## **ARBORICULTURAL REPORT**



WestConnex New M5 Prepared for CDS-JV Initial Report Date 14<sup>th</sup> March 2018

VMS Signage Installation at Tempe and St Peters

CDS-JV Document Number: M5N-ES-RPT-LRW-0032 Rev 4. Date 3 May 2018



## AUSTRALIAN TREE CONSULTANTS Pty Ltd ABN 38 104 636 535



14th March 2018

To:

Environmental Coordinator Level 6, Building B, 197-201 Coward Street, Mascot, NSW

Re -Arborist Inspection

I refer to your request to undertake site inspections for CPB Dragados Samsung Joint Venture (CDS-JV) on trees that are affected by the installation of VMS signage.

If you require any further information in relation to this report please contact us on

Yours sincerely

Director - Australian Tree Consultants
Member Arboriculture Australia
BA (L) Major in Wilderness Management/Outdoor Education
Diploma Horticulture - Arboriculture (Level 5)
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QTRA No 2650
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CASA RPAS Pilot and Operator

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#### 1. Introduction

CPB Dragados Samsung Joint Venture (CDS-JV) has commissioned Australian Tree Consultants Pty Ltd (ATC) to prepare an Arboricultural Impact Assessment Report for the proposed installation of VMS signage (Variable Message Signs). The proposed works are part of the WestConnex New M5 Development Project.

This arboricultural report should be read in conjunction with the RMS Minor Consistency Review Variable Message Signs report dated July 2017.

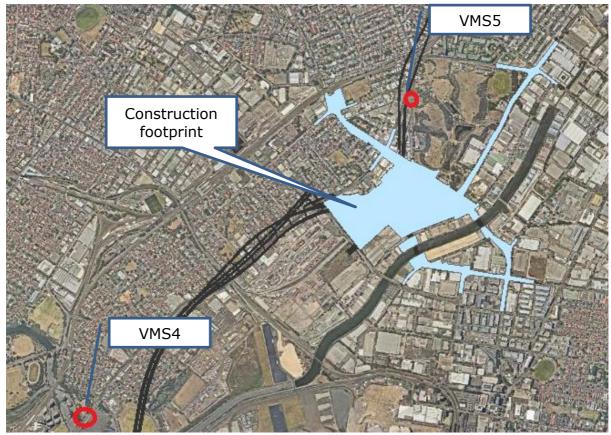
#### 1.1 Purpose

The purpose of this report is to:

- Identify trees that are likely to be affected by the VMS installation.
- Ascertain the works required to trees within the footprint of the VMS installation and line of sight to the signs.

#### 1.2. Sites Assessed

- 1. VMS 4 Princes Highway (northbound) Tempe.
- 2. VMS 5 Princes Highway (southbound) St Peters.



Map 1: Project Footprint Overview, St Peters.

# 1.3. Condition of Approval

**Table 1**: Condition of Approval B63 Compliance Table

Condition	Requirement	Addressed in:
B63	The SSI must be designed to retain as many trees as possible and provide a net increase in the number of replacement trees. The Proponent must commission an independent experienced and suitably qualified arborist, to prepare a comprehensive Tree Report(s) prior to removing any trees on the periphery and/or outside the construction footprint as identified in the figures in Section 6 of the document referred to in condition A2(b), including any tree(s) removed along Euston Road. The Tree Report may be prepared for the entire SSI or separate reports may be prepared for individual areas where trees are required to be removed. The report(s) must identify the impacts of the SSI on trees and vegetation within and adjacent to the construction footprint. The report(s) must include:	This Report
B63(a)	A visual tree assessment with inputs from the design, landscape architect, construction team;	Section: 2 Inputs and Considerations
B63(b)	Consideration of all options to amend the SSI where a tree has been identified for removal, including realignment, relocation of services, redesign of or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services.	Section: 2 Inputs and Considerations
B63(c)	Measures to avoid the removal of trees or minimise damage to existing trees and is to ensure the health and stability of those trees to be protected. This includes details of any proposed canopy or root pruning, excavation works, site controls on waste disposal, vehicular access, and storage of materials and protection of public utilities.	Section: 2 Inputs and Considerations
	In the event that trees are to be removed, then replacement trees are to be planted within, or in close proximity to, the SSI boundary, including along Euston Road where feasible and reasonable. The location of the trees must be determined in consultation with the relevant council(s). The replacement trees are to have a minimum pot size of 75 litres. A copy of the report(s) must be submitted to the Secretary for approval prior to the removal, damage and/or pruning of any trees, including those affected by site establishment works. All recommendations of the report must be implemented by the Proponent, unless otherwise agreed by the Secretary.	Consistent with earlier approved Tree Reports replanting will be detailed in the Urban Design and Landscape Plan in consultation with relevant councils.

### 2. Inputs and considerations

Inputs from the design and construction team were incorporated between the 1st July 2017 and the 18<sup>th</sup> October 2017.

The VMS locations were determined by SWTC requirements. Exact locations for the VMS were chosen based upon a combination of survey data and site inspection of the carriageways in the vicinity of the two (2) specified locations. Overhead obstructions including trees were taking into consideration. The chosen locations minimize impacts to trees to the extent possible. Impact on existing trees has been minimised at all locations by placing the VMS pile so as to minimise tree removals whilst delivering compliant sight lines to the VMS.

Based on detailed site assessment and local site constraints the locations of VMS sites have been revised as follows and these input constraints were provided to the Arborist:

- Design has taken this into consideration and an outreach of 3.3m at VMS 4
  has been provided to avoid removal of trees. This VMS will be located 3.5m
  from the back of the kerb behind the footpath. The existing footpath will be
  retained. There are some overhead power lines obstructing the installation
  of the VMS. The VMS is to be located at a distance of 3m from the overhead
  line running across the road. A part of these overhead power lines will be
  routed to underground as a part of this installation. An underground utility
  will be relocated to accommodate the VMS foundation pile.
- VMS 5 is located within the traffic island between the Princes Highway and Barwon Park Road. The VMS post is located 3.0m from the edge of the kerbside southbound traffic lane on the Princes Highway and 3.0m from the edge of the southbound lane on Barwon Park Road which is in spec with RMS requirements.

Further constraints and considerations are as follows;

VMS 4: Moving the VMS south (towards the river) also requires tree removal, hence this option presents no reduced impact.

The area to the north of the proposed location, where there is a gap is trees, is sterilised by a TransGrid 330kV electricity transmission cables (see Figure 1.) and telecommunications lines. Whilst it may be feasible to relocate the telecommunication lines, similar to the overhead power that will be relocated, it is not feasible to relocate the transmission power cables without significant impact to Sydney's power supply, traffic on Princess Hwy and increased tree removal. For these reasons the location identified in Map 2 has been assessed as the lowest impact location.

VMS 5: All VMS poles are non frangible necessitating offset from live traffic. In relation to VMS 5, for the speed zone on the Princes Hwy the VMS pole must be offset 3m from the traffic consistent with the Austroads – Road Design and Guides. F type barriers were assessed to surround the VMS and VMS maintenance area to enable the VMS pole to be move north closer to the apex of the traffic island; the assessment identified the barriers would increase the risk in the area to motorists due to the angle of approach for oncoming traffic at the intersection. The Safety in

Design review has identified the parking space at the apex of the triangle is required to provide safe access for maintenance workers.

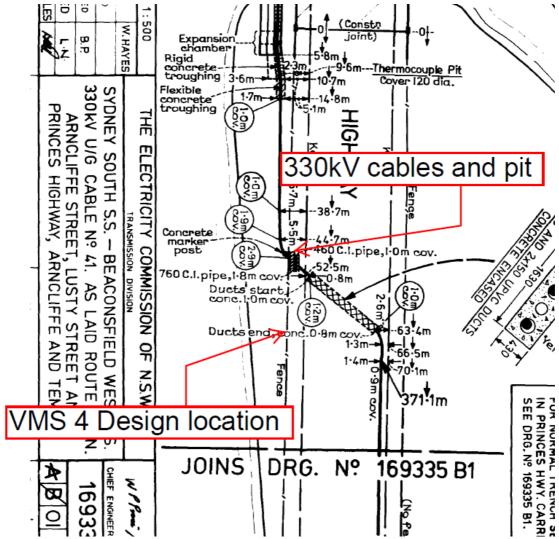


Figure 1. VMS 4 Location and surrounding transmission power.

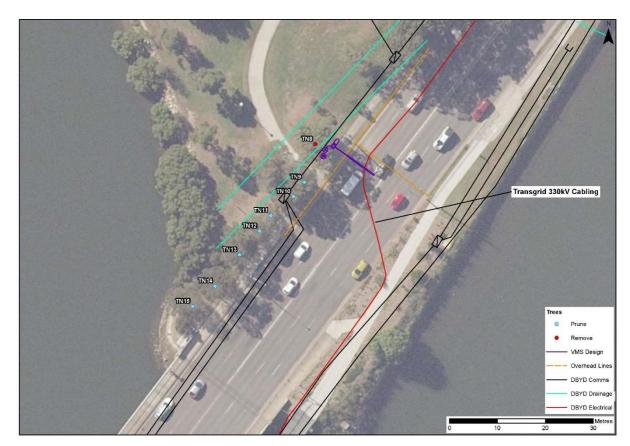


Figure 2. VMS4 location showing trees and surrounding services

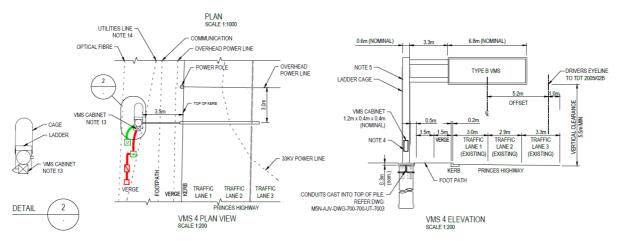


Figure 3. VMS4 plan and elevation view with surrounding services

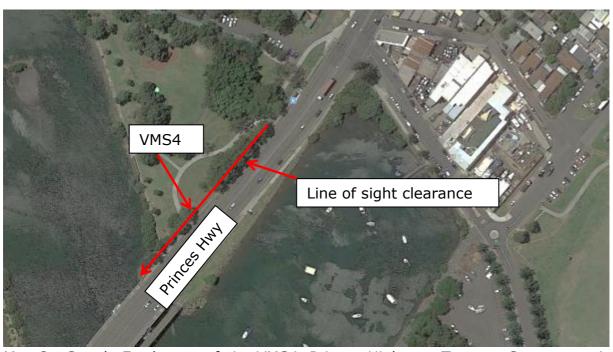
An onsite inspection was held with the Project Engineer, Environmental Advisor and Project Arborist to assess the work site and construction impacts on any trees for the two (2) VMS locations. The below sections outline the Project Arborists recommendations for each VMS site.

These trees will be included in the Urban Design and Landscape Plan (UDLP) however the locations identified for VMS installation fall outside the UDLP. Revegetation plans will be made in consultation with local councils and the landscape architect.

### 3. Site Inspections and Recommendations

From the two (2) locations assessed, three (3) trees have been recommended for removal and seven (7) trees have been recommended for pruning. A schedule of all trees assessed is included in Appendix A.

### 3.1. VMS4 Princes Highway (northbound) Tempe



Map 2. Google Earth map of site VMS4, Princes Highway, Tempe. Some trees in the map at the site for the sign installation are no longer there.



Map 3. Tree numbers (TN) – VMS4, Tempe. Red dot for remove, blue dot for prune

Proposed tree works required for the installation of VMS4.

- Removal of a mature Eucalyptus botryoides (Southern Mahogany) TN#8.
   Tree is located at the site for the proposed base of the sign.
- Select branch removal for line of sight clearance on five (5) TN# 9, 10,11,12,13 Melaleuca quinquenervia (Broad Leaved Paperbark). Minor pruning works required.
- Select branch removal for line of sight clearance on two (2) Casuarina glauca (Swamp She-oak) trees TN#14, 15. Minor pruning works required.

The seven (7) trees that are required to have minor lateral pruning works undertaken for line of sight clearances are within the park land area of Kendrick Park Tempe.



Photo 1. Eucalyptus botryoides to be removed.

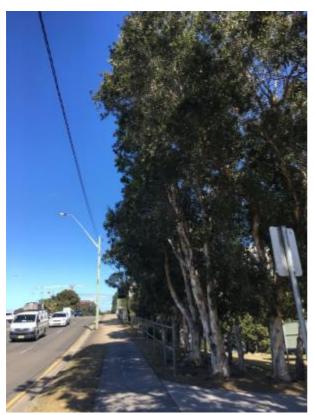
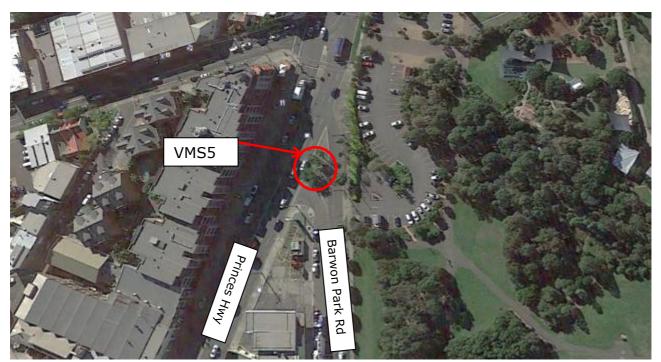


Photo 2. Line of sight clearance required on seven (7) trees.

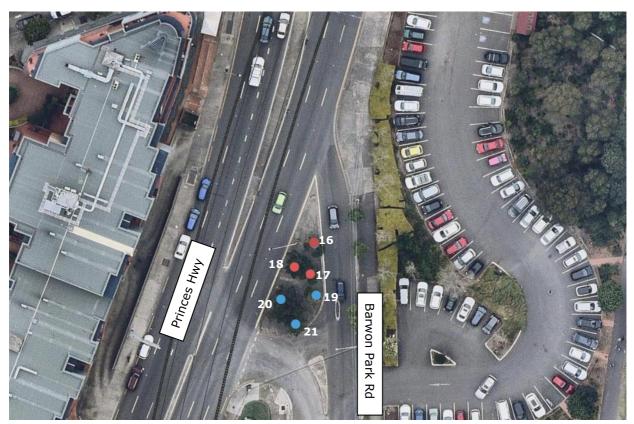
#### 3.3.1 Recommendations VMS4.

- Remove Eucalyptus botryoides tree TN#8.
- Undertake lateral pruning on seven (7) TN#9, 10, 11, 12,13,14,15 trees to allow for line of sight to VMS4.
- Replacement planting of Eucalyptus botryoides to be undertaken within Kendrick Park Tempe.

## 3.4. VMS5 Princes Highway (southbound) St Peters



Map 4. Googlearth map of site VMS5 - Princes Highway, St Peters.



Map 5. Tree Numbers (TN) - VMS5, St Peters. Red dot for remove, blue dot for prune

Proposed tree works required for the installation of VMS5.

• Removal of thee (3) semi-mature *Ficus spp.* (Fig trees) TN#16, TN#17 and TN#18. Trees are located at the site for the installation of the sign.

• Select branch removal may be required to accommodate machinery. Minor pruning works required.

The three (3) Fig trees that are required to be removed will be in the way of the sign, supporting infrastructure and the drilling rig to install the sign. Trees are in fair to poor condition due to the site constraints at the location of the trees.



Photo 3. Three (3) Ficus trees to be removed. TN#16, TN#17 and TN#18



Photo 4. NDD this tree for services. TN#20

#### 3.4.1 Recommendations VMS5

- Remove three (3) Ficus trees TN#16, TN#17 and TN#18
- Additional Ficus tree in photo 7 may need to have underground services located close to the tree, TN#20. This can be installed with vacuum truck with the supervision of a Consulting Arborist.
- If required undertake lateral branch pruning works.
- Replacement planting of the Ficus to be undertaken at alternative site.

#### 4. Tree Work

- All pruning and/or tree removal work is to be carried out by, or under supervision of, an arborist with a minimum AQF Level 3 qualification in Arboriculture or equivalent.
- All pruning and tree protection for those trees retained will be undertaken in accordance with Australian Standard AS 4373-2007.'
- All pruning and/or tree removal work is to be carried out in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).
- Reference should also be undertaken for any tree works to the SafeWork Australia Guide to Managing Risks of Tree Trimming and Removal Work – 2016.

- Permission must be granted from the relevant consent authority, prior to removing or pruning of any of the subject trees.
- Tree material to be used for landscaping where practical or disposed of offsite.

If you require any further information in relation to this report, please contact us on

Yours sincerely

QTRA No 2650

Director - Australian Tree Consultants
Member Arboriculture Australia
BA (L) Major in Wilderness Management/Outdoor Education
Diploma Horticulture - Arboriculture (Level 5)
Arborist/ Tree Surgeon/ Horticulturist
Certificate IV Occupational Health & Safety

NPWS Wildlife license and Wires volunteer CASA RPAS Pilot and Operator

#### LIMITATION OF LIABILITY

Australian Tree Consultants Pty Ltd and their employees are tree specialists who use their qualifications, education, knowledge, training, diagnostic tools and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of this assessment and report.

Australian Tree Consultants Pty Ltd and its employees cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that sometimes fail in ways the arboriculture industry does not fully understand. Conditions are often hidden within trees and below ground. Unless otherwise stated, observations have been visually assessed from ground level. Australian Tree Consultants Pty Ltd cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of Australian Tree Consultants Pty Ltd services, such as property boundaries and ownership, disputes between neighbours, sight lines, landlord-tenant matters, and related incidents. Australian Tree Consultants Pty Ltd cannot take such issues into account unless complete and accurate information is given prior or at the time of the site inspection. Likewise Australian Tree Consultants Pty Ltd cannot accept responsibility for the authorisation or non-authorisation of any recommended treatment or remedial measures undertaken.

In the event that Australian Tree Consultants Pty Ltd recommends retesting or inspection of trees at stated intervals or installs any cable/s, bracing systems and support systems, Australian Tree Consultants Pty Ltd must inspect the system installed at intervals not greater than 12 months unless otherwise

specified in written reports. It is the client's responsibility to make arrangements with Australian Tree Consultants Pty Ltd to conduct the re- inspection.

Trees can be managed, but they cannot be controlled. To live or work near a tree involves a degree of risk. The only way to eliminate all risks associated with a tree is to eliminate the tree.

All written reports must be read in their entirety, at no time shall part of the written assessment be referred to unless taken in full context of the whole written report.

If this written report is to be used in a court of law or any legal situation Australian Tree Consultants Pty Ltd must be advised in writing prior to the written assessment being presented in any form to any other party.

# **Appendix 1: Schedule of Trees Assessed**

Tree No.	Genus & species Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	٧	С	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
TN8	Eucalyptus botryoides Southern Mahogany	10	12	450	М	G	G-F	Deadwood to 40mm noted. Prolific epicormic growth along lateral branches. Shallow, exposed roots.	2A	M	M	2.4	5.4	92
TN9	Melaleuca quinquenervia Broad Leaved Paperbark	10	8	AB 475	EM	G	G	Very straight specimen. Co-dominant @ 1m AGL with inclusions typical of species.	2A	M	M	2.7	7.0	152
TN10	Melaleuca quinquenervia Broad Leaved Paperbark	10	5	AB 375	EM	G	G	Secondary stem @ 1m AGL. Straight specimen with large diameter structural root exposed and growing toward footpath/road.	2A	М	M	2.2	4.5	64
TN11	Melaleuca quinquenervia Broad Leaved Paperbark	9	4	175	EM	G	G	Slightly thin specimen, suppressed by surrounding trees.	2A	M	M	1.6	2.2	15
TN12	Melaleuca quinquenervia Broad Leaved Paperbark	9	3	@ .7m AGL 200	EM	G	G	Trifurcate @ .8m AGL.	2A	М	M	1.7	2.4	18
TN13	Melaleuca quinquenervia Broad Leaved Paperbark	8.5	4	@ 1m AGL 250	EM	G	G	No special problems noted at time of assessment.	2A	М	M	1.9	3.0	28
TN14	Casuarina glauca Swamp Oak	8.5	5	275	EM-M	G	F	Thin canopy, high percentage of deadwood.	2A	М	M	2.0	3.3	35
TN15	Casuarina glauca Swamp Oak	9.5	6	225	EM-M	G	F	Canopy slightly thin.	2A	М	M	1.8	2.7	23
TN16	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4.5	5	200	Y-EM	F	Р	Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form. Small cavity noted @	4A	L	L	1.7	2.4	18

								1m AGL. All severely stunted with limited soil volume to grow in (1x1m pits in concrete).						
TN17	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4	4	150	Y-EM	F	Р	Several mechanical wounds noted. Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form.	4A	L	L	1.5	2	10
TN18	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4.5	6	250	Y-EM	F	Р	Minor epicormic growth noted. Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form.	4A	L	L	1.9	3.0	28
TN19	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4.5	4	@ .8m AGL 150	Y-EM	F	Р	Co-dominant stems @ 1.2m AGL. Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form.	4A	L	L	1.5	2	10
TN20	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4.5	8	AB 350	EM	F	Р	Secondary stem @ .2m AGL. Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form.	4A	L	L	2.2	4.2	55
TN21	Ficus macrocarpa var. Hillii Hill's Weeping Fig	4.5	3	175	Υ	F	Р	Small deep wound at base of stem to south. Heavily affected with sooty mould, along branches, stem and leaves, only recent new growth free of it. Twiggy deadwood. Poor form.	4A	L	L	1.6	2.2	15

# **Appendix 2: VMS Design Drawings**

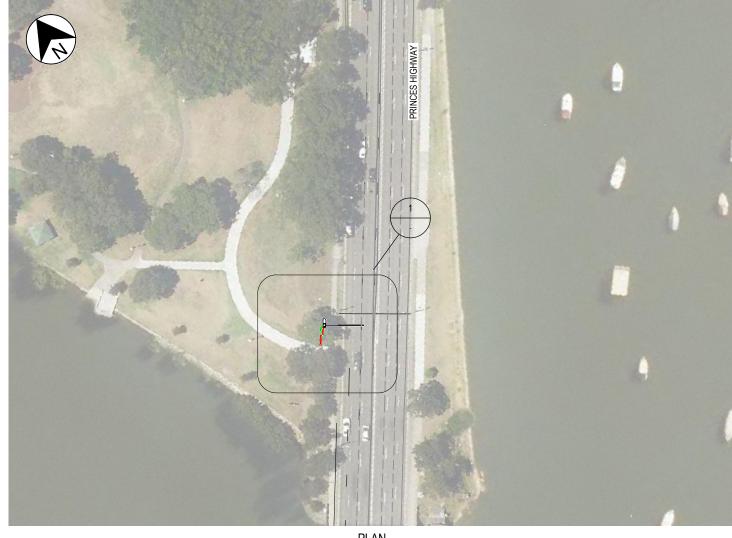
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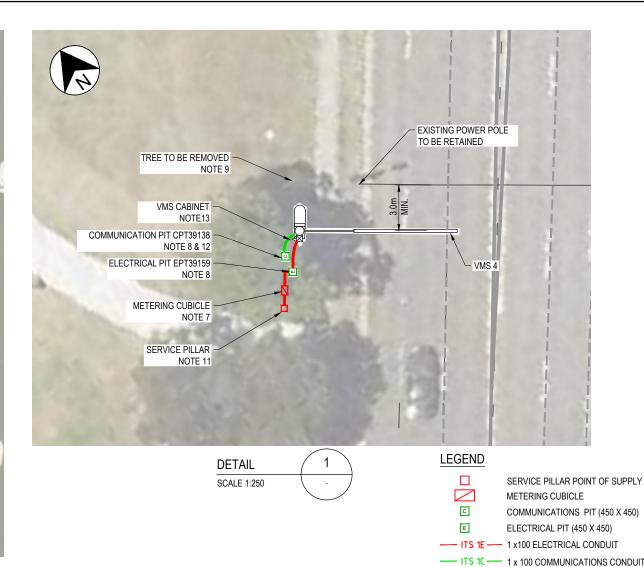
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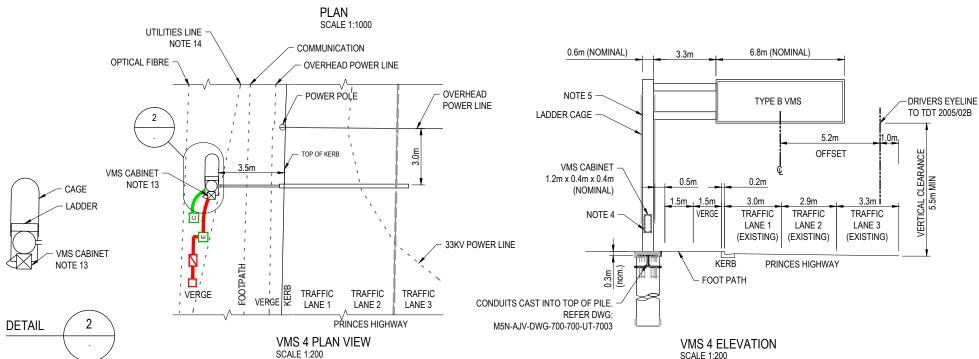
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING REV DATE

AMENDMENT / REVISION DESCRIPTION

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M5N-AJV-DPK-700-700-IT-7071

HEIGHT DATUM

AHD

CALES ON A3 SIZE DRA

OLORDINATE SYSTEM

MGA ZONE 56

SCALE 1:250

SCALE 1:1000

WestConnex New M

AURECON JACOBS NEW M5 JOINT VENTURE

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### NOTES:

- ALL SERVICES TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION. UNDERGROUND SERVICES TO BE RELOCATED AS REQUIRED.
- FOR ITS PACKAGE DETAILS REFER TO PACKAGE M5N-AJV-DPK-700-700-IT-7071
- COMMUNICATIONS VIA 3G/4G MODEM IN TEMPORARY CONFIGURATION. PERMANENT COMMUNICATIONS TO BE ESTABLISHED USING LOCAL ADSL SERVICE.
- COLOUR OF VMS CABINET TO BE SMOKE BLUE (T33) IN ACCORDANCE WITH AS 2700.
- ALL FINAL FABRICATION DETAILS OF VMS STRUCTURE TO MANUFACTURERS DETAILS.
- VMS TYPE-B TO BE 6.8m WIDE NOMINAL.
- METERING CUBICLE TO BE INSTALLED IN COMPLIANCE WITH SERVICE AND INSTALLATION RULES OF NSW,AUGUST 2012(AMENDMENT 30 JUNE 2015) REFER TO M5N-AJV-DWG-700-700-IT-7920 FOR TYPICAL SINGLE LINE DIAGRAM.
- 8. REFER TO M5N-AJV-DWG-700-700-IT-7903 FOR PIT LOCATION DETAILS.
- INSTALLATION OF THE VMS FOOTING WILL REQUIRE TREE REMOVAL. AN ARBORIST SHALL BE ENGAGED TO ASSESS THE INSTALLATION SITE AND ADVISE OF A SUITABLE REMOVAL PROCEDURE.
- PITS AND CONDUITS TO BE INSTALLED AS PER RMS SPECIFICATION R155 AND RMS STANDARD DRAWINGS.
- SERVICE PILLAR TO BE INSTALLED BY OTHERS. CABLE ROUTING TO THE SERVICE PILLAR TO BE UNDERTAKEN BY OTHERS AS PART OF RELOCATION OF OVERHEAD MAINS TO UNDERGROUND.
- COMMUNICATION PIT FOR AND CONDUIT FUTURE USE. NOT TO BE USED FOR EARLY WORKS CONNECTION (SEE NOTE 3).
- 13. VMS CABINET DOOR TO BE HINGED ON LEFT.
- 14. UNKNOWN UTILITY TO BE ASSESSED AND RELOCATED TO ACCOMMODATE THE VMS FOUNDATION PILE.

SHEET 6



M5N-AJV-DWG-700-700-IT-7916

WESTCONNEX NEW M5

VMS 4 LOCATION PRINCES HIGHWAY NORTHBOUND

APPROACHING CANAL ROAD SHEET 6 OF 5

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