Revision History

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<th>Revision Nº</th>
<th>Prepared By</th>
<th>Description</th>
<th>Date</th>
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<tr>
<td>A</td>
<td></td>
<td>First draft</td>
<td>22/09/2017</td>
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<tr>
<td>B</td>
<td>Section 74 - Not in scope</td>
<td>Final</td>
<td>2/11/2017</td>
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Document Acceptance

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<th>Action</th>
<th>Name</th>
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<td>Prepared by</td>
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<td>2/11/2017</td>
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<tr>
<td>Reviewed by</td>
<td>Section 74 - Not in scope</td>
<td></td>
<td>3/11/2017</td>
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<tr>
<td>Approved by</td>
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<td>3/11/2017</td>
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<tr>
<td>on behalf of</td>
<td>Beca Pty Ltd</td>
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Appendices

Appendix 1 – Plans

Appendix 2 – Option Analysis

Appendix 3 – Cessnock Correctional Centre – Access Road Preliminary Review Meeting Notes

Appendix 4 – LotSearch Report
1 Background

The Department of Justice (DoJ) is proposing to expand the existing Cessnock Correctional Complex (the Complex) located on Lindsay Street, Nulkaba on the northern fringe of Cessnock, NSW. A REF has previously been prepared for these proposed works.

At present, the Complex is accessed via residential streets on Council maintained roads, primarily Lindsay and Kerlew St and branching service roads. The DoJ would like to determine alternative access options for the Complex so that Lindsay Street no longer needs to be used for access.

Beca has been commissioned to undertake the investigation, development and assessment of options and design of the new access road. As part of the investigation a site inspection was undertaken on 17 August 2017 with representatives from DoJ – Justice Infrastructure.

The purpose of this report is to outline the options that have been considered, the approach taken to assessing these options and a summary for the outcomes of the assessment. This report should be read in conjunction with the Cessnock Correction Centre Access Road Optioneering Analysis (refer Appendix 2) which provides further detail about the specific criteria considered when assessing the options.
2 Description of Options

Six alignment options have been investigated and developed by Beca for analysis of their suitability, constructability and potential risks/constraints. The preferred option will be determined by representatives from DoJ – Justice Infrastructure.

It is acknowledged that St Philips Christian College has a petition against the access road works. Our understanding is that the impact on this school is equivalent for all Options described in this report.

Figure 1 shows the location of the options developed. These are described in further detail below and shown on Drawings SK00, SK01 Sheet 1 – SK01 Sheet 6 included in Appendix 1. All options, with the exception of Option 5 follow the existing access from Wine Country Drive on Kerlew Street.

2.1 Option 1

Once on Kerlew Street, Option 1 continues west down Kerlew Street for approximately 820m. Connecting to the Complex via a proposed new section of road, generally following the existing construction access, linking Kerlew Street to the existing internal roads within the Complex. This option maximises the utilisation of existing road infrastructure, however, impacts on the operation of the Complex.
2.2 Option 2

Option 2 has a similar arrangement to Option 1, continuing down Kerlew Street from Wine Country Drive for approximately 755m. A new road would be constructed connecting Kerlew Street to the Complex, the alignment of which follows the western boundary of Lot 72 DP 755252 and then connects to existing internal roads within the Complex. This option maximises the utilisation of existing road infrastructure, however, has the most impact on Lot 72 DP 755252.

2.3 Option 3A

Option 3A follows Kerlew Street for approximately 460m before turning onto the southern-leg of Occident Street. The alignment then follows an existing internal road which traverses Lot 2 DP 1078864 before tying in with existing internal roads within the Complex. It is noted that the existing road through Lot 2 DP1078864 is classified as a road but it is expected that it would require upgrading to support the increased vehicle movements. This option disrupts fewer residents on Kerlew Street, however, requires vegetation removal and the demolition of operational structures.

2.4 Option 3B (Variation of Option 3A)

Option 3B follows a similar alignment to Option 3A, however, instead of accessing the Complex via Occident Street, Option 3B instead extends down Kerlew Street for 600m. A new road would be constructed within Lot 230 DP 755252 and tie-in with the existing road on Lot 2 DP 1078864, following the same alignment as Option 3A to access the Complex. This option disrupts fewer residents on Kerlew Street, however, requires vegetation removal and purchase of Lot 230 DP 755252.

2.5 Option 4 (Variation of Options 1 and 2)

Option 4 is a combination of Options 1 and 2 creating a one-way loop road. Vehicles entering the Complex follow the same alignment as Option 1 while vehicles leaving the Complex follow the Option 2 alignment. This option maximises the utilisation of existing road infrastructure, however, has the same negative impacts as Options 1 and 2.

2.6 Option 5

Option 5 involves access from Wine Country Drive, however, instead of following Kerlew Street the access point would be a new road constructed approximately 200m south of the existing intersection with Kerlew Street and approximately 150m north of the retirement access. This alignment extends for approximately 530m along the north of Lot 2 DP 1078864 through land owned by the Department of Health before connecting to the existing road network on this site, following the same curved alignment as Options 3A and 3B to access the Complex. This Option limits the impact on the residents on Kerlew Street, however, requires the fragmentation of Calvary Cessnock Retirement Community.

3 Approach to Options Analysis

The Options Analysis is included in Appendix 2. A two-staged approach has been taken to assessing the six different alignment options.

Firstly, a ranking of the different alignment options from 1 to 6 (a score of 1 being preferred / the least impact, a score of 6 being less-preferred) across a number of different criteria was applied. Where all options are equal for a given criteria they have all been given a ranking of 1. In the case
The ranking of criteria in the Options Analysis relied upon an assessment against the following factors - presence / absence of construction, environmental, social, planning and programming. These factors were identified by the DoJ and Beca as the key potential constraints and opportunities for the access road optioneering process.

Following the initial ranking of the options against the key criteria, weighting factors were applied to emphasise the options which best reflected the cost, social impacts and facility operations criteria which are understood to be of most importance to DoJ. The weighting has been developed following a workshop discussion on 19/10/2017 and with reference to meeting minutes received from Robert McQueen, dated 27/10/2017 (refer Appendix 3 for attendees and meeting notes). Beca have assigned weightings to the best of our judgement based on these discussions.

A percentage approach was taken to weighting, with all criteria receiving a nominal 1% as a starting point. Six criteria relating to the features highlighted above then received additional weighting so that the overall weighting scores added up to 100%. The weighting factors were, therefore, entirely arbitrary and their only function was to differentiate the options rather than being considered as a performance scoring system. This ranking and weighting method is a typical approach used to support road optioneering studies [e.g. Multi Criteria Assessment used for Safe Roads Alliance project for NZTA] and aligns to the principles of the hazard likelihood component of Australian Risk Assessment Guidelines AS/NZS ISO 31000:2009. The six criteria in order of highest weighting first were: cost of construction (16%), cost of demolition (16%), cost of maintenance to DoJ (13 %), reconfiguration requirements (10 %), socio-economic impacts (10 %) and cost of maintenance to Cessnock City Council (6%).

An overall score is given to each options by multiplying the pre-weighted score by the weighted score for each sub-criteria. The scores are then added together to obtain the total score for each option. A lower overall score represents a preferred option.

We have used the LotSearch report (see Appendix 4) for the scoring of the environmental sub-criteria.

## 4 Option Analysis Outcomes

Overall, across the criteria analysed, Option 2 has the lowest ranking indicating that it has fewer potential constraints with respect to the other options assessed.

The table below provides a summary of the full Options Analysis provided in Appendix 2. This is broken down by the criteria assessed to give a snapshot of how each option performs.

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<th>Criteria</th>
<th>Summary of Option Analysis</th>
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<td>Construction</td>
<td>Option 2 has the lowest overall score across the construction sub-criteria indicating that it is the preferred option for this criteria. Option 1 has the next lowest score due to the required demolition of a structure as well as potential access safety risks. This is followed by 3B which has a higher score due to a combination of new road construction and maintenance costs for DoJ. Option 3A and Option 4 have the fourth highest scores for construction. For Option</td>
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3A This reflects the required demolition of two structures and maintenance costs for DoJ. Option 4 has a high score due to the length of this option being 350 metres longer than the others and therefore more costly as well as the potential access safety risks.

Option 5 has the highest score for construction as it requires the greatest length of new road construction which has higher construction costs. In addition, the increased length of road on private property will require higher maintenance costs for DoJ and the demolition of the retirement village operational structure.

| Environmental | Option 3B has the lowest overall score across the environmental sub-criteria, followed by Option 1. Option 2 has the third lowest score, by virtue of higher scores for bushfire prone land, ecological constraints and visual impacts. This is followed by Option 4 due to higher scoring for bushfire risk, ecological, sustainability and waste management sub-criteria. Option 3A and option 5 have the highest score making them the least preferable option when considering environmental factors. Both Options received high scores for air quality impacts and contaminated land associated with proximity to the retirement home facilities and the requirement to demolish a building which may contain asbestos. Option 3A also scored high for soil management issues while Option 5 received a high score for visual impacts. |
| Planning Approvals | Options 1, 2 and 4 all have the same overall scores for the Planning Approvals sub-criteria, reflecting use of an existing road. Options 3A, 3B and 5 have higher scores in increasing order across the Planning Approvals sub-criteria due to referrals for vegetation clearance and the presence of underground infrastructure. |
| Program | Option 3B has the lowest score across the program sub-criteria indicating it is the preferred option for this criteria. This is followed by Option 2 then Option 1. While both of these Options require some reconfiguration, this will be undertaken on DoJ land and is therefore considered to have a lesser impact on program consideration. Option 4 requires additional reconfiguration (as a combination of Options 1 and 2), however, is also on DoJ land. Options 3A and 5 require reconfiguration of the retirement facility with Option 5 requiring the most reconfiguration works, giving it the highest score. |
| Social | Option 3B has the lowest score indicating it is the preferred option for this criteria. This reflects the initial engagement that has been undertaken with the owner of Lot 230 who is understood to be open to selling their property. Option 1 scores higher than option 3B as the road alignment passes more private properties along Kerlew Street. Option 3A follows due to its impact on the retirement village and property acquisition requirements. Option 2 and Option 4 score the same overall value for the social sub-criteria. This is reflective of the impacts on Kerlew Street properties. Option 5 is the least preferred option for this criteria. It is considered to have the greatest impact as it results in the fragmentation of a community facility (retirement home) within the retirement village. |
village) which impacts the use and development potential of the site.

5 Risks and Assumptions

In addition to the risks and assumptions included in the Option Analysis (Appendix 2), we also note the following:

- No background traffic data has been provided for Wine Country Road. As such, it is not known whether Kerlew Street is an appropriate intersection for the additional operational traffic volume. Given the intersection currently is single lane on all approaches, with no auxiliary lanes, there is a risk that the intersection as currently constructed may not be suitable for the additional vehicle movements.
- The geotechnical assessment of options is based on a desktop analysis only. Further investigations will be undertaken once a preferred alignment is agreed.
- We have assumed that existing internal roads, parking and manoeuvring areas within the complex will remain unchanged. Any upgrades/alterations to these areas are understood to be out of scope and therefore have not been included in our option analysis.
- From a planning and approvals standpoint, the assessment provided of each of the options is based upon publicly available ecological mapping and data and the Cessnock LEP.
- It is assumed no new road reserve allocations will be created for any of the options.
- It is understood that initial (high level) consultation has been undertaken with the owner of The Options Analysis has been undertaken on this basis.
- We have assumed that the Department of Health land can be acquired.
- Boundary titles have been acquired from GIS mapping data exported from NSW Spatial Service Portal (1 July 2016), which uses NSW Spatial Data Catalogue (NSDC).