGN DOES NOT RELY ON COMPACTION TO REINSTATED MATERIAL FOLLOWING FUTURE TEMPORARY EXCAVATION.



**BRIDGE N° 1799 ELEVATION (A)** 1020  
1:200



**TYPICAL DECK SECTION**  
**SECTION (B)** 1020  
1:50

| AMENDMENTS |                         |
|------------|-------------------------|
| No.        | DESCRIPTION             |
| 0          | ISSUED FOR CONSTRUCTION |

| METADATA                 |          |
|--------------------------|----------|
| GROUND SURVEY STANDARD:  | 67-08-43 |
| DATE OF CAPTURE:         |          |
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| DATE OF CAPTURE:         |          |
| MAIN ROADS PROJECT ZONE: | PCG94    |
| HEIGHT DATUM:            | AHD      |

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Western Australia 6000

DESIGNED: H. ALGUIRE 12.04.18  
CHECKED: P. THOMPSON 12.04.18  
APPROVED: P. THOMPSON 07.06.18

DRAWING STATUS: IFC

CPB CONTRACTORS

mainroads WESTERN AUSTRALIA

INFRASTRUCTURE DELIVERY DIRECTORATE

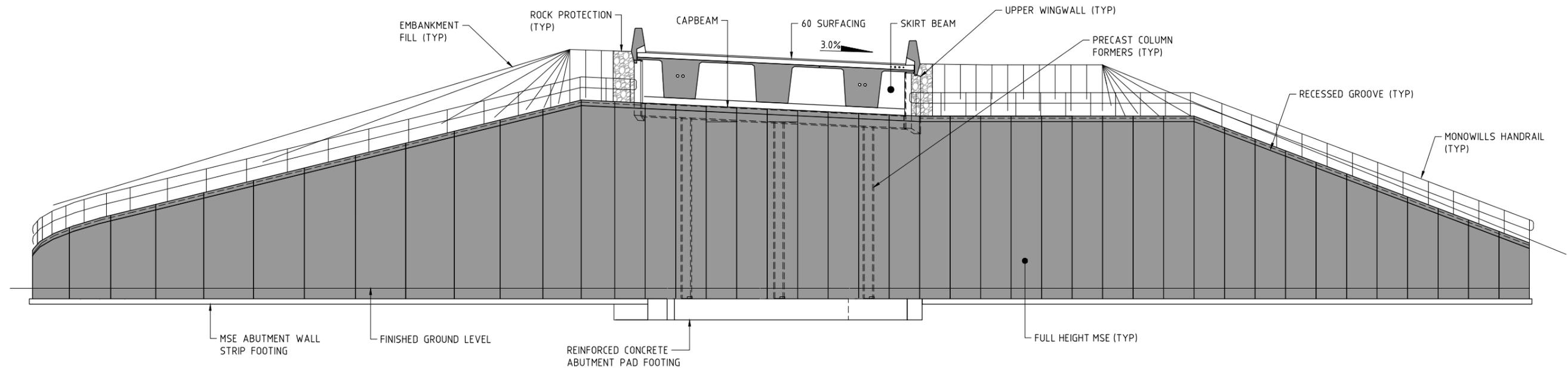
PROJECT MANAGER: C. SAXON 14.06.18  
DESIGN MANAGER: A. WHITESIDE 11.06.18

PROJECT MANAGER: Y. SIDDIQUI 19.06.18  
PROJECT DIRECTOR: R. ARNOTT 28.06.18

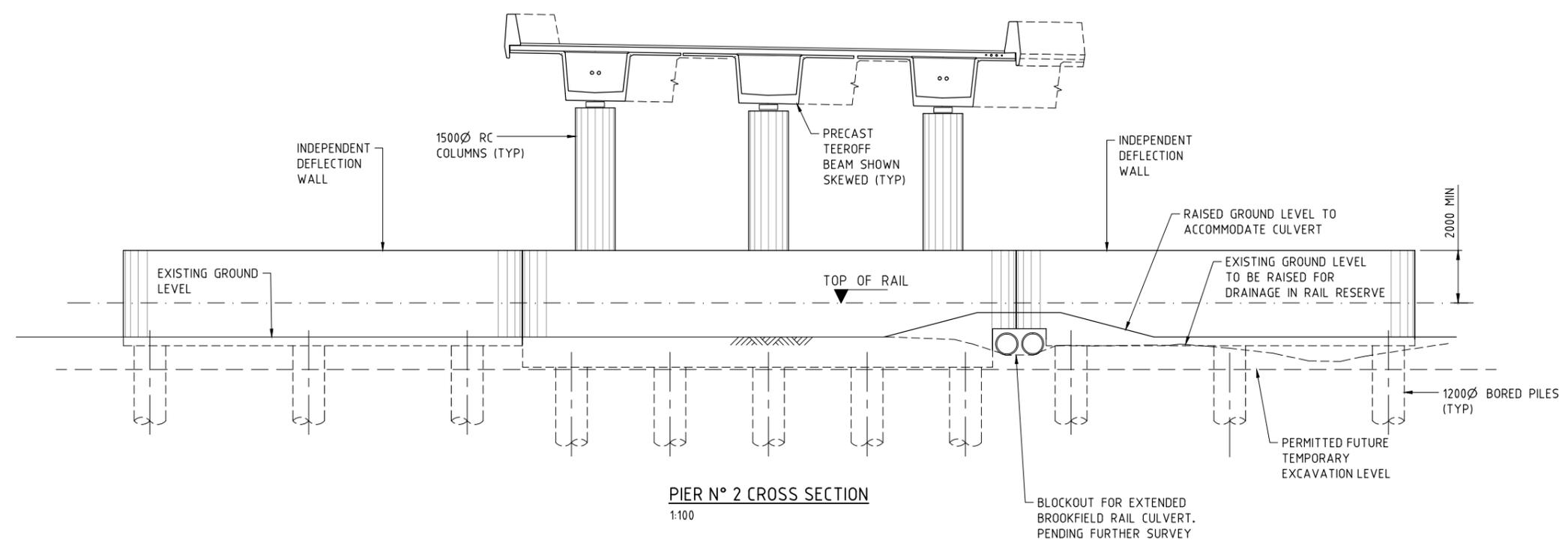
|                     |  |                                |           |
|---------------------|--|--------------------------------|-----------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |           |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |           |
| DRAWING TITLE       | BRAND HWY DEVIATION H004 (3.28 SLK)<br>BRIDGE N° 1799 OVER EXISTING BRAND HWY AND RAILWAY<br>GENERAL ARRANGEMENT ELEVATION AND SECTION |                                |           |
| DRAWING No.         | NL3-BGE-160-ST-DG-1021   |                                | REV 0     |



NOTE:  
1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-160-ST-DG-1005.



**ABUTMENT N° 2 CROSS SECTION**  
1:100



**PIER N° 2 CROSS SECTION**  
1:100

SCALE 1:100  
A 1

| METADATA                 |                 |
|--------------------------|-----------------|
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BG&E DOC No: P17077

DRAWN: K. TAYLOR 12.04.18  
DESIGNED: H. ALGUIRE 12.04.18  
CHECKED: P. THOMPSON 12.04.18  
APPROVED: P. THOMPSON 07.06.18

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Level 15, 300 Murray St, Perth  
Western Australia 6000

VERIFIED: R. DENHAM 11.06.18  
DATE: 11.06.18

PROJECT MANAGER: C. SAXON 14.06.18  
DESIGN MANAGER: A. WHITESIDE 11.06.18

PROJECT MANAGER: Y. SIDDIQUI 19.06.18  
PROJECT DIRECTOR: R. ARNOTT 28.06.18

CPB CONTRACTORS

INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |   |                                |           |
|---------------------|---|--------------------------------|-----------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |           |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |           |
| DRAWING TITLE       | BRAND HWY DEVIATION H004 (3.28 SLK)<br>BRIDGE N° 1799 OVER EXISTING BRAND HWY AND RAILWAY<br>GENERAL ARRANGEMENT SECTIONS |                                |           |
| DRAWING No.         | NL3-BGE-160-ST-DG-1022  |                                | REV 0     |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| <u>DRG No.</u>         | <u>DRAWING TITLE</u>   |
|------------------------|--|
| <b>GENERAL</b>         |  |
| NL3-BGE-230-ST-DG-1000 | COVER SHEET  |
| NL3-BGE-230-ST-DG-1001 | INDEX SHEET  |
| NL3-BGE-230-ST-DG-1005 | GENERAL NOTES  |
| NL3-BGE-230-ST-DG-1008 | CONSTRUCTION NOTES   |
| NL3-BGE-230-ST-DG-1010 | DESIGN SUMMARY SHEET 1 OF 3                                      |
| NL3-BGE-230-ST-DG-1011 | DESIGN SUMMARY SHEET 2 OF 3                                      |
| NL3-BGE-230-ST-DG-1012 | DESIGN SUMMARY SHEET 3 OF 3                                      |
| NL3-BGE-230-ST-DG-1020 | GENERAL ARRANGEMENT PLAN   |
| NL3-BGE-230-ST-DG-1021 | GENERAL ARRANGEMENT ELEVATION                                    |
| NL3-BGE-230-ST-DG-1022 | GENERAL ARRANGEMENT SECTIONS                                     |
| NL3-BGE-230-ST-DG-1040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                      |
| NL3-BGE-230-ST-DG-1041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                      |
| NL3-BGE-230-ST-DG-1050 | GEOMETRIC DATA   |
| <b>SUB-STRUCTURE</b>   |  |
| NL3-BGE-230-ST-DG-1080 | ABUTMENT No. 1 MSE WALL PLAN AND ELEVATION                       |
| NL3-BGE-230-ST-DG-1081 | ABUTMENT No. 2 MSE WALL PLAN AND ELEVATION                       |
| NL3-BGE-230-ST-DG-1082 | ABUTMENT MSE WALL DETAILS  |
| NL3-BGE-230-ST-DG-1100 | ABUTMENT No. 1 FOOTING CONCRETE PLAN AND SECTIONS                |
| NL3-BGE-230-ST-DG-1105 | ABUTMENT No. 2 FOOTING CONCRETE PLAN AND SECTIONS                |
| NL3-BGE-230-ST-DG-1110 | ABUTMENT No. 1 AND No. 2 FOOTING REINFORCEMENT PLAN AND SECTIONS |
| NL3-BGE-230-ST-DG-1115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS         |
| NL3-BGE-230-ST-DG-1120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS  |
| NL3-BGE-230-ST-DG-1125 | ABUTMENT No. 1 CAP BEAM CONCRETE PLAN, ELEVATION AND SECTIONS    |
| NL3-BGE-230-ST-DG-1127 | ABUTMENT No. 2 CAP BEAM CONCRETE PLAN AND ELEVATION              |
| NL3-BGE-230-ST-DG-1130 | ABUTMENT No. 1 & No. 2 CAPBEAM REINFORCEMENT PLAN AND SECTIONS   |
| NL3-BGE-230-ST-DG-1190 | BEARINGS PLAN AND NOTES  |
| NL3-BGE-230-ST-DG-1191 | BEARINGS SECTIONS AND DETAILS                                    |
| <b>SUPER-STRUCTURE</b> |  |
| NL3-BGE-230-ST-DG-1200 | PRECAST PLANK LAYOUT PLAN AND DETAILS                            |
| NL3-BGE-230-ST-DG-1210 | PRECAST PLANK CONCRETE PLAN AND SECTIONS                         |
| NL3-BGE-230-ST-DG-1220 | PRECAST PLANK CONCRETE SECTIONS AND DETAILS                      |
| NL3-BGE-230-ST-DG-1240 | PRECAST PLANK PRESTRESS LAYOUT AND NOTES                         |
| NL3-BGE-230-ST-DG-1250 | PRECAST PLANK REINFORCEMENT PLAN AND SECTION                     |
| NL3-BGE-230-ST-DG-1260 | PRECAST PLANK REINFORCEMENT SECTIONS                             |
| NL3-BGE-230-ST-DG-1270 | PRECAST PLANK REINFORCEMENT ABUTMENT & INTERNAL DIAPHRAGMS       |

| <u>DRG No.</u>                 | <u>DRAWING TITLE</u>                            |
|--------------------------------|---|
| <b>SUPER-STRUCTURE (CON'T)</b> |   |
| NL3-BGE-230-ST-DG-1300         | DECK CONCRETE PLAN AND DETAILS                  |
| NL3-BGE-230-ST-DG-1310         | DECK CONCRETE SECTIONS AND DETAILS              |
| NL3-BGE-230-ST-DG-1315         | DECK REINFORCEMENT PLAN                         |
| NL3-BGE-230-ST-DG-1320         | DECK REINFORCEMENT ELEVATION                    |
| NL3-BGE-230-ST-DG-1330         | DECK REINFORCEMENT SECTIONS AND DETAILS         |
| NL3-BGE-230-ST-DG-1340         | DECK WATERPROOFING PLAN AND DETAILS             |
| NL3-BGE-230-ST-DG-1350         | APPROACH SLAB CONCRETE PLAN AND DETAILS         |
| NL3-BGE-230-ST-DG-1355         | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS   |
| NL3-BGE-230-ST-DG-1360         | EXPANSION JOINT PLAN AND SECTIONS               |
| NL3-BGE-230-ST-DG-1365         | COVER PLATE PLAN AND SECTIONS                   |
| NL3-BGE-230-ST-DG-1366         | COVER PLATE DETAILS                             |
| NL3-BGE-230-ST-DG-1370         | BARRIER LAYOUT PLAN AND DETAILS                 |
| NL3-BGE-230-ST-DG-1375         | BARRIER SECTIONS AND DETAILS                    |
| NL3-BGE-230-ST-DG-1380         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 1    |
| NL3-BGE-230-ST-DG-1381         | PRECAST PANEL PLANS AND ELEVATIONS - SHEET 2    |
| NL3-BGE-230-ST-DG-1385         | PRECAST PANEL REINFORCEMENT DETAILS             |
| NL3-BGE-230-ST-DG-1395         | INSITU BARRIER STITCH ELEVATION AND DETAILS     |
| NL3-BGE-230-ST-DG-1400         | INSITU TRANSITION BARRIER ELEVATION AND DETAILS |
| NL3-BGE-230-ST-DG-1401         | INSITU TRANSITION BARRIER REINFORCEMENT DETAILS |
| NL3-BGE-230-ST-DG-1430         | SERVICES LAYOUT PLAN                            |
| NL3-BGE-230-ST-DG-1431         | SERVICES SECTIONS AND DETAILS                   |
| NL3-BGE-230-ST-DG-1450         | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS   |

**MRWA REFERENCE DRAWINGS**  
9230-0921-6 LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS

| <b>METADATA</b>                   |                   |
|-----------------------------------|-------------------|
| GROUND SURVEY STANDARD: 67-08-43  | DATE OF CAPTURE:  |
| MAPPING SURVEY STANDARD: 67-08-43 | DATE OF CAPTURE:  |
| ISSUED FOR CONSTRUCTION           | PDT 15.02.18      |
| No. DESCRIPTION                   | APPROVED & DATE   |
| AMENDMENTS                        |                   |
| MAIN ROADS PROJECT ZONE: PCG94    | HEIGHT DATUM: AHD |

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|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A. RIECK    | 15.02.18 |
| DESIGNED       | J. JAMESON  | 15.02.18 |
| CHECKED        | P. THOMPSON | 15.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |
| VERIFIED       | R. DENHAM   | 09.03.18 |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

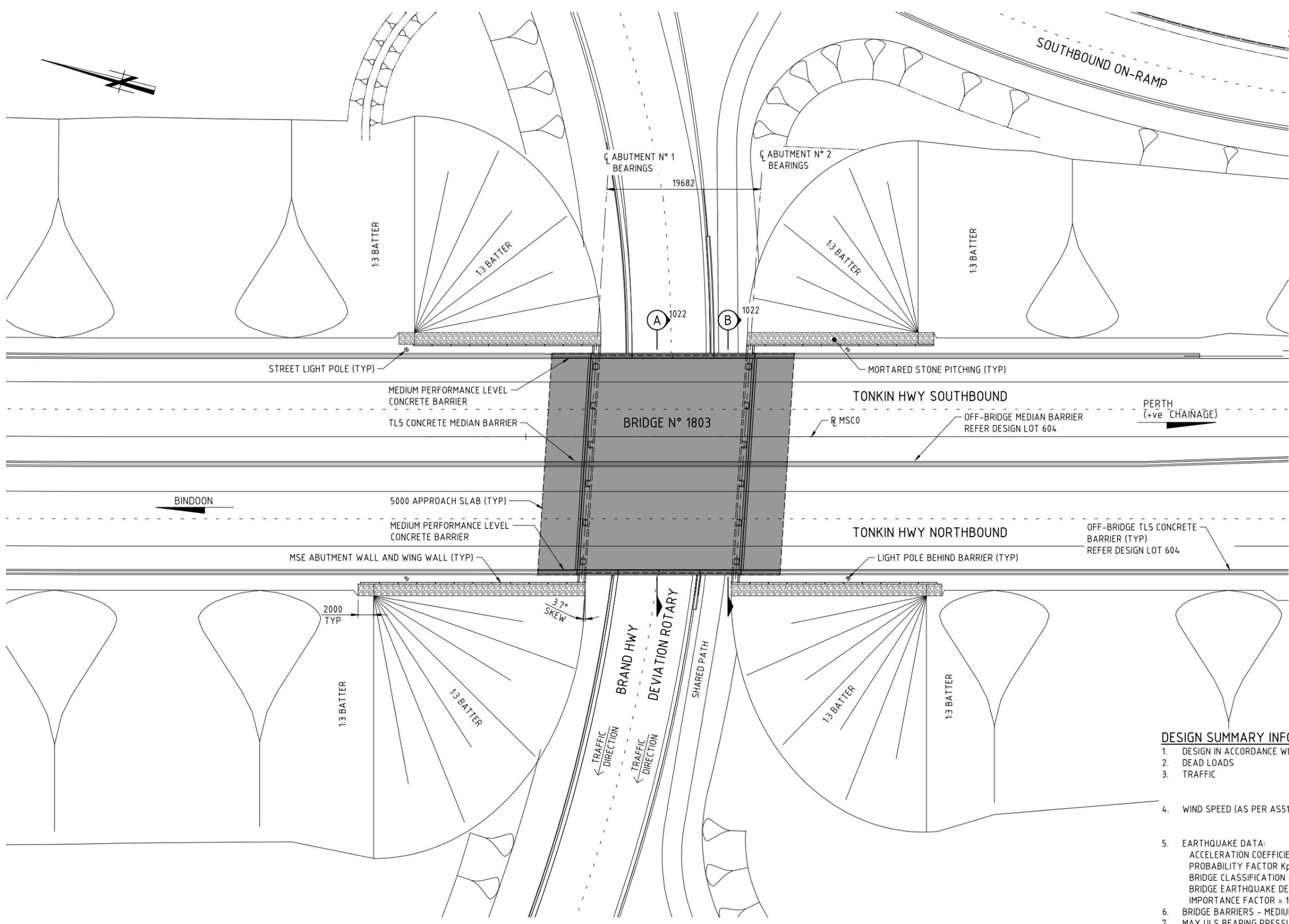
INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (1.07 SLK)<br>BRIDGE N° 1803 OVER BRAND HWY DEVIATION ROTARY<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-230-ST-DG-1001  | REV                            | 0                        |

SCALE  
**A  
1**

**NOTES:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-1005.
- BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 604.



**BRIDGE N° 1803 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

- DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
  - DEAD LOADS - AS PER CODE.
  - TRAFFIC - SM1600 AS PER CODE.
  - TRAFFIC - HLP400 AS PER CODE.
  - TRAFFIC - G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM
- WIND SPEED (AS PER AS5100)
  - SERVICEABILITY V20 = 37m/s
  - ULTIMATE V2000 = 48m/s
- EARTHQUAKE DATA:
  - ACCELERATION COEFFICIENT Z = 0.09
  - PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.
  - BRIDGE CLASSIFICATION = TYPE II
  - BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2
  - IMPORTANCE FACTOR = 1.0
- BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL
- MAX ULS BEARING PRESSURE 410 kPa
- MAX SLS BEARING PRESSURE 300 kPa
- FATIGUE ROUTE FACTOR RF=1 No. HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 1590

SCALE 1:250

| METADATA                 |              |
|--------------------------|--------------|
| GROUND SURVEY STANDARD:  | 67-08-43     |
| DATE OF CAPTURE:         |              |
| MAPPING SURVEY STANDARD: | 67-08-43     |
| DATE OF CAPTURE:         | PDT 15.02.18 |
| MAIN ROADS PROJECT ZONE: | PCG94        |
| HEIGHT DATUM:            | AHD          |

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BG&E

DRAWN: A.RIECK 15.02.18  
DESIGNED: J. JAMESON 15.02.18  
CHECKED: P. THOMPSON 15.02.18  
APPROVED: C. RAMM 02.03.18

**Kellogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000

CPB CONTRACTORS

PROJECT MANAGER: S. NICOLAY 09.03.18  
DESIGN MANAGER: A. WHITESIDE 08.03.18

INFRASTRUCTURE DELIVERY DIRECTORATE

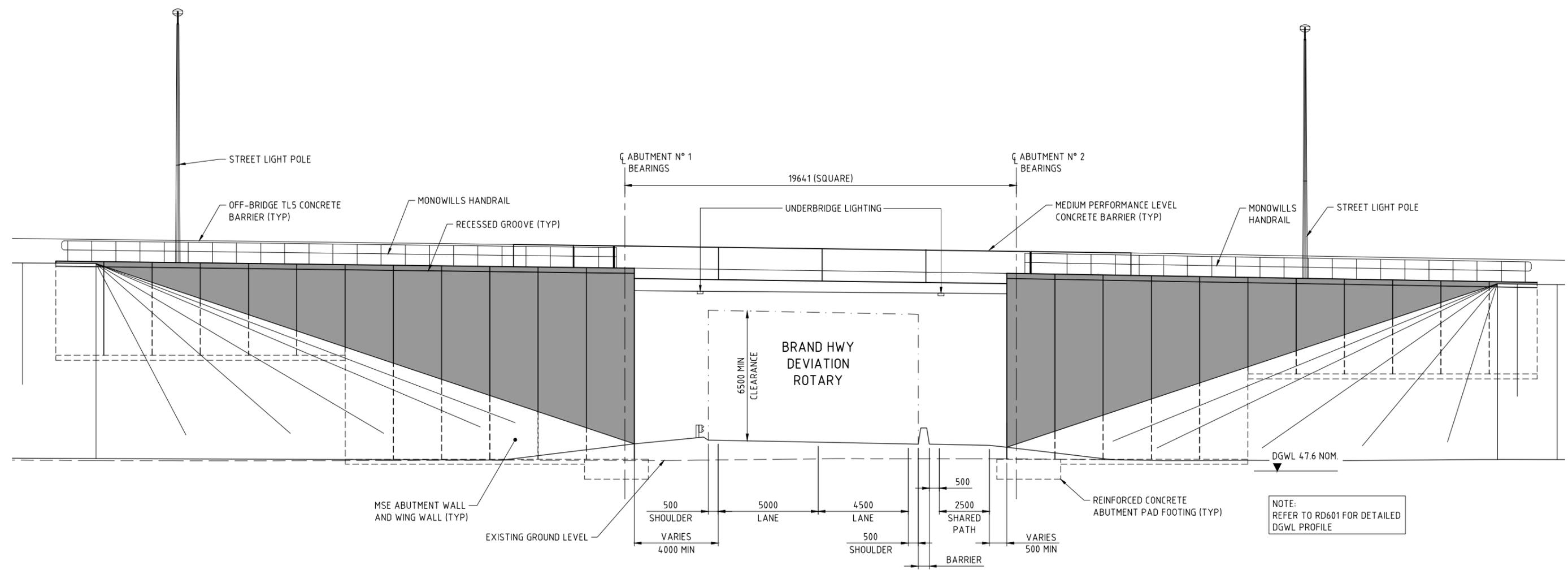
PROJECT MANAGER: Y. SIDDIQUI 13.03.18  
PROJECT DIRECTOR: R. ARNOTT 15.03.18

mainroads WESTERN AUSTRALIA

|                     |  |                                |                          |
|---------------------|--|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (1.07 SLK)<br>BRIDGE N° 1803 OVER BRAND HWY DEVIATION ROTARY<br>GENERAL ARRANGEMENT PLAN |                                |                          |
| DRAWING No.         | NL3-BGE-230-ST-DG-1020   |                                | REV 0                    |

**NOTE:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-1005.

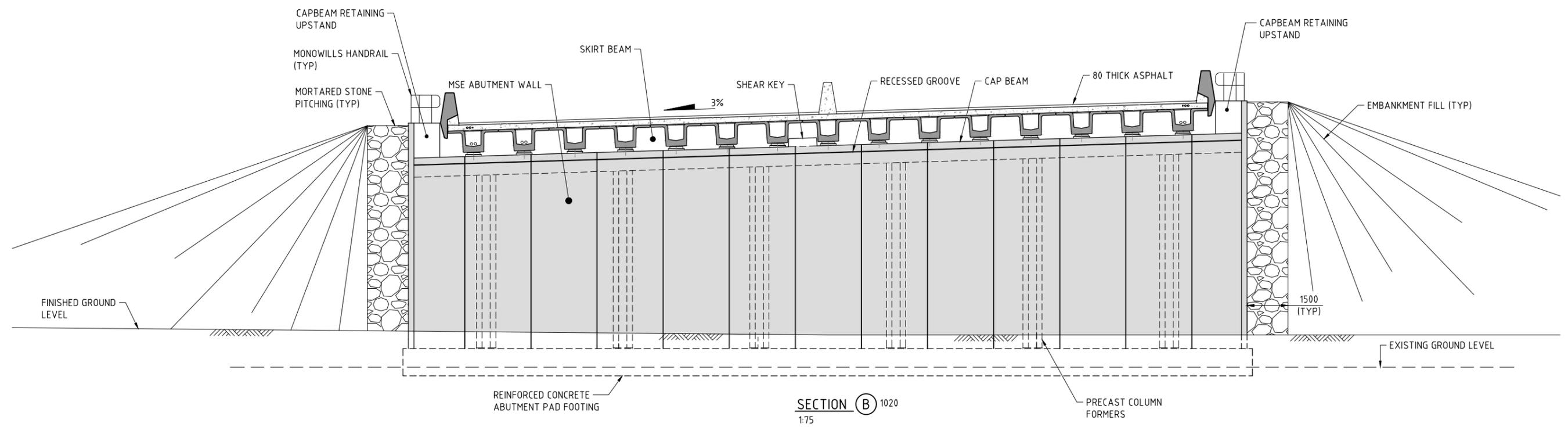
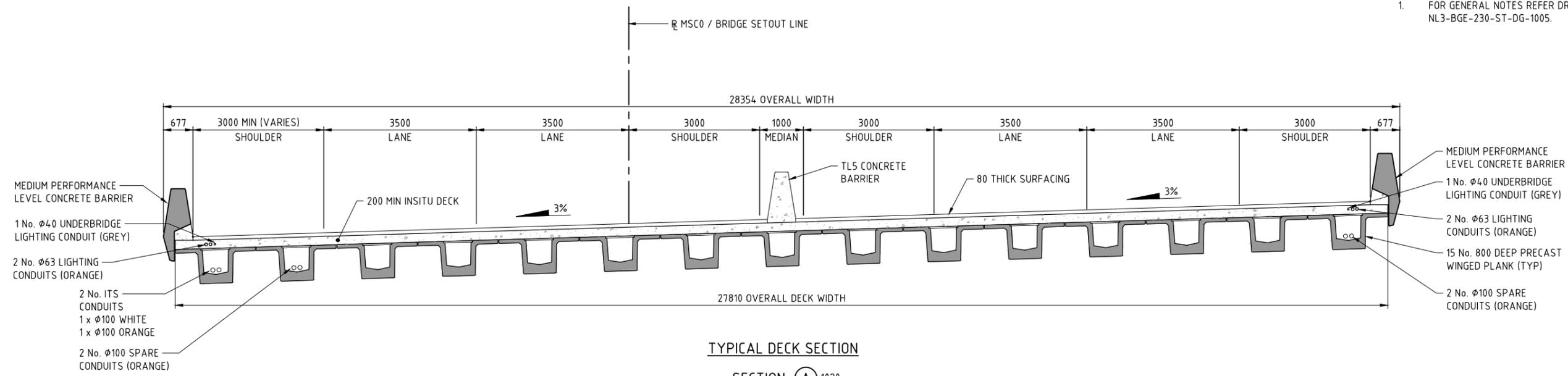


**BRIDGE N° 1803 ELEVATION**  
1:100

1:100 SCALE  
A 1

|  |  |  |  |                                    |  |  |  |  |  |   |  |   |  |  |  |
|--|--|--|--|------------------------------------|--|--|--|--|--|---|--|---|--|--|--|
| <p><b>METADATA</b></p> <p>GROUND SURVEY STANDARD: 67-08-43<br/>         DATE OF CAPTURE:<br/>         MAPPING SURVEY STANDARD: 67-08-43<br/>         DATE OF CAPTURE:<br/>         MAIN ROADS PROJECT ZONE: PCG94<br/>         HEIGHT DATUM: AHD</p> |  | <p><b>Perth Office—</b><br/>         484 Murray St, Perth WA 6000<br/>         P /+61 8 6364 3300<br/>         E / info@bgeeng.com<br/>         bgeeng.com</p> |  | <p><b>BG &amp; E</b></p>           |  | <p>DRAWN: A.RIECK 15.02.18<br/>         DESIGNED: J. JAMESON 15.02.18<br/>         CHECKED: P. THOMPSON 15.02.18<br/>         APPROVED: C. RAMM 02.03.18</p> |  | <p><b>Kellogg Brown &amp; Root Pty Ltd</b><br/> <b>KBR</b><br/>         ABN 91 007 660 317<br/>         Level 15, 300 Murray St, Perth<br/>         Western Australia 6000</p> |  | <p><b>CPB CONTRACTORS</b></p>                     |  | <p><b>mainroads WESTERN AUSTRALIA</b><br/>         INFRASTRUCTURE DELIVERY DIRECTORATE</p>  |  | <p>LOCAL AUTHORITY: SHIRE OF CHITTERING (502) MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT</p> |  |
| <p>0 ISSUED FOR CONSTRUCTION PDT 15.02.18</p>  |  | <p>AMENDMENTS</p>  |  | <p>VERIFIED: R.DENHAM 09.03.18</p> |  | <p>PROJECT MANAGER: S. NICOLAY 09.03.18<br/>         DESIGN MANAGER: A. WHITESIDE 08.03.18</p>   |  | <p>PROJECT MANAGER: Y. SIDDIQUI 13.03.18<br/>         PROJECT DIRECTOR: R. ARNOTT 15.03.18</p>   |  | <p>PROJECT TITLE: <b>NORTHLINK WA STAGE 3</b></p> |  | <p>DRAWING TITLE: TONKIN HIGHWAY H017 (1.07 SLK)<br/>         BRIDGE N° 1803 OVER BRAND HWY DEVIATION ROTARY<br/>         GENERAL ARRANGEMENT ELEVATION</p> |  | <p>DRAWING No: NL3-BGE-230-ST-DG-1021 REV 0</p>  |  |

**NOTE:**  
 1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-1005.



SCALE 1:50  
 A 1

**METADATA**

|                          |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 15.02.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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BG & E

BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | A.RIECK     | 15.02.18 |
| DESIGNED       | J. JAMESON  | 15.02.18 |
| CHECKED        | P. THOMPSON | 15.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
 ABN 91 007 660 317  
 Level 15, 300 Murray St, Perth  
 Western Australia 6000

**CPB CONTRACTORS**

**mainroads WESTERN AUSTRALIA**  
 INFRASTRUCTURE DELIVERY DIRECTORATE

|                     |                           |                                |  |
|---------------------|---------------------------|--------------------------------|--|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502) | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT   |
| MRWA DRAWING NUMBER |                           | PROJECT TITLE                  | NORTHLINK WA STAGE 3   |
|                     |                           | DRAWING TITLE                  | TONKIN HIGHWAY H017 (1.07 SLK)<br>BRIDGE N° 1803 OVER BRAND HWY DEVIATION ROTARY<br>GENERAL ARRANGEMENT SECTIONS |
|                     |                           | DRAWING No.                    | NL3-BGE-230-ST-DG-1022   |
|                     |                           | REV                            | 0  |

**NORTHLINK STAGE 3  
DRAWING INDEX**

| <u>DRG No.</u>         | <u>DRAWING TITLE</u>   |
|------------------------|--|
| <b>GENERAL</b>         |  |
| NL3-BGE-230-ST-DG-2000 | COVER SHEET  |
| NL3-BGE-230-ST-DG-2001 | INDEX SHEET  |
| NL3-BGE-230-ST-DG-2005 | GENERAL NOTES  |
| NL3-BGE-230-ST-DG-2008 | CONSTRUCTION NOTES   |
| NL3-BGE-230-ST-DG-2010 | DESIGN SUMMARY SHEET 1 OF 3                                      |
| NL3-BGE-230-ST-DG-2011 | DESIGN SUMMARY SHEET 2 OF 3                                      |
| NL3-BGE-230-ST-DG-2012 | DESIGN SUMMARY SHEET 3 OF 3                                      |
| NL3-BGE-230-ST-DG-2020 | GENERAL ARRANGEMENT PLAN   |
| NL3-BGE-230-ST-DG-2021 | GENERAL ARRANGEMENT ELEVATION                                    |
| NL3-BGE-230-ST-DG-2022 | GENERAL ARRANGEMENT SECTIONS                                     |
| NL3-BGE-230-ST-DG-2040 | SITE INVESTIGATION INFORMATION SHEET 1 OF 2                      |
| NL3-BGE-230-ST-DG-2041 | SITE INVESTIGATION INFORMATION SHEET 2 OF 2                      |
| NL3-BGE-230-ST-DG-2050 | GEOMETRIC DATA   |
| <b>SUB-STRUCTURE</b>   |  |
| NL3-BGE-230-ST-DG-2080 | ABUTMENT No. 1 MSE WALL PLAN AND ELEVATION                       |
| NL3-BGE-230-ST-DG-2081 | ABUTMENT No. 2 MSE WALL PLAN AND ELEVATION                       |
| NL3-BGE-230-ST-DG-2082 | ABUTMENT MSE WALL DETAILS  |
| NL3-BGE-230-ST-DG-2100 | ABUTMENT No. 1 FOOTING CONCRETE PLAN AND SECTIONS                |
| NL3-BGE-230-ST-DG-2105 | ABUTMENT No. 2 FOOTING CONCRETE PLAN AND SECTIONS                |
| NL3-BGE-230-ST-DG-2110 | ABUTMENT No. 1 AND No. 2 FOOTING REINFORCEMENT PLAN AND SECTIONS |
| NL3-BGE-230-ST-DG-2115 | PRECAST COLUMN FORMER CONCRETE AND REINFORCEMENT DETAILS         |
| NL3-BGE-230-ST-DG-2120 | PRECAST COLUMN FORMER INFILL CONCRETE AND REINFORCEMENT DETAILS  |
| NL3-BGE-230-ST-DG-2125 | ABUTMENT No. 1 CAPBEAM CONCRETE PLAN AND ELEVATION               |
| NL3-BGE-230-ST-DG-2127 | ABUTMENT No. 2 CAPBEAM CONCRETE PLAN AND ELEVATIONS              |
| NL3-BGE-230-ST-DG-2128 | ABUTMENT No. 1 & 2 CAPBEAM CONCRETE SECTIONS                     |
| NL3-BGE-230-ST-DG-2130 | ABUTMENT CAPBEAM REINFORCEMENT ELEVATION AND SECTIONS            |
| NL3-BGE-230-ST-DG-2190 | BEARINGS PLAN AND NOTES  |
| NL3-BGE-230-ST-DG-2191 | BEARINGS SECTIONS AND DETAILS                                    |
| <b>SUPER-STRUCTURE</b> |  |
| NL3-BGE-230-ST-DG-2200 | PRECAST BEAM LAYOUT PLAN AND DETAILS                             |
| NL3-BGE-230-ST-DG-2210 | PRECAST BEAM CONCRETE PLAN AND ELEVATION                         |
| NL3-BGE-230-ST-DG-2211 | PRECAST BEAM CONCRETE PLANS                                      |
| NL3-BGE-230-ST-DG-2220 | PRECAST BEAM CONCRETE SECTIONS                                   |
| NL3-BGE-230-ST-DG-2221 | PRECAST BEAM CONCRETE SECTIONS AND DETAILS                       |
| NL3-BGE-230-ST-DG-2230 | PRECAST BEAM LIFTING LOCATIONS AND DETAILS                       |
| NL3-BGE-230-ST-DG-2240 | PRECAST BEAM PRESTRESS LAYOUT AND NOTES                          |
| NL3-BGE-230-ST-DG-2250 | PRECAST BEAM REINFORCEMENT PLAN AND ELEVATION                    |
| NL3-BGE-230-ST-DG-2260 | PRECAST BEAM REINFORCEMENT SECTIONS                              |

| <u>DRG No.</u>               | <u>DRAWING TITLE</u>                              |
|------------------------------|---|
| <b>SUPER-STRUCTURE CONT.</b> |   |
| NL3-BGE-230-ST-DG-2270       | PRECAST BEAM REINFORCEMENT ABUTMENT END DIAPHRAGM |
| NL3-BGE-230-ST-DG-2280       | PRECAST BEAM REINFORCEMENT INTERNAL DIAPHRAGM     |
| NL3-BGE-230-ST-DG-2300       | DECK CONCRETE PLAN                                |
| NL3-BGE-230-ST-DG-2305       | DECK CONCRETE DETAILS AND ELEVATIONS              |
| NL3-BGE-230-ST-DG-2315       | DECK REINFORCEMENT PLAN                           |
| NL3-BGE-230-ST-DG-2320       | DECK REINFORCEMENT ELEVATIONS                     |
| NL3-BGE-230-ST-DG-2330       | DECK REINFORCEMENT SECTIONS AND DETAILS           |
| NL3-BGE-230-ST-DG-2340       | DECK WATERPROOFING PLAN AND DETAILS               |
| NL3-BGE-230-ST-DG-2350       | APPROACH SLAB CONCRETE PLAN AND SECTIONS          |
| NL3-BGE-230-ST-DG-2355       | APPROACH SLAB REINFORCEMENT PLAN AND SECTIONS     |
| NL3-BGE-230-ST-DG-2360       | EXPANSION JOINT PLAN AND SECTIONS                 |
| NL3-BGE-230-ST-DG-2361       | EXPANSION JOINT DETAILS                           |
| NL3-BGE-230-ST-DG-2365       | COVER PLATE PLAN AND SECTIONS                     |
| NL3-BGE-230-ST-DG-2366       | COVER PLATE DETAILS                               |
| NL3-BGE-230-ST-DG-2370       | BARRIER LAYOUT PLAN AND DETAILS                   |
| NL3-BGE-230-ST-DG-2375       | BARRIER SECTIONS AND DETAILS                      |
| NL3-BGE-230-ST-DG-2380       | PRECAST PANEL PLANS AND ELEVATIONS SHEET 1        |
| NL3-BGE-230-ST-DG-2381       | PRECAST PANEL PLANS AND ELEVATIONS SHEET 2        |
| NL3-BGE-230-ST-DG-2382       | PRECAST PANEL PLANS AND ELEVATIONS SHEET 3        |
| NL3-BGE-230-ST-DG-2385       | PRECAST PANEL REINFORCEMENT DETAILS               |
| NL3-BGE-230-ST-DG-2395       | INSITU BARRIER STITCH ELEVATION AND DETAILS       |
| NL3-BGE-230-ST-DG-2400       | TRANSITION BARRIER ELEVATION AND DETAILS          |
| NL3-BGE-230-ST-DG-2401       | TRANSITION BARRIER REINFORCEMENT DETAILS          |
| NL3-BGE-230-ST-DG-2430       | SERVICES LAYOUT PLAN                              |
| NL3-BGE-230-ST-DG-2431       | SERVICES SECTIONS AND DETAILS                     |
| NL3-BGE-230-ST-DG-2450       | UNDER BRIDGE LIGHTING LAYOUT PLAN AND DETAILS     |

**MRWA REFERENCE DRAWINGS**  
9230-0921-6 LUMINAIRE SUPPORT BRACKET AND COVER PLATE DETAILS

| <b>METADATA</b>          |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 10.04.18    |
| No.                      | DESCRIPTION     |
|                          | APPROVED & DATE |
|                          | AMENDMENTS      |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

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BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 09.02.18 |
| DESIGNED       | H. ALGUIRE  | 09.02.18 |
| CHECKED        | P. THOMPSON | 09.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |
| VERIFIED       | R. DENHAM   | 09.03.18 |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



**CPB CONTRACTORS**




**INFRASTRUCTURE DELIVERY DIRECTORATE**

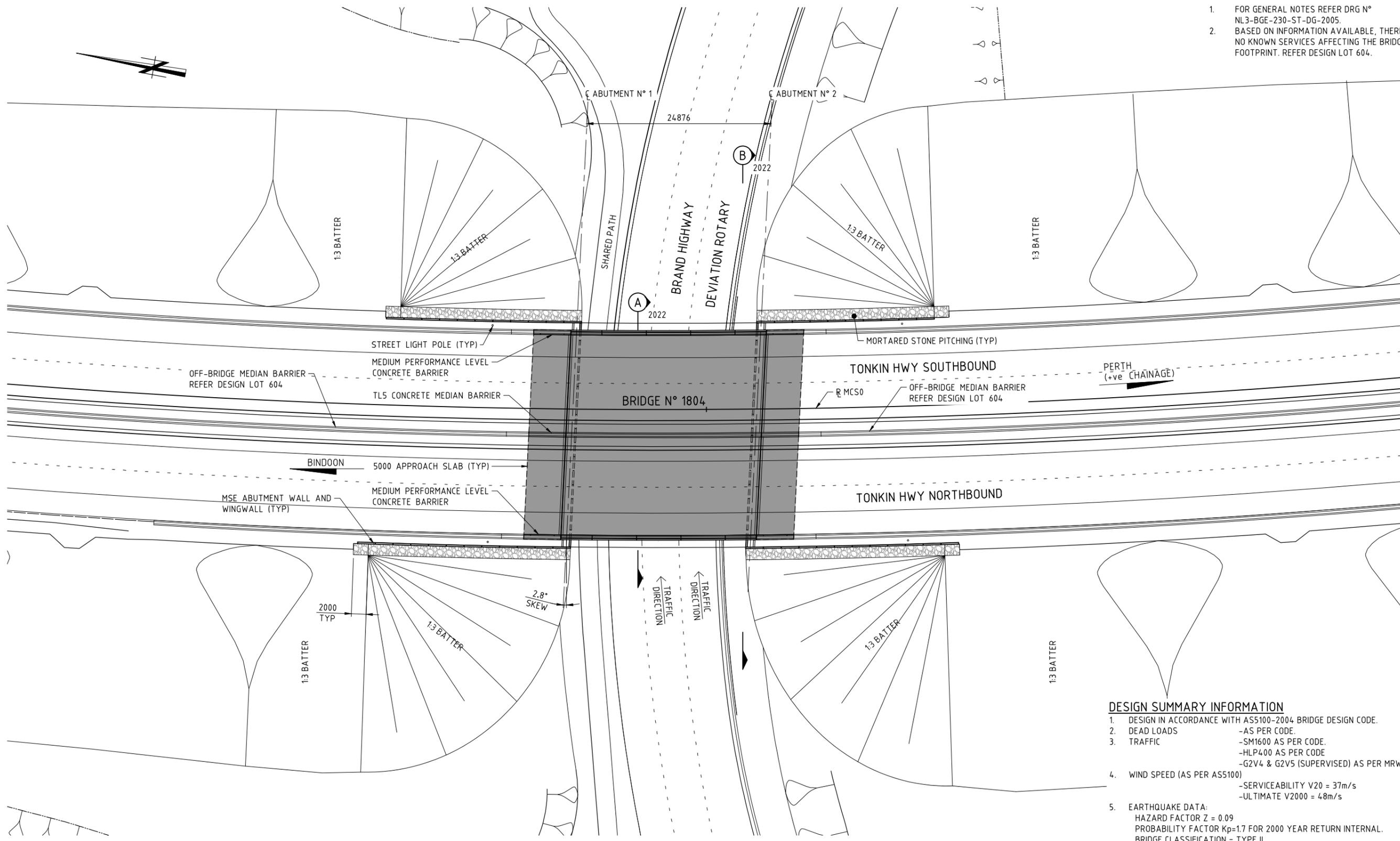
|                  |              |          |
|------------------|--------------|----------|
| PROJECT MANAGER  | S. NICOLAY   | 09.03.18 |
| PROJECT MANAGER  | Y. SIDDIQUI  | 13.03.18 |
| DESIGN MANAGER   | A. WHITESIDE | 08.03.18 |
| PROJECT DIRECTOR | R. ARNOTT    | 15.03.18 |

|                     |   |                                |                          |
|---------------------|---|--------------------------------|--------------------------|
| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)   | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |   |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3  |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (0.89 SLK)<br>BRIDGE N° 1804 OVER BRAND HWY DEVIATION ROTARY<br>INDEX SHEET |                                |                          |
| DRAWING No.         | NL3-BGE-230-ST-DG-2001  |                                | REV 0                    |

SCALE  
**A  
1**

**NOTES:**

1. FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-2005.
2. BASED ON INFORMATION AVAILABLE, THERE ARE NO KNOWN SERVICES AFFECTING THE BRIDGE FOOTPRINT. REFER DESIGN LOT 604.



**BRIDGE N° 1804 PLAN**  
1:250

**DESIGN SUMMARY INFORMATION**

1. DESIGN IN ACCORDANCE WITH AS5100-2004 BRIDGE DESIGN CODE.
2. DEAD LOADS -AS PER CODE.
3. TRAFFIC -SM1600 AS PER CODE.  
-HLP400 AS PER CODE  
-G2V4 & G2V5 (SUPERVISED) AS PER MRWA BDDIM
4. WIND SPEED (AS PER AS5100)  
-SERVICEABILITY V20 = 37m/s  
-ULTIMATE V2000 = 48m/s
5. EARTHQUAKE DATA:  
HAZARD FACTOR Z = 0.09  
PROBABILITY FACTOR Kp=1.7 FOR 2000 YEAR RETURN INTERNAL.  
BRIDGE CLASSIFICATION = TYPE II  
BRIDGE EARTHQUAKE DESIGN CATEGORY = BEDC-2  
IMPORTANCE FACTOR = 1.0
6. BRIDGE BARRIERS - MEDIUM PERFORMANCE LEVEL
7. MAX SLS BEARING PRESSURE 365kPa.  
MAX SLS BEARING PRESSURE 280kPa.
8. FATIGUE ROUTE FACTOR RF = 1 N° HEAVY VEHICLES PER DAY (ADJUSTED TO 2019) = 1590

1:250 SCALE A 1

**METADATA**

GROUND SURVEY STANDARD: 67-08-43  
 DATE OF CAPTURE:  
 MAPPING SURVEY STANDARD: 67-08-43  
 DATE OF CAPTURE:  
 MAIN ROADS PROJECT ZONE: PCG94  
 HEIGHT DATUM: AHD

**Perth Office—**  
 484 Murray St, Perth WA 6000  
 P /+61 8 6364 3300  
 E / info@bgeeng.com  
 bgeeng.com—



DRAWN: K. TAYLOR 09.02.18  
 DESIGNED: H. ALGUIRE 09.02.18  
 CHECKED: P. THOMPSON 09.02.18  
 APPROVED: C. RAMM 02.03.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
 ABN 91 007 660 317  
 Level 15, 300 Murray St, Perth  
 Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

VERIFIED: R. DENHAM  
 DATE: 09.03.18

PROJECT MANAGER: S. NICOLAY 09.03.18  
 DESIGN MANAGER: A. WHITESIDE 08.03.18

PROJECT MANAGER: Y. SIDDIQUI 13.03.18  
 PROJECT DIRECTOR: R. ARNOTT 15.03.18

LOCAL AUTHORITY: SHIRE OF CHITTERING (502) MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT

MRWA DRAWING NUMBER

PROJECT TITLE: **NORTHLINK WA STAGE 3**

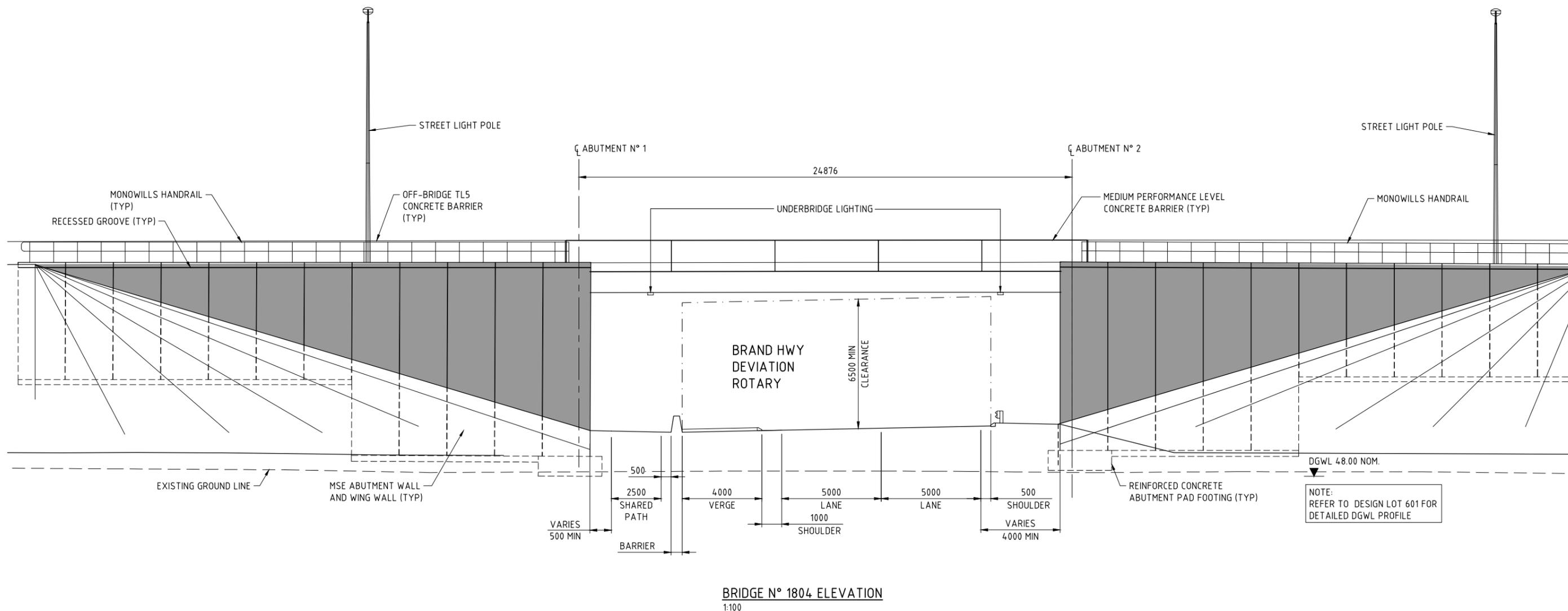
DRAWING TITLE: **TONKIN HIGHWAY H017 (0.89 SLK) BRIDGE N° 1804 OVER BRAND HWY DEVIATION ROTARY GENERAL ARRANGEMENT PLAN**

DRAWING No. **NL3-BGE-230-ST-DG-2020** REV 0

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

**NOTES:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-2005.



**BRIDGE N° 1804 ELEVATION**  
1:100

NOTE:  
REFER TO DESIGN LOT 601 FOR  
DETAILED DGWL PROFILE

15  
14  
13  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0  
1:100  
SCALE  
A  
1

**METADATA**

GROUND SURVEY STANDARD: 67-08-43  
DATE OF CAPTURE:  
MAPPING SURVEY STANDARD: 67-08-43  
DATE OF CAPTURE:  
MAIN ROADS PROJECT ZONE: PCG94  
HEIGHT DATUM: AHD

**Perth Office—**  
484 Murray St, Perth WA 6000  
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bgeeng.com



DRAWN: K. TAYLOR 09.02.18  
DESIGNED: H. ALGUIRE 09.02.18  
CHECKED: P. THOMPSON 09.02.18  
APPROVED: C. RAMM 02.03.18

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



INFRASTRUCTURE DELIVERY DIRECTORATE

PROJECT MANAGER: S. NICOLAY 09.03.18  
DESIGN MANAGER: A. WHITESIDE 08.03.18

PROJECT MANAGER: Y. SIDDIQUI 13.03.18  
PROJECT DIRECTOR: R. ARNOTT 15.03.18

LOCAL AUTHORITY: SHIRE OF CHITTERING (502) MAIN ROADS RESPONSIBILITY AREA: METROPOLITAN / WHEATBELT

MRWA DRAWING NUMBER

PROJECT TITLE: **NORTHLINK WA STAGE 3**

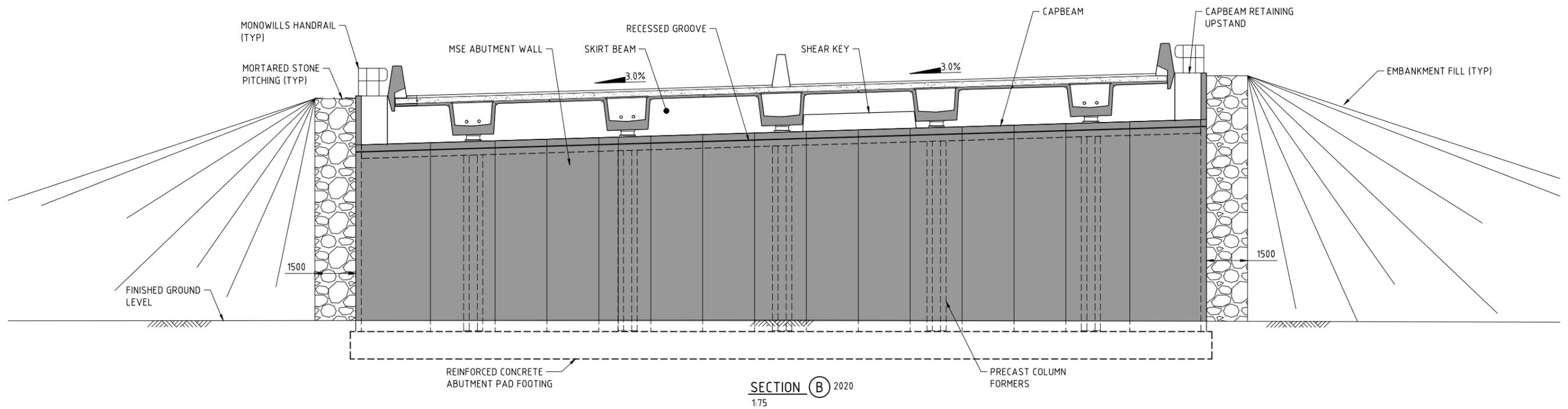
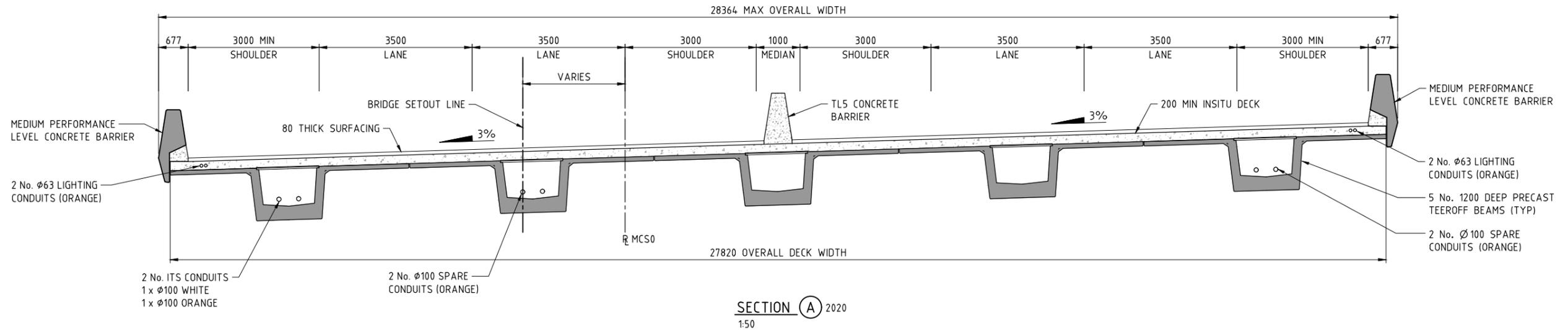
DRAWING TITLE: TONKIN HIGHWAY H017 (0.89 SLK)  
BRIDGE N° 1804 OVER BRAND HWY DEVIATION ROTARY  
GENERAL ARRANGEMENT ELEVATION

DRAWING No: NL3-BGE-230-ST-DG-2021 REV 0

| No.        | DESCRIPTION             | APPROVED & DATE |
|------------|-------------------------|-----------------|
| 0          | ISSUED FOR CONSTRUCTION | PDT 10.04.18    |
| AMENDMENTS |                         |                 |

**NOTES:**

- FOR GENERAL NOTES REFER DRG N° NL3-BGE-230-ST-DG-2005.



SCALE 1:75 1:50 A 1

| METADATA                 |                 |
|--------------------------|-----------------|
| GROUND SURVEY STANDARD:  | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| MAPPING SURVEY STANDARD: | 67-08-43        |
| DATE OF CAPTURE:         |                 |
| ISSUED FOR CONSTRUCTION  | PDT 10.04.18    |
| DESCRIPTION              | APPROVED & DATE |
| AMENDMENTS               |                 |
| MAIN ROADS PROJECT ZONE: | PCG94           |
| HEIGHT DATUM:            | AHD             |

**Perth Office—**  
484 Murray St, Perth WA 6000  
P /+61 8 6364 3300  
E / info@bgeeng.com  
bgeeng.com



BG&E DOC No: P17077

|                |             |          |
|----------------|-------------|----------|
| DRAWN          | K. TAYLOR   | 09.02.18 |
| DESIGNED       | H. ALGUIRE  | 09.02.18 |
| CHECKED        | P. THOMPSON | 09.02.18 |
| APPROVED       | C. RAMM     | 02.03.18 |
| DRAWING STATUS | IFC         |          |

**Keliogg Brown & Root Pty Ltd**  
**KBR**  
ABN 91 007 660 317  
Level 15, 300 Murray St, Perth  
Western Australia 6000



VERIFIED  
R. DENHAM  
09.03.18

DESIGN MANAGER  
A. WHITESIDE



INFRASTRUCTURE DELIVERY DIRECTORATE

PROJECT MANAGER  
S. NICOLAY  
09.03.18

DESIGN MANAGER  
A. WHITESIDE  
08.03.18

PROJECT MANAGER  
Y. SIDDIQUI  
13.03.18

PROJECT DIRECTOR  
R. ARNOTT  
15.03.18

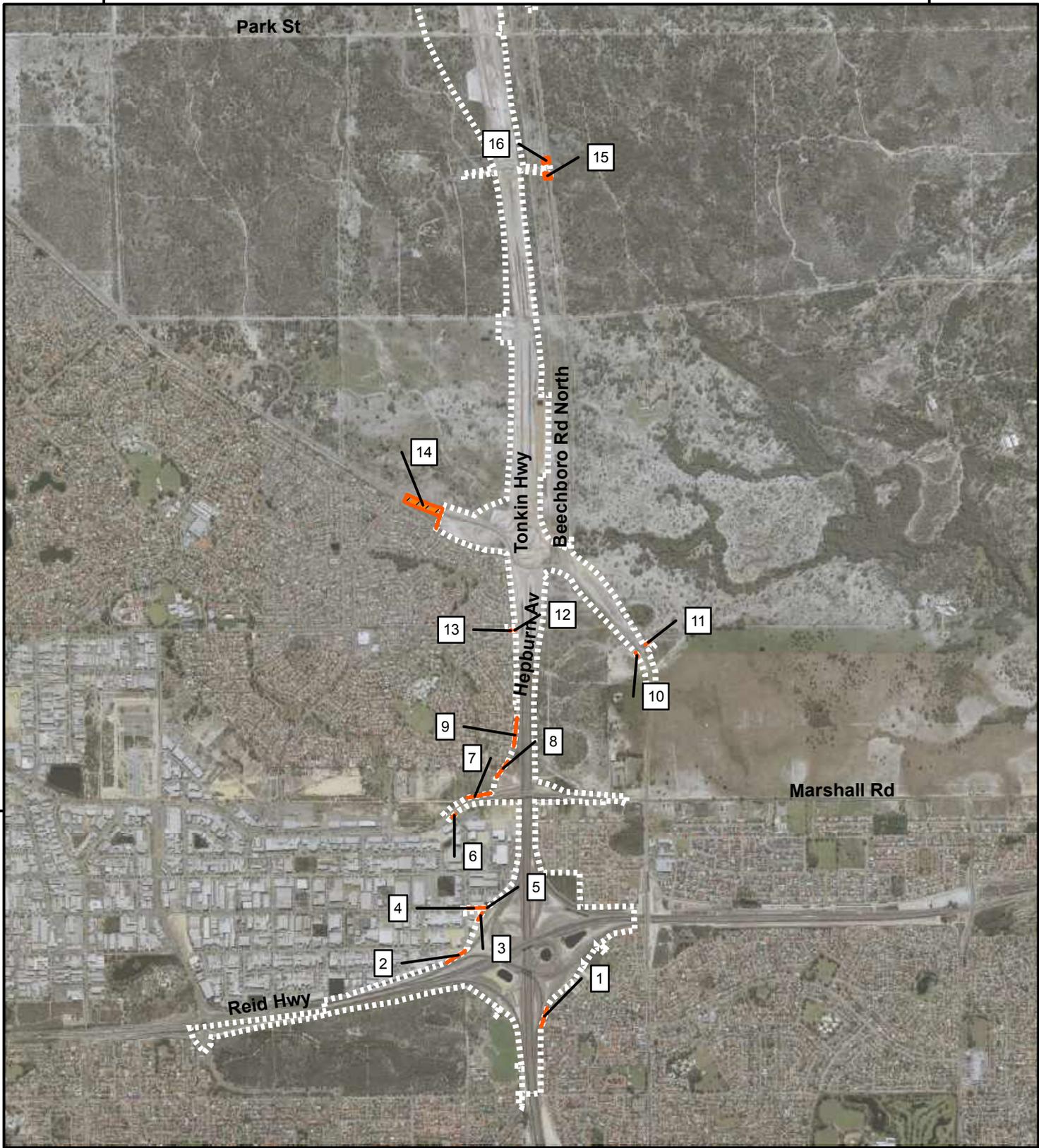
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| LOCAL AUTHORITY     | SHIRE OF CHITTERING (502)  | MAIN ROADS RESPONSIBILITY AREA | METROPOLITAN / WHEATBELT |
| MRWA DRAWING NUMBER |  |                                |                          |
| PROJECT TITLE       | NORTHLINK WA STAGE 3   |                                |                          |
| DRAWING TITLE       | TONKIN HIGHWAY H017 (0.89 SLK)<br>BRIDGE N° 1804 OVER BRAND HWY DEVIATION ROTARY<br>GENERAL ARRANGEMENT SECTIONS |                                |                          |
| DRAWING No.         | NL3-BGE-230-ST-DG-2022   |                                | REV 0                    |

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APPENDIX B

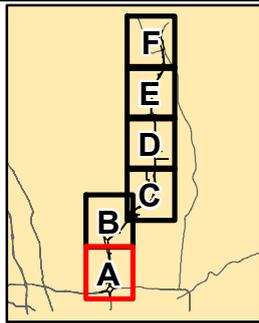
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# Non-Compliances



**Legend**

-  Clearance Footprint Outside the Development Envelope
-  Development Envelope



|   |                            |   |
|---|----------------------------|---|
| ACKNOWLEDGEMENT   |                            |  |
|  |                            |   |
| DRAWN AS  | PROJECT BGE-0104           |   |
| REVIEWED  | DATE 15/06/2020            |   |
| APPROVED  | DATUM GDA 1994 MGA Zone 50 |   |
| 1:32,500 (at A4)  |                            |  |
|  |                            |   |

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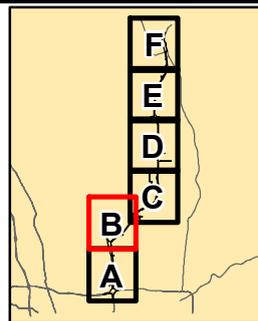
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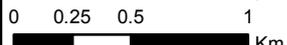
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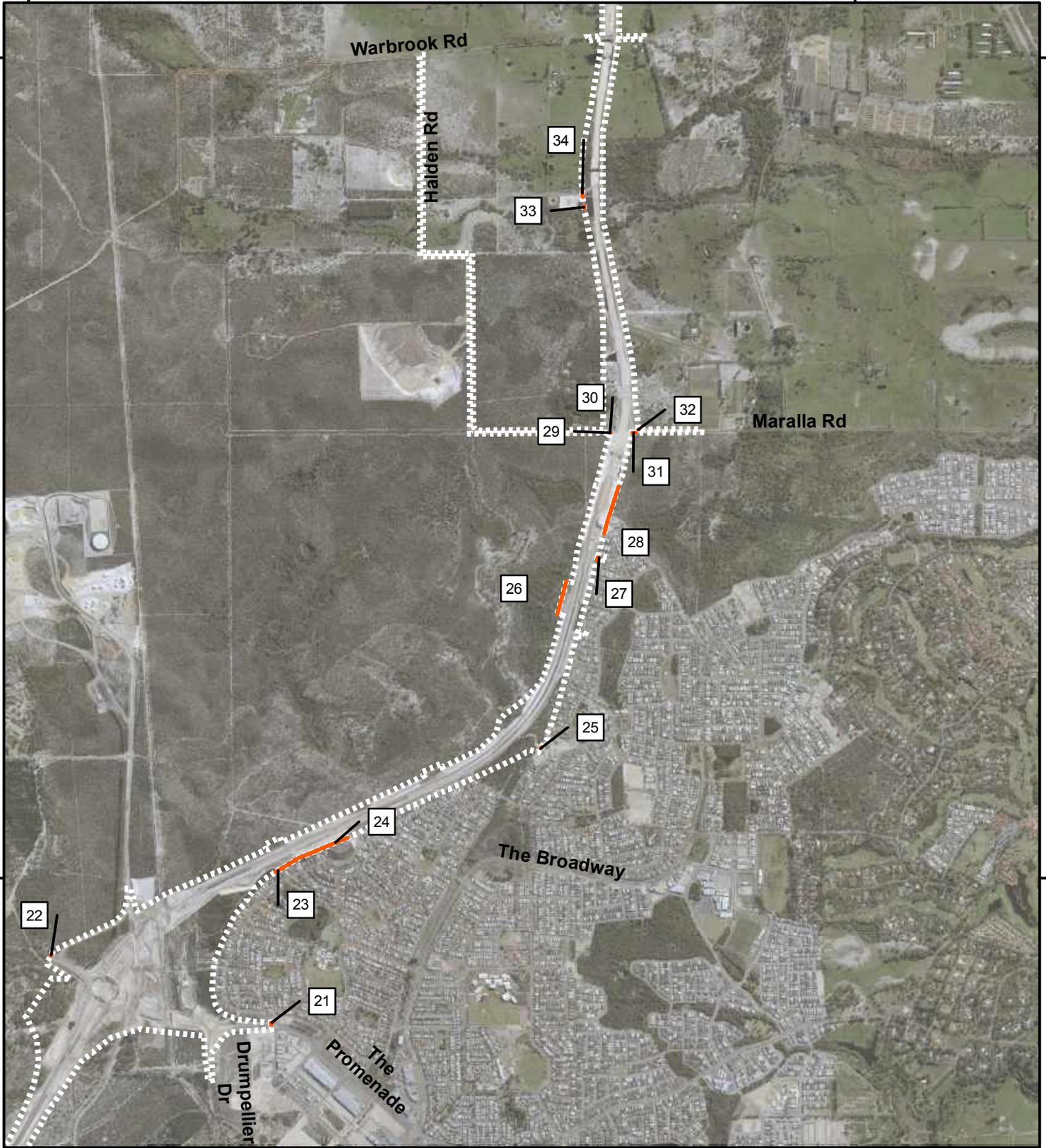
**Legend**

-  Clearance Footprint Outside the Development Envelope
-  Development Envelope



|   |                            |   |
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|  |                            |   |
| DRAWN AS  | PROJECT BGE-0104           |   |
| REVIEWED  | DATE 15/06/2020            |   |
| APPROVED  | DATUM GDA 1994 MGA Zone 50 |   |
| 1:32,500 (at A4)  |                            |  |
|  |                            |   |

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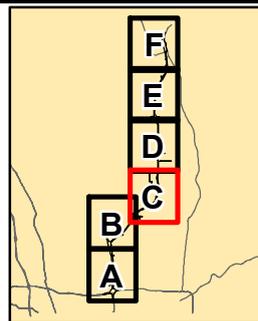
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6485000

**Legend**

 Clearance Footprint Outside the Development Envelope

 Development Envelope



|   |   |   |
|---|---|---|
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|  |  |   |
| DRAWN AS  | PROJECT BGE-0104  |   |
| REVIEWED  | DATE 15/06/2020   |   |
| APPROVED  | DATUM GDA 1994 MGA Zone 50  |   |

1:32,500 (at A4)

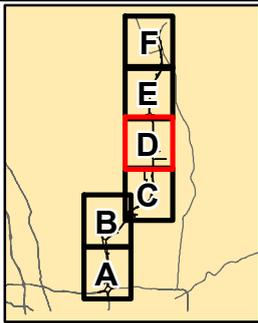
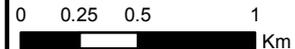
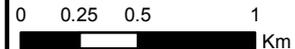
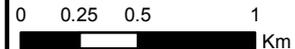
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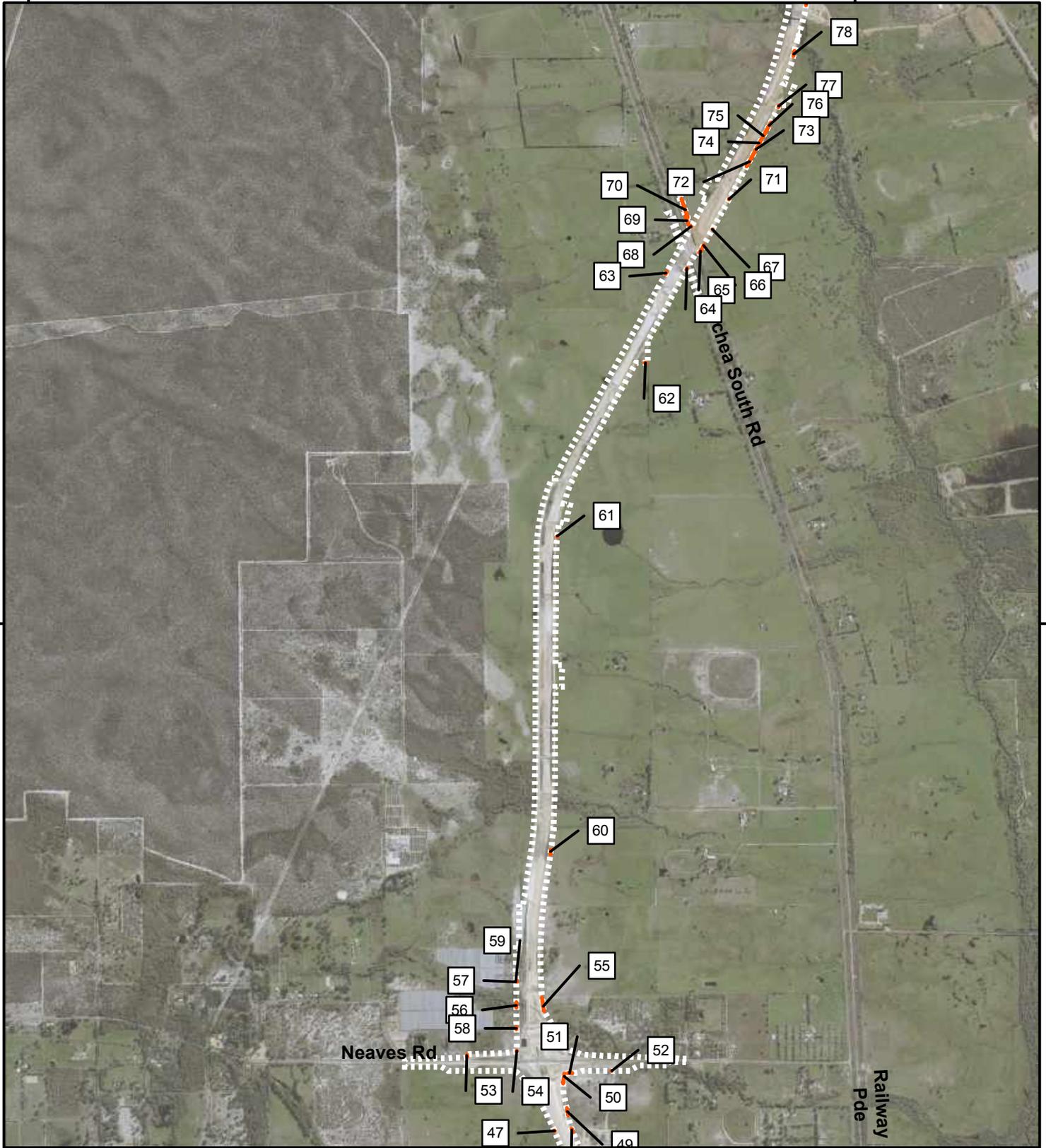


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|   |   |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
|---|---|---|-----------------|--|---|---|---|----------|------------------|--|----------|-----------------|--|----------|----------------------------|--|------------------|--|---|---|--|
| <p><b>Legend</b></p> <p> Clearance Footprint Outside the Development Envelope</p> <p> Development Envelope</p>  |   | <table border="1"> <tr> <td colspan="2">ACKNOWLEDGEMENT</td> <td rowspan="2">  </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>DRAWN AS</td> <td>PROJECT BGE-0104</td> <td></td> </tr> <tr> <td>REVIEWED</td> <td>DATE 15/06/2020</td> <td></td> </tr> <tr> <td>APPROVED</td> <td>DATUM GDA 1994 MGA Zone 50</td> <td></td> </tr> <tr> <td colspan="2">1:32,500 (at A4)</td> <td rowspan="2">  </td> </tr> <tr> <td colspan="2">  </td> </tr> </table> | ACKNOWLEDGEMENT |  |  |  |  | DRAWN AS | PROJECT BGE-0104 |  | REVIEWED | DATE 15/06/2020 |  | APPROVED | DATUM GDA 1994 MGA Zone 50 |  | 1:32,500 (at A4) |  |  |  |  |
| ACKNOWLEDGEMENT   |   |    |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
|    |  |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
| DRAWN AS  | PROJECT BGE-0104  |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
| REVIEWED  | DATE 15/06/2020   |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
| APPROVED  | DATUM GDA 1994 MGA Zone 50  |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
| 1:32,500 (at A4)  |   |    |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
|    |   |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |
| <p><b>Disclaimer</b> This map is current at the time of publication and has been prepared, in part, from unverified data and information (Data) supplied by other parties. Whilst BG&amp;E takes due care in providing its services, BG&amp;E accepts no liability for any loss or damage suffered which is caused by any inaccuracy in the design or drawing which has resulted from the use of any unverified, inaccurate or misleading Data supplied by other parties.</p> <p>PIC112-17 MRWAETS PANEL CONTRACT/BGE-PXXXX - PSAs/BGE-P0104 - NORTHLINK INFRASTRUCTURE REPORT/100 DRAWINGS/102 Civil &amp; Water/GIS/Maps/Report Maps/Clearance Footprint Outside the Development Envelope.mxd</p> |   |   |                 |  |   |   |   |          |                  |  |          |                 |  |          |                            |  |                  |  |   |   |  |



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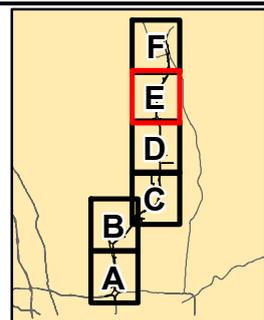
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### Legend

Clearance Footprint Outside the Development Envelope

Development Envelope



|                  |                               |  |
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| ACKNOWLEDGEMENT  |                               |  |
| DRAWN AS         | PROJECT BGE-0104              |  |
| REVIEWED         | DATE 15/06/2020               |  |
| APPROVED         | DATUM<br>GDA 1994 MGA Zone 50 |  |
| 1:32,500 (at A4) |                               |  |
|                  |                               |  |

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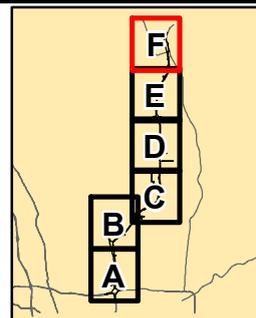
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### Legend

-  Clearance Footprint Outside the Development Envelope
-  Development Envelope



|   |                            |   |
|---|----------------------------|---|
| ACKNOWLEDGEMENT   |                            |  |
|  |                            |   |
| DRAWN AS  | PROJECT BGE-0104           |   |
| REVIEWED  | DATE 15/06/2020            |   |
| APPROVED  | DATUM GDA 1994 MGA Zone 50 |   |

1:32,500 (at A4)



0 0.25 0.5 1 Km



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---

APPENDIX C

---

# DWER Response



Our ref: DWERA-000257  
Enquiries: Rowan Inglis, Ph 6364 6472

Mr John Braid  
Principal Environment Officer  
Main Roads Western Australia  
Waterloo Crescent  
East Perth WA 6004

Dear Mr Braid

**MINISTERIAL STATEMENT 1036 PERTH – DARWIN NATIONAL HIGHWAY  
(SWAN VALLEY SECTION) CONDITION 1-1 NOTIFICATION OF  
OPERATIONS OUTSIDE OF DEVELOPMENT ENVELOPE**

I refer to your email dated 15 June 2020 in which Main Roads Western Australia notified the Department of Water and Environmental Regulation (the department) that operations relating to the construction and operation of the Perth-Darwin National Highway have exceeded the development envelope defined as Figure 1 (as approved on 7 June 2017) of Ministerial Statement 1036.

The department notes the following, of the 94 instances where the development envelope was exceeded:

1. 90 are considered minor and to be due to errors in the accuracy of the spatial data; and
2. The remaining four instances relate to road works on existing infrastructure where no clearing of native vegetation occurred.

The department has determined that due to the nature of the exceedances of the development envelope no enforcement action will be taken in relation to this matter.

Please contact Rowan Inglis on 6364 6472 or [rowan.inglis@dwer.wa.gov.au](mailto:rowan.inglis@dwer.wa.gov.au) if you require any additional information relating to this matter.

Yours sincerely

Ms Clare Grosser  
Senior Manager  
Compliance and Enforcement  
07 / 07 / 2020