

# Easement Enquiry Design Advice

## Project Services / Engineering / Transmission Line and Cable Design

### Response to Easement Enquiry: 2020-023 – Modification to Oakdale West (SSD-7348-MOD-1)

#### Enquiry Details

The following information has been provided as a basis of the enquiry:

Item	Notes
Customer/Project	Goodman – Industrial Development, Oakdale West Estate
Date Enquiry Received	14/01/2020
Date Response Required by	ASAP
Outline of Proposed Works by Customer	<p>This enquiry is for a section 4.55 (1A) modification (V7 drawings) to an existing application. The modifications include;</p> <ul style="list-style-type: none"><li>• The addition of batter and earthworks either side of the Western/North-South link road into TransGrid easement</li><li>• The addition of Bio-retention Basin No.1</li><li>• The relocation of Bio-retention Basin No.5 (now called Basin No.4) closer to TransGrid structures and more directly under conductors</li></ul> <p>The previous assessment completed by TransGrid was in 2017 and was under assessment 2017-363. This assessment viewed drawing suite V1.</p>
Details of Assets Impacted	<p>330kV TL 30 Sydney West - Liverpool, Span 6-10</p> <p>330kV TL 14 Sydney North – Kemps Creek, Span 104-108</p>
Type of Impact on TransGrid Assets	Clearance of proposed road and ground level changes within TransGrid easement
Supporting Documents Provided by Customer	<p>Appendix A - Architectural Plans.pdf</p> <p>Appendix D - Civil Masterplan Concept Drawings (1).pdf</p> <p>Appendix F - Traffic Impact Statement.pdf</p> <p>2020-01-24 - OWE INFRA MOD3 DRAFT BULK EARTHWORKS (EXCLUDING SEDIMENT AND EROSION).dxf</p> <p>2020-01-24 - OWE INFRA MOD3 DRAFT BULK EARTHWORKS (INCLUDING SEDIMENT AND EROSION).dxf</p> <p>2020-01-24 - OWE INFRA MOD3 DRAFT PROPOSED STRINGS.dxf</p> <p>2020-01-24 - OWE INFRA MOD3 DRAFT PROPOSED STRINGS.12da</p>

#### Design Assessment Criteria

The following criteria are used to assess any impacts from the proposed customer works in accordance with the relevant easement and fencing guidelines:

Item	Criterion
Required Clearances	<ul style="list-style-type: none"><li>• 330kV ground clearances as per AS7000. 8m clearance to roads and 8m clearance to traversable ground.</li><li>• 17m metre Exclusion Zone clearance from Transmission centre line</li></ul>

Safety Buffer Around Structure	<ul style="list-style-type: none"> <li>20m Exclusion Zone (per former Easement guidelines)</li> </ul>
Earthing/EMF Compliance	<ol style="list-style-type: none"> <li>EMF - ARPANSA for the current Standard for Radiation Protection Standard for Exposure Limits to Electrical and Magnetic Fields 0 Hz–3 kHz.</li> <li>Earthing – AS7000</li> </ol>
Civil and/or subsidence Compliance	<ul style="list-style-type: none"> <li>Excavation works must be no greater than 2.0 metres in depth and must employ dust suppression</li> </ul>
Fence Earthing Compliance	TransGrid Fencing Guidelines

## Design Assessment Findings

The following information outlines the finding following assessment of the proposal against the above criteria:

Item	Notes
Actual Clearances	<ul style="list-style-type: none"> <li>Span 106-107 of <b>TL14</b>, of 9.35m</li> <li>Span of 107-108 <b>TL14</b>, of 8.76m</li> <li>Span of 8-9 of <b>TL30</b>, of 9.73m</li> <li>Span of 9-10 <b>TL30</b>, of 8.85m</li> </ul>
Safety Buffer Around Structure	<ul style="list-style-type: none"> <li>Tower TL14-106 is 87.2m</li> <li>Tower TL14-107 is 22.5m</li> <li>Tower TL30-9 is 21.5m</li> <li>Tower TL30-8 is 30m</li> </ul>
Earthing/EMF Compliance	N/A
Civil and/or subsidence Compliance	<ul style="list-style-type: none"> <li>Excavation works must be no greater than 2.0 metres in depth and must employ dust suppression</li> <li>Batter must be no greater than 1 in 6</li> </ul>
Other	Any construction work for the proposed work within the easement shall maintain safe approach distance to the exposed conductors when performing work which requires that plant to approach electrical apparatus.

## Summary of Findings

A summary of the findings and recommendations is as follows;

- This assessment is carried out in regards to 2019-597 – DA 2019/20/2 – A/3493 – CNR 3335. The proposed works within this assessment fall within the scope of previous easement enquiry, reference 2017-363, which was completed by TLCD and submitted to Property on 18<sup>th</sup> December 2017.
- This assessment proposes a section 4.55 modification to an approved industrial subdivision to include additional batter and earthworks, add an additional bio-retention basin, and relocation an existing bio-retention basin.
- The proposed work falls within the easement of 330kV TL 30 Sydney West - Liverpool, Span 10-8, and 330kV TL 14 Sydney North – Kemps Creek, Span 106-108.

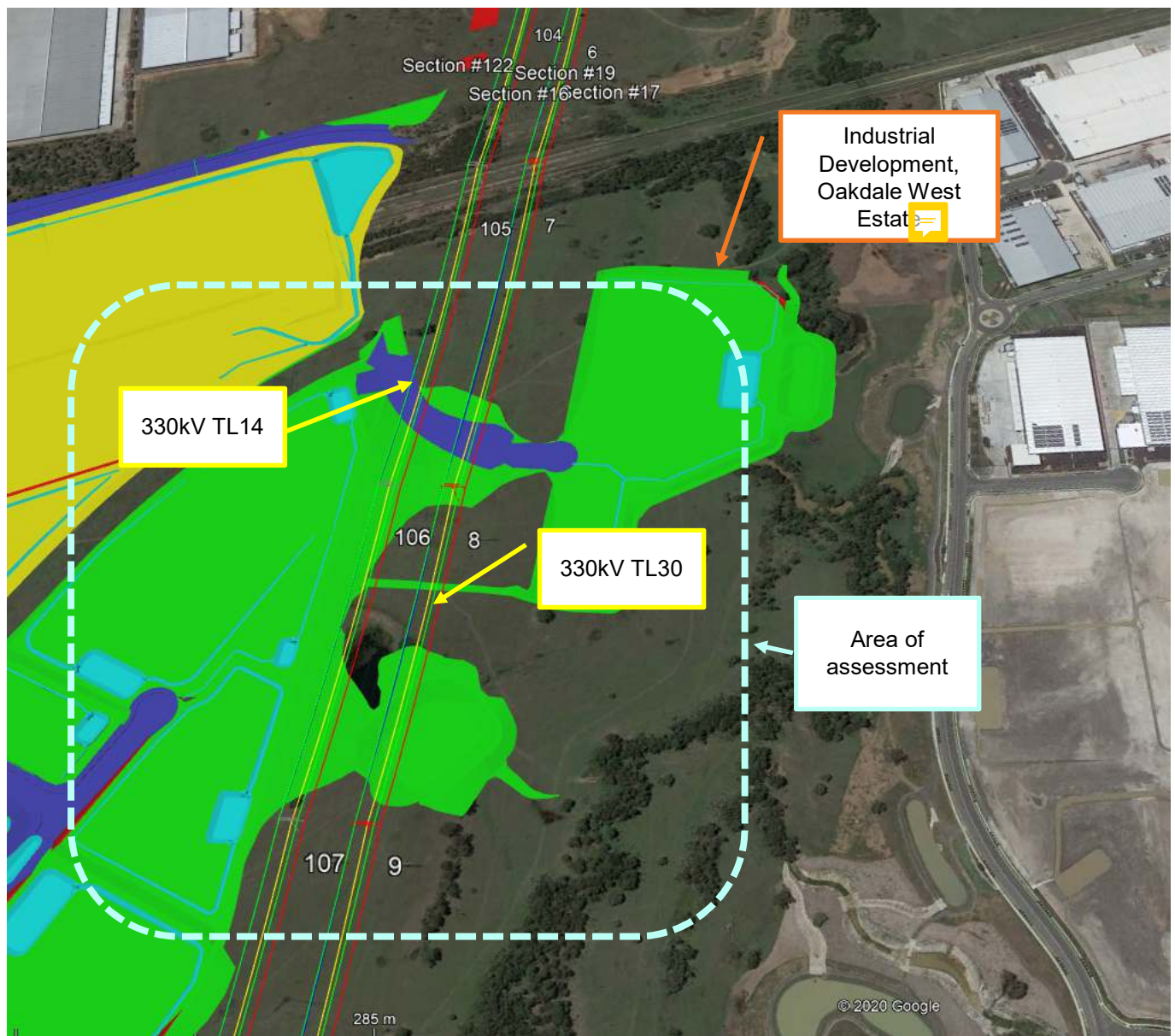


Figure 1 – Proposed development works & 330kV feeder #37 Google Earth layout

## TL14 Assessment

- Proposed ground has clearance to the 330kV aerial conductors at span of 106-107 of **TL14**, of 9.35m, where the conductor is sagged at maximum operation temperature of 120°C. This is compliant to AS/NZS:7000 clearances.
- Proposed ground has clearance to the 330kV aerial conductors at span of 107-108 **TL14**, of 8.76m, where the conductor is sagged at maximum operation temperature of 120°C. This is compliant to AS/NZS:7000 clearances.
- Structure Exclusion Zone;
  - To Tower 106 is 87.2m
  - To Tower 107 is 22.5m

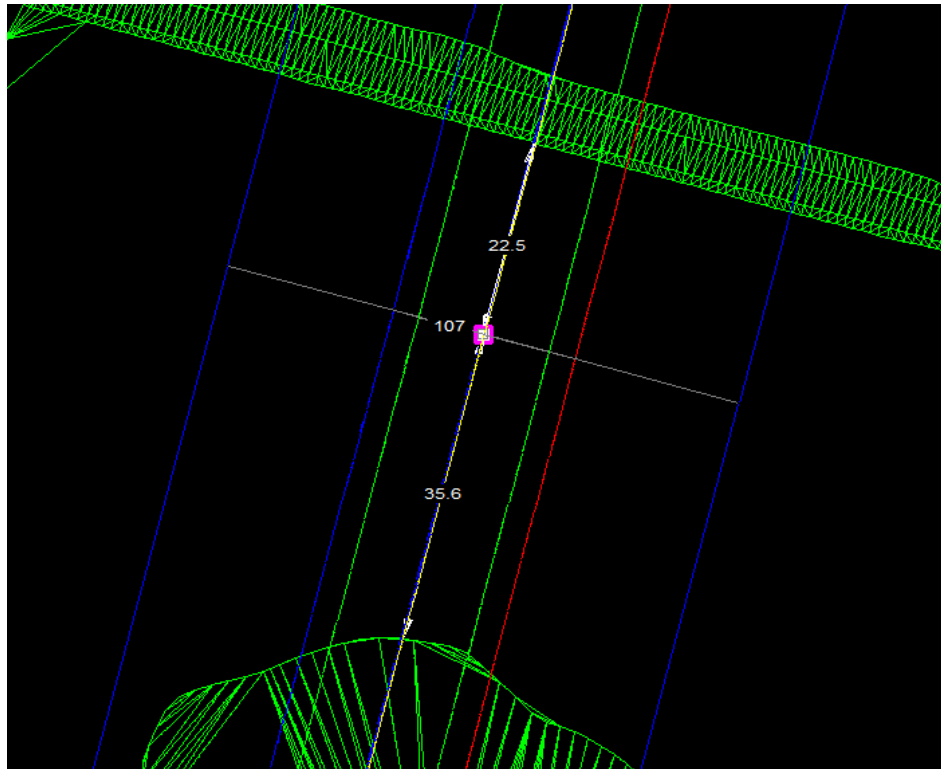


Figure 3 – Clearance from Tower 107 to batter earthworks and bio-retention basin No.4

### TL30 Assessment

- Proposed ground has clearance to the 330kV aerial conductors at span of 8-9 of **TL30**, of 9.73m, where the conductor is sagged at maximum operation temperature of 120°C. This is compliant to AS/NZS:7000 clearances.
- Proposed ground has clearance to the 330kV aerial conductors at span of 9-10 **TL30**, of 8.85m, where the conductor is sagged at maximum operation temperature of 120°C. This is compliant to AS/NZS:7000 clearances.
- Structure Exclusion Zone;
  - To Tower 9 is 21.5mm to Lot 5A access road

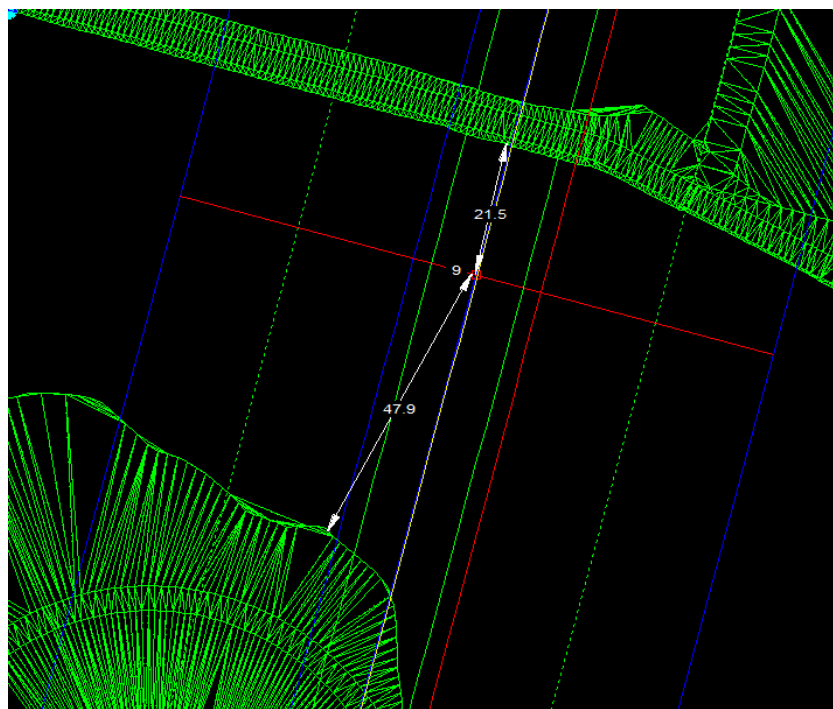


Figure 4 – Clearance from Tower 9 to batter earthworks and bio-retention basin No.4

- To Tower 8 is 30m. Lot 5A batter is outside 20m structure clearance zone.

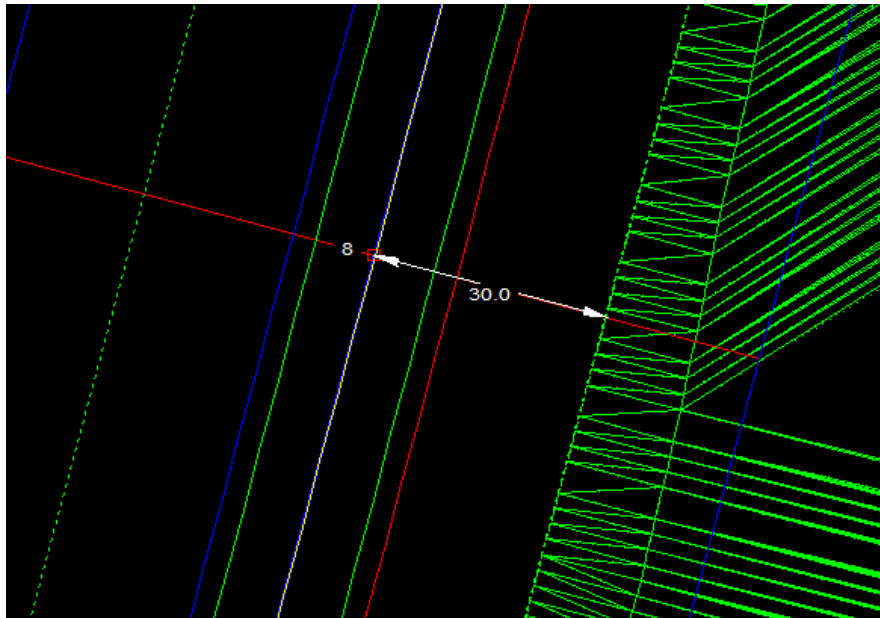


Figure 5 – Clearance from Tower 8 to Lot 5A batter earthworks

Clearance to ground for TL14:

Back Structure Number	Ahead Structure Number	Controlling Weather Case	Clearance Margin Radial (m)	OK	Controlling Point Feature Code Description	Controlling Point Station (m)	Controlling Point Offset (m)	Controlling Point Z (m)	AS:7000 Clearance required radial (m)
106	107	Tmax	1.35	OK	Oakdale West Ground Data	39389.17	-10.89	65.39	8
107	108	Tmax	0.76	OK	Oakdale West Ground Data	39763.57	10.92	67.78	8

Clearance to ground for TL30:

Back Structure Number	Ahead Structure Number	Controlling Weather Case	Clearance Margin Radial (m)	OK	Controlling Point Feature Code Description	Controlling Point Station (m)	Controlling Point Offset (m)	Controlling Point Z (m)	AS:7000 Clearance required radial (m)
8	9	Tmax	1.73	OK	Oakdale West Ground Data	2640.46	10.69	66.27	8
9	10	Tmax	0.85	OK	Oakdale West Ground Data	2921.26	11.05	63.30	8

Summary: The proposal is acceptable.

Advice provided by: Beau Stoner – Senior Design Engineer  
Reviewed By: Sharmeen Sultana – Professional Engineer  
Date: 18/03/2020