



Cockle Creek - Munibung Road Boolaroo Addendum Review of Environmental Factors

December 2020



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Hunter and Central Coast Development Corporation


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Prepared by ESS Australia for Hunter and Central Coast Development Corporation

Document controls


Approval and authorisation

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Signed:	
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I, Valentina Misevska, Chief Executive of the Hunter and Central Coast Development Corporation, have examined and considered the Cockle Creek Boolaroo NSW Addendum Review of Environmental Factors dated December 2020 in accordance with the provisions of s5.5 of the *Environmental Planning and Assessment Act 1979* [and the *State Environmental Planning Policy (Infrastructure) 2007*, or relevant environmental planning instrument under which the works are permissible] and determine that the proposed development may be carried out as development without consent, subject to compliance with the conditions to manage environmental impacts outlined within the REF.


Signature

23.12.20
Date

Executive summary

HCCDC owns and manages part of the Cockle Creek Precinct land (the site). The site is bounded by First Street in the south, T.C Frith Avenue in the west, the Main Northern Railway line in the north and the base of Munibung Hill in the east.

To drive economic growth in the local community and region, HCCDC is facilitating the redevelopment of the site in accordance with the Lake Macquarie City Councils (LMCC) 09/03/20 Local Strategic Planning Statement and the planning controls specific for the site including LMCC DCP 2014 Part 12 – Area Plans – 12.15 Pasmenco.

The proposal

The overall proposal is a key component of early works allowing for the future redevelopment of the site and addressing existing traffic issues on Munibung Road. The original proposal involved the construction and operation of road, traffic controls, sewer, water, stormwater, electrical infrastructure and associated infrastructure. The addendum includes the extension of construction hours to reduce traffic impacts during construction, additional traffic mitigation measures to TC Frith roundabout, the replacement of car parking within the Bunnings site (Appendix B) and the provision for construction of additional public car parking spaces on Part Lot 1012 (under the ISEPP).

Need for the addendum

The need to modify the existing approval is as a result of the development of the detailed design prior to commencement of construction and ongoing consultation with TfNSW, Bunnings and LMCC and Conditions of Consent relating to the Costco approval. The addendum will allow for reduced impacts on traffic during construction and improved long term outcomes for traffic congestion and car parking within and in the vicinity of the site.

Options considered

The options considered included:

- Do Nothing – maintain the current approval and as a result have greater impacts on traffic during construction and less benefit to the network in the long term, however this was disregarded due to the requirements for Costco and Bunnings.
- Alternate Solutions – a number of alternate solutions were considered during the development of the final design and construction methodology. The proposed addendum encompasses the preferred outcomes for the proposed works and long-term network improvements.

Statutory and planning framework

HCCDC is both the proponent of the proposal (i.e. the body proposing to carry out the proposal) and the public authority determining authority. HCCDC must comply with the legal provisions relating to both. This means that HCCDC can both prepare and review any environmental assessment document required under Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Community and stakeholder consultation

Community and stakeholder consultation for the proposal is being undertaken and will continue until the proposal is completed to minimise any impacts during the construction phase.

Environmental impacts

This original REF identified the key potential environmental adverse impacts associated with the proposal were:

- Traffic and access impacts during construction; and
- Noise and vibration emissions during construction.

The proposed modifications and additional works considered within this Addendum REF result in the same potential adverse impacts.

Justification and conclusion

In accordance with the requirements of Part 5 of the EP&A Act and the EP&A Regulation the proposal has been fully assessed. Based on the original assessment of the proposal, and the mitigation measures proposed, the proposal is not likely to significantly affect the environment and therefore does not require the preparation of an Environmental Impact Statement (EIS).

The proposed modifications will not result in any greater impact that would require the preparation of an EIS.

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1 Introduction

Hunter and Central Coast Development Corporation (HCCDC) owns and manages part of the Cockle Creek Precinct land (the site). The site is located at 13A Main Road, Boolaroo NSW 2284 between Cockle Creek in the west and Munibung Hill in the east and is positioned approximately 13km south west of Newcastle and 1km north of the existing Boolaroo and Speers Point townships. The site is bounded by First Street in the south, T.C Frith Avenue in the west, the Main Northern Railway line in the north and the base of Munibung Hill in the east.

To drive economic growth in the local community and region, HCCDC is facilitating the redevelopment of the site in accordance with the Lake Macquarie City Councils (LMCC) 09/03/20 Local Strategic Planning Statement and the planning controls specific for the site including LMCC DCP 2014 Part 12 – Area Plans – 12.15 Pasmenco.

The original proposal involves the construction and operation of road, traffic controls, sewer, water, stormwater, electrical infrastructure and associated infrastructure in the location.

HCCDC has consulted with Transport for NSW (TfNSW) and Lake Macquarie City Council (LMCC) throughout the approval and WAD process for the proposed road works, with this process identifying additional works being required.

1.1 Existing Approved Project

The original proposal involved the physical road/intersection upgrade works to Munibung Road and Hague Road, and new road and intersection works for the internal connection road with associated upgrades of services/utilities in the road reserves. Key features of the original proposal were:

- A Bunnings/Costco and Munibung Road signalised intersection, including adjustments to the existing Bunnings driveway;
- A T intersection for Hague Road and Munibung Road;
- Minor modifications and adjustment within existing Munibung Road;
- A realignment and widening of the existing Hague Road;
- A roundabout at southern end of Hague Rd including additional legs to support future development;
- An internal road connection between the roundabout at southern end of Hague Road and the Bunnings/Costco and Munibung Road signalised intersection, including entry points to development lots;
- Modified and adjusted footpaths along Munibung Road and new internal roadworks to accommodate pedestrians and/or cyclists;
- Adjustments to parking lanes;
- Clearing, demolition and civil earthworks;
- Modifications to existing road pavements;
- New road pavement works;
- Installation of a Heritage Interpretation Sign, at the main entry point to the site from the roundabout on T.C. Frith Avenue and Main Road and Munibung Road.
- Utility extensions and/or relocations within the road reserve along Munibung Road and the new roads to service development blocks of land (e.g. water, sewer, gas, electricity, telecommunication services, etc);
- New stormwater infrastructure to suit new and adjusted roadworks;
- Ancillary works including kerb and guttering for the length of the new roads, signs, line marking, landscaping and environmental protection works;
- Temporary ancillary facilities including site compounds and stockpile sites; and
- Temporary diversion and traffic control as required.

The proposal has been assessed in relation to the following defined areas:

- **Study area:** This is the area specifically considered for on-the-ground assessments (e.g. ecology and heritage) and REF.
- **Disturbance area:** This is the area which will be directly physically impacted on by the proposal.
- **Addendum area:** This is the area which will be directly physically impacted on by the additional works covered in this addendum.

The proposed addendum activities are described in section 3 and the surrounding land uses of the site is shown in Figure 1-1.

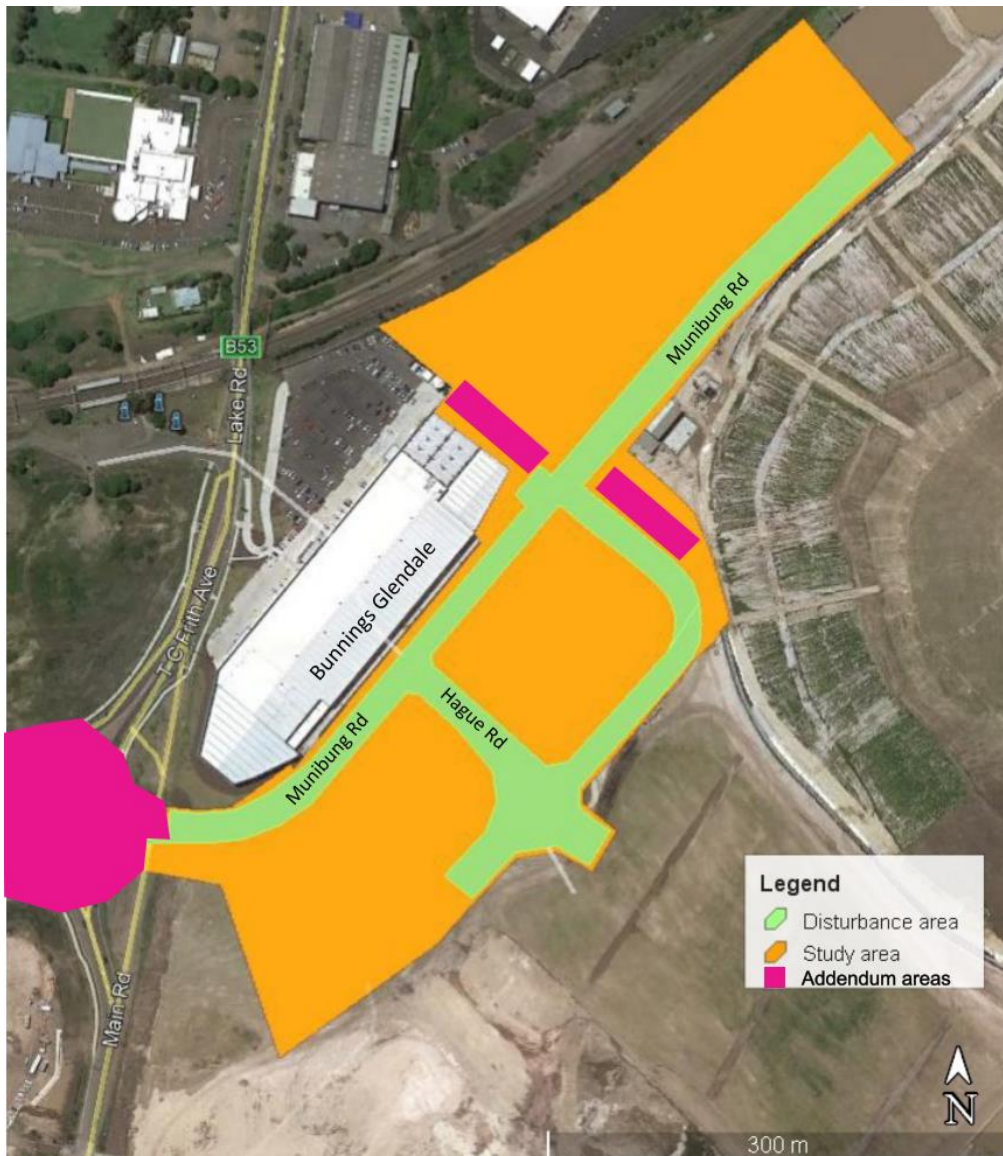


Figure 1-1: Location of the proposal

1.2 Need for modification

HCCDC in consultation with Transport for NSW (TfNSW) and Lake Macquarie City Council (LMCC) has identified additional required works beyond the original works identified within the REF. Further, Conditions of Consent relating to the approval of the Costco development require some of the additional works. These additional works shall reduce impact on the road network during the construction stage and provide further traffic and car parking mitigation measures.

2 Description of modified activity

HCCDC propose additional works to be undertaken to address construction needs and traffic and car parking matters related to the Cockle Creek site. Figure 2-1 below shows the original area of assessment and the additional area at TC Frith, subject of the impact assessment as part of this Addendum REF.

This will involve the following new activities that were not previously considered:

- Removing of restrictions for hours of construction in relation to night time road works;
- Additional road works at the TC Frith roundabout;
- Extension of Bunnings car park and associated infrastructure; and,
- The construction of additional car parking area on Part Lot 1012.

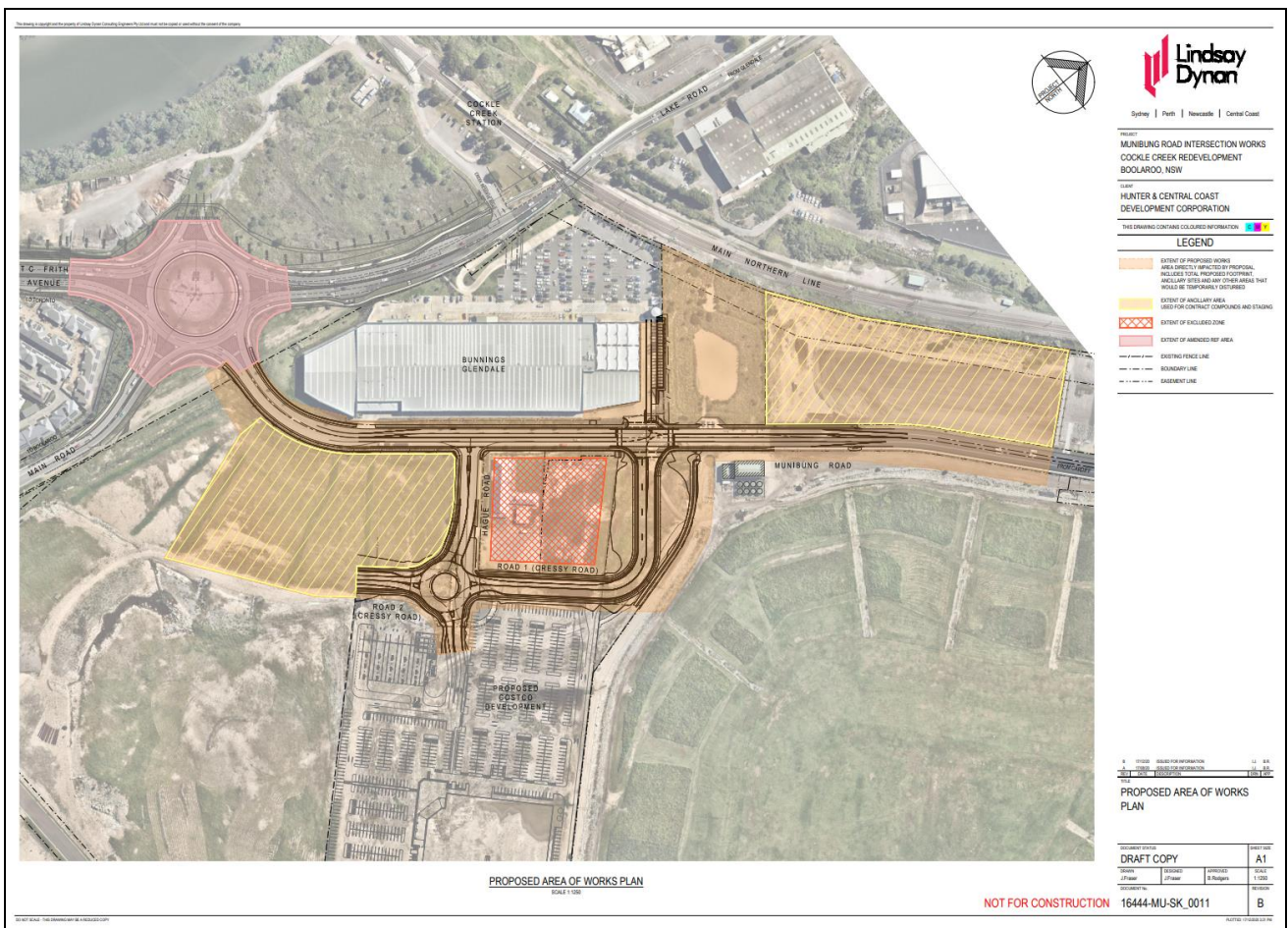


Figure 2-1: Munibung Road Intersection Works, amended.

3 Description of the proposed modification

3.1 The proposal

HCCDC proposes to modify the existing approval to extend the hours of construction for road works and add additional works to improve traffic movement and car parking within the vicinity of the site.

Key features of the proposal are outlined below.

3.2 Addendum 1 – Removing of restrictions for hours of construction in relation to night time road works

3.2.1 Description

The removal of the current restrictions relating to construction hours, specifically in relation to night time works.

3.2.2 Original REF summary

The Original REF did not assess night time road works as part of the proposed works, stating: *“While construction works would generally occur during the standard working hours set out in the Interim Construction Noise Guideline (DECC, 2009) i.e. Mondays to Fridays between 7am and 6pm, Saturdays between 8am and 1pm and no work occurring on Sundays or public holidays, it may be sensible for some construction activities in disturbance area including the installation /construction of the public infrastructure to be undertaken outside the prescribed hours to shorten the length of the construction.”*

3.2.3 Original Mitigation Measures

The Original REF includes limited consideration of works outside of standard construction hours.

Section 6.4.3 includes the following:

- Ensuring all equipment complies with relevant standards/guidelines including the Interim Construction Noise Guideline 2009;
- Construction works taking place in accordance with the standard working hours set out in the Interim Construction Noise Guideline (DECC, 2009) i.e. Monday to Friday, 7am to 6m and Saturday at 8am to 1pm;
- Construction works taking place outside standard working hours, set out in the Interim Construction Noise Guideline (DECC, 2009), to comply with the requirements for works outside standard working hours set out in the Interim Construction Noise Guideline (DECC, 2009);
- Undertake an out of hours noise assessment of the construction works to inform/identify construction works that may be possible during out of standard working hours timeframes as set out in the Interim Construction Noise Guideline (DECC, 2009);
- Use of noisy equipment and construction work to be scheduled to occur between the hours of 9am and 4pm, where possible;

3.2.4 Consideration of change

Due to the nature of the road works and heavy traffic congestion during daytime traffic periods, it is desirable for works undertaken within the current road reserve, Bunnings site and Part Lot 1012 to be completed out of peak hours and provision is made within the *Environmental Planning and Assessment (COVID-19 Development – Construction Work Days) Order 2020* as it relates to night time works.

The expanded range of hours to include night time roads works, could potential increase the likelihood of noise pollution to sensitive receivers. The mitigation measures outline will need to be implemented to ensure any impacts are reasonable.

In ESS Australia's opinion, with the inclusion and proper implementation of the mitigation measures outlined above to address the changes, no increase in the risks of noise, vibration and/or light pollution is considered likely. The proposed variations are not considered likely to have any other consequences or alter the findings of the Original REF. On this basis, the conclusions of the Original REF remain valid.

Based on the review of the REF, consideration of the variation proposed change requests and other supporting information, the requested changes would appear reasonable provided the mitigation measures outlined above are implemented.

3.3 Addendum 2 - Additional road works at the TC Frith roundabout

3.3.1 Description

Network modelling had shown that current congestion at the TC Frith roundabout may be negatively impacted by the proposed roadworks within Munibung Road and future development within the site, in particular the Costco development. As a result of ongoing consultation with TfNSW and LMCC, it was considered appropriate to increase traffic movement at the roundabout as part of broader network improvements in conjunction with the Costco development.

3.3.2 Original REF summary

Enhancements to the TC Frith roundabout were not considered as part of the original REF.

3.3.3 Original Mitigation Measures

The Original REF did not contain mitigation measures associated with the TC Frith roundabout as the works were not contemplated.

3.3.4 Consideration of change

Due to the traffic congestion recorded at TC Frith roundabout, it is considered to be of benefit to the site, the Costco development and the broader road network to undertake enhancements as part of the current works.

3.4 Addendum 3 - Extension of Bunnings car park and associated infrastructure

3.4.1 Description

Aligning the Munibung Road signalised intersection to the existing Bunnings driveway formed a key component of the proposed road works. Since the Munibung Road extension was completed, congestion has impacted upon the egress from the Bunnings site. The adjustments to the driveway to facilitate an improved function of the signalised intersection will result in the loss of a number of spaces. The modification proposes to replace these spaces adjacent to their current location.

3.4.2 Original REF summary

The extension of the Bunnings car park to maintain the current car parking spaces was not considered as part of the original REF.

3.4.3 Original Mitigation Measures

The Original REF did not contain mitigation measures specifically addressing the replacement of current carparking space, however the works would be considered as part of the overall roadworks.

3.4.4 Consideration of change

Maintaining the number of car parking spaces within the Bunnings car park is consistent with the original approval granted by LMCC and general car parking demand associated with the Bunnings complex. The works will be completed in association with other adjoining roadworks, to reduce the overall impact on Bunnings and adjacent Munibung Road network.

3.5 Addendum 4 - Construction of additional car parking area on Part Lot 1012

3.5.1 Description

HCCDC has identified the potential need for additional car parking within the site. A number of options were considered, with Part Lot 1012 being identified as the preferred location. The additional car parking area is exempt development under the ISEPP and can be delivered by HCCDC without further approval. As the proposed development is within the previously identified impact area and will be delivered concurrently with other works, it has been included within this Addendum REF for completeness. , additional

3.5.2 Original REF summary

An additional car parking area within Part Lot 1012 was not considered as part of the original REF.

3.5.3 Original Mitigation Measures

The Original REF includes assessment of potential impact upon the area nominated, however no mitigation measures are identified for the construction and ongoing operation of an additional car parking area.

3.5.4 Consideration of change

Additional car parking will replace existing on street parking which will be removed due to the increased capacity of Munibung Road. The works will be completed in association with other adjoining roadworks, to reduce the overall impact on Munibung Road and the broader road network.

4 Statutory and planning framework

The works the subject of this addendum are considered wholly ancillary to the physical road/intersection upgrade works to Munibung Road and Hague Road, and new road and intersection works for the internal connection road with associated upgrades of services/utilities in the road reserves, and are hence considered permissible without consent as per the findings of the original REF.

Under Section 5.5 of the Environmental Planning and Assessment Act 1979 (EP&A Act), for the purpose of attaining the objects of this Act relating to the protection and enhancement of the environment, HCCC in its consideration of an activity shall, notwithstanding any other provisions of the EP&A Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity. However, Section 5.4 of the EP&A Act provides an exemption to Section 5.5 for certain activities including a modification of an activity, whose environmental impact has already been considered, that will reduce its overall environmental impact and an activity (or part of an activity) that has been approved, or is to be carried out, by another determining authority after environmental assessment in accordance with Division 5.1 of the EP&A Act.

The purpose of this Addendum REF is to consider the modified construction methodology for the proposed roads works, additional site area subject of works and potential impacts related to additional works. This consideration would facilitate HCCDC in confirming the works, additional site area and modified scope remain consistent with the determined REF and would not result in a significant environmental impact.

4.1.1 State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for a road and road infrastructure facilities and is to be carried out by HCCDC it can be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979*. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by State Environmental Planning Policy No. 14 - Coastal Wetlands, State Environmental Planning Policy No. 26 - Littoral Rainforests, State Environmental Planning Policy (State and Regional Development) 2011 or State Environmental Planning Policy (Major Development) 2005.

Part 2 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. Consultation, including consultation as required by ISEPP (where applicable), is discussed in chapter 5 of this REF.

4.2 Confirmation of statutory position

The proposal is categorised as development for the purpose of a road and road infrastructure facilities and is being carried out by or on behalf of a public authority. Under clause 94 of the ISEPP the proposal is permissible without consent. The proposal is not State significant infrastructure or State significant development. The proposal can be assessed under Part 5 of the EP&A Act.

HCCDC is the determining authority for the proposal. This Addendum REF fulfils HCCDC's obligation under section 5.5 of the EP&A Act 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.

5 Consultation

5.1 Consultation to date

Clauses 13 to 16 of the State Environmental Planning Policy (Infrastructure) 2007 specify the requirements for consultation with councils and other public authorities for infrastructure development carried out by or on behalf of a public authority. The original REF identified the following consultation with public authorities required prior to assessment of the development:

- Consultation with LMCC under clause 13 and 14 due to the works impacting on Council infrastructure and the works being in the vicinity of a heritage item.
- Consultation with TfNSW under clause 16 due to the works potentially impacting upon roads operated by TfNSW.
- Consultation with Subsidence Advisory NSW under clause 16 due to the works being on land in a mine subsidence district.

HCCDC has also entered into a conditional contract with Costco whose proposed development is contingent on the proposed works identified in the original REF. The TC Frith works are also required as a result of the Costco development proceeding on the site.

Additionally, HCCDC has commenced and has continued consultation with Bunnings throughout the process, with Bunnings being a landowner affected by the proposed works. A summary of consultation undertaken and matters raised is contained in the original REF.

5.2 Additional Consultation for Modification

HCCDC has continued consultation with Costco, Bunnings, TfNSW and LMCC through the ongoing design process for the proposed road/intersection upgrade works to Munibung Road and Hague Road, and new road and intersection works for the internal connection road with associated upgrades of services/utilities in the road reserves. Through this ongoing process it has been identified that modifications to the current approved works are required.

No formal consultation with Council or other agencies is deemed necessary under Clause 13, 14 or 15 of ISEPP.

6 Environmental assessment

The purpose of this Addendum REF is to fully consider the likely impacts introduced through modification of the activity, including the proposal's construction phase and operation phase.

The approved REF considered the environmental impacts of the proposed road/intersection upgrade works to Munibung Road and Hague Road, and new road and intersection works for the internal connection road with associated upgrades of services/utilities in the road reserves. A range of measures were proposed in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. The REF was determined on the basis that should the proposal proceed, these safeguards and management measures would be incorporated into the detailed design and applied during the construction of the proposal.

This addendum REF considers the implications of the proposed change to the construction methodology and additional works. In order to consider the changed impacts resulting from the modification this addendum follows the same approach that was used in the REF.

Site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

6.1 Preliminary consideration of potential for additional impacts

Environmental Aspect	REF Impacts	Modification Impacts
Soils and Geology	The proposal's construction works will require ground disturbance and exposure of soil consequently there is potential for soil erosion and sediment transport during the construction period	No significant increase in impact.
Ecology	<p>The original ecological due diligence assessment found the proposal is unlikely to have a significant impact on threatened biodiversity and as such a Species Impact Statement or a referral to the Commonwealth under the EPBC Act is not required.</p> <p>An updated assessment (Appendix C) concluded that in summary, the proposed works within the Study Area is unlikely to impact directly on potential habitat for threatened species. The works will not impact any TECs or endangered populations. The proposal will clear approximately 0.6 ha of native vegetation but will not fragment any wildlife corridors or impact on areas of outstanding biodiversity values. If the proposal scope is to change further assessment may be needed.</p>	No significant increase in impact.

Environmental Aspect	REF Impacts	Modification Impacts
Noise and Vibration	<p>Without mitigation measures it is likely the construction activities in the disturbance area will generate noise at levels that could potentially adversely impact nearby sensitive receivers located in the surrounding locality e.g. the Bunderra residential estate. The noise impacts would only be experienced during the construction phase.</p> <p>The proposal's operation works are likely confined to infrequent and limited maintenance of the proposal's infrastructure consequently the potential to adversely impact the Study area's or surrounding locality's noise and vibration amenity during the proposal's operation is minimal.</p>	<p>There will be greater noise impacts due to works being undertaken in closer proximity to sensitive receivers and works being undertaken outside of standard construction hours.</p>
Light	<p>Limited consideration was undertaken in the original REF due to the location of works and adoption of standard construction hours.</p>	<p>There will be potential for light impacts associated with night works. Lighting design will need to minimise light spillage from the work area.</p>
Non-Indigenous Heritage	<p>The original Heritage Impact Statement identified no likely physical or visual impacts to the identified heritage items and overall, the potential heritage impacts of the proposed works are assessed as negligible at most.</p> <p>An updated assessment (Appendix C) concluded that no physical or visual impacts to any heritage items located within or in the vicinity of the Study Area have been identified. Overall, the potential heritage impacts of the proposed works are assessed as negligible at most.</p>	<p>No greater impact.</p>

Environmental Aspect	REF Impacts	Modification Impacts
Aboriginal Heritage	<p>The original Aboriginal archaeological due diligence assessment concluded that the proposed works will occur in the Study area that has been significantly disturbed through a range of factors including historical use and remediation works and consequently assessed as having negligible Aboriginal archaeological potential.</p> <p>An updated assessment (Appendix C) concluded that no Aboriginal objects or sites are recorded as being located within the Study Area, which is clearly and demonstrably disturbed. It is assessed that there is a very low to nil likelihood that the proposed works will result in harm to Aboriginal objects. In accordance with the provisions of the due diligence code there is consequently no requirement for further archaeological assessment.</p>	No greater impact.
Traffic and Access	<p>A Traffic and Transport Impact assessment (TIA) was prepared as part of the original REF. The TIA provides assessment of existing transport conditions, as well as construction and operational impacts associated with the proposed road infrastructure and associated works required to facilitate future transport requirements in the Study area and surrounding area.</p> <p>Construction heavy and light vehicle movements would be distributed across the construction phase and be managed in accordance with a Construction Traffic, Transport and Access Management Plan to minimise the potential for impacts on the existing Study area and surrounding locality roads and transport network, and to ensure adequate levels of safety.</p> <p>Overall, the total numbers of heavy and light vehicle movements on roads in the surrounding locality during construction would be low compared to the overall traffic volumes on the surrounding locality roads. Construction vehicle generation would not result in a substantial impact on surrounding locality road capacity or the road network overall.</p>	The modification of the construction methodology is designed to reduce the impact on traffic congestion during the construction period.

Environmental Aspect	REF Impacts	Modification Impacts
Land Uses	<p>The disturbance area is predominately occupied by the existing Munibung Rd and Hague Rd road reserve infrastructure and adjacent vacant land.</p> <p>The land uses bordering the disturbance area includes Bunnings, a containment cell including water treatment plant, the old lab building on its own lot and vacant land. Impacts on the land uses in the disturbance area would be limited to temporary use of land for construction activities including the presence of construction equipment, plant, vehicles and fenced work sites along the work sites. During construction, the use of the land would change from its present uses to a construction site.</p> <p>After construction works are completed the land use in the disturbance area will predominantly return to their post construction land uses as practicable.</p>	No greater impact.
Cumulative and Consequential Impacts	<p>There is currently one proposed development project of a similar nature and size as the proposal located adjacent to the Study area with the potential for cumulative impacts on the Study area and/or the surrounding locality.</p> <p>The development is the approved Costco wholesale and retail warehouse and service station project (Costco) located on land adjoining the Study area's eastern boundary.</p>	The same cumulative impacts from the construction of the Costco project will be present.

6.2 Noise and Vibration

6.2.1 Existing environment

The existing primary noise and vibration sources in the disturbance area are road traffic and pedestrian noise emanating from Munibung Road, the Bunnings site and Hague Road.

6.2.2 Impacts Assessment

The proposal's construction works requires the use of heavy and light machinery/tools which can generate noise and vibration levels at nearby receptors. At any location, the potential impacts may vary greatly depending on factors such as the proximity of receivers, the duration of works, the magnitude of the noise levels, the time at which the construction is undertaken, and the character of the noise or vibration emissions.

The proposal's construction noise emissions in the disturbance area could be high during parts of the construction phase.

The proposal's construction vibration emissions in the disturbance area are likely to be:

- Impulsive e.g. occasional dropping of heavy equipment occasional loading and unloading;
- Intermittent e.g. construction activity, jack hammers; and
- Continuous e.g. use of heavy machinery.

There are noise and vibration sensitive receivers in the Study area, being the Bunderra residential development to the south of TC Frith roundabout and the former laboratory building listed under the SHR.

Without mitigation measures it is likely the construction activities in the disturbance area will generate noise at levels that could potentially adversely impact nearby sensitive receivers located in the surrounding locality e.g. the Bunderra residential estate. The noise impacts would only be experienced during the construction phase.

It is unlikely the construction activities in the disturbance area will generate vibration at levels with the potential to adversely impact non-residential receivers and sensitive receivers located in the Study area and/or surrounding locality.

While construction works would generally occur during the standard working hours set out in the Interim Construction Noise Guideline (DECC, 2009) i.e. Mondays to Fridays between 7am and 6pm, Saturdays between 8am and 1pm and no work occurring on Sundays or public holidays, it may be required that some construction activities in disturbance area including the installation /construction of the public infrastructure to be undertaken outside the prescribed hours to reduce impacts upon day time traffic and shorten the length of the construction.

Construction during evening and night periods are undertaken to minimise the disruption to traffic and to maximise the safety of construction workers. Night works are referenced generally within the original REF, with night works typically being road construction for tie ins with intersections, including milling and resurfacing asphalt, laying of kerb and gutters. Additionally, night works may be required for:

- Delivery of oversized plant or structures
- Emergency work to prevent to the loss of life or property or to prevent environmental harm
- Other work periods where there may be a justifiable need to operate outside of normal working hours may including temporary night works at the eastern and western tie ins as part of pavement and line marking.

These night time works are essential to provide a safe working environment and to reduce traffic impacts. The main impacts upon sensitive receivers associated with night works are noise and vibration impacts, and visual amenity impacts resulting from the use of temporary lighting.

The proposal's operation works are likely confined to infrequent and limited maintenance of the proposal's infrastructure consequently the potential to adversely impact the Study area's or surrounding locality's noise and vibration amenity during the proposal's operation is minimal.

6.2.3 Mitigation Measures

Construction

Construction would likely be conducted predominantly during daytime hours with works within active road corridors, such as tie ins, carried out in evening and night periods in order to minimise disruption to traffic and to maximise the safety of construction workers. Sleep disturbance impacts would be likely to occur during out of hours works associated with TC Frith roundabout and Munibung Road activities.

6.2.4 Additional safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing
Noise and Vibration	Noise and Vibration Management Plan (NVMP) be prepared as part of the CEMP. The NVMP will generally follow the approach in the Interim Construction Noise Guideline (ICNG) (DECC, 2009) and identify: All potential significant noise and vibration generating activities associated with the activity; <ul style="list-style-type: none"> • a monitoring program to assess performance against relevant noise and vibration criteria; • arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures; • contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. 	Construction Contractor	Pre-construction
Noise and Vibration	Night works within Munibung Road and TC Frith roundabout have the potential to disrupt road traffic. A road occupancy licence will be required to manage these impacts. As part of the approval for road occupancy, the relevant roads authority may require additional mitigation measures	Construction Contractor	Pre-construction

Impact	Environmental safeguards	Responsibility	Timing
Noise and Vibration	<p>All sensitive receivers (e.g. schools, local residents) likely to be affected will be notified at least 5 days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:</p> <ul style="list-style-type: none"> • the project; • the construction period and construction hours; • contact information for project management staff; • complaint and incident reporting - how to obtain further information. 	Construction Contractor	Construction
Noise and Vibration	<p>Mitigation impacts of the proposed works would be undertaken in accordance with the qualitative assessment guidelines of the Interim Construction Noise Guidelines (DECC 2009) such as community notification of the works, operating plant in a quiet and efficient manner, involving workers in minimising noise and a procedure of handling complaints in accordance with these guidelines.</p>	Construction Contractor	Construction
Out of hours works	<p>In instances where, after the application of standard noise mitigation measures, there still remain receivers at which noise management levels are exceeded, the Construction Noise and Vibration Guide (CNVG) (Roads and Maritime, 2016) directs that the proposal should implement additional mitigation measures where feasible and reasonable.</p>	HCCDC/ Construction Contractor	Construction

7 Environmental management

7.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in the original REF in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these safeguards and management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

Additional safeguards and measures resulting from the Addendum REF are outlined below.

Aspect	Mitigation Measure	Timing	Responsibility
Noise and Vibration	Noise and Vibration Management Plan, including additional works as outlined within this Addendum REF, be prepared as part of the CEMP.	Pre-construction	Construction Contractor
Noise and Vibration	Ensuring all equipment complies with the Interim Construction Noise Guideline 2009.	Construction	Construction Contractor
Noise and Vibration	Implementation of additional mitigation measures where feasible and reasonable in accordance with Construction Noise and Vibration Guide (CNVG) (Roads and Maritime, 2016).	Construction	Construction Contractor
Light	Lighting design to ensure safety of workers as a priority, however, contractors should minimise light spillage impacting on sensitive receivers where possible.	Construction	Construction Contractor

8 Conclusion

8.1 Justification

The modification to the original proposal would enhance the locality and complement the development of the site through the improve traffic function and provision of additional car parking.

While there would be some minor environmental impacts as a consequence of the proposal such as temporary noise and vibration, light impacts and traffic and access; they have been avoided or minimised wherever possible through design and site-specific safeguards. The beneficial effects of the proposal in improving traffic congestion in the locality and complementing the development of the site is considered to outweigh the mostly temporary adverse construction impacts and risks associated with the proposal.

The proposal is subject to assessment under Division 5.1 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

8.2 Conclusion

The approved REF activity was subject to assessment under Part 5 of the EP&A Act and documented in the *Hunter and Central Coast Development Corporation Cockle Creek Boolaroo NSW Review of Environmental Factors*, December 2020 prepared by EPS. This addendum has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed modification to the activity originally considered.

The factors listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 have also been considered to assess the likely impacts of the proposal as modified on the natural and built environment (Appendix A).

The proposal as described in the Addendum REF best meets the project objectives but would still result in some impacts on arising from the removal of restrictions relating to hours of construction for road works and additional works over an extended impact area. Safeguards and management measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also improve traffic function on Munibung Road, reduce traffic congestion at TC Frith roundabout and support future development of the site. On balance the proposal is considered justified and the following conclusions are made.

The activity, including the modified methodology described in this addendum, would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Part 5.1 of the EP&A Act. A Species Impact Statement is also not required. The proposal remains subject to assessment under Part 5 of the EP&A Act and as such consent from Lake Macquarie City Council is not required. On the basis that the modification has not been found to constitute an overall reduced environmental impact, a new determination is required for the activity as modified.

9 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.



Shannon Sullivan
Planning Manager
ESS Australia Pty Limited
Date: 22/12/2020

Terms and acronyms used in this REF

Term / Acronym	Description
CEMP	Construction environmental management plan
EIA	Environmental impact assessment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
HCCDC	Hunter and Central Coast Development Corporation
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LMCC	Lake Macquarie City Council
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
TfNSW	Transport for New South Wales

Appendix A

Consideration of clause 228(2) factors

Clause 228(2) Checklist

In addition to the requirements of the *Is an EIS required?* guideline (DUAP 1995/1996) as detailed in the REF, the following factors, listed in clause 228(2) of the *Environmental Planning and Assessment Regulation 2000*, have also been considered to assess the likely impacts of the proposal on the natural and built environment.

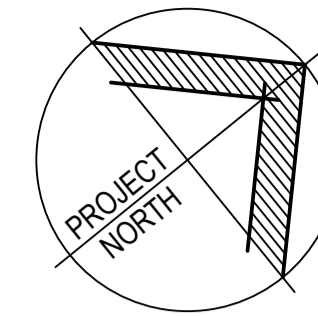
Factor	Impact	Variation Impact
<p>a. Any environmental impact on a community? Minor short-term environmental impacts on a small part of the community may be experienced during the proposal's construction period from noise, vibration, traffic and dust. Safeguards and mitigation measures have been proposed.</p>	Short-term, minor, negative Long term, positive	Increased noise impact
<p>b. Any transformation of a locality? Minor short-term impacts on a small part of the locality may be experienced from the proposal's construction works e.g. earthworks and trenching. Safeguards and mitigation measures have been proposed.</p>	Short term, minor, negative Long term, positive	Minor increase in impact
<p>c. Any environmental impact on the ecosystems of the locality? Minor short-term impacts on a small part of the ecosystems of the locality may be experienced from the proposal's construction works e.g. earthworks and trenching. Safeguards and mitigation measures have been proposed.</p>	Short-term, minor, negative Long term, positive	Nil impact
<p>d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? During construction, the proposal would have the potential to create a reduction in the overall aesthetic quality of the proposal area due to equipment associated with the construction worksite, dust and noise generation as well as traffic and access disruption.</p>	Short-term, minor, negative	Nil impact
<p>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? Minor short-term impacts on a place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations may be experienced from the proposal's construction works e.g. earthworks and trenching. Safeguards and mitigation measures have been proposed.</p>	Short-term, minor, negative Long term, positive	Nil impact
<p>f. Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act</i></p>	Nil impact.	Nil impact

Factor	Impact	Variation Impact
<p>1974)? Impacts are not expected, and mitigation measures are proposed. Refer to Flora and Fauna Assessment Report.</p>		
<p>g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? Impacts are not expected, and mitigation measures are proposed. Refer to Flora and Fauna Assessment Report.</p>	Nil impact.	Nil impact
<p>h. Any long-term effects on the environment? The proposal provides for safe and efficient transfer of water/wastewater and upgrades public services/utilities. The proposal will have a positive long-term effect.</p>	Short-term, minor, negative	Nil impact
<p>i. Any degradation of the quality of the environment? Construction has the potential to temporarily impact on the environment. The proposal provides for safe and efficient transfer of water and wastewater and upgrades public services/utilities. The proposal will have a positive long-term effect.</p>	Short-term, minor, negative	Nil impact
<p>j. Any risk to the safety of the environment? Construction has the potential to temporarily decrease safety along local roads within proposal area due to road work and movement of construction plant. This would be managed via a traffic management plan. The proposal provides for safe and efficient transfer of water/wastewater and upgrades public services/utilities. The proposal will have a positive long-term effect.</p>	Short-term, minor, negative	Nil impact
<p>k. Any reduction in the range of beneficial uses of the environment? The proposal would result in traffic impacts during construction which would include an increase in the volume of heavy vehicles, interruption of traffic flow, detours and temporary change in speed limit. The proposal will be in part located underground and will in part upgrade existing public services/utilities therefore will not impact on the beneficial uses of the environment. It will allow development to be serviced in the Study area and in the site.</p>	<p>Short-term, minor, negative</p> <p>Long-term, minor, positive</p>	<p>Nil impacts</p> <p>Nil impacts</p>
<p>l. Any pollution of the environment? The proposal would have the potential to result in some minor negative short-term water pollution risks including from sediments, soil nutrients, waste, and spillage of fuels and chemicals. Management of water quality impacts would be carried out in accordance with the safeguards and management measures. The proposal provides for safe and efficient transfer of wastewater preventing it from polluting the environment. The proposal will have a positive long-term effect.</p>	Short-term, minor, negative	Nil impacts

Factor	Impact	Variation Impact
<p>m. Any environmental problems associated with the disposal of waste?</p> <p>Ancillary sites would be managed in a way that minimise waste on site and manage excess materials.</p> <p>Waste associated with the proposal would be managed in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i> and recycled where possible. Issues associated with the disposal of waste are not expected.</p>	Short-term, negative	Nil impacts
<p>n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</p> <p>None of these resources required for the proposal are or are likely to become in short supply as a result of the proposal.</p>	Nil impact	Nil impact
<p>o. Any cumulative environmental effect with other existing or likely future activities?</p> <p>Cumulative effects from construction activities would include noise and vibration, traffic and access, visual amenity and air quality impacts. Based on the findings of the specialist studies summarised in the preceding sections, cumulative construction impacts may include contributions to:</p> <ul style="list-style-type: none"> • Increases in construction vehicle traffic on local roads causing noise/vibration and air quality impacts on sensitive receivers • Extended construction zones which would likely result in delays from roadwork, reduced speed limits, and overall longer travel times • Noise impacts associated with multiple construction works, especially at night <p>There are project (such as Costco) that would overlap in terms of construction timing and would have cumulative impacts on road users, pedestrians, cyclists and residents.</p>	Nil impacts	Nil Impacts
<p>p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</p> <p>The proposal is located in the coastal zone but would not result in any impact on coastal processes and coastal hazards.</p>	Nil impact.	Nil impact.

Appendix B

Concept Design



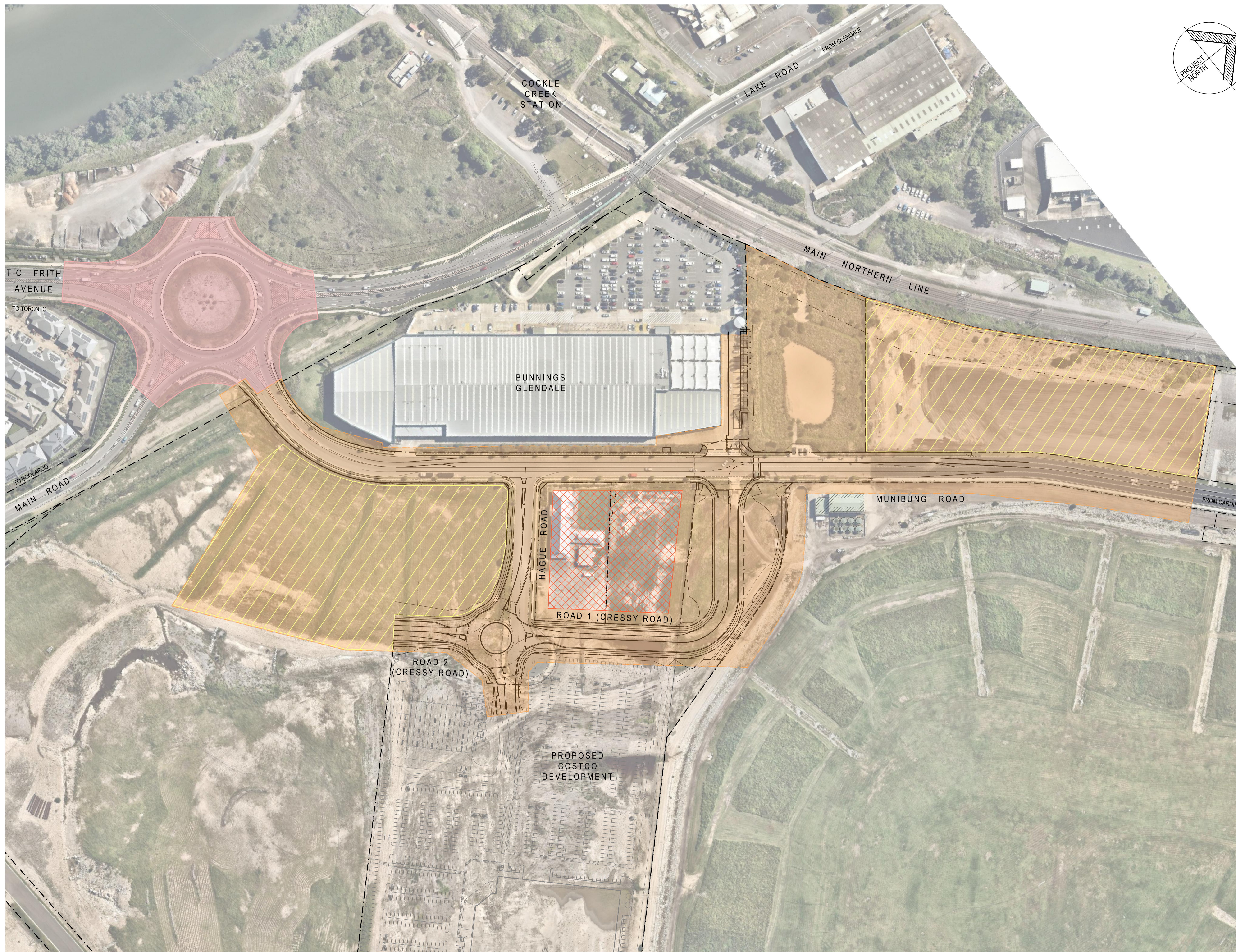
PROJECT
**MUNIBUNG ROAD INTERSECTION WORKS
COCKLE CREEK REDEVELOPMENT
BOOLAROO, NSW**

CLIENT
**HUNTER & CENTRAL COAST
DEVELOPMENT CORPORATION**

THIS DRAWING CONTAINS COLOURED INFORMATION **C M Y**

LEGEND

- EXTENT OF PROPOSED WORKS
AREA DIRECTLY IMPACTED BY PROPOSAL,
INCLUDES TOTAL PROPOSED FOOTPRINT,
ANCILLARY SITES AND ANY OTHER AREAS THAT
WOULD BE TEMPORARILY DISTURBED
- EXTENT OF ANCILLARY AREA
USED FOR CONTRACT COMPOUNDS AND STAGING
- EXTENT OF EXCLUDED ZONE
- EXTENT OF AMENDED REF AREA
- EXISTING FENCE LINE
- BOUNDARY LINE
- EASEMENT LINE



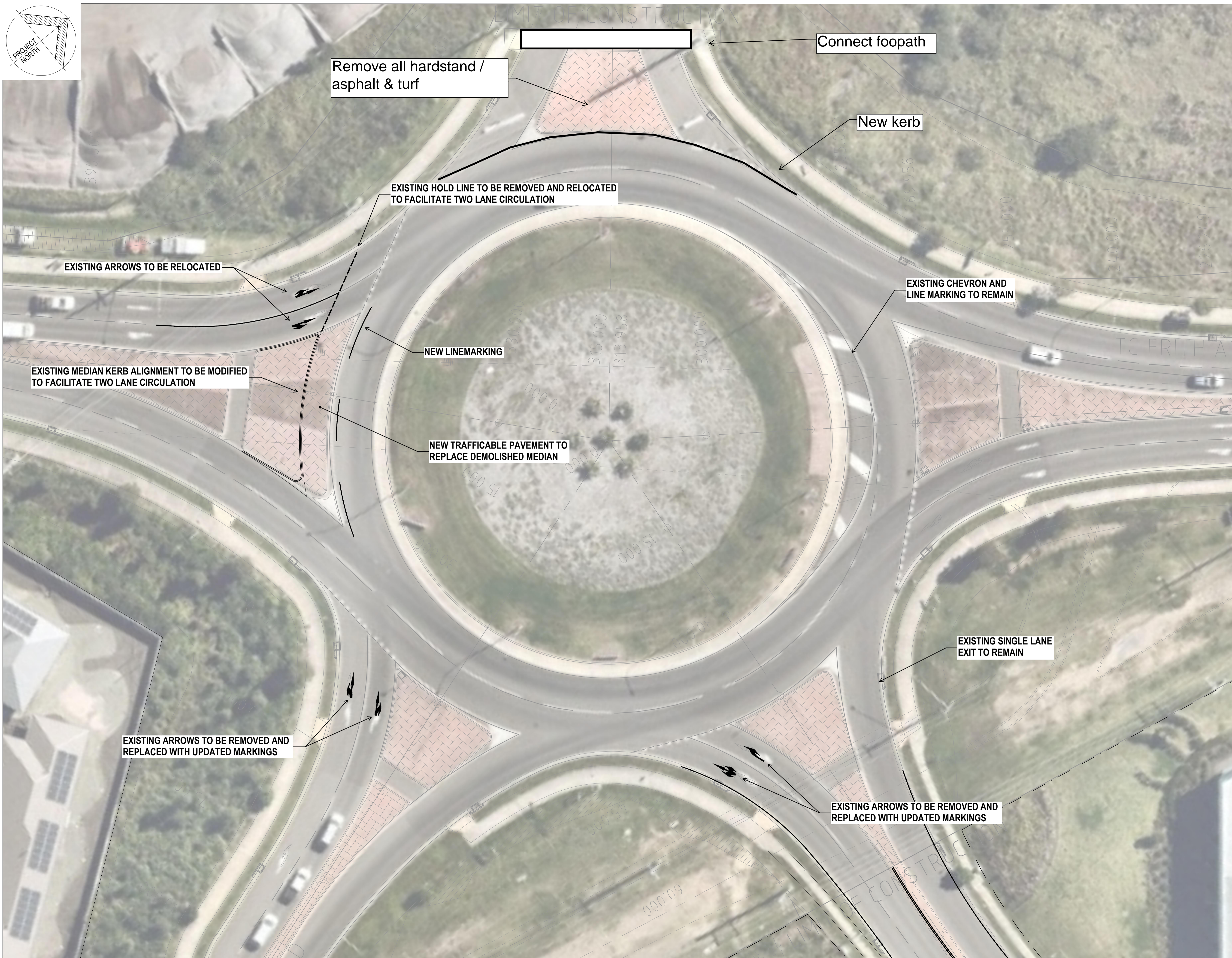
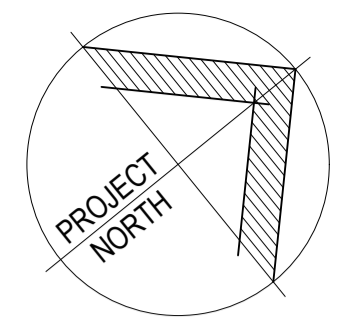
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TITLE				

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DOCUMENT No.			REVISION

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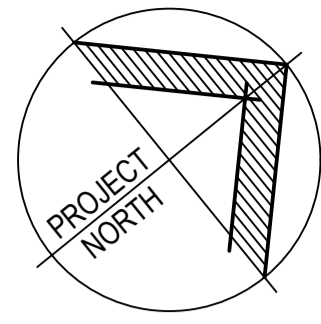
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 BOOLAROO, NSW**

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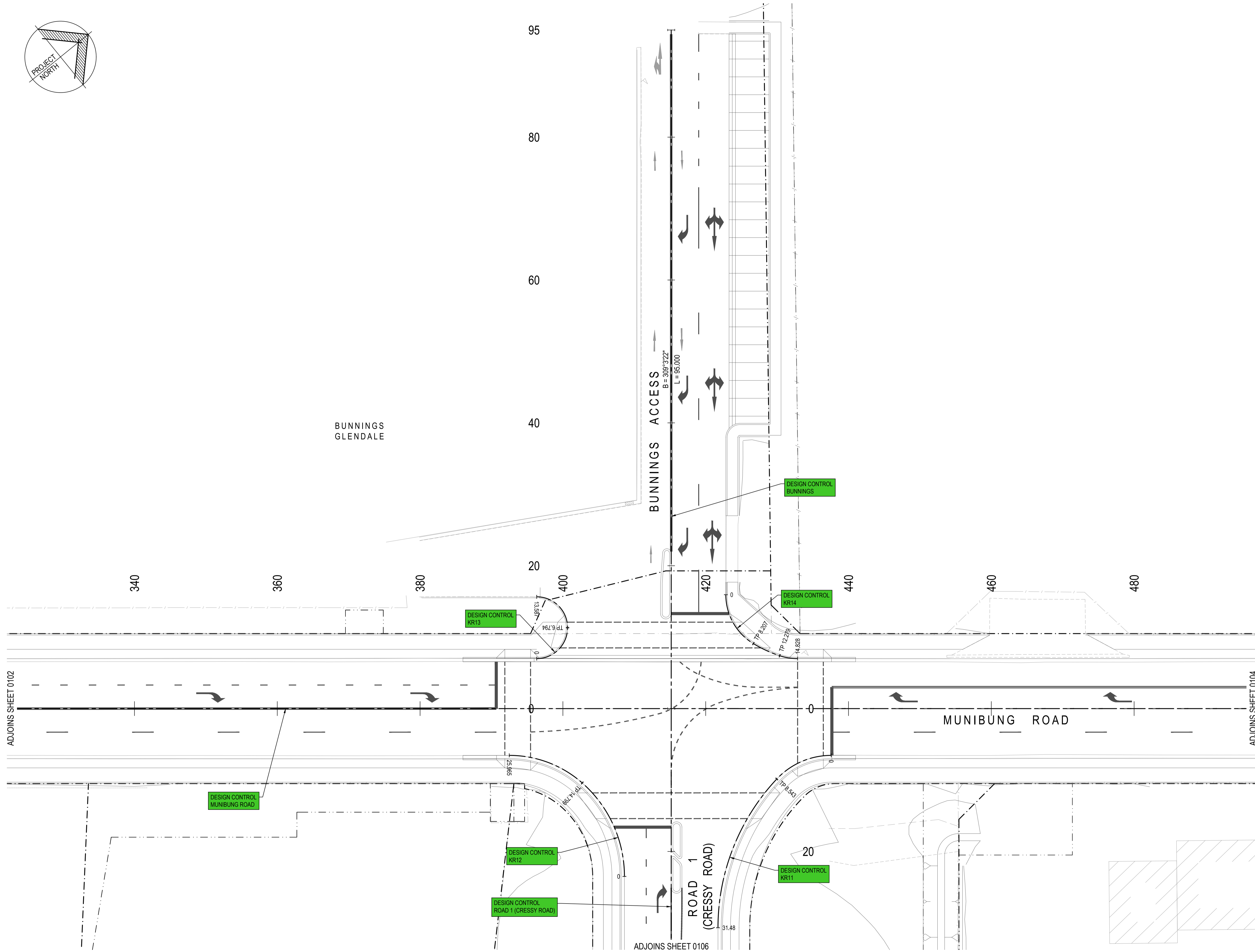
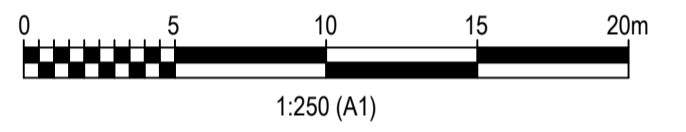
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- BOUNDARY LINE
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- PROPOSED FEATURES DESIGNED BY OTHERS

NOTES

ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL ENGINEERING GUIDELINES, TECHNICAL MANUALS, SPECIFICATIONS AND STANDARD DRAWINGS UNLESS STATED OTHERWISE.

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**SETOUT PLAN
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NOT FOR CONSTRUCTION

16444-MU-DR-0103

GENERAL NOTES

ALL INVESTIGATIONS AND WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CURRENT RMS QA SPECIFICATIONS, LAKE MACQUARIE CITY COUNCIL ENGINEERING GUIDELINES AND AUSTRALIAN STANDARDS UNLESS OTHERWISE STATED.

CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES, DRAINAGE WORKS AND UNDERGROUND INFRASTRUCTURE PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE ADOPTED METHOD OF CONSTRUCTION AND PROPOSED WORKS WILL AVOID DAMAGE TO ALL SERVICES AND DRAINAGE WORKS INCLUDING CLEARANCES TO OVERHEAD POWER LINES.

CONTRACTOR TO VERIFY SETOUT BEFORE COMMENCING EARTHWORKS AND REFER ANY DISCREPANCIES TO ENGINEER.

ANY SURVEY PMS OR SSMs THAT ARE DESTROYED ARE TO BE REPLACED WITH AN EQUIVALENT STANDARD MARK TO LANDS DEPARTMENT STANDARDS PRIOR TO THE EXISTING MARK BEING REMOVED AND TO THE STANDARD SET OUT IN THE SURVEYOR GENERAL'S DIRECTIONS.

RETRO REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE PROVIDED IN ACCORDANCE WITH RMS QA SPECIFICATIONS.

ALL PROPOSED LINEMARKING TO MAKE SMOOTH CONNECTION WITH EXISTING LINEMARKING.

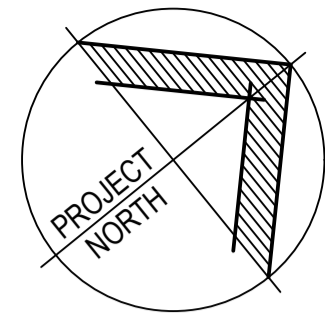
ALL REDUNDANT PAVEMENT MARKINGS MUST BE REMOVED BY GRINDING, BLASTING OR RESURFACING. PAINT OVER WITH BLACK BITUMINOUS PAINT IS NOT ACCEPTABLE.

ALL EXPOSED/DISTURBED AREAS TO BE TREATED IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS.

FOR DRAWING LIST REFER TO SHEET 0000.

FOR ALIGNMENT SETOUT REFER TO SHEET 0120.

FOR PAVEMENT DETAILS REFER TO SHEET 0220.



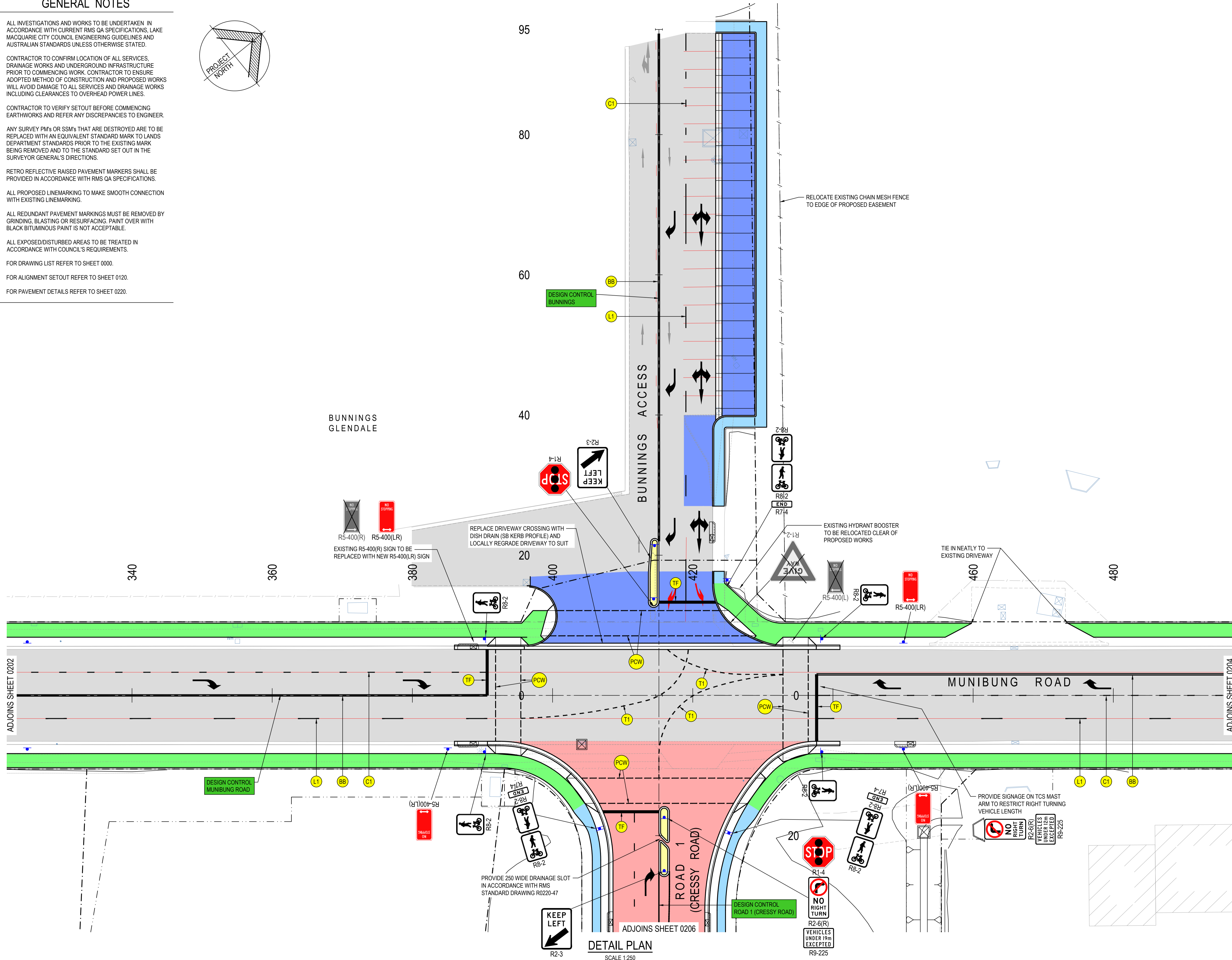
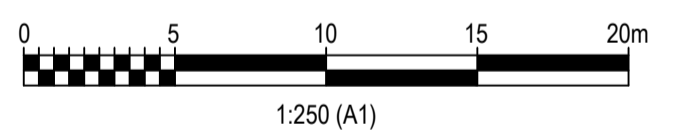
PROJECT
MUNIBUNG ROAD INTERSECTION WORKS
COCKLE CREEK REDEVELOPMENT
BOOLAROO, NSW

CLIENT
HUNTER & CENTRAL COAST
DEVELOPMENT CORPORATION

THIS DRAWING CONTAINS COLOURED INFORMATION C M Y

LEGEND

- PROPOSED FLEXIBLE ROAD PAVEMENT, REFER TO SHEET 0220 FOR DETAILS
- PROPOSED RIGID ROAD PAVEMENT, REFER TO SHEET 0220 FOR DETAILS
- PROPOSED RIGID ROUNDABOUT PAVEMENT, REFER TO SHEET 0220 FOR DETAILS
- PROPOSED CONCRETE MEDIAN, REFER TO SHEET 0220 FOR DETAILS
- PROPOSED DRIVEWAY PAVEMENT IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL STANDARD DRAWING EGS-104
- PROPOSED FOOTPATH PAVEMENT IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL STANDARD DRAWING EGS-301
- PROPOSED SHARED PATH PAVEMENT IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL STANDARD DRAWING EGS-301
- EXISTING FLEXIBLE PAVEMENT TO REMAIN
- PROPOSED LINEMARKING DESIGNATION
- PROPOSED PAVEMENT ARROW
- EXISTING LINEMARKING TO BE REMOVED
- EXISTING FENCE LINE TO REMAIN
- EXISTING FENCE LINE TO BE DEMOLISHED
- BOUNDARY LINE
- EASEMENT LINE
- SURVEY FEATURES
- EXISTING FEATURES DESIGNED BY OTHERS (NOT SURVEYED)
- PROPOSED FEATURES DESIGNED BY OTHERS
- PROPOSED SIGNAGE
- EXISTING SIGNAGE TO REMAIN OR BE RELOCATED AS NOTED ON PLAN
- EXISTING SIGNAGE TO BE REMOVED



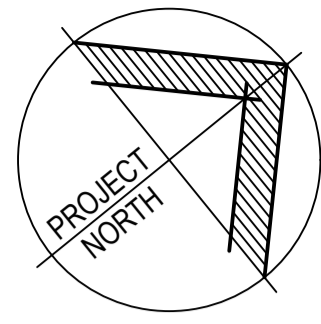
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REV	DATE	DESCRIPTION	DRN	APP

TITLE
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SHEET 3

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DOCUMENT No.		REVISION	

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PROJECT
**MUNIBUNG ROAD INTERSECTION WORKS
 COCKLE CREEK REDEVELOPMENT
 BOOLAROO, NSW**

CLIENT
**HUNTER & CENTRAL COAST
 DEVELOPMENT CORPORATION**

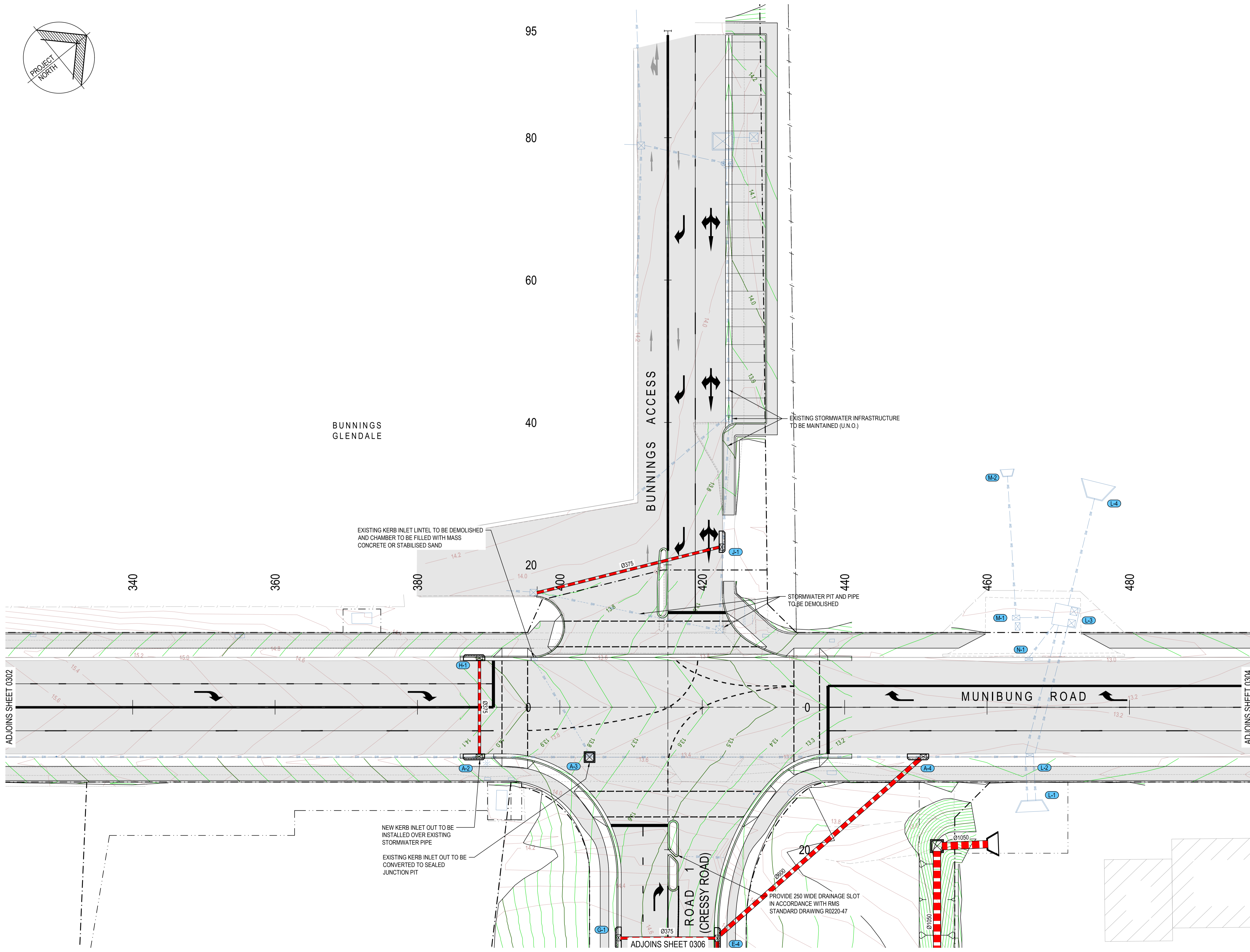
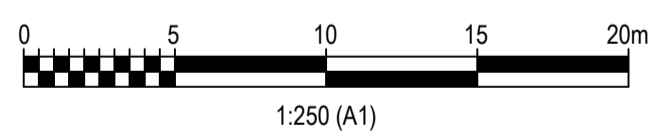
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LEGEND

- □ PROPOSED STORMWATER DRAINAGE PIT. REFER TO SHEET 0340 FOR PIT SCHEDULE
- PROPOSED STORMWATER DRAINAGE PIPE. REFER TO SHEETS 0340 TO 0341 FOR DETAILS
- EXISTING STORMWATER PIPE TO REMAIN
- - - EXISTING STORMWATER PIPE TO BE DEMOLISHED
- 16.0 DESIGN MAJOR CONTOUR (0.5m INTERVALS)
- 16.4 DESIGN MINOR CONTOUR (0.1m INTERVALS)
- 16.4 EXISTING CONTOUR (0.2m INTERVALS)
- - - EXISTING FENCE LINE TO REMAIN
- - - EXISTING FENCE LINE TO BE DEMOLISHED
- - - BOUNDARY LINE
- - - EASEMENT LINE
- SURVEY FEATURES
- EXISTING FEATURES DESIGNED BY OTHERS (NOT SURVEYED)
- PROPOSED FEATURES DESIGNED BY OTHERS

GENERAL NOTES

- ALL INVESTIGATIONS AND WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CURRENT RMS QA SPECIFICATIONS, LAKE MACQUARIE CITY COUNCIL ENGINEERING GUIDELINES AND AUSTRALIAN STANDARDS UNLESS OTHERWISE STATED.
- CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES, DRAINAGE WORKS AND UNDERGROUND INFRASTRUCTURE PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE ADOPTED METHOD OF CONSTRUCTION AND PROPOSED WORKS WILL AVOID DAMAGE TO ALL SERVICES AND DRAINAGE WORKS INCLUDING CLEARANCES TO OVERHEAD POWER LINES.
- CONTRACTOR TO VERIFY SETOUT BEFORE COMMENCING EARTHWORKS AND REFER ANY DISCREPANCIES TO ENGINEER.
- ANY SURVEY PMS OR SSM'S THAT ARE DESTROYED ARE TO BE REPLACED WITH AN EQUIVALENT STANDARD MARK TO LANDS DEPARTMENT STANDARDS PRIOR TO THE EXISTING MARK BEING REMOVED AND TO THE STANDARD SET OUT IN THE SURVEYOR GENERAL'S DIRECTIONS.
- ALL EXPOSED/DISTURBED AREAS TO BE TREATED IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS.
- FOR DRAWING LIST REFER TO SHEET 0000.
- FOR ALIGNMENT SETOUT REFER TO SHEET 0120.
- FOR DRAINAGE DETAILS REFER TO SHEET 0320.
- FOR DRAINAGE PROFILES REFER TO SHEETS 0340 TO 0341.



ADJOINS SHEET 0302

ADJOINS SHEET 0304

DRAINAGE PLAN
 SCALE 1:250

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A	02/11/2020	ISSUED FOR 20% DESIGN	J.F. B.R.
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**DRAINAGE PLAN
 SHEET 3**

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DRAWN J.Fraser	DESIGNED J.Fraser	APPROVED B.Rodgers	SCALE 1:250
DOCUMENT No.			REVISION

NOT FOR CONSTRUCTION 16444-MU-DR-0303

LEGEND

- PROPOSED KERB INLET PIT
- PROPOSED DRAINAGE PIT
- PROPOSED CLASS B RC PIPE
- EXISTING STORMWATER PIPE
- DESIGN MAJOR CONTOUR (0.5m INTERVALS)
- DESIGN MINOR CONTOUR (0.1m INTERVALS)
- EXISTING CONTOUR (0.2m INTERVALS)
- EXISTING FENCE LINE
- BOUNDARY LINE
- EASEMENT LINE
- EXISTING FEATURES DESIGNED BY OTHERS (NOT SURVEYED)
- PROPOSED FEATURES DESIGNED BY OTHERS

NOTES

1. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH LAKE MACQUARIE CITY COUNCIL ENGINEERING GUIDELINES, TECHNICAL MANUALS, SPECIFICATIONS AND STANDARD DRAWINGS UNLESS STATED OTHERWISE.
2. RELOCATION OF UTILITIES AND SERVICES TO BE UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATIONS OF THE RELEVANT SERVICE PROVIDER. CONTRACTOR TO ALLOW TO COORDINATE WITH SERVICE PROVIDERS AS REQUIRED TO ENSURE RELOCATION IS UNDERTAKEN ADEQUATELY.
3. CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES, DRAINAGE WORKS AND UNDERGROUND INFRASTRUCTURE PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE ADOPTED METHOD OF CONSTRUCTION AND PROPOSED WORKS WILL AVOID DAMAGE TO ALL SERVICES AND DRAINAGE WORKS INCLUDING CLEARANCES TO OVERHEAD POWER LINES.
4. CONTRACTOR TO VERIFY SETOUT BEFORE COMMENCING WORKS. REFER ANY DISCREPANCIES TO ENGINEER.
5. BENCHMARKS TO BE PROVIDED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
6. REFER TO MU-DR-0000 FOR DRAWING LIST.
7. REFER TO MU-DR-0101 - 0106 FOR ALIGNMENT SETOUT DETAILS.
8. REFER TO MU-DR-0340 - 0341 FOR DRAINAGE PROFILES AND PIT SCHEDULE.
9. EXISTING CONTOURS ARE SHOWN AT 0.20m INTERVALS
10. MAJOR DESIGN CONTOURS ARE SHOWN AT 0.50m INTERVALS AND MINOR DESIGN CONTOURS ARE SHOWN AT 0.10m INTERVALS.



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REV	DATE	DESCRIPTION	DRN	APP
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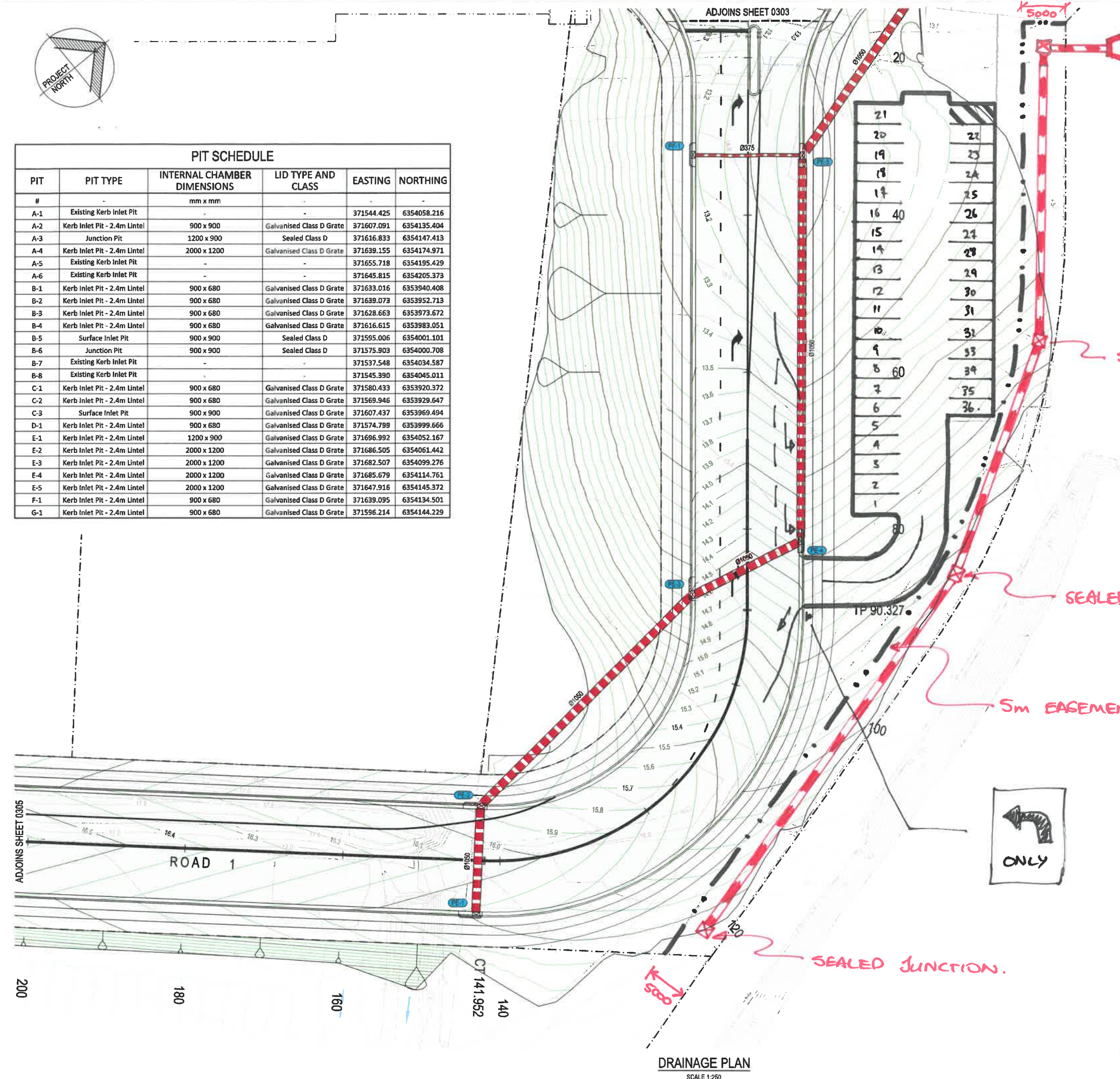
DRAINAGE PLAN
SHEET 6

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DOCUMENT No.			REVISION

PITS 5-1 AND 5-6 ARE TO BE CONSTRUCTED WITH LARGE BURIED CHAMBERS TO SUIT PROPOSED DRAINAGE PIT DIAMETER. STRUCTURAL DETAILS FOR PITS TO FOLLOW AT LATER STAGE.

NOT FOR CONSTRUCTION 16444-MU-DR-0306

PIT SCHEDULE					
PIT #	PIT TYPE	INTERNAL CHAMBER DIMENSIONS (mm x mm)	LID TYPE AND CLASS	EASTING	NORTHING
A-1	Existing Kerb Inlet Pit	-	-	371544.425	6354058.216
A-2	Kerb Inlet Pit - 2.4m Lintel	900 x 900	Galvanised Class D Grate	371607.091	6354135.404
A-3	Junction Pit	1200 x 900	Sealed Class D	371616.833	6354147.413
A-4	Kerb Inlet Pit - 2.4m Lintel	2000 x 1200	Galvanised Class D Grate	371639.155	6354174.971
A-5	Existing Kerb Inlet Pit	-	-	371655.718	6354195.429
A-6	Existing Kerb Inlet Pit	-	-	371645.815	6354205.373
B-1	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371633.016	6353940.408
B-2	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371639.073	6353952.713
B-3	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371628.663	6353973.672
B-4	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371616.615	6353983.051
B-5	Surface Inlet Pit	900 x 900	Sealed Class D	371595.006	6354001.101
B-6	Junction Pit	900 x 900	Sealed Class D	371575.903	6354000.708
B-7	Existing Kerb Inlet Pit	-	-	371537.548	6354034.587
B-8	Existing Kerb Inlet Pit	-	-	371545.390	6354045.011
C-1	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371580.433	6353920.372
C-2	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371569.946	6353929.647
C-3	Surface Inlet Pit	900 x 900	Galvanised Class D Grate	371607.437	6353969.494
D-1	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371574.799	6353999.666
E-1	Kerb Inlet Pit - 2.4m Lintel	1200 x 900	Galvanised Class D Grate	371696.992	6354052.167
E-2	Kerb Inlet Pit - 2.4m Lintel	2000 x 1200	Galvanised Class D Grate	371686.505	6354061.442
E-3	Kerb Inlet Pit - 2.4m Lintel	2000 x 1200	Galvanised Class D Grate	371682.507	6354099.276
E-4	Kerb Inlet Pit - 2.4m Lintel	2000 x 1200	Galvanised Class D Grate	371685.679	6354114.761
E-5	Kerb Inlet Pit - 2.4m Lintel	2000 x 1200	Galvanised Class D Grate	371647.916	6354145.372
F-1	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371639.095	6354134.501
G-1	Kerb Inlet Pit - 2.4m Lintel	900 x 680	Galvanised Class D Grate	371596.214	6354144.229



DRAINAGE PLAN
SCALE 1:250

Appendix C

Environmental Impact Assessment

Our Ref: 20119/R04/AW/KV/NB/22122020

22 December 2020

Jacob Whiting
A/Development Manager
Hunter and Central Coast Development Corporation

E | Jacob.whiting@hccdc.nsw.gov.au

Dear Jacob

Re: Biodiversity Due Diligence Site Inspection and Heritage Due Diligence Assessment for an Addendum REF for the proposed new intersection and access road off Munibung Road, Boolaroo, NSW

Hunter and Central Coast Development Corporation (HCCDC) prepared a Review of Environmental Factors (REF), in October 2020, under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to assess the environmental impacts of the proposed new intersection and access road off Munibung Road, Boolaroo in Lake Macquarie local government area.

As an outcome of consultation with Transport for NSW (TfNSW), HCCDC have revised the design, to better manage traffic congestion within the network to include two separate portions of work being:

- Bunnings carparking – relocating carparks near the intersection egress where a dual lane is required, with the works encroaching into the adjacent drainage basin area and some of the original Bunnings landscaping (refer **Appendix A**).
- TC Frith roundabout - modifications to the TC Frith roundabout within the existing roundabout and road reserve (refer **Appendix A**).

The impact of these two separate portions is being assessed by HCCDC as an Addendum REF to the October 2020 REF.

The proposal is primarily on land at 13A Main Road, Boolaroo NSW 2284, in the City of Lake Macquarie, commonly referred to as the Cockle Creek site (formerly Pasmenco). The proposal would support the release and development of the lots within the site. The general location of the proposal is shown in **Plate 1**.

Umwelt (Australia) Pty Limited (Umwelt) had previously been engaged by HCCDC to undertake heritage and biodiversity desktop due diligence assessment to identify potential impacts on heritage and biodiversity values in the proposal area. This document presents the results of an ecological and heritage due diligence of the two separate portions of work to support the Addendum REF. As part of the biodiversity due diligence assessment, a site inspection was undertaken of the Bunnings Carpark impact area (study area). The focus of the inspection is shown on **Plate 1**. No inspection was undertaken of the TC Firth roundabout work area.

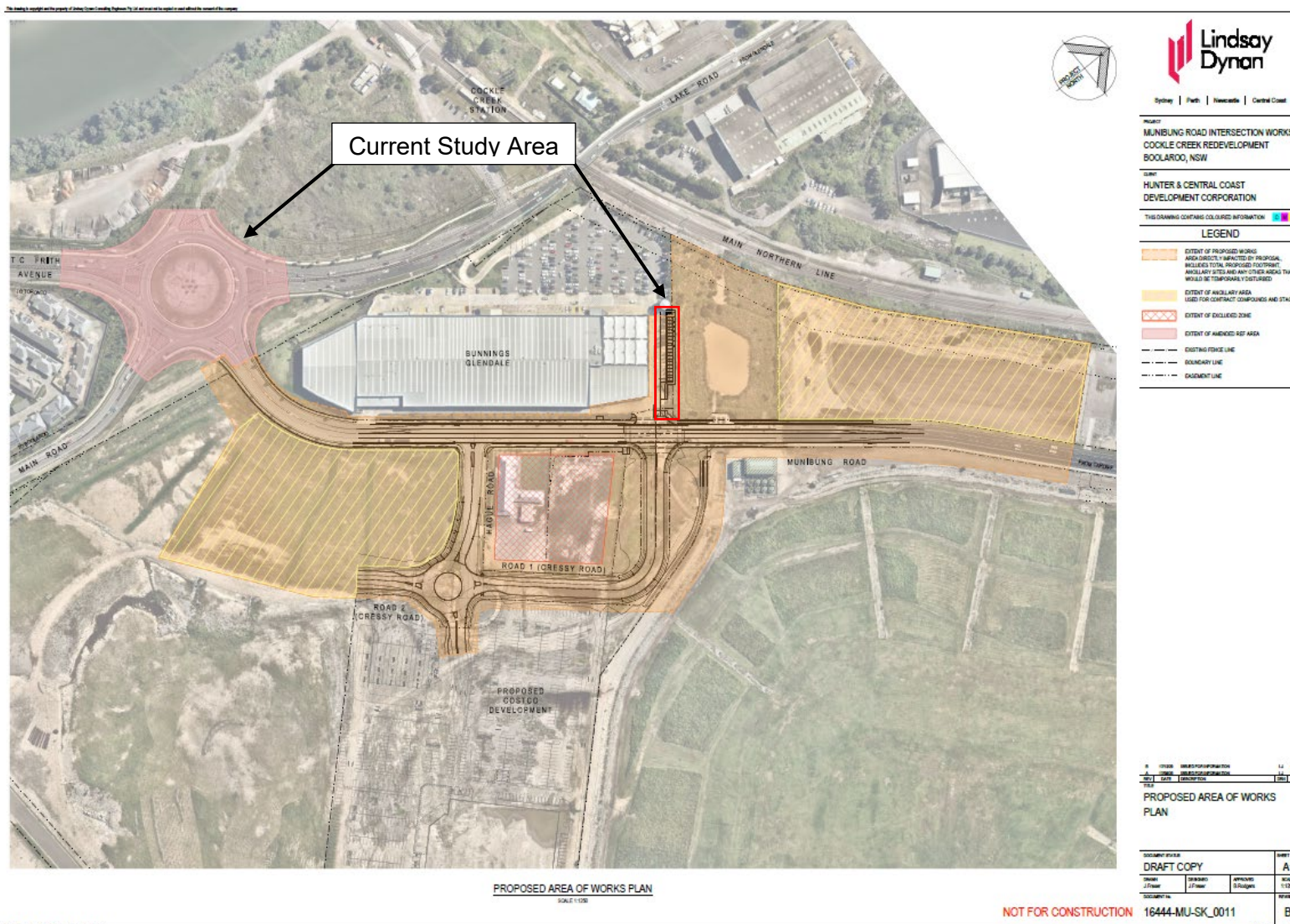


Plate 1 - Extent of proposed works area directly impacted by proposal (orange) and Study Area for the site inspection (red shading and outline)

© Lindsay Dynan, 2020

The key features of the proposed amendments in Bunnings Carpark represented by Plate 2 and Plate 3 include:

- A Bunnings/Costco and Munibung Rd signalised intersection
- Adjustments to the existing Bunnings access driveway, including the removal of existing carparks, sidewalk, and removal of landscaped vegetation
- Realignment of existing fenceline
- Removal of fringing vegetation associated with a drainage basin adjacent to Munibung Rd and the Bunnings access driveway.

The construction of the road extensions and alterations will necessitate extensive sub-surface works to occur throughout much of the proposal area.

The Study Area has a history of high disturbance due to the activities of the former Pasmenco smelter, extensive remediation of the site since 2003, construction of Munibung Road and construction of the Bunnings facility.



Plate 2 – Proposed road widening works would encroach on existing Bunnings carparking, pedestrian access and landscaping.



Plate 3 - Road widening works encroaching on fringe vegetation of the existing detention basin

Biodiversity Due Diligence Assessment

This Biodiversity due diligence assessment is an addendum to the desktop due diligence assessment provided in October 2020 (Umwelt 2020a). The due diligence assessment focused on threatened entities as listed under the Biodiversity Conservation Act 2016 (BC Act), Fisheries Management Act 1994 (FM Act) and the Environment Protection Biodiversity Conservation Act 1999 (EPBC Act).

A site inspection has been undertaken focused on the area adjacent to the road verge and detention basin which would be subject to clearing for road widening works at the Bunnings carpark access road (hereafter referred to as the Study Area). Approximately 0.6 hectares (ha) will be disturbed as part of the work within the carpark Study Area.

1.1 Methodology

No additional database review has been undertaken (refer to Umwelt 2020a for the results of same).

On Monday 21 December 2020, an Umwelt ecologist inspected the Study Area. The focus of the site inspection was to identify the vegetation likely to be impacted by the proposed work for the carpark and describe the habitats present. In addition, the site inspection aimed to identify any potential threatened and migratory species, endangered populations (or their habitats), delineate threatened ecological communities (TECs) or any other key ecological features present that must be considered as part of an Ecological Assessment in accordance with NSW and Commonwealth legislation.

A site inspection was not undertaken in the TC Firth roundabout as all work is proposed to occur in the existing road reserve and road of the roundabout (refer to **Appendix A**).

The following was undertaken as part of the site inspection:

- A walking meander throughout the Study Area, including an over the fence inspection of the drainage basin where parts of the Study Area were not accessible.

- Recording flora species composition and level of disturbance in a manner that allowed for assessment of whether vegetation meets the criteria of a listed TEC (note: no plot-based flora surveys were completed, instead, rapid assessments were conducted along the length of impact)
- Identification and/or recording of the location of any threatened species or key ecological features (such as active nests and hollows) with the potential to provide habitat for threatened species (only for features that may be impacted by proposed works).

The ability to identify threatened species was limited to those that could be identified at the time and season of survey.

1.2 Assessment of Biodiversity Values

No threatened species, TECs or endangered populations were recorded within the Study Area. No habitat features such as nests, burrows or hollows were recorded. Only three fauna species were recorded from the Study Area, being the Australian magpie (*Cracticus tibicen*), common myna (*Acridotheres tristis*) and common eastern froglet (*Crinia signifera*).

The vegetation encountered in the Study Area included a landscaped linear strip of vegetation following the pedestrian pathway next to the carparks along the Bunnings access driveway. The Study Area also included a linear section of vegetation within the detention basin on the other side of the fence.

For ease of description, the two distinct vegetation assemblages inspected within the Study Area will be described separately below.

1.2.1 Landscaped Vegetation

Planted vegetation along the Bunnings facility fenceline ranged from 0.5 metres (m) to about 5m in height. Canopy species included spotted gum (*Corymbia maculata*), narrow-leaved ironbark (*Eucalyptus crebra*), swamp oak (*Casuarina glauca*) and broad-leaved paperbark (*Melaleuca quinquenervia*). Mid-storey species included fringed wattle (*Acacia fimbriata*), common lilly pilli (*Acmena smithii*), coastal wattle (*Acacia longifolia* subsp. *sophorae*), crimson bottlebrush (*Callistemon citrinus*), gorse bitter pea (*Daviesia ulicifolia*), lantana (*Lantana camara*) and a paperbark (*Melaleuca* sp. - not native to the area). The native understorey was sparse and primarily comprised of spiny-headed mat-rush (*Lomandra longifolia*), common tussock grass (*Poa labillardierei*) and purple flax lily (*Dianella caerulea*). Exotic species were scattered sparsely throughout the understorey and became more dominant at the intersection with Munibung Rd where the landscaped vegetation met the road verge. Dominant exotic understorey species included lantana (*Lantana camara*), fleabane (*Conyza bonariensis*), slender celery (*Cyclosporum leptophyllum*), lambs tongues (*Plantago lanceolata*), prolific pink (*Petrorhagia nanteulli*) and blackberry nightshade (*Solanum nigrum*).

An example of the vegetation in this area is shown in **Plate 4**.

1.2.2 Detention Basin Fringing Vegetation

The detention basin primarily consisted of planted understorey species spiny-headed mat-rush (*Lomandra longifolia*). Other dominant native understorey species included blady grass (*Imperata cylindrica*). Exotic understorey species included spear thistle (*Cirsium vulgare*), fleabane (*Conyza bonariensis*) and purpletop (*Verbena bonariensis*). Emergent shrubs appear to have recruited close to the landscaped vegetation on the other side of the fence. These shrubs were between 1 and 3 metres in height and included fringed wattle (*Acacia fimbriata*), swamp oak (*Casuarina glauca*) and coastal wattle (*Acacia longifolia* subsp. *sophorae*). The vegetation within the detention basin did not contain a canopy layer. An example of this vegetation is shown in **Plate 5**.



Plate 4 - Landscaped vegetation adjacent to existing Bunnings carpark



Plate 5 - Vegetation within existing detention basin

1.3 Summary of the Site Inspection

The results of the site inspection indicate that while native vegetation is present, it is almost entirely planted and contains minimal habitat. No threatened species, TECs or endangered populations were recorded within the Study Area. While some of the planted vegetation loosely confirms to a spotted gum - ironbark vegetation community, this vegetation does not meet the criteria for *Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions Endangered Ecological Community* due to its distribution and composition. Boolaroo has a coastal influence and is too far east for this vegetation to conform to this community, and the canopy does not have a *Eucalyptus fibrosa* dominant ironbark component (NSW Threatened Species Scientific Committee 2019).

A small area of native vegetation within the detention basin will be removed as part of the proposal. Given that this area of impact is on the very edge of the detention basin away from the aquatic habitat, it is anticipated that impacts to the existing habitat and environment will be minimal. With adequate water and sediment/erosion controls, any potential indirect impacts on habitat values in the detention basin can be mitigated.

The following general recommendations are provided in addition to those provided in Umwelt (2020a) to avoid and minimise impacts of the proposed works:

- disturbance will be kept within the areas provided by HCCDC of the proposed construction alignment in Attachment B in the original consultation letter
- ensure that machinery is free of weed material before entering and exiting the Study Area to avoid the introduction or spread of weed species
- backfilling of any holes associated with boring and trenching should utilise soil excavated onsite
- if possible, mature trees and shrubs within the existing landscaped area of the Bunnings access driveway should be translocated into areas requiring future landscaping, for example, in other areas around the Bunnings facility or along Munibung Rd.

In summary, the proposed works within the Study Area is unlikely to impact directly on potential habitat for threatened species. The works will not impact any TECs or endangered populations. The proposal will clear approximately 0.6 ha of native vegetation but will not fragment any wildlife corridors or impact on areas of outstanding biodiversity values. If the proposal scope is to change further assessment may be needed.

Heritage Due Diligence

Based on the visual inspection of the Study Area, as well as an updated review of all relevant background information, it is considered that the proposed carparking and roundabout works will not result in any heritage or archaeological impacts, including historical heritage impacts, and Aboriginal archaeological impacts. This assessment of impacts is consistent with the heritage assessments prepared in support of the original (October) REF:

- No physical or visual impacts to any heritage items located within or in the vicinity of the Study Area have been identified. Overall, the potential heritage impacts of the proposed works are assessed as negligible at most.
- No Aboriginal objects or sites are recorded as being located within the Study Area, which is clearly and demonstrably disturbed. It is assessed that there is a very low to nil likelihood that the proposed works will result in harm to Aboriginal objects. In accordance with the provisions of the due diligence code there is consequently no requirement for further archaeological assessment.

No further assessment with regards to historical or Aboriginal heritage is required in association with the proposed carparking and roundabout works. For a complete overview of all relevant background information used to undertake this assessment, reference should be made to the Heritage Impact Statement (Umwelt, 2020b) and Aboriginal Archaeological Due Diligence Assessment (Umwelt, 2020c) prepared for the original REF.

We trust this information meets with your current requirements. Please do not hesitate to contact the undersigned on 1300 793 267 should you require clarification or further information.

Kind regards



Naomi Buchhorn
Principal Ecologist

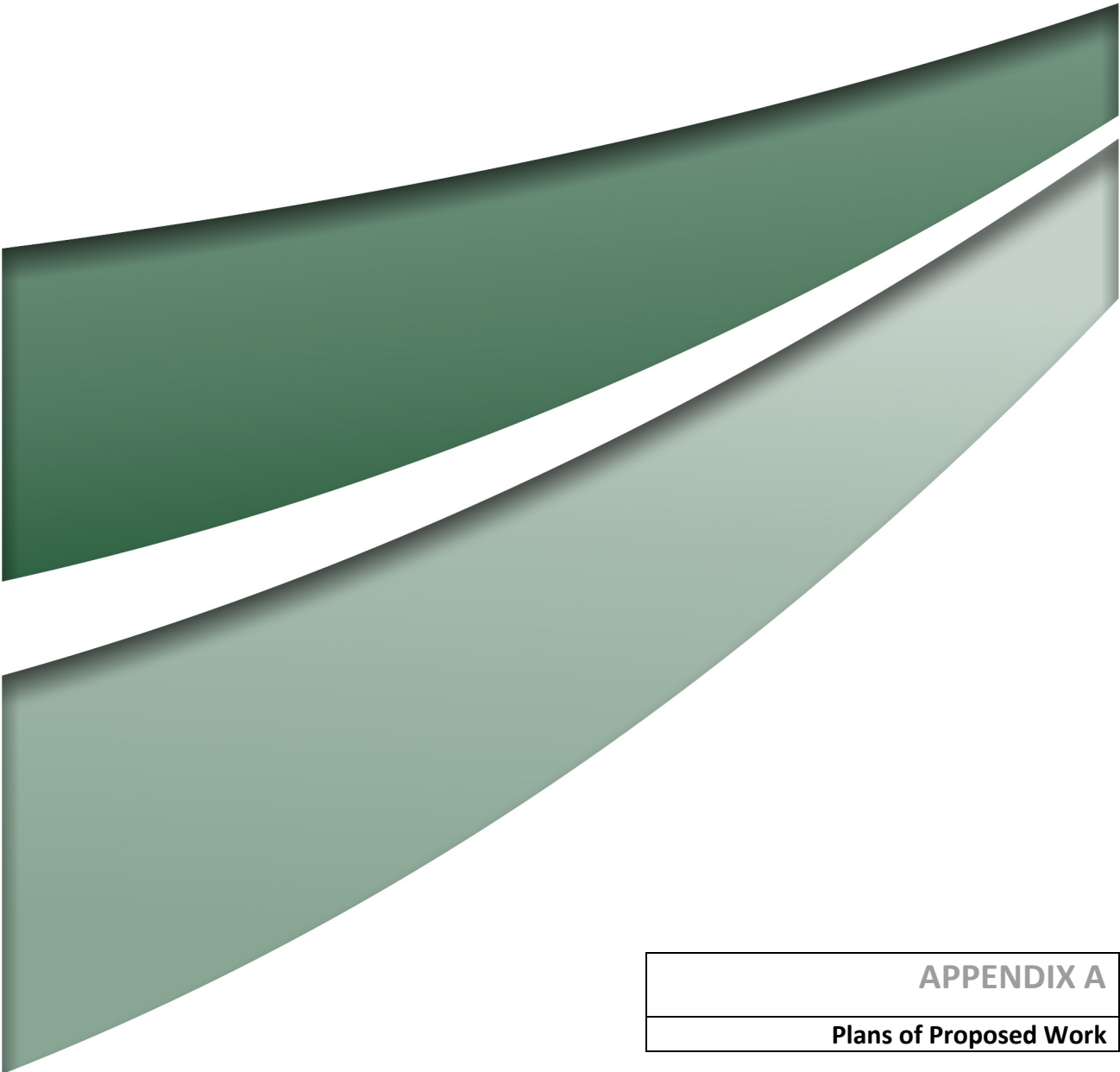
References

NSW Threatened Species Scientific Committee (2019) Final Determination - Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions, accessed December 2020, from < <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2019/lower-hunter-spotted-gum-ironbark-forest-final-determination-EEC.pdf?la=en&hash=45284937A71F0175AF94955070E93778C784AA0F> >.

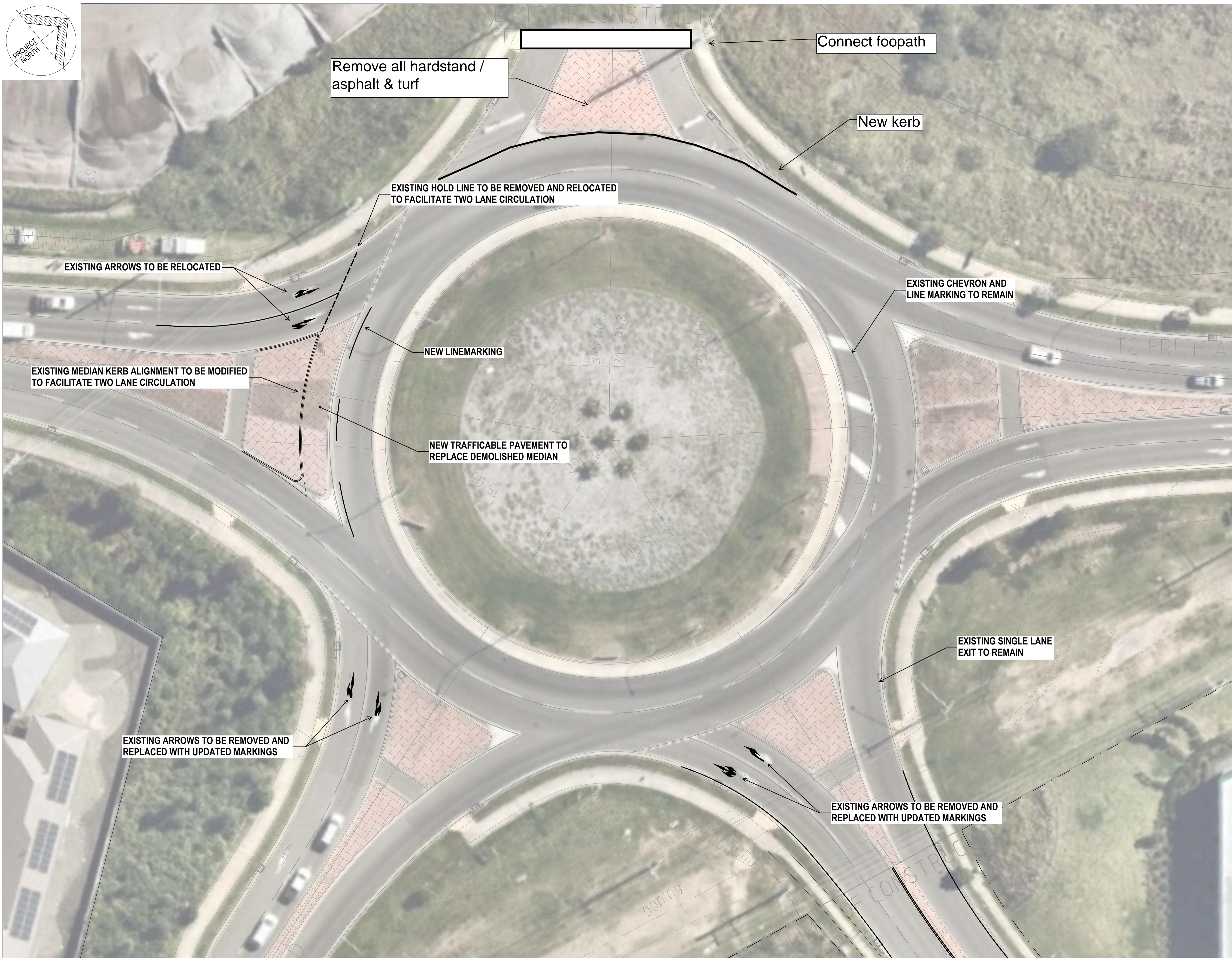
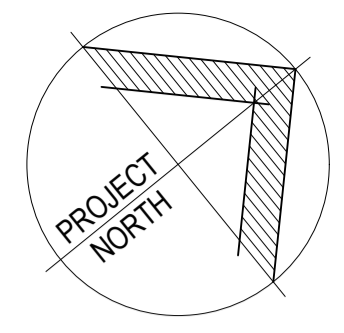
Umwelt (Australia) Pty Limited (Umwelt) (2020a) Ecological Due Diligence Assessment (Desktop): Proposed new intersection and access road off Munibung Road, Boolaroo, NSW. For Hunter and Central Coast Development Corporation. 1 October 2020.

Umwelt (Australia) Pty Limited (Umwelt) (2020b) Heritage Impact Statement: Proposed new intersection and access road off Munibung Road, Boolaroo, NSW. For Hunter and Central Coast Development Corporation. 1 October 2020.

Umwelt (Australia) Pty Limited (Umwelt) (2020c) Aboriginal Archaeological Due Diligence Assessment (Desktop): Proposed new intersection and access road off Munibung Road, Boolaroo, NSW. For Hunter and Central Coast Development Corporation. 1 October 2020.



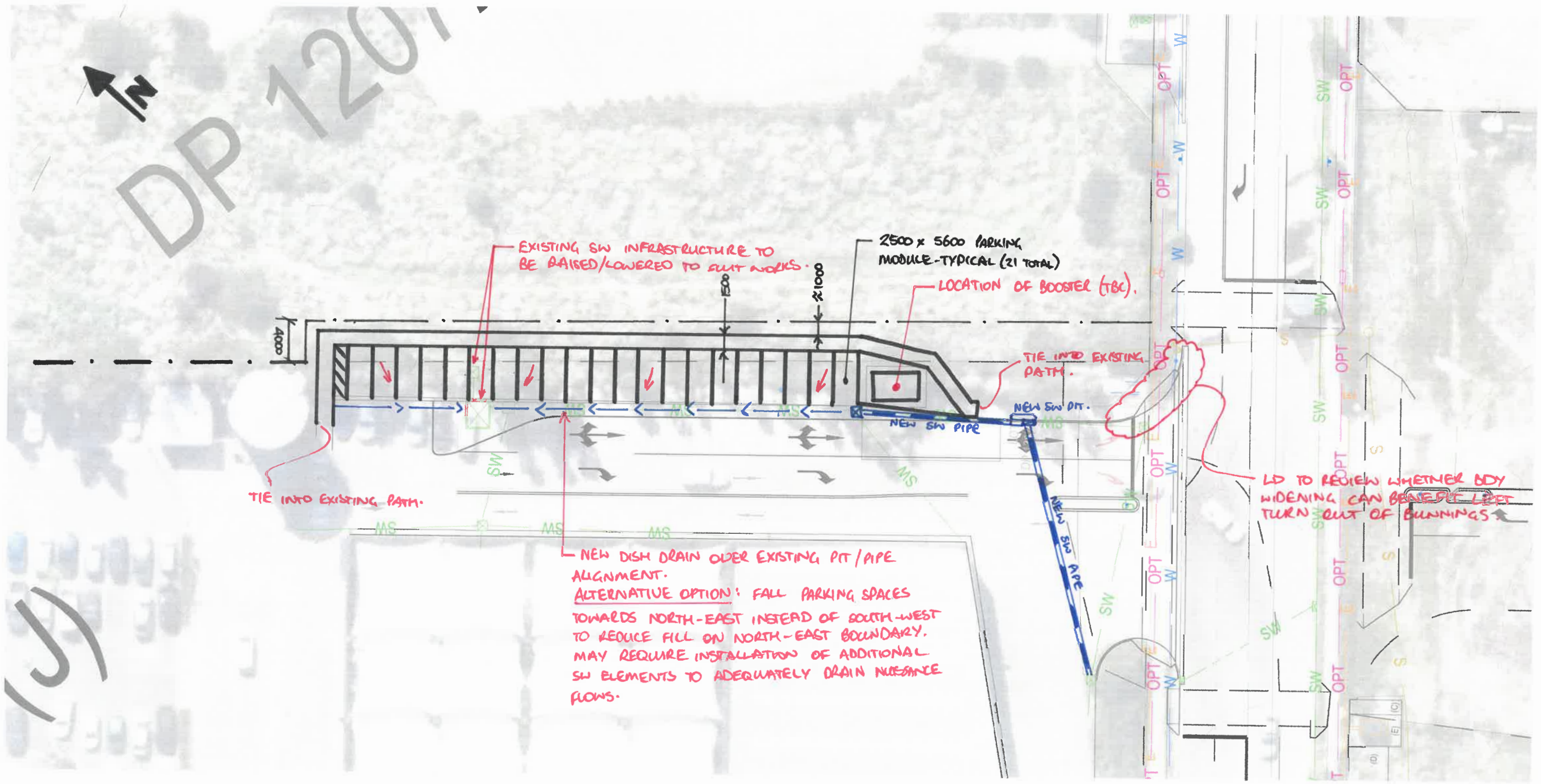
APPENDIX A
Plans of Proposed Work



REV	DATE	DESCRIPTION	DRN	APP
TITLE				

COSTCO/BUNNINGS SIGNALISED INTERSECTION PLAN

DOCUMENT STATUS			SHEET SIZE
DRAFT COPY			A1
DRAWN	DESIGNED	APPROVED	SCALE
-	-	-	1:200
DOCUMENT No.			REVISION
-			-



DP 1201

EXISTING SW INFRASTRUCTURE TO BE RAISED/LOWERED TO SUIT WORKS.

2500 x 5600 PARKING MODULE-TYPICAL (21 TOTAL)

LOCATION OF BOOSTER (TBC).

TIE INTO EXISTING PATH.

NEW SW PIT.

NEW SW PIPE

TIE INTO EXISTING PATH.

NEW DISH DRAIN OVER EXISTING PIT/PIPE ALIGNMENT.

ALTERNATIVE OPTION: FALL PARKING SPACES TOWARDS NORTH-EAST INSTEAD OF SOUTH-WEST TO REDUCE FILL ON NORTH-EAST BOUNDARY. MAY REQUIRE INSTALLATION OF ADDITIONAL SW ELEMENTS TO ADEQUATELY DRAIN NUISANCE FLOWS.

LD TO REVIEW WHETHER BDY WIDENING CAN BENEFIT LEFT TURN OUT OF BUILDINGS.

SCALE APPROX. 1:400 @A3.

BR PARKING SKETCH
30/11/20