

New Grafton Correctional Centre Stage 2

Infrastructure Management Plan

26 May 2017

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1. Introduction

1.1 Nature of this report

This infrastructure management plan has been prepared as part of the environmental impact statement that accompanies the stage 2 development application for the New Grafton Correctional Centre (NGCC). Further detail in respect of the purpose for this report is set out in section 1.7 below.

1.2 Background to the NGCC

A new correctional centre is being developed at Grafton to help meet the State's need for increased inmate capacity. The New Grafton Correctional Centre (NGCC) will be built and operated as a public-private partnership (PPP) and will be retained in ownership by the NSW Government.

The NSW Government is responsible for site acquisition and the provision of certain public utilities infrastructure to the site. Under the PPP arrangement, the private sector will be responsible for the initial design, construction and financing of the NGCC, as well as the provision of operational (custodial) services, designated health services and hard and soft facilities maintenance services over the contract term.

NGCC will be the major multifunctional, regional correctional facility servicing the northern part of NSW and will be the primary correctional facility for all corrections operations from the Queensland border in the north to Kempsey in the south, and Tamworth in the southwest.

The vision for the project is to operate in accordance with innovative best practice, both in providing safety and security and providing dynamic, pro-social management of inmates.

1.3 Stage 1 Development Consent

On 14 March 2017, a stage 1 concept plan approval SSD 7413 was granted by the Minister for Planning to the concept proposal for the staged development of the NGCC (the Stage 1 Consent). The development approved under the Stage 1 Consent includes:

- 1,700 maximum and minimum security beds, consisting of:
 - 1,000 maximum security beds for male inmates.
 - 300 maximum security beds for female inmates.
 - 400 minimum security beds for male inmates
- Core correctional facility buildings including: maximum and minimum accommodation units; special accommodation units; health facilities; education and programs areas; administration; workshops; staff amenities; and visitor facilities.
- A recreational oval within the perimeter of the facility.
- A six metre high fence or wall around the perimeter of the facility, with light and security camera poles up to 10 metres in height.
- Store buildings, small ancillary facilities, a central energy plant, black water treatment facilities and a drug dog detection unit and yard located outside the perimeter wall / fence.
- Fire access roads on the inside and the outside of the perimeter wall/ fence of the facility.
- Water, power, wastewater and communication utilities within the site.
- A maximum building height of 12 metres (approximately three storeys).
- Total Gross Floor Area (GFA) of approximately 100,000 square metres (sqm).
- Vegetative buffer of 50 metres along the northern boundary, 15 metres along the eastern boundary and 30 metres along the southern boundary.
- Asset protection zone of 100 metres from every boundary or vegetation buffer.

- One vehicular entry/exit point from Avenue Road.
- 500 car parking spaces.
- 1.5 metre high boundary fence.
- Landscaping of ground cover and /or shrubbery.

The works approved under the stage 1 development consent include:

- Vegetation clearance and biodiversity management activities.
- Bulk excavation and site stabilisation works.
- Demolition of the existing house and sheds.
- Construction of access roads including fire access roads to the extent required to conduct Stage 1 works.
- Construction of auxiliary facilities such as construction compound, construction staff parking facilities and stockpiles sites.
- Temporary provision of water, power and communication services within the site to the extent required to conduct Stage 1 works.
- Landscaping.

The NGCC will be constructed and maintained by John Holland and Serco will operate the correctional centre.

1.4 Approvals Framework

NGCC is a State Significant Development with planning approval being obtained in two stages:

- Stage 1 – for the concept proposal and Stage 1 works.
- Stage 2 – for the design and construction of the facility.

The Stage 1 Development Consent was obtained by the Infrastructure NSW (INSW) on behalf of Corrective Services NSW (CSNSW), a division of the Department of Justice.

The development to which the Stage 2 development application relates is also State significant development. Clause 8(1)(b) in Part 2 of *State Environmental Planning Policy (State and Regional development) 2011* (SRD SEPP), development is declared to be State significant development if the development is specified in Schedule 1 or 2 of the SRD SEPP. Schedule 1 includes paragraph 16:

16 Correctional centres

Development for the purpose of correctional centres that has a capital investment value of more than \$30 million.

The proposed NGCC has a capital investment value of over \$30 million and is State Significant Development.

The Minister is the consent authority for State Significant Development.

1.5 The site and its context

1.5.1 Regional context

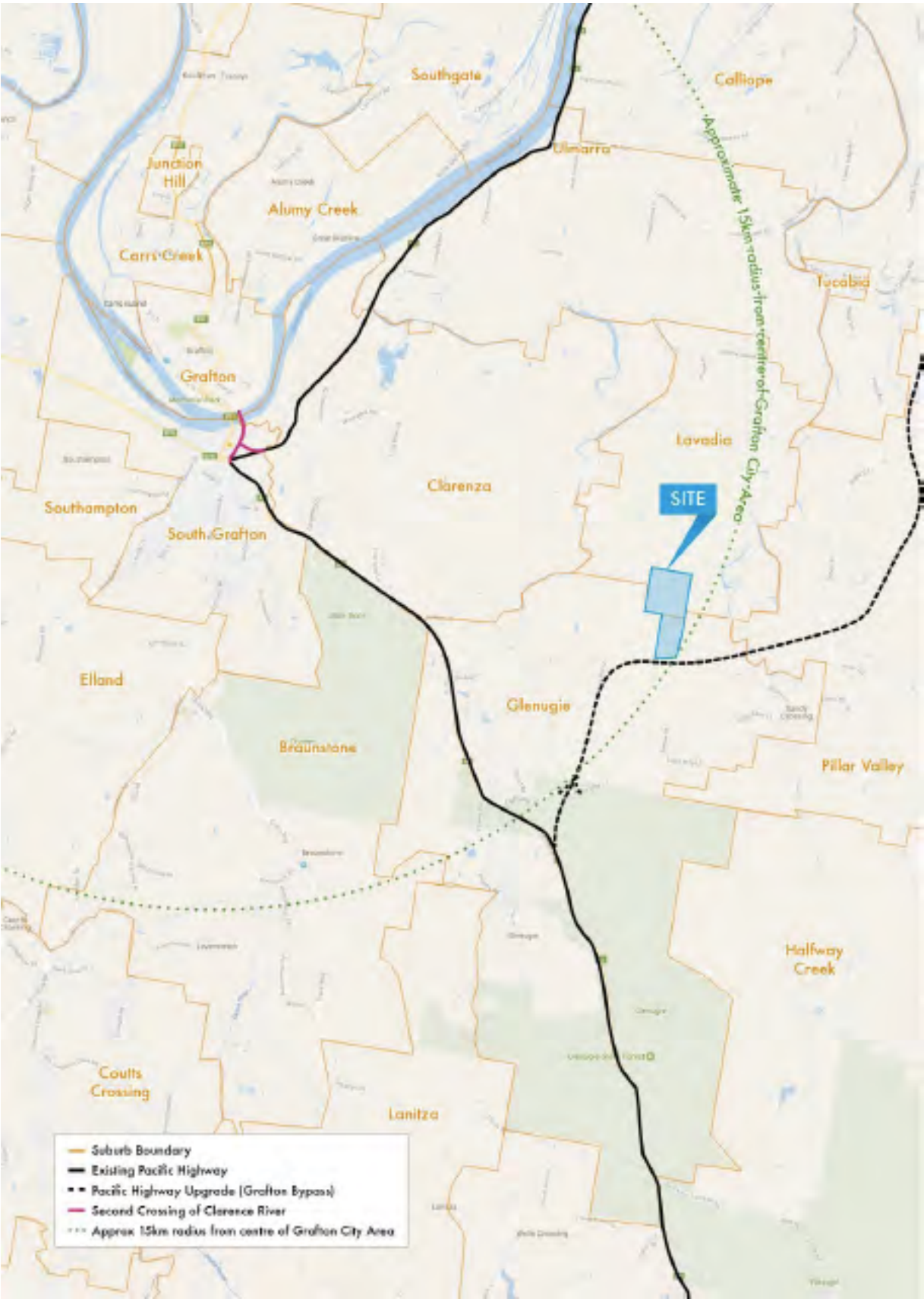
The site is located 23 kilometres by road to the south east of Grafton, five kilometres north east of Grafton Airport and seven kilometres east of the Pacific Highway at 313 Avenue Road Lavadia on the Mid North Coast of New South Wales. The Pacific Highway provides connections north towards Queensland and south towards the Hunter and Sydney. The Gwydir Highway provides a connection between the North Coast and the New England and Summerland Way extends north connecting Grafton, Casino and Kyogle to the Mt Lindesay Highway.

Grafton is a focal point for regional road, river and other transport networks and focus of higher order services to the Clarence Valley sub-region. It is the sub-region's major employment centre and a focus of government administration.

1.5.2 The site

The site comprises Lot 26 DP751376 and Lot 1 DP 1190399 each roughly rectangular with a total area of 195.0 hectares, refer to **Figure 1-1**. It is known as 313 Avenue Road Lavadia although the site straddles the boundary between the localities of Lavadia and Glenugie.

It has a frontage to Avenue Road of approximately 2.2 kilometres, a northern boundary to an unformed Crown road of 1.1 kilometres, a western boundary to adjoining private property and unformed Crown roads of 2.3 kilometres and a southern boundary of 627 metres to the Pacific Highway under construction including the relocated Old Six Mile Lane.



1-1 the site

Figure

1.6 The proposal

The proposed development comprises the construction of a new correctional centre designed to accommodate 1,700 male and female inmates as summarised in **Table 1-1**.

Table 1-1 Summary of security classifications for male and female inmates at the NGCC

Classification	Number	Gender
Maximum Security Classification Inmates	1000	Male
Maximum Security Classification Inmates	300	Female
Minimum Security Classification Inmates	400	Male
Total	1,700	

1.7 Purpose of this Report

The site of the NGCC has previously been used for rural purposes and as such there is a need to augment the existing services to the land to ensure that the NGCC has the necessary infrastructure to service the development sought in this stage 2 development application.

The purpose of this report is to provide detail in respect of the proposed services and to meet the requirements of:

Condition of Stage 1 Development Consent	Where addressed
B11. Full details of the proposed potable water supply system infrastructure is to be provided with the development application for Stage 2, including but not limited to: a) demonstrating that any proposed reticulation works/ services would not conflict with future road maintenance and construction activities; b) prepared in consultation with DPI Water and Council; c) details of ongoing ownership and maintenance of any water supply services.	Section 2.1 and Appendix B Also refer to Appendix of the EIS-Water Management Report
B13. The development application for Stage 2 must include details on the proposed telecommunications infrastructure that is to be installed to service the proposal.	Section 2.2 and Appendix C
B14. The development application for Stage 2 must demonstrate that adequate electricity infrastructure would be provided to service the proposed NGCC.	Section 2.3 and Appendix D

In addition to the above conditions, condition B6 requires the stage 2 development application to address various traffic issues including a detailed assessment of traffic impacts associated with the proposed stage 2 NGCC. These matters are the subject of a separate transport and accessibility report prepared by Woollacott's Consulting Engineers.

However, in addition to the assessment and content of the transport and accessibility report, INSW has, since the grant of the Stage 1 Development Consent, been in regular consultation with Clarence Valley Council in respect of the upgrade of a 2.6km section of Avenue Road adjacent to the NGCC site from Old Six Mile Lane to the Northern Boundary of the NGCC site. This constitutes the entire length of the NGCC Site and the works include upgrading the road from single to double lanes. The southern end of the upgraded section will tie-in with an upgraded section of Avenue Road being undertaken by NSW Roads and Maritime Services as part of the Woolgoolga to Ballina Pacific Highway Upgrade.

Infrastructure Management Plan

Development consent for this upgrade is not being sought in the stage 2 development application. Rather, these works will be the subject of a part 5 determination under the Environmental Planning and Assessment Act 1979 (EP&A Act). A Review of Environmental Factors has been prepared for the works, a copy of which appears as Appendix A to this plan.

The final purpose of this plan is to meet the requirements of Secretary's Environmental Assessment Requirement 14, which provides:

SEAR	Where addressed
Preparation of an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities, including staging of infrastructure.	Section 2
Preparation of an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water, water balance assessment and water sensitive urban design.	Section 2.1. Also refer to Appendix of the EIS- Water Management Plan

2. Utilities

2.1 Water

The water supply infrastructure required by the NGCC will be delivered by way of a part 5 determination under the EP&A Act. As such, development consent is not sought in this stage 2 application for the water supply delivery main.

A Review of Environmental Factors has been prepared in respect of the proposed activity being the installation of a water supply delivery main that would connect to the existing Clarence Valley Water Reticulation System, at Ulmarra. The REF proposes that:

- the water main will extend via public road reserves and easements within public road reserves and easements within private properties; and
- installation works shall include trenching and installation of approximately 13 kilometres of pipe including under-boring of the existing Pacific Highway and Deep Creek.

A copy of the REF is annexed to this plan as Appendix B. A description of the proposed water supply route is shown in illustration 2.2 of Appendix B.

As part of the preparation of the REF, INSW has undertaken consultation with Clarence Valley Council in respect of the proposed pipeline and has and will continue to adopt Council's comments prior to determination of the activity. The proposed pipeline route has been predominately determined by Council.

The REF also confirms that the water infrastructure supply will be adequate to service the NGCC. It will not conflict with or have any significant impacts on future road maintenance or constructions activities associated with the NGCC. No environmental impacts will impact the local residents and nor will there be any impacts on existing land uses.

The water supply infrastructure would be owned and managed by Clarence Valley Council.

2.2 Telecommunications

INSW has been in regular consultation with Telstra in respect of the provision of telecommunications infrastructure for the NGCC Site. On 12 December 2016, INSW and Telstra executed a Detailed Feasibility Study contract to identify the most appropriate fibre and mobile route to the NGCC Site.

The study was broken into two phases:

- Phase 1: works included a fibre design team undertaking site visits to the NGCC Site and surrounds; meeting and discussing with other services teams in Grafton in respect of the NGCC facility; investigating any synergies between Telstra's current installation fibre program for the Pacific Complete project; and agreeing on final desktop fibre route and Macro radio base station location for Telstra to undertake Phase 2; and
- Phase 2: works included issuing of land access notices for the agreed fibre routes, undertaking applicable environmental and heritage assessments; surveying and pegging final chosen and approved fibre routes; producing final construction plans for final chosen routes and production of a final report encompassing the works from stage 1 and 2.

Phase 2 has been completed by Telstra and a copy of the final report appears at Appendix C to this plan.

The report concludes that there are two available routes to provide optical fibres to the NGCC site boundary being a North Route of 15.8 kilometres and a West Route of 10.26 kilometres. The parameters of these two options are described in more detail in Appendix C.

Telstra have confirmed that either of the two proposed routes for fibre cables will be sufficient to provide adequate telecommunications infrastructure to the NGCC site.

2.3 Electricity

INSW has been in consultation with Transgrid and Clarence Valley Council in respect of the provision of electricity infrastructure to service the NGCC since November 2016. INSW and Transgrid are parties to a Consultation Services Agreement dated 27 March 2017 in respect of the delivery of that infrastructure.

The works undertaken by Transgrid to ensure adequate electricity infrastructure (12 MVA of electricity) will be provided include:

- route feasibility analysis to identify the potential route/s for the transmission line;
- desktop reviews to ascertain any constraints for the transmission line.
- attendances in and around the NGCC site and potential route locations;
- identification of two options for the transmission line route.

The possible routes for the transmission line identified by Transgrid as being suitable to deliver 12 MVA of electricity to the NGCC are shown on Figure 1-2

being option 4 in light blue and 1a and 2b in pink. Clarence Valley Council has been consulted in respect of each of these options.

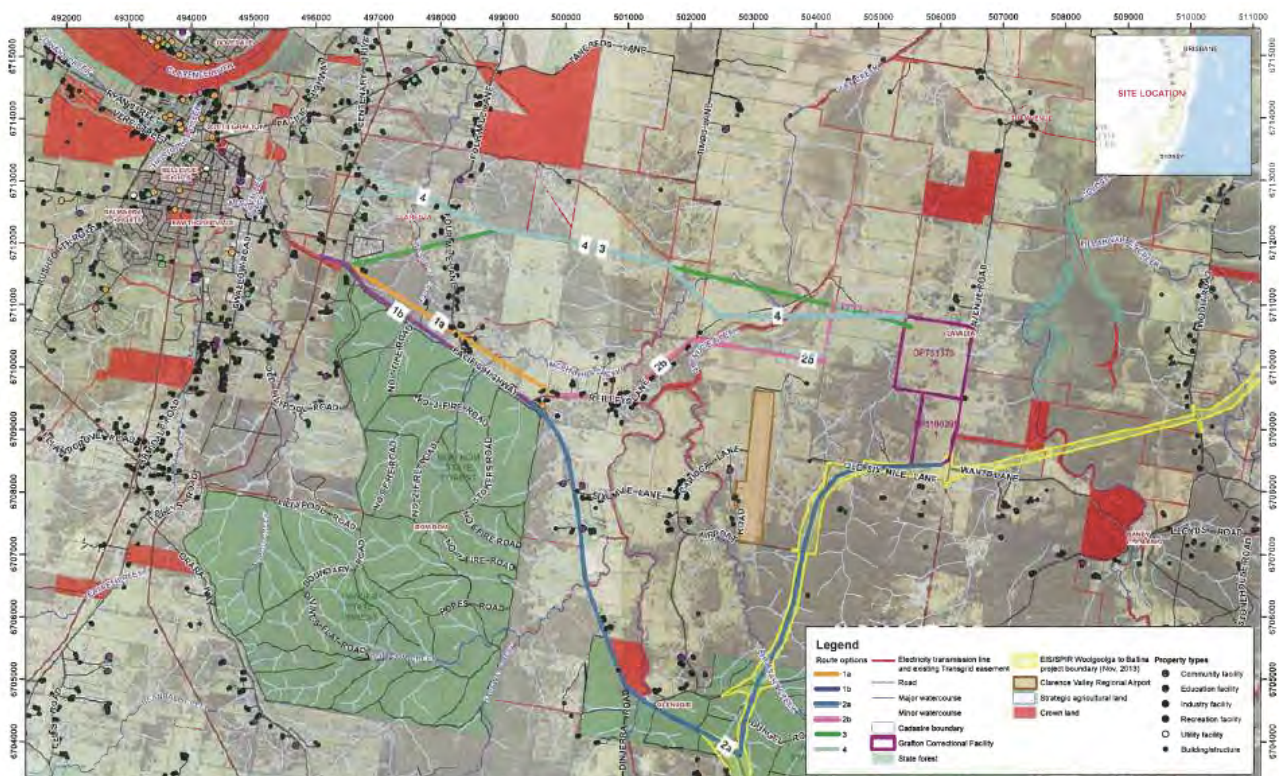


Figure 1-2 Possible routes for transmission line

Each of these possible routes have been identified over other possible route options because each has a reduced impact in terms of environmental constraints and land acquisitions. A final route will be adopted by Transgrid who will deliver the infrastructure to the NGCC.

Planning approval for the development required to deliver the electricity infrastructure to the NGCC is not sought as part of this stage 2 development application. The works will either be the subject of a separate application under part 4 of the EP&A Act or a determination under part 5 of the EP&A Act.

A copy of a letter from Transgrid in respect of the electricity infrastructure for the NGCC appears at Appendix D to this report.

Appendix A: Review of Environmental Factors for Avenue Road Upgrade

Review of Environmental Factors

New Grafton Correctional Centre, Avenue Road Upgrade

A decorative graphic consisting of two overlapping wavy lines, one in a light olive green and the other in a darker olive green, spanning the width of the page below the title.

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Executive Summary

The Proposal

GeoLINK has been engaged by Infrastructure New South Wales (INSW) to prepare a Review of Environmental Factors (REF) for the upgrade (widen from one lane to two) of a 2.6 km section of Avenue Road located approximately 13 km south-east of Grafton, NSW.

Need for the Proposal

The proposed upgrade of Avenue Road is adjacent to and is in support of the New Grafton Correctional Centre (NGCC). The Proposal will support an increase in traffic on Avenue Road associated with the NGCC and provide safer access to the NGCC.

Statutory and Planning Framework

All relevant statutory planning instruments have been examined in relation to the Proposal. Development consent is not required for the subject activity by virtue of Clause 94 of State Environmental Planning Policy (infrastructure) 2007 (ISEPP). The Proposal, however, becomes an 'activity' for the purposes of Part 5 of the EP&A Act, hence a REF, assessing the Proposal and any associated environmental impacts is required.

Consultation

Since the inception of the Proposal for the NGCC, there has been ongoing consultation with Clarence Valley Council including the Avenue Road upgrade Proposal. A letter was also sent to Council on 1 May 2017 to formalise consultation for this specific activity under Part 5 of the EP&A Act, as required under Clause 13 of ISEPP.

Given the nature of the Proposal, the localised scope and potential impacts, targeted consultation with the three affected landowners whose access would be temporarily impacted by the Proposal would occur. This is deemed sufficient given the scope and nature of the works. No additional/ broader community consultation is considered necessary, other than relevant on-going affected land-owner consultation and standard notification/ management measures during the works.

An Aboriginal Heritage Information Management System (AHIMS) search was undertaken. The Proposal is considered to present a low risk to Aboriginal heritage and no consultation is required at this stage.

Environmental Assessment

This REF provides an assessment of the Proposal that takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the Proposal as is required under the EP&A Act. The main potential negative environmental impacts of the Proposal include:

- Removal of vegetation including hollow-bearing trees.
- Localised short term disturbance from construction activities such as possible noise impacts.

The Proposal would result in a positive long term outcome in relation to providing safe access to the NGCC.

- 
- Other potential environmental impacts will generally be minor in nature and are documented within the REF. A variety of safeguards have been developed to avoid and/ or minimise the risk of potential impacts posed by the Proposal to the environment.

Justification and Conclusion

The proposed upgrade of Avenue Road is an important element of infrastructure to support the NGCC. The potential environmental impacts posed by the Proposal have been thoroughly examined through this REF. Some minor impacts would occur locally; however, it is unlikely that any significant or long-term adverse impacts would eventuate. To help ensure that the extent of impacts is limited and that unavoidable impacts likely to occur are managed and minimised, mitigation measures and safeguards have been developed and would be implemented and monitored. The Proposal is considered justifiable taking into account the potential environmental impacts and subsequent mitigation measures and safeguards. The Proposal supports the establishment and operation of the NGCC. The Proposal is in accordance with ESD principles and consistent with the objectives of the EP&A Act.



1. Introduction

1.1 Proposal Identification

The Proposal involves upgrade of a section of Avenue Road, approximately 13 km south-east of Grafton, NSW, from a single lane to double lanes. The upgrade is associated with the New Grafton Correctional Centre (NGCC) and the section of the road to be upgraded runs adjacent to the NGCC site from Old Six Mile Lane to the northern boundary of the NGCC site (i.e. the entire length of the NGCC site). This upgraded section of Avenue Road would connect with a section of Avenue Road (to the south of Old Six Mile Lane) that is being upgraded by NSW Roads and Maritime Service as part of the Woolgoolga to Ballina Pacific Highway Upgrade Project.

All construction and operational activities associated with the upgrade of Avenue Road (adjacent to the NGCC) would be referred to herein as 'the Proposal'.

1.2 Purpose of this Report

This REF has been prepared by GeoLINK on behalf of engineering consultants Umow Lai who have been engaged by Infrastructure NSW (INSW) to manage the works. For the purposes of these works, INSW is the proponent and Clarence Valley Council (CVC) is the determining authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Construction works associated with the upgrade of Avenue Road and associated works would be undertaken by contractors/ Council on behalf of INSW.

The purpose of the REF is to describe the Proposal, to document the likely impacts of the Proposal on the environment, and to detail safeguard/ mitigation measures to be implemented.

The description of the Proposal and associated environmental impacts have been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000, the *Threatened Species Conservation Act 1995* (TSC Act) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 111 of the EP&A Act, which requires the determining authority to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- whether the Proposal is likely to have a significant impact on the environment and therefore the necessity to prepare an Environmental Impact Statement (EIS) under Part 5 of the EP&A Act;
- the significance of any impact on threatened species, populations or ecological communities, or their habitats as defined by the TSC Act and/ or *Fisheries Management Act 1994*, in Section 5A of the EP&A Act and therefore the requirement for a Species Impact Statement; and
- the potential for the Proposal to significantly impact a matter of national environmental significance or Commonwealth land and the need to make a referral to the Department of the Environment and Energy for a decision by the Commonwealth Minister on whether assessment and approval is required under the EPBC Act.

2. Description of the Proposal

2.1 Site Location

The proposed road upgrade of Avenue Road is located within CVC local government area (LGA), approximately 13 km south-east of Grafton (refer to **Illustration 2.1**). All works would be within the CVC road reserve (refer to **Plate 2.1**). The section of the road to be upgraded runs adjacent to the NGCC site from Old Six Mile Lane to the northern boundary of the NGCC site (i.e. the entire length of the NGCC site). The southern end of the upgraded section would tie-in with an upgraded section of Avenue Road being undertaken by NSW Roads and Maritime Service as part of the Woolgoolga to Ballina Pacific Highway Upgrade Project (refer to **Plate 2.2**).



Plate 2.1 Avenue Road view south (trees on left require removal)



Plate 2.2 View south towards Six Mile Lane from southern extent of works

2.2 The Proposal

INSW proposes to upgrade a 2.6 km long section of Avenue Road from a single lane to double lanes (refer to **Illustration 2.2**). The proposed road upgrade works is expected to take approximately 10-12 weeks.

The upgrade of Avenue Road comprises the following works:

- Extension of eleven existing pipe culverts to accommodate increased road width.
- Existing sealed road to be widened from approximately 4 m to 8 m width as follows:
 - Clear and grub verge-side grass/ weeds/ regrowth and native vegetation with a maximum disturbance footprint of 3 m from road edge.
 - Excavation of unsuitable existing shoulder material.

- 
- Construction of new catch and table drains along length of road using imported fill.
 - Reconstruction of driveways to maintain access to existing private properties.
 - Pavement construction.
 - Line marking and sign installation.

Appendix A presents drawings for the proposed works.

2.2.1 Proposal Objectives

The objectives of the Proposal are to:

- Upgrade Avenue Road to service the NGCC.
- Avoid as far as possible impacts on utilities and services, property and access and ecological features including fauna habitat features, Endangered Ecological Communities (EECs) and threatened plants.

2.3 Construction Activities

2.3.1 Plant and Equipment

The main plant and equipment required for the works may include (but not be limited to):

- Chainsaws
- Grader
- Smooth and pad foot rollers
- Truck and dog
- Water truck
- Excavator
- Dozer
- Seal and asphalt trucks
- Line marking plant.

2.3.2 Working Hours

Construction activities will be undertaken in accordance with standard construction and work hours, i.e. Monday to Friday: 7:00 am to 6:00 pm and Saturday 8:00 am to 1:00 pm.

2.4 Ancillary Facilities

Given the nature and limited scope of the Proposal, ancillary facilities are not expected to be substantial, and would fall within the overall scope and environmental considerations undertaken as part of this assessment. Proposed ancillary facilities would comprise the same facilities and location as those being used for the road upgrade further south as part of the Pacific Highway upgrade (Wave 5A). The mitigation measures in this REF would also be applicable to any ancillary facilities. Once determined, if the ancillary facilities were to affect a substantially different locality or notably departed from the scope of this assessment, a review of this component may be necessary.



OpenStreetMap (and) contributors, CC-BY-SA^N



0 3 Km

GeoLINK
environmental management and design

Review of Environmental Factors
New Grafton Correctional Centre - Avenue Road Upgrade
2736-1023

Site Locality

Illustration 2.1



0 300

GeoLINK
environmental management and design



3. Statutory and Planning Framework

3.1 Planning Approval Pathway

The Proposal involves the upgrade of Avenue Road, from Old Six Mile Lane to the northern end of the new Correctional Centre site, totalling approximately 2.6 km long. As part of this project, the applicable environmental planning and legislative requirements were reviewed and the planning approval pathway is outlined as follows:

Section 76 of the EP&A Act states that if an environmental planning instrument (EPI) provides that development may be carried out without the need for development consent, a person may carry the development out, in accordance with the EPI, on land to which the provision applies. However the environmental assessment of the development is required under Part 5 of the EP&A Act.

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) applies to the State and aims to facilitate the effective delivery of infrastructure across NSW. This policy overrides other EPIs, including Local Environmental Plans, and provides specific planning provisions and development controls relating to nominated types of infrastructure. Division 17 of the ISEPP outlines the approval requirements for roads and traffic.

The Proposal is for the upgrade, including widening, of the existing Avenue Road and is therefore a Proposal associated with a road and road infrastructure facilities under ISEPP and is subject to the development control provisions Division 17 of ISEPP. Specifically Clause 94 (Development permitted without consent), under the ISEPP states that (as relevant to the Proposal):

- (1) Development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land. However, such development may be carried out without consent on land reserved under the National Parks and Wildlife Act 1974 only if the development:*
- (a) is authorised by or under the National Parks and Wildlife Act 1974, or*
 - (b) is, or is the subject of, an existing interest within the meaning of section 39 of that Act, or*
 - (c) is on land to which that Act applies over which an easement has been granted and is not contrary to the terms or nature of the easement.*

The Proposal does not occur on land reserved under the *National Parks and Wildlife Act 1974*. Clause 94 the ISEPP allows for the roadworks and upgrade of the existing road by or on behalf of INSW without consent under Part 5 of the EP&A Act. The Proposal therefore becomes an activity and requires preparation of an environmental assessment (Review of Environmental Factors) for approval by the determining authority, in this case CVC.



3.2 Environmental Planning and Assessment Act 1979

Although the Proposal does not require development consent under Part 4 of the EP&A Act, Section 111 of the EP&A Act requires determining authorities, when assessing activities under Part 5, to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity. To ensure the Proposal adequately addresses the requirements of Section 111, an assessment of the Proposal's consistency with relevant EPIs including State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs) has been completed.

3.3 State Environmental Planning Policies

3.3.1 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State. Development consent is not required for the subject activity by virtue of Clause 94 of ISEPP. Clause 94 of ISEPP permits development for the purpose of road and road infrastructure facilities to be carried out by or on behalf of a public authority without consent on any land.

As the Proposal is for the upgrade/ widening of an existing road, the works can be assessed under Part 5 of the EP&A Act. Part 2, Division 1 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development (refer to **Section 4.3**).

3.3.2 State Environmental Planning Policy 14 – Coastal Wetlands

SEPP 14 aims to ensure that coastal wetlands are preserved and protected in the environmental and economic interests of the state. The nearest mapped SEPP 14 Coastal Wetland is SEPP 14 No. 292 located approximately 720 m east of the site. It is not expected the Proposal would impact this wetland. Safeguards would be in place to ensure the activity does not indirectly affect areas outside of the project footprint.

3.3.3 State Environmental Planning Policy 26 – Littoral Rainforest

SEPP 26 aims to provide a mechanism for the consideration of applications for development that is likely to damage or destroy littoral rainforest areas with a view to the preservation of those areas in their natural state. It is not expected that the Proposal would impact on any areas of SEPP 26 Littoral Rainforest. There are no SEPP 26 Littoral Rainforests within 10 km of the site.

3.3.4 State Environmental Planning Policy 44 - Koala Habitat Protection

SEPP 44 aims to encourage the conservation and management of natural vegetation areas that provide habitat for Koalas, to ensure permanent free-living populations would be maintained over their present range. Clause 6 of SEPP 44 states that the SEPP applies only to land 'in relation to which a development application has been made'. Clause 94 of ISEPP precludes the Proposal from requiring consent therefore Part 2 of SEPP 44 does not apply to the Proposal. However, in order to consider environmental issues to the fullest extent possible, it is prudent to assess any potential impacts on Koalas in accordance with SEPP 44.



One Schedule 2 feed tree species (Forest Red Gum; *Eucalyptus tereticornis*) occurs infrequently on site and does not comprise >15% of the canopy. The site therefore does not comprise potential Koala habitat.

3.3.5 State Environmental Planning Policy 71 – Coastal Protection

SEPP 71 predominantly aims to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coastal zone. The site is not situated within the SEPP 71 coastal zone, which is located approximately 16 km south-east of the site. No impacts would occur.

3.3.6 State Environmental Planning Policy (Rural Lands) 2008

SEPP (Rural Lands) 2008 aims to facilitate the orderly and economic use and development of rural lands for rural and related purposes. Part of this objective relates to the maintenance of the social, economic and environmental welfare of the state and the reduction of land use conflicts.

The Proposal would not impose any significant environmental impacts to local agricultural land.

3.4 Local Environmental Plan

Clarence Valley Local Environmental Plan 2011 (CVLEP 2011)

Zoning: RU2 Rural Landscape and SP2 Infrastructure (Classified Road).

Permissibility: Roads are permitted with development consent within the RU2 zone under the CVLEP. The subject SP2 zone allows a classified road and development that is ordinarily incidental or ancillary to this. It could be said that the Avenue Road upgrade that will also tie in with the Pacific Highway Upgrade at its southern end would be generally consistent with this intent.

The objectives of the RU2 Rural Landscape zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.
- To provide land for less intensive agricultural production.
- To prevent dispersed rural settlement.
- To minimise conflict between land uses within the zone and with adjoining zones.
- To ensure that development does not unreasonably increase the demand for public services or public facilities.
- To ensure development is not adversely impacted by environmental hazards.

The Proposal is not directly consistent with the zone objectives as they are targeted toward primary industry activities, however the Proposal for the upgrade of a road would not contradict or hinder the achievement of these objectives in the context of the LEP.



The objectives of the SP2 Infrastructure zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

The subject SP2 Infrastructure zone is designated for a Classified Road (Pacific Highway upgrade). The Proposal would not contradict or hinder the achievement of the relevant zone objectives in the context of the LEP and the upgraded road would appropriately integrate with the Pacific Highway upgrade.

ISEPP overrides the CVLEP and development without consent for road and road infrastructure facilities is permitted on any land under ISEPP Clause 94 (by or on behalf of a public authority). The Proposal becomes an 'activity' for the purposes of Part 5 of the EP&A Act and is subject to an environmental assessment (Review of Environmental Factors).

3.5 Development Control Plans

The *Clarence Valley Council Development Control Plans – Development in Rural Zones 2011* is to encourage development of land in rural zones that complements the rural character of a locality and is at an appropriate scale and form to minimise land use conflicts. CVC DCP – *Development in Rural Zones* applies to land within the following rural zones:

- RU1 Primary Production.
- RU2 Rural Landscape.
- RU3 Forestry.

The CVC DCP – *Development in Environmental Protection, Open Space and Special Use Zones* applies to land, including the following zone:

- SP2 Infrastructure.
- The Proposal however does not require development consent and is therefore not subject to the requirements of the DCP. It is not expected however that the Proposal would limit or hinder the achievement of the DCP objectives.

3.6 Other State and Commonwealth Legislation

3.6.1 Other NSW Legislative Acts

Table 3.1 lists and describes other NSW State legislation and comments on its applicability in relation to the Proposal.

Table 3.1 NSW Legislation

Legislation	Section(s)	Comment
<i>Fisheries Management Act 1994</i>	Section 199 and 219	Concurrence is required from the Minister for Primary Industries for dredge and reclamation works on land that is periodically inundated by water in accordance with s199 of the <i>Fisheries Management Act 1994</i>. A permit is required under s219 of the FM Act to undertake activities that block the passage of fish. The Proposal does not involve dredge and reclamation work nor does it block fish passage.
<i>Protection of the Environment Operations Act 1997</i>		No Protection of the Environment Policies (PEPs) are relevant to the Proposal. No licences will be required pursuant to the <i>Protection of the Environment Operations Act 1997</i> (POEO Act). The appointed contractor/s are required to notify EPA when a 'pollution incident' occurs that is likely to impact upon the environment.
	Section 120	It is an offence to pollute any waters of the State. The REF includes mitigation measures to minimise potential impacts that may result in pollution of waters.
	Section 115	It is an offence to negligently dispose of waste in a manner that harms the environment. Waste would be managed in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i>. The Proposal aims to reduce the environmental impact of waste and includes mechanisms to recover resources and reduce the production of waste where possible.
<i>National Parks and Wildlife Act 1974</i>	Sections 118D(2)(b)(ii)	It is an offence to cause damage to habitat of threatened species, endangered populations or EECs unless it was essential for the carrying out of an activity in accordance with an approval of a determining authority within the meaning of Part 5 of the EP&A Act if the determining authority has complied with that Part. This REF forms the Part 5 assessment however every measure would be implemented to minimise impacts to habitat of threatened species, endangered populations or endangered ecological communities.
	Sections 84, 90	The <i>National Parks and Wildlife Act 1974</i> (NPW Act) provides the basis for the legal protection and management of Aboriginal sites within NSW. Sections 84 and 90 of the NPW Act provide statutory protection for any physical/ material evidence of Aboriginal occupation of NSW and places of cultural significance to the Aboriginal community. The key principles of the Act in relation to Aboriginal heritage are the prevention of unnecessary or unwarranted destruction of Aboriginal objects, and the active protection and conservation of objects which are of high cultural significance. It is an offence to knowingly disturb an Aboriginal object, irrespective of its nature or significance, without the prior consent of the Director-General of the NSW OEH. An Aboriginal Heritage Information Management System (AHIMS) search was undertaken for the Proposal. Four sites were recorded; two to the east and two to the west of the works area; however no Aboriginal sites or places of cultural significance have been registered within the works footprint (refer to Section 5.6 for further detail).



Legislation	Section(s)	Comment
		As such, and given the extent of existing disturbance at the site, the Proposal is considered to present low risk to Aboriginal heritage and no additional consultation is required. Works will cease if an artefact or place of significance is disturbed or encountered during the Proposal and the Local Aboriginal Land Council (LALC) and OEH Cultural Heritage Division notified immediately.
<i>Threatened Species Conservation Act 1995</i>	Schedules 1, 1A, 2 and 3	Schedules of threatened species, populations and ecological communities were confirmed prior to site assessment. Based on field assessment, the Proposal has little potential to impact on habitat for threatened species or communities. The Proposal would incrementally contribute to Anthropogenic Climate Change, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption. No other KTPs would be noticeably contributed to by the Proposal.
<i>Heritage Act 1977</i>	Section 31 - 38A Section 170	Searches of the OEH State Heritage Branch database and Schedule 5 of the CVLEP 2011 were undertaken in relation to the Proposal. No heritage items have been identified at or in close proximity to the site.
<i>Native Vegetation Act 2003</i>	Section 25	Provisions of the Act do not apply to any clearing that is, or is part of, an activity carried out by a determining authority within the meaning of Part 5 of the EP&A Act if the determining authority has complied with that Part.

3.6.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), any action that has, or is likely to have, a significant impact on matters of national environmental significance or other aspects of the environment, such as on commonwealth land, may progress only with approval of the Commonwealth Minister for the Environment under Part 9 of the EPBC Act. There are no matters of national environmental significance that would be affected by the Proposal and therefore no Commonwealth referral or approval is necessary for the proposed works (also refer to **Section 7**).

3.7 Confirmation of Statutory Position

An assessment of the relevant statutory provisions and planning instruments has concluded that the Proposal can be carried out as development without consent under ISEPP and can be assessed under Part 5 of the EP&A Act.



4. Stakeholder Consultation

4.1 ISEPP Consultation

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State. Part 2, Division 1 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development.

In relation to Clause 13 of ISEPP, the Proposal would involve excavation of or adjacent to Council road infrastructure. Hence consultation with Council is required.

Since the inception of the Proposal and planning and environmental assessment for the NGCC, there has been ongoing consultation with CVC regarding various elements of the NGCC and ancillary works. This includes the involvement of CVC in the Avenue Road upgrade project. However as the proposed Avenue Road upgrade works are to occur under the ISEPP as development without consent, a letter was sent to Council on 01 May 2017 to formalise consultation for this specific activity under Part 5 of the EP&A Act, as required under Clause 13 of ISEPP. Mr Tim Jenkin's of CVC advised via email on 12 May 2017 that *apart from the standard investigation into flora and fauna impacts and heritage issues, other issues to consider are:*

- *There is a population of threatened plant, Melaleuca irbyana, along that area of Avenue Road. This plant is both State and Commonwealth listed threatened species.*

A substantial population of the threatened Weeping Paperbark (*Melaleuca irbyana*) occurs on adjacent land to the east of the proposed works area (Lots 19, 20 & 30 DP751376), with several hundred trees present. The closest Weeping Paperbark is within 5 m of the road reserve. Thorough searches of the eastern road reserve were completed and no Weeping Paperbark were recorded. Weeping Paperbark is listed as Endangered under the TSC Act however is not listed under the Commonwealth EPBC Act.

- *There is a watermain meant to go along the Avenue Road road corridor as well. Council has been in discussions with GeoLINK about that as they are designing the watermain. The interaction between the road and watermain construction and any impacts needs considering.*

Design changes to the proposed route of the water main mean that the pipeline and road upgrade do not overlap. The pipeline would enter the northern end of the NGCC property rather than stay within the road reserve adjacent to the NGCC.

- *An issue Pacific Complete is dealing with is that some the culvert extensions are long, with impacts potentially extending outside the road corridor. They are trying to design these impacts out at the moment so they are not an issue. The current design by Bonacci is only conceptual at this stage so it is unknown whether they will also have similar issues.*

The design has been checked by Bonacci and all culvert extensions would be located within the road reserve. The design of batters is being revised to steepen these to ensure they're located within the road reserve however some minor works at the boundary may be required to ensure scour as a result of these design changes does not occur.



In relation to Clauses 13 (other sub-clauses), 14 and 15 of ISEPP, the Proposal would not have a substantial impact on the other listed Council infrastructure, nor would it generate traffic that would strain the road system or impact local heritage or flood liable land. Hence consultation regarding these matters is not required.

The proposed road upgrade is not classified as specified development under the provisions of Clause 16 (2) of ISEPP; therefore consultation with relevant state government agencies is not required.

4.2 Community

Although separate to this project and REF, the EIS prepared for the NGCC also identified essential services/ infrastructure that would be required for the development. An Infrastructure Management Plan was also prepared and accompanied the EIS which gives an overview of the likely proposed infrastructure requirements and requisite upgrades associated with the NGCC project. These documents identified the need for various potential upgrades to Avenue Road. These documents were publically exhibited during the EIS and approval process and it would have been well known in the community that some level of infrastructure upgrades or extensions would be required and reasonably expected as part of the NGCC project.

The Avenue Road upgrade is not part of the NGCC approval but is rather being proposed and assessed as an Activity under Part 5 of the EP&A Act (development without consent). It would be constructed within the existing road reserve. Some design modifications are required to steepen the batters to ensure that all works are within the road reserve. The construction, including tie-in with existing private property access/ driveways would intersect three private properties. Given the nature of the Proposal subject to this, the localised scope and potential impacts, targeted consultation with the three affected landowners would occur. This is deemed sufficient given the scope and nature of the works. No additional/ broader community consultation is considered necessary, other than relevant on-going affected landowner consultation and standard notification/ management measures during the works, including those that advise local road users and/ or affected property owners of the works and any construction activities that may affect them.

4.3 Aboriginal Community

An Aboriginal Heritage Information Management System (AHIMS) search was undertaken. Four recorded sites were identified by the search; however an extensive search revealed that these are between 150 m east and 375 m west of the Proposal. No known Aboriginal sites or places of cultural significance have been registered within the proposed works footprint (refer to **Section 5.6**). As such, and given the extent of existing disturbance at the site and nature of the works, the Proposal is considered to present a low risk to Aboriginal heritage and no consultation is required at this stage.



5. Environmental Assessment

5.1 Ecology

5.1.1 Existing Environment

5.1.1.1 Vegetation

Vegetation within the area comprises Spotted Gum (*Corymbia henryi*)/ Grey Box (*Eucalyptus moluccana*) dry grassy sclerophyll forest, equivalent to *Spotted Gum - Grey Box - Grey Ironbark dry open forest of the Clarence Valley lowlands of the NSW North Coast Bioregion*.

Scattered vegetation occurs along the eastern road verge and the western road verge is grassed with very infrequent trees. Grassy verges are a mix of introduced species (Rhodes Grass *Chloris gayana*, Bahia Grass *Paspalum notatum*, Summer Grass *Digitaria ciliaris*) and native species (Scented-top Grass *Capillipedium spicigerum*, Blady Grass *Imperata cylindrica* and Three-awn speargrass *Aristida vagans*).

5.1.1.2 Fauna

The ecological assessment recorded the following fauna and fauna habitats within or in the vicinity of the proposed road upgrade works:

- A variety of woodland birds (34 species recorded), with open forest, native grassland and hollow-bearing trees creating good quality habitat.
- Three frog species (*Litoria fallax*, *Crinia signifera*, *Crinia parinsignifera*), one reptile species (*Lampropholis delicata*) and two mammal species (*Macropus rufogriseus*, *Trichosurus vulpecula*) were observed.
- Some trees show scratch marks indicative of use by arboreal species such as the Brushtail Possum, Sugar Glider, Feathertail Glider and (possibly) the Brush-tailed Phascogale.
- A number of habitat trees occur within the road reserve and would be affected by the Proposal.

5.1.1.3 Threatened Flora

A substantial population of the threatened Weeping Paperbark (*Melaleuca irbyana*) occurs on adjacent land to the east of the proposed works area (Lots 19, 20 & 30 DP751376), with several hundred trees present (refer to **Illustration 5.1**). The closest Weeping Paperbark is within 5 metres of the road reserve. Thorough searches of the eastern road reserve were completed and no Weeping Paperbark were recorded.

5.1.1.4 Threatened Ecological Communities

No threatened ecological communities were identified within or adjacent to the proposed road upgrade.

5.1.1.5 Threatened and Significant Fauna

Calls of the Grey-crowned Babbler were recorded more than 100 m east of the road reserve during ecological field surveys. While no birds or nesting dormitories were observed, this species is likely to occasionally forage within the road reserve and adjacent habitat to the east. A range of other fauna species may also occur within the road reserve on an opportunistic or seasonal basis.

5.1.2 Potential Impacts

The Proposal would require removal of up to 420 native trees (i.e. trees >10 cm DBH or >3 m in height). This includes numerous small trees such as regrowth Swamp Oak (*Casuarina glauca*). Species most commonly affected are Spotted Gum and Grey Box. Other affected species include Red Ash (*Alphitonia excelsa*), Swamp Oak, Wattles (*Acacia concurrens*, *A. disparrima* subsp. *disparrima*) and Forest Red Gum (*E. tereticornis*).

An estimated 110 dead native trees will also require clearing; it is noted that the majority of these are immature Swamp Oak less than 5 m in height. Up to 23 habitat trees may require removal, all of which contain hollows.

A number of threatened fauna species are likely to utilise the hollow-bearing trees within the works footprint. A threatened species potential occurrence table is provided in **Appendix B** which assesses the likelihood of occurrence. Seven-part tests of significance were then undertaken for all species either known to occur within the study area, or likely to utilise the works footprint for a significant part of their lifecycle (refer to **Appendix B**).

It is concluded that the proposed works is unlikely to result in a significant impact on any TSC Act listed threatened species, populations or endangered communities and therefore preparation of a Species Impact Statement is not required. Similarly, the proposed works is unlikely to result in significant impacts to any threatened species, communities or migratory species listed under the EPBC Act and referral to DoEE and approval by the Minister is not required.



Plate 5.1 Habitat tree



Plate 5.2 Weeping Paperbark on adjacent property



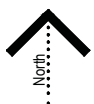
5.1.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to minimise adverse ecological impacts:

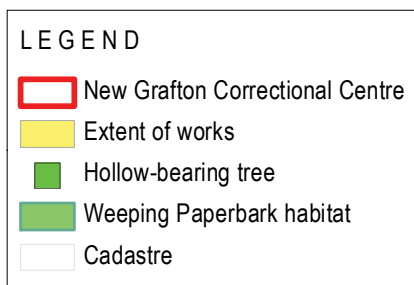
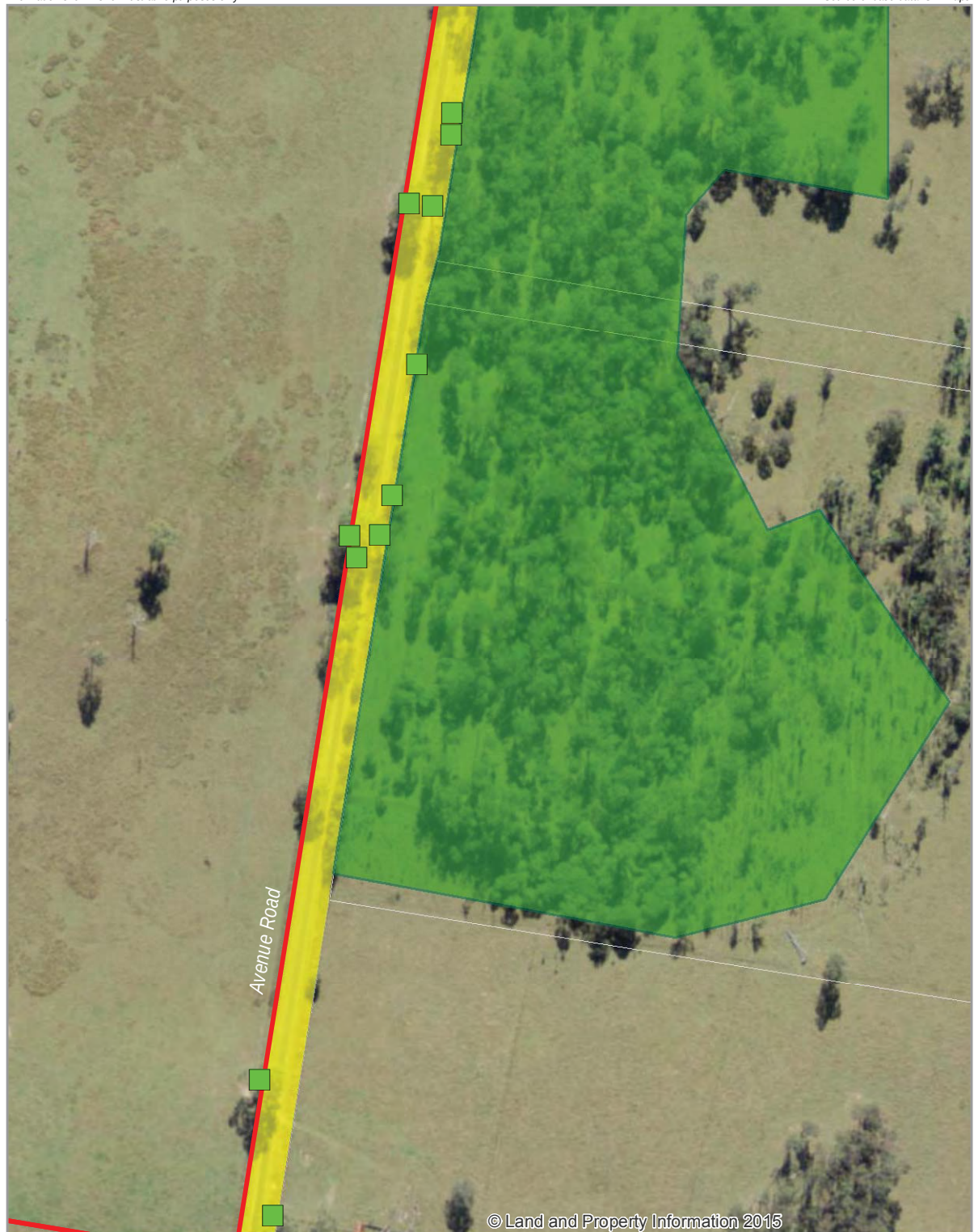
1. Two-stage clearing procedure will be undertaken (with ecologist present) when habitat trees are to be removed. This involves:
 - Pre-clearing checks.
 - Stage 1 clearing where non-habitat trees and underscrub are cleared 24 hours prior to the habitat tree being removed.
 - Pre-clearing checks.
 - Stage 2 clearing where the habitat tree is bumped, watched then carefully felled in the presence of an ecologist.
2. Retain trees (including habitat trees) wherever possible.
3. Nest boxes will be installed to compensate for habitat trees removed. It is recommended that 23 nest boxes be installed within retained forest within the NGCC land.
4. If a Koala or threatened fauna is found to be occupying a tree at the site, a flagged exclusion zone will be established (minimum 50 m) in which works will not proceed until the individual has moved from the site.
5. Temporary erosion and sediment control devices such as silt fencing will be installed and maintained, where required.
6. A spill containment kit, including equipment to address both terrestrial and aquatic spills, will be kept on site at all times during the proposed works. Staff will also be trained in the effective deployment of the spill containment kit.
7. Ground disturbance outside of that required to undertake the proposed works will be minimised.
8. Damage to trees outside of those that require clearing will be avoided at all times.
9. Stockpiling will not occur under the crown of existing native trees (i.e. the crown comprises the full width of the branches).
10. Stockpiling will not occur near drainage lines or on overland flow paths, and where necessary will be bunded or covered to reduce sediment runoff.
11. Trees will be felled in a way that minimises disturbance to adjacent retained native vegetation.
12. Works will be completed sensitively to ensure minimal disturbance occurs.
13. All vegetation removed will be chipped and removed from the site, unless hollow-bearing limbs can be set aside for placement within NGCC forested land.
14. No vegetation waste will be burnt.
15. Any materials to be removed from the site will be taken to a licensed waste facility for disposal or recycling.
16. All plant, equipment and personnel will be free of soil and potential weed propagules prior to being brought to the site.
17. Should injured fauna be found on the site, local wildlife care groups and/ or local veterinarians will be contacted immediately and arrangements made for the immediate welfare of the animal. The phone number of the local WIRES group (ph: 1800 094 737) will be known to the project foremen.
18. Environmental safeguards will be communicated to all construction personnel as part of an Environmental Site Induction, and repeated where appropriate at toolbox sessions prior to commencement of relevant work components.



LEGEND	
	New Grafton Correctional Centre
	Extent of works
	Hollow-bearing tree
	Weeping Paperbark habitat
	Cadastral

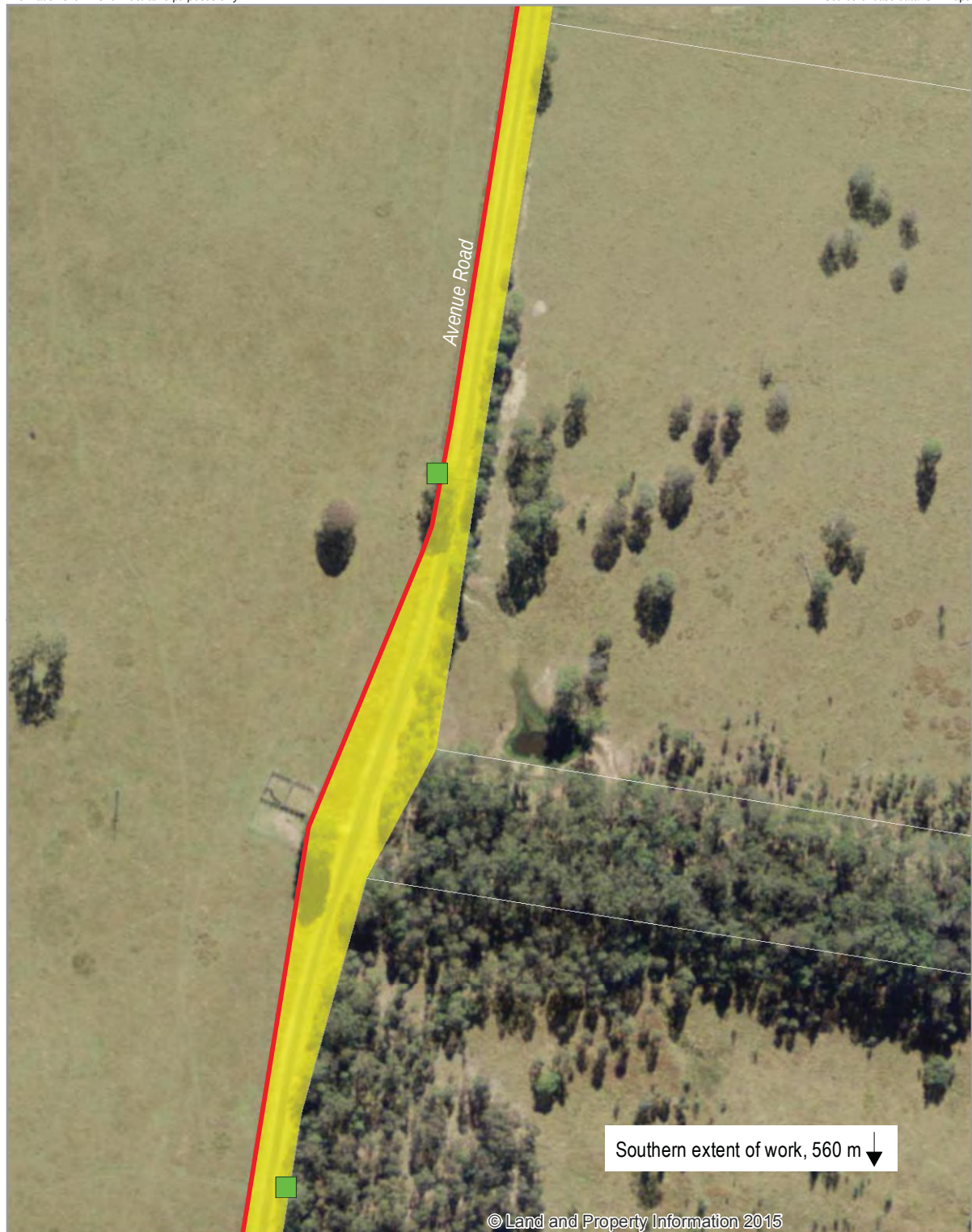


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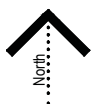
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GeoLINK
environmental management and design



LEGEND

- New Grafton Correctional Centre
- Extent of works
- Hollow-bearing tree
- Cadastre



0 60

GeoLINK
environmental management and design



5.2 Traffic and Access

5.2.1 Existing Environment

The Pacific Highway as well as local and regional road networks will be used to access the proposed work area on Avenue Road. There are three private property accesses on the section of road to be upgraded. The subject section of Avenue Road currently comprises a single lane, with a 4 m wide pavement.

5.2.2 Potential Impacts

There may be minor traffic disruptions associated with the proposed upgrade works and associated traffic control measures on Avenue Road and Old Six Mile Lane. Traffic would be generated by the Proposal during construction through:

- Construction employees entering and leaving the site;
- Equipment and plant being delivered to the site for construction purposes; and
- Periodic deliveries to the site for construction materials.

The existing volume and frequency of traffic to and from the site and on the nearby road network would render any additional traffic movements associated with the construction of the Proposal as low. This is particularly the case as most additional traffic movements would be generated during a temporary construction period. The impact of additional traffic movements associated with the proposed construction activities would represent a small and temporary increase compared to existing traffic movements. Impacts associated with increased traffic associated with the NGCC have been addressed in the relevant EIS and are not addressed here; nonetheless the proposed upgrade of Avenue Road would support any increased traffic volumes associated with the NGCC. Given the location of the works, current accessibility and the temporary nature of the construction period, no significant traffic impacts would result.

5.2.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to prevent adverse impacts relating to traffic and access:

19. Unencumbered access to a number of private properties along Avenue Road will be maintained (unless otherwise agreed in advance with the landowner) throughout the works and all driveway accesses of Avenue Road will be matched to the existing driveways.
20. In the unlikely event of a requirement to alter existing access or close a road, sufficient and appropriate notification will be provided to the affected traffic users.
21. Regard to public safety will be maintained at all times.



5.3 Soils, Erosion and Sedimentation

5.3.1 Existing Environment

The subject section of Avenue Road traverses flat to mildly undulating land. The Atlas of Australian Soils (Northcote *et. al.* 1960-1968) classifies the soil in the area as Kurosol soils. The area of works intersects two small areas mapped as having a high probability of Acid Sulfate Soil (refer to **Illustration 5.2**).

A search of the NSW DPI Cattle Dip Site Locator (<http://www.dpi.nsw.gov.au/content/agriculture/livestock/health/images/information-by-species/cattle/ticks/cattle-dip-site-locator>) was undertaken 19 April 2017 to determine if any cattle dip sites are recorded in proximity to the site. No recorded cattle dip sites are located within or proximate to the site.

A search of the NSW EPA Contaminated Land Register (<http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx>) was undertaken 19 April 2017 to determine if any areas of contaminated land occur in proximity to the site. There are two known records of contamination within the Clarence Valley LGA (Ashby Dry Dock, approximately 35 km north east of Ulmarra and the former Koolkhan Power Station, >10 km west of Ulmarra) however neither are proximate to the Proposal.

5.3.2 Potential Impacts

Excavation works associated with the Proposal would be limited to shallow depth excavations associated with the installation of erosion-sediment controls, lengthening of culverts, road widening and drainage installation. There is therefore the potential to disturb acid sulfate soils and there is a subsequent risk to soil and water resources associated with low pH runoff as well as contamination of areas associated with inappropriate management of excavated acid sulfate material.

There is also risk from erosion and sedimentation as a result of the ground disturbance. Whilst the local topography is very flat to gently undulating there are a number of drainage lines that traverse the works area; the proposed works therefore present a (manageable) risk to these watercourses from erosion and sedimentation.

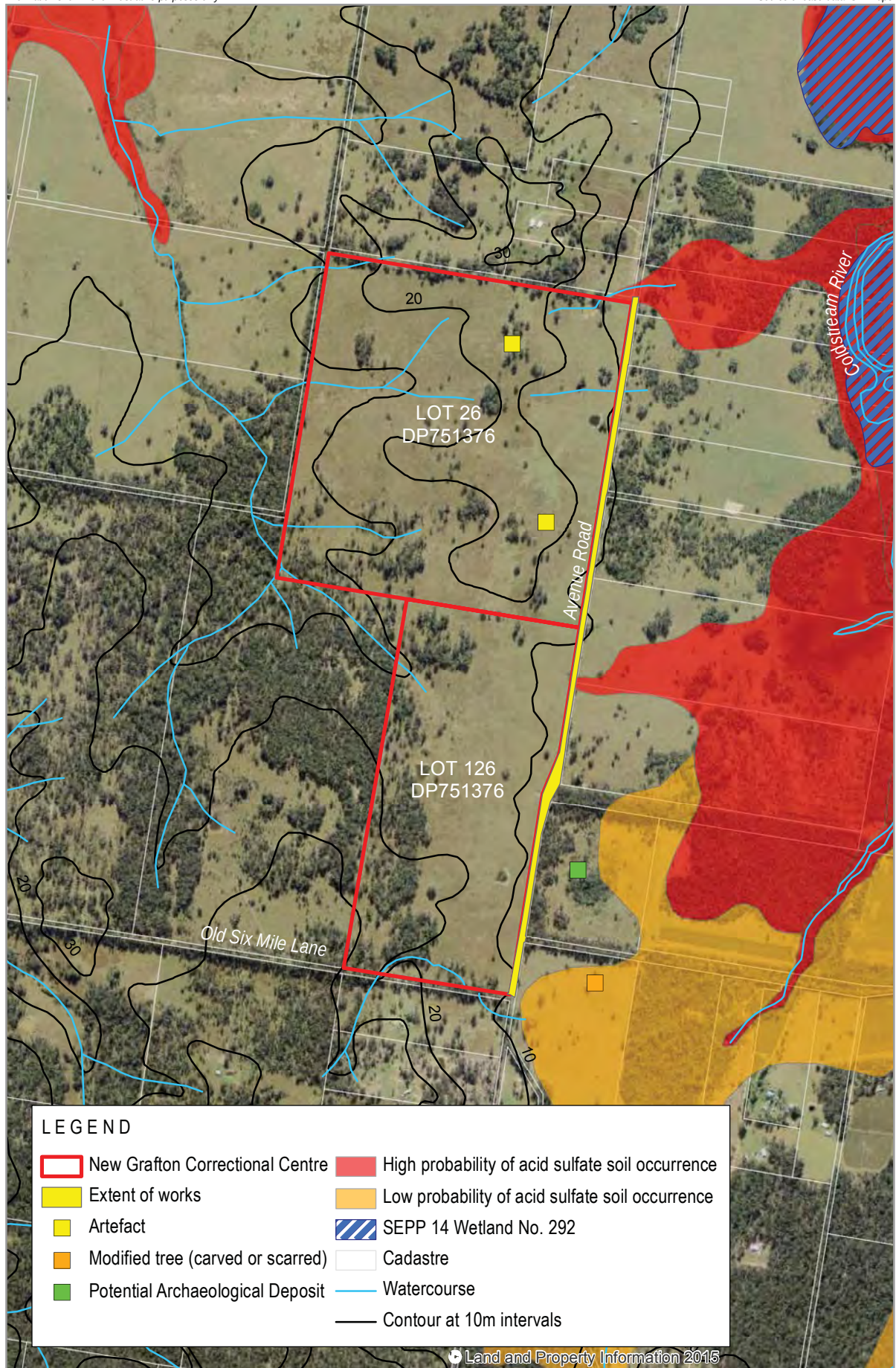
There is no apparent risk associated with contaminated land. Regardless, safeguards would be in place should unexpected contamination be encountered during the works.

5.3.3 Safeguards and Management Measures

The following safeguards and management measures will be implemented in order to prevent adverse soil, erosion and sedimentation impacts:

22. Erosion and sediment controls will be implemented in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book).
23. Works will be carefully managed in accordance with an Acid Sulfate Soils Management Plan, to manage risks associated with exposure of actual and/ or potential acid sulfate material, especially in proximity to the two areas identified in **Illustration 5.2** as having a high probability of Acid Sulfate Soil.

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24. Any unsuitable excavated material/ waste will be classified, managed appropriately (in accordance with the CEMP) including placement in approved stockpile locations, approved landfill facilities or Acid Sulfate Soil treatment facilities as appropriate.
 25. Work will not commence prior to installation of appropriate sediment control structures.
 26. Imported materials will be sourced as clean-fill from an approved site.
 27. Disturbance of natural sediments and vegetation will be minimised.
 28. In the event that unexpected contaminated land is encountered during the works, works will stop immediately and relevant procedures outlined in a CEMP will be followed.
 29. Erosion and sedimentation controls will be checked and maintained (including clearing of sediment from behind barriers) on a regular basis (including after any precipitation events) and records kept and provided on request.
 30. Works will cease and all erosion and sedimentation controls checked and repaired or re-installed (if required) if heavy rainfall was forecast.
 31. Only clean equipment and vehicles will be used, with equipment being cleaned down before being brought to the site.
 32. Erosion and sediment control measures will not be removed until the works are complete or disturbed areas are stabilised.



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5.4 Water Quality

5.4.1 Existing Environment

The proposed Avenue Road upgrade works are not proximate to any waterways with the exception of ephemeral drainage lines that intersect Avenue Road via culverts (refer to **Illustration 5.2**). These culverts were observed to mainly be 300 mm diameter and designed to take overland flow. Coldstream River is approximately 700 m to the east of the works at its nearest point.

With the exception of a number of farm dams, the closest being approximately 40 m from the proposed works, there are no other waterbodies proximate to the proposed works. The proposed upgrade area is outside the 1:20 ARI flood zone.

5.4.2 Potential Impacts

The Proposal presents a low risk to the waterways and wetlands that are adjacent to the proposed works. There is potential for impact to water quality of waterways and wetlands from erosion and sedimentation caused by the proposed earthworks associated with the road upgrade. Construction activities that could present a risk to waterways or sensitive environments in the broader landscape include ground disturbance, erosion and sedimentation and accidental chemical spills such as fuels, oils and solvents from use of plant and equipment on-site.

Hydraulic characteristics associated with the existing culverts could be altered by the proposed works. Culvert extension would therefore be designed and constructed to ensure conveyance characteristics of the ephemeral drainage lines are maintained at the existing capacity to prevent blockages.

With appropriate controls in place during construction, the Proposal is considered unlikely to present significant risk to waterways and wetlands in the area. Post construction, the Proposal would not have any potential to negatively impact water quality above or beyond the current situation.

5.4.3 Safeguards and Management Measures

The following measures (in addition to erosion and sediment control measures listed in **Section 5.3.3**) will be implemented in order to prevent adverse impacts relating to water quality:

33. Culvert extension will be designed and constructed to ensure conveyance characteristics of the ephemeral drainage lines are maintained at the existing capacity to prevent blockages.
34. A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment.
35. Any required fuels and other liquids will be stored in self-safe chemical storage containers.
36. All refuelling of plant and equipment will be undertaken in appropriately designated areas.
37. Cleaning of tools and equipment will occur off site.
38. All equipment will be maintained in good working order and operated according to manufacturer's specification.
39. No waste and/ or wastewater will be discharged directly or indirectly in drains or waterways.
40. The EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the POEO Act (via EPA Environment Line on 131 555).



5.5 Non-Aboriginal Heritage

5.5.1 Existing Environment

Searches of the Department of Environment and Energy Australian Heritage database, OEH State Heritage Branch database and Schedule 5 of the CVLEP 2011 were undertaken on 19 April 2017 in relation to the Proposal (refer to **Appendix C**). Only those results within or proximate to the proposed works are discussed below.

The Australian Heritage database lists Crowsnest Swamp Area, Deep Creek Road ((class: natural; Legal status: indicative place) within the Register of the National Estate. The register notes that this site is an '*Extensive wetland in good condition*'.

5.5.2 Potential Impacts

The Proposal presents some (manageable) risks to wetlands that are adjacent to the proposed works. Impacts to wetland areas from the Proposal can be appropriately managed with environmental safeguards to minimise any risk to the values of the listed wetlands.

The Proposal is considered to present low risk to Non-Aboriginal heritage; the Proposal would not represent a risk to any known heritage sites.

5.5.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to prevent adverse impacts to any items of non-Indigenous heritage:

41. If any suspected archaeological items are uncovered during the works, all works will cease in the vicinity of the material/ find. Contact with NSW OEH Heritage Branch will be made immediately.

5.6 Aboriginal Heritage

5.6.1 Existing Environment

Searches of the Office of the Environment and Heritage AHIMS were undertaken on 4 May 2017. An initial 'Basic Search' covering the area of proposed works plus a 50 m buffer indicated that four aboriginal sites are recorded in or near the search area. An 'Extensive Search' of the same areas was subsequently undertaken and indicated that the aforementioned aboriginal sites are between 150 m east and 375 m west of the proposed works area (refer to **Illustration 5.2**). The AHIMS searches are provided in **Appendix D**.

5.6.2 Potential Impacts

The Proposal is considered to present low risk to Aboriginal heritage, given the existing disturbed nature of the site and there are no registered items or objects of Aboriginal cultural heritage within the proposed works footprint.



5.6.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to prevent adverse impacts to any items of Aboriginal heritage:

42. If Aboriginal cultural material is identified on site, a Stop Work Procedure will be followed, which includes:
 - Works will cease immediately.
 - A temporary exclusion zone established.
 - Local Aboriginal Land Council contacted immediately.
 - OEH contacted immediately.
43. Aboriginal human remains – should skeletal material be exposed during ground disturbance, work will cease immediately and contact made with NSW Police, National Parks and Wildlife and the Local Aboriginal Land Council as per OEH requirements.
44. Notifying OEH – it is a legislative requirement that cultural heritage materials uncovered as a result of the Proposal are registered as Aboriginal sites with OEH on the AHIMS database within the required timeframe.

5.7 Noise and Vibration

5.7.1 Existing Environment

The land to the west of Avenue Road (within the proposed upgrade section) is currently associated with agricultural use and will be the site of the proposed NGCC. To the west of the proposed road upgrade, the land is partially cleared for agriculture. There are no private dwellings within 400 m of the proposed works. The existing background noise is typical for a rural area and includes local vehicle traffic noise and agricultural noises associated with farm machinery and livestock.

5.7.2 Potential Impacts

Noise from the Proposal would be typical of that associated with construction work and would be generated by machinery and equipment, vehicles and tree removal. Noise and possibly vibration emissions within the immediate area have the potential to affect residences; however, given the nearest property to the works is greater than 400 m to the north-west of the northern most extent of the proposed works, impacts are considered unlikely. Furthermore, the works area is linear so that the duration of any noise exposure to this nearest residence would be short lived.

Construction traffic would use the existing local road network, with traffic numbers likely to be small enough to be absorbed into general traffic numbers without an audible change in noise level.

Under the EPA's Interim Construction Noise Guidelines (NSW EPA 2009):

- The noise management level for works during the recommended standard hours is background + 10 dB(A). Above this noise level, the proponent needs to implement all feasible and reasonable work practices, as defined in the Guideline, to minimise noise impacts;
- For works outside the recommended standard hours, the noise management level is background + 5 dB(A); and

- 
- The highly noise-affected level of LAeq 75 dB(A) represents the point above which there may be strong community reaction to noise and indicates a need to consider other feasible and reasonable ways to reduce noise, such as restricting the times of very noisy works to provide respite to affected residences.

The NSW EPA website suggests that review of predicted noise levels for some recent major construction projects indicated that a level of 75 dB(A) would not likely be triggered on many projects. Given the scale, location and methodology of the proposed works, it is unlikely that the Proposal would result in a highly noise-affected level of LAeq 75 dB(A) at any local sensitive receiver.

Overall, no significant short term or long term adverse noise and vibration impacts are expected to result from the Proposal and reasonable safeguard and management measures can be implemented to ensure no adverse impacts.

5.7.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to address adverse impacts relating to noise and vibration:

45. Construction activities will be undertaken in accordance with EPA recommended standard construction hours:
 - Monday to Friday 7 am to 6 pm;
 - Saturday 8 am to 1 pm;
 - No work on Sundays or public holidays.
46. Any noise complaints will be recorded and include suitable identification/ description of the noise source (e.g. continual/ impulsive) and general location of the complaint. Any noise complaints will be investigated and actioned as required.
47. The CEMP will include controls relevant to management of noise and vibration specific to the proposed works.
48. All vehicles and equipment will be turned off and not left idling when not required for work uses.
49. All plant will be fitted with appropriate exhaust systems to ensure compliance with pollution and noise emission standards.

5.8 Air Quality

5.8.1 Existing Environment

The Proposal is located in a predominantly rural context. Potential airborne particles within the locality are largely restricted to agricultural activities, vehicle emissions and minor dust generated by vehicle movements in the broader landscape.

5.8.2 Potential Impacts

The Proposal may temporarily affect air quality through exhaust emissions from machinery and associated transportation. There may also be minor dust generated during excavations and the removal of trees. The nearest sensitive receiver is a residence greater than 400 m to the north-west of the northern most extent of the proposed works. It is considered unlikely that emissions and dust generated from the works would result in air quality impacts to this receiver (or receivers further afield)



especially given the temporary duration of the works. Regardless, impacts to air quality would be managed or minimised through implementation of safeguards and management measures.

5.8.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to prevent adverse impacts relating to air quality:

- 50. Vegetation or other materials will not to be burnt on site.
- 51. Vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation.
- 52. Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
- 53. Machinery and vehicles not in use during construction will be turned off and not left to unnecessarily run idle.
- 54. Vehicles, machinery and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the *Protection of the Environment Operations Act 1997* and associated regulation.

5.9 Visual Environment

5.9.1 Existing Environment

The proposed works lie predominantly within gently undulating flood plains. The visual environment is predominantly of a rural landscape.

5.9.2 Potential Impacts

During construction there may be minor visual impacts associated with views of construction plant, equipment and construction site activities. Given the low profile of the road, any visual changes or impacts to the landscape associated with the works after completion are considered negligible. There would be some visual impact associated with the removal of trees from within the road reserve. Given these trees do not represent a well-defined natural screening effect for any particular receiver (e.g. residence), nor do they represent an important scenic context of vista; their removal is not expected to contribute to any long term visual issues.

5.9.3 Safeguards and Management Measures

The following measures will be implemented in order to prevent and/ or minimise adverse impacts relating to visual amenity:

- 55. Vegetation will only be cleared to the minimum extent necessary to undertake the proposed works.
- 56. Upon completion of the works, any works areas will be restored to an acceptable visual state.
- 57. All sites will be maintained, kept free of rubbish and cleaned up at the end of each work day.



5.10 Land Use and Property

5.10.1 Existing Environment

The proposed Avenue Road upgrade works are within CVC road reserve. The works would intersect three existing private property accesses.

5.10.2 Potential Impacts

Potential impacts to land use and property is considered low given:

- Works are restricted to the road reserve.
- Access to privately owned property would be maintained at all times.
- Negligible effect on land use resulting from proposed works.

5.10.3 Safeguards and Management Measures

Refer to management measures listed in **Section 5.2** (Traffic and Access) regarding maintaining unencumbered access to private properties (unless otherwise agreed in advance with the landowner) throughout the works and matching ground levels of existing driveways to ensure no change in access conditions.

5.11 Socio-economic

5.11.1 Existing Environment

The land to the west of Avenue Road (within the proposed upgrade section) is currently associated with agricultural use and would be the site of the NGCC. To the east of the proposed upgrade, the land is partially cleared agricultural area. There are no residences within 400 m of the proposed works.

5.11.2 Potential Impacts

The Proposal is unlikely to cause any negative socio-economic impacts. There is unlikely to be any significant disruption to traffic or access during construction.

The Proposal would result in positive socio-economic outcomes as it would support the operation of the NGCC in the long term. The long-term community benefit resulting from the Proposal would outweigh any potential short-term effects or disturbances. Given the nature of the Proposal, the site context and temporary construction period, no adverse long-term socio-economic impacts are anticipated.

5.11.3 Safeguards and Management Measures

The following mitigation measures will be implemented in order to prevent adverse socio-economic impacts:

58. Contractors/ workers will be mindful of the needs of the local community.

- 
59. Any potentially impacted parties or landholders will be consulted prior to construction with a goal of minimising or eliminating any adverse impacts.
60. Any changes to public or private roads (including private driveways) as a result of the works will be reinstated to an acceptable standard upon completion of the works.

5.12 Waste

5.12.1 Potential Impacts

The Proposal would be undertaken to ensure minimal impacts are generated from waste produced on site by ensuring that all waste is managed appropriately. Waste generated from the Proposal may include, but is not limited to:

- Packaging materials;
- General site rubbish;
- Oils and grease from machinery;
- Soil spoils; and
- General building materials waste.

5.12.2 Safeguards and Management Measures

Measures to prevent adverse impacts in relation to generated waste will include:

61. Working areas will be maintained, kept free of rubbish and cleaned up at the end of each day.
62. Waste material will not be left on site once the works have been completed.
63. Ensure the responsible environmental management of wastes that cannot be avoided and promote opportunities for the re-use of waste products where appropriate.
64. Waste will be disposed of at a licensed waste or recycling facility as appropriate.

5.13 Climate Change

5.13.1 Existing Environment

Climate change associated with global warming resultant from human activities and the creation of greenhouse gases affects the environment.

5.13.2 Potential Impacts

The Proposal would contribute to carbon emissions and climate change to a minor extent via the emissions of carbon dioxide by construction equipment and traffic as well as the consumption of materials requiring carbon emissions and the removal of vegetation that may otherwise act as a carbon sink. Given the scale of the works however, the influence on climate change would be negligible. However, it is appropriate to implement measures that can reduce or minimise such effects.



5.13.3 Safeguards and Management Measures

Mitigation measures to prevent adverse impacts in relation to climate change will include:

- 65. Vehicles and equipment will be switched off when not required for direct construction activities.
- 66. Waste will be minimised and is otherwise to be recycled or disposed of appropriately.

5.14 Cumulative Impacts

Under Clause 228 of the Environmental Planning and Assessment Regulation 2000, any cumulative environmental effect with other existing or likely future activities must be taken into account when assessing the impact of an activity for the purposes of Part 5 of the EP&A Act.

The Proposal is expected to add to a number of cumulative impacts including resource consumption, vegetation clearing and generation of greenhouse gas emissions (eg. through operation of vehicles and equipment). However, the mitigation measures stated within **Section 5** and the methodology for completion of the Proposal aim to minimise the extent to which the Proposal contributes to cumulative adverse environmental impacts.

5.15 Ecologically Sustainable Development

The principles of ecologically sustainable development are outlined in Schedule 2 of the Environmental Planning and Assessment Regulation 2000, in relation to EIS requirements. Whilst an EIS is not required for this project, a consideration of these principles is useful.

5.15.1 Precautionary Principle

Schedule 2 of the Environmental Planning and Assessment Regulation 2000 states that “the ‘precautionary principle’, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- ii) an assessment of the risk-weighted consequences of various options”.

To satisfy the precautionary principle, this REF has conducted a thorough analysis of potential environmental, economic and social concerns. This assessment has identified and examined potential impacts and developed appropriate mitigation measures and safeguards to help avoid and/or minimise any impacts and safeguard the environment. Considering this assessment’s findings, the Proposal is unlikely to impose significant and/ or long-term adverse impacts on the environment, economy, or community. The mitigation measures and safeguards outlined in this REF would be implemented to ensure sound environmental outcomes in all aspects of the Proposal.



5.15.2 Intergenerational Equity

Schedule 2 of the Environmental Planning and Assessment Regulation 2000 defines inter-generational equity as “the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations”.

The Proposal would not significantly affect the viability of local or threatened species, or any EECs. Therefore local biodiversity values would not be substantially adversely affected by the Proposal and would be maintained for future generations.

5.15.3 Conservation of Biological Diversity and Ecological Integrity

Schedule 2 of the Environmental Planning and Assessment Regulation 2000 requires the “conservation of biological diversity and ecological integrity”, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The impacts to ecological integrity and conservation of biological diversity at the site have been thoroughly assessed as part of this REF. No threatened species, endangered populations or EECs are likely to be significantly affected by the Proposal. No populations of native species are likely to be made locally rare or unviable as a result of the Proposal. Consequently the ecological integrity and biological diversity would be maintained at the site.

5.15.4 Improved Valuation, Pricing and Incentive Mechanisms

The following principles of valuation, pricing and incentive as per Schedule 2 of the Environmental Planning and Assessment Regulation 2000 are acknowledged as part of this review:

- i) Polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement.
- ii) The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.
- iii) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

It is difficult, however, to assign a monetary value to the environment of a locality or to environmental resources not considered for commercial use. The proponent has taken an approach to manage the potential environmental impacts of the Proposal by identifying appropriate safeguards to avoid or mitigate adverse environmental effects. This would ensure that the integrity of the environment is not degraded, is managed and enhanced.

6. Environmental Management

Table 6.1 provides a summary of the mitigation measures and safeguards detailed in this report that would be implemented.

Table 6.1 Summary of Mitigation Measures and Safeguards

<i>Environmental Attribute</i>	<i>Mitigation Measures/ Safeguards</i>
Ecology	- Two-stage clearing procedure will be undertaken (with ecologist present) when habitat trees are to be removed. This involves: - Pre-clearing checks. - Stage 1 clearing where non-habitat trees and underscrub are cleared 24 hours prior to the habitat tree being removed. - Pre-clearing checks. - Stage 2 clearing where the habitat tree is bumped, watched then carefully felled in the presence of an ecologist. - Retain trees (including habitat trees) wherever possible. - Nest boxes will be installed to compensate for habitat trees removed. It is recommended that 23 nest boxes be installed within retained forest within the NGCC land. - If a Koala or threatened fauna is found to be occupying a tree at the site, a flagged exclusion zone will be established (minimum 50 m) in which works will not proceed until the individual has moved from the site. - Temporary erosion and sediment control devices such as silt fencing will be installed and maintained, where required. - A spill containment kit, including equipment to address both terrestrial and aquatic spills, will be kept on site at all times during the proposed works. Staff will also be trained in the effective deployment of the spill containment kit. - Ground disturbance outside of that required to undertake the proposed works will be minimised. - Damage to trees outside of those that require clearing will be avoided at all times. - Stockpiling will not occur under the crown of existing native trees (i.e. the crown comprises the full width of the branches). - Stockpiling will not occur near drainage lines or on overland flow paths, and where necessary will be bunded or covered to reduce sediment runoff. - Trees will be felled in a way that minimises disturbance to adjacent retained native vegetation. - Works will be completed sensitively to ensure minimal disturbance occurs. - All vegetation removed will be chipped and removed from the site, unless hollow-bearing limbs can be set aside for placement within NGCC forested land. - No vegetation waste will be burnt. - Any materials to be removed from the site will be taken to a licensed waste facility for disposal or recycling. - All plant, equipment and personnel will be free of soil and potential



<i>Environmental Attribute</i>	<i>Mitigation Measures/ Safeguards</i>
	weed propagules prior to being brought to the site. 17. Should injured fauna be found on the site, local wildlife care groups and/ or local veterinarians will be contacted immediately and arrangements made for the immediate welfare of the animal. The phone number of the local WIRES group (ph: 1800 094 737) will be known to the project foremen. 18. Environmental safeguards will be communicated to all construction personnel as part of an Environmental Site Induction, and repeated where appropriate at toolbox sessions prior to commencement of relevant work components.
Traffic and Access	19. Unencumbered access to a number of private properties along Avenue Road will be maintained (unless otherwise agreed in advance with the landowner) throughout the works and all driveway accesses of Avenue Road will be matched to the existing driveways. 20. In the unlikely event of a requirement to alter existing access or close a road, sufficient and appropriate notification will be provided to the affected traffic users. 21. Regard to public safety will be maintained at all times.
Soils, Erosion and Sedimentation	22. Erosion and sediment controls will be implemented in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book). 23. Works will be carefully managed in accordance with an Acid Sulfate Soils Management Plan, to manage risks associated with exposure of actual and/ or potential acid sulfate material, especially in proximity to the two areas identified in Illustration 5.2 as having a high probability of Acid Sulfate Soil. 24. Any unsuitable excavated material/ waste will be classified, managed appropriately (in accordance with the CEMP) including placement in approved stockpile locations, approved landfill facilities or Acid Sulfate Soil treatment facilities as appropriate. 25. Work will not commence prior to installation of appropriate sediment control structures. 26. Imported materials will be sourced as clean-fill from an approved site. 27. Disturbance of natural sediments and vegetation will be minimised. 28. In the event that unexpected contaminated land is encountered during the works, works will stop immediately and relevant procedures outlined in a CEMP will be followed. 29. Erosion and sedimentation controls will be checked and maintained (including clearing of sediment from behind barriers) on a regular basis (including after any precipitation events) and records kept and provided on request. 30. Works will cease and all erosion and sedimentation controls checked and repaired or re-installed (if required) if heavy rainfall was forecast. 31. Only clean equipment and vehicles will be used, with equipment being cleaned down before being brought to the site. 32. Erosion and sediment control measures will not be removed until the works are complete or disturbed areas are stabilised.
Water Quality	33. Culvert extension will be designed and constructed to ensure conveyance characteristics of the ephemeral drainage lines are



Environmental Attribute	Mitigation Measures/ Safeguards
	maintained at the existing capacity to prevent blockages. 34. A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment. 35. Any required fuels and other liquids will be stored in self-safe chemical storage containers. 36. All refuelling of plant and equipment will be undertaken in appropriately designated areas. 37. Cleaning of tools and equipment will occur off site. 38. All equipment will be maintained in good working order and operated according to manufacturer's specification. 39. No waste and/ or wastewater will be discharged directly or indirectly in drains or waterways. 40. The EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the POEO Act (via EPA Environment Line on 131 555).
Non-Aboriginal Heritage	41. If any suspected archaeological items are uncovered during the works, all works will cease in the vicinity of the material/ find. Contact with NSW OEH Heritage Branch will be made immediately.
Aboriginal Heritage	42. If Aboriginal cultural material is identified on site, a Stop Work Procedure will be followed, which includes: • Works will cease immediately. • A temporary exclusion zone established. • Local Aboriginal Land Council contacted immediately. • OEH contacted immediately. 43. Aboriginal human remains – should skeletal material be exposed during ground disturbance, work will cease immediately and contact made with NSW Police, National Parks and Wildlife and the Local Aboriginal Land Council as per OEH requirements. 44. Notifying OEH – it is a legislative requirement that cultural heritage materials uncovered as a result of the Proposal are registered as Aboriginal sites with OEH on the AHIMS database within the required timeframe.
Noise and Vibration	45. Construction activities will be undertaken in accordance with EPA recommended standard construction hours: • Monday to Friday 7 am to 6 pm; • Saturday 8 am to 1 pm; • No work on Sundays or public holidays. 46. Any noise complaints will be recorded and include suitable identification/ description of the noise source (e.g. continual/ impulsive) and general location of the complaint. Any noise complaints will be investigated and actioned as required. 47. The CEMP will include controls relevant to management of noise and vibration specific to the proposed works. 48. All vehicles and equipment will be turned off and not left idling when not required for work uses. 49. All plant will be fitted with appropriate exhaust systems to ensure compliance with pollution and noise emission standards.



Environmental Attribute	Mitigation Measures/ Safeguards
Air Quality	50. Vegetation or other materials will not to be burnt on site. 51. Vehicles transporting waste or other materials that may produce odours or dust will be covered during transportation. 52. Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely. 53. Machinery and vehicles not in use during construction will be turned off and not left to unnecessarily run idle. 54. Vehicles, machinery and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the <i>Protection of the Environment Operations Act 1997</i> and associated regulation.
Visual Environment	55. Vegetation will only be cleared to the minimum extent necessary to undertake the proposed works. 56. Upon completion of the works, any works areas will be restored to an acceptable visual state. 57. All sites will be maintained, kept free of rubbish and cleaned up at the end of each work day.
Socio-economic	58. Contractors/ workers will be mindful of the needs of the local community. 59. Any potentially impacted parties or landholders will be consulted prior to construction with a goal of minimising or eliminating any adverse impacts. 60. Any changes to public or private roads (including private driveways) as a result of the works will be reinstated to an acceptable standard upon completion of the works.
Waste	61. Working areas will be maintained, kept free of rubbish and cleaned up at the end of each day. 62. Waste material will not be left on site once the works have been completed. 63. Ensure the responsible environmental management of wastes that cannot be avoided and promote opportunities for the re-use of waste products where appropriate. 64. Waste will be disposed of at a licensed waste or recycling facility as appropriate.
Climate Change	65. Vehicles and equipment will be switched off when not required for direct construction activities. 66. Waste will be minimised and is otherwise to be recycled or disposed of appropriately.

7. Summary of Consideration of Environmental Factors

7.1 Clause 228 Checklist (NSW Legislation)

As part of its obligation under Section 111 of the EP&A Act, the determining authority is required to take into account, to the fullest extent possible, all matters likely to affect the environment. The determining authority is required by Clause 228 of the Environmental Planning and Assessment Regulations 2000 to give consideration to a number of factors that are listed below. Table 7.1 provides a summary of the key issues relevant to each factor and the key mitigation measures proposed.

Table 7.1 Clause 228 Checklist (NSW Legislation)

	<i>Factor</i>	<i>Impact</i>
a	Any Environmental Impact on a Community	
	The community would not be affected through declines in the local environment as a result of the Proposal. Mitigation measures have been designed to reduce environmental impacts on the community to negligible levels (refer to Section 5).	Nil
b	Any Transformation of a Locality	
	The proposed works involve upgrade of a section of public road with works restricted to the road reserve. Tree removal would be the main visual change; however, the visual impacts of the Proposal are not expected to be significant.	Minor
c	Any Environmental Impact on the Ecosystems of the Locality	
	The ecosystems of the locality would not be affected through declines in local environmental values (e.g. biodiversity, physical environment) as a result of the Proposal. Extensive mitigation measures have been designed to reduce environmental impacts (refer to Section 5).	Nil
d	Any Reduction of the Aesthetic, Recreational, Scientific or Other Environmental Quality or Value of a Locality	
	It is not expected that a reduction in the scientific quality of the locality would occur due to the Proposal in the long term.	Nil
	No reduction in the quality of the environment would occur due to the mitigation measures detailed in Section 5 of this REF. No significant changes of the locality are expected to occur.	Nil
e	Any Effect on A Locality, Place or Building Having Aesthetic, Anthropological, Archaeological, Architectural, Cultural, Historical, Scientific or Social Significance or Other Special Value for Present or Future Generations	
	The site is within a rural area and the Proposal is not expected to impact the existing land uses. There will be no significant impacts to heritage, visual amenity or social significance and as such impacts are therefore considered to be negligible.	Negligible
f	Any Impact on the Habitat of Protected Fauna (Within the Meaning of the National Parks and Wildlife Act 1974)	
	With effective implementation of the safeguards provided in Section 5 of this REF, the Proposal is not considered likely to have a significant negative impact on the habitat of any other protected fauna.	Nil

	<i>Factor</i>	<i>Impact</i>
g	Any Endangering of any Species of Animal, Plant or Other Form of Life Whether Living on Land, in Water or in the Air	
	With effective implementation of the safeguards provided in Section 5 of this REF, the Proposal is not considered likely to significantly endanger any species of animal, plant or other form of life.	Nil
h	Any Long Term Effects on the Environment	
	No negative long term impacts would occur in the locality given the implementation of the proposed safeguards and measures in Section 5 of this REF.	Nil:
i	Any Degradation of the Quality of the Environment	
	Degradation of the quality of the environment is not expected. Given the safeguards in Section 5 of this REF, any impacts are considered unlikely.	Nil
j	Any Risk to the Safety of the Environment	
	No negative long term impacts would occur in the locality given the implementation of the proposed measures in Section 5 of this REF.	Nil
k	Any Reduction in the Range of Beneficial Uses of the Environment	
	The proposed works would not result in any reduction in the range of beneficial uses of the environment.	Nil
l	Any Pollution of the Environment	
	The proposed works may adversely affect air quality during construction. The mitigation measures determined in Section 5 would minimise the duration and impact. Once construction is complete, the installation is not expected to adversely impact on air quality.	Minor
	No reduction in the quality of the environment associated with water would occur due to the mitigation measures detailed in Section 5 of this REF.	Nil
	Waste materials, fuel spills and particulate matter have the potential to cause pollution to the environment. However, given the proposed safeguards detailed in Section 5 of this REF and all waste being disposed within an appropriate/ approved waste disposal facility, pollution to the environment would be minimised.	Minor
m	Any Environmental Problems Associated with the Disposal of Waste	
	Any wastes would be disposed of in a manner which would not damage or disturb any native flora or fauna or the physical environment. The disposal of such waste would be within a waste management facility in accordance with OEH approved methods of waste disposal. Safeguards detailed in Section 5 of this REF would protect the environment from problems associated with waste disposal.	Nil
n	Any Increased Demands on Resources (Natural or Otherwise) that are likely to Become in Short Supply	
	The project does not create any demand for resources that are in short supply nor is it likely to result in an increased demand on any natural resources that are likely to become in short supply.	Nil
o	Any Cumulative Environmental Effect with Other Existing or Likely Future Activities	
	The proposed works are unlikely to have any significant impact on the environment, therefore would not contribute to any cumulative impacts.	Nil

7.2 EPBC Act 1999 (Commonwealth Legislation)

The EPBC Act protects/ regulates matters of national environmental significance (MNES), including:

- World heritage properties.
- National heritage places.
- Wetlands of international importance.
- Nationally threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- A water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land'. Database searches were completed in May 2017 encompassing a 1 km radius search area from the proposed works (refer to **Appendix E**). Search results following the site assessment are considered in **Table 7.2**.

Table 7.2 EPBC Act Considerations

<i>Matter</i>	<i>Impact</i>
Any impact on a World Heritage property?	
No World Heritage properties occur within 10 km of the site.	Nil
Any impact on a National Heritage place?	
No National Heritage places occur within 10 km of the site.	Nil
Any impact on a wetland of international importance?	
No wetlands of international importance (Ramsar Sites) occur within 10 km of the site.	Nil
Any impact on nationally threatened species and ecological communities?	
Habitat for two threatened ecological community, 36 threatened species and 23 marine species is identified within 10 km of the site. The vegetation present does not conform to the definition of any federally listed threatened ecological communities, and no federally listed threatened flora or fauna species were recorded. Based on the minor nature of the works, no listed threatened species or communities are likely to be significantly affected by the Proposal.	Negligible
Any impact on Migratory species?	
Thirteen migratory species (or their habitat) are known to or have potential to occur within 10 km of the site. Based on the minor nature of the works, no listed migratory species are likely to be significantly affected by the Proposal (refer to Section 5).	Negligible
Any impact on a Commonwealth marine area?	
No Commonwealth marine areas occur within 10 km of the site.	Nil
Any impact on the Great Barrier Reef Marine Park?	
The Great Barrier Reef Marine Park is distant from the site.	Nil
Does the Proposal involve a nuclear action (including uranium mining)?	
The Proposal does not involve a nuclear action.	Nil

Matter**Impact****Any impact on a water resource, in relation to coal seam gas development and large coal mining development?**

The Proposal does not involve any impact on a water resource, in relation to coal seam gas development and large mining development.

Nil

The assessment of the impact of the Proposal on MNES and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant MNES. Accordingly, the Proposal has not been referred to the Australian Government Department of the Environment and Energy.



8. Conclusion

All relevant statutory planning instruments have been examined in relation to the Proposal. Based on the review undertaken, the Proposal does not require development consent and is subject to environmental impact assessment (this REF) under Part 5 of the EP&A Act.

The proposed upgrade of Avenue Road is an important element of infrastructure to support the NGCC. The potential environmental impacts posed by the Proposal have been thoroughly examined through this REF. Some minor impacts would occur locally; however, it is unlikely that any significant or long-term adverse impacts would eventuate. To help ensure that the extent of impacts is limited and that unavoidable impacts likely to occur are managed and minimised, mitigation measures and safeguards have been developed and would be implemented and monitored. These measures are provided in **Sections 5 and 6**.

The Proposal is considered justifiable taking into account the potential environmental impacts and subsequent mitigation measures and safeguards. The Proposal supports the establishment and operation of the NGCC. The Proposal is in accordance with ESD principles and consistent with the objectives of the EP&A Act.



Certification

This Review of Environmental Factors provides a true and fair review of the Proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the Proposal.

Signature:



Veronica Silver

Senior Ecologist/ Planner/ Project Manager

GeoLINK

Date: 18 May 2017

I have examined this Review of Environmental Factors and the certification by Veronica Silver and accept the Review of Environmental Factors on behalf of CVC.

Signature:

Name:

Title:

Date:



References

Northcote, K. H. with Beckmann, G. G., Bettenay, E., Churchward, H. M., Van Dijk, D. C., Dimmock, G. M., Hubble, G. D., Isbell, R. F., McArthur, W. M., Murtha, G. G., Nicolls, K. D., Paton, T. R., Thompson, C. H., Webb, A. A. and Wright, M. J. (1960-1968). *Atlas of Australian Soils, Sheets 1 to 10*. With explanatory data (CSIRO Aust. and Melbourne University Press: Melbourne).

NSW EPA (2009). *Interim Construction Noise Guideline* [Online]. Available (<http://www.epa.nsw.gov.au/resources/noise/09265cng.pdf>) [Assessed March 2017].



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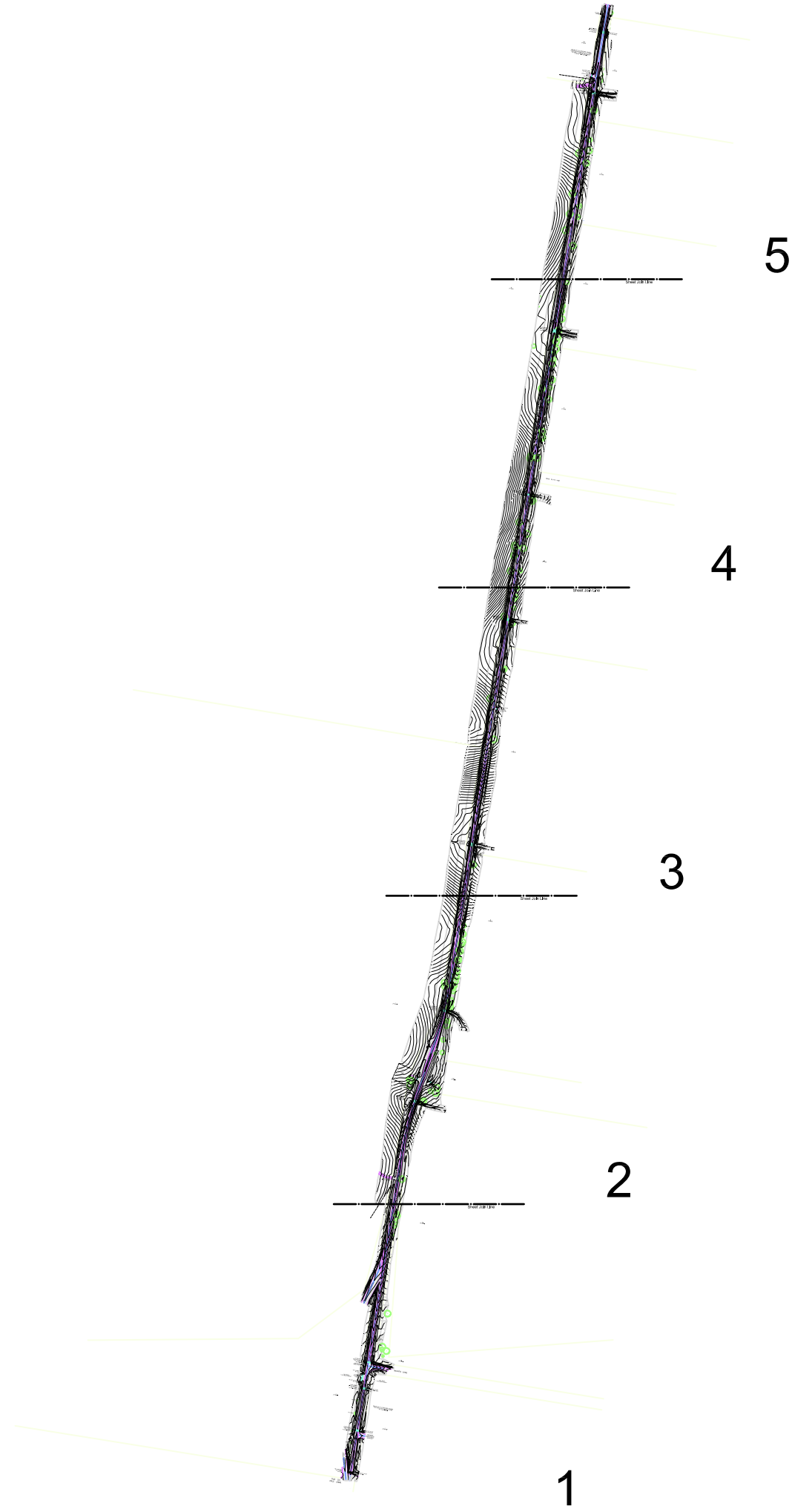
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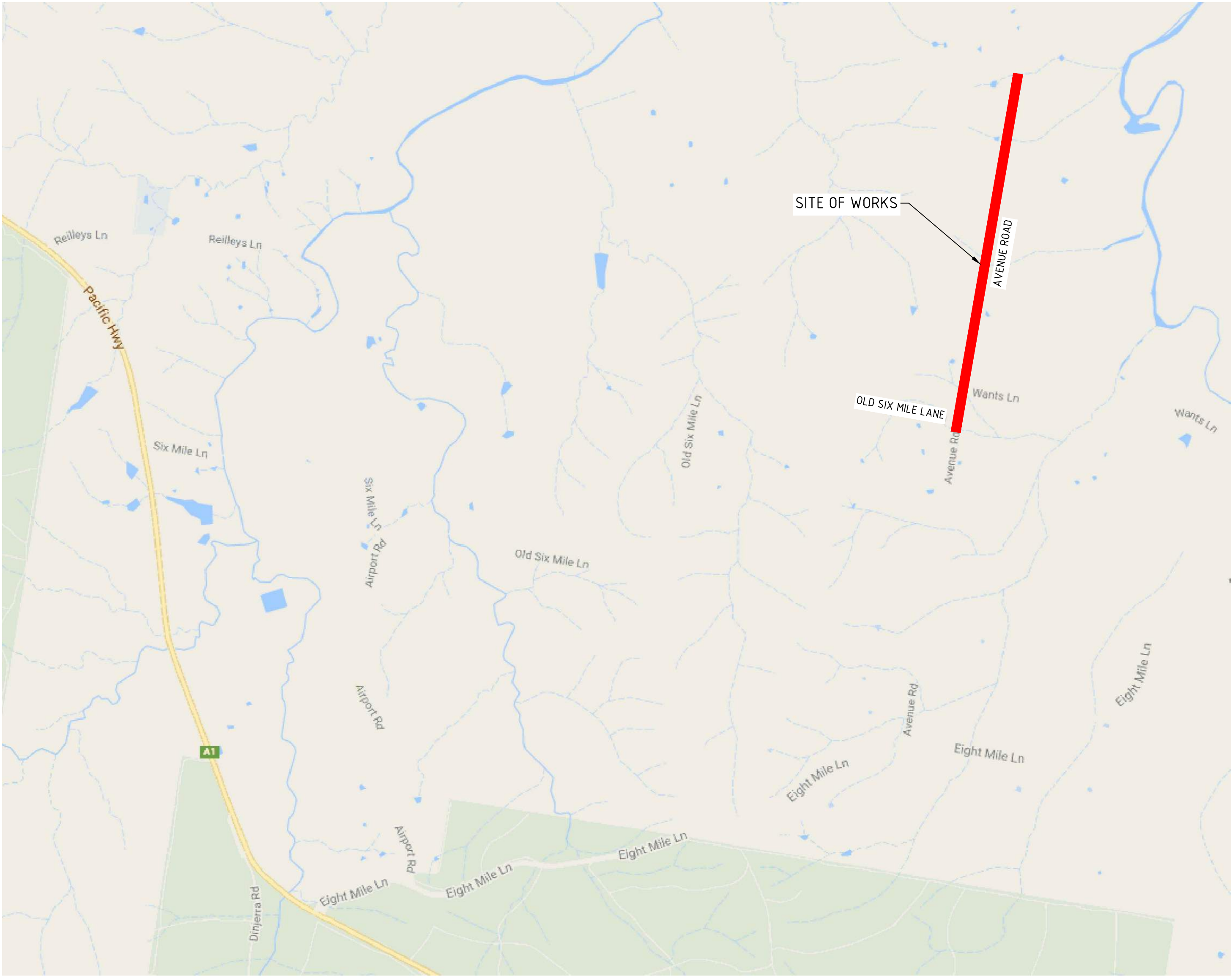
Appendix A

Drawings



202183601C - AVENUE ROAD UPGRADE, TUCABIA

DRAWING No.	DESCRIPTION
202183601C-C200	DRAWING REGISTER AND CONSTRUCTION NOTES
202183601C-C205	TYPICAL DETAILS
202183601C-C230	ROAD DETAIL PLAN AND LONG SECTION MC50 - CH 2340 TO CH 3020 SHEET 1 OF 4
202183601C-C231	ROAD DETAIL PLAN AND LONG SECTION MC50 - CH 3020 TO CH 3700 SHEET 2 OF 4
202183601C-C232	ROAD DETAIL PLAN AND LONG SECTION MC50 - CH 3700 TO CH 4380 SHEET 3 OF 4
202183601C-C233	ROAD DETAIL PLAN AND LONG SECTION MC50 - CH 4380 TO CH 5025 SHEET 4 OF 4
202183601C-C240	ROAD CROSS SECTIONS - MC50 CH 2360 TO CH 2660 SHEET 1 OF 9
202183601C-C241	ROAD CROSS SECTIONS - MC50 CH 2680 TO CH 2980 SHEET 2 OF 9
202183601C-C242	ROAD CROSS SECTIONS - MC50 CH 3000 TO CH 3300 SHEET 3 OF 9
202183601C-C243	ROAD CROSS SECTIONS - MC50 CH 3320 TO CH 3540 SHEET 4 OF 9
202183601C-C244	ROAD CROSS SECTIONS - MC50 CH 3560 TO CH 3780 SHEET 5 OF 9
202183601C-C245	ROAD CROSS SECTIONS - MC50 CH 3800 TO CH 4100 SHEET 6 OF 9
202183601C-C246	ROAD CROSS SECTIONS - MC50 CH 4120 TO CH 4420 SHEET 7 OF 9
202183601C-C247	ROAD CROSS SECTIONS - MC50 CH 4440 TO CH 4740 SHEET 8 OF 9
202183601C-C248	ROAD CROSS SECTIONS - MC50 CH 4760 TO CH 4950 SHEET 9 OF 9



LOCALITY PLAN

NOT TO SCALE

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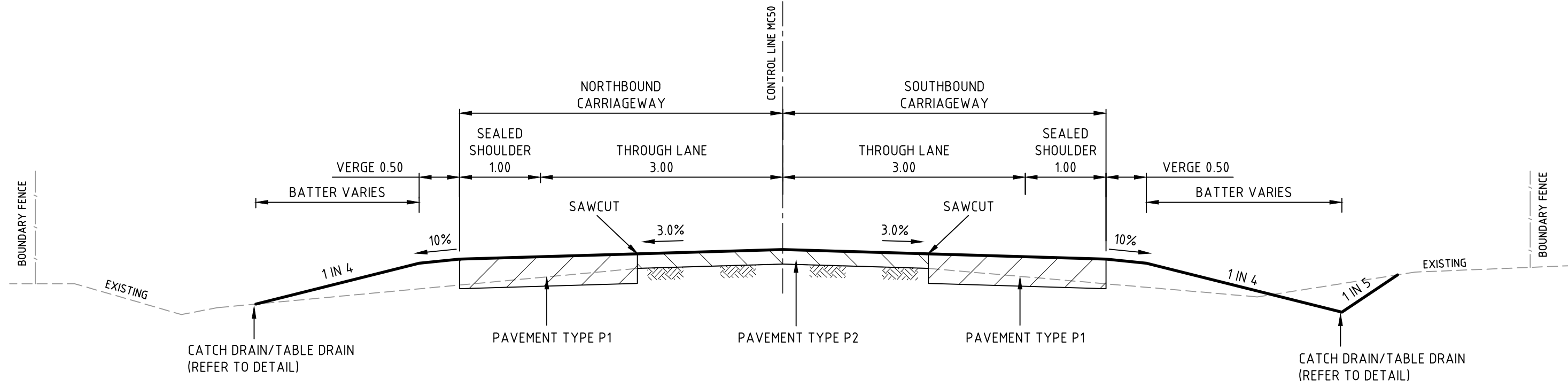
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Project Name
AVENUE ROAD UPGRADE
TUCABIA NSW 2462

Drawing Title
DRAWING REGISTER
AND LOCALITY PLAN

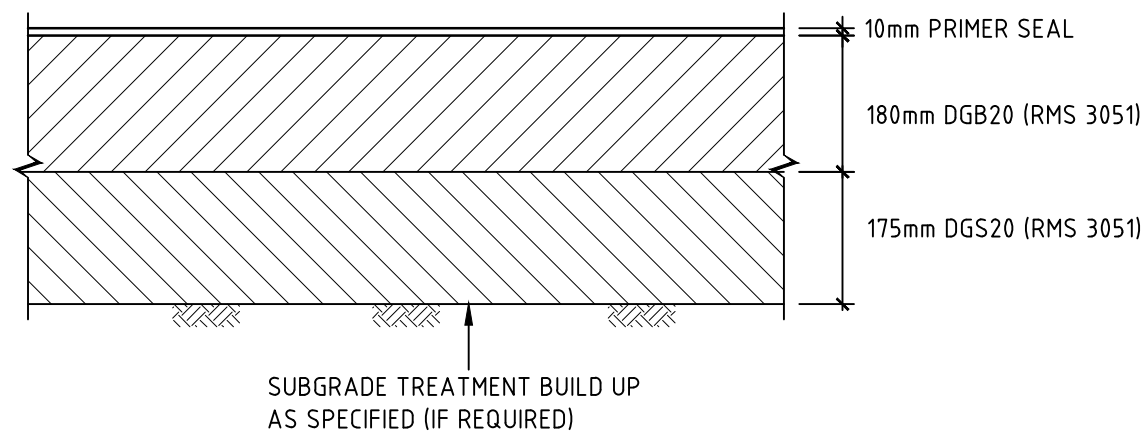
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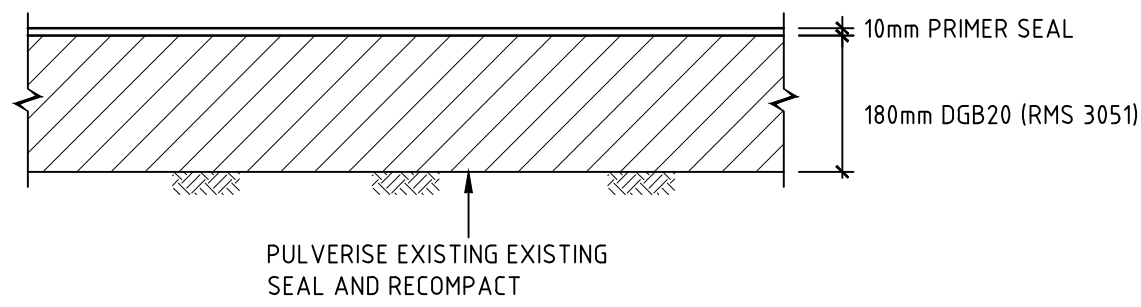
TYPICAL CROSS SECTION - AVENUE ROAD

SCALE 1:50



PAVEMENT TYPE P1

SCALE 1:10



PAVEMENT TYPE P2

SCALE 1:10

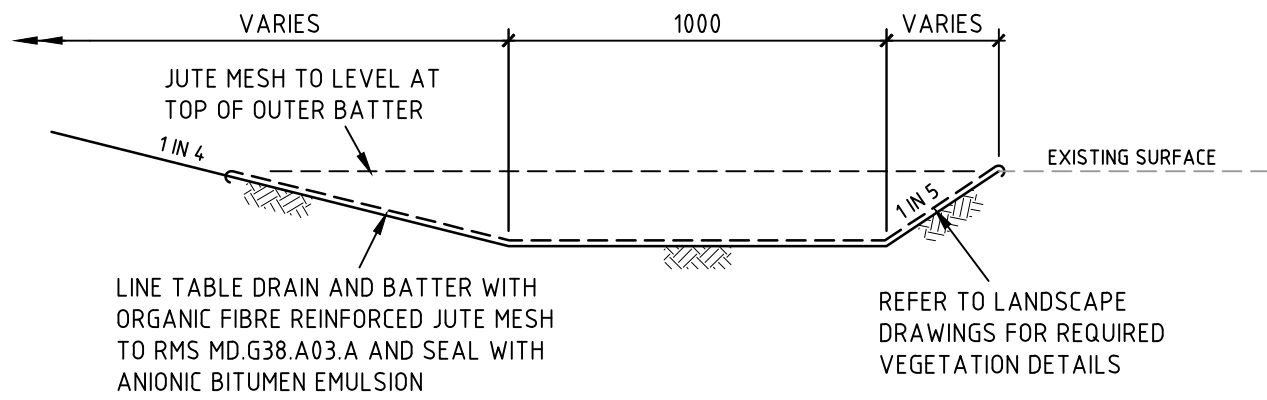
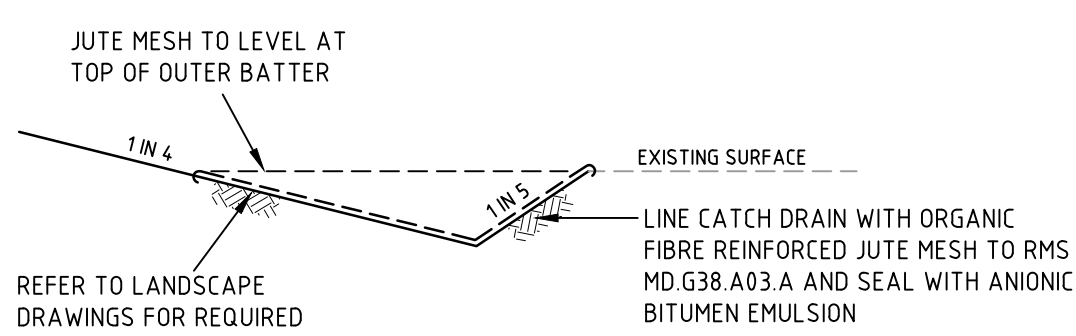


TABLE DRAIN DETAIL

SCALE 1:20



CATCH DRAIN DETAIL

SCALE 1:20

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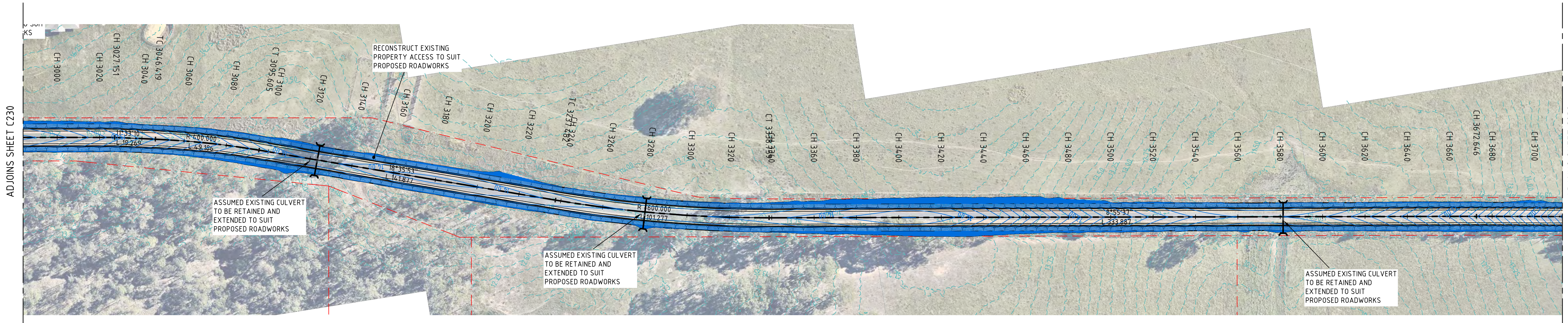
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Project Name	AVENUE ROAD UPGRADE TUCABIA NSW 2462
Drawing Title	TYPICAL DETAILS

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Sheet	A1			



AVENUE ROAD DETAIL PLAN

SCALE 1:1000



DESIGN GRADELINE
VERTICAL GEOMETRY
HORIZONTAL GEOMETRY

DATUM -0.1

CHAINAGES	EXISTING SURFACE	DESIGN SURFACE
3020.000	14.915	15.140
3025.000	14.850	15.077
3025.790	14.867	15.067
3027.151	14.822	15.049
3046.419	14.529	14.794
3050.000	14.486	14.746
3075.000	14.174	14.415
3088.920	13.986	14.231
3095.605	13.947	14.151
3100.000	13.909	14.107
3113.920	13.843	14.013
3125.000	13.787	13.988
3138.920	13.831	14.020
3150.000	13.818	14.074
3151.187	13.882	14.080
3175.000		
3176.187	13.935	14.146
3200.000	13.952	14.110
3201.187	13.931	14.106
3218.375	13.861	14.041
3225.000	13.814	14.020
3237.482	13.753	13.981
3244.766	13.748	13.958
3250.000	13.725	13.942
3275.000		
3294.766	13.764	13.887
3300.000	13.749	13.890
3325.000		
3338.759	13.779	13.869
3344.766	13.822	13.991
3350.000	13.841	14.011
3375.000	13.988	14.106
3395.670	14.066	14.185
3400.000	14.065	14.198
3425.000	14.007	14.114
3425.670	13.997	14.108
3450.000	13.681	13.682
3455.670	13.542	13.646
3474.892	13.049	13.226
3500.000	12.459	12.751
3525.000	12.201	12.421
3550.000	12.062	12.234
3575.000	11.991	12.190
3599.892	12.024	12.288
3625.000	12.207	12.531
3650.000	12.586	12.916
3672.646	13.045	13.388
3675.000	13.112	13.444
3700.000	13.765	14.115
3705.000	13.920	14.266

1 in 1000 HORIZONTAL
1 in 200 VERTICAL

LONGITUDINAL SECTION - AVENUE ROAD - MC50 (CONT.)

SCALE Hor: 1:1000 Ver: 1:200



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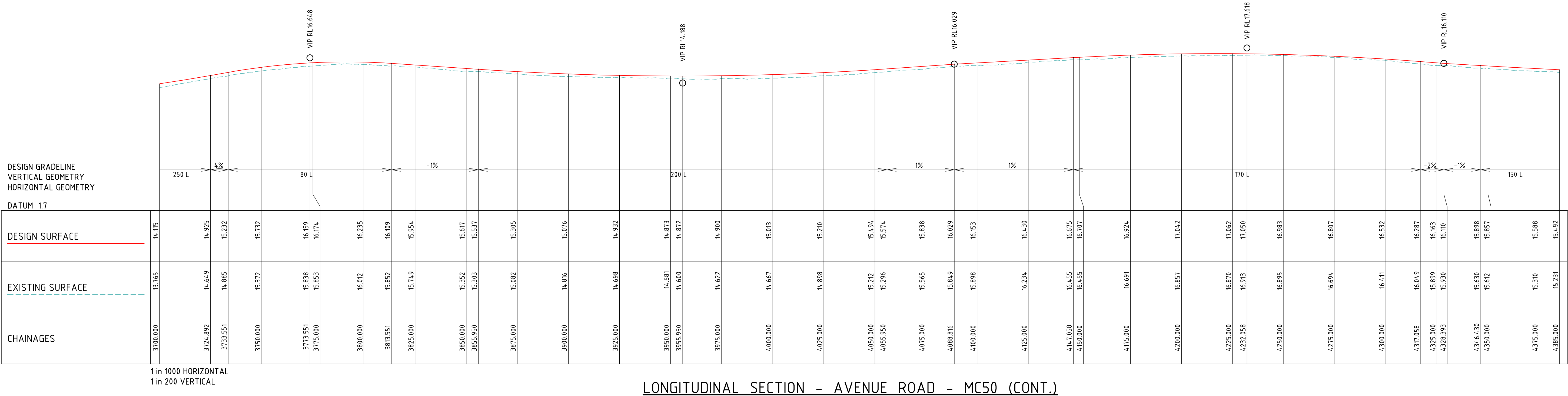
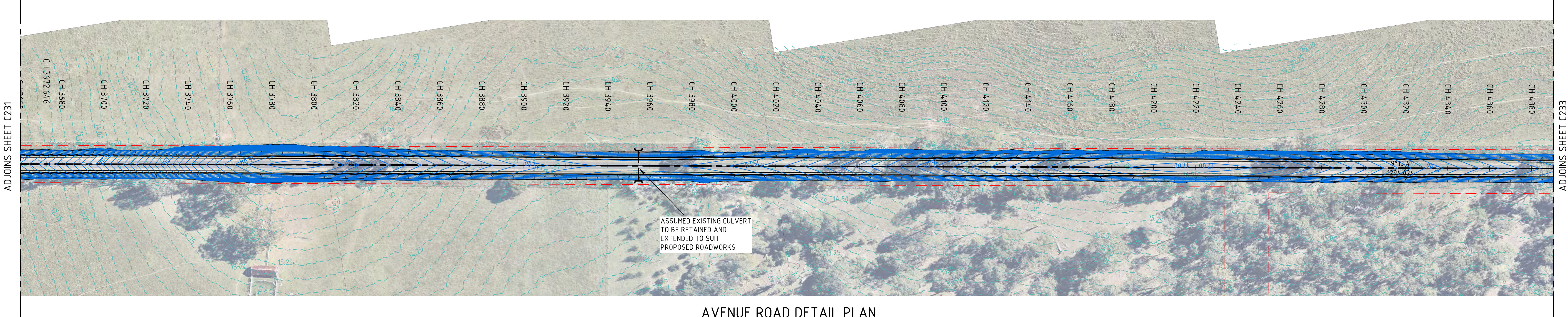
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Drawing Title
ROAD DETAIL PLAN AND LONG
SECTION MC50 CH 3020 TO CH 3700
SHEET 2 OF 4

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Rev
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SECTION MC50 CH 3700 TO CH 4380
SHEET 3 OF 4

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