Document controls

Approval and authorisation

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<th>Title</th>
<th>Archbold Road upgrade and extension Submissions Report</th>
</tr>
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</table>
| Accepted on behalf of Roads and Maritime NSW by | Matty Mathivanar  
Project Development Manager |
| Signed | |
| Dated | December 2017 |

Document status

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<th>Date</th>
<th>Prepared by</th>
<th>Reviewed by</th>
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<tr>
<td>Initial draft</td>
<td>July 2017</td>
<td>Chris Fay</td>
<td>Andrew Cook</td>
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<tr>
<td>Updated draft</td>
<td>September 2017</td>
<td>Bella See</td>
<td>Chris Fay/Andrew Cook</td>
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<td>Final</td>
<td>December 2017</td>
<td>Chris Fay</td>
<td>Andrew Cook</td>
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</table>
Executive summary

The proposal

Roads and Maritime Services is planning for the future and proposing to build a north-south access road into the Western Sydney Employment Area (WSEA) between Old Wallgrove Road, Eastern Creek and the Great Western Highway, Minchinbury. The proposal is being undertaken by Roads and Maritime at the request of the NSW Department of Planning and Environment (DPE) to support the development of the WSEA.

The key features of the proposal include:

- upgrading the Great Western Highway and Archbold Road intersection at Minchinbury
- upgrading the existing Archbold Road south of the Great Western Highway from a two lane to a four-lane divided road, including a new bridge over the M4 Western Motorway
- extending Archbold Road south through the WSEA greenfield site with a four-lane divided road to meet Lenore Drive
- extending Archbold Road further south with a four-lane divided road to meet the Old Wallgrove Road southern extension near the WaterNSW pipelines
- a new east facing entry and exit ramps to the M4 Western Motorway
- a new shared path for pedestrians and cyclists along the western side of the road including a new shared path bridge over the M4 Western Motorway
- eight new intersections at future access points in the WSEA and the upgrade of four existing intersections
- bus priority measures at key intersections.

Display of Review of Environmental Factors

Roads and Maritime prepared a Review of Environmental Factors (REF) for the Archbold Road upgrade and extension to assess the potential environmental impacts and to obtain planning approval for the proposal. The REF was publicly displayed between Monday 22 May 2017 and Friday 16 June 2017 at the Mount Druitt and St Clair libraries. The REF was also published on the project website and made available for download.

The display locations and website link were advertised in the St Marys - Mt Druitt Standard and St Marys Star local newspapers. During this time, Roads and Maritime invited the public to provide feedback on the proposal. Roads and Maritime also held two community information sessions and meetings with residents and businesses who are directly affected by the proposal.

Summary of main issues

The display of the REF and the supporting consultation generated 29 submissions, of which:

- two were from Councils
- seven from businesses
- five from utility service providers
- 14 from the community
- one ‘other’.

Of these submissions, 31 per cent were in support of the proposal and only seven per cent objected to the proposal, who were local members of the community. The remainder (62 per cent) offered no position on whether they supported or objected to the proposal. 80 per cent of submissions in support of the proposal were from businesses.
The main issues raised in submissions relating to the proposal are summarised under the following headings:

- proposal design
- property acquisition and land use
- traffic, parking and access
- noise and vibration
- drainage and flooding.

Proposal design

**Issue:** Sought clarification on the design of the Great Western Highway intersection with Archbold Road and M4 Western Motorway ramps.

**Response:** The proposal includes upgrading the entire length of Archbold Road including upgrading of the existing signalised intersection at the Great Western Highway to accommodate the predicted increase in traffic. Additional turning bays are provided for right turn movements from the Great Western Highway onto Archbold Road and left turn out from Archbold Road onto the Great Western Highway.

Only east facing ramps are provided at the M4 Western Motorway as part of the proposal in accordance with the planning approval. However, the proposal’s concept design includes provisions to allow the construction of westbound ramps at the M4 Western Motorway in the future, which is subject to demand and funding availability.

Property acquisition and land use

**Issue:** Sought clarification and rationale on the extent of property acquisition

**Response:** The extent of property acquisition detailed in the REF is based on the proposal’s concept design. Roads and Maritime will confirm the extent of property acquisition during the detailed design phase and will continue to consult with affected property owners as the proposal progresses.

Following the display of the REF and consultation with property owners, the acquisition identified in the REF for the two properties at the north-east corner of the intersection of Archbold Road and Robinson Street are no longer required. The property impact has been eliminated by re-designing the intersection of Archbold Road and Robinson Street.

Traffic, parking and access

**Issue:** Raised concern that there would be more traffic than reported in the REF on Archbold Road and in the Minchinbury area.

**Response:** The traffic and transport assessment report prepared for the REF used traffic modelling based on the Strategic Traffic Assignment Model (STAM) and validated the outputs against traffic counts collected in 2015. The STAM is routinely used for traffic modelling and forecasting for road projects with network impacts for examination of the effect of the proposal on adjoining land uses. The predicted traffic volumes are representative of the future traffic volumes associated with the proposal and accounts for future land use development and subsequent traffic changes.

**Issue:** Raised concern that the proposal would affect access to the Salvation Army store and depot on the corner of Archbold Road and the Great Western Highway, Minchinbury.

**Response:** Access to Salvation Army store and depot would be restricted to left-in and left-out only due to its proximity to the intersection of Archbold Road and the Great Western Highway. An alternative access route to ensure customers and delivery vehicles can safely enter the site is available.
**Noise and vibration**

**Issue:** Raised concern about the proposal’s noise impacts during construction and operation.

**Response:** The noise model was based on the on-site noise measurements collected over a period of seven days and the collection of traffic count data over the same period. The model was then used to predict noise levels at the year of opening (2021) and ten years after opening to traffic (2031).

The noise modelling identified that 98 residential and three non-residential properties would be impacted by an increase in road traffic noise that exceeds the operational noise criteria. As such, noise treatments would be implemented as part of the proposal to mitigate operational noise impacts, which may include noise walls and installing at-property treatments.

**Issue:** Sought clarification about the design and installation of noise walls along Archbold Road and the replacement of the existing noise wall along the northern side of the M4 Western Motorway.

**Response:** The REF confirmed that noise walls along the eastern side of Archbold Road would treat about 50 per cent of the affected receivers, while the rest could be effectively treated with at-property treatment. The REF also confirmed that the extent and height of the noise wall and the final at-property treatments would be determined during the detailed design. Roads and Maritime would work with the community during the detailed design to ensure that noise walls do not result in other impacts such as blocking views or overshadowing.

The noise and vibration assessment prepared to support the REF did not specifically discuss the relocation of an existing noise wall along the northern side of the M4 Western Motorway, the location of which would be impacted by the proposed east facing entry ramp. A new noise wall would be provided along the northern boundary of the M4 Western Motorway. The extent and height of this new wall would be determined during the detailed design phase of the proposal.

In addition, the need to provide noise mitigation on the entry ramp on the M4 Western Motorway would be subject to feasible and reasonable test during the detailed design phase of the proposal.

**Drainage and flooding**

**Issue:** Requested clarification on the inconsistencies between the drainage drawings shown in the main REF and the flooding and drainage report.

**Response:** The drawings in the main REF are correct and postdate those in the flooding and drainage technical investigation report included as Appendix L of the REF. This has now been rectified to ensure consistency across the REF and technical reports.

**Issue:** Noted that none of the hydraulic and hydrological modelling has been provided to Blacktown City Council for review.

**Response:** Roads and Maritime acknowledges that the detailed flood modelling and reporting was not made available for review before displaying it in the REF. As such, Roads and Maritime will consult with Blacktown City Council to develop the proposal’s stormwater drainage and road design during the detailed design phase. Roads and Maritime will also issue the latest flooding and drainage report and the modelling to Blacktown City Council for review and comment when undertaking the detailed design.
Changes to the proposal

Roads and Maritime have considered feedback received during the consultation period and is proposing to make the following changes:

1. Changes to Archbold Road intersection

Source: Roads and Maritime

The realignment of the Robinson Street intersection together with a slight shifting of the Archbold Road alignment to the west would eliminate property impacts and acquisition from two private residential properties (Lot 1/DP825353 and Lot 21/DP1207798). It would, however, result in acquisition of additional vacant public land at the southern side of Robinson Street. These changes will not impact the operational performance of the intersection. This change will not alter the predicted operational noise and air quality impacts reported in Chapter 6 of the REF.
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Appendix B  Final concept design, proposal footprint and construction footprint
Appendix C  Additional flooding and drainage information
1 Introduction and background

1.1 The proposal

Roads and Maritime Services is planning for the future and proposing to build a north-south access road into the Western Sydney Employment Area (WSEA) between Old Wallgrove Road, Eastern Creek and the Great Western Highway, Minchinbury. The proposal is being progressed by Roads and Maritime at the request of the NSW Department of Planning and Environment to support the development of the WSEA.

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- a new shared path for pedestrians and cyclists along the western side of the road including a new shared path bridge over the M4 Western Motorway
- eight new intersections at future access points in the WSEA and the upgrade of four existing intersections
- bus priority measures at key intersections.

Appendix B includes the final concept design, proposal footprint and construction footprint.

A more detailed description of the proposal is available in the Archbold Road upgrade and extension REF prepared by WSP Australia Pty Ltd on behalf of Roads and Maritime in May 2017.

1.2 REF display

Roads and Maritime prepared the REF for the Archbold Road upgrade and extension to assess the environmental impacts of the proposal. The REF was publicly displayed between Monday 22 May 2017 and Friday 16 June 2017 at the Mount Druitt and St Clair libraries, as detailed in Table 1.1. The REF was also placed on the Roads and Maritime project website and made available to download. The display locations and website link were advertised in the St Marys - Mt Druitt Standard and St Marys Star local newspapers.

In addition to the above public display, there were several events and activities undertaken during the consultation period to give the community a chance to learn more about the project, meet the project team and ‘have their say’ (refer to Table 1.2). During this period, Roads and Maritime also engaged and consulted with property owners who impacted by this proposal.

Community members and stakeholders were asked to make submissions via email, mail and phone or at the information sessions directly to the project team. The community could contact Roads and Maritime and leave comments and submissions by:

Email Archboldroadupgrade@rms.nsw.gov.au
Phone 1800 548 813
Mail Archbold Road Upgrade
PO Box 973
Parramatta CBD NSW 2124
Table 1.1: Display locations

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<th>Location</th>
<th>Address</th>
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<tbody>
<tr>
<td>Mount Druitt Library</td>
<td>Ayers Grove, Mount Druitt</td>
</tr>
<tr>
<td>St Clair Library</td>
<td>Shop 12, St Clair Shopping Centre, Bennett Road and Endeavour Avenue, St Clair</td>
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Table 1.2: Consultation activities during the public display period

<table>
<thead>
<tr>
<th>Tool / Activity</th>
<th>Reach</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community update newsletter (Appendix A)</td>
<td>5,500</td>
<td>A community update newsletter was produced including the key features of the proposal, details of the community information sessions and how to provide feedback on the REF and concept design. The community update newsletters were letterbox dropped to about 5,500 properties. The newsletter was also made available on the Roads and Maritime website and at the community information sessions.</td>
</tr>
<tr>
<td>Doorknocks/ meetings with property owners</td>
<td>10</td>
<td>At the beginning of the consultation period 10 property owners and stakeholders were doorknocked or met with by the project team. The purpose was to notify owners and stakeholders of the potential impacts to their property and to encourage them to attend the community information sessions. A community update newsletter was left with each property owner or stakeholder. Where the property owner was not home a 'sorry we missed you' flyer was left.</td>
</tr>
<tr>
<td>Frequently Asked Questions (FAQs)</td>
<td>30</td>
<td>A ‘frequently asked questions’ (FAQ) document was produced to provide stakeholders with a summary of responses to questions that were readily asked as part of the announcement of the proposal. These FAQs were provided to property owners and stakeholders along with the community update newsletter and supplied at the community information sessions.</td>
</tr>
<tr>
<td>Media release</td>
<td>As per circulation numbers</td>
<td>A media release was issued by the Member of Mulgoa, The Hon. Tanya Davies, on Friday 19 May 2017. It was titled ‘Community invited to have a say on proposed upgrade and extension of Archbold Road between Minchinbury and Eastern Creek’ and encouraged local community members and stakeholders to engage in the consultation process.</td>
</tr>
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| Newspaper advertisement                              | As per circulation numbers | Newspaper advertisements appeared in local papers between Tuesday 23 May 2017 and Wednesday 31 May, 2017 to raise awareness of the consultation and information sessions. Publications included:  
- St Marys Star (23 May 2017 and 30 May 2017)  
- St Marys Mt Druitt Star (24 May 2017 and 31 May 2017). |
| Email notifications                                  | 109   | Direct emails were sent from Roads and Maritime to 109 stakeholders (community members and groups), local Members of Parliament (MPs), and other Government stakeholders on Tuesday 23 May 2017 to announce the REF and concept design, raise awareness of the start of the consultation period, and to provide details of the information sessions. |
| Webpage                                             | 644-page views | The project webpage was updated on Monday 22 May 2017 with project information including the community update newsletter, |
A Facebook advertisement was live between Friday 9 June 2017 and Friday 16 June 2017. The post targeted a 17-kilometre radius around the Minchinbury area. The post was published to target a broader geographic area and encourage community members to make a formal submission on the proposal.

Two community consultation sessions were held with 15 people attending:
- Saturday, 3 June 2017, 10am – 1pm
  - Rooty Hill Senior Citizens Centre
  - 34a Rooty Hill Road South, Rooty Hill
- Wednesday, 7 June 2017, 5pm – 8pm
  - The Mount Druitt Hub
  - Level 1, 9 Ayers Grove, Mount Druitt

Since the display of the REF, the project team held one government stakeholder briefing with Blacktown City Council on Tuesday 18 July 2017.

1.3 Purpose of the report

This submissions report relates to the Archbold Road upgrade and extension REF and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Roads and Maritime. This submissions report summarises the issues raised and provides responses to each issue (refer to Chapter 2). It clarifies environmental impacts (refer to Chapter 3), describes and assesses the environmental impact of changes to the proposal (refer to Chapter 4), and identifies new or revised environmental safeguards and management measures (refer to Chapter 5).
2 Response to issues

Roads and Maritime received 29 submissions, accepted up until 7 July 2017. Table 2.1 lists the respondents and each respondent’s allocated submission number. The table also indicates where the comments from each submission have been addressed in the report.

Table 2.1: Respondents

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<tr>
<th>Respondent</th>
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<td>2.3.3</td>
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<td>Utility provider: Optus</td>
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<td>Community member: individual</td>
<td>6</td>
<td>2.2, 2.6</td>
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<tr>
<td>Business owner: small business</td>
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<td>2.3.3</td>
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<tr>
<td>Community member: individual</td>
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<td>Business owner: The Salvation Army</td>
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<td>2.3.3</td>
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<td>Utility provider: Sydney Water</td>
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<td>Business owner: Jacfin Pty Ltd</td>
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<td>Utility provider: WaterNSW</td>
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<td>Business: Goodman</td>
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<tr>
<td>Business: Woolworths</td>
<td>29</td>
<td>2.3.3</td>
</tr>
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</table>
2.1 Overview of issues raised

The display of the REF and the supporting consultation generated 29 submissions, of which:

- two were from Councils
- seven from businesses
- five from utility service providers
- 14 from the community
- one ‘other’.

Of these submissions, 31 per cent were in support of the proposal and only seven per cent objected to the proposal, who were local members of the community. The remainder (62 per cent) offered no position on whether they supported or objected to the proposal. 80 per cent of submissions in support of the proposal were from businesses.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and responses form the basis of this Chapter. Figure 2.1 summarises the percentage of responses received from each of the five groups identified in Table 2.1.

Figure 2.1: Grouped responses
Table 2.2: Summary of the main issues by respondent group
### Respondent group | Main comments or issues
--- | ---
**Community** | • Concerns about environmental and social impacts, including loss of amenity, noise impacts and safety  
• Clarification about specific design elements  
• Clarification about property acquisition.

**Councils** | • Design requirements to either ensure consistency with Council-related development or prevent any impacts on existing and future land uses  
• Clarification about specific design elements  
• Need for further consultation during the detailed design phase and before construction begins.

**Businesses** | • Design recommendations, suggestions and clarifications to either support existing businesses or planned future development  
• Clarification about how business access would be either affected or impacted once the proposal is operational  
• Clarification about potential land use conflicts including property acquisition and access, which may affect existing or future business operations.

**Utility companies** | • Highlighted the several important utility assets that either cross under or run alongside the proposal  
• Need for protecting or managing the utility assets before construction starts.

## 2.2 Proposal need and justification

**Submission number(s)**
2, 6, 16, 19, 20

**Issue descriptions**
Respondents raised the following issues about the need and justification of the proposal:

- questioned the requirement for an upgrade of the existing Archbold Road  
- suggested the development of alternative access into the northern part of the WSEA to avoid upgrading Archbold Road and to limit impacts on the Minchinbury residents  
- questioned the requirement for upgrading Lenore Drive.

**Responses**
Roads and Maritime reviewed a number of access options into the WSEA in 2008 while preparing the Erskine Park Link Road Network Concept Plan. Chapter 3 of the environmental assessment prepared to support the Erskine Park Link Road Network Concept Plan described why the upgrade and extension of Archbold Road was selected as the preferred option over alternatives.

The original concept plan approval was limited to the northern extent of the proposal along Archbold Road up to the intersection of Sargents Road and was subsequently extended to the intersection of the Great Western Highway by an addendum to the planning approval. The extension to the Great Western Highway was justified on the grounds that it provided the most direct link to the existing industrial developments along Sargents Road.

The Lenore Drive intersection was designed and built with a plan for it to be upgraded in the future as part of this proposal. This is described in the Erskine Park Link Road REF (Roads and Maritime, 2010). The existing levels on Lenore Drive would need to be adjusted with the new Archbold Road link to make sure the intersection geometry complies with 80 km/hr signposted speed.
2.3 Proposal design

2.3.1 Design features

Submission number(s)
8, 14, 19, 20, 23, 25

Issue descriptions
Respondents raised the following issues regarding the design of the proposal:

- enquired into the weight (tonnage) or classification limit on the road once upgraded, noting the current three-tonne limit on Archbold Road
- questioned the requirement for access to the proposed ‘Next Generation’ Electricity Generation Facility at Eastern Creek
- requested that the road alignment and intersection locations are designed to be consistent with the planned local roads across the WSEA in consultation with Council and DPE
- requested that certain elements of the road infrastructure are designed in accordance with Council’s specifications
- requested detail on the connection into the planned Southern Link Road
- requested details of the full extent of batters (slopes), earthworks and drainage infrastructure.

Responses
A set weight or classification limit has not been proposed on Archbold Road. One of the main objectives of the proposal is to provide convenient and reliable access for freight vehicles moving between the WSEA and Sydney’s motorway and arterial road network and the wider interstate freight network. One of the other key objectives of the proposal is to support the long-term growth and economic success of the WSEA and this includes supporting existing and future developments along the proposal.

Blacktown City Council and DPE are the consenting authorities for development grant approvals along and adjacent to the proposal. As described in Section 2.4.1 of the REF, the proposal has been designed to be consistent with the Erskine Park Link Road Network Concept Plan and the Ropes Creek Industrial Estate Concept Plan. The alignment and intersection arrangements are consistent with both concept plans. The purpose of the proposal is to provide access from the north to the Ropes Creek and Eastern Creek Precincts rather than being built to service a specific or individual development.

As the detailed design is developed, it is feasible that Blacktown City Council and DPE may refine their development plans for the WSEA precincts. As such, Roads and Maritime will continue to discuss the proposal’s design to ensure it is consistent with and supports the development of the WSEA precincts. As the proposal is designed to be consistent with the Erskine Park Link Road Network Concept Plan it would remain broadly consistent with Lenore Drive and the recent upgrade of Old Wallgrove Road at Eastern Creek.

The detailed design of the proposal would also be developed to be consistent with Roads and Maritime and Austroads standards. Relevant specifications from Council standards and development control plans would also be considered during the development of the detailed design and included where applicable.

The southern extent of the proposal, south of the water supply pipelines, is consistent with the route as shown in the Erskine Park Link Road Network Concept Plan and designed to meet the future Southern Link Road.
The concept design includes two specific areas:

- the proposal footprint, which accounts for all the land needed to build the proposal including batters, earthworks and drainage infrastructure
- the construction footprint (refer to Figure 3.8 in the REF), which is a 10-metre buffer set beyond the limit of the proposal footprint to provide access to build the proposal.

The footprints will be refined as detailed design is progressed. The initial footprints indicate the maximum extents needed for the proposal based on the current concept design. If there is further need for land during detailed design, Roads and Maritime would then undertake a consistency assessment, and if needed, prepare an addendum REF to assess any additional environmental and social impacts. This would include any additional consultation with affected stakeholders.

2.3.2 Great Western Highway intersection

Submission number(s)

1, 13, 16

Issue descriptions

Respondents raised the following issues regarding Great Western Highway intersection with Archbold Road:

- expressed concern that potential changes to the priorities and arrangements at the Great Western Highway intersection would cause road-user confusion and uncertainty
- suggested installation of additional traffic lights at the BP service station and the Salvation Army store
- suggested improvements to the Great Western Highway intersection on the George Street leg
- suggested installing safety cameras at the Great Western Highway intersection.

Responses

The concept design ensures that all traffic can safely enter and leave the Great Western Highway and the Archbold Road intersection. The storage lengths of turning bays have been designed to cater for the current and projected increases in traffic.

The proposal has been designed to current Roads and Maritime, Austroads and Australian Standards. Roads and Maritime have investigated options to install a new set of traffic lights to access the car park of the Salvation Army complex and BP service station. In following these standards, the installation of these traffic lights in close proximity to the Great Western Highway intersection was not supported for the following reasons:

- it would be unsafe for road users as it may introduce driver confusion and uncertainty
- there would be too little room between each set of lights to store the traffic during peak periods, which is likely to cause potential traffic queues across the intersection
- it would negatively affect the performance of both intersections.

As part of the traffic and transport assessment for the proposal, a detailed intersection analysis was undertaken to predict the level of service of the upgraded intersection at the Great Western Highway at the time of opening the proposal to traffic and in future years. The intersection is predicted to operate at a satisfactory level of service in year 2031 which is ten years from the assumed opening of the proposal to traffic. However, Roads and Maritime would monitor the performance of the intersection post completion and further improvements would be considered if warranted.

The suggestion for the installation of safety cameras at the intersection of the Great Western Highway and Archbold Road would be referred to the Transport Management Centre for their consideration.
2.3.3 M4 Western Motorway intersection

Submission number(s)
4, 7, 10, 11, 16, 26, 27, 29

Issue descriptions
Respondents raised the following issues about the M4 Western Motorway intersection:

- suggested building westbound ramps at the M4 Western Motorway intersection to support residents and businesses
- expressed concern that the slip lanes to and from the M4 Western Motorway were not long enough to allow traffic to safely slow down or speed up to enter or exit the motorway.

Responses
As part of the proposal, east facing ramps are provided at the M4 Western Motorway and this is consistent with the concept plan approval granted for the Erskine Park Link Road Network. During the project development phase for the proposal, Roads and Maritime gave serious consideration to the design of the east facing ramps to make sure the proposal’s design did not preclude future west facing ramps, should there be a need. The concept design for the proposal allows such a modification to the interchange in the future, without having to re-build significant portions of the proposal.

The lengths of the entry and exit ramps on the motorway have been designed to accommodate future M4 Smart Motorway upgrades (http://www.rms.nsw.gov.au/projects/sydney-west/m4/index.html). The M4 Western Motorway intersection is also designed to current Roads and Maritime and Austroads safety standards and it has been subject to a safety assessment and review. This review confirmed that the ramps would allow traffic to safely enter and exit the motorway without impeding on the through traffic flow of the motorway. Merging and diverging of traffic at the ramps was also analysed as part of the traffic and transport assessment for the proposal, given the proximity of the proposal to the M7 and M4 motorways interchange.

2.4 Safety

Submission number(s)
9, 12

Issue descriptions
Respondents raised the following issues about safety:

- concern that it would be unsafe to increase the speed limit along Archbold Road from 60 km/hr to 80 km/hr due to its location to residential areas
- concern that the chosen option for the proposal is not considerate of public safety.

Responses
The proposed posted speed limit is set and consistent with the concept design. In developing the proposal, Roads and Maritime followed the relevant road design standards and had the safety of the concept design reviewed to ensure that it met safety requirements for use by vehicles travelling at 80 km/hr.

Roads and Maritime’s Customer Charter includes a commitment to make safety a priority. All options developed for the proposal, including the preferred option, considered public safety by meeting the current Roads and Maritime, Austroads and Australian Standards. In addition, when finalising the proposal’s concept design, a safety audit was carried out to ensure all relevant safety requirements were complied with.
2.5 Utilities

Submission number(s)
5, 17, 18, 22, 24

Issue descriptions

The following issues were raised by utility providers:

- described the requirements for adjusting and protecting Transgrid assets while undertaking work and described the processes that need to be followed to install new infrastructure that can connect into their networks
- requested consultation with Transgrid throughout the detailed design process to help resolve constraints and ensure the design is consistent with their requirements and specifications
- expressed concern that the proposed construction access route to the water supply pipelines via Milner Avenue and the Oakdale Industrial Estate is flood prone and suggested identifying an alternative route
- requested that concrete casings are included around the water supply pipelines close to the proposal and installing security fencing to prevent unauthorised access.

Responses

Road and Maritime acknowledges the requirements provided by the utility service providers. Section 5.6.2 of the REF describes the planned consultation process. Roads and Maritime will continue to work with utility service providers during the detailed design phase to:

- minimise supply interruptions and allow prior notice to affected customers if disruption occurs
- provide the necessary infrastructure to connect into the existing or planned future utilities and services in the area
- protect the existing utility infrastructure in the area while the proposal is being built and once operational
- ensure the proposal does not place unnecessary or unexpected demand on the current provisions
- resolve any construction and design issues that would affect the operation of the water supply pipelines, mainly from an access, security and safety perspective
- ensure there would be planned maintenance and emergency access arrangements to any assets while the proposal is being built and once it is operational.

The proposal has been developed in consultation with TransGrid. As such, the aspects of the design within the transmission line easements comply with horizontal and vertical clearances of the overhead power lines and pylons. Further measures would be taken during detailed design in consultation with Transgrid to ensure pylons and towers are protected from road accidents and to address potential risks associated with overhead power lines earthing.

Roads and Maritime acknowledges that access to parts of the proposal footprint, including via the Milner Avenue and the Oakdale Industrial Estate, is flood prone. As noted in section 3.3 of the REF, the appointed contractor would ultimately confirm the final construction access routes onto site before starting work. Where required, this would involve consultation with the relevant authorities and land owners. Roads and Maritime has committed to the contractor by working under a contingency and emergency evacuation plan (safeguard HF1) for a potential flood event. This would include ensuring appropriate site accesses and safe evacuation routes are developed to support construction. Roads and Maritime will address WaterNSW’s safety and security requirements concerning the water supply pipeline during the detailed design. This will include ensuring concrete casings are included around the pipelines.
The design, safety and management of maintenance and operational issues in relation to the proposal within the WaterNSW pipelines would be:

- refined during the detailed design in consultation with WaterNSW
- included as specific contractual requirements for compliance during construction including stabilisation of land around the water supply pipelines and provision of security fencing.

2.6 Construction staging

Submission number(s)
6, 26

Issue description
Respondents raised the following suggestions about the construction staging of the proposal:

- suggested building the section from the Great Western Highway to the M4 Western Motorway first, followed by the section to Lenore Drive and then the section to Old Wallgrove Road
- suggested building the M4 Western Motorway intersection first to help provide access for the existing operational commercial businesses along Sargents Road.

Response
While section 3.3 of the REF identified a possible staging program, work method and plan, the final delivery staging of the proposal would be identified with consideration of the final detailed design, community feedback, land release, development and uptake, access requirements, and in consultation with DPE and other stakeholders. This would also include consultation with the Western Sydney Project Office Environment Manager to determine the need for further assessment, the preparation of an addendum to the REF, and/or the provision of additional safeguards and management measures.

It is understood that some developers have approval to access and build on the land to the south of the M4 Western Motorway and to the south of Lenore Drive (refer to section 4.1 of the REF). As such, some early works consistent with the proposal may be built by others to service their development lots. Roads and Maritime will continue consulting with Blacktown City Council, DPE, and developers as the detailed design is prepared. This consultation will consider staging, funding and development priorities, which will ultimately define the staging sequence of how the proposal would be built. It is possible that sections and stages of the proposal may be built by future land developers as a “works in kind” arrangement under a Voluntary Planning Agreement with DPE.

2.7 Public notification

Submission number(s)
25

Issue description
One respondent requested confirmation that Roads and Maritime would consult affected property owners before undertaking any work.

Response
Roads and Maritime has started its consultation with affected property owners to describe the current proposal and the extent of the associated impacts. Any property acquisition would be carried out in accordance with the Land Acquisition Information Guide (Roads and Maritime, 2012a) and under the Land Acquisition (Just Terms Compensation) Act 1991. In general, and as described in section 5.6 of the REF, Roads and Maritime will inform the public at least 10 days before work starts (safeguard GEN2). This would also include further notification before
undertaking any particularly intrusive work that may have amenity effects on local businesses and residents, such as piling work and/or night work on the M4 Western Motorway.

2.8 Property acquisition and land use

Submission number(s)
9, 12, 14, 21, 24, 28

Issue descriptions
Respondents raised the following issues about impacts to property and land:

- concern that land acquisition would result in the loss of specific items of property such as fences and garden sheds
- requested information on the exact extent of property acquisition needed for the proposal
- concern about the impact of the proposal on property values
- concern that the proposals footprint is inconsistent with a current development application for an asphalt plant
- requested clarification of the extent of impact to the hardstand area currently next to the DHL facility on Old Wallgrove Road.

Responses
Where partial or strip acquisition is needed, the process would involve property adjustment work that may include adjusting boundary fences, garden sheds and the like. Generally, property adjustment work is carried out on a like-for-like basis. All property adjustment work would be carried in consultation with the affected property owners.

The land acquisition requirement will be determined at the detailed design phase and the aim will be to reduce and minimise the extent, where possible.

The following operational benefits are expected from the proposal:

- improved transport, connectivity and access to the main roads in the area, which will advantage the high commuting population, while also improving the area’s liveability
- improved access to the open space and recreational land of Ropes Creek and the Western Sydney Parklands by providing walking and cycling infrastructure and connectivity
- improved road safety by building and designing the road to current standards
- indirect support to the local community through access to job opportunities in the WSEA.

The following operational impacts are expected from the proposal:

- changes to the amenity and setting of Archbold Road due to its reclassification
- perceived safety issues from increasing the speed limit on Archbold Road
- amenity loss through potentially building noise walls along Archbold Road
- amenity loss through supporting an increase in traffic in the local area, including heavy vehicles.

Despite this, on balance it is concluded that the community values in the residential centre of Minchinbury would be largely unaffected by the proposal. As such, its sense of place, liveability, and sense of community, safety and security are expected to be retained.

The proposal has been designed to be consistent with the alignment and intersection arrangements of the Erskine Park Link Road Network Concept Plan and WSEA precinct plans. However, the concept design (refer to section 3.2 of the REF) has been adjusted to account for recent minor changes to the alignment and intersection location close to the proposed asphalt plant. Consultation with the proponent for the proposed asphalt plant would continue during the detailed design phase.
A retaining wall is proposed along the common boundary of the DHL facility to avoid impacting the existing hardstand area. The extent would be confirmed once a detailed survey is carried out as part of the detailed design.

2.9  Traffic, parking and access

2.9.1 Traffic and parking related issues

Submission number(s)
2, 13, 16

Issue description
Respondents raised the following issues about traffic impacts of the proposal:

- more traffic would use Archbold Road than predicted in the REF as the modelling did not account for the high volumes of traffic associated with commercial businesses on the Great Western Highway, the proposed traffic lights, or changes to timing on existing traffic lights
- the proposed traffic lights would create impacts to the surrounding local road network in Minchinbury
- potential increase of vehicles parking on Robinson Street.

Response
The operational assessment used traffic modelling to evaluate how predicted changes in the type and volume of traffic would be serviced by, and delayed on, the local road network in 2021 and 2031. This involved comparing the difference between building and not building the proposal and validating this against modelled predictions in 2015, which were verified against data collected in the study area. The predictions also accounted for the other changes on the local road network that will occur over this period in the form of introducing Intelligent Transport System (ITS) on the M4 Western Motorway as part of Smart Motorway proposal.

The local roads in the area (Sargents Road and Robinson Street) would be largely unaffected by the proposal. This is due to two factors:

- the predicted change in traffic volumes in the future being adequately 'serviced' by Sargents Road and Robinsons Street as confirmed in Table 6.5 of the REF.
- the availability of alternative routes into and out of Minchinbury and the Sargents Road commercial area other than Archbold Road, which provides travel choice for people.

As part of the traffic and transport assessment for the proposal, a detailed intersection analysis was undertaken to predict the level of service of the upgraded intersection at Robinson Street at the time of opening the proposal to traffic and in future years. The intersection is predicted to operate at good level of service in year 2031 which is ten years from the assumed opening of the proposal to traffic.

The existing on-road parking on Archbold Road, between Sargents Road and Robinson Street, would be removed to make way for two signalised intersections; one at Sargents Road and one at the intersection with Robinson Street. As described in section 6.1.3 of the REF, there is considered to be sufficient alternative parking available locally on Robinson Street and Sargents Road to accommodate the loss.

2.9.2 Access

Submission number(s)
1, 9, 10, 13, 16, 19, 24
**Issue descriptions**

Respondents raised the following issues about access impacts:

- **access to and from the Salvation Army store and depot on the corner of Archbold Road and the Great Western Highway and requested input into the construction traffic management plan.**
- **Suggested extension of the footpath from Archbold Road to the Minchinbury Fruit Market on the Great Western Highway to improve access for pedestrians and people with low mobility**
- **loss of access at the rear of the properties that back onto Archbold Road**
- **requested access to the agricultural land to the south of Lenore Drive while the proposal is being built until the land is redeveloped as the Ropes Creek Industrial Estate**
- **requested guaranteed access to the WaterNSW supply pipelines both during construction and at completion of the proposal.**

**Responses**

Access to the Salvation Army carpark and delivery areas from Archbold Road would be restricted to left-in and left-out only. When travelling westbound on the Great Western Highway, customers and delivery vehicles entering Archbold Road would need to turn right onto Sargents Road before doing a U-turn and travelling back towards the store entrance on the western side of Archbold Road (refer to the red line on the Figure 2.2). This route could also be used by vehicles travelling eastbound from the store.

When travelling eastbound on the Great Western Highway, customers and delivery vehicles would be required to use Carlisle Avenue and Sargents Road before turning north onto Archbold Road to access the Salvation Army store (refer to the green line on Figure 2.2).

While access to the store would be maintained, preventing right turn moves into the store from Archbold Road and the Great Western Highway would increase customer and delivery journeys by about 1.5 kilometres.

Local access improvements, network operation changes, additional footpath provisions, and improvements on the Great Western Highway are outside of the proposal’s scope. While this is the case, Roads and Maritime acknowledges the suggestions and has passed them on to the relevant internal Network Operations team, the NSW Transport Management Centre, and Blacktown City Council for further consideration.

No direct access to Archbold Road would be permitted other than at nominated intersections. This includes the current access at the rear of some properties that back on to Archbold Road. Likewise, no direct access would be permitted on Lenore Drive.

Access across the agricultural grazing land south of Lenore Drive would remain in place until the land is developed as the Ropes Creek Industrial Estate. However, certain traffic management controls around active working areas during construction are needed for safety reasons. These controls would ensure that there would be some retained means of access to all parts of the land throughout. Roads and Maritime will continue working with the landowner as the proposal’s detailed design is developed and leading up to construction to confirm needs and requirements and to finalise the traffic management plan (safeguard TT1).

Roads and Maritime is aware that there is a standing approval to build an access road into the northern section of the Ropes Creek Industrial Estate, south of the Lenore Drive intersection. The concept design allows for this access to be built ahead of the proposal. Roads and Maritime is also committed to working with the developers, the Councils and DPE to support delivering an integrated staged development of the land to support existing, approved and future development commitments across the WSEA.

Access to the water supply pipeline would be maintained throughout the construction period. This would form part of the construction environmental management and traffic management plans (safeguard GEN1 and safeguard TT1). Roads and Maritime has also continued to consult and work with WaterNSW to ensure safe and reliable access to the water supply pipelines once the proposal is operational. This includes both emergency and maintenance access to the corridor,
including the provision of sufficient space to allow WaterNSW to use various larger lifting equipment to service the pipelines close to the proposed alignment.

Source: Roads and Maritime

Figure 2.2: Access arrangements to and from the Salvation Army Store and Depot

2.10 Noise and vibration

Submission number(s)
3, 8, 9, 14, 15, 16, 26

Issue descriptions
Respondents raised the following issues about noise and vibration impacts:

- that the proposal would cause an unacceptable noise impact for the people that live and work in the area
- that the provision of noise walls and treatments was not certain or sufficient
- that noise walls would block light into adjacent buildings
- requested provision of a replacement noise wall along the frontage of the M4 Western Motorway north of the east facing on-ramp in preference over an earth mound due to lack of privacy and flooding concerns.
Responses
The REF assessed the predicted operational road traffic noise impacts on the people living in Minchinbury using validated modelling methods, verified modelling predictions and following NSW Government guidelines.

The noise modelling identified that 98 residential and three non-residential properties would be affected by an increase in road traffic noise that exceed the operational noise criteria. As such, noise treatments would be implemented as part of the proposal to mitigate operational noise impacts including noise walls and at-property treatments. Section 6.2.5 of the REF describes the four treatment measures that could be introduced, concluding that a combination of noise walls and at-property treatments were the only feasible and reasonable solutions to provide adequate noise mitigation.

The REF confirmed that noise walls along the eastern side of Archbold Road would be able to treat about 50 per cent of the affected receivers, while the rest could be effectively treated with at-property treatments. The REF also confirmed that the extent and height of the wall and the final at-property treatments would be determined during the detailed design phase. The noise model also assessed that the noise treatment measures would adequately reduce noise to a level where there would be no residual (remaining) impacts.

The noise modelling accounts for how traffic would move along Archbold Road once it is upgraded, including how traffic would move through the Robinson Street intersection. Part of the assessment considered the maximum noise levels in the area. This accounts for aspects such as breaking on the approach to and accelerating away from intersections. This was used to prioritise the proposed noise treatment measures described in Section 6.2.5 of the REF.

As the detailed design is progressed, the noise impact assessment will be refined to finalise the proposed treatment requirements and ensure they provide sufficient treatment in accordance with Roads and Maritime policy. As described in Table 3.8 of the REF, Roads and Maritime is committed to providing noise mitigation, either by building a wall or by treating individual properties. Where feasible and reasonable, the aim would be to install noise walls and property treatments before starting work. This would also provide an effective means of managing construction related noise. Chapter 3 provides more detail on this. Roads and Maritime would also work with the community during the detailed design phase to ensure that noise walls do not result in other impacts such as blocking views or overshadowing.

The noise and vibration assessment prepared to support the REF did not specifically discuss the relocation of an existing noise wall along the northern side of the M4 Western Motorway, the location of which would be impacted by the proposed east facing entry ramp. A new noise wall would be provided along the northern boundary of the M4 Western Motorway. The extent and height of this new wall would be determined during the detailed design phase of the proposal.

In addition, the need to provide noise mitigation on the entry ramp on the M4 Western Motorway would be subject to feasible and reasonable test during the detailed design phase of the proposal.

2.11 Drainage and flooding
Submission number(s)
14, 19, 23

Issue descriptions
Respondents raised the following issues about drainage and flooding impacts:

- requested clarification on the level of flood protection that the road would be designed to and its consistency with Blacktown City Council’s requirements
- requested clarification on the inconsistency between the drainage drawings shown in the main REF and the flooding and drainage report
- noted that none of the hydraulic and hydrological modelling has been provided for review
• asked for more information in relation to the flooding and drainage impacts
• requested clarification on how the proposed road drainage would link into the planned regional basin and how it would relate to Blacktown City Council’s existing flood modelling
• commented that an existing flooding model for the WSEA precinct, which predates the drainage investigation carried out to support the proposal, was not referenced. This model was used as the basis of the flood study by the DPE for the Water Cycle Management Study for the Ropes Creek Precinct
• requested that more information is provided on the cross drainage that connects the open channel crossing the M4 Western Motorway to the east of Archbold Road to the proposed cross drainage located about 20 metres south of the Sargents Road intersection
• commented that the proposed grading of the road between the drainage channel about 20 metres south of the Sargents Road intersection and the channel immediately north of the M4 Western Motorway would substantially block the existing overland flow path
• questioned how the maximum afflux of up to 200 mm between the drainage channel about 20 metres south of the Sargents Road intersection and the channel immediately north of the M4 Western Motorway would increase the flood level impact on the adjacent dwellings, and if an adequate flood management level (freeboard) was maintained.

Responses
The flooding and drainage investigation report prepared to support the proposal (refer to Appendix L of the REF) compared peak flow estimates from the present investigation with those derived from an urban runoff model that was developed as part of the Stormwater Management and Trunk Drainage Strategy: Lot 5 DP 262213, Ropes Creek Employment Precinct (Brown Consulting, 2010) and the South Creek Flood Study (Worley Parsons, 2015).

The proposed stormwater drainage and road have been designed to be consistent with Blacktown City Council’s requirements. The proposal is being designed to ensure that it would not affect or alter the flood risk in the area and Roads and Maritime can confirm that the road drainage system has been designed to cope with a one in 10-year storm event and cross drainage structures are sized wherever possible for a one in 100-year storm event. Any existing flooding issues in the area would also, therefore, not change under the proposal, and would be a consideration of Blacktown City Council and/or the relevant landowners to assess and rectify, if needed.

The drawings in the main REF are correct and postdate those in the flooding and drainage technical investigation report included as Appendix L of the REF. This has now been rectified to ensure consistency across the REF and technical reports.

Roads and Maritime acknowledges that the detailed flood modelling and reporting was not made available for review before displaying it in the REF. As such, Roads and Maritime will consult with Blacktown City Council to develop the proposals stormwater drainage and road design. Roads and Maritime will also issue the latest flooding and drainage report and the modelling to Blacktown City Council for review and comment when progressing the detailed design.

The following provides further detailed and specific technical information to respond to the technical flood modelling, impacts and mitigation queries raised in the submissions.

The peak 100-year storm event flow in Ropes Creek derived by the urban runoff model was comparable to the peak event flows derived from the South Creek Flood Study, but was less than the relatively large peak flow estimates presented in the Stormwater Management and Trunk Drainage Strategy. It was, therefore, concluded in Appendix L of the REF that the Stormwater Management and Trunk Drainage Strategy was an overestimate.

The information presented in Appendix C of this submissions report shows the inlet to cross drainage channel, about 20 metres south of the Sargents Road intersection (reference XD02b in Appendix C) comprising a series of grated inlet pits located along the base of the grass-lined channel, that runs in a north-westerly direction from the outlet of the open channel crossing the M4 Western Motorway to the east of Archbold Road (reference XD04 in Appendix C). An earth mound is located between the grass-lined channel and the adjoining properties. The top of the earth mound is about 2.2 metres above the base of the grass-lined channel and about one metre above
the existing level of Archbold Road. Thus, stormwater flows that would surcharge (flow into) the grass-lined channel would discharge on to Archbold Road rather than overtopping the earth mound.

Under operational conditions, the existing earth mound would provide 0.8 metre freeboard (additional flood allowance) to the 100-year ARI peak flood level should there be a partial blockage to the grated inlet pits located along the base of the grass-lined channel whereby their clear opening area is reduced by 50 per cent. However, if the grated inlet pits were to fully block, then the raised level of Archbold Road would result in a portion of the flow that surcharges the grass-lined channel overtopping the earth mound and inundating the properties to its north. Because of this, it is proposed to raise the level of the earth mound by up to 0.9 metres to provide a 0.5 metre freeboard to the peak 100-year ARI flood level should there be a complete blockage to the grated inlet pits that are located along the base of the grass lined channel.

The figure in Appendix C includes a concept layout of the raised earth mound. The figures also show a length of flood protection barrier to tie the earth mound into the road cutting.

2.12 Biodiversity

Submission number(s)
25

Issue description
One respondent expressed concern that the proposal would impact on an area of protected woodland next to Old Wallgrove Road which was not assessed in the REF.

Response
The proposal would not impact on the protected woodland east of Old Wallgrove Road opposite the Oakdale Industrial Estate. Figure 6.7a of the REF provides the proposed construction footprint for the proposal. Appendix B also reproduces this information to show the final concept design and footprints.

2.13 Amenity and health impacts

Submission number(s)
2, 8, 9, 14, 15, 16

Issue descriptions
Respondents raised the following issues about amenity and health impacts:

- impacts to community and the residents health because of the proposal
- that the proposed traffic lights would create amenity impacts to the surrounding local road network, particularly around Minchinbury.

Responses
Potential health impacts to the community were considered under the noise and vibration (section 6.2) and air quality (section 6.10) sections of the REF.

The noise and vibration assessment report prepared for the REF identified that several residents would experience operational noise impacts once the proposal is built, which could be mitigated against through noise treatment provisions (refer to section 2.10 of this report).

The noise and vibration assessment report (refer to Appendix K of the REF) also assessed proposed noise treatments and found that operational noise impacts would be adequately
managed through implementation of measures (refer to section 2.10 of this report and section 6.2.5 of the REF).

The air quality assessment conducted for the REF found that the volume and concentration of traffic generated air pollutants, in combination with those generated from the traffic on the M4 Western Motorway would not cause health impacts to those living in the area, including people who suffer from associated health related illnesses (refer to section 6.10 of the REF).

Regarding the visual amenity, Table 6.38 in the REF identifies that widening Archbold Road north of the M4 Western Motorway and planning for its use by more heavy-vehicle traffic would have an adverse negative visual amenity impact for the people who live and work in the area. To minimise this impact, Roads and Maritime has committed to a range of urban design and landscaping treatments for the proposal that would reduce the overall impact (safeguard UD1). It is expected that once these treatments are introduced and the planting is established and matured, the amenity of the road corridor would improve over time.

2.14 Cumulative impacts

Submission number(s)
22

Issue description
One respondent enquired about an area of 11 hectares next to the proposals footprint, north of the water supply pipelines, which had not been considered in the cumulative impact assessment as it has been acquired for future development.

Response
As reported in section 6.14 of the REF, the cumulative impact assessment only focusses on the combined residual impacts of the proposal and committed and approved projects that are not yet built. Aspirational projects (i.e. developments where there is no determined REF or planning application/approval) cannot be assessed as part of a cumulative impact assessment as there is no specific information on their expected impacts. However, Roads and Maritime acknowledges the owner’s aim to develop this land and would continue its consultations during the detailed design phase to ensure the proposal is designed to be consistent with future development needs.
3 Additional assessment

This chapter describes the impacts and benefits of building a noise wall along the common boundary of the M4 Western Motorway.

3.1 Noise

The noise and vibration assessment prepared to support the REF did not specifically discuss the relocation of an existing noise wall along the northern side of the M4 Western Motorway, the location of which would be impacted by the proposed east facing entry ramp on the M4 Western Motorway (refer to Figure 3.1). A new noise wall would therefore be provided along the northern boundary of the M4 Western Motorway. This would result in the provision of a continuous noise wall along the eastern side of the existing section of Archbold Road and then along the northern section of the M4 Western Motorway close to the limit of the proposals footprint, as shown in Figure 3.2.

In addition, the need to provide noise mitigation on the entry ramp of the M4 Western Motorway would be subject to feasible and reasonable tests during the detailed design phase of the proposal. The final height and design of any noise wall would be confirmed as part of the detailed design. It would be designed to consider:

- maximum reasonable and practical build heights
- overlapping sections to provide access, particularly access to Everton Park from Archbold Road
- the effectiveness of, need for, and extent of, at-property treatments
- final urban design requirements, including the walls visual and amenity impacts.

Independent of whether the noise wall is being built to support this proposal or if it is being replaced, the above factors would be considered in developing the walls design height and specification.

As reported in section 6.2 and section 6.14 of the REF, the noise and vibration assessment considered the combined impacts of traffic on the M4 Western Motorway, the east facing ramps and on the upgraded section of Archbold Road. This was used to identify and confirm which properties would need treating as part of the proposal.

Source: WSP

Figure 3.1: Existing noise wall and bunding along the M4 Western Motorway
Source: WSP

Figure 3.2: Indicative noise wall location for the proposal
4 Changes to the proposal

This chapter describes proposed changes to the concept design.

4.1 Robinson Street intersection

Following consultation with property owners affected by the concept design, Roads and Maritime reviewed the footprint of the Robinson Street intersection as described below.

4.1.1 Description

Figure 4.1 shows the original and revised intersection arrangement at Robinson Street.

Following consultation with the property owners affected by the concept design, Roads and Maritime reviewed the footprint of the Robinson Street intersection with a view to minimising property impacts and this resulted in rationalising the concept design to:

- reduce the lane and median widths on Archbold Road at the approach to the intersection with Robinson Street
- move the Archbold Road centre line slightly to the west in the vicinity of the intersection with Robinson Street
- realign the Archbold Road centreline to the south, away from the properties at the north-east corner of the intersection.

These changes would result in removal of the strip acquisition identified in the REF from two residential properties at the north-east corner of the Archbold Road and Robinson Street intersection. It would, however, require acquisition of an additional strip from vacant public land at the southern side of the Robinson Street intersection. This would benefit the two residents, while having no operational performance impact on the intersection. This minor change is not likely to alter the predicted operational noise and air quality impacts reported in Chapter 6 of the REF.

Source: Roads and Maritime
Figure 4.1: Original and revised proposal for the upgrade of the Robinson Street intersection

4.1.2 Environmental assessment
The nature of the changes would have a negligible environmental impact or benefit. Specifically:

- there would be minor land use and socioeconomic benefit from reducing the amount of private property acquisition for two of Minchinbury’s residents
- there would be a neutral traffic and transport impact as the change would not affect the intersections operational performance
- the revision would not result in a perceptible change in the proposals predicted noise or air quality impacts along this section of Archbold Road.

4.1.3 Revised safeguards and management measures
Given the negligible impact from the above changes, the safeguards and management measures described in the REF are considered adequate and, therefore, do not need revising or supplementing.

4.2 M4 Western Motorway intersection earth mound
The drainage design was reviewed following a submission from Blacktown City Council regarding the drainage and flooding assessment at the M4 Western Motorway and Archbold Road intersection.

4.2.1 Description
Appendix C of this report shows the existing and proposed stormwater drainage around the M4 Western Motorway and Sargents Road. It shows an earth mound located between the existing grass-lined open channel to the east of Archbold Road and the residential properties in the south of Minchinbury. This earth mound was reviewed in 100-year peak flood conditions. It was concluded that, once the proposal is built and Archbold Road is raised, if the grated inlet pits in the open channel were to be fully blocked, then it is feasible that the earth mound would be breached and it would over top resulting in flooding of the adjacent properties. For this reason, it is proposed to raise the height of the earth mound by up to an additional 0.9 metres to protect the adjacent properties. This would provide a 0.5 metre freeboard (additional flood allowance) in the event the inlet pits in the open channel were fully blocked during a peak 100-year flood event.

The figure in Appendix C includes a concept design and layout for the raised earth mound. The figure also shows a length of flood protection barrier to tie the earth mound into the road cutting.

4.2.2 Environmental assessment
The modification to the earth mound would have the following effects:

- provision of additional protection to the adjacent properties in the event that there were blockages to the drainage channel in a 100-year peak flood event
- minor visual impact from increasing the height of the earth mound, however it is unlikely to visually impact on residents living in south Minchinbury
- minor increase in the amount of soil required for construction of the earth mound with potential for erosion and sediment risk during construction.
5 Environmental management

The REF for the proposal identified the framework for environmental management, including safeguards and management measures that would be adopted to mitigate or reduce environmental impacts (refer to Chapter 7 in the REF).

Because of the issues raised in the submissions and the changes to the proposal, several additional and revised safeguards and management measures have been identified. These include Roads and Maritime:

- notifying affected residents at least 10 days before carrying out any major work and/or night work that could affect amenity (safeguard GEN2)
- consulting with the Western Sydney Project Office Environment Manager once the construction staging is confirmed to determine the need for further assessment, the preparation of an addendum to the REF, and/or the provision of additional safeguards and management measures (safeguard GEN4)
- maintaining access across the agriculturally grazed land south of Lenore Drive until the Ropes Creek Industrial Estate is built (safeguard TT3)
- confirming the final noise treatments during the detailed design. This would include noise wall heights and locations. Roads and Maritime would also work with the community during the detailed design phase to ensure that any noise walls to be provided do not result in other impacts such as blocking views or overshadowing (safeguard NV5)
- continuing to consult with local councils, DPE and future developments involved in the WSEA to ensure the final design is consistent with design layouts, footprints and configuration, including the layout of internal road networks and their necessary connection into the proposal (safeguard SE5)
- ensuring the proposals detailed design allows for the concrete encasement of the water supply pipelines close to Old Wallgrove Road. The specifications would be agreed with WaterNSW and security fencing and other measures would be installed to prevent access to any sensitive utility areas and corridors (safeguard PL3).

Should the proposal proceed, environmental management would be guided by the framework and measures outlined below.

5.1 Environmental management plans

Several safeguards and management measures have been identified to minimise adverse environmental impacts, including social impacts, which could potentially arise because of the proposal. Should the proposal proceed, management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe the safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to the construction of the proposal and must be reviewed and certified by Roads and Maritime's environment staff prior to the commencement of any onsite work. The CEMP will be a working document (subject to ongoing change) and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with the specifications set out in Roads and Maritime's quality assurance (QA) Specifications:

- G10: traffic management
- G36: environmental protection
- G38: soil and water management
- G40: clearing and grubbing.
5.2 Summary of safeguards and management measures

The REF for the proposal identified a range of environmental outcomes and management measures that would be needed to avoid or reduce environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Chapter 7 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 5.1 will guide the subsequent phases of the development. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined, and deleted measures, or parts of measures to be deleted, have been struck out.
Table 5.1: Summary of environmental safeguards and management measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>General</td>
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</tbody>
</table>
|     |        | Minimise environmental impacts during construction | A CEMP will be prepared and submitted for review and endorsement of the Roads and Maritime Environment Manager prior to commencement of the activity. As a minimum, the CEMP will address the following:  
- any requirements associated with statutory approvals  
- details of how the project will implement the identified safeguards outlined in the REF  
- issue-specific environmental management plans  
- roles and responsibilities  
- communication requirements  
- induction and training requirements  
- procedures for monitoring and evaluating environmental performance, and for corrective action  
- reporting requirements and record-keeping  
- procedures for emergency and incident management  
- procedures for audit and review. The endorsed CEMP will be implemented during the undertaking of the activity. | Roads and Maritime Contractor | Pre-construction Construction |
|     |        | GEN2 Notification           | Contractor     | Pre-construction Construction |
|     |        | GEN3 Environmental awareness | All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular “toolbox” style briefings. | Contractor | Pre-construction Construction |
|     |        | GEN4 Construction staging  | Roads and Maritime/Contractor | Detailed design/pre-construction |
|     |        | Traffic and transport      | Contractor     | Pre- |
|     |        | TT1 Traffic and transport  | Contractor     | Pre- |
The TMP will be prepared in accordance with the Roads and Maritime *Traffic Control at Work Sites Manual* (Roads and Maritime, 2010) and *QA Specification G10 Control of Traffic* (Roads and Maritime, 2008a). The TMP will include:

- confirmation of haulage routes
- measures to maintain access to local roads and properties
- site specific traffic control measures (including signage) to manage and regulate traffic movement
- measures to maintain pedestrian and cyclist access
- requirements and methods to consult and inform the local community of impacts on the local road network
- access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads
- a response plan for any construction traffic incident
- consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the increase in construction vehicle traffic
- monitoring, review and amendment mechanisms.

The TMP will be prepared in consultation with BCC, FCC, DPE and TMC to ensure there is an integrated response to traffic management in the area while the proposal is being built.

| TT2 | Traffic and transport | The local bus operators will be consulted to confirm alternative temporary bus stop and operations during construction. The local community will be notified about the agreed local temporary bus stop location, as coordinated and managed under the consultation strategy. | Contractor | Pre-construction |
| TT3 | Property access | Property access will be maintained where feasible and reasonable, and property owners will be consulted before starting any work that may temporarily restrict or control access. This will extend to maintaining access across the agriculturally grazed land south of Lenore Drive until the Ropes Creek Industrial Estate is built. (Side) road and lane closures will be minimised where feasible and reasonable. | Contractor | Construction |
| TT4 | Traffic management at ancillary sites | The following traffic management provisions will be provided at each ancillary facility: appropriate ‘sight distances’ to allow traffic to safely enter and exit temporary painted road lines to provide delineation suitable intersection arrangements where required other controls to separate, slow down, or temporarily stop traffic to allow for safe entry and exit. | Contractor | Construction |
## Noise and vibration

| NV1 | Construction noise and vibration impacts | A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG, DECC, 2009) and identify:  
- all potential noise and vibration generating activities associated with construction  
- feasible and reasonable mitigation measures to be implemented  
- a monitoring program to assess performance against relevant noise and vibration criteria  
- arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures  
- contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. | Contactor | Pre-construction |
| NV2 | Construction noise and vibration impacts | All sensitive receivers (e.g. schools, residents) likely to be affected will be notified at least 10 days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:  
- the project  
- the construction period and construction hours  
- contact information for project management staff  
- complaint and incident reporting  
- how to obtain further information. | Contactor | Pre-construction |
| NV3 | Noise impacts due to out of hours work during construction | As part of the NVMP, develop an out-of-hours work protocol, including any requirements set under the EPL which defines:  
- all scheduled and planned out-of-hours activities  
- any oversized and other deliveries needing to take place out-of-hours as required by the police or other authorities for safety reasons  
- other tie-in, utility connection and intersection work that may need to take place out-of-hours for road user safety issues  
- out-of-hours emergency work needed to prevent the loss of life, property, to prevent harm or as agreed under negotiation with EPA and affected sensitive receivers  
- the record keeping process for capturing agreed and emergency out-of-hours work. | Contactor | Pre-construction |
<p>| NV4 | Construction noise and vibration | Implement noise management controls early in the work program to benefit receivers while the proposal is being built. | Roads and Maritime Contractor | Pre-construction |</p>
<table>
<thead>
<tr>
<th>NV5</th>
<th>Operational noise impacts</th>
<th>Roads and Maritime Contractor</th>
<th>Detailed design Pre-construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Where feasible and reasonable include any noise treatments (such as noise walls) along Archbold Road before work starts. The final noise treatments would be confirmed during the detailed design. This would include noise wall heights, locations and impacts. Roads and Maritime would also work with the community during the detailed design to ensure that any provided noise walls do not result in other impacts such as blocking views or light (termed overshadowing).</td>
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<table>
<thead>
<tr>
<th>NV6</th>
<th>Construction vibration impacts</th>
<th>Roads and Maritime Contractor</th>
<th>Detailed design Pre-construction</th>
</tr>
</thead>
</table>
|     | As part of the NVMP, include the following requirements:  
- carry out precondition surveys of the Water Supply pipelines or obtain integrity data from WaterNSW  
- include vibration controls and safe working distances to reduce any impacts that could affect the pipelines’ integrity, including slow start up of vibration-generating work close to the pipelines where there is a damage risk  
- detail equipment specifications with the aim of selecting to use alternatives where feasible and reasonable to reduce vibration  
- use vibration monitors where there is determined need following the precondition survey. |

<table>
<thead>
<tr>
<th>NV7</th>
<th>Construction vibration impacts</th>
<th>Contractor</th>
<th>Pre-construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensure vibratory rollers are limited to &lt;100 kN (typically two to four tonnes) and hydraulic hammers are limited to 300 kg (five to 12 tonne excavator) are used when upgrading the existing section of Archbold Road and building the M4 Western Motorway intersection. Otherwise carry out additional vibration impact assessment and/or conditional surveys on the potentially affected buildings adjacent to Archbold Road and the M4 Motorway in line with the predictions in the REF.</td>
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<table>
<thead>
<tr>
<th>NV8</th>
<th>Construction noise and vibration</th>
<th>Contractor</th>
<th>Pre-construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consider the use and layout of the secondary site compounds on Archbold Road on either side of the M4 Western Motorway to maximise the distance from sensitive receivers. Also consider placing temporary structures, barriers and screens between the site compound and adjacent receivers.</td>
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<thead>
<tr>
<th>NV9</th>
<th>Noise and vibration</th>
<th>Contractor</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Locate fixed plant as far from residences as possible and behind site structures, barriers, screens and/or noise walls. Plan for the use of less noise/vibration equipment where reasonable and feasible.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NV10</th>
<th>Noise and vibration</th>
<th>Contractor</th>
<th>Construction</th>
</tr>
</thead>
</table>
|      | Ensure toolbox talks and environmental induction training includes specific noise and vibration management including, but not limited to:  
- avoiding: |
- radio use outside of standard working hours
- shouting and slamming doors
- dropping materials from height
- operating machinery at low speeds or powers, and switching-off equipment when it is not being used
- minimising reversing.

### Biodiversity

<table>
<thead>
<tr>
<th>B1</th>
<th>General biodiversity impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A Flora and Fauna Management Plan (FFMP) will be prepared in accordance with Roads and Maritime's Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects (Roads and Maritime, 2011a) and implemented as part of the CEMP. It will include, but not be limited to:</td>
</tr>
<tr>
<td></td>
<td>- plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas</td>
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<td></td>
<td>- requirements set out in the Landscape Guideline (Roads and Maritime, 2008b)</td>
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<tr>
<td></td>
<td>- pre-clearing survey requirements</td>
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<td></td>
<td>- procedures for unexpected threatened species finds and fauna handling</td>
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<tr>
<td></td>
<td>- procedures addressing relevant matters specified in the Policy and guidelines for fish habitat conservation and management (DPI Fisheries, 2013)</td>
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<td></td>
<td>- protocols to manage weeds and pathogens.</td>
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</table>

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<thead>
<tr>
<th>B2</th>
<th>Native vegetation loss and habitat removal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal will be investigated during detailed design and implemented where reasonable and feasible.</td>
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<thead>
<tr>
<th>B3</th>
<th>Threatened ecological community loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Offsets are to be calculated in accordance with the Guidelines for Biodiversity Offsets (Roads and Maritime, 2011a).</td>
</tr>
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<thead>
<tr>
<th>B4</th>
<th>Light spill impacts</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>The lighting is to be designed to minimise light spill into woodland areas either side of the M4 Western Motorway corridor.</td>
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</tbody>
</table>

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<thead>
<tr>
<th>B5</th>
<th>Potential loss of individual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As part of the FFMP, develop a procedure to prevent the movement of Cumberland Plain land snails into the work zone and identify suitable relocation habitat, if required.</td>
</tr>
</tbody>
</table>
### Cumberland Plain land snail

Any fauna encountered onsite would be managed in accordance with Biodiversity Guidelines, Guide 9 (fauna handling, Roads and Maritime, 2016).

<table>
<thead>
<tr>
<th>B6</th>
<th>Fauna impacts</th>
<th>Contractor</th>
<th>Pre-construction</th>
</tr>
</thead>
</table>

### Aquatic habitat loss

Aquatic habitat would be protected in accordance with Biodiversity Guidelines, Guide 10 (aquatic habitats and riparian zones, Roads and Maritime, 2016) and the standard precautions and measures of the Policy Guidelines for Fish Habitat Conservation and Management (NSW DPI Fisheries, 2013).

<table>
<thead>
<tr>
<th>B7</th>
<th>Aquatic habitat loss</th>
<th>Contractor</th>
<th>Construction</th>
</tr>
</thead>
</table>

### Impacts on Ropes Creek

The above safeguards will be developed in accordance with the provisions of State Regional Environmental Plan No.20 (Hawkesbury-Nepean River, No.2 1997) that are aimed at protecting catchment values. Therefore, the mitigation will specifically consider the need to:
- avoid aquatic plant areas, significant fauna and wetland habitat
- re-establish and replant impacted riparian flora and fauna habitat.

<table>
<thead>
<tr>
<th>B8</th>
<th>Impacts on Ropes Creek</th>
<th>Roads and Maritime Contractor</th>
<th>Detailed design Pre-construction</th>
</tr>
</thead>
</table>

### Aboriginal heritage

#### AH1 General Aboriginal heritage impacts

An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2012b) and Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented for managing impacts on Aboriginal heritage. The AHMP will be prepared in consultation with all relevant Aboriginal groups.

<table>
<thead>
<tr>
<th>AH1</th>
<th>General Aboriginal heritage impacts</th>
<th>Roads and Maritime Contractor</th>
<th>Detailed design Pre-construction</th>
</tr>
</thead>
</table>

#### AH2 Unexpected finds

The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) will be followed if an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Roads and Maritime does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the abovementioned procedure) is not in place. Work will only recommence once the requirements of that Procedure have been satisfied.

<table>
<thead>
<tr>
<th>AH2</th>
<th>Unexpected finds</th>
<th>Contractor</th>
<th>Construction</th>
</tr>
</thead>
</table>

#### AH3 Known Aboriginal heritage

An Aboriginal Heritage Impact Permit (AHIP) will be obtained to cover four items (AHIMS ID 45-5-4492, 45-5-4599, 45-5-3165 and 45-5-3937) to allow salvage and excavation work before construction starts. This work will be undertaken in accordance with the AHIP and its

<table>
<thead>
<tr>
<th>AH3</th>
<th>Known Aboriginal heritage</th>
<th>Roads and Maritime</th>
<th>Pre-construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>objects</td>
<td>supporting due diligence codes.</td>
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<tr>
<td><strong>AH4</strong></td>
<td>Recovered and salvaged objects</td>
<td></td>
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</tr>
<tr>
<td>Objects will be managed and temporarily stored in accordance with the terms of the AHIP. A long-term management plan for the objects will then be developed in consultation with OEH and the Aboriginal community.</td>
<td>Roads and Maritime</td>
<td>Pre-construction</td>
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</table>

### Non-Aboriginal heritage

<table>
<thead>
<tr>
<th><strong>H1</strong></th>
<th>General Non-Aboriginal heritage impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to Non-Aboriginal heritage. The NAHMP will be prepared in consultation with OEH.</td>
<td>Contractor</td>
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<table>
<thead>
<tr>
<th><strong>H2</strong></th>
<th>Unexpected finds</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) will be followed if an unknown or potential non-Aboriginal items, including skeletal remains, is found during construction. This applies where Roads and Maritime does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.</td>
<td>Contractor</td>
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<thead>
<tr>
<th><strong>H3</strong></th>
<th>Known non-Aboriginal heritage items</th>
</tr>
</thead>
</table>
| An exception under section 139(4) of the *Heritage Act 1977* will be obtained to allow test excavations and survey work before construction starts. This work will:  
  - clarify the research potential and value of the shed and yard complex over the area  
  - confirm if the physical and archaeological value of the complex is sufficient to classify as a ‘relic’ of local heritage value within the meaning and definition of the *Heritage Act 1977*. | Roads and Maritime | Pre-construction |

<table>
<thead>
<tr>
<th><strong>H4</strong></th>
<th>Potential non-Aboriginal heritage relics</th>
</tr>
</thead>
<tbody>
<tr>
<td>An excavation permit under section 140 of the <em>Heritage Act 1977</em> will be obtained if the shed and yard complex proves to qualify as a ‘relic’.</td>
<td>Roads and Maritime</td>
</tr>
</tbody>
</table>

### Socioeconomic

<table>
<thead>
<tr>
<th><strong>SE1</strong></th>
<th>General socioeconomic impacts</th>
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</table>
| A Communication Plan (CP) will be prepared and implemented as part of the CEMP to help provide timely and accurate information about the project to the community during construction. The CP will include (as a minimum):  
  - mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions  
  - contact name and number for complaints. The CP will be prepared in accordance with the Community Involvement and | Contactor | Pre-construction |
| SE2 | Integration with the development of the WSEA | Discussions with the relevant State Government agencies and future developers will continue in preparing the proposal’s detailed design to support wider socioeconomic benefits delivered in the WSEA. | Roads and Maritime | Detailed design |
| SE3 | Use of local goods and services | Labour, services and goods will be sourced from the local market where feasible, reasonable and cost effective. | Contractor | Pre-construction Construction |
| SE4 | Amenity impacts | The noise management treatments and controls introduced under safeguard NV5 will allow for road user and pedestrian access where feasible. This also needs to ensure the integrity and function of the noise controls is preserved. | Contractor | Construction |
| SE5 | Development coordination across the WSEA | Roads and Maritime would consult with the local Councils, DPE and future developers involved in the WSEA to ensure the final design is consistent with design layouts, footprints and configuration, including the layout of internal road networks and their required connection into the proposal (safeguard SE5). | Roads and Maritime | Detailed design |

**Landscape character and visual impacts**

| UD1 | General landscape character and visual impact | An Urban Design Plan will be prepared to support the final detailed project design and implemented as part of the CEMP. The Urban Design Plan will present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for:  
- location and identification of existing vegetation and proposed landscaped areas, including species to be used  
- built elements including retaining walls, bridges and noise walls  
- pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings  
- fixtures including seating, lighting, fencing and signs  
- details of the staging of landscape works taking into account related environmental controls such as erosion, sedimentation and drainage  
- procedures for monitoring and maintaining landscaped or rehabilitated areas.  
The Urban Design Plan will be prepared in accordance with relevant guidelines, including:  
- Beyond the Pavement urban design policy, process and principles (Roads and Maritime, | Contractor | Pre-construction |
<table>
<thead>
<tr>
<th>UD2</th>
<th>Operational light spill impacts</th>
<th>The lighting design specification will be developed to ensure the height and direction of any relocated lighting poles would not be adjacent to first or second floor residential properties where feasible and reasonable. If there is any identified conflict, Roads and Maritime will consider relocating the lighting pole. If the pole cannot be relocated, the aim will be to minimise light spill and light glare in accordance with the provisions of AS4282-1997 Control of the Obtrusive Effect of Outdoor Lighting (Standards Australia, 1997). This may require the use of directional lighting, cut-offs or filters.</th>
<th>Roads and Maritime</th>
<th>Detailed design</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD3</td>
<td>Landscape character and visual impact</td>
<td>The landscape plans will incorporate the design principles outlined in the landscape character and visual impact assessment and urban design technical study report, as supplemented by the landscape and urban design strategy for the corresponding development of the WSEA.</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>UD4</td>
<td>Operational visual and amenity impacts</td>
<td>Where feasible and reasonable, include an integrated response on Archbold Road that provides the required noise treatments, while also minimising the visual impact of the noise walls. Also, select materials that would avoid amenity or social value impacts in the area.</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>UD5</td>
<td>Operational visual impacts</td>
<td>The visual impacts to two-storey properties that would overlook the widened and improved Archbold Road will be further investigated during detailed design, and additional safeguards developed, where needed.</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>UD6</td>
<td>Tree management and removal</td>
<td>Any tree removal or pruning will be undertaken by a qualified specialist and in accordance with AS4970: 2009: Protection of Trees on Development Sites (Standards Australia, 2009) and AS4373:2007: Pruning of Amenity Trees and WorkCover Amenity Tree Industry Code of Practice 1998.</td>
<td>Contractor</td>
<td>Pre-construction</td>
</tr>
<tr>
<td>UD7</td>
<td>Construction light spill impacts</td>
<td>Measures to minimise the use and spill from temporary and construction lighting will be introduced on site.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>

**Soil and water**

| SW1 | General soil and water | A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion | Contractor | Pre-construction |
Archbold Road upgrade and extension impacts

and water pollution and describe how these risks will be addressed during construction. The SWMP will be reviewed by a soil conservationist on the Roads and Maritime list of Registered Contractors for Erosion, Sedimentation and Soil Conservation Consultancy Services. The SWMP will then be revised to address the outcomes of the review.

| SW2 | General erosion and sediment discharge impacts | A site specific Erosion and Sediment Control Plan(s) will be prepared and implemented as part of the SWMP. The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather. | Contractor | Pre-construction |
| SW3 | General soil and water impacts | Temporary sediment basins and sediment sumps will be installed in accordance with the findings of the drainage and flooding report (Lyall & Associates, 2016). Where required, further environmental assessment would be undertaken if the location of these features is outside of the agreed construction and proposal footprint. | Contractor | Construction |
| SW4 | General soil and water impacts | A mixture of work management controls, catch drains, temporary stabilisation, temporary surface treatment, sediment barriers, vegetation buffer strips and the stabilisation of drainage lines will be adopted as recommended in the flooding and drainage investigation (Lyall & Associates, 2016). A land buffer will also be included to filter stormwater runoff before it enters Ropes Creek as per State Regional Environmental Plan No.20 (Hawkesbury–Nepean River, No.2 1997). | Contractor | Construction |
| SW5 | General soil and water impacts | Creek diversion/work will be scheduled during periods of predicted low flow to minimise impacts where feasible and reasonable. | Contractor | Pre-construction Construction |
| SW6 | General soil and water impacts | All stockpiles will be designed, established, operated and decommissioned in accordance with the Stockpile Site Management Procedure (Roads and Maritime, 2011b). | Contractor | Pre-construction Construction |
| C1 | General contaminated land impacts | A Contaminated Land Management Plan will be prepared in accordance with the Guideline for the Management of Contamination (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:  
- capture and management of any surface runoff contaminated by exposure to the contaminated land  
- further investigations to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2) | Contractor | Pre-construction |
- management of the remediation and subsequent validation of the contaminated land, including any certification required
- measures to ensure the safety of site personnel and local communities during construction.

| C2 | General contaminated land impacts | If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other work that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA. | Contractor | Pre-construction |

| C3 | Accidental spills | A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (Roads and Maritime, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers). | Contractor | Pre-construction |

### Hydrology and flooding

| HF1 | Hydrology and flooding | A contingency and evacuation plan will be prepared for a potential flood event while the proposal is being built. The plan will:
- evaluate what flood event would trigger the plan
- include evacuation procedures
- include a map indicating the area that is flood prone. | Contractor | Pre-construction
| HF2 | Hydrology and flooding | The layout and detail of the drainage system including water quality treatments, discharge points, swale design and scour protection will be refined during detailed design in consultation with the Roads and Maritime Environment Branch as recommended in the flooding and drainage investigation (Lyall & Associates, 2016). | Roads and Maritime | Detailed design |
| HF3 | Hydrology and flooding | The nine-drainage-line crossing points will be designed in accordance with Guidelines for Controlled Activities: Watercourse Crossings (NSW DEC, 2008). | Roads and Maritime | Detailed design |

### Air quality

| AQ1 | General air quality impacts | An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to:
- potential sources of air pollution | Contractor | Pre-construction |
- air quality management objectives consistent with any relevant published EPA guidelines
- mitigation and dust suppression measures to be implemented
- methods to manage work during strong winds or other adverse weather conditions
- a progressive rehabilitation strategy for exposed surfaces.

<table>
<thead>
<tr>
<th>AQ2</th>
<th>Dust generation</th>
<th>The CP (safeguard SE1) will include provision for managing dust nuisance complaints during the work.</th>
<th>Contractor</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ3</td>
<td>Equipment air emission impacts</td>
<td>Onsite machinery will be run efficiently to ensure optimal performance, minimise down time, and improve fuel efficiency.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>

**Waste management and resource use**

| W1 | General waste management impacts | A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:  
- measures to avoid and minimise waste associated with the project  
- classification of waste and management options (re-use, recycle, stockpile, disposal)  
- statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions  
- procedures for storage, transport and disposal  
- monitoring, record keeping and reporting.  
The WMP will be prepared taking into account the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (Roads and Maritime, 2014b) and relevant Roads and Maritime Waste Fact Sheets. | Contractor | Pre-construction, Construction |
| W2 | General waste impacts | Waste accumulation, littering and general tidiness will be monitored during routine site inspections. | Contractor | Construction |
| W3 | Resource minimisation | Recycled, durable, and low embodied energy products will be used to reduce primary resource demand in instances where the materials are cost and performance competitive and comparable in environmental performance (e.g. where quality control specifications allow). | Contractor | Construction, Operation |

**Property and land use**

<p>| PL1 | Property acquisition | All property acquisition will be carried out in accordance with the Land Acquisition Information Guide (Roads and Maritime, 2012a) and the <em>Land Acquisition (Just Terms</em> | Roads and Maritime | Pre-construction |</p>
<table>
<thead>
<tr>
<th>PL2</th>
<th>Temporary utility service interruption</th>
<th>Residents and businesses will be notified before any utility service interruption.</th>
<th>Contractor</th>
<th>Pre-construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL3</td>
<td>Utility relocation and adjustment</td>
<td>• A utility management will be prepared to include:</td>
<td>Roads and Maritime Contractor</td>
<td>Detailed design Pre-construction Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• utility company consultation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• maintenance and emergency access requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• construction staging and programming conflicts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The proposal’s detailed design will allow for the concrete encasement of the water supply pipelines, the specifications and the extent of encasement would be agreed with WaterNSW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Security measures will be introduced to prevent access to any sensitive utility areas and corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The land around the water supply pipeline would be reinstated and stabilised as part of the finalisation work undertaken to build the proposal.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Greenhouse gas and climate change**

<table>
<thead>
<tr>
<th>GG1</th>
<th>Greenhouse gas emissions</th>
<th>The detailed design will consider opportunities to reduce building material quantities.</th>
<th>Roads and Maritime</th>
<th>Detailed design</th>
</tr>
</thead>
<tbody>
<tr>
<td>GG2</td>
<td>Climate change adaptation</td>
<td>The pavement design will ensure resilience against extreme temperature and more frequent and intense rainfall events where feasible and reasonable. The use of climate tolerant vegetation will be considered and its ability to provide pedestrian shading included in the UDLP.</td>
<td>Roads and Maritime</td>
<td>Detailed design</td>
</tr>
<tr>
<td>GG3</td>
<td>Greenhouse gas emissions</td>
<td>The proposal will reuse, recycle and upcycle demolition waste and excavated natural material where feasible and reasonable. Failing that, recycled materials or materials with a high recycled content will be used.</td>
<td>Contractor</td>
<td>Pre-construction Construction</td>
</tr>
<tr>
<td>GG4</td>
<td>Greenhouse gas emissions</td>
<td>Equipment performance and running and idling times will be monitored and managed to reduce emissions.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
<tr>
<td>GG5</td>
<td>Greenhouse gas emissions</td>
<td>Where feasible and reasonable, the proposal’s transport footprint (haul distance) will be reduced by purchasing materials and disposing of waste locally.</td>
<td>Contractor</td>
<td>Construction</td>
</tr>
</tbody>
</table>
| Cumulative impacts | Other developers will be consulted:  
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>CI1</td>
<td></td>
</tr>
</tbody>
</table>
|                   | • to obtain information about project timeframes and impacts and identify and implement appropriate safeguards and management measures to minimise cumulative impacts  
|                   | • to manage the interfaces of the proposal’s staging and programming in combination with the other projects occurring in the area.  
|                   | Roads and Maritime Contractor  
|                   | Pre-construction Construction  
| CI2               | All environmental management plans (including but not limited to the TMP and NMP) will be prepared to consider other developments in the area.  
|                   | Contractor  
|                   | Pre-construction  
|
### 5.3 Licensing and approvals

Table 5.2 lists the license and approval requirements that would need obtaining to cover various activities that would be undertaken in building the proposal. They relate to the statutory and planning framework presented in Chapter 4.

Table 5.2: Summary of licensing and approvals required

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Requirement</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 43 of the Protection of the Environment Operations Act 1997</strong></td>
<td>EPL from EPA as the proposal would involve the construction of a road longer than three kilometres and the excavation of more than 30,000 tonnes of material, both of which are scheduled activities.</td>
<td>Before starting work.</td>
</tr>
<tr>
<td><strong>Section 139(4) of the Heritage Act 1977</strong></td>
<td>Excavation permit from the Heritage Council of NSW before undertaking test excavations on the shed and yard complex.</td>
<td>Before starting test excavations, which need to take place before starting work.</td>
</tr>
<tr>
<td><strong>Section 140 of the Heritage Act 1977</strong></td>
<td>Exception notification from the Heritage Council of NSW if the shed and yard complex classify as a relic of local value.</td>
<td>Contingent on the above test excavations, also needed before starting work.</td>
</tr>
<tr>
<td><strong>Section 90 of the National Parks and Wildlife Act 1974</strong></td>
<td>Aboriginal heritage impact permit from OEH to cover four locations.</td>
<td>Prior to starting work.</td>
</tr>
<tr>
<td><strong>Section 138 of the Roads Act 1993</strong></td>
<td>Road Occupancy Licence from TMC.</td>
<td>Needed before specific related work takes place. Potentially requiring multiple applications.</td>
</tr>
</tbody>
</table>


Lyall & Associates, 2016, Archbold Road Flooding and Drainage Investigation.


NSW Department of Primary Industry (Fisheries), 2013, Policy Guidelines for Fish Habitat Conservation and Management.


NSW Government, 1997, State Regional Environmental Plan No.20 (Hawkesbury-Nepean River) (No.2 1997).


Roads and Maritime, 2008a, G10 Control of Traffic.

Roads and Maritime, 2008b, Landscape Guideline.


Roads and Maritime, 2011a, Guidelines for Biodiversity Offset.


Roads and Maritime, 2012b, Procedure for Aboriginal Cultural Heritage Consultation and Investigation


Roads and Maritime, 2012d, Bridge Aesthetics.


Roads and Maritime, 2014a, Beyond the Pavement.


Roads and Maritime, 2015, Unexpected Heritage Finds.


Worley Parsons, 2015, Updated South Creek Flood Study.
Appendix A

Public display notices
Archbold Road Upgrade and Extension

May 2017

The NSW Government is planning for a future upgrade and extension of Archbold Road between the Great Western Highway, Minchinbury, and Old Wallgrove Road, Eastern Creek. Roads and Maritime Services is inviting your feedback on the concept design and Review of Environmental Factors, with comments closing on Friday, 16 June 2017.

Background

Western Sydney’s population of nearly two million people is expected to increase to more than three million over the next 20 years. The NSW Government is planning for the future and has established the Western Sydney Employment Area (WSEA) as an employment hub to support economic growth in the area. It is anticipated the WSEA will provide more than 57,000 jobs over the next 30 years, making western Sydney an even better place to live and do business.

Roads and Maritime is planning for the proposed future upgrade and extension of Archbold Road. The existing two kilometre section of Archbold Road would be upgraded, and the road would be extended by a further three kilometres south to Old Wallgrove Road, Eastern Creek. The planned upgrade and extension of Archbold Road would support the development of the WSEA by providing a reliable, safe and efficient north-south route serving future transport needs in the region.

Roads and Maritime invited community feedback on the proposed access strategy in March 2016. After reviewing the submissions and considering feedback, we have now developed the concept design and Review of Environmental Factors.

Review of Environmental Factors

Roads and Maritime has prepared an environmental assessment, known as a Review of Environmental Factors, to examine the potential impact of the proposed Archbold Road upgrade and extension and outlined measures to reduce and manage potential impacts. The Review of Environmental Factors addresses potential environmental impacts including noise, heritage, biodiversity, property as well as impacts during construction.

Community involvement

The Archbold Road concept design and Review of Environmental Factors is on display for community and stakeholder comment until Friday, 16 June 2017.

During the display period, printed copies of the Review of Environmental Factors will be available to view in several locations and Roads and Maritime will also hold two community information sessions. The times and locations are listed on the back page of this newsletter.

All feedback received during the display of the concept design and Review of Environmental Factors will be considered by Roads and Maritime. At the end of the consultation period, a submissions report will be prepared and made available on the project website.
What are the benefits?

- Support for the expected growth of the Western Sydney Employment Area
- Improved freight connections to Sydney’s motorway network and wider interstate freight network
- Reduced travel times and transport costs
- Improved road safety
- Improved public transport and bus priority
- Residential and employment growth supported by providing a reliable road network
- Safe and effective pedestrian and cycling infrastructure

Why are there only east-facing ramps included in the proposed design?

Traffic investigations have supported the need for east-facing ramps which have been included in the current design. The design allows for west facing ramps in the future, should they be required.

Concept design

Some design improvements have been made since the last consultation. The improvements aim to address comments received from the community and further investigations carried out by Roads and Maritime.

Changes include:

- intersection upgrade at Archbold Road and the Great Western Highway, Minchinbury
- new traffic lights at Robinson Street, Minchinbury
- dedicated left lane on to the M4 Motorway entry ramp.

What happens next?

All comments received during the consultation period will be considered. Upon obtaining planning approval, Roads and Maritime will inform the community of the outcome of the Review of Environmental Factors, including any further changes made to the design. The next phases of the project are detailed design and construction, which are subject to funding.

Typical section – Archbold Road Upgrade and Extension

Diagram is indicative

Shared path          Northbound          Southbound          Footpath
Proposed bridge over WaterNSW Pipelines

Archbold Road and Lenore Drive intersection with traffic lights

Upgrade of Archbold Road and Great Western Highway intersection

Archbold Road and Sargents Road intersection with traffic lights

Archbold Road and Robinson Street intersection with traffic lights

Upgrade of Archbold Road and M4 Motorway exit ramp

M4 Motorway entry ramp

Proposal of right-turning lane extension

Keep existing bridge

Shared path bridge for pedestrians and cyclists

New bridge

M4 Motorway exit ramp

Dedicated left-turn lane to M4 Motorway entry ramp

Shared path for pedestrians and cyclists

Proposed access points to WSEA

Proposed road upgrade and extension

Median/Island

Proposed access points to WSEA

Key

Have your say

We are inviting your feedback and suggestions on the concept design and Review of Environmental Factors until Friday, 16 June 2017.


It is also available to view in hard copy at the following locations:

**Mount Druitt Library**
Ayers Grove, Mount Druitt
Monday to Thursday between 9.30am and 7.45pm
Friday between 9.30am and 6pm
Saturday between 9.30am and 4pm
Sunday between 12pm and 4pm

**St Clair Library**
Shop 12, St Clair Shopping Centre
Bennett Road and Endeavour Avenue, St Clair
Monday to Friday between 10am and 5.30pm
Saturday between 9am and 1pm

Community Information Sessions

Roads and Maritime will host two community information sessions where the project team will be available to answer any questions and receive feedback. A formal presentation will not be given, so please feel free to drop in any time during these sessions:

**Saturday, 3 June 2017 between 10am and 1pm**
Rooty Hill Senior Citizens Centre
34a Rooty Hill Road South, Rooty Hill

**Wednesday, 7 June 2017 between 5pm and 8pm**
The Mount Druitt Hub
Level 1, 9 Ayres Grove, Mount Druitt

To make a submission on the concept design and Review of Environmental Factors or to join the Archbold Road project mailing list, please contact the project team (see across for details)

Contact us

For more information and to provide feedback on the concept design and Review of Environmental Factors, please contact the project team:

**1800 548 813**
archboldroadupgrade@rms.nsw.gov.au

Archbold Road Upgrade,
Roads and Maritime Services,
PO Box 973, Parramatta NSW 2124


If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 548 813.

Privacy

Roads and Maritime Services (“RMS”) is subject to the Privacy and Personal Information Protection Act 1998 (“PPIP Act”) which requires that we comply with the Information Privacy Principles set out in the PPIP Act. All information in correspondence is collected for the sole purpose of assisting in the assessment of this proposal. The information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise RMS will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by RMS at 27 Argyle Street, Parramatta NSW 2150. You have the right to access and correct the information if you believe that it is incorrect.
Appendix B

Final concept design, proposal footprint and construction footprint
DATUM RL 57.0
HORIZONTAL ALIGNMENT
D=299.282
R=575.000 L=667.559
VERTICAL ALIGNMENT
P=-5.000% L=77.439 R=1883.528 L=75.426
P=-0.995% L=457.152
DESIGN SURFACE LEVELS
63.8 68.6
62.8 86
61.9 82
61.2 89
60.8 96
60.5 38
60.3 39
60.1 40
59.9 40
59.7 41
59.5 42
59.3 43
59.1 44
62.8 34
56.3 73
59.6 54
EXISTING SURFACE LEVELS
61.5 56
61.0 44
60.9 50
60.6 84
60.2 80
60.0 60
60.1 51
60.1 91
60.1 12
59.6 28
59.0 37
8.5 36
CHAINAGE
940.000 960.000 980.000 1000.000 1020.000 1040.000 1060.000 1080.000 1100.000 1120.000 1140.000 1160.000 1180.000
961.043
963.649
1036.469
1128.730
1220.000
1311.333
DATUM RL E00
HORIZONTAL ALIGNMENT
DATUM RL E00
VERTICAL ALIGNMENT

VERTICAL ALIGNMENT
P=-0.995% L=457.152

DESIGN SURFACE LEVELS
5 8.1 4 4
5 8.9 4 5
5 8.7 4 6
5 8.5 4 7
5 8.3 4 8
5 8.1 4 9
5 7.9 5 0
5 7.7 5 0
5 7.5 5 1
5 7.3 5 2
5 7.1 5 3
5 6.9 5 4
5 6.7 5 5

EXISTING SURFACE LEVELS
5 8.1 0 4
5 7.9 0 5
5 7.5 6 0
5 7.3 9 4
5 7.0 9 4
5 6.8 7 8
5 7.0 4 6
5 7.3 7 7
5 7.5 1 0
5 7.3 6 6
5 7.0 9 8
5 6.7 4 0
5 6.3 5 3

CHAINAGE
11 8 0 .0 0 0
12 0 0 .0 0 0
12 2 0 .0 0 0
12 4 0 .0 0 0
12 6 0 .0 0 0
12 8 0 .0 0 0
13 0 0 .0 0 0
13 2 0 .0 0 0
13 4 0 .0 0 0
13 6 0 .0 0 0
13 8 0 .0 0 0
14 0 0 .0 0 0
14 2 0 .0 0 0

PLAN VIEW - MC10
LONGITUDINAL SECTION - MC10

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NOT FOR CONSTRUCTION

EASTERN CREEK & WINDINGBURY - CITIES OF BLACKTOWN AND FAIRFIELD
ARCHBOLD ROAD
EXTENSION BETWEEN OLD WALLGROVE ROAD,
HORSLEY PARK AND THE GREAT WESTERN HIGHWAY
PLAN AND LONGITUDINAL SECTION - MC10
1180 - 1430

NOT FOR PRINTING OR DISTRIBUTION

LEGEND
MASTER STRING LABEL
CADASTRAL BOUNDARY
PROPOSED BOUNDARY

CLIENT
Transport Roads & Maritime Services
DIRECTOR GENERAL, TECHNICAL AND PROJECT SERVICES
WESTERN SYDNEY PROJECT OFFICE

DESIGNED / DRAWN
D.CHUNG
S.HOLVAST
S.HOLVAST
P.CAMPBELL
M.MATHIVANAR

DESIGN CHECK
S.HOLVAST
S.HOLVAST
P.CAMPBELL

PROJECT MNGR
M.MATHIVANAR

ISSUED FOR REF
TECHNICAL AND PROJECT SERVICES
WESTERN SYDNEY PROJECT OFFICE
**NOT FOR CONSTRUCTION**

**LEGEND**
- MASTER STRING LABEL
- CADASTRAL BOUNDARY
- PROPOSED BOUNDARY

**DATUM RL 0.00**

**HORIZONTAL ALIGNMENT**

**VERTICAL ALIGNMENT**

**DESIGN SURFACE LEVELS**

**EXISTING SURFACE LEVELS**

**CHANGE**

**LONGITUDINAL SECTION - MC10**

**PLAN VIEW - MC10**

**LONGITUDINAL SECTION - MC10**

**EASTERN CREEK & MINCHINBURY - CITIES OF BLACKTOWN AND FAIRFIELD**

**ARCHBOLD ROAD**

**EXTENSION BETWEEN OLD WALLGROVE ROAD, HORSLEY PARK AND THE GREAT WESTERN HIGHWAY**

**PLAN AND LONGITUDINAL SECTION - MC10**

**CONCEPT DESIGN**

**DATE**

**PREPARED FOR**

**DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING**

**FILE NAME ; FILE NAME**

**VERTICAL SCALE 1:200m**

**HORIZONTAL SCALE 1:1000m**

**DRAWINGS / DESIGN PREPARED BY**

**TITLE**

**NAME**

**DESIGN MNGR**

**PROJECT MNGR**

**DRAWN**

**DRG CHECK**

**DESIGN CHECK**

**TECHNICAL AND PROJECT SERVICES**

**WESTERN SYDNEY PROJECT OFFICE**

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PLAN VIEW - MC10

DATUM RL 50.0

HORIZONTAL ALIGNMENT

D=218.644
R=-1700.000 L=239.604

VERTICAL ALIGNMENT

R=3331.523 L=163.439 P=3.554% L=41.859
R=-4651.241 L=204.802

DESIGN SURFACE LEVELS

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56.173
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57.453
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58.415
58.761
59.022
54.870
63.587
71.981

EXISTING SURFACE LEVELS

52.376
53.355
54.570
55.828
56.854
57.606
58.143
58.387
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59.166
59.613
60.316
60.813
61.738

CHAINAGE

3180.000
3200.000
3220.000
3240.000
3260.000
3280.000
3300.000
3320.000
3340.000
3360.000
3380.000
3400.000
3420.000
3440.000
3460.000

LONGITUDINAL - MC10
### Plan View - MC10

**Horizontal Alignment**

- **Datum RL:** 47.0
- **Horizontal Alignment:**
  - D = 1214.361 R = -1250.000 L = 63.138

**Vertical Alignment**

- **P = -2.816% L = 160.338**
- **P = 0.615% L = 84.946**

**Design Surface Levels**

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</tr>
</tbody>
</table>

**Existing Pavement**

- **Levels:** 51.577, 51.014, 50.451, 49.888, 49.400, 48.988, 48.819, 48.856, 48.979, 49.102, 49.225, 49.348, 49.455, 49.597

**Chainsage**

<table>
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<th>Chainage</th>
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<td>4860.000</td>
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</tbody>
</table>

**Longitudinal Section - MC10**

**Legend**

- Master String Label
- Existing Pavement
- Cadastral Boundary
- Proposed Boundary
- Noise Wall

### Longitudinal Section - MC10

**Vertical Alignment**

- **P = -2.816% L = 160.338**
- **P = 0.615% L = 84.946**

**Horizontal Alignment**

- **D = 1214.361 R = -1250.000 L = 63.138**

**Design Surface Levels**

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</table>

**Existing Pavement**

- **Levels:** 51.577, 51.014, 50.451, 49.888, 49.400, 48.988, 48.819, 48.856, 48.979, 49.102, 49.225, 49.348, 49.455, 49.597

**Chainsage**

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</table>
DATUM RL 48.0
HORIZONTAL ALIGNMENT

D=127.974
R=1250.000 L=69.095

D=351.466

VERTICAL ALIGNMENT

P=0.473% L=66.582 R=1811.248 L=231.000

DESIGN SURFACE LEVELS

49.5
49.6
44
49.7
39
49.9
44
50.3
70
51.0
16
51.8
84
52.8
62
53.8
33
54.6
81
55.3
61
55.8
74
56.2
20

EXISTING SURFACE LEVELS

49.3
49.9
67
49.7
72
199
986
775
800
...
EASTERN CREEK & MINCHINBURY - CITIES OF BLACKTOWN AND FAIRFIELD
ARCHBOLD ROAD
EXTENSION BETWEEN OLD WALLGROVE ROAD,
HORSLEY PARK AND THE GREAT WESTERN HIGHWAY
CONCEPT DESIGN

DATUM R.L. 50.000
HORIZONTAL ALIGNMENT
VERTICAL ALIGNMENT
DESIGN LEVELS
EXISTING LEVELS
CHAINAGE

LONGITUDINAL SECTION - MCB1

FOR DETAILS REFER TO RA-0116

M4 WESTERN MOTORWAY

APPROX. HEIGHT = 6.91m APPROX. HEIGHT = 0.22m

MAX. WALL HEIGHT = 4.3m LENGTH = 355m
MAX. WALL HEIGHT = 7.5m LENGTH = 35m
PLAN VIEW - MCC1

LONGITUDINAL SECTION - MCC1

DATUM R.L. 51.000
HORIZONTAL ALIGNMENT
VERTICAL ALIGNMENT
DESIGN LEVELS
EXISTING LEVELS
STATION

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

100

0 1 2 3 4 5

3.092%

1.720%

L=414.296

G=-3.092% L=101.368

R=1662.398 L=80.000

G=1.720% L=395.528

LEGEND

MCC

EXISTING PAVEMENT

MASTER STRING LABEL

OVERPASS BRIDGE

PROPOSED BOUNDARY

RETAINING WALL

NOISE WALL

FOR DETAILS REFER TO RA-0117

LEGAL/TECHNICAL SERVICES

DESIGN & ENGINEERING SERVICES

WESTERN SYDNEY PROJECT OFFICE

NOT FOR CONSTRUCTION

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### Plan View - MCC1

- **Datum R.L. 52.000**
- **Height = 5.26m, Length = 770m**
- **Max Retaining Wall**
  - Height = 2.5m, Length = 770m

### Longitudinal Section - MCC1

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</tbody>
</table>

### Vertical Alignment

- **G = 1.720% L = 395.528**
- **R = 1500.000**

---

**Design Levels**

- **Existing Levels**
- **Design Levels**

---

**Legend**

- **MCS** - Master String Label
- **Exisiting Pavement**
- **Cadastral Boundary**
- **Proposed Boundary**
- **Retaining Wall**
- **Noise Wall**

**NOT FOR CONSTRUCTION**

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PLAN VIEW - MCC1

LONGITUDINAL SECTION - MCC1

RAW TEXT END
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AMD75 AND FILE NAME. ARF3/REV 1.2/PDF FOR DRAINAGE CALCULATIONS.
NOT FOR CONSTRUCTION

1. REFER TO LYALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOTE: REFER TO LYLAY AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

1. REFER TO LYLAY AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOT FOR CONSTRUCTION

1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM735 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

LEGEND
- CADASTRAL BOUNDARY
- PROPOSED BOUNDARY
- DESIGN CONTOUR - MAJOR
- DESIGN CONTOUR - MINOR
- EXISTING DRAINAGE PIPE
- PROPOSED DRAINAGE PIPE - SIZE TO BE DETERMINED
- PROPOSED DRAINAGE PIPE
- PROPOSED CULVERT
- PROPOSED DRAINAGE FLOW LINE
- WATER COURSE

NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM735 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

SM-0005

1430 - 1680
NOTES

1. REFER TO LYL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

LEGEND

- Master String Label
- Cadastral Boundary
- Proposed Boundary
- Design Contour - Major
- Design Contour - Minor
- Existing Drainage Pipe
- Proposed Drainage Pipe - Size to be Determined
- Proposed Culvert
- Proposed Drainage Flow Line
- Water Course

NOT FOR CONSTRUCTION
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM175 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

1. REFER TO LYALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM175 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
REFERENCES

1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

NOTES

1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

NOT FOR CONSTRUCTION
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AMDS7 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

LEGEND
MC10  MASTER STRING LABEL
CADASTRAL BOUNDARY
PROPOSED BOUNDARY
DESIGN CONTOUR - MAJOR
DESIGN CONTOUR - MINOR
MC200  EXISTING DRAINAGE PIPE
MC20  PROPOSED DRAINAGE PIPE - SIZE TO BE DETERMINED
MC150  PROPOSED DRAINAGE PIPE
MC100  PROPOSED CULVERT
MC750  PROPOSED DRAINAGE FLOW LINE
MC500  PROPOSED DRAINAGE FLOW LINE
MC200  WATER COURSE

NOT FOR CONSTRUCTION
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

NOT FOR CONSTRUCTION

TRANSPORT ROADS & MARITIME SERVICES

DESIGN AND PROJECT SERVICES

TECHNICAL AND PROJECT SERVICES

WESTERN SYDNEY PROJECT OFFICE

© Roads and Maritime Services
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOTES
1. REFER TO LVALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

REFERENCES:
SM-0016 A
SM-0101

 LEGEND
MASTER STRING LABEL
OVERPASS BRIDGE
EXISTING PAVEMENT
CADASTRAL BOUNDARY
PROPOSED BOUNDARY
RETIWING WALL
DESIGN CONTOUR - MAJOR
DESIGN CONTOUR - MINOR
EXISTING DRAINAGE PIPE
#450
PROPOSED DRAINAGE PIPE - SIZE TO BE DETERMINED
#750
PROPOSED DRAINAGE PIPE
1.14
PROPOSED CULVERT
PROPOSED DRAINAGE FLOW LINE
WATER COURSE

CONTACT
Transport Roads & Maritime Services
TECHNICAL AND PROJECT SERVICES
WESTERN SYDNEY PROJECT OFFICE

DESIGNER
D. CHUNG
S. HOLVAST
S. HOLVAST
P. CAMPBELL
P. CAMPBELL
M. MATHIVANAR

PLOT DATE / TIME

PLOT BY

DRAWN

DRG CHECK

DESIGN MNGR

PROJECT MNGR

DATE

CONCEPT DESIGN

© Roads and Maritime Services

NOT FOR CONSTRUCTION
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. TD757 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOT FOR CONSTRUCTION
NOTES
1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM7051 AND FILE NAME. ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.
NOT FOR CONSTRUCTION

1. REFER TO LYALL AND ASSOCIATES CONSULTING WATER ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM375 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

LEGEND
- MASTER STRING LABEL
- OVERPASS BRIDGE
- EXISTING PAVEMENT
- CADASTRAL BOUNDARY
- PROPOSED BOUNDARY
- RETAINING WALL
- DESIGN CONTOUR - MAJOR
- DESIGN CONTOUR - MINOR
- EXISTING DRAINAGE PIPE
- PROPOSED DRAINAGE PIPE - SIZE TO BE DETERMINED
- PROPOSED CULVERT
- PROPOSED DRAINAGE FLOW LINE
- WATER COURSE

1. REFER TO SM-0017 FOR DETAILS

NOTES

1. REFER TO SM-0101 FOR DETAILS

FOR DETAILS REFER TO SM-0017

FOR DETAILS REFER TO SM-0017

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NOT FOR CONSTRUCTION

1. REFER TO LVALL AND ASSOCIATES CONSULTING ENGINEERS FLOOD AND DRAINAGE INVESTIGATION REPORT - MARCH 2016 JOB NO. AM075 AND FILE NAME: ARFDI (REV 1.2).PDF FOR DRAINAGE CALCULATIONS.

NOTES

CALENDAR DATUM

NAD27 1985

0

LEGEND

MASTER STRING LABEL
EXISTING PAVEMENT
CADASTRAL BOUNDARY
PROPOSED BOUNDARY
REINFORCEMENT WALL
DESIGN CONTOUR - MAJOR
DESIGN CONTOUR - MINOR
EXISTING DRAINAGE PIPE
PROPOSED DRAINAGE PIPE - SIZE TO BE DETERMINED
PROPOSED DRAINAGE PIPE
PROPOSED CULVERT
PROPOSED DRAINAGE FLOW LINE
WATER COURSE

REFERENCE MAP

REFERENCES

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## Notes


### Diagram

- **Legend**
  - Master String Label
  - Existing Pavement
  - Cadastral Boundary
  - Proposed Boundary
  - Retaining Wall
  - Design Contour - Major
  - Design Contour - Minor
  - Existing Drainage Pipe
  - Proposed Drainage Pipe - Size to be Determined
  - Proposed Drainage Pipe
  - Proposed Culvert
  - Proposed Drainage Flow Line
  - Water Course

### Technical Details

- **Scale**
  - Vertical Scale: 1:200m
  - Horizontal Scale: 1:1000m

- **Drawings/Design Prepared By**
  - Title: Design Model File(S) Used for Documentation of This Drawing
  - File Name: File Name

- **Design Lot Code**
  - Eastern Creek & Minchinbury, Cities of Blacktown and Fairfield
  - Archbold Road
  - Extension between Old Wallgrove Road, Horsley Park and the Great Western Highway

- **Design Model File(S) Used for Documentation of This Drawing**
  - File Name: File Name

- **Design Manager**
  - P. Campbell

- **Project Manager**
  - P. Campbell

- **Date**
  - 17-05-17

- **File**
  - A3

- **Client**
  - 05101520

- **Prepared for**
  - Technical and Project Services
  - Western Sydney Project Office

- **Approved By**
  - S. Holvast
  - S. Holvast
  - D. Chung

- **Drawn By**
  - S. Holvast
  - P. Campbell

- **Plot Date/Time**
  - Date: __________
  - Time: __________

- **Plot By**
  - A. Smets

- **Not for Construction**
  - © Roads and Maritime Services

---

**NOTES**

LEGAL

NOTE:

1. THE UTILITIES INFORMATION ON THESE DRAWINGS IS BASED ON A
UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF
ALL UTILITY SERVICES.

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

NOTES

THE UTILITIES INFORMATION ON THESE DRAWINGS IS BASED ON A
UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF
ALL UTILITY SERVICES.

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750
NOTES

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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

---

**Legend**

- **MC10**: MASTER STRING LABEL
- **MC30**: CADASTRAL BOUNDARY
- **EU**: ELECTRICAL LINE (UNDERGROUND)
- **E**: ELECTRICAL LINE - MAJOR TRANSMISSION
- **EC**: ELECTRICAL LINE - MINOR TRANSMISSION
- **Du**: OPTICAL FIBRE
- **Th**: TELEPHONE - HOUSE CONNECTION
- **TEL**: TELEPHONE LINE
- **H**: HIGH PRESSURE GAS LINE
- **LS**: LOW PRESSURE GAS LINE
- **G2**: OXYGEN GAS LINE
- **P**: WATER MAIN
- **W**: WATER PIPELINE (ABOVE GROUND)
- **O1**: OXYGEN WATER MAIN
- **O2**: OXYGEN WATER PIPELINE
- **W1**: WATER HOUSE CONNECTION
- **S**: SEWER MAIN
- **S2**: OXYGEN SEWER MAIN

---

**Technical and Project Services**

- Transport Roads & Maritime Services
- Technical and Project Services
- Western Sydney Project Office

**Project Details**

- **Project Name**: Eastern Creek & Minchinbury - Cities of Blacktown and Fairfield
- **Archiboil Rd**: Extension between Old Wallgrove Road, Horsley Park and the Great Western Highway
- **Utility Plan**: MC10
- **Utility Survey**: UT-0003

---

**DESIGNER**

- D. Chung
- S. Holvast
- S. Holvast
- P. Campbell
- M. Mathivanar

---

**PREPARED FOR**

- TECHNICAL AND PROJECT SERVICES
- WESTERN SYDNEY PROJECT OFFICE

---

**NOT FOR CONSTRUCTION**

---

**NOTES**

**SCALE**

- Vertical Scale: 1:200m
- Horizontal Scale: 1:1000m

**DATE**

- 17-05-17
NOT FOR CONSTRUCTION

1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A
UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF
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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

NOTES
NOTES

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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

---

**LEGEND**

- **MASTER STRING LABEL**
- **CADASTRAL BOUNDARY**
- **ELECTRICAL LINE (UNDERGROUND)**
- **ELECTRICAL LINE - MAJOR TRANSMISSION**
- **ELECTRICAL LINE - MINOR TRANSMISSION**
- **ELECTRICAL CONDUIT**
- **OPTICAL FIBRE**
- **TELEPHONE - HOUSE CONNECTION**
- **TELEPHONE LINE**
- **HIGH PRESSURE GAS LINE**
- **LOW PRESSURE GAS LINE**
- **DIGITISED GAS LINE**
- **WATER MAIN**
- **WATER PIPELINE (ABOVE GROUND)**
- **DIGITISED WATER MAIN**
- **WATER HOUSE CONNECTION**
- **SEWER MAIN**
- **DIGITISED SEWER MAIN**

---

**TRANSPORT ROADS & MARITIME SERVICES**

**EASTERN CREEK & MACHINERY SITE BETWEEN BIGHTOWN AND FAIRFIELD ROAD, ARCHBOLD ROAD, EXTENSION BETWEEN OLD WALLGROVE ROAD, HORSELEY PARK AND THE GREAT WESTERN HIGHWAY, MC10**

**UTILITY PLAN - MC10**

**SHEET 05 OF 20**

**DS2015/002622**
NOTES

1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

3. THE DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
NOTES

1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A
UTILITY SURVEY.
CAUTION SHOULD BE EXERISED WHEN WORKING IN THE VICINITY OF
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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

REVISION 01

DS2015 / 002622

A3

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NOT FOR CONSTRUCTION
NOTES
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UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF
ALL UTILITY SERVICES.
2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750
NOTES

1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

LEGEND
- MASTER STRING LABEL
- CADASTRAL BOUNDARY
- ELECTRICAL LINE (UNDERGROUND)
- ELECTRICAL LINE - MAJOR TRANSMISSION
- ELECTRICAL LINE - MINOR TRANSMISSION
- ELECTRICAL CONDUIT
- OPTICAL FIBRE
- TELEPHONE - HOUSE CONNECTION
- TELEPHONE LINE
- HIGH PRESSURE GAS LINE
- LOW PRESSURE GAS LINE
- DIGITISED GAS LINE
- WATER MAIN
- WATER PIPELINE (ABOVE GROUND)
- DIGITISED WATER MAIN
- WATER HOUSE CONNECTION
- SEWER MAIN
- DIGITISED SEWER MAIN

Scales on A3 Size Drawing

- Vertical Scale 1:200m
- Horizontal Scale 1:1000m

Drawing Size

- A3

D.CHIUNG
S.BOLVAST
S.BOLVAST
P.CAMPBELL
P.CAMPBELL
M.MATHIVANAR

DESIGN

- D.CHUNG
- S.HOLVAST
- S.HOLVAST
- P.CAMPBELL
- P.CAMPBELL
- M.MATHIVANAR

PROJECT MGR

- D.CHUNG
- S.HOLVAST
- S.HOLVAST
- P.CAMPBELL
- P.CAMPBELL
- M.MATHIVANAR

CONCEPT DESIGN
NOTES
1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A UTILITY SURVEY. CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.
2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

EASTERN CREEK & MINCHINBURY - CITY OF BLACKTOWN AND FAIRFIELD
ARCHBOLD ROAD
EXTENSION BETWEEN OLD WALLGROVE ROAD,
HORSLEY PARK AND THE GREAT WESTERN HIGHWAY
UTILITY PLAN - MC10
SBM - 360

4/10 D CHUNG
S H OLVAST
S H OLVAST
P CAMPBELL
P CAMPBELL
M MATHIVANAR

Transport Roads & Maritime Services
TECHNICAL AND PROJECT SERVICES
T WESTERN SYDNEY PROJECT OFFICE

APPROX. 830m OF HIGH PRESSURE OF GAS LINE TO BE RELOCATED OR PROTECTED.
NOTES

1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A
CADASTRAL BOUNDARY

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

APPROX. 13m OF HIGH PRESSURE GAS LINE TO BE RELOCATED OR PROTECTED

APPROX. 83m OF HIGH PRESSURE GAS LINE TO BE RELOCATED OR PROTECTED

UTILITY PLAN - MC10

ARCHBOLD ROAD

HORSLEY PARK

FROM

TO MACHINIST

EXTENSION BETWEEN OLD WALGROVE ROAD, HORSLEY PARK AND THE GREAT WESTERN HIGHWAY

HORM AND PROJECT SERVICES WESTERN SYDNEY PROJECT OFFICE

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NOTES
1. THE UTILITIES INFORMATION ON THESE DRAWINGS ARE BASED ON A
UTILITY SURVEY.
CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF
ALL UTILITY SERVICES.

2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750

REFER TO UT407 FOR DETAILS

APPROX. 366m OF TELEPHONE LINE TO BE RELOCATED OR PROTECTED.

APPROX. 190m OF HIGH PRESSURE OF GAS LINE TO BE RELOCATED OR PROTECTED.

UTILITY PLAN - MC10

EXTENSION BETWEEN OLD WALLГОVE ROAD,
ARCHBOLD ROAD
HORSELY PARK AND THE GREAT WESTERN HIGHWAY
UTILITY PLAN - MC10

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APPROX. 516m of HIGH PRESSURE OF GAS LINE TO BE RELOCATED OR PROTECTED.

APPROX. 79m OF OPTICAL FIBRE TO BE RELOCATED OR PROTECTED.

APPROX. 126m OF UNDERGROUND ELECTRICAL LINE TO BE RELOCATED OR PROTECTED.

APPROX. 20m OF SEWER MAIN TO BE RELOCATED OR PROTECTED.
NOTES
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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750
NOT FOR CONSTRUCTION

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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4170

EBAY, 500 - 2400

M4 WESTERN MOTORWAY

EXTENSION BETWEEN OLD WALGROVE ROAD, HORSLEY PARK AND THE GREAT WESTERN HIGHWAY
UTILITY PLAN - MCC1

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NOTES

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2. UTILITY SURVEY DRAWINGS BY RMS NO. UT4750
Appendix C

Additional flooding and drainage information
Responses to Council Comments on Drainage Related Issues

1. The drawings of the concept alignment in the Flooding and Drainage Investigation (Appendix L) are inconsistent with the drawings in the Concept Design (Appendix N).

Response

[Roads and Maritime to address. While the Flooding and Drainage Investigation report was updated in March 2017 to incorporate the latest road design, the REF that was issued to Council contained the earlier version of the report dated May 2016.]

2. None of the hydrological or hydraulic modelling undertaken in the Investigation has been provided for review. As a result and the insufficient time provide to review, the Investigation has not been reviewed in detail.

Response

Copies of the hydrologic/hydraulic models that were developed as part of the flooding and drainage investigation for the Archbold Road Upgrade & Extension are available on request.

3. Council has an existing and developed XP-RAFTS model for Precinct of the WSEA, which predates the drainage investigation and hasn’t been referenced in the modelling. This model was used as the basis of the flood study by the Department of Planning for the Watercycle Management Study for the Ropes Creek Precinct.

Response

Section 4.3 of the Flooding and Drainage Investigation report (Appendix L of the REF) provides a comparison of peak flow estimates from the present investigation with those derived from the XP-RAFTS models that were developed as part of the ‘Stormwater Management and Trunk Drainage Strategy - Lot 5 DP 262213, Ropes Creek Employment Precinct’ (Brown Consulting, 2010) and the South Creek Flood Study (WorleyParsons, 2015). The key findings of this comparison were as follows:

“The peak 100 year ARI flow in Ropes Creek at the Great Western Highway (location RC3) derived by RAFTS during the present investigation compared closely with the value presented in WorleyParsons, 2015. It is noted that WorleyParsons, 2015 determined the storm critical duration to be 36 hours, in comparison to a critical duration of 9 hours from the present investigation. However, the difference between peak flows from the 9 and 36 hour storms derived by RAFTS during the present investigation is less than 10 per cent. The peak 100 year ARI flow derived by RAFTS during the present investigation in Ropes Creek north of Lenore Drive (location RC2) is almost half the corresponding value presented in Brown Consulting, 2010. It is noted that the catchment area presented in Brown Consulting, 2010 (2,122 hectares) compares closely with the catchment area calculated in the present investigation (2,139 hectares). It is also noted that the PRM estimate presented in Brown Consulting, 2010 (228 m3/s) differs significantly to the PRM estimate calculated in the present investigation (130 m3/s). The PRM estimate in Brown Consulting, 2010 is higher than would be expected for the catchment area draining to location RC2.

In summary, the peak 100 year ARI flows in Ropes Creek derived by RAFTS during the present investigation compared closely with those derived by the PRM approach and WorleyParsons, 2015. Based on the findings of the present investigation and WorleyParsons, 2015, the relatively large peak flow estimates presented in Brown Consulting, 2010 are considered to be an overestimate.”

(Extract from Section 4.3 of the Flooding and Drainage Investigation report)
4. For the developed case model the modelling needs to include the area of the landfill void, as this will ultimately drain to the road corridor.

Response

As noted in Section 6.2.3 of the Flooding and Drainage Investigation report (Appendix L of the REF), the sizing of cross drainage was based on a level of development consistent with present day conditions. While a sensitivity analyses was also undertaken to assess the impact of future development on peak flows in each cross drainage, the assessment was based on an increase in impervious area only. During detailed design the assessment of future development conditions will be updated to include the extent of catchments under ultimate conditions as identified by Council and the size of cross drainage XD07 will be reassessed accordingly.

5. The proposed grading of the road between XD02 and XD03 substantially blocks the existing overland flow path. The flood modelling at this location shows a maximum afflux of 200mm, how does this increase in flood level impact on the adjacent dwellings and is adequate freeboard maintained. The Proposal shall demonstrate no adverse impact on the adjoining private property. More information is to be provided on the cross drainage that connects the open channel from XD04 to Archbold Road, to proposed cross drainage XD02.

Response

Figure 1 (2 sheets) (refer attachment) shows the inlet to cross drainage XD02b comprises a series of grated inlet pits located along the base of the grass lined channel that runs in a north-westerly direction from the outlet of cross drainage XD04. An earth mound is located between the grass lined channel and the adjoining properties. The top of the earth mound is about 2.2 m above the base of the grass lined channel and about 1 m above the existing level of Archbold Road. As a result, flow that surcharges the grass lined channel will discharge onto Archbold Road rather than overtopping the earth mound.

Under post-project conditions the existing earth mound would provide 0.8 m freeboard to the 100 year ARI peak flood level should there be a partial blockage to the grated inlet pits located along the base of the grass lined channel whereby their clear opening area is reduced by 50 per cent. However, if the grated inlet pits were to fully block then the raised level of Archbold Road would result in a portion of the flow that surcharges the grass lined channel overtopping the earth mound and inundating the properties to its north.

In light of the above it is proposed to raise the level of the earth mound by up to 0.9 m to provide 0.5 m freeboard to the peak 100 year ARI flood level should there be a complete blockage to the grated inlet pits that are located along the base of the grass lined channel. A concept layout of the raised earth mound is provided on Figure 1 (2 sheets), which also shows a length of flood protection barrier to tie the earth mound into the road cutting.

6. The WSEA Precinct Planning for Stage 3 shows a 4 leg intersection at Access Road 7. Whereas the concept design shows only a 3 leg intersection. However, the drainage drawings show a 4 leg intersection at this location. Any proposed amendment to the Precinct Plan need to be justified and the impacts on the road network assessed.

Response

[Roads and Maritime to address. While the flooding and drainage report was updated in March 2017 to incorporate the latest road design, the REF that was issued to Council contained the earlier version of the report dated May 2016.]

7. In the Precinct Planning and CP 18 Major Drainage Line 2 and 3 and the next minor low point to the south are combined at a single location, at Access Road 7 (XD07). The proposed swale drain from Access Road 6 to 7 on the eastern side of the road is to be graded to Access Road 7.
Response

Council's comments on the future layout of the precinct are noted. As identified in Section 6.4.4 of the Flooding and Drainage Investigation the details of concept drainage strategy will need to be confirmed during the detailed design based on the latest development layouts within the WSEA Eastern Creek and Ropes Creek Precincts and in consultation with Council. This will include the details identified by Council in this comment.

The size of cross drainage XD07 will be reviewed and updated as required during detailed design to control runoff from the ultimate development conditions in the upstream catchment, including runoff from the diversion of cross drainage XD06 and XD09.

8. XD07 has been sized a 4 cell 900mm diameter piped culvert. Council's CP 18 proposes a 2400 x 1200 RCBC at this location. This is currently being conceptually designed as part of the proposed subdivision to the west of this location.

Response

The size of cross drainage XD07 was based on the assumption that separate cross drainage structures would be provide at XD06, XD07 and XD09. The arrangement at these three cross drainage locations will be reviewed and updated during detailed design to integrate with the latest details of the proposed subdivisions to the west of this location.

9. Major Drainage Line 4 (Ropes Creek Tributary in Precinct Plan and CP18) is a 2nd order riparian corridor and zoned E2 environmental conservation. In the Plan and CP 18 it was proposed that a bridge be provided at this location, crossing XD10.

Response

The ‘Guidelines for Riparian Corridors on Waterfront Land’ (NSW Office of Water (NoW), 2012a) and ‘Guidelines for Watercourse Crossings on Waterfront Land’ (NoW, 2012b) allow for either a bridge or box culvert crossing of a 2nd Order stream. Notwithstanding this, the provision of a bridge crossing in lieu of a box culvert at cross drainage XD10 will be incorporated into the detailed design to be consistent with Council’s Contributions Plan 18. [Roads and Maritime to advise].

10. The proposed water quality basin at XD10 is located within the core riparian zone of the watercourse. This is not in accordance with the Office of Water guidelines.

Response

During detailed design the location of the water quality basin adjacent to cross drainage XD10 will be reviewed and updated to be a minimum 10 m (i.e. 50% of the vegetated riparian zone) from the top of the high bank of the watercourse in accordance with NoW, 2012a. This is likely to require the basin to be shifted about 5 m south from its currently proposed location in the concept drainage strategy.

11. Major Drainage Line 7 is a 2nd order riparian corridor and the proposed water quality basin at XD13 is located within the core riparian zone of the watercourse. This is not in accordance with the Office of Water guidelines.

Response

During detailed design the location of the water quality basin adjacent to cross drainage XD13 will be reviewed and updated to be a minimum 10 m (i.e. 50% of the vegetated riparian zone) from the top of the high bank of the watercourse in accordance with NoW, 2012a. This is likely to require the basin to be shifted about 3 m south from its currently proposed location in the concept drainage strategy.
12. The long term operation and maintenance responsibilities for the proposed water quality basins needs to be determined. If it is proposed to hand these over to Council, they are to be design in accordance with Council’s requirements.

Response

[Roads and Maritime to confirm the planned ownership and include requirements in the detailed design of the water quality basins as required].

13. The stormwater management and drainage design needs to be coordinated with Council's S94 plan CP 18 and the precinct planning outcomes.

Response

As identified in Section 6.4.4 of the Flooding and Drainage Investigation, the details of concept drainage strategy will be confirmed during the detailed design based on the latest details of the proposed subdivisions within the WSEA Eastern Creek and Ropes Creek Precincts and in consultation with Council, including the details contained in Council’s Section 94 Contributions Plan 18.
FLOODING AND DRAINAGE INVESTIGATION

Scale: 1:4,000

LEGEND

- Extent of Catchment
- Extent of Catchment Draining into Upgraded Cross Drainage Structures and Identifier
- Existing Piped Drainage System
- Existing Piped Drainage System to be removed or abandoned
- Proposed Catch/Diversion Drain
- Proposed Piped Drainage System
- Proposed Basin
- Peak Flow Location and Identifier
- Existing Dam

ARCHBOLD ROAD
CONCEPT LAYOUT OF RAISED EARTH MOUND AND FLOOD PROTECTION BARRIER

Figure 1
Sheet 1 of 2
FLOOD PROTECTION BARRIER
1.0 m, 10.1 m HIGH WALL TO TIE IN WITH RAISED EARTH MOUND

EXISTING EARTH MOUND
RAISE EARTH MOUND BY MAXIMUM OF 1.0 m ON 1:4 AND 1:5 HORIZONTAL SLOPES WITH 1:1.5 TOP WIDTH

LEGEND ARCHBOLD ROAD
EXISTING PIPE DRAINAGE SYSTEM EXISTING PIPE DRAINAGE SYSTEM

FLOODING AND DRAINAGE INVESTIGATION
Design Strings
Scale: 1:1,000

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to be removed or abandoned

XD01

U P G R A D E D C R O S S D R A I N A G E F I G U R E 1

Design Road Control String and Chainage
Proposed Piped Drainage System
Proposed Piped Drainage System to be removed or abandoned
Proposed Piped Drainage System Structure and Identifier
Proposed Catch/Diversion Drain

PROPOSED EAST FACING ON RAMP

EXISTING GRASS-LINED CHANNEL

ALTERNATIVE FOOTPRINT OF RELOCATED STORMWATER DETENTION BASIN

RELOCATED STORMWATER DETENTION BASIN AT LOCATION P01

PROPOSED CATCH/DIVERGENT DRAIN

CONCEPT LAYOUT OF RAISED EARTH MOUND AND FLOOD PROTECTION BARRIER

ARCHBOLD ROAD
FLOODING AND DRAINAGE INVESTIGATION
Figure 1
Sheet 2 of 2