ORANGE
Australia's Colour City

SUMMARY OF THE ENVIRONMENTAL IMPACT STATEMENT

Completion of the North Orange By-pass from Astill Drive (North) to Chinaman's Bend, Orange

Prepared by:

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Introduction

This *Environmental Impact Statement* (EIS) has been prepared by R.W. Corkery & Co. Pty. Limited on behalf of Orange City Council ('Council') Technical Services Division. The EIS assesses the potential environmental impacts of Council's proposal to construct and operate the remaining sections of the North Orange By-pass from Astill Drive (North) to Chinaman's Bend on the Mitchell Highway ('the proposed road') (**Figure A**).

The Applicant for the proposed road is the Technical Services Division of Council. The application is to be assessed by the Development Services Division of Council.

Throughout the preparation of the application, Council has maintained a clear demarcation between the Development and Technical Services Divisions.

The design of the proposed road has been undertaken by Council in consultation with R.W. Corkery & Co. Pty. Limited (RWC), who managed the environmental investigation. A team of five specialist consultants was managed by RWC to assess specific environmental aspects of the proposed road.

Background

The requirement for a potential road route around the Central Business District (CBD) and residential areas of the City of Orange

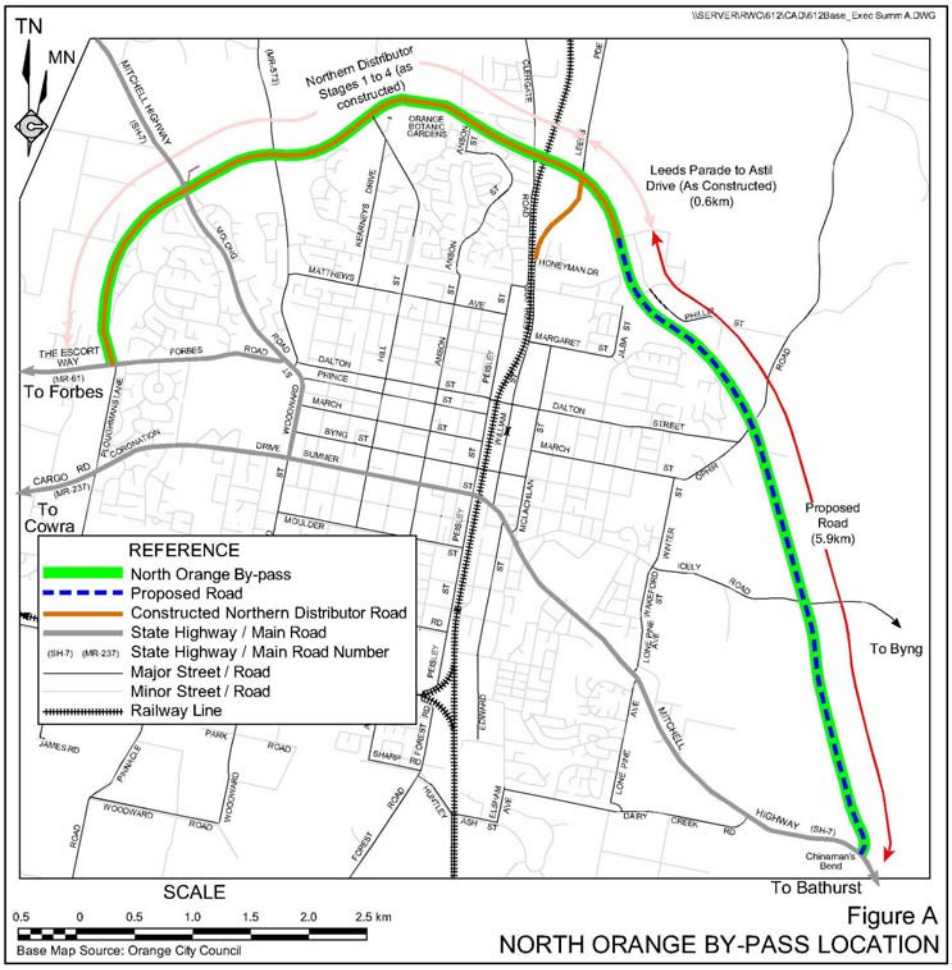


Figure A
NORTH ORANGE BY-PASS LOCATION

was identified almost 50 years ago. In 1981, Council adopted a long term proposal for a "ring-road" for the City. This was recognised by the incorporation of a 'Distributor Road' Zone in the *Orange Local Environmental Plan 2000*. In 2004, R.W. Corkery & Co. Pty. Limited prepared an EIS to support an application to construct and operate the Northern Distributor Road (NDR) from the Escort Way to Leeds Parade. Construction of that section of the road was completed in March 2006. Subsequently, in 2006, approval was granted to extend the eastern end of the NDR from Leeds Parade to Astill Drive (North). Construction of that section was completed in February 2008.

Road Corridor

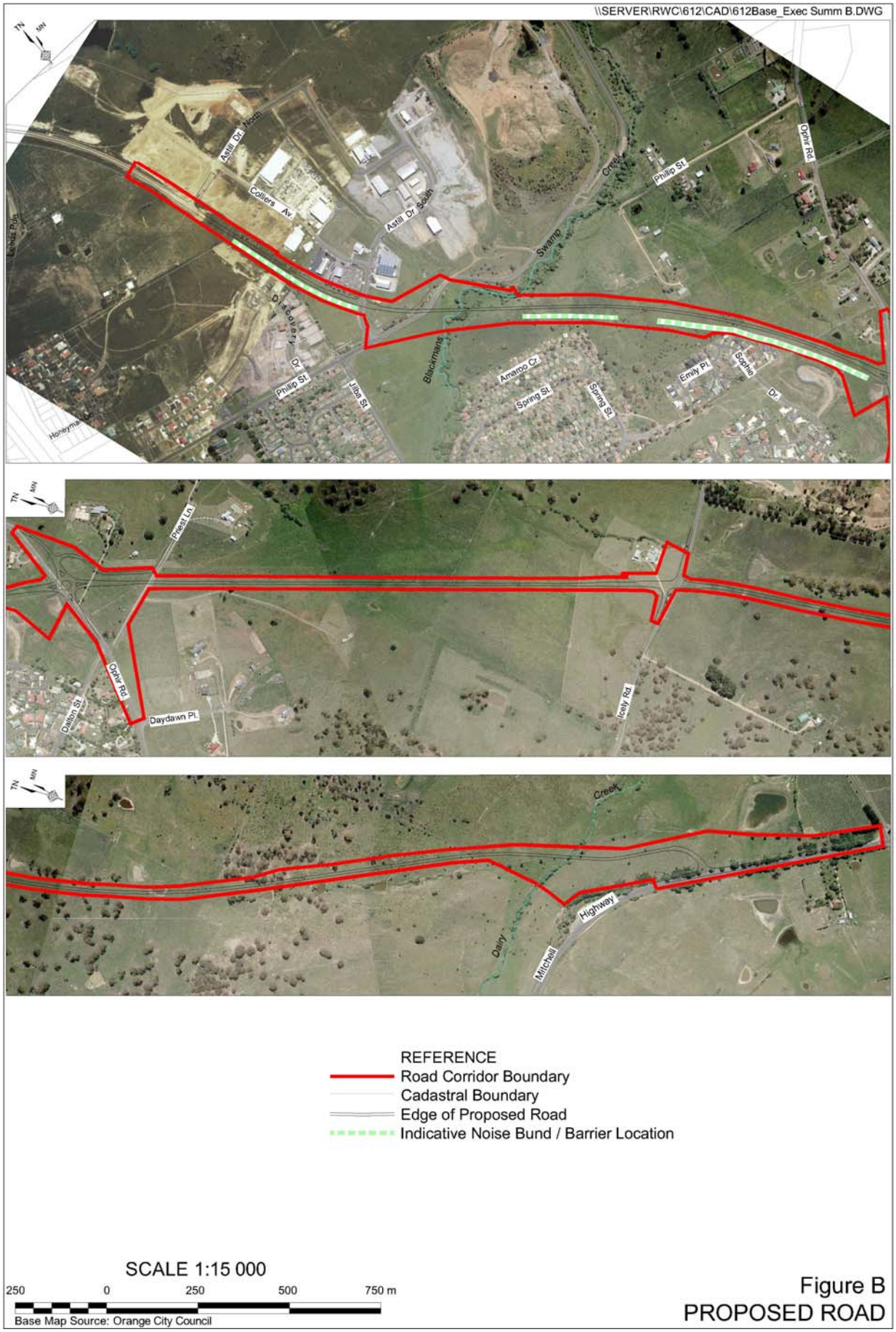
The proposed road would be constructed entirely within a road corridor approximately 5.9km long and between 30m and 80m wide. The road corridor has a total area of approximately 43.4ha and is largely coincident with the 'Distributor Road' Zone identified in the *Orange Local Environmental Plan 2000*. Council either controls or would acquire all land within the road corridor prior to commencing construction operations.

The Proposal

Overview

The construction of the proposed road would comprise the following components (**Figure B**).

- Construction of two creek crossings, one over Blackmans Swamp Creek and one over Dairy Creek.
- Construction of the road formation suitable for a sealed, two lane rural road, including establishing appropriate cut and fill areas and drainage structures.


\\SERVER\RWC\612\CAD\612Base_Exec Summ B.DWG
TN MN
Astill Dr North
Colliers Av.
Astill Dr South
Swamp
Creek
Phillip St
Ophir Rd
Discovery Dr
Phillip St
Lilba St
Blackmans
Amaroo Cr.
Spring St
Spring St
Emily Pl
Sophie Dr
Honeyman
Priest Ln
Ophir Rd
Dalton St
Daydawn Pl
Icely Rd
Creek
Highway
Dairy
Mitchell
REFERENCE
Road Corridor Boundary
Cadastral Boundary
Edge of Proposed Road
Indicative Noise Bund / Barrier Location
SCALE 1:15 000
250 0 250 500 750 m
Base Map Source: Orange City Council
Figure B
PROPOSED ROAD

- Construction of the following intersections (refer to **Figure C**).
  - Astill Drive (North): T-Intersection.
  - Astill Drive (South): T-intersection (left-in and left-out only).
  - Ophir Road: roundabout.
  - Icely Road: right-left T-Intersection.
  - Mitchell Highway: T-intersection with an east-bound slip lane.
- Construct appropriate bunding and other noise-mitigation structures.
- Installation of appropriate land-scaping and revegetation to minimise the visual impact of the proposed road.
- Implementation of a speed limit of 100km per hour from the southern end of the proposed road at the Mitchell Highway to approximately 150m south of the intersection with Ophir Road. The remaining sections of the proposed road would have a speed limit of 80km per hour.

Road Design

The proposed road would be a two-lane, rural road and would be designed and constructed in accordance with the relevant RTA and other guidelines and would include:

- a minimum sealed lane width of 3.5m;
- a minimum sealed and unsealed shoulder width of 1.0m and 1.0m respectively;
- a metal road-side safety barrier where required; and
- a maximum grade of approximately 5%.

The construction of creek crossings across Blackmans Swamp and Dairy Creeks would be required.

Council proposes to construct a bridge over Blackmans Swamp Creek. The bridge would have a span of approximately 18m, a width between kerbs of approximately 11m and would have a maximum clearance from the bottom of the bridge girders to the creek invert of approximately 3.7m. Council anticipates that the base of the proposed bridge would be approximately 0.34m above the height of a 1 in 100 year flood event.

Council proposes to construct an arch structure over Dairy Creek. The arch would have a span of approximately 7m and a height of approximately 3.5m.

Signage, Lighting, Noise Barriers

Council would erect appropriate speed limit, warning and other signs adjacent to the proposed road. In particular, Council would erect automated warning signs that would flash to warn motorists when visibility is reduced to 175m or less in the vicinity of the Icely Road intersection.

Appropriate street lighting would be constructed at the Ophir Road and Astill Drive (North and South) intersections.

Noise barriers between 3.0m and 5.5m high would be constructed adjacent to the proposed road in areas indicated on **Figure B**. These barriers would comprise an earth bund with a timber or concrete fence constructed along the top of the bund. The proposed earth bunds would be constructed during construction of the proposed road.

The timber or concrete fence would be constructed within 2 years of the opening of the road and the final height of the fence would be determined based on noise monitoring undertaken at that time.

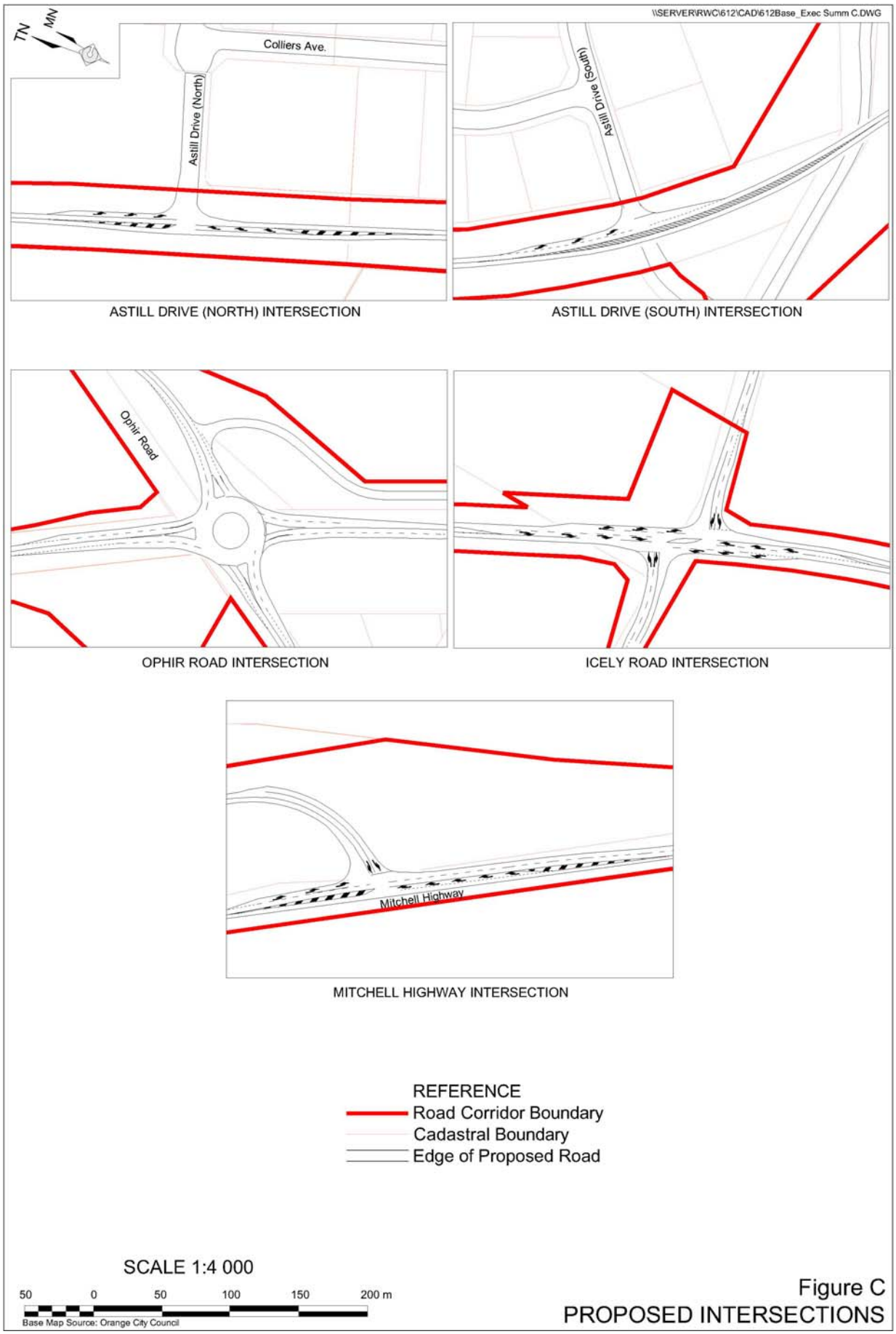


Figure C
PROPOSED INTERSECTIONS

Road Construction

Council proposes to undertake construction of the proposed road over a 2 to 3 year period, with construction proposed to be complete by the end of 2011. Prior to commencing construction operations, Council would consult with residents in the vicinity of the road corridor to advise them of the proposed construction activities and timetable and discuss any concerns.

Council proposes to complete construction of the proposed road in a staged fashion, with the anticipated sequence of stages as follows.

- Construction of the Blackmans Swamp Creek bridge and Dairy Creek arch.
- Construction of the road formation, including all earthworks and under-road drainage.
- Construction of intersections with each of the intersecting roads.
- Sealing and completion of the proposed road, including installation of road-side signage, safety barriers and line markings.

Council proposes to complete construction and open the entire length of the proposed road in a single stage. This would have the effect of preventing inappropriate traffic levels and types of vehicles using residential streets in east Orange.

It is proposed that construction activities would be undertaken between 7:00am and 6:00pm Monday to Friday and 8:00am to 1:00pm on Saturdays. No construction would be undertaken on Sundays or Public Holidays.

All areas of proposed disturbance, with the exception of the proposed road formation, would be shaped to form a final landform that would be suitable for revegetation and would be stable in the long term. Disturbed areas would be revegetated principally with native grasses, trees and shrubs. In addition, Council would undertake plantings to enhance the vegetation community within sections of the road corridor that have previously been cleared but would not be disturbed by the proposed road. Council would seek, where ever practicable, to use species consistent with the Yellow Box White Box Blakely's Red Gum Woodland Endangered Ecological Community.

Road Operations

Council anticipates that the proposed road would cater for a mix of heavy and light vehicles and a combination of local and through traffic. Traffic modelling under-taken indicates that following opening, the western-most section of the proposed road would be used by approximately 2 380 vehicles per day, while the eastern-most section of the proposed road would be used by approximately 1 608 vehicles per day.

In addition, the traffic assessment determined that the North Orange By-pass, once complete, would reduce the travel time for motorists travelling between the intersections of the By-pass and the Mitchell Highway to the east and west of Orange by approximately 3 minutes and 40 seconds compared with the existing route via Summer Street.

Issue Identification and Prioritisation

In order to undertake a comprehensive environmental assessment of the proposed road, Council consulted with the local community and relevant government agencies to identify and prioritise potential environmental issues. This process identified nine environmental issues, presented below in approximate order of priority.

1. Traffic.
2. Noise.
3. Ecology.

4. Air Quality.
5. Non-Indigenous Heritage.
6. Indigenous Heritage.
7. Surface Water and Groundwater.
8. Soils.
9. Visual amenity.

Environmental Features, Safeguards and Impacts

The components and features of the existing environment on and around the road corridor have been studied in detail and the road designed to avoid or minimise impacts on the environment. A brief overview of the main components of the surrounding environment, the proposed safeguards and the residual impacts are set out below.

Traffic

A detailed assessment of the performance of each of the proposed intersections using estimated peak hour traffic flows 10 years after opening of the proposed road was undertaken.

The performance of all the intersections was determined to range from very good to excellent, with the longest average delays of approximately 17 seconds expected to be experienced by motorists turning right off the proposed road into Astill Drive (North) and motorists turning right out of Astill Drive (North) onto the proposed road.

An assessment of the impact of completion of the North Orange By-pass on traffic levels on Summer Street indicated that approximately 400 heavy vehicles per day would be diverted away from the Mitchell Highway route through the CBD of Orange, including approximately 20 vehicles per hour during the afternoon peak hour. In addition, the traffic assessment indicated that a significant number of light vehicles would also be diverted away from Summer Street or alternative east-west routes through the CBD.

Noise

Council is committed to undertake the following management and mitigation measures.

- Prepare an *Environmental Management Plan*, including best practice noise control measures to manage construction noise.
- Avoid noisy plant items working simultaneously close together.
- Maximise the offset distance between noisy plant items and nearby noise sensitive receivers where practicable.
- Undertake noise monitoring during construction at sensitive receivers.
- Form the proposed earth mounds as early as possible during the construction program.
- Select appropriate rolling and vibrating equipment.
- Implement an effective community consultation program.
- Seal the proposed road using two spray seal coats, with the first coat incorporating 14mm aggregate and the second coat incorporating 10mm aggregate.
- Erect appropriate signage requesting that heavy vehicles limit compression breaking and warning of intersections.
- Undertake, with landholder agreement, noise mitigation works at 95 Ophir Road, 261 Icely Road and 23 Cossack Close.

A noise and vibration assessment was undertaken in accordance with the *Environmental Noise Control Manual* and the *Environmental Criteria for Road Traffic Noise* published by the DECC. That assessment indicated that the construction noise goals may be exceeded for short periods at some residences adjacent to the road corridor, but that the impacts of those exceedances would be mitigated through early construction of the noise barriers and consultation with the effected residents.

With the exception of the residences at which 'receiver' noise mitigation measures are proposed, the operational noise assessment indicated that the noise criteria would be achieved at all other residences.

Ecology

The ecology assessment identified the following three vegetation communities within the road corridor.

- Invaded Grassland Community comprising exotic grasses, occasional shrubs and isolated trees. This community comprises 92% of the road corridor.
- Invaded Yellow Box, Apple Box Woodland Community comprising Yellow Box, Apple Box and Blakely's Red Gum trees with exotic shrubs and grasses. This community may be classified as a variant of the Yellow Box White Box Blakely's Red Gum Endangered Ecological Community (Box-gum Woodland) and occupies approximately 3ha of the 39ha road corridor.
- Invaded Creek Community in the vicinity of Blackmans Swamp and Dairy Creeks.

No threatened flora species were identified or are considered likely to occur within the road corridor. One threatened fauna species, namely the Eastern Bentwing Bat, was identified based on ultrasonic call recordings within the road corridor.

Council is committed to the following management and mitigation measures.

- Minimise areas of disturbance and avoid disturbing areas beyond the nominated footprint of the proposed road.
- Restrict all vehicular movement to identified tracks and approved work areas.
- Inspect trees for the presence of birds, nestlings and/or arboreal mammals before felling or pushing.
- Monitor disturbed areas to identify invasive weed species and implement appropriate control measures.
- Progressively revegetate disturbed sections on the road corridor using native flora species representative of the Box-Gum Woodland.

The ecology assessment concluded that four trees with high or moderate habitat value would be removed and that this limited clearing would be unlikely to have any significant impact on the ecological value of the road corridor.

Tests of significance were undertaken in accordance with Section 5A of the *Threatened Species Conservation Act 1995* for the Box-gum Woodland or the Eastern Bentwing Bat. These assessments concluded that the proposed road would have no significant impacts on wither the woodland community or the Eastern Bentwing Bat. In addition, it was concluded that the design of the creek crossings would ensure that there would be no significant impact on aquatic habitat or fish species.

Air Quality

Council is committed to the following management and mitigation measures during construction operations.

- Develop and implement an Air Quality Management Plan.
- Minimise the area disturbed by controlling the number of points of entry to the construction areas and identifying "no go" areas.
- Stabilise all disturbed areas as soon as practicable.
- Undertake progressive revegetation of completed areas as soon as practicable.
- Water all soil stockpiles at the completion of construction to form a "skin" on the stockpile surface.

- Remove any dust, soil or mud deposited on public roads by construction-related vehicles, as soon as practicable.

In addition, Council is committed to the following management and mitigation measures to manage the risks associated with naturally occurring chrysotile asbestos within the road corridor.

- Implement the procedures identified in the documents *Remediation Action Plan* and *Naturally Occurring Asbestos Planning Procedures* prepared by Noel Arnold.
- Ensure all personnel entering the road corridor are appropriately trained and inducted.
- Erect appropriate signage and provide mechanisms to ensure potentially chrysotile-laden material is not tracked out of the road corridor onto public roads.
- Cover disturbed areas within 30 days.

The air quality impact assessment concluded that there would be no significant air quality-related impacts associated with the proposed road

Non-Indigenous Heritage

The Non-Indigenous heritage assessment identified the following features of heritage significance within the road corridor (**Figure D**).

- Chinaman's Bend Cemetery - the cemetery is currently fenced contains only a half a dozen headstones. It is likely, however, that burials extend beyond the fenced area, particularly to the (North) and west.
- Traveller's Rest Inn – this site comprises a number of ruins and an associated well. The site is well preserved.
- Government Stock Station – a rectangular area of raised ground to the south of the Traveller's Rest Inn is interpreted as a potential site for the Government Stock Station.

Each of these sites are located a minimum of 50m from the area of disturbance associated with the proposed road.

Council would ensure that no ground disturbing activities are undertaken within areas of high or moderate Archaeological Sensitivity as indicated on **Figure D**.

The non-Indigenous heritage assessment concluded that, assuming the implement-tation of the above, there would be no significant impact on the identified sites as a result of the construction and operation of the proposed road.

Indigenous Heritage

The Indigenous heritage assessment did not identify any items of Indigenous heritage significance.

Soils

The soils assessment identified five soil mapping units within the road corridor. Four of these are suitable for to be stripped and used during rehabilitation operations.

The following management and mitigation measures would be implemented.

- Directly transfer soil material from a newly stripped area to one being rehabilitated, where practicable.
- Ensure that soil stockpiles are be less than 2m high, would have slopes of less than 1:2 (V:H) and upslope diversion structures.
- Sow and soil stockpiles proposed to be retained for more than 3 months with stabilising species.

The soils assessment determined that construction and operation of the proposed road would not have an adverse impact upon the soil resources within the road corridor.

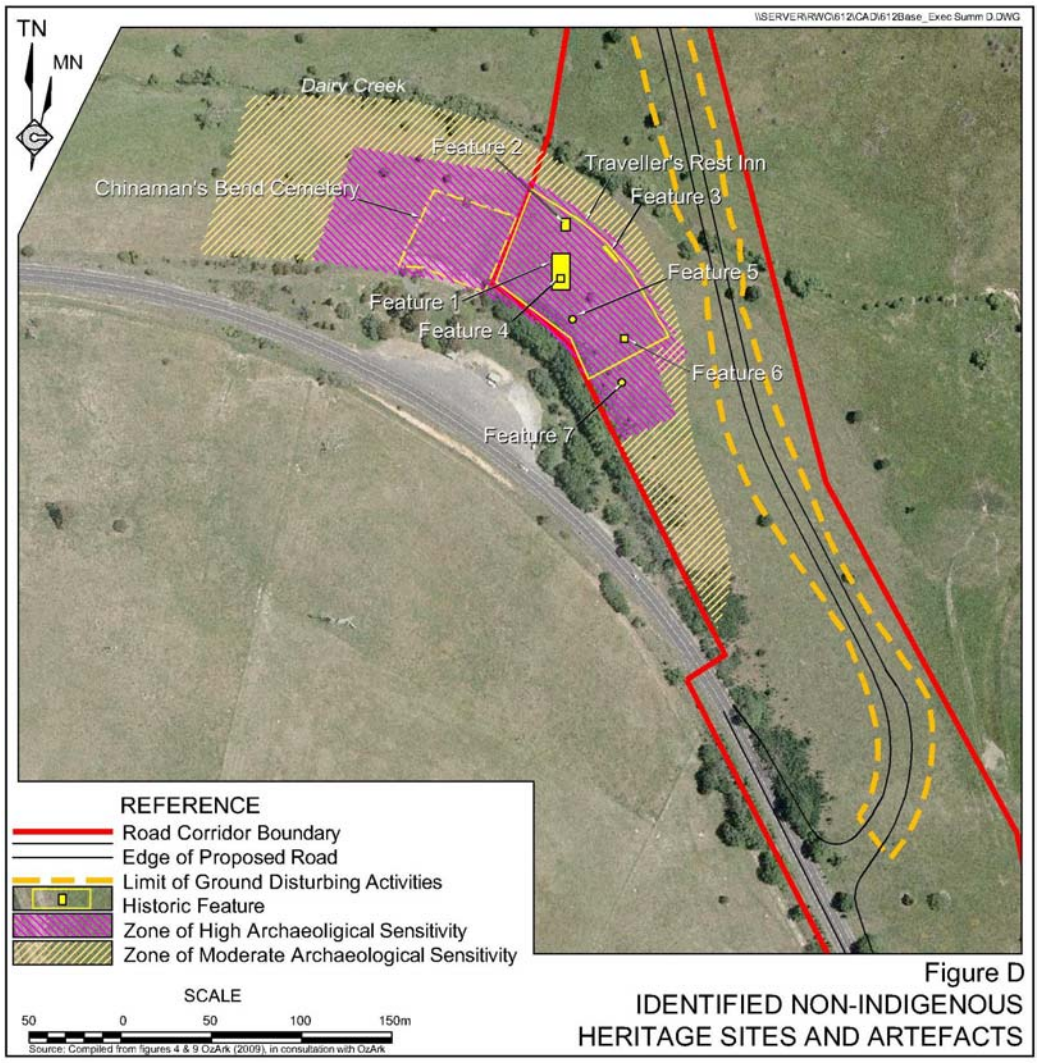


Figure D
IDENTIFIED NON-INDIGENOUS HERITAGE SITES AND ARTEFACTS

Water Resources

The road corridor occurs within two catchments, namely:

- the Blackmans Swamp Creek catchment which forms part of Council's Stormwater Harvesting Scheme; and
- The Suma Park Reservoir catchment which forms part of Orange's water supply catchment.

Council is committed to the following management and mitigation measures.

- Prepare Erosion and Sediment Control and Hydrocarbon Management Plans prior to commencement of construction operations.
- Ensure that construction is undertaken comparatively quickly and disturbed areas stabilised with vegetation or rock protection as soon as practicable.
- Ensure that where feasible all upslope runoff is directed around areas of disturbance.
- Ensure the separation of clean water from any potentially sediment-laden water.
- Provide for sufficient retention of any sediment-laden water and provide suitable sediment control measures for any waters that leave site in accordance with the documents identified above.
- Avoid, where practicable, storing hydrocarbons or refuelling within the road corridor.

- Ensure that any spillage of hydrocarbons is immediately cleaned up.

The water resources impact assessment concluded that there would be no significant impact on water resources in the vicinity of the road corridor.

Visual Amenity

Council is committed to the following management and mitigation measures.

- Planting of native trees, shrubs and grasses at selected locations within the road corridor.
- The erection of non-reflective/ attractive fencing (eg. wood palings/textured concrete panels) on the top of the earth mounds as part of the noise barriers.

The visual amenity assessment concluded that, while there would be a substantial change in the visual amenity at residences closest to the road corridor, the proposed controls would progressively limit the impact of those changes.

Justification

The construction and operation of the proposed road has been evaluated and justified principally through consideration of its potential impacts on the environment and potential benefits to the local and wider community.

An evaluation was undertaken by assessing the biophysical and socio-economic aspects of the Proposal. This assessment concluded the likely biophysical impacts of the Proposal are of a comparatively low level and are carefully safeguarded against in the design of the road. In addition, the socio-economic impacts of the Proposal are considered to be predominantly positive.

In addition, the Proposal was assessed against the principles of Ecologically Sustainable Development. This evaluation found that, in accordance with the precautionary principle, there are no activities or features for which there is a level of uncertainty in achieving an acceptable level of environmental performance.

The Proposal has also been designed to ensure that no part of the community would be unacceptably disadvantaged and that the Proposal would not have a significant impact on biological diversity or ecological integrity within or surrounding the road corridor.

Conclusion

The construction and operation of the proposed road has been designed with an emphasis upon demonstrating that changes to the existing traffic, noise levels, ecological setting, air quality, heritage setting, water and soil resources and visual amenity satisfy relevant goals or realistic community expectations. The substantial investigations undertaken during the preparation of the EIS would enable Council to progressively implement a range of management and mitigation measures consistent with recognised environmental practice to achieve a high standard of environmental performance.

As a result, it is concluded that construction and operation of the proposed road should proceed as it would:

- have long term benefits for current and future generations by providing improved access and safer travelling conditions;
- have an acceptable impact on the biophysical environment with respect to noise, safety, air quality, transportation and water quality; and
- satisfy sustainable development principles.