Oakdale Central Development

Regional Link Roads

Old Wallgrove Road Upgrade - Road Design Report

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Finalisation signatures

The design described in this report is considered to have been finalised.

	Signature	**Date**
Dane Segail Civil Engineer (Author)		27/06/14
Mark Marsic Lead Designer (Road)		27/06/14
Anthony McLandsborough Director		27/06/14

Notes: The finalisation signatures shown above do not provide evidence of approval to the design. Approval signatures are shown on the title sheet of the design plans.

Authority Endorsement

The concept design of the Old Wallgrove Road Upgrade as described in this report has been reviewed and is endorsed as suitable for progressing to detailed design.

Department of Planning

Authorised Representative (Name)	Signature	Date

Fairfield City Council

Authorised Representative (Name)	Signature	Date

Blacktown City Council

Authorised Representative (Name)	Signature	Date

Road and Maritime Services

Authorised Representative (Name)	Signature	Date

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1 Scope

1.1 Purpose of Design Report

The purpose of this Design Report is to:

- Describe the Project Scope and Background;
- Define the Project's objectives;
- Describe those documents which make up the Design and subsequent Application;
- Describe the Design Inputs;
- Describe the Design parameters and why they were selected;
- Describe the Road Scape Allocation and how guidelines are met;
- Describe the Road Typical Cross Sections and how standards are met;
- Describe Horizontal Curves and Alignments and how standards are met;
- Describe the Geometric Design and how constraints and standards are met; and
- Describe the Design Finalisation Process.

This Design Report describes ***why things were done.*** What was done is shown on the plans. The objectives of this Design Report are to provide the reasons for design decisions.

1.2 Context/Background

The existing section of Old Wallgrove Road (OWR) between the recently completed EPLR and the Oakdale Estate, is best categorised as a rural road, comprising a variable width pavement from 7 to 8m with flush shoulders and table drains. This section of road is approximately 1600m in length. The road is unlit and is in a poor condition with numerous pavement failures along the stretch of road.

Existing features of Old Wallgrove Road (post temporary upgrade as described below) are:

- Total length of road 1600m.
- Single carriageway variable width, average of 7m, widening at access points to circa 12m.
- Unformed shoulders - Stormwater freely drains to surrounding verge.
- Flexible pavement with flush seal.
- Significant pavement cracking and potholing.

- Sign posted speed limit - 70km/h.
- Sight distance satisfactory apart from the area directly south of the SCA crossing.

As part of the Concept Approval for the Oakdale Estate, a section of Old Wallgrove Road was to be temporarily upgraded to provide additional road width to cater for additional heavy traffic. These works were completed in 2011. Since the completion of these roadworks, the pavement has deteriorated and potholes have developed, calling for a need to rehabilitate Old Wallgrove Road. The drawings associated with the completed upgrade works can be found in Appendix A – GHD OWR Upgrade Drawings (Works Completed).

In addition, Goodman proposes to develop the remainder of the Oakdale Estate, which necessitates consideration of the required road connection.

The Oakdale Estate is located within the Fairfield City Council Local Government area and is bounded by the future Chandos Parkway Road Corridor to the south, the SCA(SCA) pipeline to the north, Old Wallgrove Road to the East, and Ropes Creek to the West. The Site forms part of the Oakdale Central Precinct Concept Plan Approval (08_0065) and is approximately 61.2ha in area.

The Concept Approval approved the developed of:

- Overall the subdivision, as modified, created:
    - 15 lot subdivision (total area ~ 45.8ha).
    - 7 industrial buildings.
    - Recreation and biodiversity land (total area ~ 10.1ha)
    - Road construction and upgrades
    - Infrastructure
- Upgrade of a 1.6km section of Old Wallgrove Road to provide a 7m wide road to provide B-Double access to the Estate, between the Estate Road entry location and a point on Old Wallgrove Road located outside the Coles Myer Distribution Centre (Note: These works have been completed, refer above). Refer to Appendix A – GHD OWR Upgrade Drawings (Works Completed).
- Bulk earthworks

Much of the first half of the Estate is built, with the first leg of the Estate Road built, and the first three industrial buildings built and occupied. The remaining infrastructure is either under construction, or pending Development Approval from Fairfield City Council.

In addition, RMS have requested that the upgrade of Old Wallgrove Road, south of the SCA pipeline, be developed and implemented to be compatible with the long term provision of a proposed north south link road. The objective of the future proposed north south link road will be to provide an connector route between the EPLR and the Chandos Parkway, and in addition, to support the development of lands along the corridor of the north south link road.

To support the ongoing development of the Oakdale Estate in the short term, the section of Old Wallgrove Road north of the SCA pipeline through to the recently upgraded EPLR, is also required to be upgraded.

AT&L have been commissioned to develop and design the proposed permanent upgrade solution of Old Wallgrove Road (including the section south of the SCA pipeline), which will ultimately support further development south of the pipeline.

1.3 Project Objectives

1.3.1 Project Specific Objectives

The project specific objectives for the design are:

- Upgrade Old Wallgrove Road to increase the traffic capacity, as outlined in the Traffic Impact Assessment prepared by Traffix.
- Rehabilitate or replace existing pavement.
- Ensure the upgraded road can operate at the intended design speed of 80km/h and posted speed of 70km/h. NB: The section of Works south of the SCA Pipeline will as part of the Old Wallgrove Road Upgrade, be designed to suit 60km/h due to the existing property constraints.
- Tie in with newly constructed/future regional link roads.
- Significantly improve the sight distance in the area directly south of the SCA crossing.
- Provide formal road shoulders – implementation of kerb and gutter/stormwater system.
- Construct under live traffic conditions.
- Provide adequate Street lighting.
- Provide adequate road verges.

1.3.2 Common Objectives

The project will also meet the following objectives that are common to road design projects:

- Develop a cost-effective solution.
- Provide appropriate levels of safety for road users.
- Minimise land acquisition.
- Minimise disruption to adjacent property owners, beingTransgrid, SCA and Austral Bricks.

1.4 Road Design Scope and Deliverables

1.4.1 Type and Stage of Design

The design stage is ‘Concept’.

Note: Pending Approval of the ‘Concept’ design, detailed design drawings will be prepared suitable for Construction. The purpose of supplying the ‘Concept’ drawings is to obtain Approval from the relevant authorities.

1.4.2 Deliverables

The following documentation has been prepared to accompany the State Significant Development Application:

- Digital drawings including:
    - Plan layouts.
    - Longitudinal sections.
    - Typical cross sections.
    - Construction staging sketches
- Design report

2 Design Input

2.1 Locality

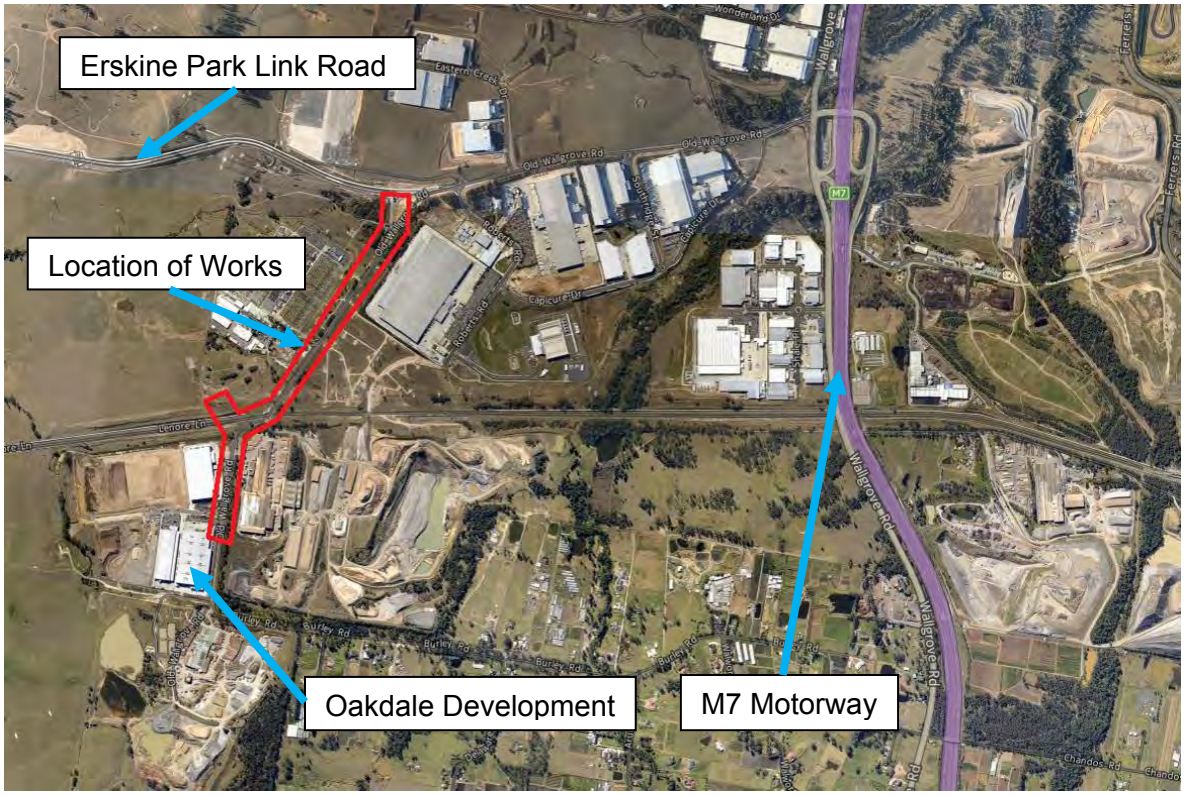


Figure 1 - Locality Sketch

The Works are located along Old Wallgrove, located between the intersection with the EPLR at the north, and the intersection with the Oakdale Estate access road (Milner Avenue) to the South.

The works span two separate LGA's, Blacktown City Council and Fairfield City Council, where by the separation occurs roughly along the northern boundary of the SCA Pipeline.

Photographs of the Site

	Photo of Old Wallgrove Road prior to widening works completed in 2011
	Photo of Old Wallgrove Road prior to widening works completed in 2011

	Photo of Old Wallgrove Road showing pavement failure and potholing after widening works completed in 2011
	Photo of Old Wallgrove Road, located at approx. CH475 looking North

	Photo of Old Wallgrove Road and existing access to SCA pipeline, located at approx. CH650 looking West
	Photo of Old Wallgrove Road and existing access to SCA pipeline, located at approx. CH700 looking South
	Photo of Old Wallgrove Road and existing access to SCA pipeline, located at approx. CH1000 facing Transgrid

	Photo of Old Wallgrove Road, located at approx. CH1225 looking South.
	Photo of Old Wallgrove Road, located at approx. CH1225 lookng North.

2.2 Utility Information

The entire length of OWR has been surveyed to identify all boundary information, extent of existing pavement, drainage systems, fence lines and all service information. Potholing has been undertaken to understand and identify the exact location and size of buried services. Survey has also identified the overhead electrical services.

Services identified:

- Endeavour Energy overhead 132kV electrical.
- Transgrid Energy overhead 132kV Electrical.
- Endeavour Energy underground 11kV, overhead 11Kv and overhead LV.

- Telecommunications.
- Water supply.
- Gas supply.

2.3 Community and Political Consultation

Community consultation of a localised nature will be carried out for those residences/business adjacent to Old Wallgrove Road who may be affected by the construction or the adjusted geometric alignment. This will include:

- Pre-construction advice regarding construction work and staging.
- Monitoring of local residences/business during construction.

Other consultation specifically for the site:

- Liaison with Blacktown City Council and Fairfield City Council.
- Liaison with RMS.
- Route information signage (including VMS) usage covering all construction stages.
- Correspondence with identified transport organisations.
- SCA (SCA); SCA has provided 'In Principal' support of the proposed upgrade works to Old Wallgrove Road. Evidence can be provided upon request.
- Transgrid: Transgrid has provided 'In Principal' support of the proposed upgrade works to Old Wallgrove Road. Evidence can be provided upon request.
- Endeavour Energy; Endeavour Energy has provided 'In Principal' support of the proposed upgrade works to Old Wallgrove Road. Evidence can be provided upon request.

3 Design Planning

3.1 Design Parameters

The design parameters used are listed below, in order of priority:

1. Austroads Guidelines.
2. Published RMS Supplements to Austroad Guidelines.
3. Australian Standards referenced in the Austroads Guidelines.
4. Published RMS Supplements to Australian Standards.

3.2 Variations from Original Design Constraints

Transgrid is a major property owner affected by the works. Lengthy negotiations have taken place over the last 12 months to understand what impact any widening of the existing 20.117m road reserve into their property would have.

Originally, the road reserve was proposed to be 25.7m which suggested a widening of some 5.5m into Transgrid lands. Due to the proximity of the existing overhead structural electrical towers, the widening to this extent was not satisfactory to Transgrid. As such, the width of the overall reserve has been reduced to cater for this constraint. The proposed overall reserve within this area is now 23.0m.

A localised section of 25.6m is proposed at the right hand turn into Transgrid.

Further minor encroachment into adjoining property may occur as a result of:

- cut and fill batters as a result of the final detailed vertical grading;
- requirements to accommodate drainage and/or water quality basins.

3.3 Road Function

Old Wallgrove Road is currently the only means of road access to the Oakdale Development, Austral Brickworks and the CSR Site. A large percentage of vehicles that travel on this section of road are heavy vehicles, including B-Doubles and semi-trailers.

The section of Old Wallgrove Road under consideration for upgrade, acts as a link between local Council Roads and other regional/state roads. By definition (as shown in section 3.4.1 below), Old Wallgrove Road would be categorised as an interim regional road.

3.4 Road Hierarchy and Classification

3.4.1 Current Road Classification

The section of Old Wallgrove Road proposed to be upgraded is currently not listed within the RMS 'Schedule of Classified Roads and Unclassified Regional Roads' (August 2013). It is stated that 'Local Roads are unclassified roads and therefore are not included in the Schedule'. Thus, it should be deemed that this section of Old Wallgrove Road is currently classified as a local road, with different sections of the road under the control of both Blacktown City Council and Fairfield City Council.

3.4.2 Proposed Road Classification

The section of Old Wallgrove Road subject to the road upgrade, from Milner Avenue to EPLR, is envisaged to be classified by TNSW as an Interim Regional Road remaining under the control of Fairfield City Council and Blacktown City Council respectively.
It understood the Depart of Planning has been in consultation with Transport for New South Wales in respect of this matter.

3.4.3 Dedication of Roads

In locations where land acquisition is undertaken to widen Old Wallgrove Road, it is proposed this land will be dedicated as public road reserve to FCC and BCC respectively.

3.5 Road Control

3.5.1 Current Control

At present, Old Wallgrove Road is controlled by local Council. The road is controlled by:

- CH00-CH675, Fairfield Council.
- CH675-CH1650, Blacktown Council.

3.6 Design Speed

The existing posted speed limit along Old Wallgrove Road is 70 km/h.

The design speed for the upgraded Old Wallgrove Road section is 80 km/h. It should be noted that Old Wallgrove Road will be signposted at 70km/h. NB: The section of Works south of the SCA Pipeline may be designed to suit 60km/h. This is a result of constraints in acquiring sufficient land to provide horizontal alignment to comply with a design speed greater than 60 km/h. In addition the section of Old Wallgrove Road, from

approximately CH325, to approximately CH650 will become redundant in the future upon delivery of the North South Link Road.

Traffic modelling will specifically look at each of the intersections and tie-ins that are affected by the proposed works.

3.7 Minimum Curve Radius

The minimum curve radius is governed by the proposed design speed. The minimum curve radius will be based on a design speed of 80km/h and will be designed to conform to the relevant design standards, where possible. As noted previously, the section of Works south of the SCA Pipeline may be designed to suit 60km/h due to the property constraints, and as such, minimum curve radii will differ through this section to suit the adjusted design speed.

If required, superelevation will be used if smaller curve radii are required.

Final minimum curve radii will be determined during the detailed design stage.

3.8 Design Vehicles

Design Parameter	Design Vehicle	Purpose
Design Heavy Vehicle	B-Double	Turning Path
Design Light Vehicle	Car	Stopping Site Distance

Table 1 - Design Vehicles

The choice of design heavy vehicle was influenced by the current high level of heavy vehicle usage of this section of Old Wallgrove Road, connecting the various industrial developments with Sydney's nearby motorways.

There is potential for an increase in these heavy vehicle movements within this section of Old Wallgrove Road due to the additional regional industrial developments, which would utilise Old Wallgrove Road as an access road.

The section of road from CH00 to CH325 which will become part of the future North South Link Road route, will be designed to accommodate b-triples. It is noted this criteria will only apply to the through lanes between the nominated chainages and will not apply to the turning movements at the Milner Avenue and Old Wallgrove Road intersection.

3.9 Traffic Signal Design

The Old Wallgrove Road Upgrade will include the following traffic signal works:

- Installation of new signals at the Old Wallgrove Road/ Milner Avenue (Oakdale Central Estate Road) Intersection CH190. The provision of new signals at this

intersection is supported by advice provided by Traffix (letter dated 6 June 2014 – attached in Appendix E).

- Minor adjustment of existing signals at the Old Wallgrove Road/ EPLR Intersection .
- Installation of conduits to facilitate the potential for future signalisation of intersections of Old Wallgrove Road and the access' to SCA and Transgrid respectively (no design and./or approval of traffic signal design are proposed to be undertake for these locations).

The design of the new signals and adjustments to existing signals will be subject to RMS approval.

4 Cross Section

4.1 Road Scape Allocation

Design Parameter	Minimum value adopted in the current design	Maximum value adopted in the current design	Within guideline limits	Outside guideline limits	Reason for use of values that are outside guideline limits
Left carriageway (north)	7.25m	8.0m	Y	N	N/A
Right carriageway (south)	7.25m	11.5m	Y	N	N/A
Median	1.0m	5.0m	Y	N	N/A
Left Verge	3.75m	4.5m	Y	N	N/A
Right Verge	3.75m	4.5m	Y	N	N/A

Table 2 - Road Scape Allocation

4.2 Typical Cross Sections

Please refer to AT&L's Civil Drawings, using the relevant chainages shown below, to locate where these typical sections apply.

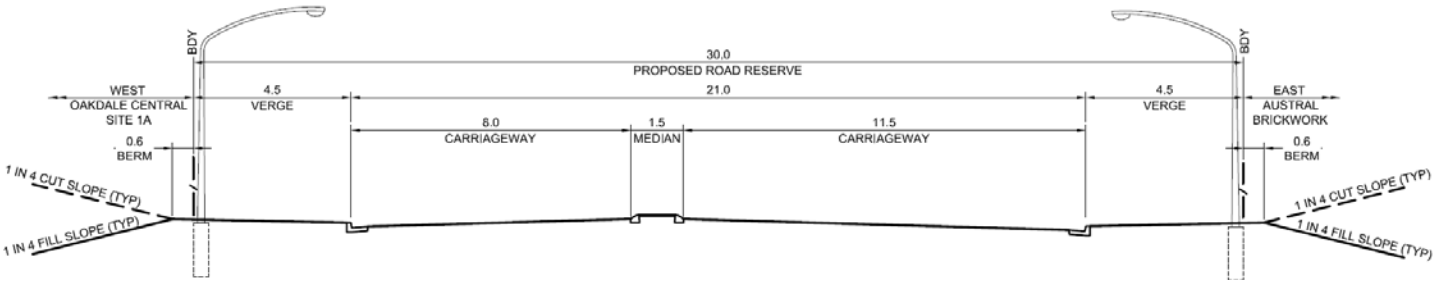


Figure 2 - Old Wallgrove Road - Typical Section

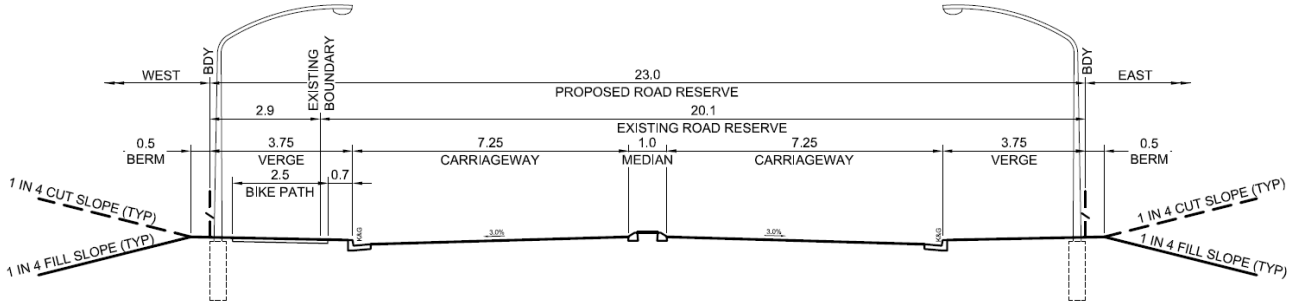


Figure 3 - Old Wallgrove Road - Typical Section CH200-CH270

4.2.1 Lane Widths

The existing single carriageway consists of 2 x 3.5m-4.3m wide lanes. This will be changed to a dual carriageway, consisting of a 3.75m RSL and a 3.5m LSL. In certain sections, lanes increase in width to a maximum of 4.5m to account for heavy vehicle turning requirements.

As part of the change to a dual carriageway, a central median will be constructed to separate the carriageways.

4.2.2 Median Type

The proposed median will vary in width, from a minimum of 1.0m to a maximum of 5.0m.

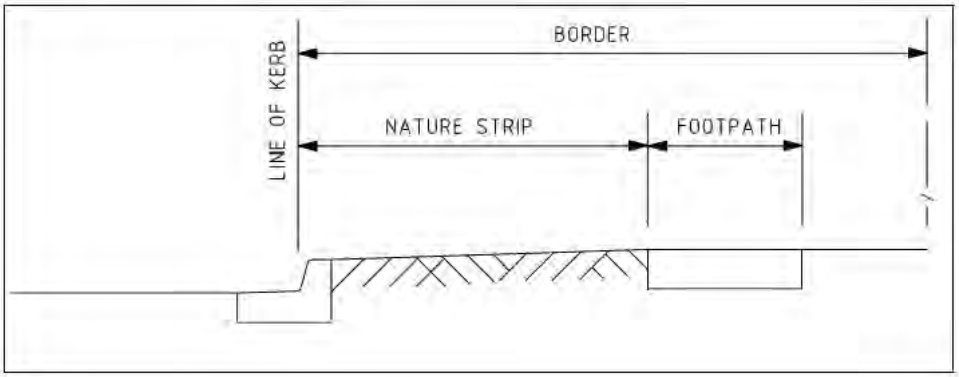
The median will be of a raised concrete type.

4.2.3 Allocation of road space for utilities, pedestrians and bicycles

A sufficiently wide verge has been allowed. Typically, the verge is 3.75m along both sides of the proposed road upgrade. The verge widens to 4.5m along both sides of the proposed road upgrade through CH200 to CH270, where the Old Wallgrove Road intersects with the Oakdale Estate Access Road. It is proposed to provide a shared path along one side of Old Wallgrove Road for the length of the project.

The verge in all areas is wide enough to include the proposed pedestrian/cycle paths and for the inclusion of all proposed services.

As per the Austroads Design Guidelines, the verge width is referred as a 'Border'. The 'Border' is described in the figure below:



Source: VicRoads (2002b).

Figure 4 – Austroads Design Guidelines - Border Diagram

The wording below is taken from the RMS Supplement to the Austroads design guidelines. The wording describes the desirable verge, or border widths and the reason by which these widths have been selected. With reference to the proposed design, all verge or border widths are above the minimum width criteria.

Urban Border

Paragraph 1
Delete "The urban border usually comprises two parts, a path for pedestrians and the nature strip. The elements of the urban border are shown on Figure 4.37. The main functions of the border are:"
and replace with:
"The urban border usually comprises the area from the face of kerb to the road boundary. Desirably the footway should be at least 3.0m wide and desirably 3.5m wide in order to contain the footpath for pedestrians and space for public utilities. Any residual road reserve should be allocated to the footway to provide additional space for landscaping and driveways. The elements of the urban border are shown on Figure 4.37. If kerbed footways are not provided then sufficient verge width should be available to enable pedestrians to walk clear of the road carriageway, e.g. lanes and shoulders. The main functions of the urban border are:" at start of paragraph.

Figure 5 - RMS Supplement to Austroad Design Guidelines - Border or Verge Widths

4.2.4 Allocation of Road Space for Landscaping

Minimal landscaping works can occur within the verges where no pedestrian/cycle paths are constructed. No formal landscaping, other than the installation of turf, is proposed for the upgrade.

4.2.5 Cut and Fill Batter Slopes

The proposed upgrade of Old Wallgrove Road has been designed to generally maintain the existing vertical grade of the road, thus minimal/no alteration to the existing batters is anticipated. Any changes to the final pavement levels which require a batter back to the surrounding existing surface levels, will batter back to the road surface at a nominal 2:1 (H:V) (or 3:1 where possible) slope.

The table below summarises the desirable and maximum batter slopes, as per the Austroad Design Guidelines.

Table 4.12: Typical design batter slopes

	Cut		Fill	
	Desirable	Maximum	Desirable	Maximum
Earth batter	3:1	2:1	6:1	4:1 (2)
Rock batter	0.5:1	0.25:1 (1)	–	–
Median	10:1	6:1 (2)	10:1	6:1 (2)

Figure 6 - Austroad Design Guidelines - Batter Slopes

The wording below is taken from the RMS Supplement to the Austroads design guidelines, and describes how the wording in the above table is modified to suit RMS

guidelines. With reference to the proposed design, proposed batter slopes are within RMS guidelines.

Batters

Paragraph 4
Delete "desirable" after "Slopes flatter than the" and before "maximum (Table 4.12) should be used where possible"

Figure 7 - RMS Supplement to Austroads Guidelines - Batter Slopes

4.2.6 Crossfall/Adverse Crossfall

Nominal crossfall along the proposed upgrade of Old Wallgrove Road will generally be at 3.0%.

Superelevation lengths with be at 7.0% maximum, which suit the proposed curve radii.

5 Geometric Design

5.1 Horizontal Curves and Alignment

5.1.1 Horizontal Sight Distance

The horizontal alignment will remain similar to existing, retaining the currently acceptable sight distance, with the addition of an extra width adjacent to the current roadway within the central median. Any proposal for planting of the median will need to be assessed for sight distance requirements, particularly on the inside of horizontal curves although the current project scope does not propose planting other than turf.

At present, horizontal sight distance on Old Wallgrove Road is not optimal at the crossing of the SCA pipeline. As part of the proposed upgrade of Old Wallgrove Road, horizontal sight distance at the SCA Crossing will be improved by the works. Horizontal sight distances will be checked to comply with the RMS Supplement to the Austroad Guidelines, with reference to Section 5.4.

5.1.2 Superelevation Transitions

The majority of the works in relatively straight with no horizontal curves apart from the SCA crossing where minimum radii are used and maximum superelevation is expect to be used.

5.1.3 Lane Widening

No lane widening is required on this section of the works, although this will be determined at the detailed design stage and in accordance with the design guides.

5.2 Vertical Alignment

5.2.1 Vertical Sight Distance/Stopping Distance

Vertical stopping sight distance along the works currently complies with design guidelines, due largely to the flat grades and long straights. Where the vertical alignment has been amended in the current concept design to enable reshaping of the superelevation transition areas, vertical stopping sight distance requirements have been achieved.

As per Austroads Design Guidelines, section 5.3, stopping sight distance is calculated based on the following equation:

$$SSD = \frac{R_T V}{3.6} + \frac{V^2}{254(d + 0.01a)}$$

R_T = reaction time (sec)
V = operating speed (km/h)
d = coefficient of deceleration (longitudinal friction factor)
a = longitudinal grade (%, + for upgrades and - for downgrades).

Figure 8 - Stopping Sight Distance Calculation

It should be noted that the during the detailed design phase, stopping site distance will be checked for compliance with the above calculation to ensure that the minimum required stopping sight distance is achieved throughout the road length. The current design meets the required stopping site distance criteria.

5.3 Utilities

Utility locations were determined using Dial Before You Dig information, ground survey data and underground service potholing. The following is a summary of the existing utility assets and assumed impacts that will occur as a result of the Old Wallgrove Road upgrade works.

5.3.1 Gas Mains

An existing Jemena high pressure 150mm diameter steel gas main is located on the eastern side verge of Old Wallgrove Road from approximately CH100 –CH380. It is proposed to relocate this main further to the east within the proposed road reserve to accommodate the upgrade of the Old Wallgrove Road/ Milner Avenue intersection.

5.3.2 Water Mains

There are two existing Sydney Water mains with the limit of works for the Old Wallgrove Road Upgrade:

- 250mm diameter DICL pipe located on the western side verge of Old Wallgrove Road between CH00–CH230. Based on the concept design, this main is not impacted by the upgrade works.
- 150mm diameter oPVC pipe located on the eastern side verge of Old Wallgrove Road between approximately CH970-CH1600. Based on the concept design it is proposed to relocate this main between approximately CH900-CH1150 to accommodate the widened formation of the Trangsrid Access at CH1000.

5.3.3 Telecommunications

Telecommunications conduits and cables are located along the length of the Old Wallgrove Road Upgrade.

The conduits are Telstra assets housing Telstra copper and optic fibre cables, sub-ducts for Optus, Uecomm and Pipe Networks.

Based on the concept design, it is expected that all of the existing conduits listed below will be required to be relocated along the length of the upgrade:

- CH00-CH430 – 2 x P100 conduits are located on the eastern side verge of Old Wallgrove Road.
- CH430-CH600 – 2 x 1P100 conduits traverses between the eastern side to the western side of the road carriageway.
- CH600-CH1600 – 1 x P100 CH650-CH850, 2 x P100 CH850-CH1250, 3 x P100 CH1250-CH1450 conduits are located on the western side verge of Old Wallgrove Road.

5.3.4 Electrical

Endeavour Energy existing assets are located as follows:

- Bank of eight underground conduits located longitudinally in western side verge CH100-CH1600.
- Bank of X conduits transverse underground road crossings at CH180, Ch200, CH1000, CH1200 and CH1300.
- Overhead electrical supply poles - eastern side CH00-CH600, western side CH660-Ch1600.

Based on the concept design it is envisaged the longitudinal underground conduits and overhead poles will be impacted and will be required to be relocated along the length of the project as part of the upgrade works.

5.3.5 Street Lighting

The upgrade includes provision of street lighting from CH00-CH1600 with light standards to be provided on both sides of the road. In accordance with Council standard's the lighting will be designed in accordance with AS1158.1 to a category V3 standard.

It is envisaged that a non standard lighting design may be required adjacent to the existing overhead 132kV and11kV road crossings.

5.4 Relationship and Proximity to Electrical Infrastructure

Both Transgrid and Endeavour require the following clearances to exiting services where possible:

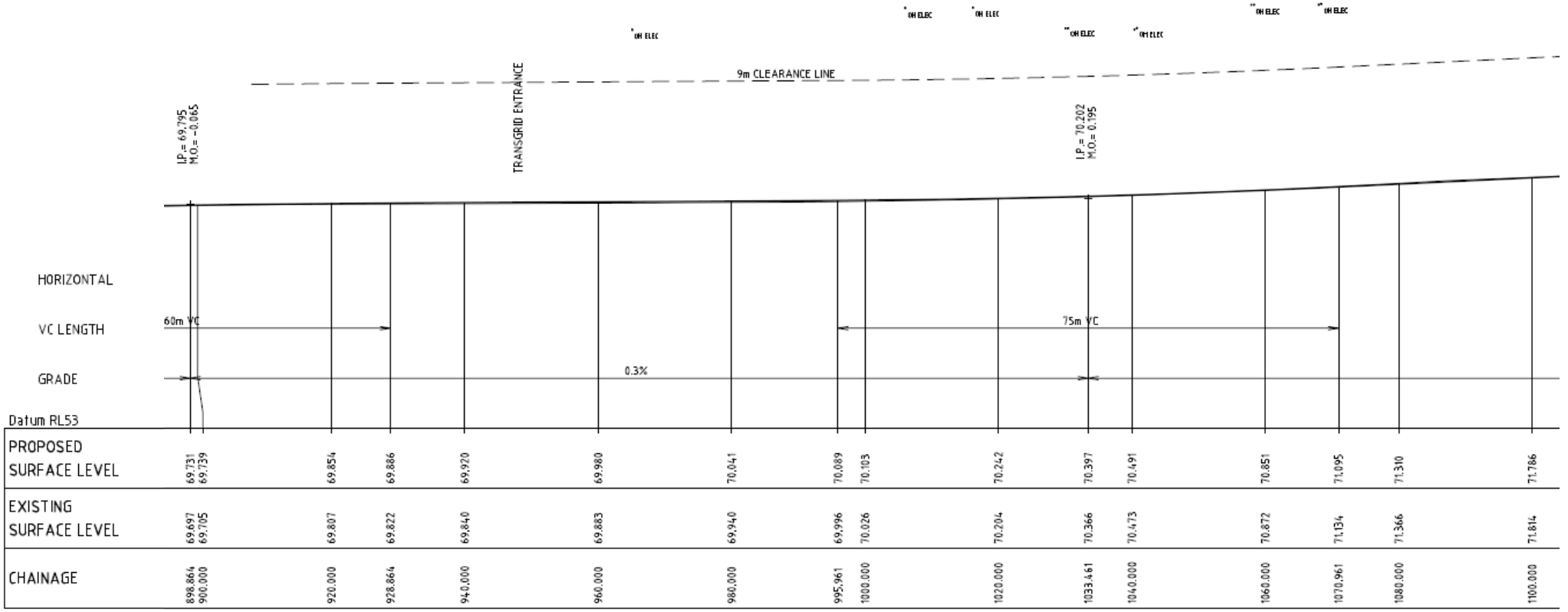
Item	Desirable Clearance	Minimum Clearance
Existing structural Stanchions (Horizontal Clearance)	30m	15m
Overhead 132kV (Vertical Clearance)		9m
Overhead 11kV (Vertical Clearance)		6m

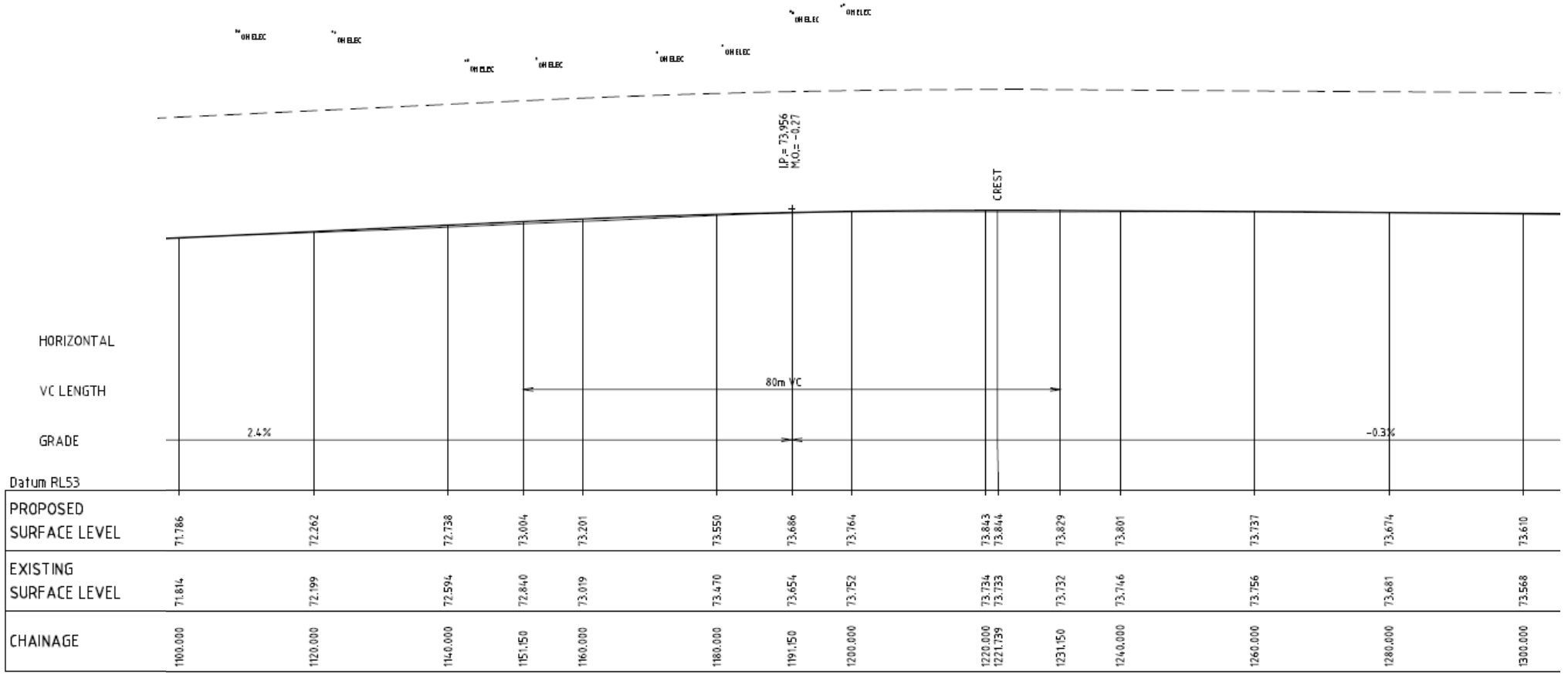
Table 3 - Electrical Horizontal and Vertical Clearances

It should be noted that many of the existing Transgrid structure lattice towers are located with horizontal clearances less than 15m. The boundary within the section of the proposed upgrade to Old Wallgrove Road adjacent to the Transgrid infrastructure is currently designed with no change, so that current clearances to the Transgrid infrastructure are maintained, despite the existing non-conformity. Refer to AT&L's for horizontal locality of Transgrid structures and proximity to the proposed road alignment.

With respect to vertical clearances, the vertical alignment of the proposed upgrade is generally the same as the existing Old Wallgrove Road alignment. Thus, any existing vertical clearances to cables will be retained and shall stay within permissible heights. As noted in Table 3 above, the minimum vertical clearance to any 132kV electrical is 9m. The figure below, highlights a section of the proposed long section, showing the road surface level, the 9m vertical clearance to overhead electrical, and shows the vertical location of the overhead cables. It should be noted that all overhead electrical cables are above the 9m clearance line.

Figure 9 - Proposed Old Wallgrove Road Upgrade Longsection with 9m Electrical Clearance and Overhead Electrical Cables Shown

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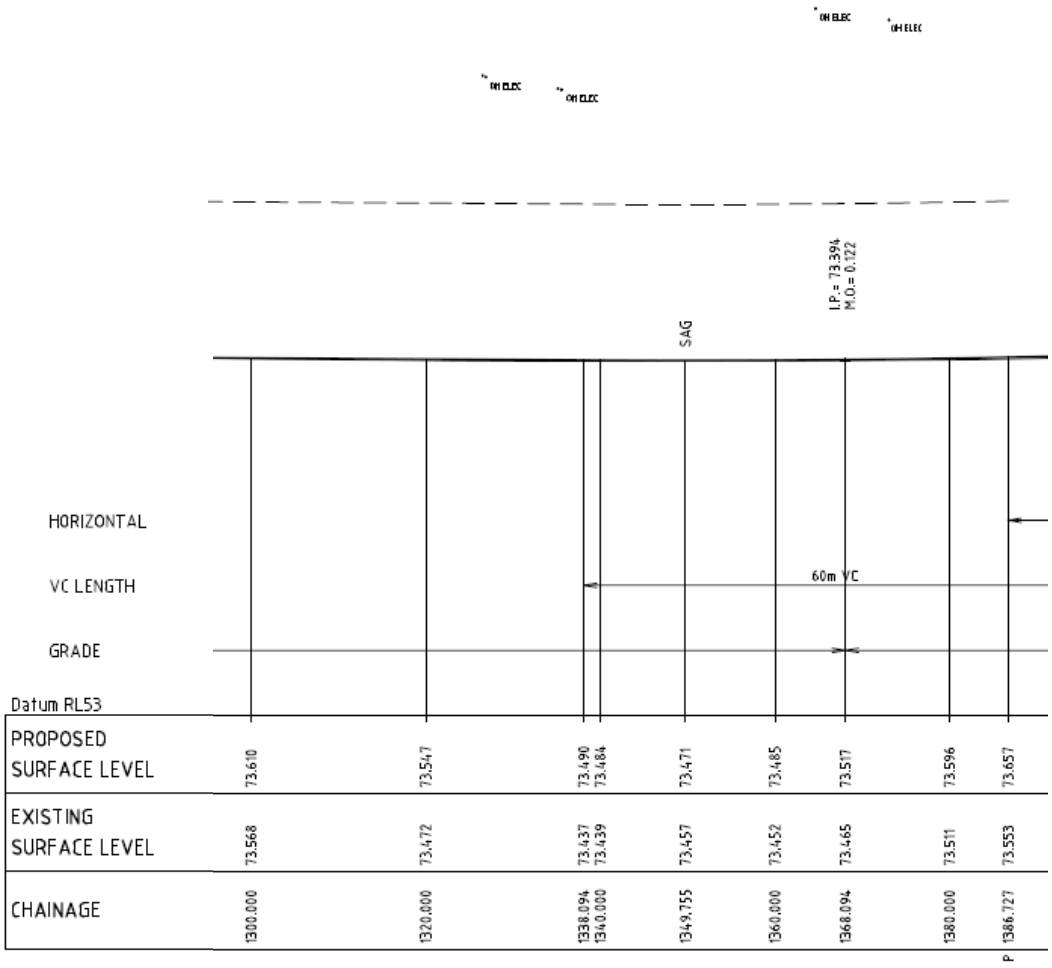
CHAINAGE
1100.000 1120.000 1140.000 1151.150 1160.000 1180.000 1191.150 1200.000 1220.000 1221.739 1231.150 1240.000 1260.000 1280.000 1300.000


OH ELEC
OH ELEC
OH ELEC
I.P. = 73.394
M.O. = 0.122
SAG
HORIZONTAL
VC LENGTH
60m VC
GRADE
Datum RL53
PROPOSED SURFACE LEVEL
73.610
73.547
73.490
73.484
73.471
73.485
73.517
73.596
73.657
EXISTING SURFACE LEVEL
73.568
73.472
73.437
73.439
73.457
73.452
73.465
73.511
73.553
CHAINAGE
1300.000
1320.000
1338.094
1340.000
1349.755
1360.000
1368.094
1380.000
1386.727

5.5 Site Issues

5.5.1 Geotechnical

No geotechnical investigations have been undertaken at this stage. These works are to be undertaken at detailed design stage. It is expected boreholes and test-pits will be undertaken at regular intervals along the road. The investigation would identify the CBR of the existing subgrade, existing pavement depth and composition, ability to reuse the existing pavement, advice on a proposed pavement design etc.

5.5.2 Pavement Design

A final pavement design for both the semi-rigid and flexible pavement areas for the project is pending, subject to further analysis of the geotechnical data and a final decision on the preferred construction methodology and staging.

The section of Old Wallgrove from CH00 to approximately CH325 will be designed and constructed to the standard to adopted for the future North South Link Road. Accordingly it is envisaged this pavement may be semi-rigid pavement of similar composition to the approved pavement design for the EPLR and will be confirmed within the detailed design process..

The section of Old Wallgrove Road from approximately CH325 to the tie in at the EPLR is proposed to be a flexible pavement which may comprise bound and unbound granular base layers. In accordance with Blacktown City Council's Engineering Guide for Development Road Design Parameters for Industrial Collector and heavy Duty roads, the adopted pavement design loading will be 1 x 10^7 ESA.

Our suggested pavement as below:

- Asphalt wearing course on,
- Granular or bound base on,
- Select Material Zone on,
- Subgrade improvements when required.

Final pavement designs will be prepared in accordance and in consultation with RMS, Council and RMS guidelines/specifications.

5.6 Property Acquisitions and Adjustments

The following property acquisitions have been identified (Refer to the Drawing C360):

Land Owner	Approximate Area of Land to Be Acquired (m2)
Transgrid	2,347
SCA	994
Austral Brickworks	4,970

Table 4 - Property Acquisition Areas

Note: These areas are preliminary and are subject to confirmation during the detail design stage pending further development of the vertical grading and resulting cut and fill batters.

5.7 Tie In

5.7.1 Milner Ave (Oakdale Central Estate Road)

The existing intersection of Old Wallgrove Road and Milner Avenue will be upgraded to accommodate the proposed upgrade cross section and proposed turn lanes. The upgrade will include the installation of new signals at the existing intersection. The provision of new signals at this intersection is supported by advice provided by Traffix (letter dated 6 June 2014).

5.7.2 Erskine Park Link Road (EPLR)

The recently completed EPLR made allowance for the future upgrade of OWR. Only minimal works are required to enable the tie-in to the intersection.

5.7.3 SCA Pipeline

It is proposed to provide adequate access to and from OWR at the SCA crossing. Through discussions with SCA, they identified their requirements and a provision has been made to satisfy SCA. Further consultation is required to ensure SCA are satisfied.

The design and construction of the intersection is such that, if required in the future, the intersection could be signalised. This would involve the installation of conduits to accommodate cabling for future signalisation.

The future design median width at this intersection proposed within the concept design is 0.6m which will require the installation of mast arms for any future traffic signals.

5.7.4 Transgrid Site Entry

Local widening has been provided at the Transgrid entrance at CH980m to enable a dedicated right turn lane for traffic entering the site from the north. The design and construction of the intersection is such that, if required in the future, the intersection could be signalised. This would involve the installation of conduit to accommodate cabling for future signalisation.

The future design median width at this intersection proposed within the concept design is 0.6m which will require the installation of mast arms for any future traffic signals.

A second access to Transgrid on the western side of Old Wallgrove Road at CH1540 is proposed to an uncontrolled left in/left out access only.

5.8 Stormwater Management

5.8.1 Design Information

The majority of the existing stormwater system will remain operational, with alterations to pit inlet levels and locations to accommodate the proposed finished surface levels or revised median width. New drainage lines will only be constructed where the carriageway pavement is to be shifted above an existing longitudinal drainage line.

Details of existing invert levels and pipe condition will be required prior to the detail design stage. As a means of obtaining this information, detailed survey has been undertaken; this has provided pit invert levels and pipe information.

There is an existing low point immediately to the south of the current limit of works a CH00. Works to upgrade the local drainage system at this location will be incorporated into the Old Wallgrove Road Upgrade.

5.8.2 Hydrological Investigation

A hydrological investigation will be undertaken as part of the project, to determine the flooding effects from the works, primarily from upstream Creek catchments. A catchment plan has been prepared for the road upgrade which has been used to assess the existing cross drainage capacity.

5.8.3 Cross Drainage

The existing cross drainage is proposed to be upgraded to cater for the 100 year design storm. No additional stormwater from the upstream catchment east of the proposed Old Wallgrove Road will be draining into the existing crossings. Confirmation has been received from Blacktown City Council that stormwater from the existing Coles Myer Distribution centre to the east of Old Walllgrove Road at approximately CH1000 does not drain through the cross drains but discharges to the east into an OSD basin within Roberts Road.

Longitudinal drainage will be directly connected to this cross drainage to minimise additional discharge points to the existing creek system.

Refer to Stormwater Catchment plan SKC04 in Appendix C for details of all catchment areas upstream of the cross drains and proposed pipe sizes of the crossings.

5.8.4 Longitudinal Drainage

Longitudinal (pavement) drainage will be directly connected to this cross drainage to minimise additional discharge points to the existing creek system. Council generally adopts the 1:20yr event criteria, while RMS generally adopts the 1:10yr event criteria.

Both scenarios will be assessed during detailed design and agreement sought with Council/RMS as to the event criteria to be adopted for the upgrade.

In addition, and as required, table drains and cut off drains will be incorporated to manage water flows at the toe of embankments and top of cut batters.

5.9 Water Sensitive Urban Design (WSUD)

5.9.1 Policy and Guidelines

The stormwater design considers the following guidelines:

- Australian Rainfall Quality (2006)
- Department of Environment and Climate Change NSW (DECC), Management Urban Stormwater: Urban Design (Consultation Draft, 2008)
- Blacktown City Council Stormwater Quality Control Policy (2001, reviewed 2009)
- Landcom Water Sensitive Urban Design Policy (2009)

•

5.9.2 Objectives

These stormwater management objectives were applied to treating stormwater runoff from the development to meet pollution reduction targets outlined in Table 5.

Pollutants	Retention Objectives
Total Suspended Solids (TSS)	85%
Total Phosphorus	65%
Total Nitrogen (TN)	45%
Gross Pollutants	90%
Total Hydrocarbons	90%

Table 5 Pollutant Retention

In order to achieve these reductions, a treatment train approach will be implemented into the development where the stormwater treatment flow path for runoff would generally be:

1. Runoff from the road reserve will be collected via pits and pipes and discharged into a bio-retention swale to be treated to the reduction targets as highlighted in Table 5.

5.9.3 MUSIC Analysis

The software package developed by the CRC for Catchment Hydrology termed "MUSIC" (Model for Urban Stormwater Improvement Conceptualisation) was used to assess the effectiveness of the proposed "treatment train" and therefore ensure compliance with the proposed objectives. Refer to Appendix B for MUSIC model data, results and catchment plan.

Based on the MUSIC analysis a total bio-retention area of 335m^2 will be required to treat all runoff within the Road Reserve from CH00 to CH1450.

It is proposed to locate the bio-retention swales on the western side of the carriageway to coincide with the existing low points along the corridor between approximately CH400-CH1600.

The road pavement drainage flows will be directed to the bio-swales which will then discharge into the downstream drainage system.

An indicative location for the bio-swales has been shown on the project land acquisition plan attached in Appendix F.

The location and footprint of individual basins will be developed as part of the detailed design.

5.10 Traffic Management, Staging

Generally, it is proposed to construct the works in two separate stages, maintaining the existing carriageway and constructing two of the new lanes and then switching the traffic and constructing the final two lanes. As described within drawings C370 to C376 refer Appendix D, the currently proposed construction staging and traffic management works are as follows:

Stage 1:

- Construct temporary pavement (width varies) adjacent to the existing north bound lane CH275 to CH525
- Construct temporary pavement (width varies) adjacent to the existing south bound lane from approximately CH675 to CH1525
- Install temporary concrete barriers from approximately CH40 to CH1550, leaving gaps to maintain access points
    - Barriers approximately located along the existing edge of the southbound lane between CH40 and CH600
    - Barriers approximately located along the edge of the northbound lane between CH575 and CH1550
- Install temporary linemarking along the length of the project to provide two lane traffic (1 lane northbound, 1 lane southbound) plus turning lanes where required
    - Temporary alignment located approximately along the existing northbound lane and new temporary pavement between CH40 and CH525
    - Temporary alignment located approximately along the existing southbound lane and new temporary pavement between CH575 and CH550
- Shift traffic from the existing alignment, to the temporary alignment
- Construct the new roadworks behind the concrete barriers

Stage 2:

- Shift the concrete barriers to their new position, leaving gaps to maintain access points
    - Barriers approximately located along the existing edge of the southbound lane between CH100 and CH200

- Barriers approximately located along the edge of the existing southbound lane between CH255 and CH600
- Barriers approximately located along the edge of the existing northbound lane/centre of existing pavement between CH575 and CH1600

- Remove temporary linemarking from stage 1 and install new stage 2 temporary linemarking along the length of the project to provide two lane traffic (1 lane northbound, 1 lane southbound) plus turning lanes where required
  - Temporary alignment located approximately along the newly constructed final pavement for the full length of the project as well as along small sections of the existing pavement
- Shift traffic from the temporary stage 1 alignment to the temporary stage 2 alignment
- Construct the remaining new roadworks behind the concrete barriers
- Remove concrete barriers, remove temporary linemarking and install final linemarking

Access to existing properties will be maintained during construction and any proposed temporary access arrangements will be agreed through consultation with the adjoining property owners.

Confirmation of this general traffic management and construction staging arrangement will be confirmed during the detailed designs stage.

Prior to construction, a detailed Traffic Management Plan will be prepared in accordance with the relevant RMS Traffic Management Guidelines.

6 Finalisation

Once DA approval is granted, the following is required:

- Constructability Review.
- Road Safety Audit.
- Detailed Design including:
    - Civil Design.
    - Stormwater Design.
    - Geotechnical Investigation.
    - Pavement Design.
    - Electrical Design.
    - Water Relocation design.
- Detailed Cost Estimation.
- Design reviews.
- Submission to RMS and Council for approval.

7 Conclusion

The design to date has been prepared for inclusion in the development application giving due consideration to the existing stake holders, physical features on site, design constraints and relevant design guidelines.

It is concluded the design could be further advanced through to a Detailed Design/Construction documentation level, as further design will ensure with certainty that there will be no major unknown constraints.

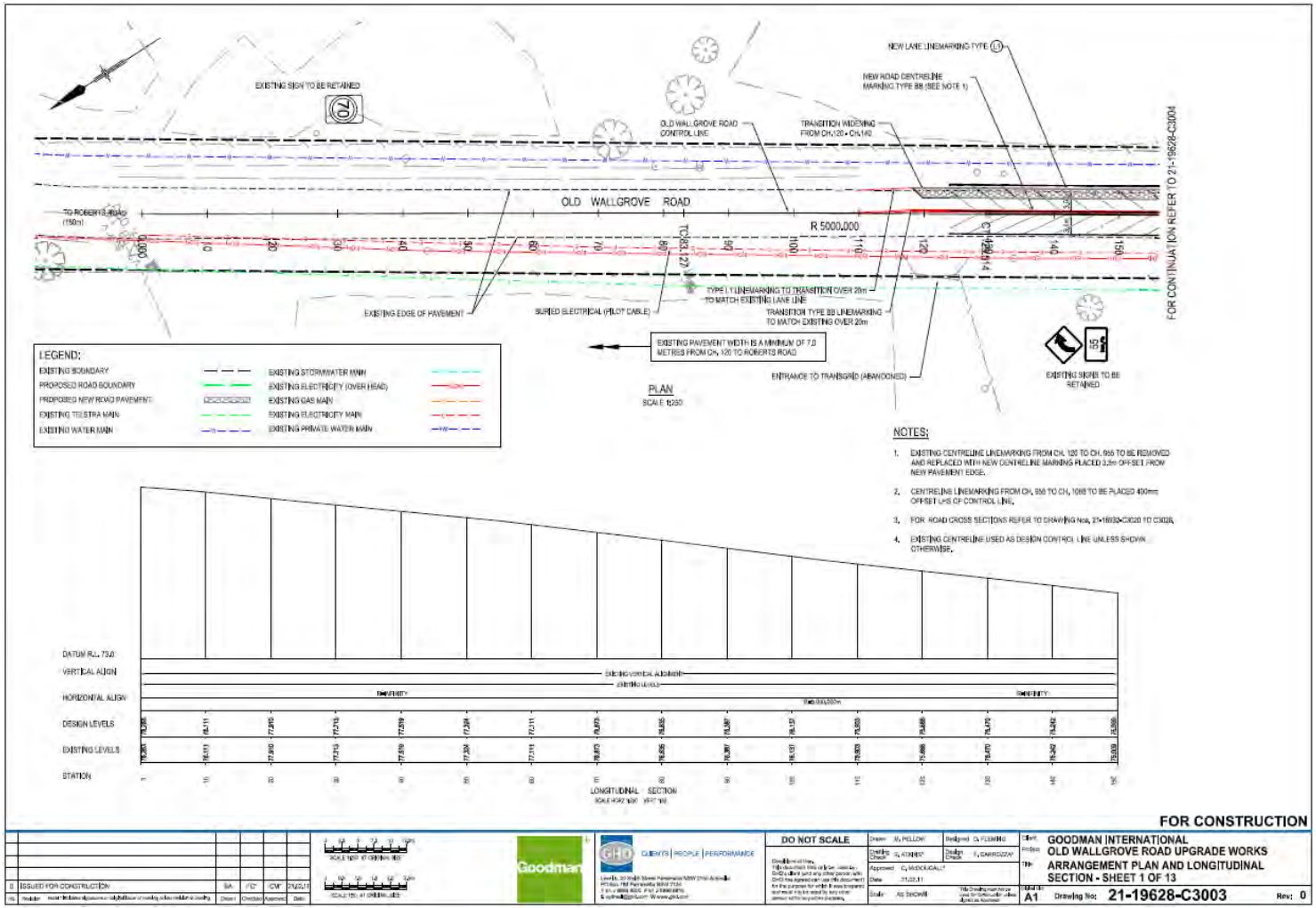
Once complete, the road will operate at the intended design speed, safely and efficiently as a regional road.

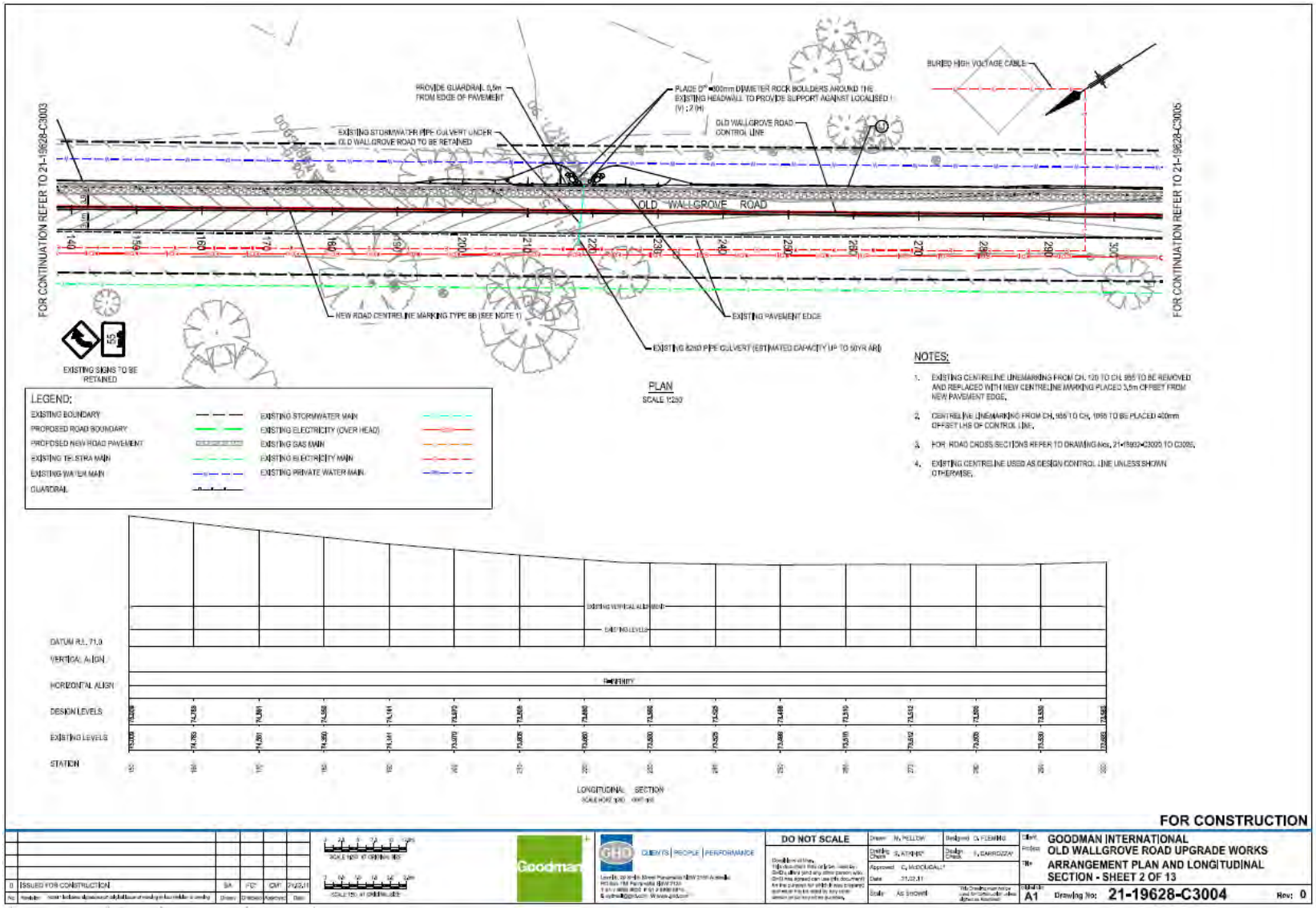
The design is generally in accordance with the relevant RMS and Austroad Design Guidelines. Upon approval, detailed design shall be completed to comply with the relevant standards and to the satisfaction of RMS, as well as any conditions of the approval.

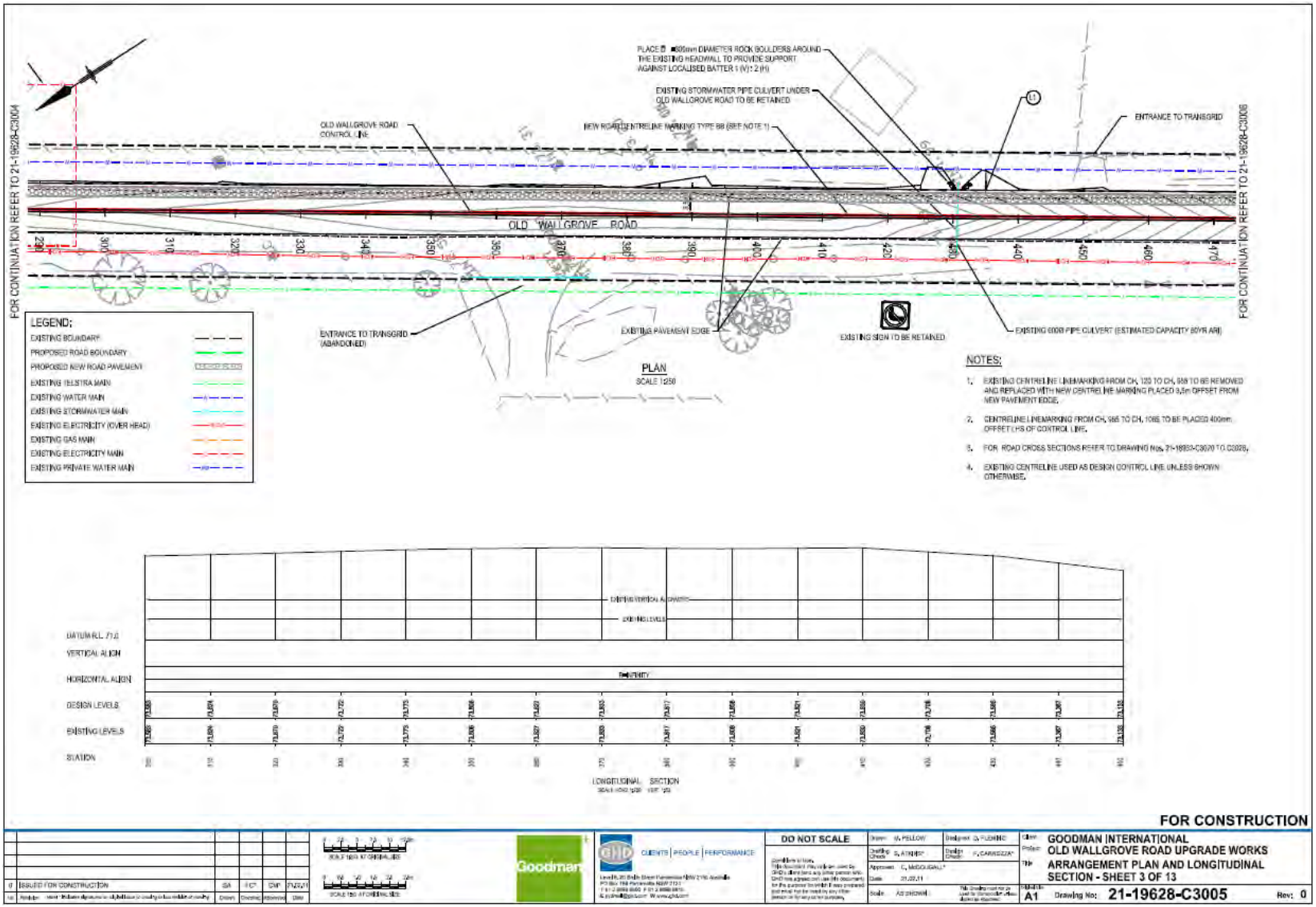
Currently, Old Wallgrove Road acts as a link road between the local Council controlled roads and other regional/state roads controlled by RMS. Future developments within the area will further utilise Old Wallgrove Road as a link road, providing access to additional local roads and other regional/state roads within the area. Thus, it is AT&L's considered opinion that the section of Old Wallgrove Road described herein, should be classified as an Interim Regional Road, and therefore be controlled by Fairfield City Council and Blacktown City Council respectively.

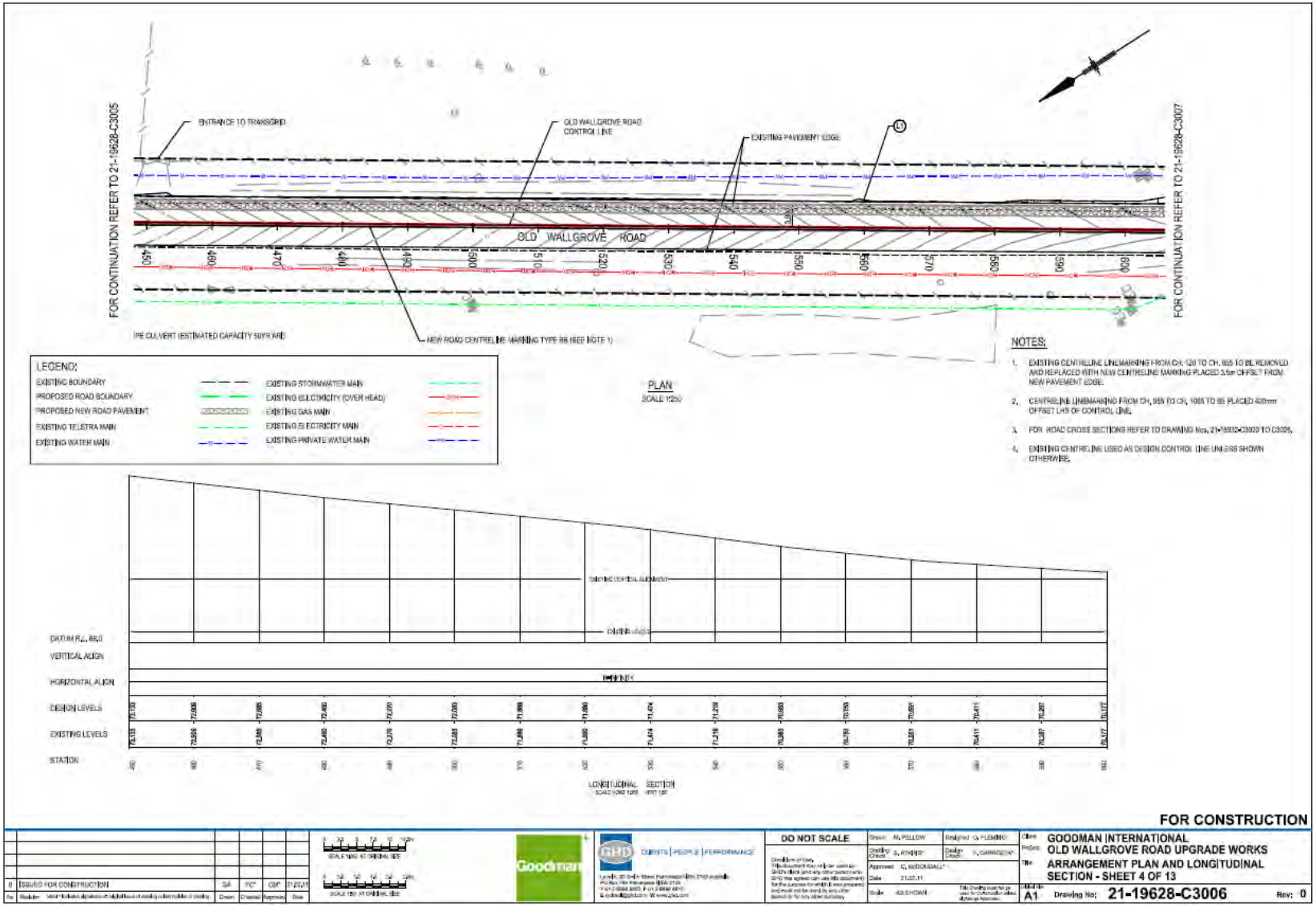
Appendices

Appendix A – GHD OWR Upgrade Drawings (Works Completed)


EXISTING SIGN TO BE RETAINED
OLD WALLGROVE ROAD CONTROL LINE
NEW LANE LINEMARKING TYPE
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
TRANSITION WIDENING FROM CH,120 - CH,140
OLD WALLGROVE ROAD
TO ROBERTS ROAD (750m)
R 5000.000
FOR CONTINUATION REFER TO 21-19628-C3004
TYPE L1 LINEMARKING TO TRANSITION OVER 20m TO MATCH EXISTING LANE LINE
EXISTING EDGE OF PAVEMENT
BURIED ELECTRICAL (PILOT CABLE)
TRANSITION TYPE BB LINEMARKING TO MATCH EXISTING OVER 20m
EXISTING PAVEMENT WIDTH IS A MINIMUM OF 7.0 METRES FROM CH, 120 TO ROBERTS ROAD
ENTRANCE TO TRANSGRID (ABANDONED)
EXISTING SIGNS TO BE RETAINED
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH, 120 TO CH, 955 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFF-SET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH, 955 TO CH, 1068 TO BE PLACED 400mm OFFSET L=S OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos, 21-19628-C3020 TO C3024.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. 730
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
EXISTING VERTICAL ALIGNMENT
EXISTING LEVELS
TANGENTIAL
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 13
A1
Drawing No: 21-19628-C3003
Rev: 0
B ISSUED FOR CONSTRUCTION


PROVIDE GUARDRAIL 0.5m FROM EDGE OF PAVEMENT
PLACE 0.8m ø600mm DIAMETER ROCK BOULDERS AROUND THE EXISTING HEADWALL TO PROVIDE SUPPORT AGAINST LOCALISED 1 (V) : 2 (H)
BURIED HIGH VOLTAGE CABLE
EXISTING STORMWATER PIPE CULVERT UNDER OLD WALLGROVE ROAD TO BE RETAINED
OLD WALLGROVE ROAD CONTROL LINE
OLD WALLGROVE ROAD
FOR CONTINUATION REFER TO 21-19628-C3003
FOR CONTINUATION REFER TO 21-19628-C3005
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
EXISTING PAVEMENT EDGE
EXISTING 825D PIPE CULVERT (ESTIMATED CAPACITY UP TO 50YR ARI)
EXISTING SIGNS TO BE RETAINED
PLAN
SCALE 1:250
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 955 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 955 TO CH. 1058 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3025.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
GUARDRAIL
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
DATUM R.L. 71.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 2 OF 13
A1
21-19628-C3004
Rev: 0


PLACE ■ 600mm DIAMETER ROCK BOULDERS AROUND THE EXISTING HEADWALL TO PROVIDE SUPPORT AGAINST LOCALISED BATTER 1 (V) : 2 (H)
EXISTING STORMWATER PIPE CULVERT UNDER OLD WALLGROVE ROAD TO BE RETAINED
OLD WALLGROVE ROAD CONTROL LINE
NEW ROAD CENTRELINE MARKING TYPE B8 (SEE NOTE 1)
ENTRANCE TO TRANSGRID
OLD WALLGROVE ROAD
FOR CONTINUATION REFER TO 21-19628-C3004
FOR CONTINUATION REFER TO 21-19628-C3006
ENTRANCE TO TRANSGRID (ABANDONED)
EXISTING PAVEMENT EDGE
EXISTING SIGN TO BE RETAINED
EXISTING 600Ø PIPE CULVERT (ESTIMATED CAPACITY 60YR ARI)
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 958 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 966 TO CH. 1085 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3026.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. 77.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 13
A1
Drawing No: 21-19628-C3005
Rev: 0


FOR CONTINUATION REFER TO 21-19628-C3005
ENTRANCE TO TRANSGRID
OLD WALLGROVE ROAD CONTROL LINE
EXISTING PAVEMENT EDGE
OLD WALLGROVE ROAD
FOR CONTINUATION REFER TO 21-19628-C3007
PIPE CULVERT (ESTIMATED CAPACITY 50YR ARI)
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
PLAN
SCALE 1:250
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 955 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 955 TO CH. 1065 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3025.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. 65.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 4 OF 13
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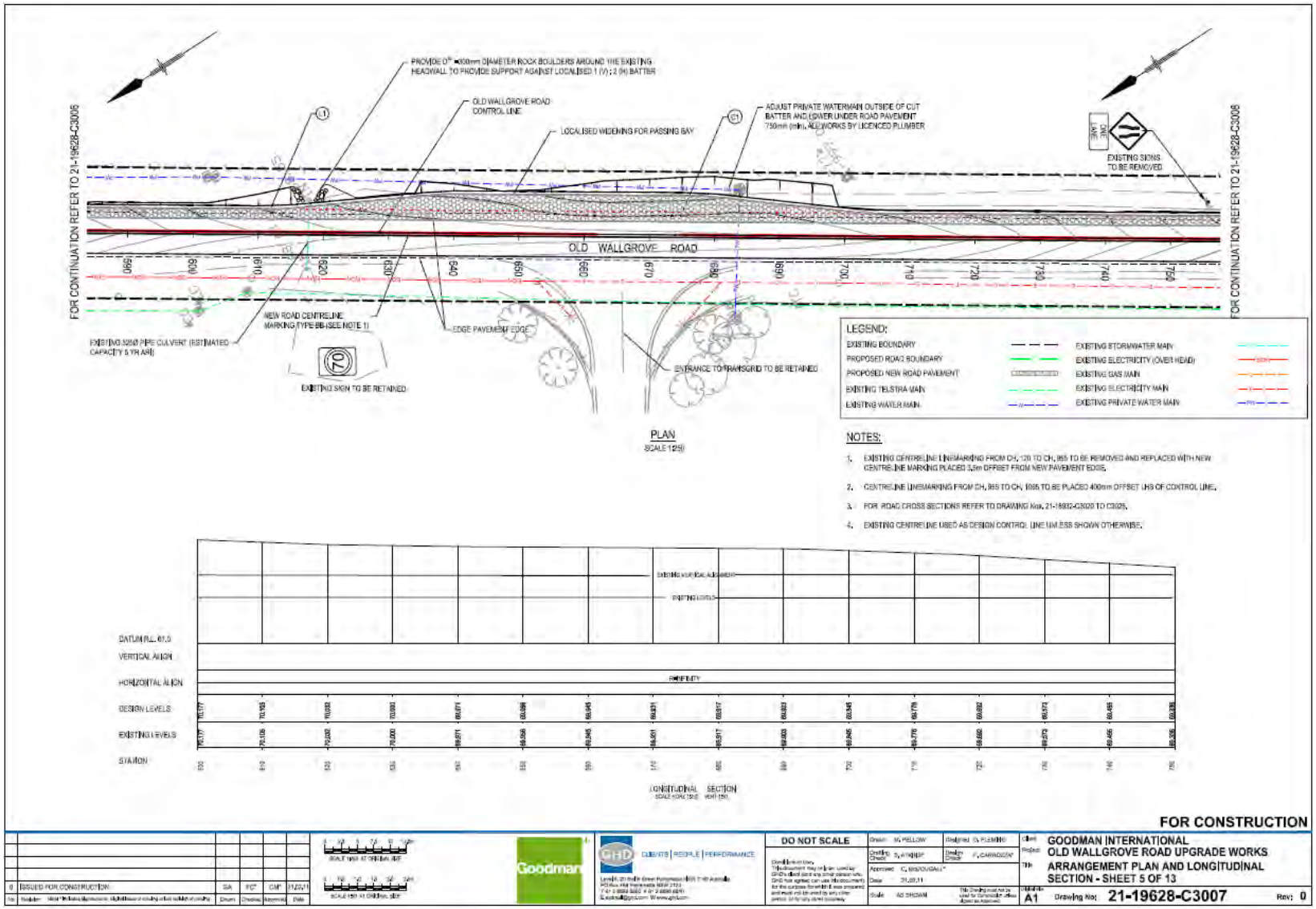
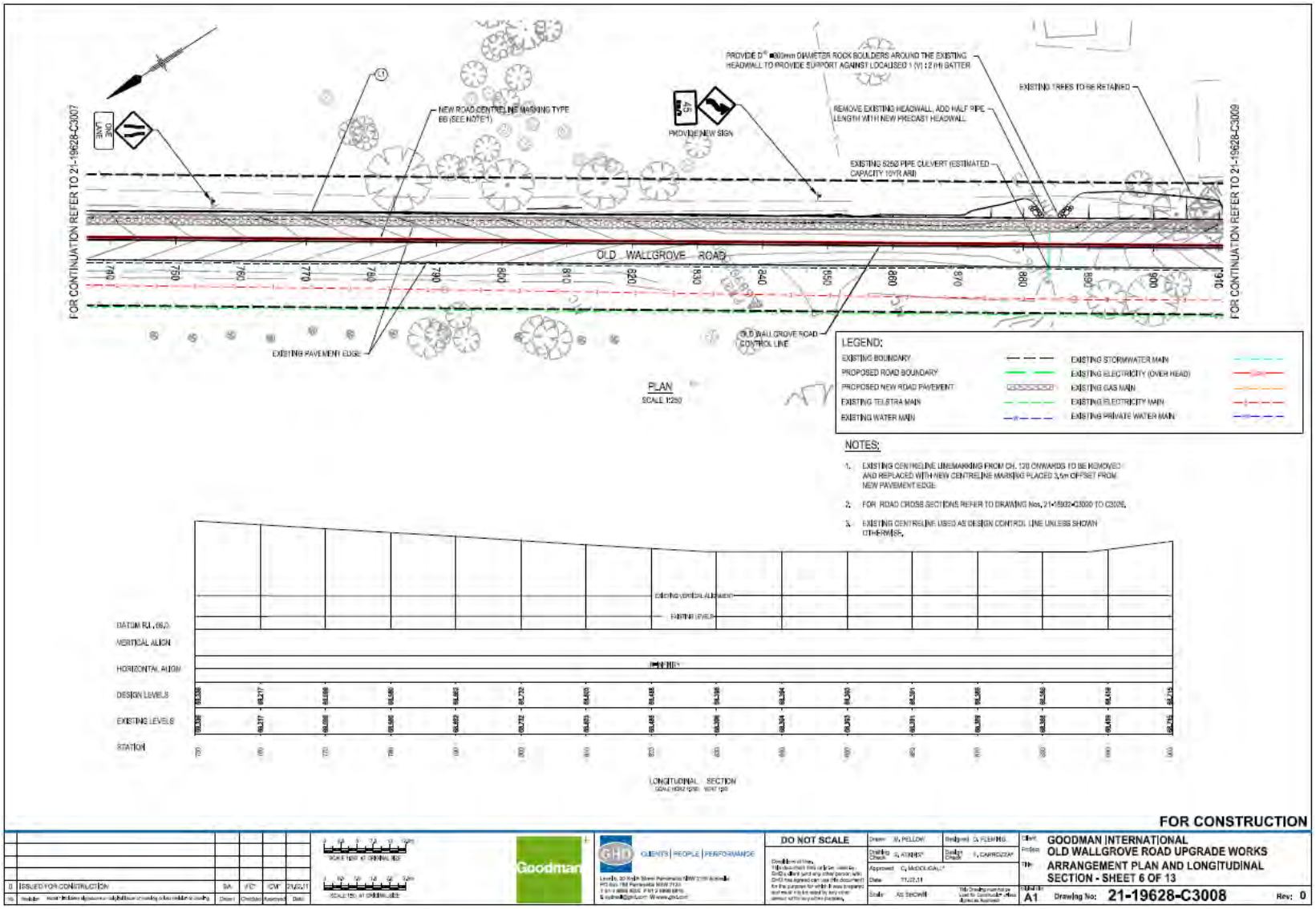
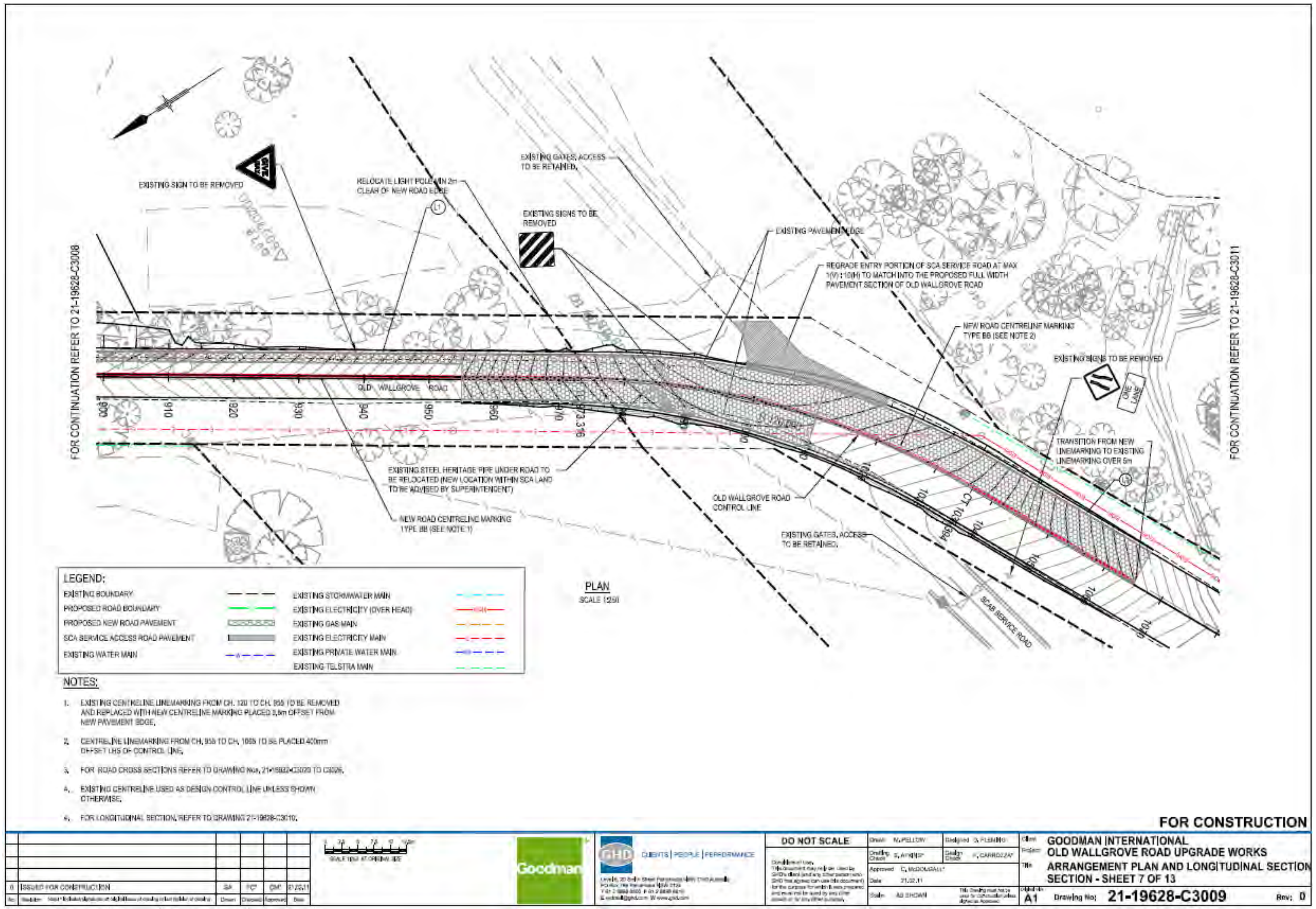
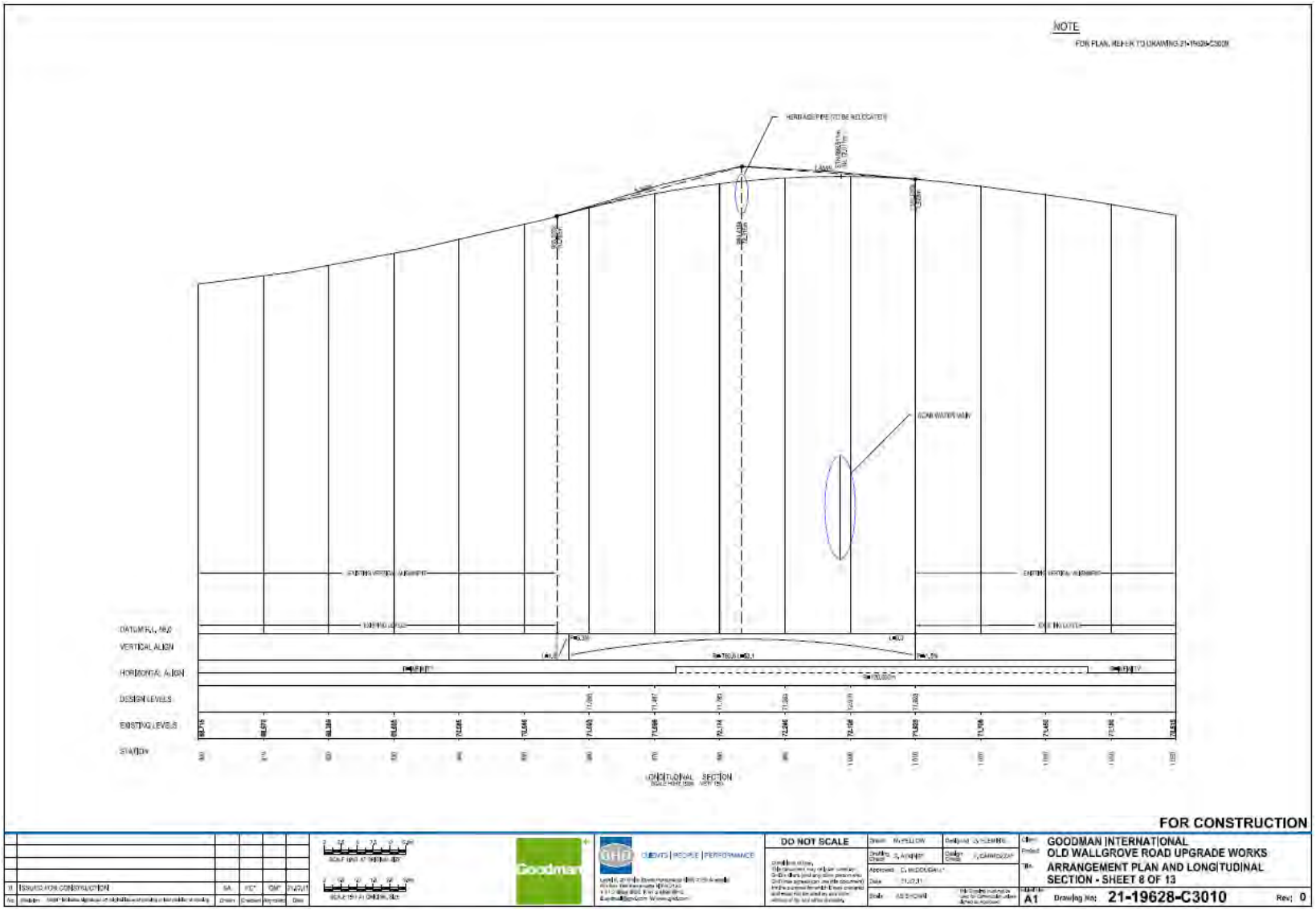
Drawing No: 21-19628-C3006
Rev: 0


PROVIDE 0.8m ø600mm DIAMETER ROCK BOULDERS AROUND THE EXISTING HEADWALL TO PROVIDE SUPPORT AGAINST LOCALISED 1 (V) : 2 (H) BATTER
OLD WALLGROVE ROAD CONTROL LINE
LOCALISED WIDENING FOR PASSING BAY
ADJUST PRIVATE WATERMAIN OUTSIDE OF CUT BATTER AND LOWER UNDER ROAD PAVEMENT 750mm (min), ALL WORKS BY LICENCED PLUMBER
EXISTING SIGNS TO BE REMOVED
FOR CONTINUATION REFER TO 21-19628-C3006
FOR CONTINUATION REFER TO 21-19628-C3008
OLD WALLGROVE ROAD
NEW ROAD CENTRELINE MARKING (TYPE BB-SEE NOTE 1)
EXISTING 3250 PIPE CULVERT (ESTIMATED CAPACITY 5 YR ARI)
EDGE PAVEMENT EDGE
EXISTING SIGN TO BE RETAINED
ENTRANCE TO FARMSGRD TO BE RETAINED
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 955 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.3m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 955 TO CH. 1095 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19932-C3020 TO C3025.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. 61.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 5 OF 13
A1
21-19628-C3007
Rev: 0


PROVIDE D* ≥600mm DIAMETER ROCK BOULDERS AROUND THE EXISTING HEADWALL TO PROVIDE SUPPORT AGAINST LOCALISED 1 (V) : 2 (H) BATTER
EXISTING TREES TO BE RETAINED
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
PROVIDE NEW SIGN
REMOVE EXISTING HEADWALL, ADD HALF PIPE LENGTH WITH NEW PRECAST HEADWALL
EXISTING 825Ø PIPE CULVERT (ESTIMATED CAPACITY 10YR ARI)
FOR CONTINUATION REFER TO 21-19628-C3007
FOR CONTINUATION REFER TO 21-19628-C3009
OLD WALLGROVE ROAD
EXISTING PAVEMENT EDGE
OLD WALLGROVE ROAD CONTROL LINE
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 ONWARDS TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3026.
3. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. (m)
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 6 OF 13
A1
Drawing No: 21-19628-C3008
Rev: 0


EXISTING SIGN TO BE REMOVED
RELOCATE LIGHT POLE MIN 2m CLEAR OF NEW ROAD EDGE
EXISTING GATES, ACCESS TO BE RETAINED.
EXISTING SIGNS TO BE REMOVED
EXISTING PAVEMENT EDGE
REGRADE ENTRY PORTION OF SCA SERVICE ROAD AT MAX 1(V) : 10(H) TO MATCH INTO THE PROPOSED FULL WIDTH PAVEMENT SECTION OF OLD WALLGROVE ROAD
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 2)
EXISTING SIGNS TO BE REMOVED
FOR CONTINUATION REFER TO 21-19628-C3008
FOR CONTINUATION REFER TO 21-19628-C3011
OLD WALLGROVE ROAD
TRANSITION FROM NEW LINEMARKING TO EXISTING LINEMARKING OVER 5m
EXISTING STEEL HERITAGE PIPE UNDER ROAD TO BE RELOCATED (NEW LOCATION WITHIN SCA LAND TO BE ADVISED BY SUPERINTENDENT)
OLD WALLGROVE ROAD CONTROL LINE
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
EXISTING GATES, ACCESS TO BE RETAINED.
SCA SERVICE ROAD
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
SCA SERVICE ACCESS ROAD PAVEMENT
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
EXISTING TELSTRA MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 955 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 955 TO CH. 1005 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3026.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
4. FOR LONGITUDINAL SECTION, REFER TO DRAWING 21-19628-C3010.
FOR CONSTRUCTION
0 ISSUED FOR CONSTRUCTION SA FC CM 21.02.11
Goodman
GHD
DO NOT SCALE
Drawn N. PELLOW
Designed S. FLEMING
Approved C. McDOUGALL
Date 21.02.11
Scale AS SHOWN
Client GOODMAN INTERNATIONAL
Project OLD WALLGROVE ROAD UPGRADE WORKS
Title ARRANGEMENT PLAN AND LONGITUDINAL SECTION
SECTION - SHEET 7 OF 13
A1
Drawing No: 21-19628-C3009
Rev: 0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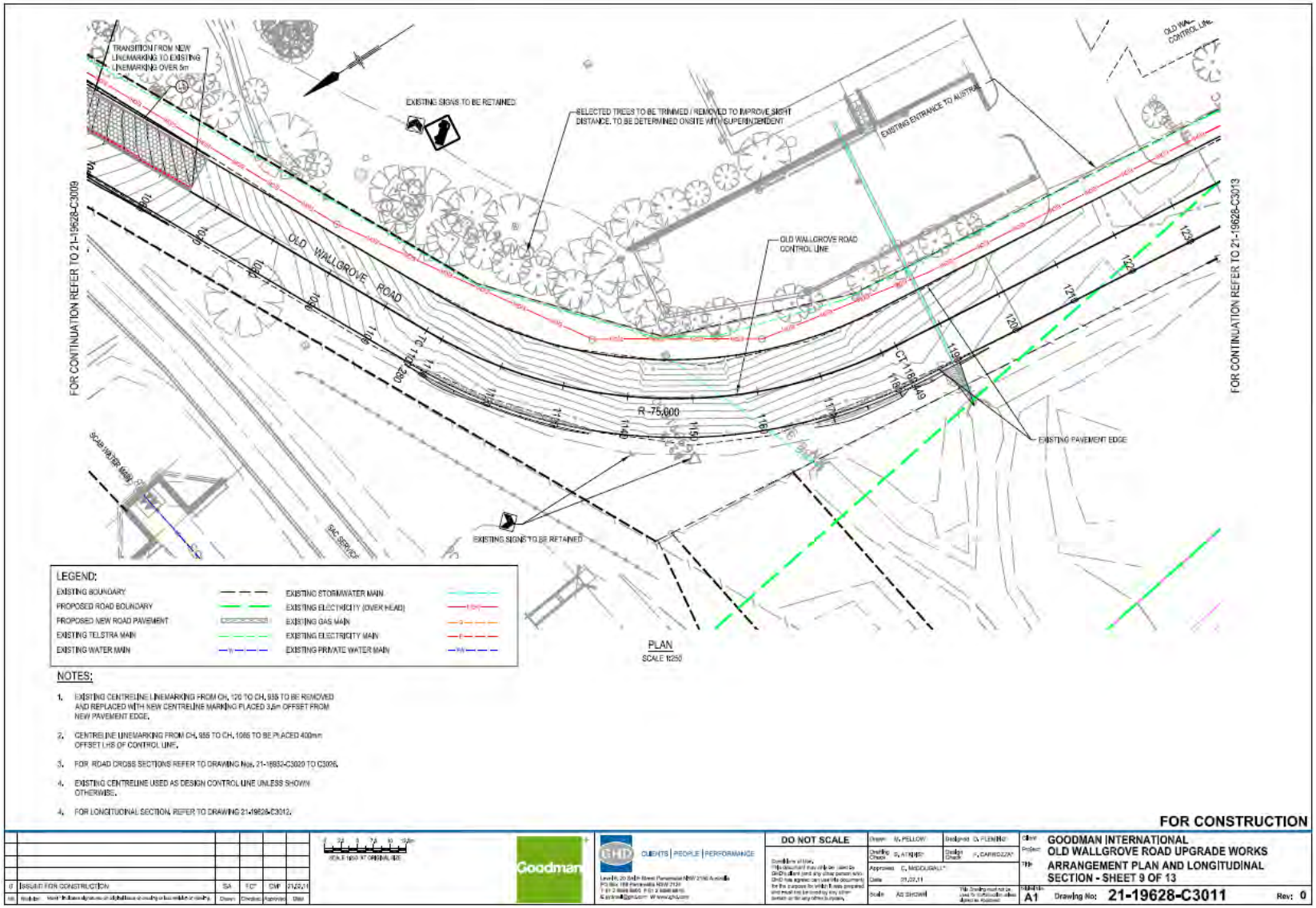
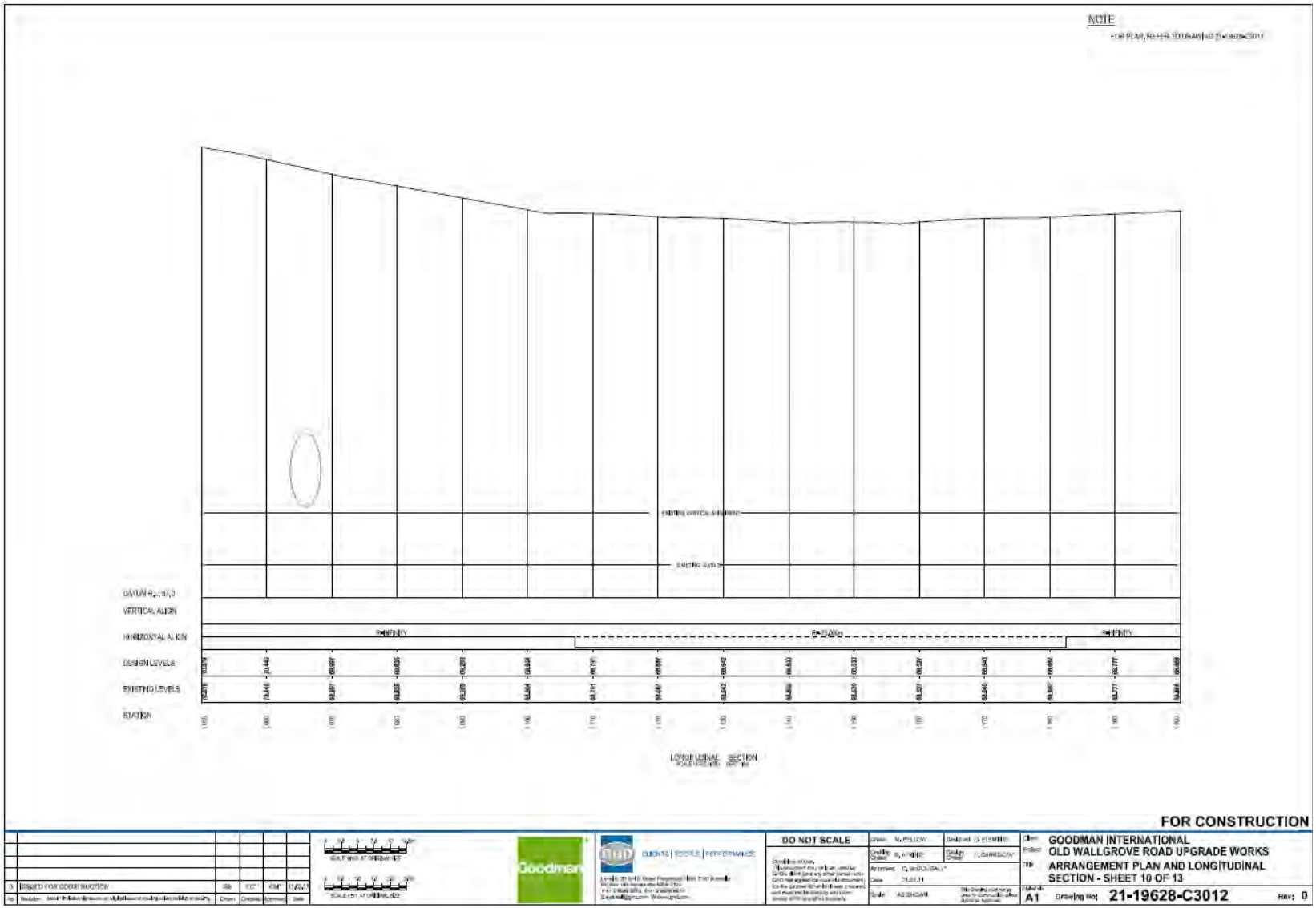
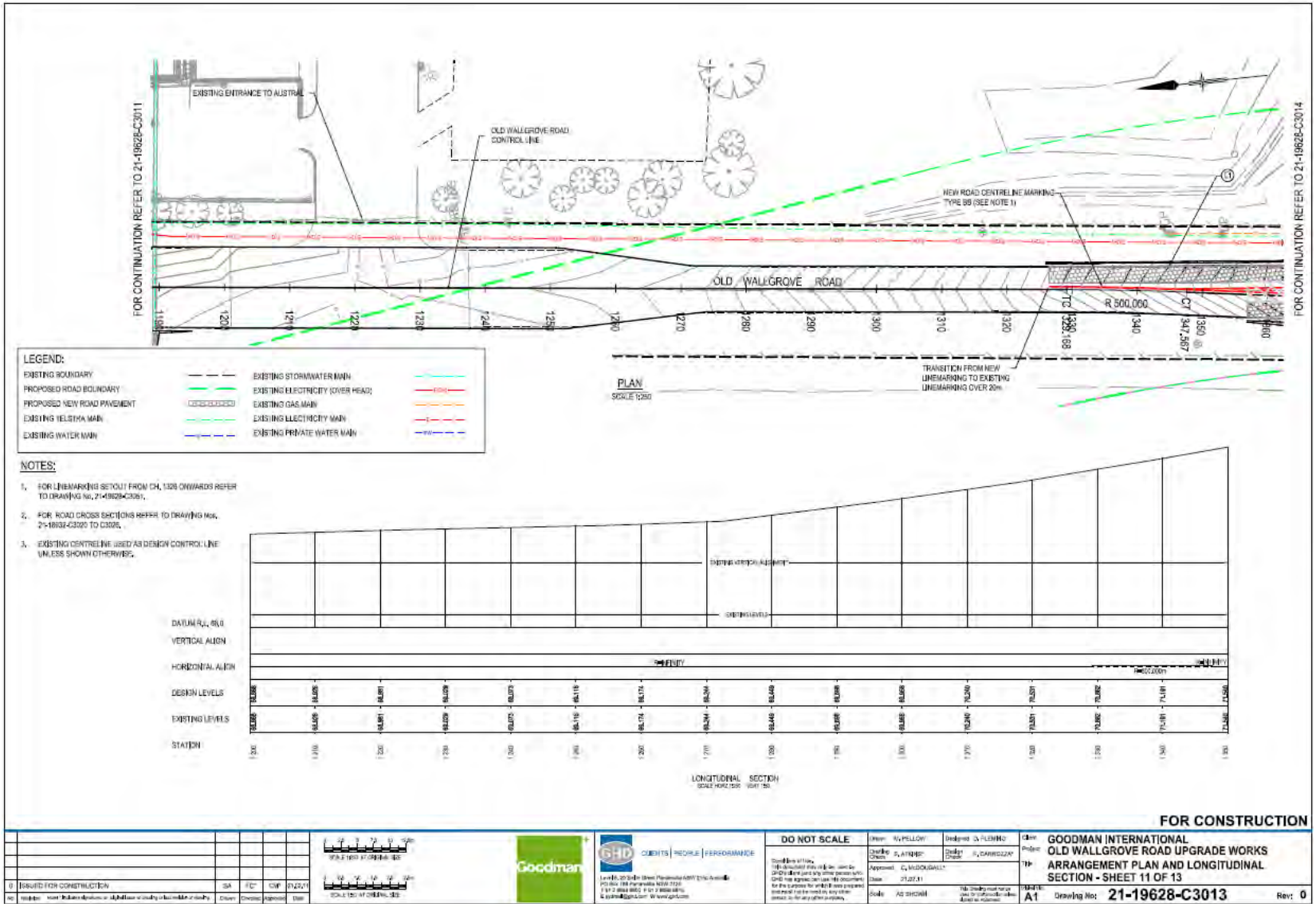
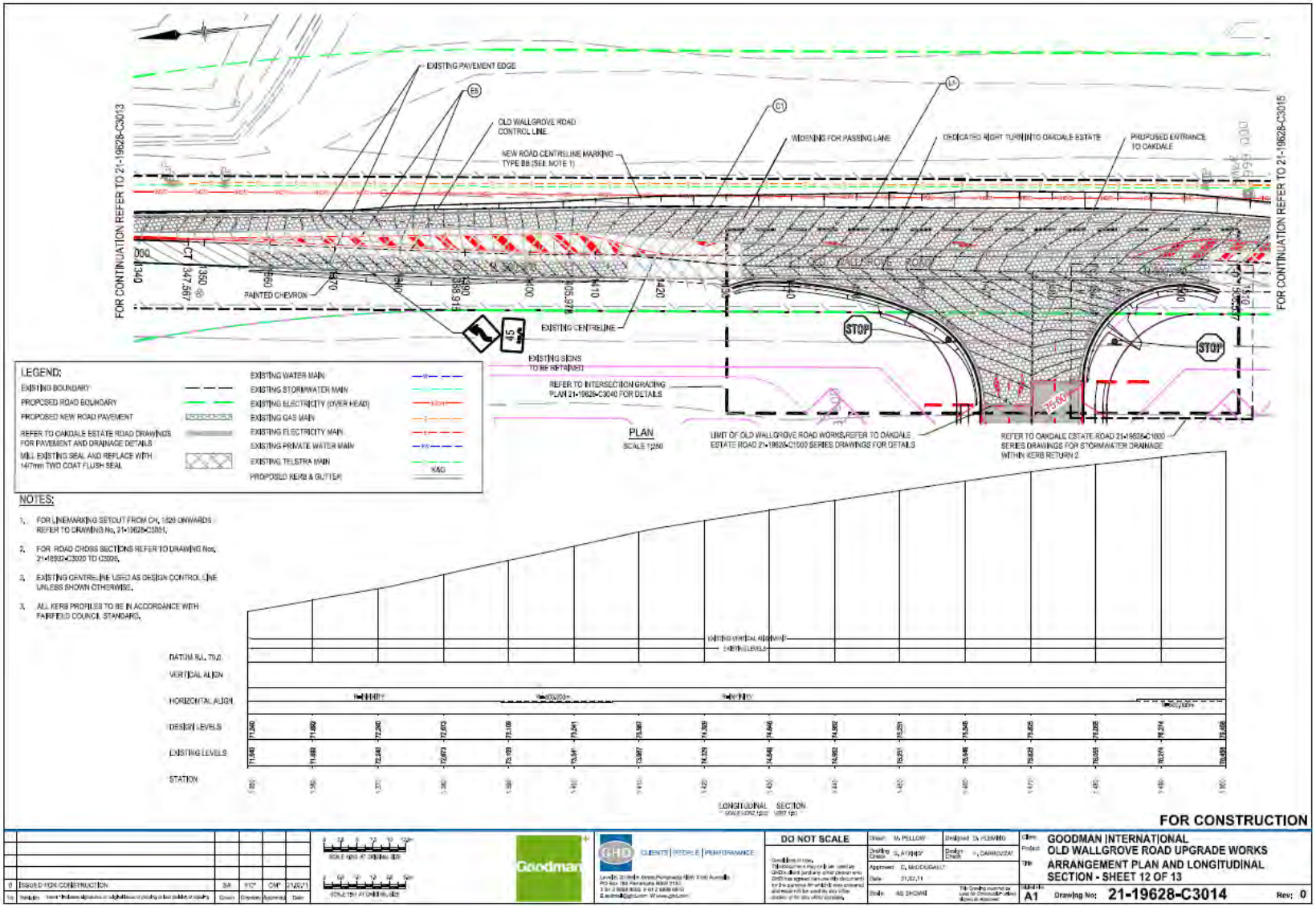
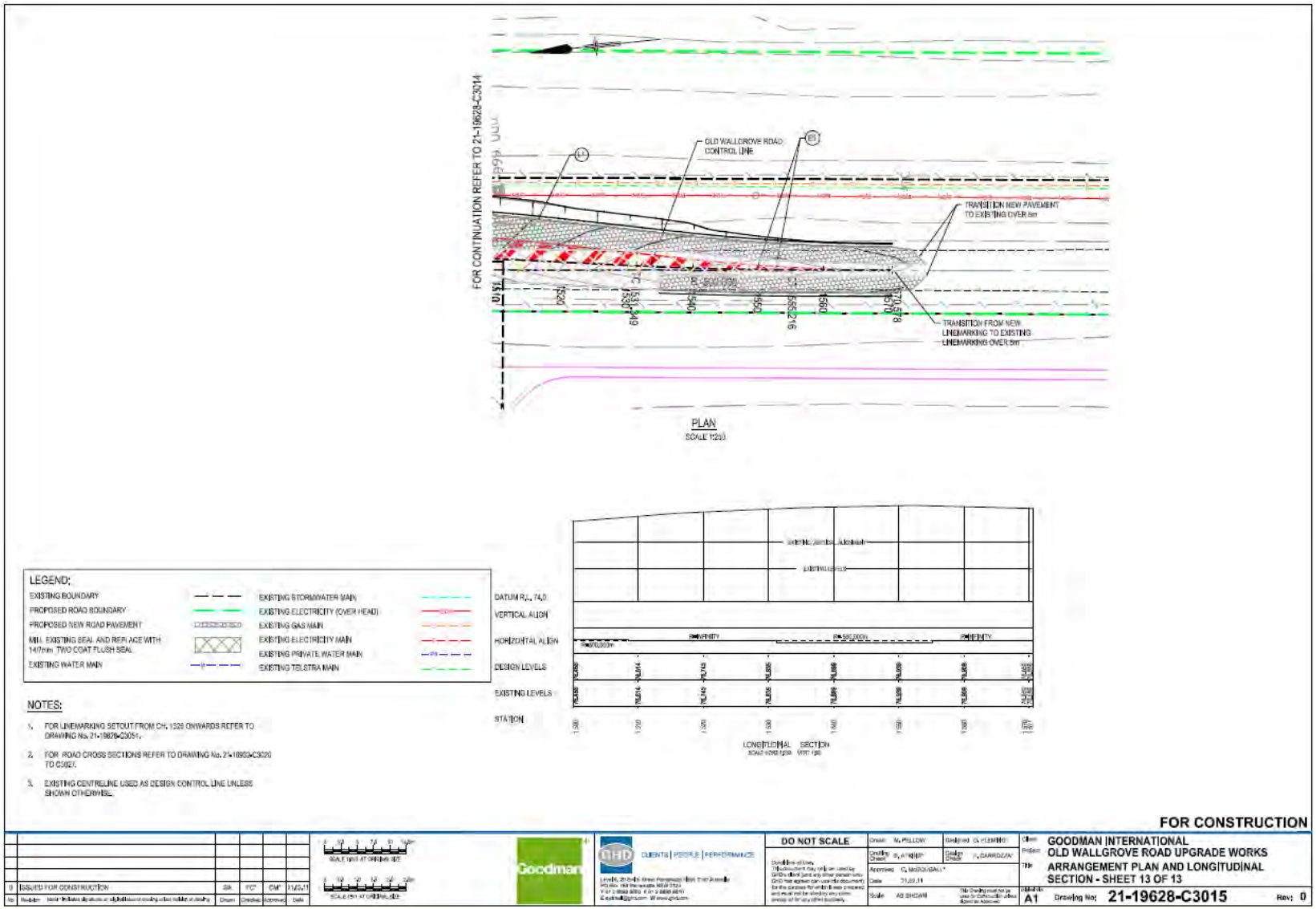
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 8 OF 13
Drawing No: 21-19628-C3010
Rev: 0


TRANSITION FROM NEW LINEMARKING TO EXISTING LINEMARKING OVER 5m
EXISTING SIGNS TO BE RETAINED
SELECTED TREES TO BE TRIMMED / REMOVED TO IMPROVE SIGHT DISTANCE. TO BE DETERMINED ONSITE WITH SUPERINTENDENT
EXISTING ENTRANCE TO AUSTRAL
OLD WALLGROVE ROAD CONTROL LINE
OLD WALLGROVE ROAD
FOR CONTINUATION REFER TO 21-19628-C3009
FOR CONTINUATION REFER TO 21-19628-C3013
R =75.000
EXISTING PAVEMENT EDGE
EXISTING SIGNS TO BE RETAINED
SCAD WATER MAIN
SAG SERVICE
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. EXISTING CENTRELINE LINEMARKING FROM CH. 120 TO CH. 935 TO BE REMOVED AND REPLACED WITH NEW CENTRELINE MARKING PLACED 3.5m OFFSET FROM NEW PAVEMENT EDGE.
2. CENTRELINE LINEMARKING FROM CH. 935 TO CH. 1086 TO BE PLACED 400mm OFFSET LHS OF CONTROL LINE.
3. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3026.
4. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
4. FOR LONGITUDINAL SECTION, REFER TO DRAWING 21-19628-C3012.
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 9 OF 13
A1
Drawing No: 21-19628-C3011
Rev: 0

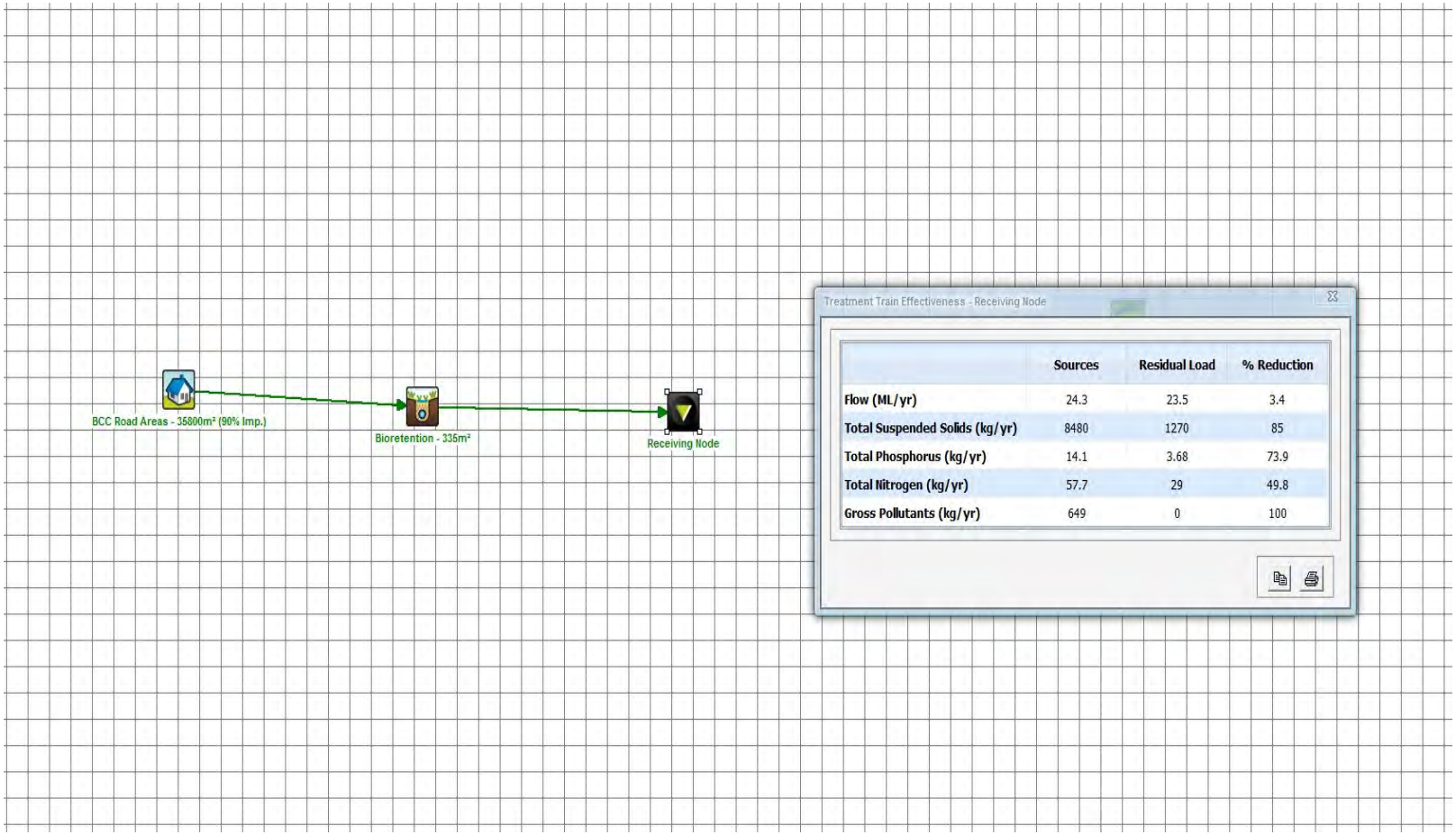

NOTE
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN |NTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONG|TUDINAL SECTION - SHEET 10 OF 13
A1
21-19628-C3012
Rev: 0


EXISTING ENTRANCE TO AUSTRAL
OLD WALLGROVE ROAD CONTROL LINE
FOR CONTINUATION REFER TO 21-19628-C3011
FOR CONTINUATION REFER TO 21-19628-C3014
NEW ROAD CENTRELINE MARKING TYPE BB (SEE NOTE 1)
OLD WALLGROVE ROAD
R 500.000
TC
CT
TRANSITION FROM NEW LINEMARKING TO EXISTING LINEMARKING OVER 20m
PLAN
SCALE 1:250
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
EXISTING TELSTRA MAIN
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
NOTES:
1. FOR LINEMARKING SETOUT FROM CH. 1326 ONWARDS REFER TO DRAWING No. 21-19628-C3061.
2. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3025.
3. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
DATUM R.L. 65.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 11 OF 13
A1
21-19628-C3013
Rev: 0


EXISTING PAVEMENT EDGE
OLD WALLGROVE ROAD CONTROL LINE
NEW ROAD CENTRELINE MARKING TYPE B8 (SEE NOTE 1)
WIDENING FOR PASSING LANE
DEDICATED RIGHT TURN INTO OAKDALE ESTATE
PROPOSED ENTRANCE TO OAKDALE
FOR CONTINUATION REFER TO 21-19628-C3013
FOR CONTINUATION REFER TO 21-19628-C3015
PAINTED CHEVRON
EXISTING CENTRELINE
EXISTING SIGNS TO BE RETAINED
REFER TO INTERSECTION GRADING PLAN 21-19628-C3040 FOR DETAILS
PLAN
SCALE 1:250
LIMIT OF OLD WALLGROVE ROAD WORKS,REFER TO OAKDALE ESTATE ROAD 21-19628-C1500 SERIES DRAWINGS FOR DETAILS
REFER TO OAKDALE ESTATE ROAD 21-19628-C1600 SERIES DRAWINGS FOR STORMWATER DRAINAGE WITHIN KERB RETURN 2
STOP
LEGEND:
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
REFER TO OAKDALE ESTATE ROAD DRAWINGS FOR PAVEMENT AND DRAINAGE DETAILS
MILL EXISTING SEAL AND REPLACE WITH 14/7mm TWO COAT FLUSH SEAL
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
EXISTING TELSTRA MAIN
PROPOSED KERB & GUTTER
K&G
NOTES:
1. FOR LINEMARKING SETOUT FROM CH. 1520 ONWARDS REFER TO DRAWING No. 21-19628-C3051.
2. FOR ROAD CROSS SECTIONS REFER TO DRAWING Nos. 21-19628-C3020 TO C3026.
3. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
4. ALL KERB PROFILES TO BE IN ACCORDANCE WITH FAIRFIELD COUNCIL STANDARD.
DATUM R.L. 70.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 12 OF 13
A1
Drawing No: 21-19628-C3014
Rev: 0


FOR CONTINUATION REFER TO 21-19628-C3014
OLD WALLGROVE ROAD CONTROL LINE
TRANSITION NEW PAVEMENT TO EXISTING OVER 5m
TRANSITION FROM NEW LINEMARKING TO EXISTING LINEMARKING OVER 5m
PLAN
SCALE 1:250
LEGEND;
EXISTING BOUNDARY
PROPOSED ROAD BOUNDARY
PROPOSED NEW ROAD PAVEMENT
M1A: EXISTING SEAL AND REPLACE WITH 14/7mm TWO COAT FLUSH SEAL
EXISTING WATER MAIN
EXISTING STORMWATER MAIN
EXISTING ELECTRICITY (OVER HEAD)
EXISTING GAS MAIN
EXISTING ELECTRICITY MAIN
EXISTING PRIVATE WATER MAIN
EXISTING TELSTRA MAIN
DATUM RL 74.0
VERTICAL ALIGN
HORIZONTAL ALIGN
DESIGN LEVELS
EXISTING LEVELS
STATION
LONGITUDINAL SECTION
NOTES:
1. FOR LINEMARKING SETOUT FROM CH 1520 ONWARDS REFER TO DRAWING No. 21-19628-C3051.
2. FOR ROAD CROSS SECTIONS REFER TO DRAWING No. 21-19628-C3020 TO C3027.
3. EXISTING CENTRELINE USED AS DESIGN CONTROL LINE UNLESS SHOWN OTHERWISE.
FOR CONSTRUCTION
0 ISSUED FOR CONSTRUCTION
DO NOT SCALE
GOODMAN INTERNATIONAL
OLD WALLGROVE ROAD UPGRADE WORKS
ARRANGEMENT PLAN AND LONGITUDINAL SECTION - SHEET 13 OF 13
A1
Drawing No: 21-19628-C3015
Rev: 0

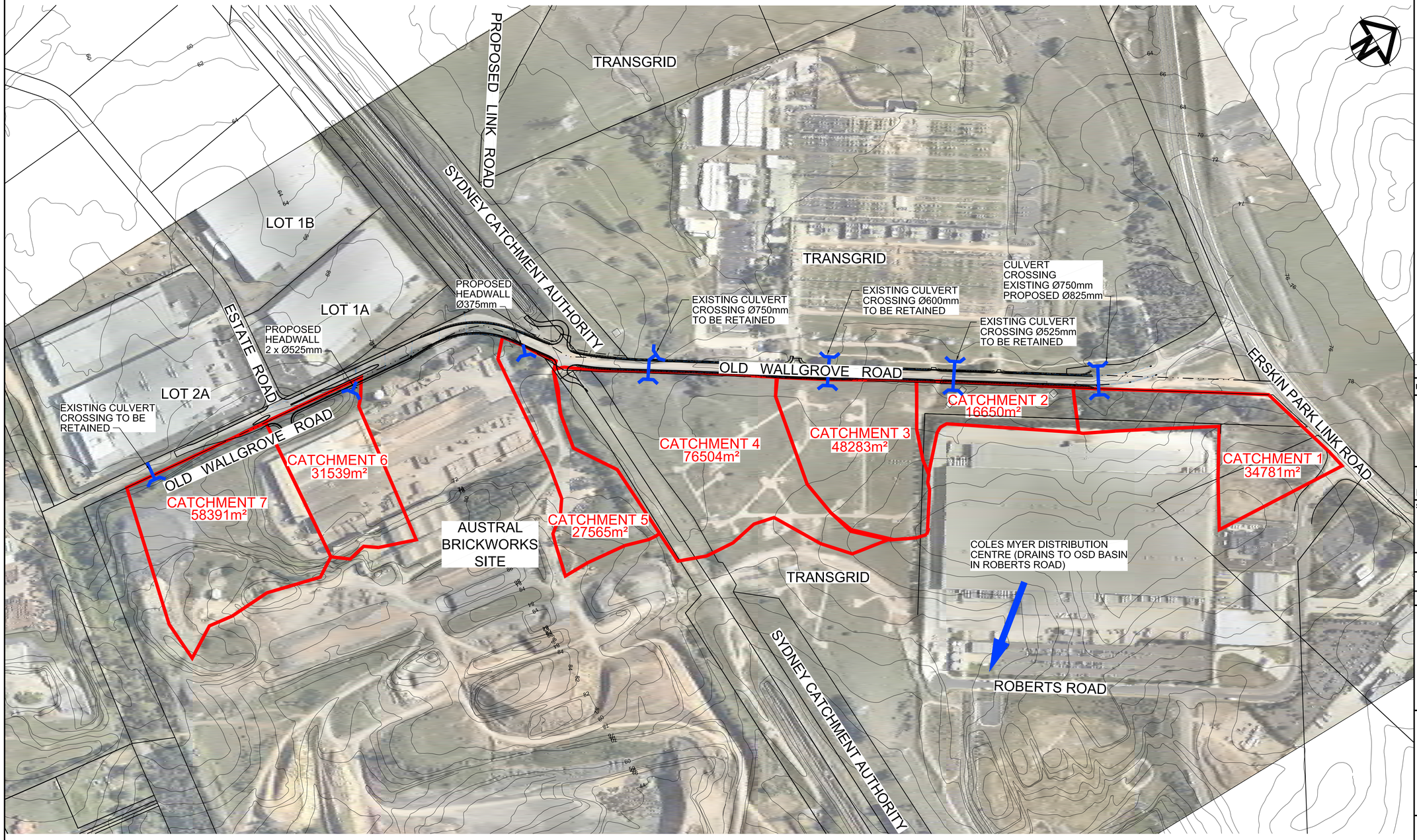
Appendix B – MUSIC Model and Results



Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	24.3	23.5	3.4
Total Suspended Solids (kg/yr)	8480	1270	85
Total Phosphorus (kg/yr)	14.1	3.68	73.9
Total Nitrogen (kg/yr)	57.7	29	49.8
Gross Pollutants (kg/yr)	649	0	100

Appendix C – Catchment Plan



Issue	Description	Date
P1	ISSUED FOR INFORMATION	13-06-14

Status: PRELIMINARY ONLY
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	NTS	Drawn TS	
		Designed TS	
Height Datum	AHD	Checked MM	
Grid	MGA	Approved	

File:

Client: Goodman

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info@atl.net.au

Project
OAKDALE CENTRAL
OLD WALGROVE ROAD
UPGRADE

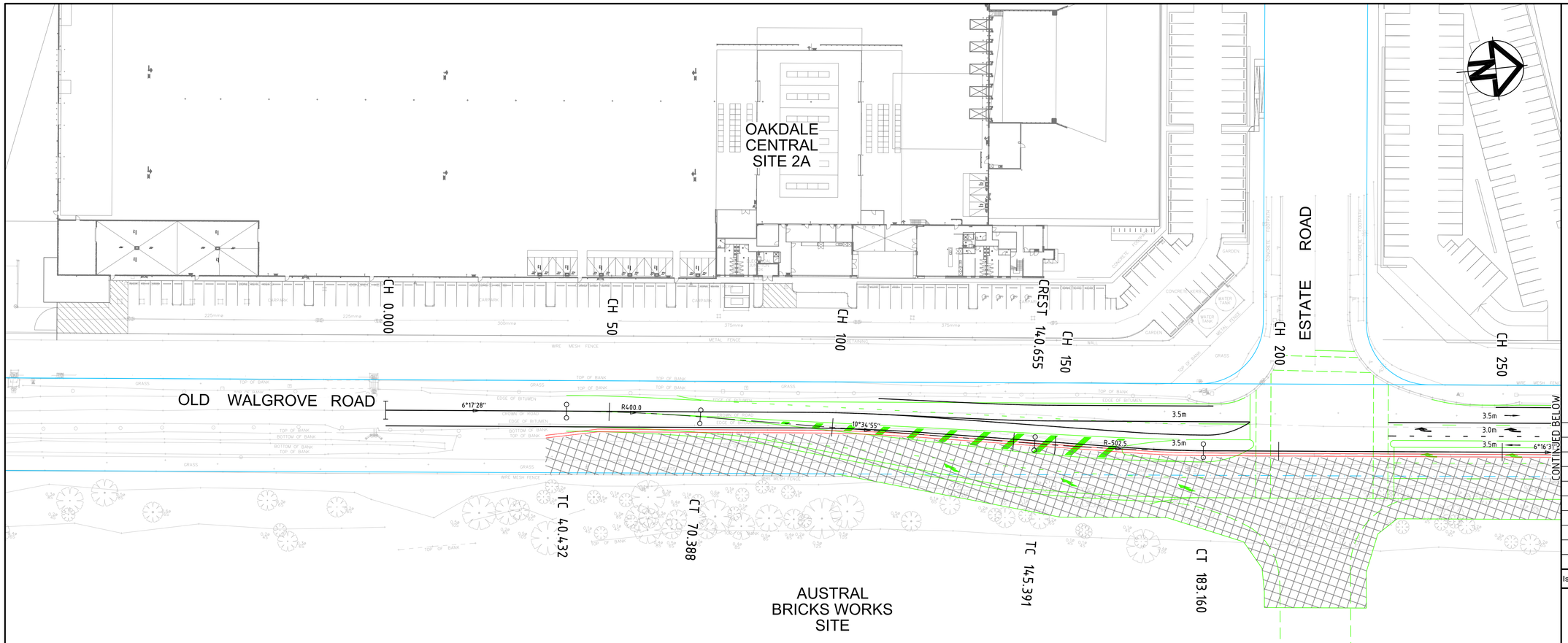
Title
STORMWATER
CATCHMENT PLAN

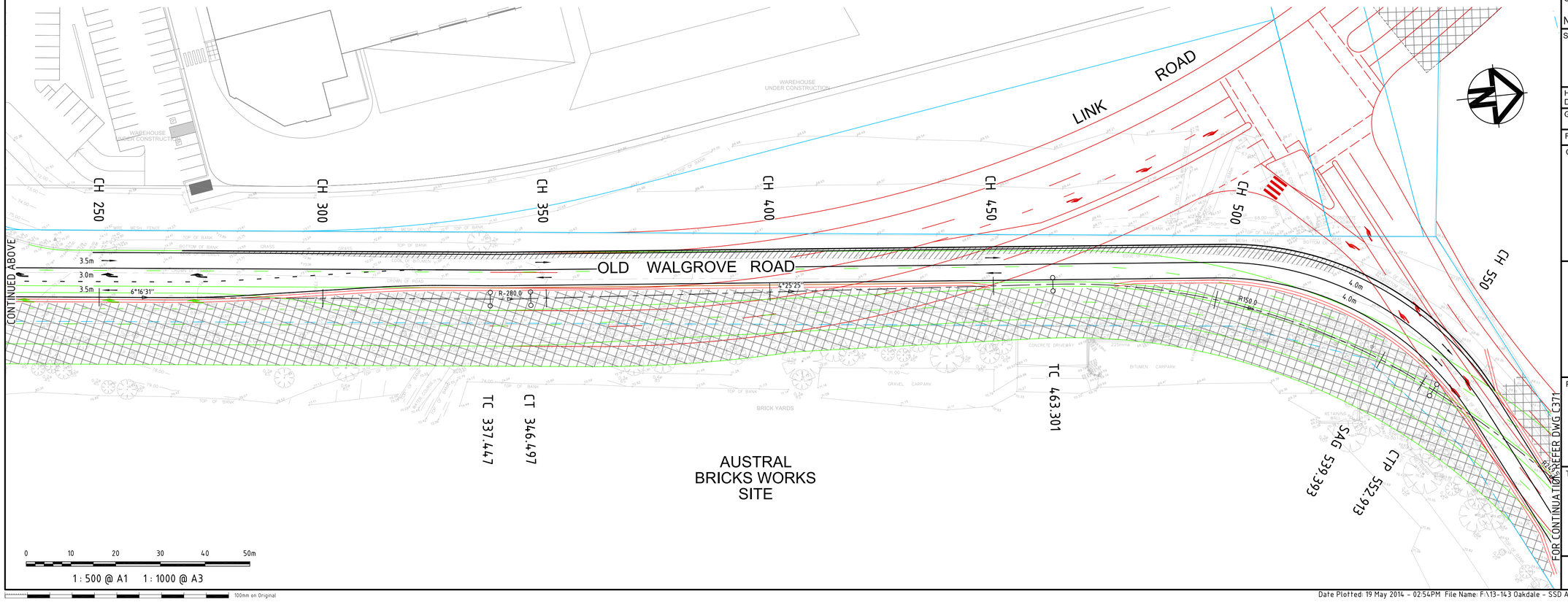
Drawing No.	Project No.	Issue
SKC04	13-129	P1

100mm on Original

Date Plotted: 13 Jun 2014 - 03:35PM File Name: F:\13-129 OWR Upgrade\Drgs\Civil\Sketches\SKC04-Stormwater Catchment Plan.dwg V1

Appendix D – Construction Staging Concept Plans





LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 500 @ A1	Drawn TS	
		Designed MM	
Height Datum	AHD	Checked MM	
Grid	MGA	Approved	

File: C370.dwg

Client: Goodman

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Fax: 02 9460 8413
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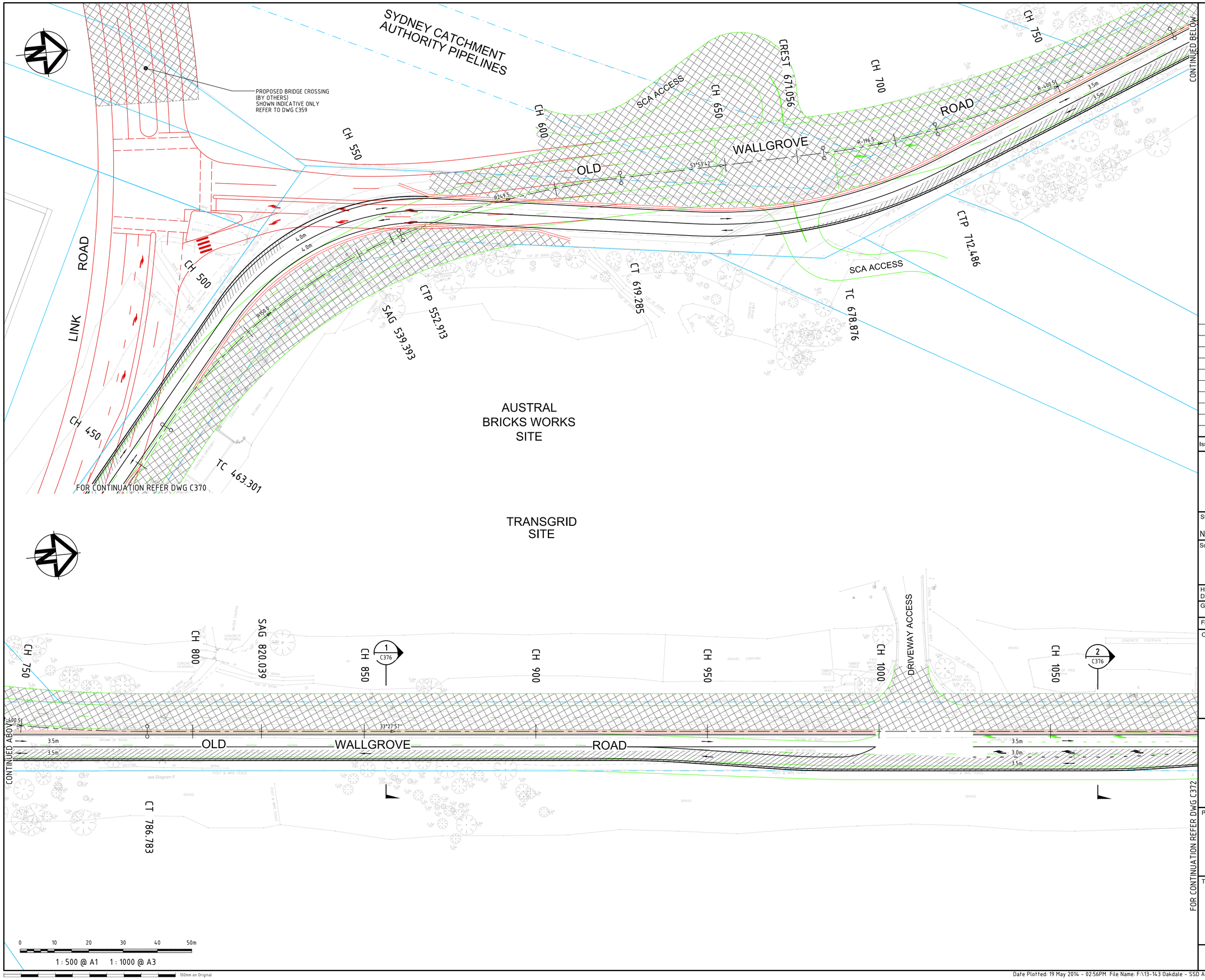
info@atl.net.au

Project
OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
STAGE 1
SHEET 1 OF 3

Drawing No.	Project No.	Issue
C370	13-143	A

100mm on Original



LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 500 @ A1	Drawn TS	
		Designed MM	
Height Datum	AHD	Checked MM	
Grid	MGA	Approved	

File: C371.dwg

Client: Goodman

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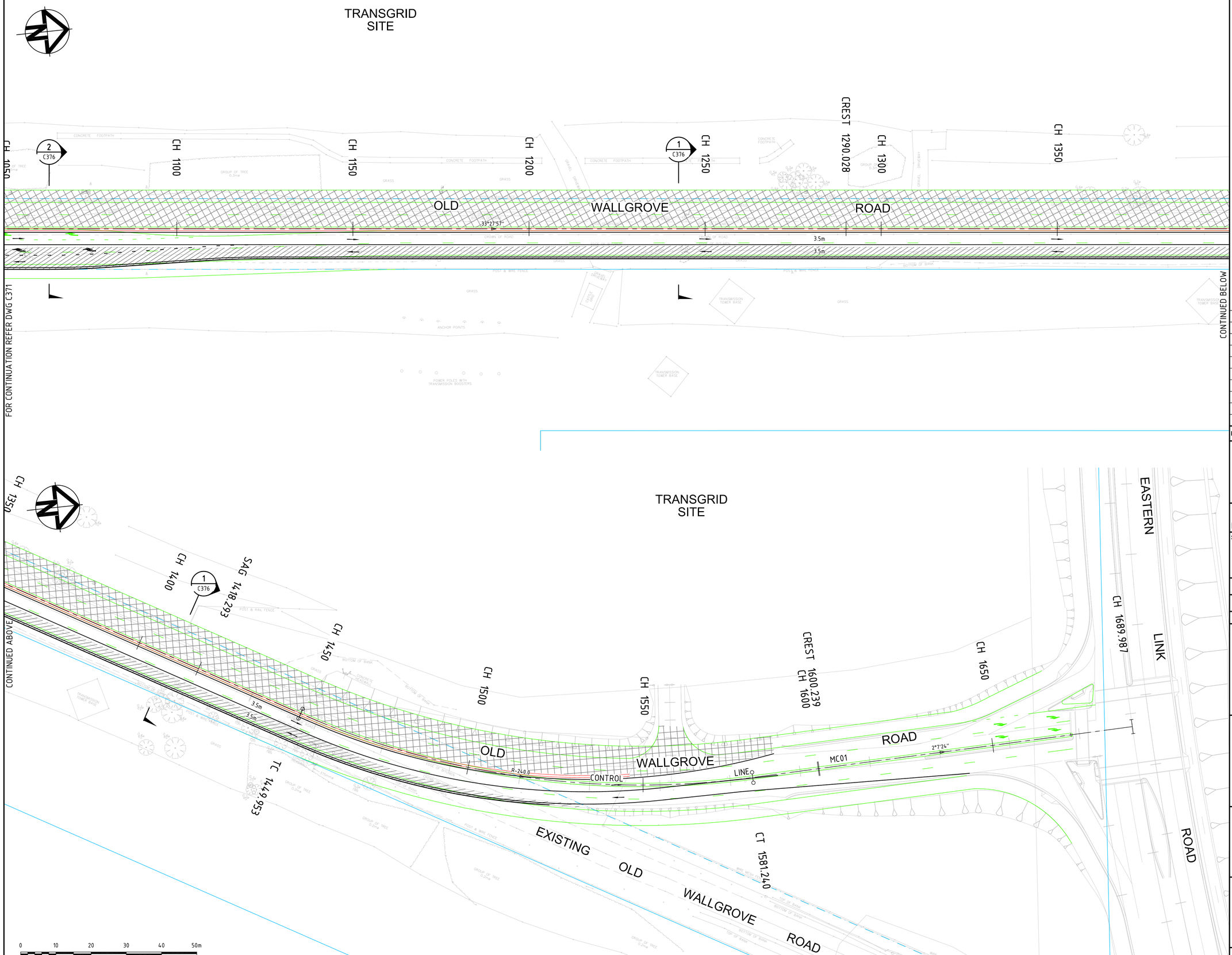
Project
OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
STAGE 1
SHEET 2 OF 3

Drawing No.	Project No.	Issue
C371	13-143	A



LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales: 1 : 500 @ A1

Drawn: TS
Designed: MM
Checked: MM
Approved:

Height Datum: AHD
Grid: MGA

File: C372.dwg

Client: Goodman

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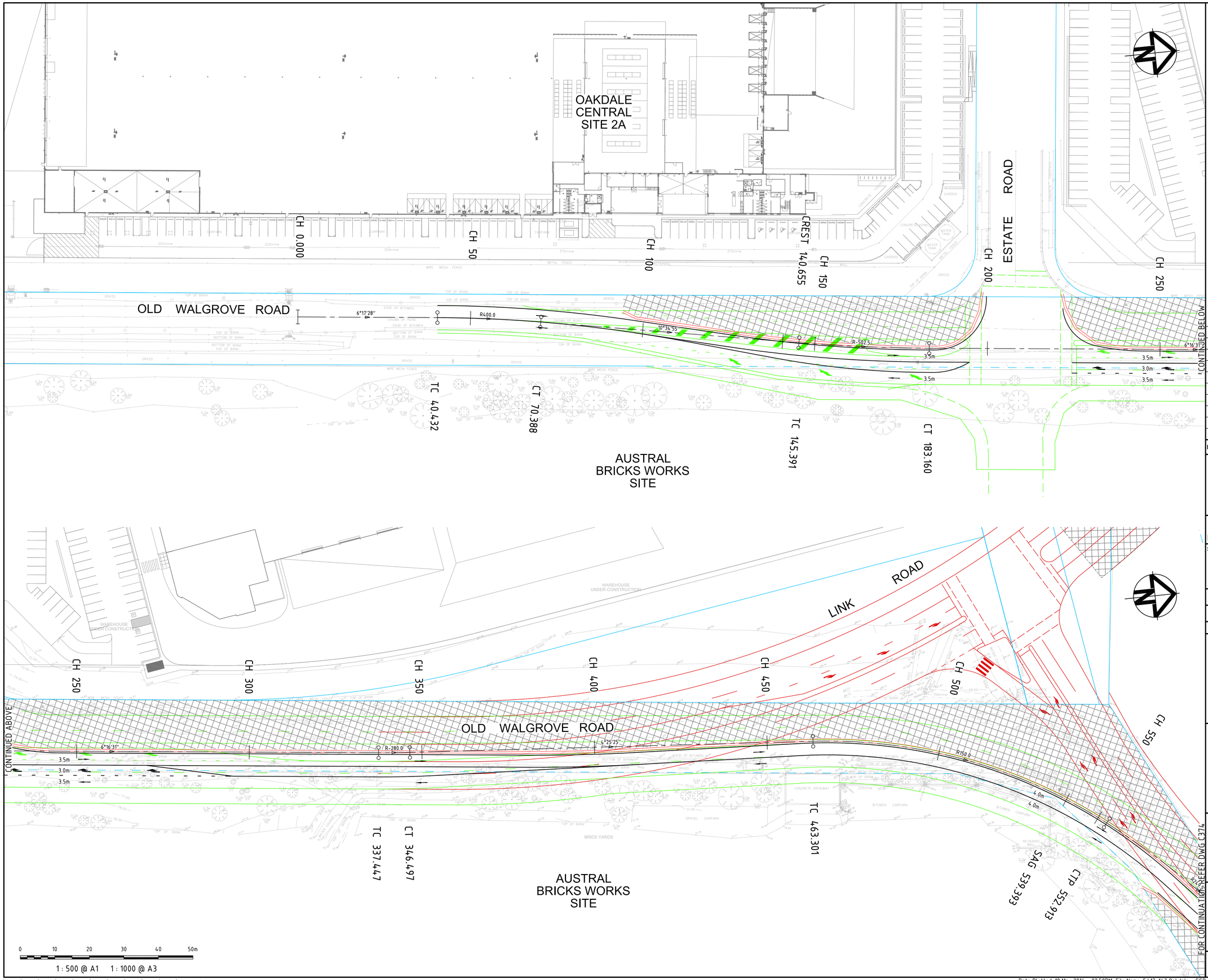
Project: OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title: CONSTRUCTION TRAFFIC MANAGEMENT PLAN
STAGE 1
SHEET 3 OF 3

Drawing No.	Project No.	Issue
C372	13-143	A



LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 500 @ A1	Drawn TS	
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Height Datum	AHD	Checked MM	
Grid	MGA	Approved	

File: C373.dwg

Client: Goodman

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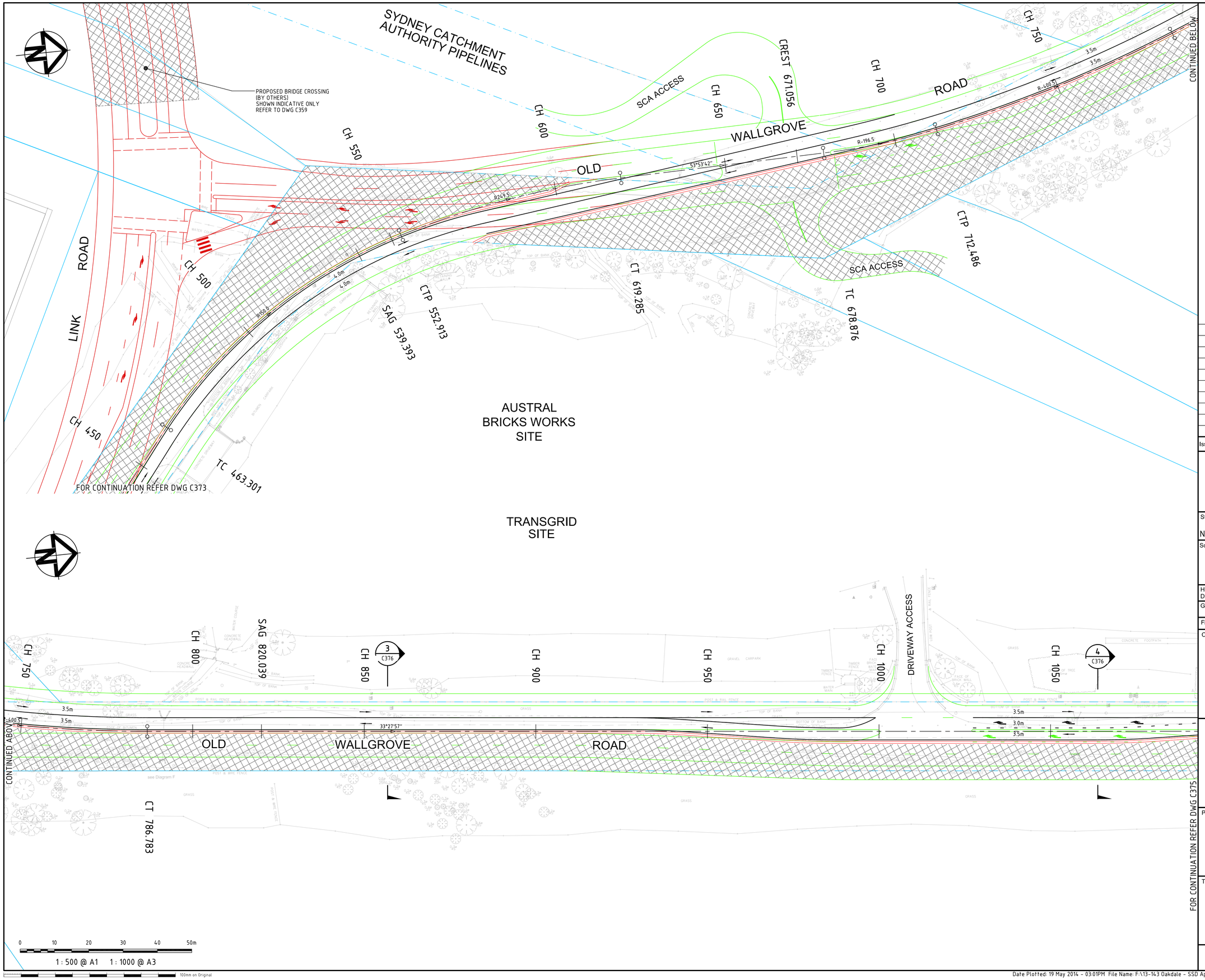
Project
OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title
CONSTRUCTION TRAFFIC MANAGEMENT PLAN
STAGE 2
SHEET 1 OF 3

Drawing No.	Project No.	Issue
C373	13-143	A



LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 500 @ A1	Drawn TS	
		Designed MM	
Height Datum	AHD	Checked MM	
Grid	MGA	Approved	

File: C374.dwg

Client: Goodman

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info@atl.net.au

Project: OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title: CONSTRUCTION TRAFFIC MANAGEMENT PLAN
STAGE 2
SHEET 2 OF 3

Drawing No.	Project No.	Issue
C374	13-143	A

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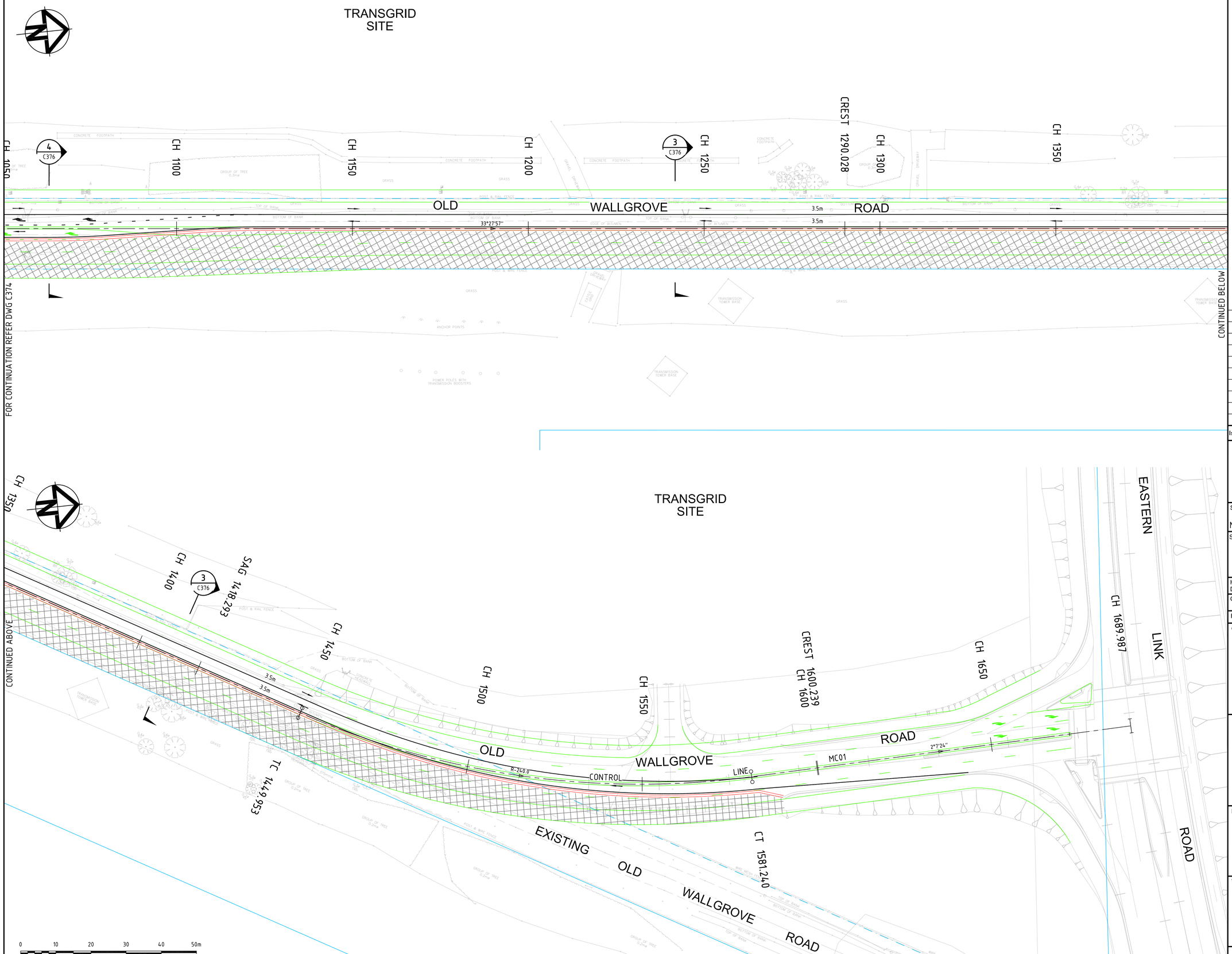

LEGEND

- BARRIER KERB
- EXTENT OF TEMPORARY ROAD PAVEMENT
- AREA OF CONSTRUCTION WORKS

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 500 @ A1	Drawn TS	
		Designed MM	
Height Datum	AHD	Checked MM	
Grid	MGA	Approved	
File:	C375.dwg		

Client: Goodman

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info@atl.net.au

Project: OAKDALE CENTRAL INDUSTRIAL FACILITIES LOTS 1C, 2B, 3A, 3B

Title: CONSTRUCTION TRAFFIC MANAGEMENT PLAN STAGE 2 SHEET 3 OF 3

Drawing No.	Project No.	Issue
C375	13-143	A

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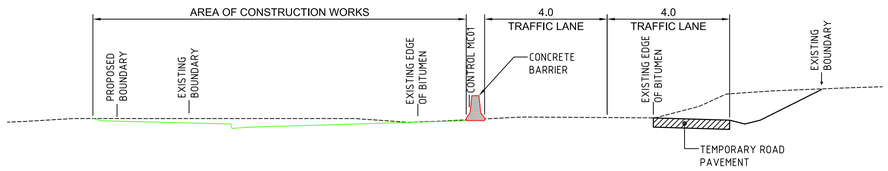
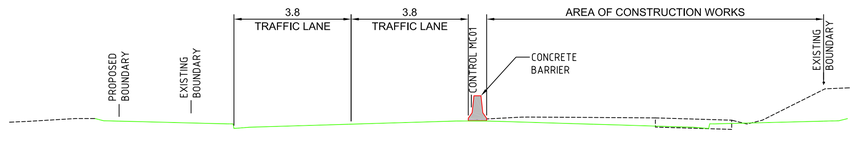


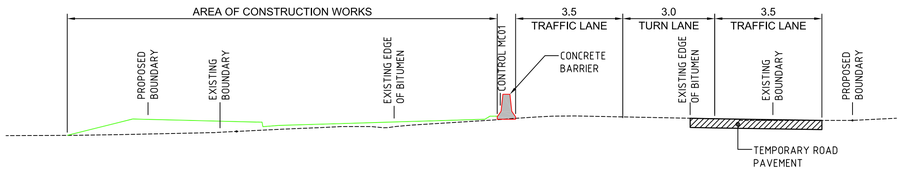
TYPICAL SECTION - STAGE 1

SECTION 1 / - 1 : 100



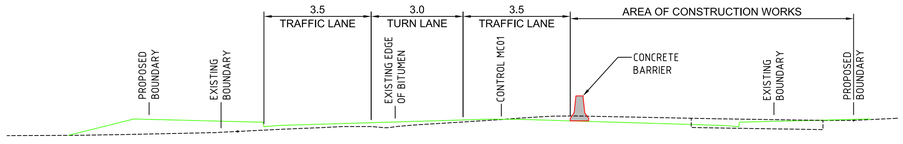
TYPICAL SECTION - STAGE 2

SECTION 3 / - 1 : 100



TYPICAL SECTION - STAGE 1 TRANSGRID ENTRANCE APPROACH

SECTION 2 / - 1 : 100



TYPICAL SECTION - STAGE 2 TRANSGRID ENTRANCE APPROACH

SECTION 4 / - 1 : 100

0 2 4 6 8 10m

1 : 100 @ A1 1 : 200 @ A3

Issue	Description	Date
A	STATE SIGNIFICANT DEVELOPMENT APPLICATION	19-5-14

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales: 1 : 100 @ A1

Drawn: TS
Designed: MM
Checked: MM
Approved:

Height Datum: AHD
Grid: MGA

File: C376.dwg

Client: Goodman

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St Leonards NSW 2065
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Project
OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title
CONSTRUCTION TRAFFIC MANAGEMENT PLANS
TYPICAL SECTIONS

Drawing No.	Project No.	Issue
C376	13-143	A

100mm on Original

Appendix E – Letter from Traffic – Milner Ave TCS

Ref 13.282l02

traffix
traffic & transport planners

suite 3.08
level 3 46a macleay street
potts point nsw 2011
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director graham pindar
acn: 065132961
abn: 66065132961

6th June 2014
t

Goodman Property Services Pty Ltd
Level 17
60 Castlereagh Street
Sydney NSW 2000

Attention: Will Dwyer

Re: Oakdale Central SSD - Response to DoP

Dear Will,

We refer to the subject development and note that the Department of Planning has queries the status of the form of control at the intersection of the Estate Road with Old Wallgrove Road. As you are aware, this was not addressed in the original traffic assessment report as it was acknowledged at that time that the area was subject to ongoing strategic review and assessment.

Nevertheless, it is noted that Buildings 1, 2 and 3 alone are predicted to generate some 430 veh/hr and this traffic will traverse this intersection. This volume is well above the RMS 'warrant' volume of 200 veh/hr for the provision of traffic signals. The future connection of a fourth approach to serve the Austral site is a further complication, which will introduce additional turn movements and conflicts.

Hence, we expect that traffic signal control will be a mandatory requirement at this intersection in the reasonably near future and certainly prior to the occupancy of all these three buildings. In this context, the signal design prepared by AT&L (which is based on a previous layout prepared by GHD) is considered acceptable in principle. Subject to detailed assessment, it will provide satisfactory operation in the short and medium terms.

We trust that this responds to the issue raised by the DoP and request that you contact the undersigned should you have any questions or would like to discuss this matter further.

Yours faithfully

Graham Pindar
Director

Appendix F – Land Acquisition Plan

	LAND OWNER	APPROX. LAND TAKE AREA (m²)
	TRANSGRID	2347
	SYDNEY CATCHMENT AUTHORITY	994
	AUSTRAL BRICKS	4970

TRANSGRID

PROPOSED LINK ROAD

ERSKINE PARK LINK ROAD

BIO-SWALE \ BASIN
30m² FILTER AREA
40m x 4m EASEMENT

ELECTRICAL TRANSMISSION TOWER

EXISTING BOUNDARY

ELECTRICAL TRANSMISSION TOWER

PROPOSED BOUNDARY

BIO-SWALE \ BASIN
50m² FILTER AREA
60m x 4m EASEMENT

APPROXIMATE EXTENT OF BATTERS

EXISTING BOUNDARY

OLD WALLGROVE ROAD

BIO-SWALE \ BASIN
40m² FILTER AREA
50m x 4m EASEMENT

PROPOSED BOUNDARY

BIO-SWALE \ BASIN
30m² FILTER AREA
40m x 4m EASEMENT

PROPOSED BOUNDARY

TRANSGRID

SYDNEY CATCHMENT AUTHORITY

ELECTRICAL TRANSMISSION TOWER

LOT 1B

LOT 1A

ESTATE ROAD

PROPOSED BOUNDARY

AUSTRAL BRICKWORKS SITE

SYDNEY CATCHMENT AUTHORITY

LOT 2A

OLD WALLGROVE ROAD

0 50 100 150 200m

1 : 2000 @ A1

100mm on Original

Issue	Description	Date
E	BIO SWALES \ BASINS SHOWN	19-06-14
D	EXTENT OF BATTERS SHOWN	30-05-14
C	STATE SIGNIFICANT DEVELOPMENT APPLICATION	06-02-14
B	STATE SIGNIFICANT DEVELOPMENT APPLICATION	21-10-13
A	ISSUED FOR CLIENT REVIEW	11-10-13

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Scales	1 : 2000 @ A1	Drawn	TS
		Designed	MM
Height Datum	AHD	Checked	MM
Grid	MGA	Approved	

File: C360.dwg

Client: Goodman

Civil Engineers and Project Managers
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Project: OAKDALE CENTRAL INDUSTRIAL FACILITIES
LOTS 1C, 2B, 3A, 3B

Title: LAND ACQUISITION PLAN

Drawing No.	Project No.	Issue
C360	13-143	E