ProTen

Euroley Poultry Production Complex

(SSD 6882)

RESPONSE TO SUBMISSIONS

Prepared by:

SLR

Euroley Poultry Production Complex, SSD 6882

Response of Submissions

1 September 2015

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
2 Lincoln Street
Lane Cove NSW 2066 Australia
(PO Box 176 Lane Cove NSW 1595 Australia)
T: +61 2 9427 8100 F: +61 2 9427 8200
sydney@slrconsulting.com www.slrconsulting.com

ON BEHALF OF:

ProTen Holdings Pty Ltd
PO Box 1746
North Sydney NSW 2060 Australia
T: +61 9458 1700
www.proten.com.au

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1 INTRODUCTION

1.1 Background

ProTen Holdings Pty Limited (ProTen) is seeking development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to develop an intensive poultry broiler production farm, known as the Euroley Poultry Production Complex, within a rural property approximately 26 kilometres west of Narrandera in south western New South Wales (NSW).

The Euroley Poultry Production Complex (herein referred to as "the Project") comprises the development of five poultry production units (PPU), where broiler birds will be grown for human consumption. Each PPU will comprise 16 tunnel-ventilated fully-enclosed climate-controlled poultry sheds, with associated support infrastructure and staff amenities. Each shed will have the capacity to house a maximum of 49,000 broilers at any one time, equating to a PPU population of up to 784,000 broilers, and a total farm population of 3,920,000 broilers. The complex will employ a total of 30 full-time equivalent employees, 10 of whom will live on site as full-time farm managers and assistant managers.

Clause 3 of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) identifies development for the purposes of intensive livestock agriculture with a capital investment value (CIV) of more than $30 million as State significant development (SSD). Given that the Project has a CIV of approximately $63.61 million, pursuant to clause 8(1) of the SRD SEPP, the Project comprises SSD.

The assessment of environmental issues associated with the Project was multi-disciplinary and involved an environmental risk assessment and consultation with relevant State and local government agencies. SLR Consulting Australia (SLR) prepared the Environmental Impact Statement (EIS) (SLR 2015a) on behalf of ProTen, with the following specialist studies undertaken to assist in the assessment of the Project:

- *Air Quality Impact Assessment* (Pacific Environment 2015a);
- *Noise Impact Assessment* (Global Acoustics 2015);
- *Traffic Assessment* (RoadNet 2015a);
- *Aboriginal Heritage Impact Assessment* (OzArk Environmental and Heritage Management (OzArk) 2015);
- *Biodiversity Assessment* (SLR 2015b);
- *Flooding Assessment* (SLR 2015c);
- *Preliminary Risk Screening & Hazard Assessment* (SLR 2015d); and
- *Stormwater Report* (Lance Ryan Consulting Engineers (LRCE) 2015).

Key milestones in the development assessment process (to date) have been:

- 19 December 2014 - Project Briefing Paper and application for the Secretary's Environmental Assessment Requirements (SEARs) submitted to the Department of Planning and Environment (DP&E);
- 6 February 2015 - SEARs (SSD 6882) issued by the DP&E;
- 3 March 2015 - draft EIS submitted to the DP&E for Adequacy Review;
- 14 April 2015 - DP&E requests that a revised EIS be submitted that addresses the Adequacy Review comments;
- 21 May 2015 - revised EIS submitted to the DP&E for public exhibition;
- 26 May to 26 June 2015 - EIS is on public exhibition;

- 14 July 2015 – meeting with DP&E to discuss some of the submissions received from government agencies during the exhibition period and project timeline;
- 24 July 2015 – DP&E provided its "issues letter" and requested that each of the issues raised in the submissions received from the government agencies, general public and special interest group following the exhibition of the EIS be addressed in a Response to Submissions report;
- 13 August 2015 – OEH met SLR and ProTen for a site visit to discuss and clarify the issues raised by OEH in their submission in relation to biodiversity and Aboriginal heritage;
- 25 August 2015 – telecom between EPA, Pacific Environment, SLR and ProTen to discuss Pacific Environment's response to the issues raised by EPA in their submission in relation to air quality; and
- 1 September 2015 – formal Response to Submissions report (i.e. this document) submitted to the DP&E.

A total of 26 submissions were received by the DP&E following public exhibition of the EIS, comprising 11 from government agencies (including DP&E's issues letter), 14 from the general public and one from a special interest group.

1.2 Document Purpose and Structure

This Response to Submissions report has been prepared by SLR on behalf of ProTen to respond to all submissions received following public exhibition of the EIS for the proposed Euroley Poultry Production Complex (SSD 6882). This report is structured as follows:

- Section 1 - background information on the Project and a summary of the submissions.
- Section 2 - comprehensive response to the issues raised by government agencies.
- Section 3 - comprehensive response to the issues raised by the general public.
- Section 4 - comprehensive response to the issues raised by the special interest group.
- Section 5 - references.
- Appendices – additional Project documentation and specialist assessment studies.

1.3 Summary of Submissions

The submissions received in relation to the Project are summarised below, and can be viewed in full on the DP&E's website at the following address:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6882

A summary of the 26 submissions received from government agencies, the general public and community interest group is provided **Table 1**.

The majority of public submissions were received from outside of the local area, with nine submissions coming from locations including Wollongong, Wagga Wagga, areas around Sydney and Victoria. The remaining five public submissions were received from residents within the local communities of Euroley, Narrandera and Griffith.

Table 1 - Submissions Received

From	Objection / Comments
Government Agencies	
Department of Planning and Environment (DP&E)	Comments
Environment Protection Authority (EPA)	Comments
NSW Office of Water (NOW)	Comments
Office of Environment and Heritage (OEH)	Comments
Roads and Maritime Services (RMS)	Comments
Department of Primary Industries	Comments
Narrandera Shire Council (Council)	Comments
Griffith City Council	Comments
Leeton Shire Council	Comments
Murrumbidgee Shire Council	Comments
Essential Energy	Comments
Public Submissions - Local residents	
A. and M. Steiner (“Warilba”, Narrandera NSW)	Objects
Randren House Pty Ltd (“Somerset Park”, Euroley NSW)	Objects
Name withheld (East Griffith NSW)	Objects
Name withheld (Narrandera NSW)	Comment
M. Rowe (“Narimba”, Narrandera NSW)	Comment
Public Submissions - Other	
J. Craig (Wagga Wagga NSW)	Comment
J. Balfour (Wollongong NSW)	Objects
J. Prasad (Doveton VIC)	Objects
M. Kelly (Reservoir VIC)	Objects
P. Karunaharan (Rushcutters Bay NSW)	Objects
Name withheld (Carrum Downs VIC)	Objects
Name withheld (Mount Eliza VIC)	Objects
Name withheld (Leumeah NSW)	Objects
Name withheld (Georges Hall NSW)	Objects
Special Interest Group	
Voiceless – the animal protection institute	Objects

2 GOVERNMENT SUBMISSIONS

Submissions were received from 11 government agencies (see **Table 1** above) following the public exhibition of the EIS. Each of these submissions are addressed in the below sub-sections, with the issues raised presented in ***bold italics***, followed by the response in normal text.

2.1 Department of Planning and Environment

2.1.1 Project Description

Clarification of the components of the proposal for which you are seeking development consent for is required. Details of preliminary design, civil and engineering drawings for all such structures, civil works and earthworks need to be provided. All drawings should be presented at an appropriate scale and minimum A3 size.

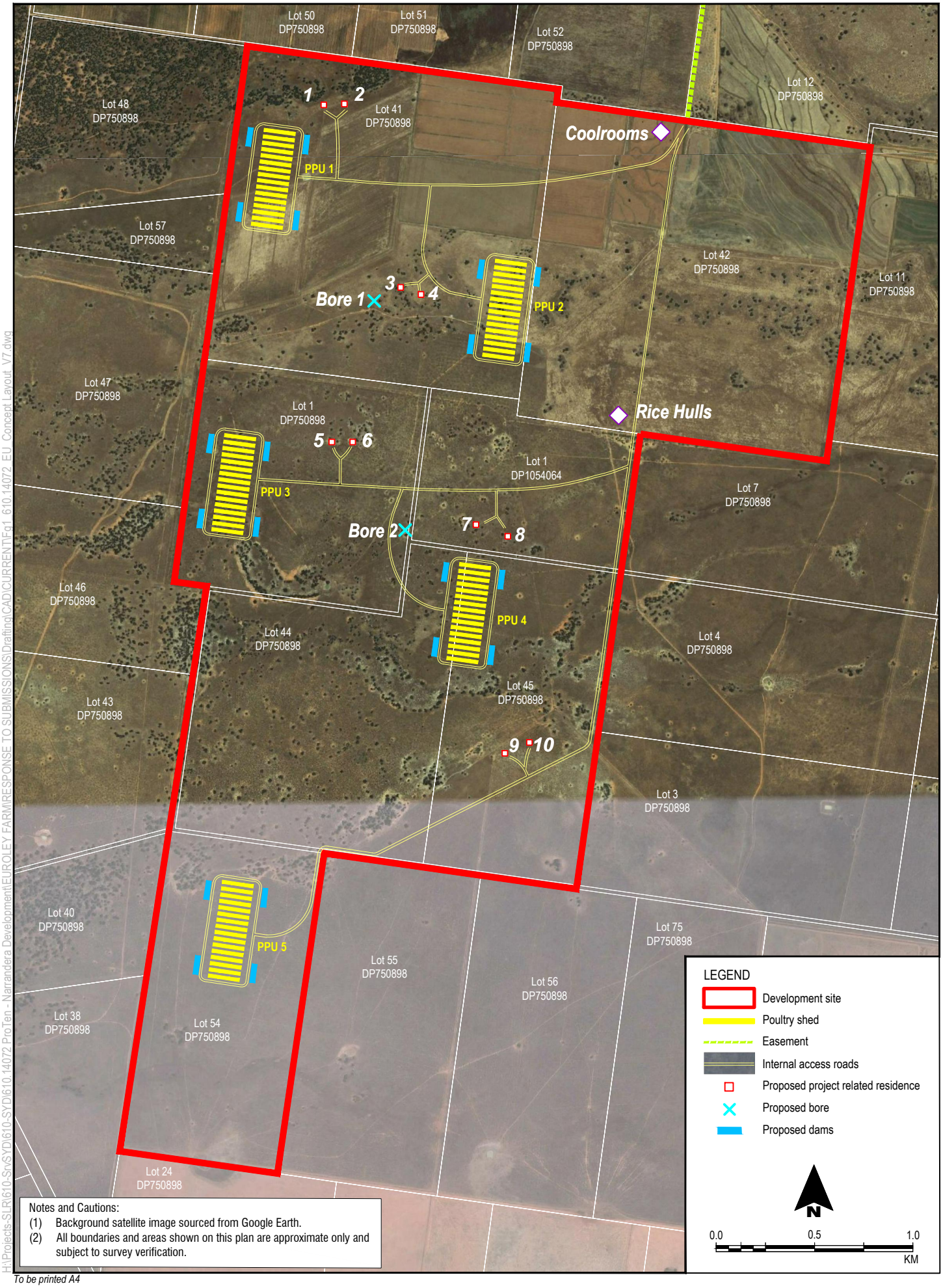
The conceptual layout of the Project is shown on **Figure 1** (revised Figure 1.3 from the EIS), and the individual components of the Project for which development consent is sought are listed and described in **Table 2**. The available preliminary civil and engineering drawings referenced in **Table 2** are contained in **Appendix A**.

Table 2 - Project Components

Component	Description	Available Plan / Design Drawing
Five Poultry Production Units (PPUs), each consisting of:		
16 poultry sheds	Each shed will: • Measure approximately 160 metres long and 17 metres wide; • Measure approximately 4.2 metres to the ridge of the roof and approximately 2.4 metres to under the eaves; • Comprise steel framework, zincalume corrugated iron roofs and coolroom sandwich panel walls; • Be constructed using a colour-bond type material in an appropriate shade such as eucalyptus green; • Have front and rear access; • Have external lighting mounted over the loading-unloading area; • Have a bird space of approximately 2,720 square metres; and • Have 12 tunnel ventilation fans mounted at one end of the shed and 3 in each side wall.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS). • Conceptual poultry shed design - **Figure 2** (Figure 3.1 from the EIS). • Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS) • Civil design drawings - drawing series by B&M Slots, drawing numbers S1-S5 - **Appendix A**. • PPU layout and access road design – LRCE - **Appendix A**.
Amenities facility for staff	• The amenities facility will comprise a demountable building and will include office space, toilets and staff change rooms. • The demountable building will measure approximately 12 metres long, 3.3 metres wide and 2.4 metres high. • Adequate car parking will be provided adjacent to the amenities facility.	• Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS) • Preliminary building design - **Appendix A**.
24 feed silos	• Three feed silos will be installed in between every second poultry shed within the PPUs. • Each silo will have a storage capacity of around 16.5 cubic metres and a bin diameter of 3.2 metres. They will measure approximately 8.3 metres high.	• Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS) • Preliminary silo design - **Appendix A**.

Workshop	• The workshop at each PPU will measure approximately 14 metres long by 6 metres wide, and measure 3.2 metres to under the eaves and 3.8 metres to the roof peak. • It will be constructed in an appropriate shade such as eucalyptus green.	• Drawing series GRIF15712 - Fair dinkum Sheds - **Appendix A**.
Four water storage tanks	• Four water storage tanks will be placed at each PPU near the amenities facility. Water from the groundwater bores will be pumped to these tanks for storage and treatment prior to use in the poultry sheds for water supply and cleaning purposes.	• Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS).
Ring roads	• Each PPU will have one-way circulation road (ring roads) around its perimeter to enable traffic to enter, exit and manoeuvre around the PPU for loading-unloading and servicing activities in a forward direction to minimise the potential for traffic conflict and noise.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS). • Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS) • PPU layout and access road design – LRCE - **Appendix A**.
Eight LPG tanks	• Eight LPG tanks, each with a capacity of 7,500 litres will be installed at each PPU.	• Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS).
Generators	• There will be two 390 kilovolt-amp (kVA) (standby rating) generators at each PPU positioned immediately to the west of the poultry sheds adjacent to sheds 4 and 5 and sheds 12 and 13. • There will also be two 143 kVA (standby rating) generators at each PPU positioned immediately to the east of the poultry sheds adjacent to sheds 4 and 5 and sheds 12 and 13. • All generators will have lockable acoustic enclosures with a vertical air discharge.	• Poultry Production Unit Layout - **Figure 3** (Figure 3.2 form the EIS). • Generator specifications and general arrangement drawings – **Appendix A**.
Stormwater management system	The stormwater management system at each PPU will consist of: • Dwarf concrete bund walls (0.4 metres high) around each poultry shed to prevent rainfall/runoff entering the sheds and to allow for controlled discharge of wash down water from the sheds; • Grassed swales between each shed; • Catch drain and underground pipes around the perimeter of the PPU. Excess water from the swale drains will be directed to the pipes, which will convey the water to the catch drain. The catch drain in turn will convey the water to storage dams; and • Four water storage dams, one constructed at each corner of the PPU. Each dam will have a capacity of approximately 7,000 cubic metres, totalling 28,000 cubic metres of storage at each PPU.	• Swale Drain Design - **Figure 4** (Figure 3.7 form the EIS) • PPU layout and access road design - drawing no. C02, sheet 2 - LRCE - **Appendix A** (cross-section of the swale drains, PPU ring roads and stormwater conveyance under the roads).
Two houses	• Two houses will be constructed in close proximately to each PPU to accommodate the farm manager and assistant farm manager.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS). • House design plans - Davis Sanders Homes - **Appendix A**.
Septic systems	• Aerated wastewater treatment systems will be installed at each PPU and at each residence. • Each of the systems installed will have a treatment capacity of 10 equivalent persons at 200 litres per person per day. Treated effluent from each system will be irrigated over an area of approximately 200 square metres.	• Ozzi Kleen Owner's Manual (including system drawings) – **Appendix A.** • Indicative system location at the residences - Davis Sanders Homes drawing - **Appendix A**.

Landscaping	• Suitable tree and shrub species will be strategically planted around the perimeter of each PPU to screen the poultry sheds, enhance dust deposition and odour dispersion. • The landscaping will provide a biological buffer of a minimum total width of 40 metres around each PPU.	• Proposed Landscaping - **Figure 5** (Figure 3.8 in the EIS).
Additional infrastructure		
Rice hull (bedding material) shed	• The bedding material shed will measure approximately 60 metres long by 17 metres wide, and measure a nominal 5.2 metres to under the eaves and 7.5 metres to the roof peak. • It will be constructed in an appropriate shade such as eucalyptus green.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS). • Drawing series GRIF15831 - Fair dinkum Sheds - **Appendix A**.
Coolroom / chiller	• The coolroom/chiller will service all five PPUs and will be used for the storage of dead birds prior to their removal off site for disposal. • The coolroom will comprise a shed approximately 20 metres long, 4 metres wide and 2.5 metres high, and will be constructed with 100 mm thick insulated sandwich panels.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS).
Groundwater bores	• A total of four groundwater production bores will be installed – a production bore and backup production bore within Lot 41 in DP 750898 and a production bore and backup production bore in Lot 1 DP 750898.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS).
Sturt Highway - site access road intersection	• An intersection consisting of a basic right turn treatment (BAR) and basic left turn treatment (BAL) will be constructed at the intersection of the Sturt Highway and the site access road. It will be designed in accordance with *Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections*.	• Proposed Access Road Route - **Figure 6** (Figure 3.3 in the EIS).
Site access roads	• An access road will be constructed from the Sturt Highway to the development site. This access road will be sealed for a minimum of 50 metres from the Sturt Highway intersection and will be approximately 6.5 metres wide. An appropriate easement will be created to enable the access road to traverse privately-owned land between the Sturt Highway and development site. • Internal access within the development site will be provided via the construction of rural-type all-weather property access roads. These internal roads will meet the minimum requirements of *AS 2890.2* to accommodate the turning movements of the largest vehicles generated by the poultry development, which will initially be semi-trailers however may include B-doubles in the future.	• Conceptual development layout - **Figure 1** (revised Figure 3.1 in the EIS). • Proposed Access Road Route - **Figure 6** (Figure 3.3 in the EIS). • PPU layout and access road design – LRCE - **Appendix A**.



Notes and Cautions:
(1) Background satellite image sourced from Google Earth.
(2) All boundaries and areas shown on this plan are approximate only and subject to survey verification.

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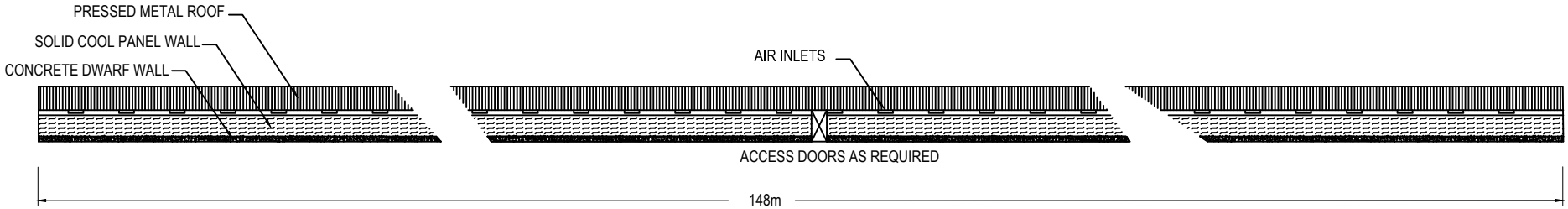
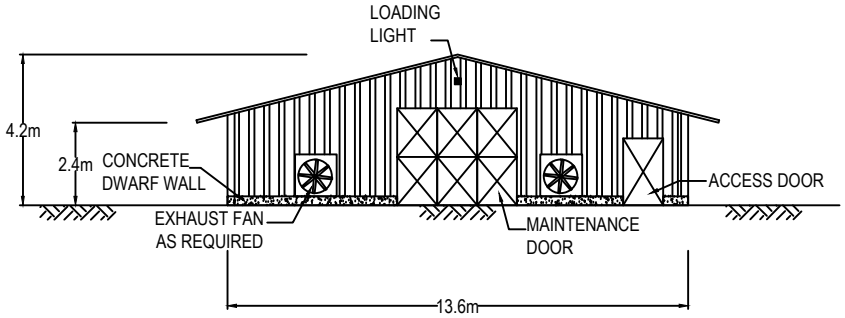
Conceptual Layout

FIGURE 1



SIDE ELEVATION

Not to Scale



FRONT ELEVATION

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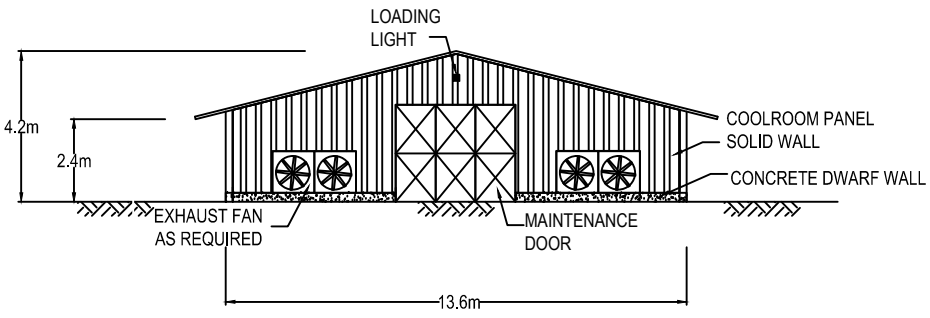

BACK ELEVATION

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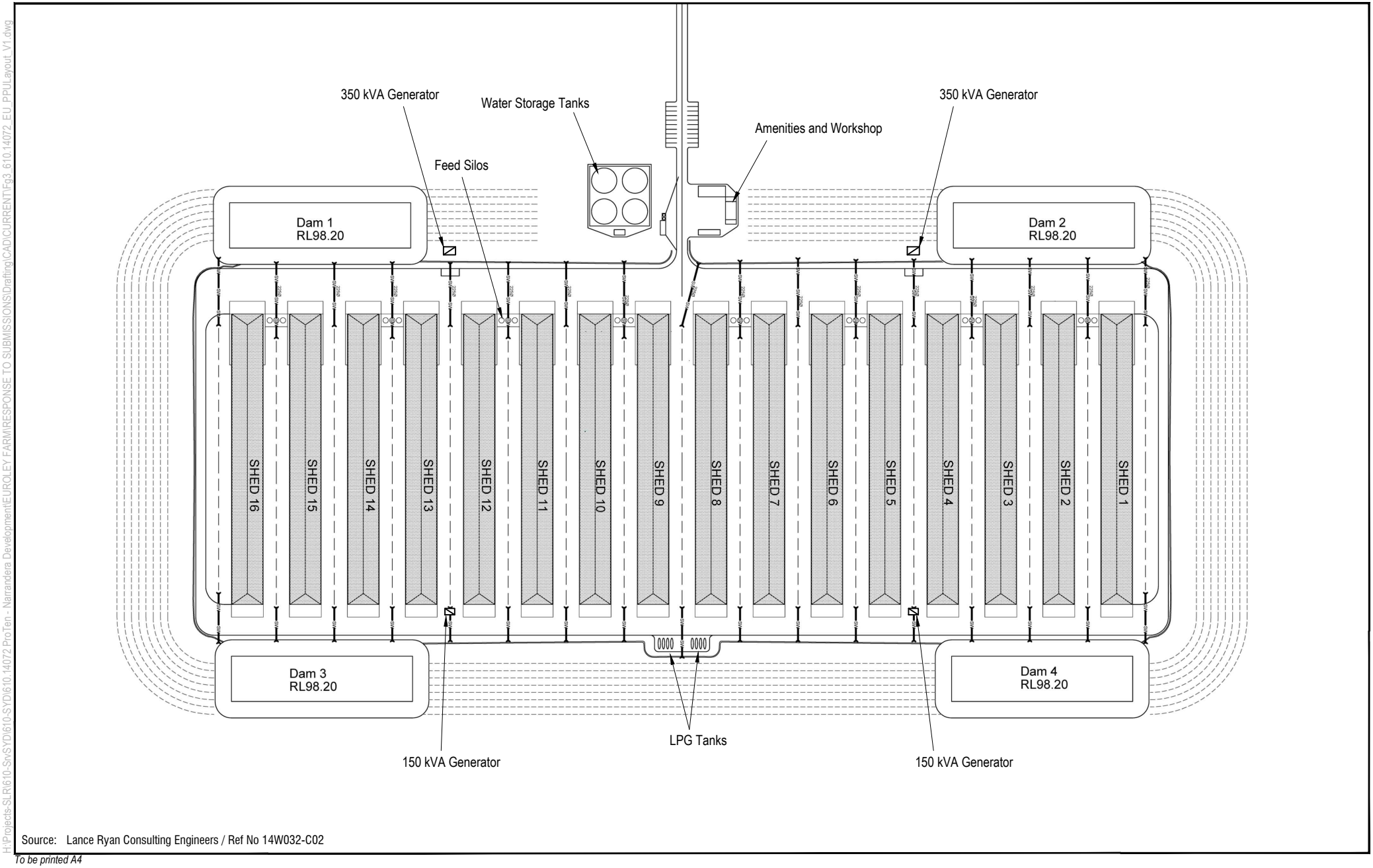
Conceptual Poultry Shed Design

FIGURE 2



Source: Lance Ryan Consulting Engineers / Ref No 14W032-C02

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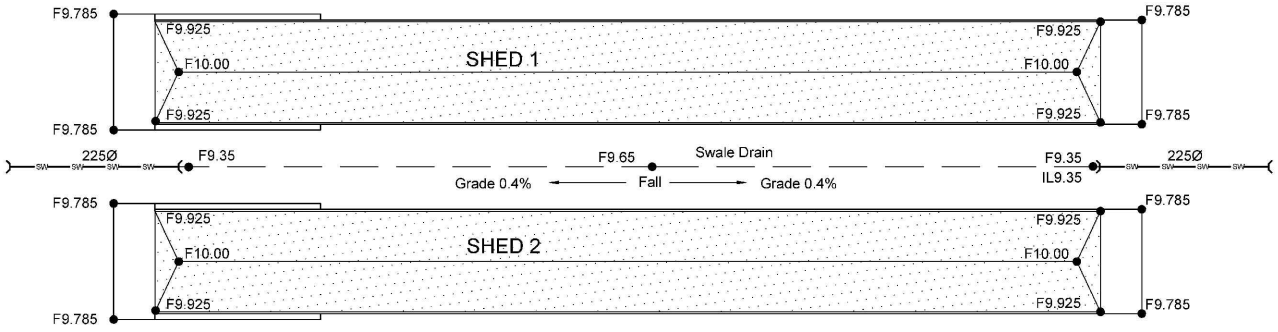
Poultry Production Unit Layout

FIGURE 3



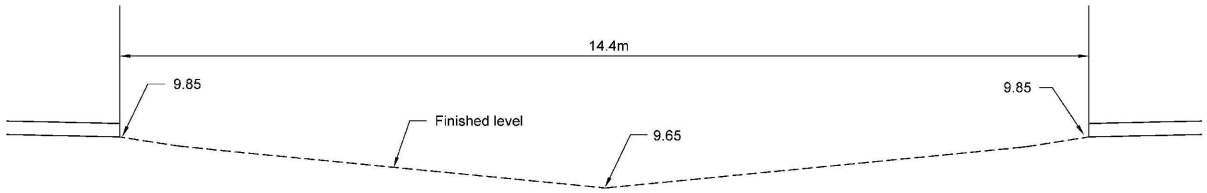
Plan

Chezy ch	Mannings Roughness n	Area Inv-HFL A (m2)	Wetted Perimeter WP (m)	Slope Decimal So	Hydraulic Radius R	Velocity V (m/sec)	Discharge Q (m3/sec)
19.46	0.035	1.44	14.41	0.004	0.10	0.39	0.56

Swale Drain Capacity at Level 9.65
(0.56m³/s)

Chezy ch	Mannings Roughness n	Area Inv-HFL A (m2)	Wetted Perimeter WP (m)	Slope Decimal So	Hydraulic Radius R	Velocity V (m/sec)	Discharge Q (m3/sec)
22.67	0.035	3.60	14.43	0.004	0.25	0.72	2.58

Swale Drain Capacity at Level 9.35
(2.58m³/s)



SWALE DRAIN
Section 1-1

Total catchment Area (A) for the swale drains = 2560m²
This comprises 1464m² of hardstand area and 1096m² of landscaped area.
Fraction Impervious for hardstand area = 0.95 and landscaped areas 0.2
Runoff Coefficients (C) are 1.0 for hardstand areas and 0.41 for landscaped areas
Time of concentration = 12minutes
Rainfall Intensity (I) = 132mm/hr
Discharge = CAI / 360 = (1 x 0.1464 + 0.41 x 0.1096) x 132 / 360) = 0.07m³/s

Therefore the swale drains are capable of handling over the 1 in 100 year rainfall event.

At the end of each swale drain is a 225Ø pipe graded at a minimum 1%. This pipe has a capacity of 70L/s which is also capable of handling the 1 in 100 year storm event.

Source: Lance Ryan Consulting Engineers

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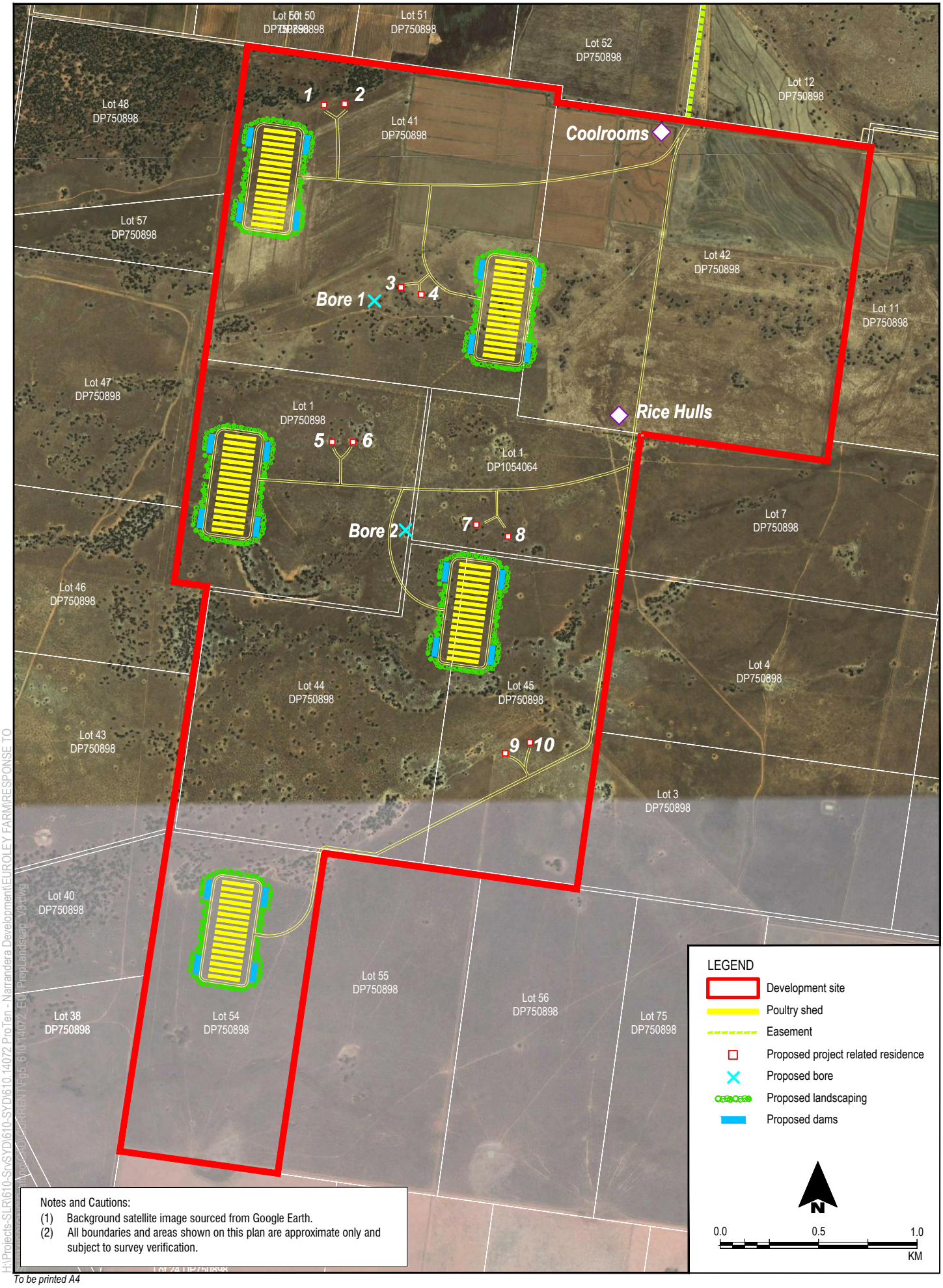
Swale Drain Design

FIGURE 4



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Proposed Landscaping

FIGURE 5

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Proposed Access Road Route

FIGURE 6

The cut and fill volumes required to construct the development should be quantified.

Cut and fill quantities required to construct the Project have been calculated by LRCE, and are presented on the plans provided in **Appendix A** for each PPU (refer LRCE drawing numbers C03 (PPU5), C04 (PPU 4), C05 (PPU 3), C06 (PPU 2) and C07 (PPU 1)).

Additional details regarding the relationship between farm managers' accommodation and each PPU is required, including proximity of the dwellings to each PPU and the management of the dwellings at the conclusion of farm operations.

As shown on **Figure 1**, two houses will be constructed in close proximity to each PPU to accommodate the farm manager and assistant farm manager. The distance from each house to the nearest poultry shed is provided in **Table 3**.

Table 3 - Proximity of houses to each PPU

PPU	House	Distance to nearest poultry shed
1	1	200 metres
	2	286 metres
2	3	450 metres
	4	345 metres
3	5	385 metres
	6	488 metres
4	7	197 metres
	8	175 metres
5	9	471 metres from PPU 4 1,450 metres from PPU 5
	10	481 metres from PPU 4 1,570 metres from PPU 5

The 10 houses to be constructed as part of Project will be owned at all times by ProTen Holdings Pty Ltd. The managers will reside in the houses, and this will form part of the manager's remuneration package under a normal tenancy type arrangement. The houses will be inspected periodically by ProTen's regional management.

As advised in Section 3.4.1 of the EIS (SLR 2015a), the use of the houses will be limited to the life of the Project. At the conclusion of farm operations the management of the houses will be determined in consultation with all relevant stakeholders and will depend on the future land use of the property (which will be subject to the appropriate planning approvals at the time).

Provide evidence of consultation with and support from Crown Lands regarding the proposed closure and purchase of Crown land within the site.

Consultation with Crown Lands regarding the management of Crown land within the development site occurred in February 2015, as documented in Table 5.1 of the EIS (SLR 2015a). During this process Crown Lands advised ProTen to apply to close and purchase the Crown roads within the development site. In addition, due to the lengthy timeframes involved in processing closure applications, Crown Lands advised ProTen to simultaneously apply for a licence under Section 34 of the *Crown Lands Act 1989* to allow access across the Crown roads so that, pending development consent from the DP&E, works could commence across the Crown roads as required by the development whilst the close and purchase application is being processed.

Both of these applications were subsequently lodged by ProTen, with Crown Lands issuing a licence on 15 July 2015 to access the Crown roads in the development site, pursuant to Section 34 of the Act. This licence is attached in **Appendix B**.

2.1.2 Contamination

A stage 1 preliminary investigation should be undertaken in accordance with State Environmental Planning Policy no. 55 - Remediation of Land.

The DP&E's provided further clarification on this matter in an email to SLR on 29 July 2015 advising – "…we require further information from a desktop analysis to confirm there have been no cattle dips, chemical storage or similar uses within and adjoining the site".

A stage 1 preliminary site investigation has been undertaken to address the contamination potential and site suitability in accordance with *State Environmental Planning Policy No. 55 - Remediation of Land* (SEPP 55). The *Stage 1 Preliminary Site Investigation* report (SLR 2015e) detailing the methodology and results of the investigation is provided in **Appendix C**.

In summary, based on a review of the available site history data, SLR (2015e) concluded the following:

- The potential for significant widespread contamination to be present on the site, as a result of past and present land use activities, is considered to be low;
- The site is suitable, from a contamination perspective, for the proposed poultry broiler production farm and associated residences; and
- No further assessment is considered necessary.

2.1.3 Flooding

A site constraints plan should be provided that shows all relevant external and internal features of the site (e.g. Dry lake, topographical features, waterways).

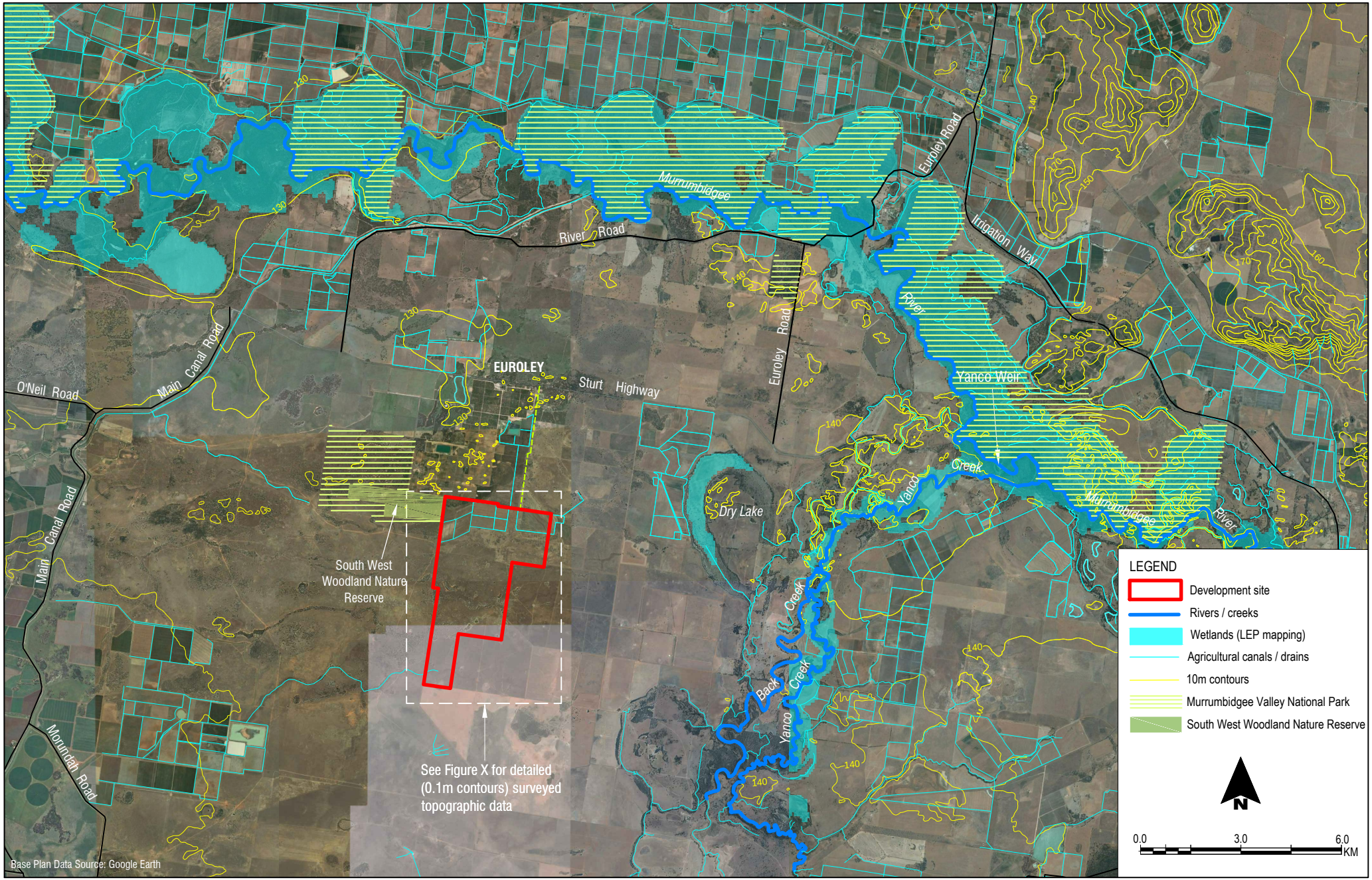
A site constraints plan showing relevant external and internal features, including Dry Lake, topographical features and waterways, is provided as **Figure 7**. An additional figure showing the recently surveyed topography (0.1 metre contours) within the development site is provided as **Figure 8.**

As evident, very limited constraints occur within the development site in relation to water resources and flooding. The topography is relatively very flat and the nearest waterway (apart from irrigation channels/agricultural drains) appears to be located approximately 8 kilometres away. The site is also well removed from any wetland areas. Two minor depressions, which act as minor drainage features, traverse the site. These features do not have any formed banks and are only distinguishable as drainage features by their location topographically.

The *Flooding Assessment* (SLR 2015c) undertaken as part of the EIS (SLR 2015a) advised that the development site is unlikely to be flood affected during mainstream flood events up to and including the 1 in 100 year annual recurrent interval (ARI) event. SLR (2015c) also advised that it is unlikely that the site will be flood affected by Murrumbidgee River or Yanco Creek out of bank flows during an extreme flood event such as the probable maximum flood (PMF).

Figure 6.8 should show the route for Option 6 for the off-site transportation of birds.

Please see **Figure 9** (revised Figure 6.8 in the EIS), which has been amended to show the route for Option 6.



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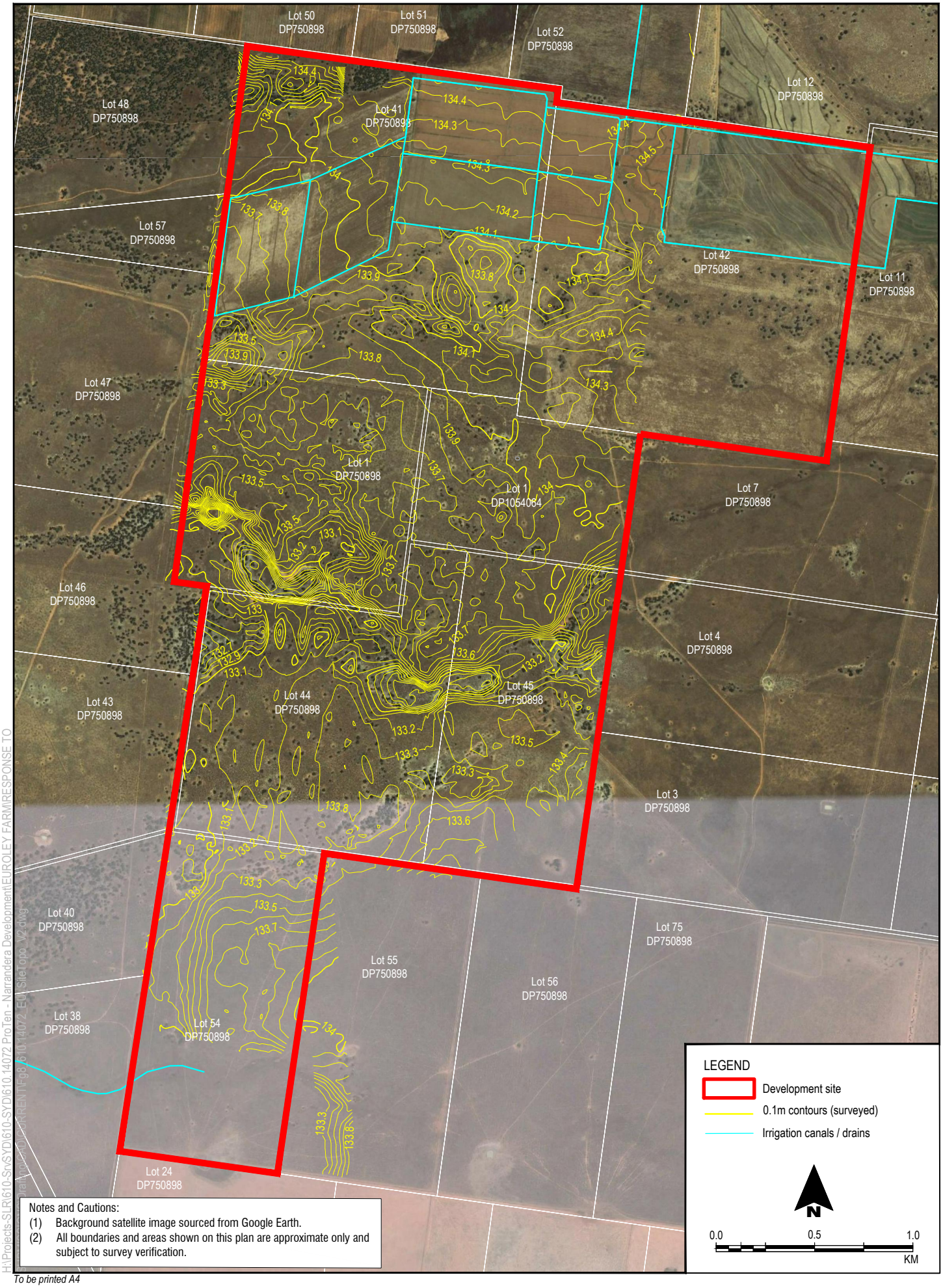
Site Constraints Plan (Flooding)

FIGURE 7



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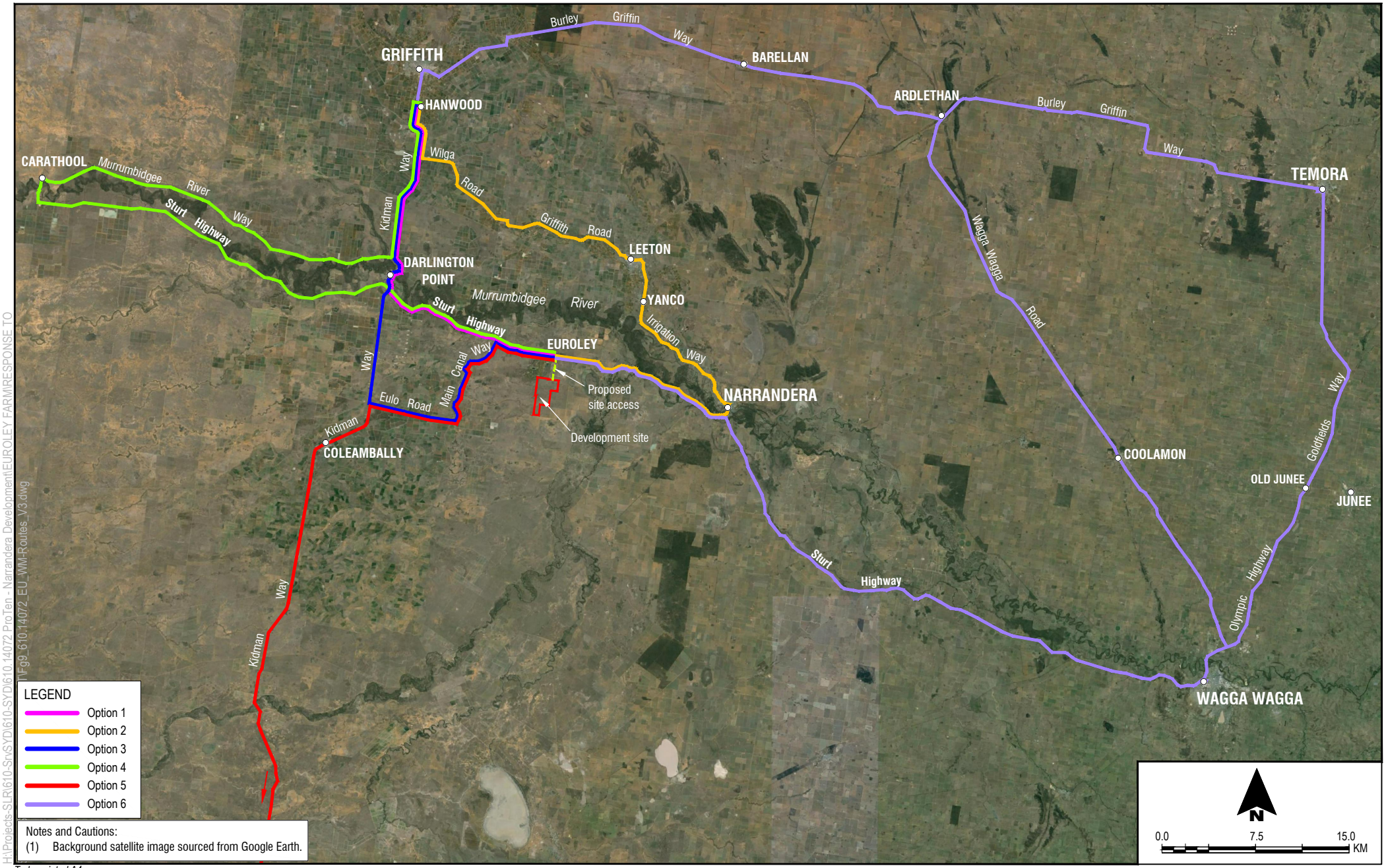
Development Site Existing Topography

FIGURE 8



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Transport Options During a Flood Event

FIGURE 9

Internal roads should be constructed to the 1 in 100 year flood level for access/egress for farm employees and manager accommodation to the Sturt Highway.

To address the flooding issues raised by NOW (see **Section 2.3.1**) and OEH (see **Section 2.4.3**), SLR undertook additional flood modelling and prepared an addendum to the *Flooding Assessment* (SLR 2015c) that was appended to the EIS (SLR 2015a). A copy of the *Flooding Addendum* (SLR 2015f) is contained in **Appendix D**.

SLR (2015f) advises that constructing the internal roads to the 100 year ARI flood level is inappropriate on the following grounds:

- The development site is affected by overland flooding;
- Overland flooding is likely to have also impacted the Sturt Highway;
- The worst-case overland flooding relates to short duration storms and, therefore, it will be safer for farm employees to remain on site during significant rainfall events until flood waters have resided;
- Floodwaters are unlikely to take more than a few hours to reside with the exception of the two topographical depressions and ephemeral flow paths; and
- Significant raising of ground levels along roadways may impede floodwaters and further alter flood behaviour.

SLR (2015f) recommends that the internal roads be raised by a minimal amount (up to 0.3 metres) above adjacent ground level to prevent farm traffic disruption during the majority of rainfall events.

As recommended by the OEH, an Emergency and Evacuation Plan will be developed to outline a strategy for responding to local food events. This will be developed for approval prior to commencement of operations.

Details should be provided regarding the potential impacts to flood behaviour, extents and flows from on-site structures to neighbouring properties for the 1 in 100 year and PMF events.

The *Flooding Addendum* (SLR 2015f), which is contained in **Appendix D** and summarised in **Sections 2.3.1** and **2.4.3**, concludes that the maximum flood afflux as a result of the development is predicted to be experienced upstream of PPU 2 at 90 millimetres for the 100 year ARI flood event and 110 millimetres for the PMF event. The flood afflux impacts upstream of the development at the site's eastern boundary are predicted to be less than 50 millimetres for a 100 year ARI event and 80 millimetres during a PMF event. No flood afflux impacts are predicted to occur downstream of the development towards the site's western boundary. The maximum average flood flow velocity increase is predicted to be 0.08 metres per second during a 100 year ARI event and 0.11 metres per second during a PMF event.

SLR (2015f) concludes that there are no existing buildings or infrastructure items on properties surrounding the development site that will to be adversely affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding. As the flood afflux is predicted to be relatively minor within the development site and at the site boundaries and flood velocities did not increase significantly within the development site or at the site boundaries, SLR (2015f) advises that agricultural practices in neighbouring properties are also unlikely to be affected by the flood impacts associated with the proposed development.

2.1.4 Stormwater and Wastewater

A plan showing each component of the stormwater treatment train is required, including a description and sizing of each component.

The civil design drawings prepared by LRCE (see **Appendix A**) provide details of the proposed stormwater treatment system. Refer to drawing number C02, which presents a cross-section of the swale drains, ring roads around the PPUs and stormwater conveyance under the roads. Further details for the swale drains are provided on **Figure 4**.

Quantify the volume of water used in the wash-down process for each production cycle.

Approximately 12 kilolitres of water will used be in the wash-down process for each poultry shed at the end of each production cycle. This amounts to a total volume of 192 kilolitres per PPU per production cycle for wash-down.

This volume was calculated by ProTen based on the volume of water used at their other operational poultry production complexes within NSW that have similarly sized poultry sheds and production cycles.

Additional details regarding the proposed wastewater system to treat and dispose of wastewater from the proposed dwellings is required, including its location, components, land area proposed for irrigation and design drawings.

Aerated wastewater treatment systems will be installed at each PPU and at each residence. Each of the systems will have a treatment capacity of 10 equivalent persons at 200 litres per person per day. Treated effluent from each of the systems will be irrigated over an area of approximately 200 square metres.

The main components of the aerated wastewater treatment systems are listed in **Table 4** and illustrated in **Appendix A** (Ozzi Kleen Owner's Manual).

Table 4 - Septic system components

Component	Details
Aeration Tank	Operating volume of 4.1 cubic metres and tank volume of 5.6 cubic metres. The tank will have a residence time of 46 hours and will be constructed of medium-density polyethylene (MDPE). All pipe work will be polyvinyl chloride (PVC).
Disinfection equipment	Chlorinator tablet dispenser cassette.
Alarm system	Comprising both audio and visual alarms.
Effluent pump	Submersible effluent pump, with a pump capacity of 100 litres per minute.

The figure at Appendix A within Appendix B should be provided at the correct size.

The figure from Appendix A (Catchment Area Plan) within Appendix B of the EIS (SLR 2015a) is contained in **Appendix E**.

2.1.5 Groundwater

Confirmation of the rate of groundwater drawdown is required for the grassed swales (for the disposal of wash down water) and chemical storage areas.

Consider the potential impacts of groundwater drawdown in areas of chemical storage, staff amenities and dwellings.

DP&E's email to SLR on 29 July 2015 clarified this two issues - "…should be read to refer to the potential for infiltration into the groundwater table at the proposed grassed swales and chemical storage areas".

SLR was engaged by ProTen to undertake additional hydrogeological assessment to address the groundwater issues raised by the NOW (see **Section 2.3.2**). SLR's letter report (2015g) in **Appendix F** advises that the Calivil Formation aquifer (i.e. deep aquifer source) lies beneath around 50 metres of the Shepparton Formation at the development site. The Shepparton Formation in turn is overlain by 4 to 5 metres of topsoil and weathered silty clay, which provides low permeability cover to the Shepparton Formation. SLR (2015g) further advises that the 4 to 5 metres of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation.

As outlined in the EIS (SLR 2015a), an engineered surface water drainage system will be implemented to provide long-term structural controls and management measures to mitigate the impact of surface water runoff throughout the life of the operation. The swale drains between the poultry sheds will be designed to allow infiltration of the water into the topsoil for nutrient uptake by the grass, which will be regularly slashed. During heavy rainfall events, excess water from the grassed swales will be directed to underground pipes and into a catch drain that will be installed around the perimeter of the poultry sheds. The construction of the perimeter catch drain will ensure that all rainfall runoff from the ground surfaces surrounding the sheds is contained within the controlled storm water management system.

The perimeter catch drain will convey the water to the four small storage dams (see **Figures 1** and **3**). These dams will each have a capacity of approximately 7 megalitres, which is equivalent to 170 percent of the capacity required to prevent runoff escaping the dams from a 1 in 100 year ARI, 72 hour event. The runoff to be captured in these dams will predominantly be clean runoff. While the water captured in the detention basins will have some level of nutrients, the levels are predicted to be low given that the poultry sheds will be thoroughly blown and swept prior to being washed and the grassed swales will provide a very effective means of nutrient removal. An analysis of the nutrient load in the wash down water was undertaken by GHD (2007) for one of ProTen's operating poultry farms, where litter is managed in the same way as proposed for the Euroley development. This analysis determined the typical nutrient concentration of wash down water to be:

- Total Suspended Solids - 2,500 milligrams per litre;
- Total Nitrogen - 65 milligrams per litre; and
- Total Phosphorus: 45 milligrams per litre.

The typical annual pollutant load removal efficiencies for vegetated swales according to *Australian Runoff Quality* (Engineers Australia 2006) are presented in **Table 5**.

Table 5 - Typical Annual Pollutant Load Removal Efficiencies for Vegetated Swales

Pollutant	Typical Removal
Total Suspended Solids	60-80 %
Total Nitrogen	25-40 %
Total Phosphorus	30-50 %

The nature of the strata, the surface water drainage system and mitigation measures to be employed at the development site will provide an adequate buffer against infiltration of wash down water and any potential pollutants to the shallow groundwater source. No detectable impacts to groundwater levels, yields or quality are expected in the Shepparton Formation aquifer.

To reiterate SLR's (2015g) advice following the additional hydrogeological assessment, the 4 to 5 metres of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation.

In addition to the strata barrier, the following best management practices and mitigation measures will be implemented to safeguard water resources and/or minimise the potential adverse impacts:

Development Design

- Each poultry shed will be fully enclosed and have concrete flooring.
- Each poultry shed will be surrounded by a dwarf concrete bund wall (0.4 metres high) to prevent rainwater and runoff entering the sheds and to allow for the controlled discharge of wash down water from the sheds.
- The engineered surface water drainage system described above will be implemented to provide long-term structural controls to manage surface water runoff and ensure no off-site impacts.
- On-site aerated wastewater management systems will be installed to manage the sewage generated by on-site staff amenities and dwellings in accordance with the manufacturer's specifications and Council requirements.

Operation

- The surface water management system will be visually inspected on a monthly basis and following significant rainfall events. Any required maintenance work (desilting, regrading and/or reshaping) will be promptly undertaken to ensure the system's design capacity is maintained.
- The grassed swale drains between the poultry sheds will be carefully managed to minimise soil disturbance and maximise infiltration of runoff, as well as regularly slashed to encourage continual grass growth and associated nutrient up-take.
- Dry-cleaning practices at the end of each production cycle will be maximised within the poultry sheds prior to washing with water to minimise the volume of wash water, along with the amount of poultry litter (and associated sediments and nutrients) washed out of the sheds.
- The waste management systems described in the EIS (SLR 2015a) will be implemented to ensure that each waste stream generated by the development is effectively managed and disposed of off site. There will not be any on-site stockpiling or disposal of waste materials.
- The best management practices and mitigation measures described in the EIS (2015a) for chemical use and storage will be implemented.
- The limited volumes of chemicals on site will be stored in appropriately sealed and bunded storage containers/sheds.
- Diesel and petrol will be stored in bunded tanks with overflow containers. These overflow containers will be regularly inspected and, when required, removed by a licensed contractor to prevent overflow and replaced. Any excess water collected in the bunded areas will also be removed by the contractor.

Confirm that the groundwater sourced for the development is suitable for staff requirements, including for drinking water, or if treatment will be necessary.

Potable water for staff will not be sourced from the groundwater bores. Rather, potable water supply for the staff amenities at each PPU and the 10 houses will be via rainwater collection in tanks from the roofs of the amenities buildings and houses. If water levels in the tanks become low due to an extended dry period, potable water will be trucked in as required.

Refer to the submission from DPI for additional information required to assess groundwater impacts.

The groundwater issues raised by the DPI (NOW) are addressed below in **Section 2.3.2**.

2.1.6 Air Quality

Refer to the submission from the EPA for additional information required to assess air quality impacts.

The air quality issues raised by the EPA are addressed below in **Section 2.2**.

2.1.7 Traffic

RoadNet was engaged to undertake the appropriate assessment and reporting of traffic and transport-related issues associated with the Project. The assessment was prepared in accordance with relevant Council and RMS standards. A copy of RoadNet's *Traffic Impact Assessment* (2015a) was appended to the EIS and summarised within the EIS.

Key conclusions of RoadNet's (2015a) assessment included:

- Existing and future background traffic volumes on the Sturt Highway are relatively low and additional traffic from the Project can be easily accommodated; and

- Provided the recommendations made by RoadNet (2015a) are met, the Project is not expected to cause any significant impacts in terms of road safety or operation.

To address the traffic-related issues raised by the DP&E (and also a public submission, see **Section 3**), RoadNet prepared the letter report (2015b) contained in **Appendix G**. A summary of RoadNet's responses to each of the issues is provided below.

Provide details of the basis and source(s) of traffic data used in the Traffic Impact Assessment (TIA).

Existing (background) traffic volumes were obtained via hourly data provided by RMS from an Infra-Red Traffic Logger (TIRTL) located just east of the development site on the Sturt Highway for the period 1 January 2011 to 9 June 2012. A separate manual traffic count was conducted by RoadNet on the Sturt Highway at the location of the proposed site access on Friday 25 July 2014. This data was analysed and compared to provide a suitable baseline (i.e. without development) scenario against which the impacts of the additional traffic generated by the Project could be assessed.

The traffic generation associated with the Project was calculated and provided by ProTen from first principles based on their extensive experience in the poultry industry. ProTen currently own and operate eight poultry production complexes within Australia similar to the proposed Project. The traffic generation volumes for the Project were provided by identifying all of the key activities that arise during a typical nine week production cycle and calculating the number of trips required to complete each activity based on the type of vehicle to be used and the number of birds or amount of product (bedding material, feed, fuel, gas, shed litter material, etc.) that needs to be transported during each production cycle. The volume of traffic generated during each cycle was then extrapolated to generate annual figures for each activity based on approximately 5.7 production cycles per year.

RoadNet (2015b) note it is important to recognise that the method used to assess the traffic generation is not only comprehensive, but also necessary in the absence of any specific data being available for this type of development in the *RMS Guide to Traffic Generating Developments* (Roads and Traffic Authority 2002) and its supplements. The same assessment methodology has previously been used successfully for other poultry developments in the region, including Rothdene Poultry Production Complex, which ProTen has been operating since 2012, and Jeanella Poultry Production Complex, which ProTen has been operating since 2013.

Provide additional detail on the potential impacts and potential road treatment for the intersection upgrades for the existing driveway to Lot 30 DP 7500876. Management measures for potential traffic impacts on the driveway during construction and operation are required.

A new intersection between the Sturt Highway and the access driveway to the development site is proposed on the southern side of the Sturt Highway opposite the existing access driveway to Lot 30 in DP 7500876. In accordance with *Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections*, the new intersection requires a basic left turn treatment (BAL) to be provided for westbound traffic turning left into the development site's access driveway and a basic right turn treatment (BAR) for eastbound traffic to pass a vehicle waiting to turn right into the driveway.

The existing access to Lot 30 will be retained at its existing location along the Sturt Highway. In addition, the new intersection will retain the lane widths currently provided for through traffic on the Sturt Highway in each direction commensurate with its designation as both a B-double route and an approved road train route. The intersection will also be designed to allow vehicles up to the size of B-doubles to turn in and out of the proposed access driveway simultaneously without impacting on the safety of other road users.

The proposed location of the intersection in relation to the existing access to Lot 30 was discussed with RMS during a site inspection in February 2015 and agreed to in-principle. The proposed intersection will be designed and constructed to Austroads standards and will need to be approved by RMS. This design will include any modifications to the existing access driveway to Lot 30 that are required to accommodate the wider sealed shoulder on the northern side of the Sturt Highway associated with the BAR treatment for the access driveway to the development site.

The existing driveway serving Lot 30 does not currently include any turn bays or widening on the Sturt Highway approaches and takes the form of an unsealed road up to the edge of seal on the Sturt Highway. These features will not change as a result of the new intersection construction, and the driveway will still be able to service the same types and sizes of vehicles that it currently accommodates. The only change will be that the existing access driveway will need to be upgraded as part of the works for the Project to tie into the more northerly edge of seal arising from the wider sealed shoulder. It is noted that this wider sealed shoulder will also be beneficial for traffic turning left into the existing access driveway.

A Construction Traffic Management Plan and associated Traffic Control Plan satisfying the requirements of *AS1742.3* will be developed prior to undertaking works on the Sturt Highway. These plans will set out the requirements to manage any impacts on existing road users during the construction of the new intersection. Short term shoulder and lane closures may be required at times. This will be undertaken in accordance with the appropriate traffic control guidelines and by approved traffic control contractors. The impact of this traffic control, in terms of delays and queuing, is expected to be minimal due to the relatively low existing traffic volumes on this section of the Sturt Highway. Importantly, access to Lot 30 will be maintained at all times to minimise any adverse impacts to the affected landowner. For the scale of works required at the intersection it is envisaged that only a couple of weeks would be required to complete the construction activities (weather permitting).

As advised in the EIS (SLR 2015a), an Operational Environmental Management Plan (OEMP) will be developed for approval by the DP&E prior to commencing operations at the site. This OEMP will include management strategies and mitigation measures for any operational traffic-related issues.

Provide an estimate of traffic volumes during construction and potential construction traffic routes.

The anticipated construction traffic volumes was presented in Table 3.4 of the EIS (SLR 2015a), which is reproduced in **Table 6** below.

Table 6 - Estimated Construction Traffic Volumes

	Daily (two way trips)	Weekly (two way trips)
Light Vehicles		
ProTen Staff	3 (6)	15 (30)
Tradespeople	15 (30)	75 (150)
Sub-total light vehicles	**18 (36)**	**90 (180)**
Heavy Vehicles		
Tradespeople – trucks	-	3 (6)
Construction material delivery	-	3 (6)
Equipment delivery	-	2 (4)
Road material	12 (24)	60 (120)
Concrete materials	2 (4)	10 (20)
Other	2 (4)	10 (20)
Sub-total heavy vehicles	**16 (32)**	**88 (176)**
Total	**34 (68)**	**178 (356)**

The majority of the construction trips are expected to have an origin/destination from/to Griffith in the west and Narrandera in the east, and will follow the Sturt Highway to the development site. Volumes along this route are low (RoadNet 2015a and 2015b), and the highway alignment has the capacity to accommodate the anticipated construction traffic (RoadNet 2015b).

The sight line diagram at Appendix B of the TIA should be provided at A3 size for legibility.

The sight line diagram from the *Traffic Impact* Assessment (RoadNet 2015a) is reproduced in A3 size in Attachment A to RoadNet's letter report (2015b) in **Appendix G**.

2.1.8 Biodiversity

Refer to the submission from the OEH for additional information required for the assessment of biodiversity impacts.

The biodiversity issues raised by the OEH are addressed below in **Section 2.4.1**.

2.1.9 Aboriginal Heritage

A ground survey of the revised location of PPU 5 should be undertaken prior to construction to confirm that no items of Aboriginal significance will be impacted by construction of the PPU.

ProTen has engaged OzArk to undertake the additional field survey requested by OEH and this survey is scheduled for mid-September 2015 (pending weather and site access). OzArk's proposed survey methodology comprises the complete pedestrian survey of the relocated PPU 5 and relocated residences, and sampled survey (dictated by a set methodology) of the internal roads.

Refer to **Section 2.4.2** for further details.

2.1.10 Other Issues

Provide additional detail regarding the capacity of the existing rendering facility at Hanwood to handle the influx of birds in the event of a mass mortality event.

In the unlikely event of an emergency animal disease (EAD) outbreak and slaughter of farm stock is necessary, the ability of Baiada's facility at Hanwood to process the birds will depend on a number of factors at the time of the outbreak. These factors include the scale of the mass mortality and the capacity at which the facility is operating at the time. The EIS (SLR 2015a) presented a number of options for the large scale disposal of birds to cater for the scenario where the facility at Hanwood cannot process the number of birds.

As described in Section 6.12.2 of the EIS (SLR 2015a), pending advice from the DPI and EPA at the time of a mass mortality, the following options in order of preference will be implemented for the disposal of bird carcasses and fomites in the event of an EAD outbreak:

1. Rendering at Baiada's Hanwood protein recovery plant; or
2. In-shed composting; or
3. Off-site burial at ProTen's Jeanella property near Goolgowi within the Carrathool Shire local government area (LGA).

Carrathool Shire Council has recently advised ProTen that a fourth disposal option is also available when the scale of the outbreak is such that Baiada's Hanwood facility (i.e. option 1) is unable to manage the volume of birds affected. Council, in conjunction with Baiada, has recently designated a portion of Council's landfill for the mass disposal of chickens from the various contract production farms in the LGA. Council has advised that this area of the landfill has been appropriately sectioned and quarantined, providing a means of safely disposing of birds in a mass mortality event.

Landfilling would be carried out under appropriately qualified supervision from the DPI, EPA and Council to ensure appropriate quarantine control and standard operating procedures are implemented in line with the relevant AUSVETPLAN disease strategy. Carcasses and formites would be loaded in to leak-proof containers within the sheds and these containers would be transported in appropriate trucks disinfected on exit from the development site. The truck and operator would be independent from normal ProTen and Baiada operations in order to minimise the risk of disease transfer to other poultry operations. All vehicles would be thoroughly cleaned and disinfected after unloading.

Baiada and Council have entered into a 2 year agreement for this quarantined portion of the landfill from mid-2015 to mid-2017. During this time Baiada has committed to investigating other long term disposal options for their contract growers (including ProTen) in the event of a mass mortality.

2.2 Environment Protection Authority

Pacific Environment was engaged to undertake the appropriate assessment and reporting of air quality issues associated with the Project. The assessment was undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Approved Methods) (Department of Environment and Conservation (DEC) 2005) and *Assessment and Management of Odours from Stationary Sources in NSW* (DEC 2006). A copy of Pacific Environment's *Air Quality Impact Assessment* (2015a) was appended to the EIS and summarised within the EIS.

In summary, Pacific Environment (2015a) concluded the following:

- Odour concentrations at all of the nearest receptors are predicted to be at or below 5 odour units (OU); and
- Maximum 24 hour and annual average PM_{10} levels are predicted to be below the respective assessment criterion at all of the sensitive receptors.

The EPA's submission dated 8 July 2015 identified 11 issues in relation to the air quality assessment undertaken for the Project. Each of these issues has been addressed by Pacific Environment in the letter report (2015b) contained in **Appendix H**, and a summary of the responses is provided below. The issues raised by the EPA and requests for additional information are identified in ***bold italic text***, followed by the response in normal text.

Staff members from the EPA, Pacific Environment, SLR and ProTen joined in on a teleconference on Tuesday 25 August 2015 to discuss the EPA's issues and Pacific Environment's responses prior to lodging this Response to Submissions to the DP&E. In summary, all issues seemed to be resolved with the exception of additional quantitative analysis requested by the EPA to address emergency standby diesel generators (issue 1) and batch length and staging (issue 2). This additional analysis was undertaken by Pacific Environment and has been detailed in their letter report in **Appendix H** and summarised in the relevant sub-sections below.

2.2.1 Emergency Diesel Generators

1. No information provided regarding emergency standby diesel generators.

The EPA requests the following information regarding the proposed emergency standby diesel generators.

- ***Capacity and location of diesel generators;***
- ***Expected frequency of use, including regular testing for maintenance; and***
- ***Assessment of compliance with the relevant emission standards in the POEO (Clean Air) Regulation.***

As advised in the EIS (SLR 2015a), the proposed diesel generators will only be used in emergency situations when mains power supply from the electricity grid is interrupted or lost to the Development Site. Based on experience at their other eight poultry production complexes within Australia, ProTen has advised that the generators are only typically required a couple of days per year. They will be tested on a regular basis as per the manufacturer's recommendations.

The Project includes two 350 kilovolt-amp (kVA) (Prime Power 315 kW) generators at each PPU, which will be positioned immediately to the west of the poultry sheds adjacent to sheds 4 and 5 and sheds 12 and 13 (see **Figure 3**). The Project also includes two 150 kVA (Prime Power 119 kW) generators at each PPU, which will be positioned immediately to the east of the poultry sheds adjacent to sheds 4 and 5 and sheds 12 and 13 (see **Figure 3**). Each of these generators will be housed in a lockable acoustic enclosure with a vertical air discharge and, as listed in **Table 7**, will meet the relevant emission standards in Schedule 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* (Clean Air Regulation).

Table 7 - Backup Generator Parameters

Pollutant	Emission Rate (mg/m^3)		Clean Air Regulation Limit
	119 kW	315 kW	
Nitrogen oxides (NOx)	441	401	450
Solid particles	11	5	50

Source: Pacific Environment (2015b)

Considering the size of the generators, the low level of usage and the location of the generators with regard to nearby sensitive locations, the generators are not expected to exceed the relevant air quality criteria at nearby sensitive locations.

In order to confirm this, Pacific Environment (2015b) completed a dispersion modelling exercise using AUSPLUME to predict ground-level concentrations at surrounding receptors. For the purposes of the assessment, Pacific Environment (2015b) conservatively assumed that 100 percent of the nitrogen oxides (NOx) is converted to nitrogen dioxide (NO_2), when in reality only a fraction will be, and that the particulate matter are PM_{10}. It was also conservatively assumed that all 20 generators were operating simultaneously and continuously.

As listed in **Table 8**, the predicted concentrations are the surrounding receptors are all well below the relevant assessment criteria.

Table 8 - Predicted Concentrations from Backup Generator Parameters

	Carbon Monoxide (CO)		Nitrogen Dioxide (NO_2)		PM_{10}	
Averaging Period	1-hour	8-hour	1-hour	Annual	24-hour	Annual
Criteria	30 mg/m^3	10 mg/m^3	246 $\mu g/m^3$	62 $\mu g/m^3$	50 $\mu g/m^3$	30 $\mu g/m^3$
R1	0.006	0.001	71.5	0.74	0.107	0.011
R2	0.007	0.002	80.1	0.83	0.174	0.013
R3	0.008	0.002	102.5	0.85	0.175	0.013
R4	0.009	0.002	105.2	1.07	0.215	0.016
R5	0.009	0.002	105.5	1.16	0.227	0.017
R6	0.006	0.002	66.7	1.37	0.144	0.020
R7	0.007	0.003	89.6	1.52	0.226	0.023
R8	0.005	0.002	66.3	0.78	0.126	0.011
R9	0.006	0.001	75.1	0.86	0.097	0.012
R10	0.004	0.001	51.2	0.76	0.112	0.011
R11	0.004	0.001	49.8	0.65	0.093	0.009

Pacific Environment (2015b) advises that the predicted concentrations of CO and PM_{10} are so low (ranging between 0.01 and 0.45 percent of the relevant criterion) that cumulative concentrations have not been considered.

The closest EPA monitoring station that records NO_2 concentrations (and has publically available data for 1-hour averages) is Wollongong, located approximately 420 kilometres east of the development site. Given the industrial/residential nature of the Wollongong area, compared with the rural setting of the development site, the NO_2 concentrations measured at Wollongong are considered to be conservative. As reported in the *NSW NEPM Annual Review* for 2010 (OEH 2010, cited in Pacific Environment 2015b), the maximum 12-hour average NO_2 concentration measured in 2010 was 106.8 $\mu g/m^3$, giving a resultant maximum NO^2 concentration of 212.3 $\mu g/m^3$ at R5, which is below the assessment criterion of 246 $\mu g/m^3$.

Based on the conservative approach taken, Pacific Environment (2015b) concludes that no air quality criteria will be exceeded as a result of the operation of the backup generators.

2.2.2 Worst Case Odour Emissions

2. Worst case odour emissions have not been estimated.

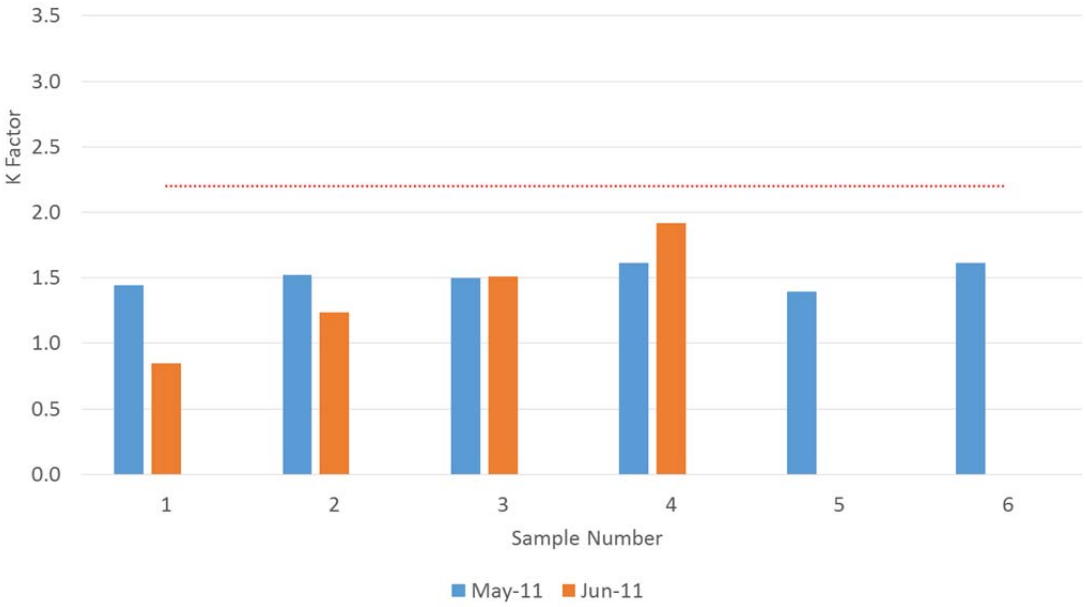
The EPA requests a sensitivity analysis to determine the impact on the odour assessment results of assuming a K factor of 2.0, 2.5 and 3.0. Further, information on the different shed management practices that correspond to a K factor of 2.0, 2.5 and 3.0 must also be provided. This information will contribute to determining the odour risk to the project (see issue 11).

Pacific Environment (2015a) adopted a modelling methodology development by Ormerod & Holmes (2005), which is based on odour emission rate data collected at a number of meat chicken farms over time. This method was recently adopted as the base model for use in Queensland as detailed in *Queensland Guidelines Meat Chicken Farms* (Department of Agriculture, Fisheries and Forestry (DAFF) 2012). It has also been used in regulatory matters in NSW, along with Victoria and South Australia.

The use of a K factor of 2 was historically based on test data collected at a number of poultry farms in Queensland and NSW over time. While older poorly managed farms typically had K factors of above 2, experience showed that all new farms typically operate with a K factor of 2 or less. Pacific Environment (2015b) advises that the majority of poultry farms approved in Queensland over the past 10 years were modelled using a K factor of 2 and have since operated without complaint.

With the adoption of the *Queensland Guidelines Meat Chicken Farms* (DAFF 2012) a 10 percent increase in K factor was used by Pacific Environment (2015a) to incorporate the potential for variation in emissions. Analysis of randomised emission rates showed that a 10 percent increase in K factor would encompass the majority of potential emission variation on farm. This did not mean that farms are expected to have a K factor of 2.2, but that the maximum K factor they are assessed against is 2.2.

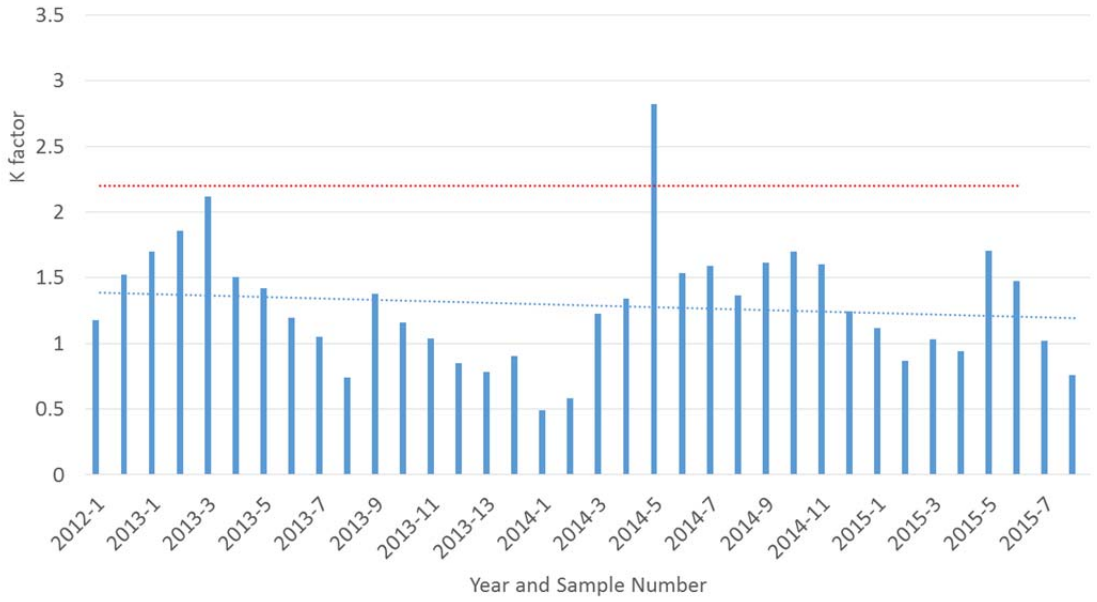
Pacific Environment reviewed the results of 10 samples collected at a ProTen farm near Tamworth in 2011 by The Odour Unit. The first six samples (in three sheds) were collected in the week leading up to first pickup (days 27 and 28) and the remaining samples were collected at day 41. This data is summarised in **Figure 10**, with the red line representing a K factor of 2.2. The average K factor for this period was 1.5.



Source: Pacific Environment (2015b)

Figure 10 - K Factors – ProTen Tamworth (2011)

The data shown in **Figure 10** is consistent with sample data held by Pacific Environment for other sites in Queensland and NSW collected between 2012 and 2015 for bird aged between 26 and 38 days. This data is summarised in **Figure 11**, with the red line representing a K factor of 2.2 and the blue line being a trend line showing K factors reducing over time.



Source: Pacific Environment (2015b)

Figure 11 - K Factors - Other Farms (2012 to 2015)

It is important to note that the highest K factor value shown in **Figure 11** was one sample from two sets of paired samples collected at the same farm in different sheds and is considered an outlier. Irrespective of this, the average K factor is well below 2. The average K factors by year are listed in **Table 9**.

Table 9 - Average K Factors – Other Farms (2012 to 2015)

Year	Average K factor
2012	1.4
2013	1.3
2014	1.4
2015	1.1

Source: Pacific Environment (2015b)

Based on this above data, Pacific Environment (2015b) concludes that there is a downward trend in emissions and a K factor of 2.2 is likely representative of worst-case (rather than average emission rates). Pacific Environment (2015b) also notes that, in their experience, the majority of modern farms comply with the best practice management requirements detailed in *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management* (Department of Primary Industries (DPI) 2012), and, as such, lower K factors are expected.

In terms of the EPA requesting a sensitivity analysis using K factors up to 3, there is nothing to suggest that any modern farm will be represented by a K factor of 3. The data Pacific Environment (2015b) has presented shows the industry on average (from paired samples) is currently around 1.5, with a long-term (~10 years) maximum average of 2. To say the K factor will sit long-term at 3 is unrealistic and would indicate that the farm was not being well managed in accordance with industry standards and not operating as profitably as it should or could be. The emissions adopted by Pacific Environment in their *Air Quality Impact* Assessment (2015a) are considered conservative and further analysis of the K factor is not warranted.

Other related factors discussed by Pacific Environment (2015b) in addressing the EPA's belief that worst case odour emissions were not modelled are:

Minimum Ventilation Rates

The minimum ventilation rates used by Pacific Environment (2015a) in the modelling are roughly a factor of two higher than the minimum rates detailed in *Poultry Housing Tips – Minimum Ventilation Rates* (University of Georgia 2007). This combined with the fact that Pacific Environment (2015a) calculated the minimum ventilation after week 5 of the production cycle based on "birds placed" (not "birds present") means that for minimum ventilation conditions the emissions were overestimated, especially for emissions after the first thin-out, which is typically when emissions are highest.

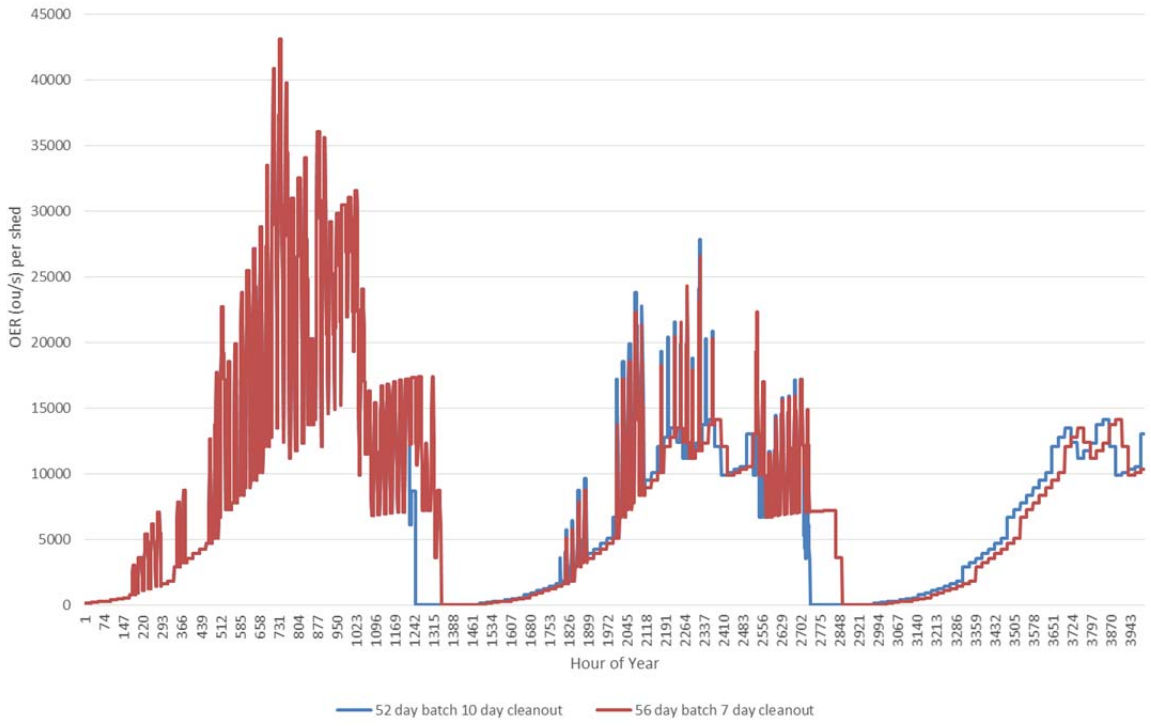
Finisher Feed

Pacific Environment's (2015a) model did not account for finisher feed, which is typically introduced around day 37 of the batch. Finisher feed is a lower value feed ration given to the birds after peak density to slow their growth down compared to the higher value feed earlier in the batch. It results in less waste and therefore lower emissions per bird towards the end of the batch.

Therefore, again, the emissions used by Pacific Environment (2015a) are conservative.

A revision of the odour assessment to assume a 56 day batch and 7 day cleanout.

Pacific Environment (2015b) undertook a comparison of emissions for 52 and 56 day batches for a summer, autumn and winter batch, with the results shown in **Figure 12**.



Source: Pacific Environment (2015)

Figure 12 - Odour Emissions for 52 and 56 Day Batches

Figure 12 shows little difference between the two scenarios. On this basis, a revision of the odour assessment to assume a 56 day batch and 7 day clean out, as requested by the EPA, was not considered warranted. When consideration is given to the over-prediction of the minimum emissions and over-prediction of the peak emissions (considering the K factor) and the minimum ventilation requirements, Pacific Environment (2015b) reaffirm that the predicted impacts are conservative.

Regardless, the EPA insisted on a quantitative analysis to address batch length and staging. On this basis, Pacific Environment (2015b) assessed another three scenarios based on the following shed placements:

- PPU 1 - birds placed first, on day 1;
- PPU 2 - birds placed on day 3;
- PPU 3 - birds placed on day 5;
- PPU 4 - birds placed on day 8; and
- PPU 5 - birds placed on day 10.

The above placements were modelled assuming starting on day 1 (Run 1), day 14 (Run 2) and day 28 (Run 3) of the year. The emission profiles are shown in Figures 3 to 5 in Pacific Environment's letter report (2015b) in **Appendix H**.

Re-running the odour model with gridded receptors for the three scenarios would take an extended period. To reduce model run time a selected number of discrete receptors were modelled. The receptors were selected by Pacific Environment (2015b) as being both the closest to the site (Receptors 5-7) or representative of areas not covered by the aforementioned receptors (Receptors 8 and 11).

The modelling results for the three scenarios, along with the original scenario, are summarised in **Table 10**.

Table 10 - Batch Staging Analysis – Odour Concentrations

Receptor	Original Run	Run 1	Run 2	Run 3	Maximum	Compliance
R5	4.7	4.5	3.6	3.9	4.5	Yes
R6	4.4	4.1	3.8	4.6	4.6	Yes
R7	2.1	2.4	2.3	2.3	2.4	Yes
R8	3.8	2.4	2.0	3.2	3.8	Yes
R11	2.8	2.2	2.2	2.8	2.8	Yes

As evident in **Table 10**, each of the receptors comply with the 5 OU criterion even with the K factor of 2.2. A lower K factor would see lower predicted odour concentrations. For example a K factor of 2 would see the maximum predicted concentrations at R5 and R6 being 4.1 OU and 4.2 OU, respectively (Pacific Environment 2015b).

Additional odour modelling with the start date of day 1 of placement offset by 2 weeks and then a further 2 weeks to determine the worst case odour impacts for the project.

Pacific Environment (2015a) modelled the sheds based on placement starting on day 1 of the year. Pacific Environment (2015b) advises that, based on their experience in modelling numerous poultry farms over time, this method typically picks up worst case impacts as it assumed that all sheds across all PPUs will have peak emissions at the same time.

This assumption is of course unrealistic as each PPU will be placed over a period of roughly one week (outlined above). As a result, the proposed development, which comprises five PPUs, will be placed across a period of up to 5 weeks. Pacific Environment (2015b) has previously examined the "all in" assumption and batch placement assumption (by week) at a similar sized farm elsewhere and found the "all in" assumption more conservative. Pacific Environment (205b) further advises that staging each farm by two weeks (as requested) and also staging by placement at the same time does not significantly change the modelled concentrations.

Considering the conservatism in the emissions (as a function of the K factor) and that the development complies with the 5 OU contour, Pacific Environment (2015b) considers that the modelling is representative of potential impacts and additional modelling is not warranted.

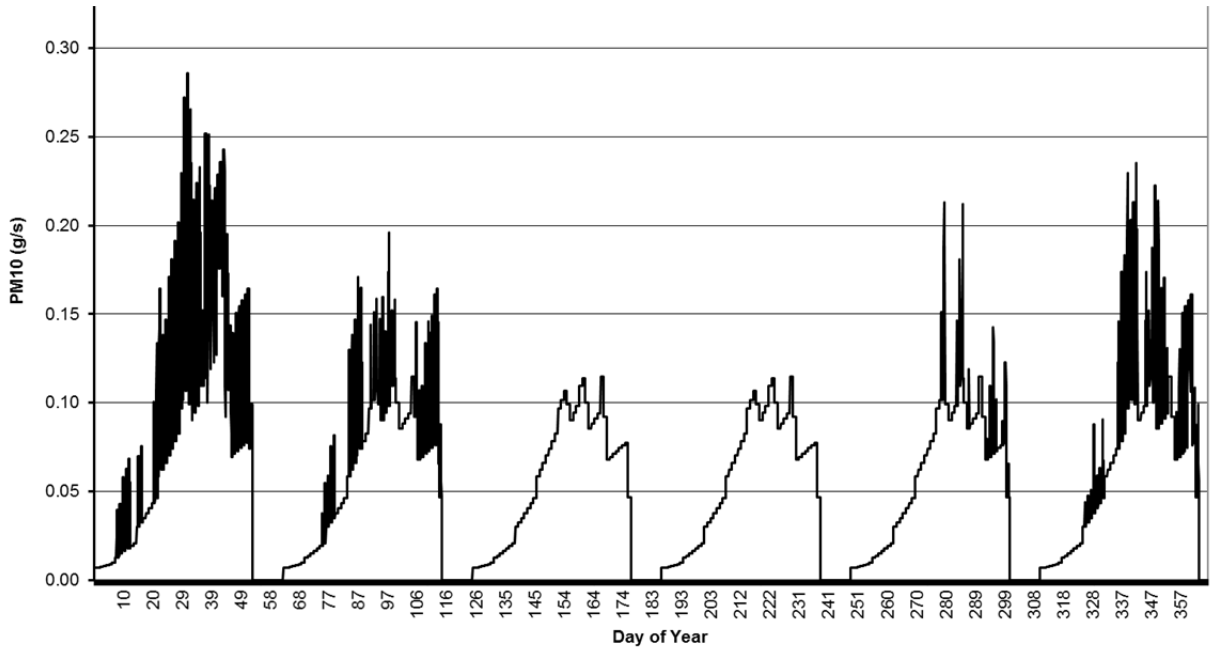
2.2.3 Particulate Emissions

3. Modelled shed particulate emission rates have not been provided.

The EPA requests clarification on how design and management practices are incorporated into the estimation of hourly particulate emission rates.

The EPA requests a presentation of the modelled hourly varying shed particulate emission rates for a grow out cycle.

Pacific Environment's (2015a) modelled PM_{10} emissions rates on a per shed basis are shown in **Figure 13**.



Source: Pacific Environment (2015b)

Figure 13 - Modelled PM_{10} Emissions

Dust emissions from modern poultry farms are typically low. Pacific Environment (2015b) advises that by adopting a conservative dust emission profile it has been found, provided the odour buffer is suitable (which in this case it is), that dust impacts will not occur even with the conservative emissions. On this basis, scaling of dust emissions based on farm management is not undertaken.

4. Sources of particulate matter were excluded from the assessment.

The EPA requests a revision of the dispersion modelling to include the internal roads as a source of particulate emissions and identify the management measures that will be applied to control particulate emissions from the internal roads.

While Pacific Environment (2015a) did consider the potential for wheel generated dust from the internal roads in the air quality impact assessment, it was concluded that the potential for emissions will be low given the constructed nature of the roads and subsequent lower silt loading (compared to using unformed tracks). As advised in the EIS (SLR 2015a), the internal roads will be 7 metres wide and will be constructed with a compacted clay base to 98 percent and 200 millimetres (mm) of road base (120 mm of 80 mm "Jawbone" rock and 80 mm of 40 mm "DGS" gravel on top).

Pacific Environment (2015b) advises that they have assessed multiple poultry operations and found internal roadways not to be a significant source of dust emissions. This is because the roads can be constructed in a way to minimise dust (as proposed) and can also be managed to minimise emissions.

Moreover, in this case, the distances from the internal roads to nearby sensitive locations are suitably significant (Pacific Environment 2015b).

On this basis, Pacific Environment (2015b) advises that modelling of dust emissions from the internal roads is not warranted.

Dust emissions from the internal roads will be managed during both the construction and operational phases through the Construction Environmental Management Plan (CEMP) and OEMP, respectively. The following mitigation measures will be implemented to minimise the potential for dust emissions from the internal roads:

- Internal roads will be appropriately constructed (including a compacted clay base) and maintained;
- The proposed access road from the Sturt Highway will be bitumen sealed for a distance of 50 metres from the carriageway of the highway;
- A 40 kilometre per hour speed limit will be adopted on the access road between the Development Site and the Sturt Highway;
- A 40 kilometre per hour speed limit will be adopted within the development site; and
- If necessary, a water truck will be used to reduce dust emissions during dry periods.

2.2.4 Meteorological Data

5. Representativeness of year 2010 meteorological data is not demonstrated.

The EPA requests provision of the results of the analysis demonstrating year 2010 is a representative year.

The year 2010 was evaluated by Pacific Environment by comparing the long-term averages up to 2015 (based on available data) against a number of years. It was found that 2010 correlated well with the long-term averages with regard to minimum and maximum temperatures, 9.00 am wind speed and humidity. A check of the weather data for the area also confirmed that the average wind speed for 2010 of 3.4 metres per second was consistent with other recent years, and that the frequency of calm winds, which are critical in terms of odour, at 12.7 percent was consistent with other years, albeit slightly higher (~1%) than 2007 to 2009.

Please refer to Pacific Environment's (2015b) letter report in **Appendix H** for graphs comparing 2010 meteorological data against long-term averages.

6. Modelled meteorological data input parameters are not presented for verification.

The EPA requests the proponent provide and justify the values assumed for these seven critical parameters (TERRAD, RMAX1, RMAX2, R1, R2, IEXTRP and BIAS).

After selecting 2010 at the representative year, Pacific Environment compared observations at the Bureau of Meteorology's (BoM) weather stations at Yanco and Narrandera with TAPM generated data. This comparison, which was illustrated in Pacific Environment's *Air Quality Impact Assessment* (2015a) and reproduced in the appended letter report (2015b), shows that the data does not compare well, with TAPM predicting less south-easterly and easterly winds. Overall, the Yanco and Narrandera sites were similar with the exception of some terrain blocking at Yanco, which resulted in a high proportion of winds from the north.

In line with good practice, Pacific Environment selected the Narrandera data to drive the model, with some data gaps filled by Yanco data. TAPM data was not considered representative of the area, particularly as it had zero calms, which are critical for odour impacts. The lack of large terrain elements in the area led Pacific Environment to conclude that the "observation only" approach was suitable for the Project.

The seven parameters used by Pacific Environment for the modelling are:

- RMAX1 = 0.1;
- RMAX2 = 0.1;
- R1 = 0.1;
- R2 = 0.1;
- TERRAD = 2;
- IEXTRP = - 4; and
- BIAS = -1, - 0.75, - 0.5, 0, 1, 1, 1, 1, 1.

Pacific Environment (2015b) advised in the following in relation to these parameters:

- IEXTRP is the extrapolation of surface wind to the upper layers. Pacific Environment (2015a) used the default of minus (-) 4, which allows extrapolation through similarity theory.
- RMAX is the maximum radius of influence the surface station will exert on the final guess field. As required, Pacific Environment (2015a) used professional judgement to select a value on the basis of the geography of the region. CALMET was run with both RMAX values at 0.1 as the method is "observation only" (see discussion below)
- R1 is the radius that yields equal weighting to the first guess and surface station winds. This is usually the same as RMAX as there is only the single meteorological station (see discussion below).
- RMAX2 and R2 for upper air. In this case the domain was small and we allowed the upper air station "observations" to influence the domain (See discussion below)
- TERRAD is a radius of influence of terrain features. As there are no significant terrain features in the area, Pacific Environment (2015a) selected a value of 2 kilometres (km).

Pacific Environment ran two scenarios with small (Run 1) and large (Run 2) RMAX and R values. Pacific Environment's letter report (2015b) in **Appendix H** contains a table summarising the parameters used for these scenarios. As there was only one observation station in the domain and the domain is flat, CALMET produced exactly the same wind field for Runs 1 and 2. Pacific Environment's model run produced wind fields which were the same as the data measured at Narrandera. This is consistent with the TAPM modelling, which produced nearly identical wind fields for spatially separated sites.

7. Modelled meteorological data is not evaluated.

The EPA requests an evaluation of the CALMET generated wind speed and wind direction data to demonstrate it is suitable for use in CALPUFF.

As advised above, Pacific Environment performed two runs to test the sensitivity of the model. Given that the terrain is flat and driven by observation data at Narrandera, the model produced a similar wind field at the Development Site as at Narrandera, which is as expected given the lack of terrain in the area which was also confirmed by the TAPM outputs.

2.2.5 Odour Criterion

8. Project odour criterion should be 5 Odour Units (OU).

The EPA considers an appropriate odour performance criterion for the project is 5 OU. The EPA notes the project, as modelled by PEL (2015) marginally complies with an odour performance criterion of 5 OU. This highlights the need for the proponent to consider feasible odour mitigation measures that will be applied should odour impacts occur once operation (see issue 10).

Pacific Environment (2015a) adopted an odour criterion of 7 OU based on discussions between ProTen and the EPA's Griffith office. The Australian Bureau of Statistics (ABS) 2011 census data for rural communities in NSW gave an average population per house of 2.4 people, which is consistent with the EPA's 2.8 people per house value.

The population density around the development site is variable and on a per square kilometre basis is quite low at approximately 29 people over an area of around 110 square kilometres (km^2) (Pacific Environment 2015b). There are three single residences around the development site, these being:

- R7 - approximately 2.7 km to the southeast of the development site (approximately 3.9 km to the nearest PPU);
- R6 (proposed) - approximately 300 metres to the east of the development site (approximately 1.8 km to the nearest PPU); and
- R11 - approximately 2.8 km to the east-northeast of the development site (approximately 4.7 km to the nearest PPU).

These are discrete dwellings rather than forming part of a cluster of dwellings.

There is a cluster of eight dwellings to the north, over an area of approximately 8 km^2, with the nearest (R5) being located approximately 1.7 km from the development site (approximately 2.1 km to the nearest PPU).

While the population (approximately 31 people, based on 11 residences with an average of 2.8 people per residence) indicates an odour criterion of 5 OU, when the area (greater than 100 km^2) and distances between the residences are considered, a higher criterion of 6 OU is considered appropriate by Pacific Environment (2015b) to protect against amenity impacts at the single rural residences.

On this basis, in addressing the EPA's request for a higher odour performance criterion, 6 OU is considered appropriate.

2.2.6 Cumulative Assessment

9. Assessment of cumulative particulate impacts not in accordance with the Approved Methods.

The EPA requests a revision of the cumulative assessment of 24 hour average PM^{10} concentrations in accordance with the methodologies listed in the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW or provide justification for adopting an alternate method.

Pacific Environment (2015a) assessed cumulative 24-hour PM_{10} impacts using Monte Carlo simulations, which provide results in terms of the statistical probability that an event may occur. This methodology has been used and accepted in numerous significant extractive industry dust assessments as an alternative to the Level 2 approach in the Approved Methods (DEC 2005) when site-specific monitoring data is unavailable.

The Monte Carlo simulation is a statistical approach that combines the frequency distribution of one data set (in this case, measured 24-hour average PM_{10} concentrations representative of the development site) with the frequency distribution of another data set (modelled concentrations at a given receptor). This is achieved by randomly and repeatedly sampling and combining values within the two data sets to create a third "cumulative" data set and associated frequency distribution. To generate greater confidence in the statistical robustness of the results, Pacific Environment (2015a) repeated the Monte Carlo simulation 250,000 times for each of the chosen receptors.

Pacific Environment (2015b) advises that, in their experience, this dust emissions method over predicts emissions by a factor (depending on bird numbers, etc.) anywhere between a factor of two and four. On this basis, based on the modelling to date, the maximum PM_{10} concentration that could actually occur at the most exposed receptors is in the order of 5 $\mu g/m^3$ (Pacific Environment 2015b). In other words, the predicted impact of the proposed development at the nearest receptors is very low. This is also based on all PPUs peaking at the same time, which is unrealistic (as discussed above) and adds to the conservatism.

In summary, Pacific Environment (2015b) considers the use of the Monte Carlo method appropriate for the assessment of cumulative impacts associated with the proposed poultry development and advises that dust impacts from the proposed development are unlikely to occur.

2.2.7 Mitigation Measures

10. No feasible mitigation measures that could be implemented should odour impacts occur once operational have been provided.

The EPA requests the proponent to investigate additional odour control options that could be implemented should odour impacts occur once operational.

As discussed above, emissions from the poultry industry have been decreasing over past years. Pacific Environment (2015b) links this to improved feed conversion and better overall shed management. The use of a K factor of 2.2, when the average K factor at present is well below this represents (as also discussed above) means Pacific Environment's (2015a) assessment is conservative. Moreover, by complying with the best practice management requirements detailed in *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management* (DPI 2012), the risk of elevated emissions is low due to the high standard of shed management (Pacific Environment 2015b).

As noted by the EPA, the industry literature does not support the use of windbreak walls or stacks. While there are other technology options for odour control, it is accepted that the potential benefits are outweighed by issues associated with cost and management.

Research has shown that vegetative buffers can reduce the impact of odour and dust emissions from agricultural operations (Laird 1997 and Thernelius 1997, cited in Pacific Environment 2015b). Other more recent publications have reported that vegetation can assist in odour management from livestock buildings by increasing dilution and acting as a sink for the chemical compounds responsible for odour (Patterson & Adrizal 2005, Tyndall & Colletti 2000, Tyndall & Colletti 2007 and Parker et. al. 2012, cited in Pacific Environment 2015b). Other publications, such as Karmaker et. al. (2006, cited in Pacific Environment 2015b), have highlighted how in other areas, such as Canada, vegetative buffers are a primary consideration for odour control on intensive livestock operations.

Pacific Environment (2015b) concludes that a combination of suitable separation distances and vegetation buffers represents the current best practice for poultry site management.

<u>Independent Environmental Audit at ProTen's Murrami Poultry Production Complex</u>

In 2013 GHD undertook an independent environment audit at ProTen's Murrami Complex near Tamworth NSW in response to a variation to the site's environment protection licence imposed by the EPA. The scope of this audit included (but was not limited) the following:

(a) Examine the systems and procedures that the Licensee has in place to ensure that any activities performed at the site are undertaken in accordance with current best practice and in accordance with the regulatory requirements;

(b) Examine the systems, procedures and control measures that the Licensee has in place to ensure it can reliably and robustly comply with section 129 of the Protection of the Environment Operations Act 1997 ("the Act");

(g) Recommend improvements, so far as reasonably practicable, to the systems referred to at a) and b) above to ensure they achieve current best practice for meat chicken farms and comply with Section 129 of the Act at all times; and

(h) Identify measures that, so far as reasonably practicable, to the systems referred to at a) and b) above to ensure compliance with Section 129 of the Act. This must include appropriate potential implementation time fame for each measure identified.

GHD's (2013) audit found that the Murrami Complex is being managed broadly in accordance with the *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management* (DPI 2012), its development consent and environment protection licence requirements. No material deficiencies in systems, procedures or controls were identified.

Given that the audit established that industry best practice is being adopted at the Murrami Complex for the protection of bird health and odour control from shed litter, GHD (2013) advised that there are few options to further reduce shed odour emission rates. A summary of GHD's (2013) analysis of odour control options is provided below.

Release of Shed Exhaust – Stub Stacks or End Bay Deflectors

A reduction in predicted odour levels at receptors as a result of introducing stub stacks or end bay deflectors would need to be significant (50 percent reduction or better) before these measures could be recommended on the basis that a perceived decrease in odour intensity is typically only registered where the reduction is 2:1 or greater. These options are only effective at short (~100s of metres) distances where there is a lower odour level at ground level compared to that at the elevated plume centreline.

Options to Reduce Shed Odour Emission Rates

By-pass cooling arrangements are a possible option to reduce odour emission rates as long as the oxygen levels within the poultry sheds are maintained for bird health. Shed insulation is also a possible option to reduce fan use. However, these options are subject to further and extensive investigation inclusive of cost/benefit analysis.

While scrubbing techniques of the exiting ventilated air have been trialled within the industry, these are yet to be established as part of "best practice". The European Union guidance on best practice for intensive rearing of poultry and pigs includes a section on a chemical wet scrubber for "end-of-pipe techniques for the reduction of air emissions from poultry housing", however the benefits were found to be outweighed by costs and other issues.

Vegetative and Other Screens

Increasing the "surface roughness" and providing some filtering effect via vegetation screening is sure to assist in reducing dust and odour levels crossing the site boundary. Options include a commercial tree plantation and cropping rather than grazing on the remnant site open space. Some measures and vegetative treatments can occur in the short-term while it is acknowledged that trees in particular take time to establish.

Vegetative screens and fixed barrier systems (fence with shade-cloth) set downwind of the farm in the directions of exposed receptors will induce additional turbulence as the odour plumes pass through this permeable barrier, though this will be muted when the stability is high (E or F conditions). Vegetative screens however also act to partially remove fine dust particles in the odour plumes. To the extent that a fraction of the odorant blend in a broiler shed exhaust is adsorbed to fine particles, then the action of dust removal by the screen will also reduce the odour level in the plumes, and will give a corresponding percentage reduction in the odour level as the plumes pass receptors further downwind.

Efforts have been made to determine the fraction of broiler odour adsorbed to particles by placing samples of the shed exhaust, both filtered and unfiltered to dynamic olfactometry. Recent research by the Queensland government has shown that dust particles in broiler exhaust are rapidly removed from the sample and adsorbed onto the sample bag wall. Further, it was realised that those particles not removed when in the sample bag will be highly likely to adsorb onto the internal surfaces of the olfactometer tubing which have much smaller dimensions. These two findings suggest that vegetative screens may be more effective to remove odour than first expected.

Proposed Landscaping and Other Odour Mitigation Measures

As outlined in the EIS (SLR 2015a), suitable tree and shrub species will be strategically planted around the perimeter of each PPU. The proposed plantings will be based on the relevant recommendations outlined in *Planning Guidelines Separating Agricultural and Residential Land Uses* (Queensland Department of Natural Resources 1997), as follows:

- Provide a biological buffer of a minimum total width of around 40 metres;
- Contain consistent, yet random, plantings of a variety of tree and shrub species of differing growth habits, at spacing's of around four to seven metres;
- Include species with long, thin and rough foliage to facilitate the capture of spray droplets and dust particles;
- Provide a permeable barrier that allows air to pass through the buffer. The plantings will aim to achieve a porosity of around 0.5 (i.e. around 50 percent of the screen will be air space);
- Include species that are hardy and fast growing; and
- Foliage from base to crown (i.e. lower and upper storey vegetation) to ensure that the buffer is effective in slowing and filtering air movement at all levels.

ProTen will progressively establish the landscape plantings, as soon as practically possible, following bulk earthworks and construction of development infrastructure.

ProTen understands that odour issues are directly related to farm operation, with good management practices playing a significant role in reducing the potential for emissions. On this basis, and as advised in the EIS (SLR 2015a), the following additional design features, best management practices and mitigation measures will be implemented to minimise the potential for odour impacts:

- The poultry sheds will be fully enclosed and have adequate roof overhang (wide eaves) and be surrounded by dwarf concrete bund walls to reduce moisture in the sheds and thereby reduce odour emissions.
- The poultry sheds will be tunnel-ventilated, which will allow control over the moisture levels and promote optimum growing conditions and bird health. The increased airflow and improved feed conversion in tunnel-vented sheds helps to maintain bedding material within the optimal moisture range (NSW Agriculture 2004).
- The poultry sheds will be fitted with nipple drinkers and drip cups to minimise water spillage and shed moisture.
- Regular monitoring and maintenance of the tunnel ventilation systems and bird drinkers will be undertaken to avoid spillages, leaks and uneven distribution.
- Stocking densities and bird health within the poultry sheds will be regularly checked and, if necessary, appropriate corrective measures will be implemented.
- Daily monitoring and maintenance of the bedding material to identify, remove and replace any caked material beneath drinking lines and/or areas with excessive moisture content.

- Poultry litter will be promptly removed from the sheds and transported off-site in covered trucks at the end of each production cycle during the clean-out phase. Where possible, litter handling will be avoided during adverse climatic conditions, such as times of cold air drainage during early morning or towards nights and strong winds. The shed ventilation systems will not be used during litter removal.
- Dead birds will be collected from the sheds on a daily basis and stored in the on-site chiller prior to removal from site.
- During sanitisation of the poultry sheds, the amount of air released from the sheds while any sanitising scent is present will be minimised and, if possible, a low scent sanitiser will be utilised.

2.2.8 Odour Risk

11. The proponent has not assessed the odour risk of their project.

The EPA recommends the proponent evaluate the odour risk level of their project. The evaluation of odour risk must, as a minimum, consider the additional information example listed above. This information is important as it will demonstrate to the EPA the proponent's level of understanding regarding the odour risk of their facility and their obligation to comply with Section 129 of the POEO Act.

Firstly, the odour risk of the poultry development has been assessed in Pacific Environment's *Air Quality Impact* Assessment (2015a), which was undertaken in accordance with accepted methodologies and considered local land use, terrain and meteorology. An air quality impact assessment, by its very nature, is an odour risk assessment. Based on the air quality impact assessment (2015a), which is considered conservative, field experience and the additional information in the letter report (2015b) contained in **Appendix H,** Pacific Environment (2015b) concludes that the modelling has produced a representative summary of potential impacts, which, in summary, are:

- Odour concentrations at all of the nearest receptors are predicted to be at or below 5 OU; and
- Maximum 24 hour and annual average PM_{10} levels are predicted to be below the respective assessment criterion at all of the sensitive receptors.

The project did not use site-specific meteorology and emissions, and only used average emission rate data.

Yes, Pacific Environment (2015a) did not use site-specific meteorology or emissions given that no such data is available. It is considered good practice and standard practice to use the methodology adopted by Pacific Environment (2015a) when site-specific data is not available. If significant terrain was present in the region reliance on prognostic model output data, including that from TAPM, would be appropriate, however, given that the area is flat and that TAPM does not compare well with the observed data, the meteorology used is likely to be consistent with that expected on the site (Pacific Environment 2015b).

While the emissions estimation method was not based on test data from the site (given there are currently no poultry sheds on site), it is based on over 10 years of experience and data collected from other poultry farms. The data makes use of local temperatures over a full year, which is firstly used to predict the shed ventilation rate, which is then used to predict an odour emission rate. As discussed above, the adopted K factor of 2.2 is conservative and is not expected to be exceeded (Pacific Environment 2015b). The data collected at a ProTen farm near Tamworth in 2011 shown above in **Figure 10**, along with the data shown in **Figure 11**, clearly shows that the K factor of 2.2 is likely to be about 50 percent higher than what is typical of similar farms elsewhere.

There was a higher risk of unacceptable odour impacts if there were small changes in the assumptions.

It is true that the assumptions can be critical, however (as discussed above) Pacific Environment (2015a) assumed all birds will be placed on the same day and used the recommended K factor for new farms, which is higher than what is measured at operational farms over the last four years. The assessment has been made based on a number of assumptions, which, through experience, Pacific Environment has found to be appropriate and conservative for poultry odour assessments.

Throughout its history in the Australian poultry industry, ProTen has proven its commitment to best management practice at its numerous poultry production operations. This is demonstrated by the independent environment audit undertaken in 2013 by GHD at ProTen's Murrami Complex (discussed above). Farm management and profitability go hand in hand. The grower (i.e. ProTen) is paid less if the farm performs poorly. Therefore, the better managed the farm, the lower the emissions, and the lower risk of odour impacts.

Further statistical analysis was required which could include maximum, minimum, 99.9th, 95th percentile values.

The Approved Methods uses the 99th percentile nose response. It is unclear as to why the EPA wishes further percentiles to be examined, or what to compare these against. Pacific Environment (2015b) advises that while different percentiles can be used there needs to be careful consideration of associated odour criteria and averaging times (odour criterion must vary with the percentile and averaging time). The use of maximum values will give a higher concentration. However, Pacific Environment (2015b) points out that odour criteria are based on the relationship between percentiles, averaging times and concentrations – if one changes, the others also need to very in order to maintain an equivalent statistical outcome. Suitable adjustments to criteria have not been developed, and the current use of a single percentile-concentration-averaging time combination is a widely accepted approach. It is an indicator of the critical upper part of the predicted odour concentration distribution.

Unreliable and poorly performing mitigation measures presented a higher risk.

The facility posed an additional risk if there were no feasible mitigation measures that could be implemented if the facility emitted more odour that assumed.

As noted above, farm management and profitability go hand-in-hand and ProTen has proven its commitment to best management practice at its numerous poultry production operations. Based on the air quality impact assessment (2015a), which is considered conservative, field experience and the additional information in the letter report (2015b) contained in **Appendix H,** Pacific Environment (2015b) does not expect farm management standards to reduce over time or the emissions to be higher than what was modelled.

As discussed above to address the EPA's issue number 10, emissions from the poultry industry have been decreasing over past years. Pacific Environment (2015b) links this to improved feed conversion and better overall shed management. The use of a K factor of 2.2, when the average K factor at present is well below this represents (as also discussed above) means Pacific Environment's (2015a) assessment is conservative. Moreover, by complying with the best practice management requirements detailed in *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management* (DPI 2012), the risk of elevated emissions is low due to the high standard of shed management (Pacific Environment 2015b).

As noted by the EPA, the industry literature does not support the use of windbreak walls or stacks. While there are other technology options for odour control, it is accepted that the potential benefits are outweighed by issues associated with cost and management.

Pacific Environment (2015b) concludes that a combination of suitable separation distances and vegetation buffers represents the current best practice for poultry site management. This is backed-up by GHD's audit of ProTen's Murrami Complex in 2013 (discussed above) which, in summary, concluded the following:

- The Murrami Complex is being managed broadly in accordance with the *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management* (DPI 2012), its development consent and environment protection licence requirements.
- Given that the audit established that industry best practice is being adopted, there are few options to further reduce shed odour emission rates.
- A reduction in predicted odour levels at receptors as a result of introducing stub stacks or end bay deflectors would need to be significant before such measures could be recommended. These options are only effective at short distances where there is a lower odour level at ground level compared to that at the elevated plume centreline.
- By-pass cooling arrangements and shed insulation options are subject to further and extensive investigation inclusive of cost/benefit analysis.
- While scrubbing techniques have been trialled within the industry, these are yet to be established as part of "best practice", with benefits being outweighed by costs and other issues.
- Increasing the "surface roughness" and providing some filtering effect via vegetation screening is sure to assist in reducing dust and odour levels crossing the site boundary. Vegetative screens will induce additional turbulence as the odour plumes pass through this permeable barrier, though this will be muted when the stability is high (E or F conditions). Vegetative screens however also act to partially remove fine dust particles in the odour plumes.

ProTen has committed to establishing vegetation screens around each PPU in accordance with the relevant recommendations outlined in *Planning Guidelines Separating Agricultural and Residential Land Uses* (Department of Natural Resources 1997) (listed above). ProTen has also committed to the range of design features, best management practices and mitigation measures listed above to minimise the potential for odour impacts.

2.3 NSW Office of Water

Water resources were assessed in the EIS (SLR 2015a) as follows:

- SLR undertook an assessment of potential surface water issues associated with the Project, including a flooding assessment to define pre-development flooding behaviour and inform any building design, transport and safety provisions necessary during flooding events. A copy of SLR's *Flooding Assessment* (2015c) was appended to the EIS and summarised within the EIS. Conclusions of the flooding assessment included:
  - The development site is unlikely to be flood affected during mainstream flood events up to and including the 1 in 100 year annual recurrence interval (ARI) event. In addition, it is considered unlikely that the site will be flood affected by Murrumbidgee River or Yanco Creek out of bank flows during an extreme flood event such as the probable maximum flood (PMF).
  - Flood warnings are likely to be available via the NSW State Emergency Service (SES) at least several days prior to a mainstream flood occurring. Where a flood warning is issued, the flood management plan documented in the EIS (SLR 2015a) will be implemented to effectively manage the flood risk to the development.
  - All PPUs will be constructed above the predicted 1 in 100 year ARI flood depth. Concrete bund walls will be constructed around each of the poultry sheds and swale drains between the sheds have been designed to safely convey flood flows.
  - The stormwater management system has been designed with the total storage on site equivalent to 170 percent of the storage capacity required to contain runoff from a 1 in 100 year ARI, 72 hour flood event.
- SLR undertook an assessment of potential groundwater issues associated with the Project, including a conceptual hydrogeological model. This assessment was detailed in the EIS (SLR 2015a). Conclusions of the groundwater assessment included:
  - The proposed extraction of groundwater to service the development's water supply requirements of 460 megalitres per year (1.26 megalitres per day averaged over a year), which will be serviced via the transfer of an existing water access licence (WAL) from a bore located approximately 5 km to the east of the development site, will not create any additional impact on the sustainable yield of the deep aquifer source (Calivil Formation).
  - The proposed extraction will also meet the NSW Aquifer Interference Policy (NOW 2012) minimal impact considerations for a "highly productive groundwater source", with the associated drawdown not exceeding 2 metres at any nearby extraction well.

The NOW's submission dated 7 July 2015 included nine recommendations (including requests for additional information) in relation to the assessment of flooding and groundwater undertaken for the Project. The recommendations made by the NOW and requests for additional information are identified below in ***bold italic text***, followed by the response in normal text.

2.3.1 Flooding

1. Clarification is included in the flooding assessment of potential impacts on-site and to the neighbouring properties in terms of food extent, food depth and flood velocities for the 1 in 100yr ARI event and the PMF. Impacts on neighbouring properties need to be considered in terms of land management practices as well as infrastructure.

To address this issue, SLR undertook additional flood modelling and prepared an addendum to the *Flooding Assessment* (SLR 2015c) that was appended to the EIS (SLR 2015a). The scope of this additional work comprised:

- One dimensional hydraulic modelling of local overland flood flows for the post-development scenario (the pre-development scenario was modelled previously by SLR (2015c)); and
- Comparison of flooding behaviour between pre-development and post-development scenarios to identify the impact of the proposed development.

A copy of the *Flooding Addendum* (SLR 2015f) is contained in **Appendix D** and the key outcomes are summarised below.

SLR (2015c) developed two hydraulic models for the pre-development scenario to simulate the northern ephemeral flow path through the development site and both the combined southern and northern ephemeral flow paths (with the worst-case flood level for the northern ephemeral flow path selected). SLR (2015f) modified these models to account for the construction of the five PPUs (i.e. the post-development scenario). Additional cross-sections were added to both the pre-development and post-development hydraulic models to enable the change in hydraulic conditions between the two scenarios to be identified and assessed. In the post-development scenario, each PPU was assumed to be a solid structure with no allowance for flow in between the poultry sheds to conservatively assess flood afflux.

A schematic of the hydraulic models, including cross-section locations, is provided in **Figure 14**.

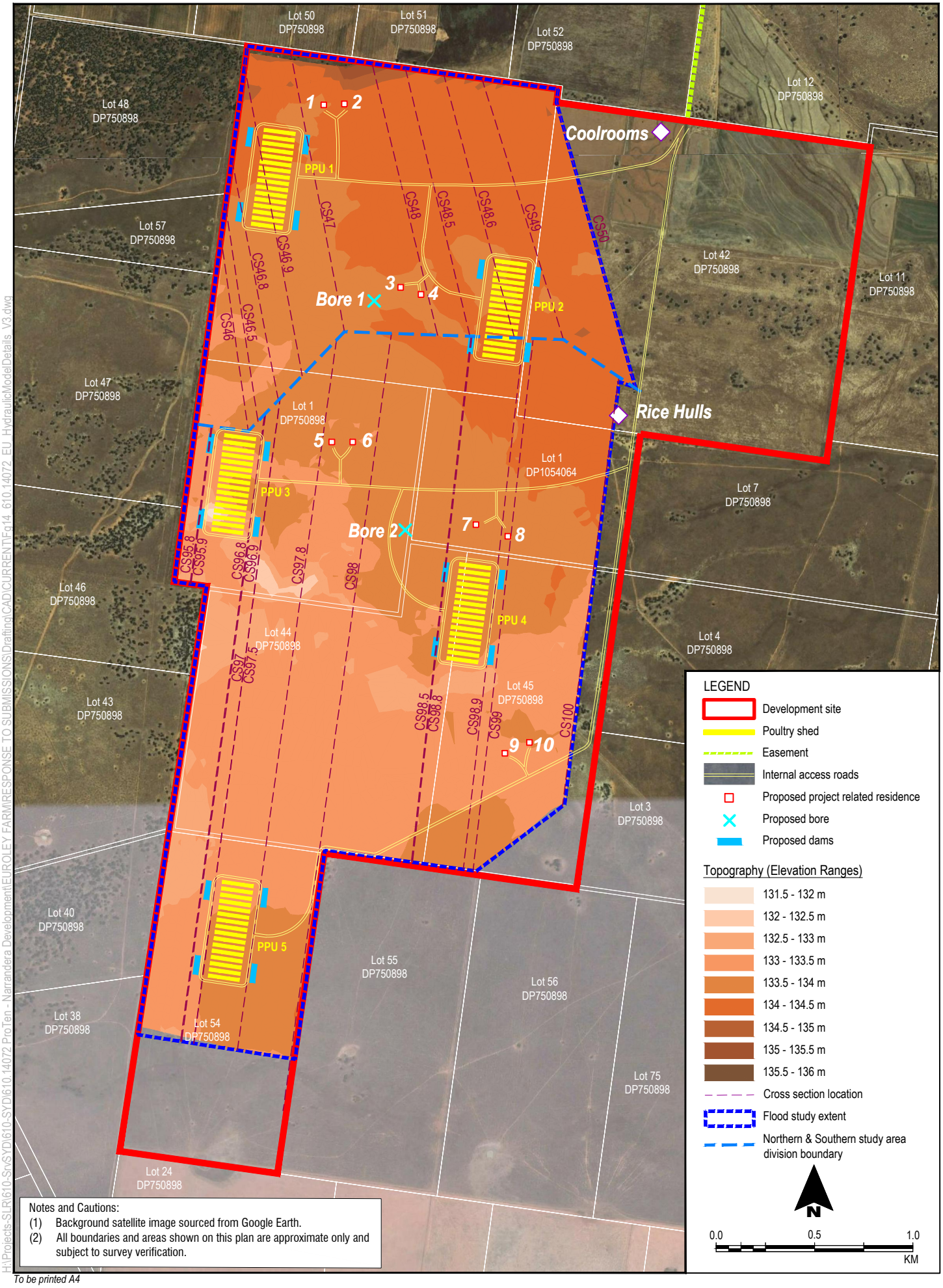
The flooding afflux impacts for the 1 in 100 year ARI event and PMF event are shown in the long-sections provided in **Figures 15** and **16** for the northern and southern ephemeral flow paths, respectively. Flood mapping showing the 1 in 100 year ARI event flooding depths for the pre-development and post-development scenarios are also shown on **Figures 17** and **18**, respectively.

The hydraulic modelling indicates that the maximum flood afflux as a result of the development is predicted to be experienced upstream of PPU 2 at 90 millimetres for the 100 year ARI flood event and 110 millimetres for the PMF event. The flood afflux impacts upstream of the development at the site's eastern boundary are predicted to be less than 50 millimetres for a 100 year ARI event and 80 millimetres during a PMF event. No flood afflux impacts are predicted to occur downstream of the development towards the site's western boundary.

The maximum average flood flow velocity increase is predicted to be 0.08 metres per second during a 100 year ARI event and 0.11 metres per second during a PMF event.

SLR (2015f) concludes that there are no existing buildings or infrastructure items on properties surrounding the development site that will to be adversely affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding. As the flood afflux is predicted to be relatively minor within the development site and at the site boundaries and flood velocities did not increase significantly within the development site or at the site boundaries, agricultural practices in neighbouring properties are also unlikely to be affected by the flood impacts associated with the proposed development.

It is also worth noting, as detailed in Section 6.5.2 of the EIS (SLR 2015a), mainstream flooding is not considered to pose a significant risk to the development site. Notably, aerial photography of the 1974 flood event, which was estimated to be a 1 in 99 year ARI event (SKM 2000), taken within hours of the flood peak do not appear to show the development site to be flood affected.



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Hydraulic Model Details

FIGURE 14

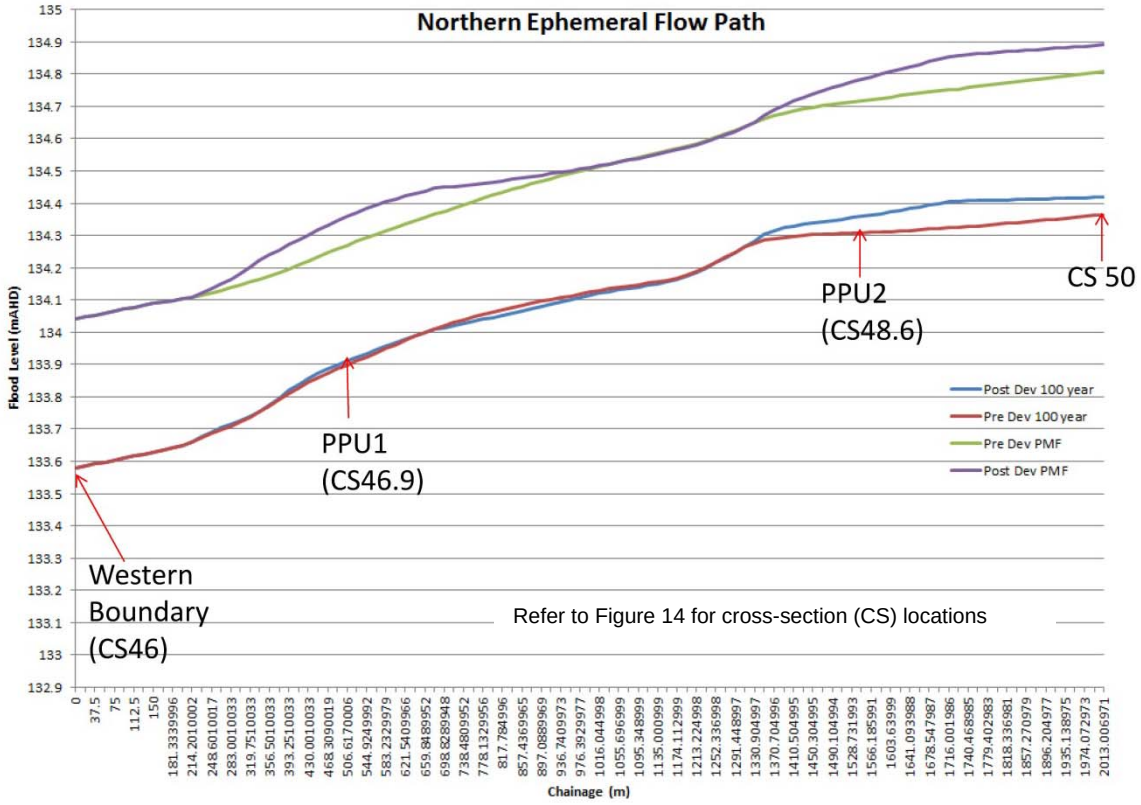


Figure 15 - Flood Afflux Impact – Northern Ephemeral Flow Path

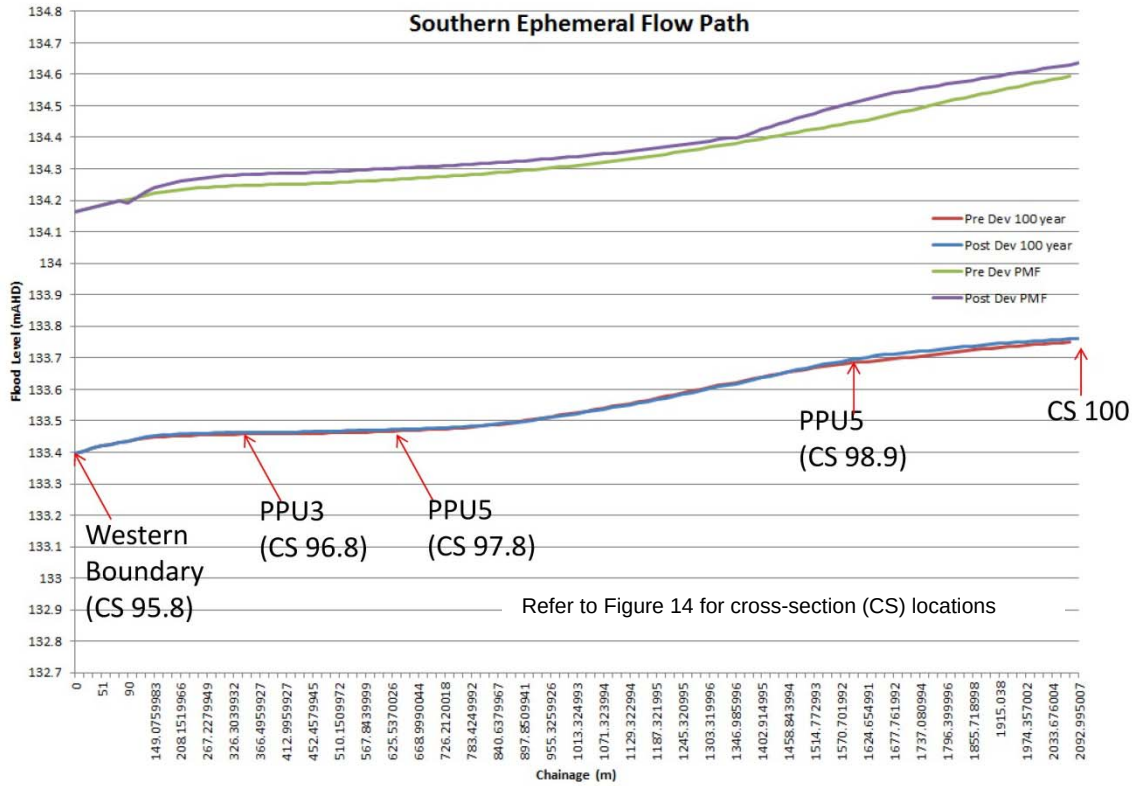
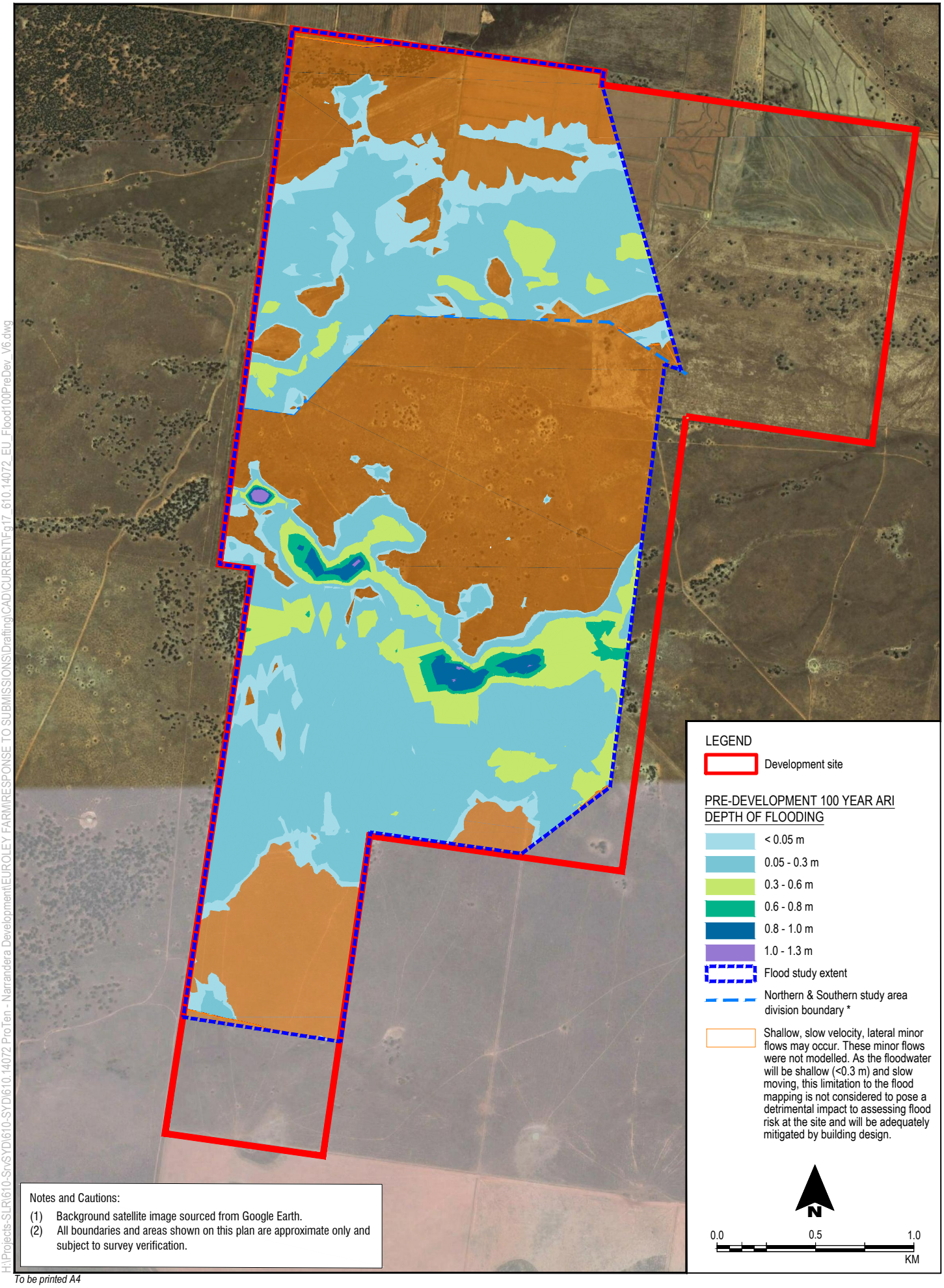


Figure 16 - Flood Afflux Impact – Southern Ephemeral Flow Path



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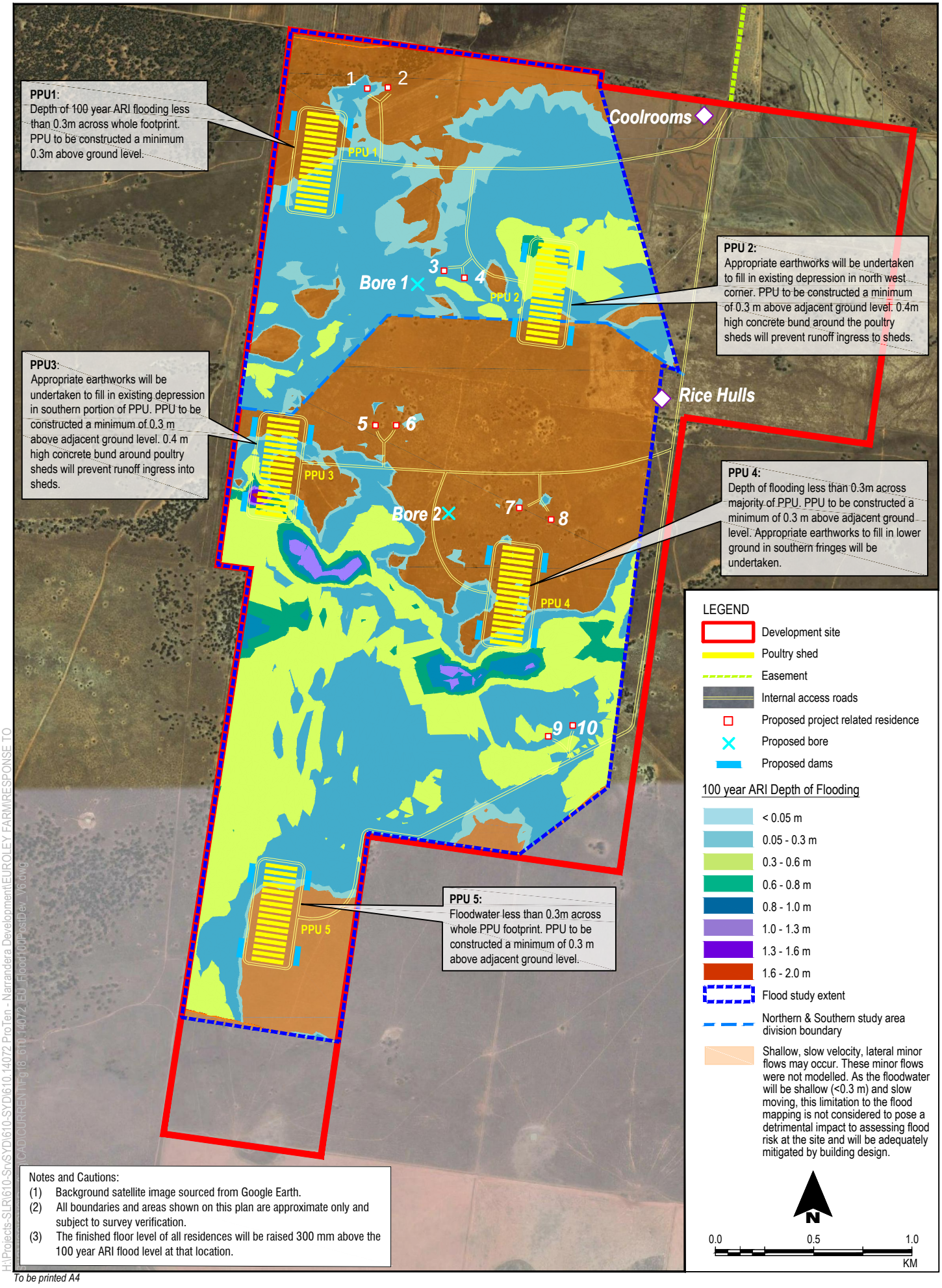
100 Year ARI Pre-Development Flood Depths

FIGURE 17



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100 Year ARI Post-Development Flood Depths

FIGURE 18

2.3.2 Groundwater

2. The EIS be amended to clarify the exact locations of proposed bores (correct Lots/DP numbers)

The exact locations of the proposed bores within the development are shown on **Figure 1** (revised Figure 1.3 from the EIS). As evident, the proposed bores will be located within Lot 41 in DP 750898 and Lot 1 in DP 750898. Both of these bore locations will include one production bore and one backup bore in case of pump failure.

3. It is recommended that proper pump testing be carried out to confirm bore yields at the proposed sites to confirm water supply security.

ProTen engaged Watson Drilling of Deniliquin to undertake bore drilling and construction, Wayne Kempton Bore Pumps of Deniliquin to undertake a bore pump testing program and SLR to provide hydrogeological support and analysis. SLR's letter report (2015g) in **Appendix D** presents the results of the bore drilling and pump testing program for the two proposed groundwater production bores, and a summary of the pump testing results is provided below.

The drilling program targeted the Calivil Formation aquifer (i.e. the deep source), which lies beneath approximately 50 metres of the Shepparton Formation at the development site. The Shepparton Formation in turn is overlain by 4 to 5 metres of topsoil and weathered silty clay, which provides low permeability cover to the Shepparton Formation aquifer (i.e. the shallow source).

Lithological drilling logs are appended to SLR's letter report in **Appendix D**, and a summary of the bore construction information is provided below in **Table 11**.

The target Calivil Formation was intersected at 54 metres below ground level (BGL) at both of the proposed groundwater production bore locations lying immediately below the Shepparton Formation. It was noted to be 24 metres thick at Bore 1 and 46 metres thick at Bore 2, although its entire thickness was not drilled in Bore 1. The Renmark Group was intersected at Bore 2 below the Calivil Formation at 100 metres depth, giving a total formation thickness of 46 metres. In the two drilling locations, the Calivil Formation consisted of medium to coarse grained clean white quartzose sands, interbedded with thin clayey horizons.

Table 11 - Bore Drilling and Construction Information

Bore ID	Total Drilled Depth (mBGL)	Top of Calivil Formation (mBGL)	Base of Calivil Formation (mBGL)	Well Screens (ss wire-wound)		Standing Water Level (mBGL)
				Aperture	Setting (mBGL)	
Bore 1	78	54	not drilled	0.050" 0.060" 0.040" 0.050" 0.060" 0.070"	57-79 59-60 64-65 65-66 66-71 71-73	24.48
Bore 2	107	54	100	0.060" 0.070" 0.040" 0.050"	73-75 75-77 85-91 91-93	24.22

The bore pump testing was undertaken according to *AS 2368-1990 Test Pumping of Water Wells* and comprised:

- A single constant rate test on Bore 1 at a rate of 45 litres per second (i.e. well in excess of the long-term forecast water demand of the development) for 48 hours, with drawdown monitored in both Bore 1 and Bore 2 using electronic data loggers and e-tapes. The constant rate test was undertaken with the objective of obtaining reliable site-specific estimates of the aquifer hydraulic properties of transmissivity and storativity for groundwater drawdown modelling (see issue 5 below).
- A short monitored recovery test, with recovery monitored in Bore 1 using an electronic data logger and an e-tape. The recovery test was undertaken with the objective of obtaining additional data on aquifer hydraulic properties.

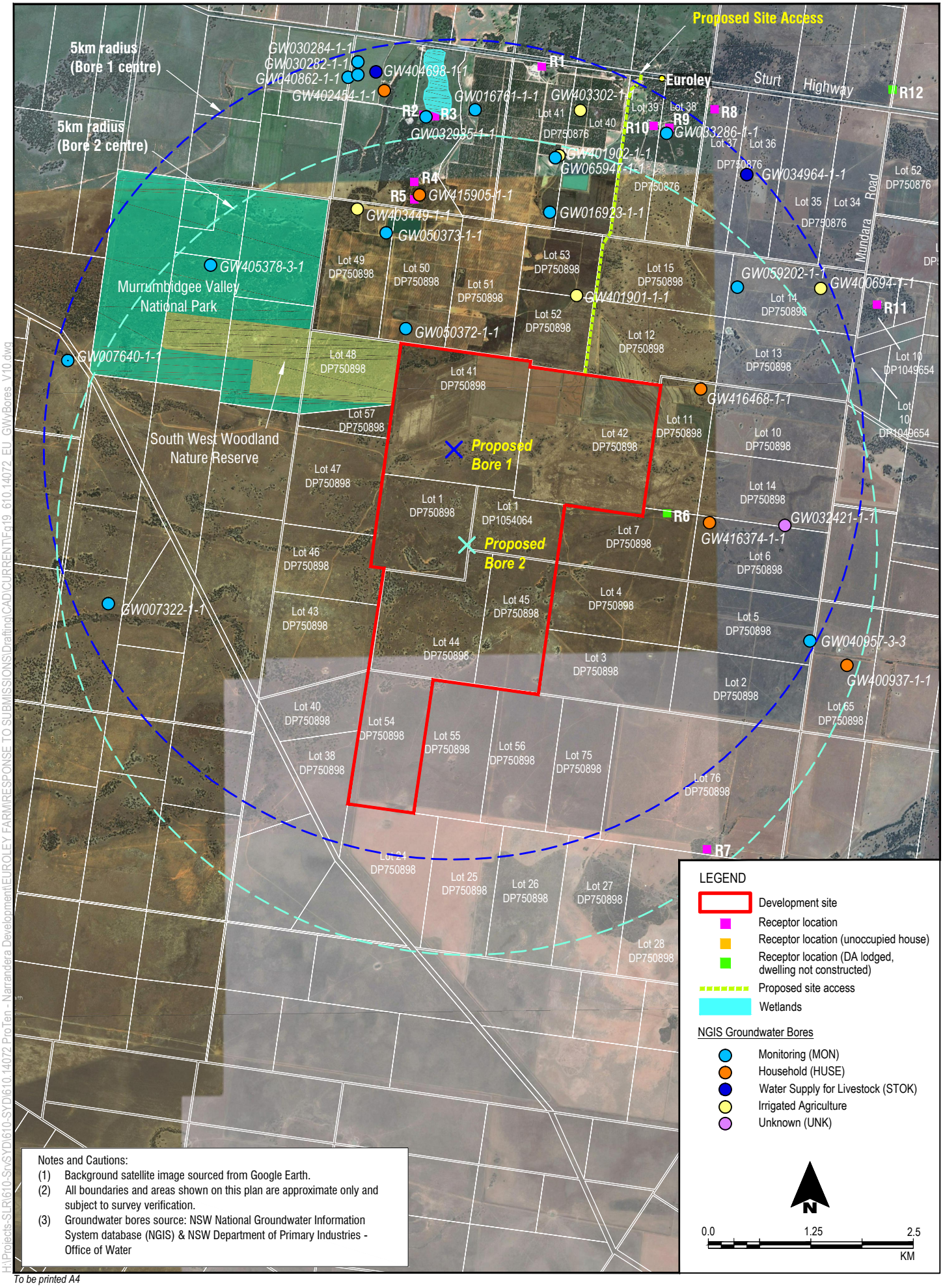
The results of the pumping test indicate that the Calivil Formation aquifer has sufficient capacity to support the development's long-term water supply requirements of approximately 1.26 megalitres per day and can support significantly higher rates of extraction. The pumped bore recorded a maximum drawdown of only 4.18 metres after 2 days of pumping at 45 litres per second (3.89 megalitres per day), with the observation bore located almost 1.2 kilometres away recording a maximum of 0.44 metres drawdown.

The achieved yields demonstrate appropriate water supply security for the development.

4. The locations of all existing bores within 5km including their depths and distances from ProTen's proposed extraction sites are provided.

The locations of all existing bores within 5 km of the proposed bores within the development site are shown on **Figure 19**. As evident a total of 28 bores have been identified within this area, including 15 monitoring bores, five bores used for household purposes, two bores used for livestock watering, five bores used for irrigation purposes and one bore with an unknown purpose.

This information was sourced from the National Groundwater Information System (NGIS) on-line database and NOW's on-line database.



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Groundwater Bores

FIGURE 19

5. The assessment of potential impacts of 460 ML extraction on nearby bores is considered inadequate and it is recommended that the analytical model be re-run to assess the impact of extraction using modified aquifer parameters and a longer pumping period (i.e. 2,000 days).

As outlined above (see issue 3), ProTen engaged Watson Drilling of Deniliquin to undertake bore drilling and construction, Wayne Kempton Bore Pumps of Deniliquin to undertake a bore pump testing program and SLR to provide hydrogeological support and analysis. SLR's letter report (2015g) in **Appendix D** presents the results of the bore drilling and pump testing program for the two proposed groundwater production bores, and a summary of the modelling results is provided below.

Analysis of the bore pumping test was undertaken by SLR (2015g) using the following published solutions (Kruseman & de Ridder 1994):

- Cooper-Jacob straight-line method (pumping data, pumping bore and observation bore); and
- Theis recovery straight-line method (recovery data, pumping bore only).

These analyses are appended to SLR's letter report (2015g) in **Appendix D** and a summary of the results from the pumping test analysis is provided below in **Table 12**.

Table 12 - Aquifer Testing Analysis Results

Pumped Bore ID	Observation Bore	Transmissivity (m^2/d)	Storativity
Bore 1	Bore 1	3,389 (pumping, Cooper-Jacob) 3,953 (Theis recovery)	n/a n/a
	Bore 2	3,389 (pumping, Cooper-Jacob) 3,350 (pumping, Theis curve fitting)	3.45×10^{-4} 3.30×10^{-4}
	Geometric mean	**3,512**	**3.4×10^{-4}**

The aquifer test analysis indicates that the transmissivity of the Calivil Formation aquifer is about 3,400 square metres per day in the development area and storativity is around 3.4×10^{-4}.

The aquifer parameters obtained from the testing program were input to an analytical model using the Theis distance-drawdown equation to determine likely groundwater drawdown resulting from operation of the development. The model adopted the following assumptions:

- Pumping rate of 1.26 megalitres per day, equivalent to the development's proposed extraction of approximately 460 megalitres per year;
- Pumping from only Bore 1 (rather than splitting the extraction over two bores) to provide the most conservative estimate of groundwater drawdown;
- Transmissivity of 3,512 square metres per day and storativity of 3.37 x 10-4 as per the results of the aquifer testing program (see **Table 12**); and
- Pumping duration of 2,000 days (as requested by NOW) to provide an indication of the long-term groundwater drawdown impacts.

The results of the analytical model, which are presented in **Figure 20** below, show a predicted maximum long-term drawdown of 0.8 metres in the immediate vicinity of the pumping bore, with the 0.5 metre drawdown radius extending only around 110 metres from the pumping bore.

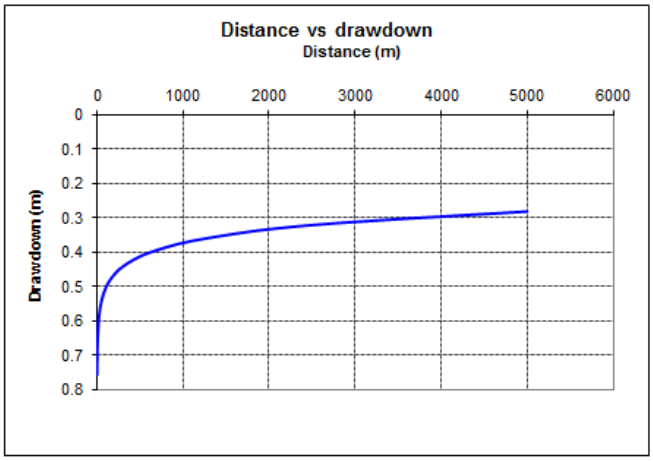
Project: ProTen

Calculate Drawdown (s) for known Discharge (Q) **THEIS Analytical Solution (Theis, 1935)**

INPUTS

Pumping rate of well:	14.58	L/s
	1260	m3/day
Storage coefficient (s) of aquifer:	3.37E-04	
Transmissivity (m2/day):	3512	
Time since pumping started (days):	20000	

Distance (m)	u	W(u)	Drawdown (m)
1.2	1.79E-12	2.65E+01	0.76
2.4	7.15E-12	2.51E+01	0.72
4.9	2.86E-11	2.37E+01	0.68
9.8	1.14E-10	2.23E+01	0.64
19.5	4.58E-10	2.09E+01	0.60
39.1	1.83E-09	1.95E+01	0.56
78.1	7.32E-09	1.82E+01	0.52
156.3	2.93E-08	1.68E+01	0.48
312.5	1.17E-07	1.54E+01	0.44
625.0	4.69E-07	1.40E+01	0.40
1250.0	1.87E-06	1.26E+01	0.36
2500.0	7.50E-06	1.12E+01	0.32
5000.0	3.00E-05	9.84E+00	0.28



Source: SLR 2015g

Figure 20 - Groundwater Analytical Model Predictions

The pump test analysis indicates that the development's proposed groundwater abstraction levels will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the *NSW Aquifer Interference Policy* (NOW 2012) thresholds.

6. It is recommended that all groundwater extraction points (bores) are required to be equipped with meters as per required standards.

Noted. The proposed groundwater bores within the development site will be equipped with meters to record water extraction volumes.

7. The volume of groundwater extracted from the authorised bores be limited to 460 ML/year through the project approval.

While it has been calculated that the poultry development will require approximately 460 megalitres per annum, the volume of water extracted will be limited by the conditions on the development site's WAL. The development's water supply requirements will be serviced via the transfer of an existing WAL (No. 11788) from a bore located approximately 5 kilometres to the east of the development site. WAL 11788 permits the abstraction of 488 megalitres per year from the Lower Murrumbidgee Deep Groundwater Source under the *Water Sharing Plan for Lower Murrumbidgee Groundwater Sources 2003.* The *Statement of Conditions* for WAL 11788 includes the following relevant conditions:

Condition 5 *The licence holder must comply with the terms of the extraction component specified on this licence, including the times, rates or circumstances in which, and the areas or locations from which, water may be taken under this licence subject to any extraction restrictions in local impact areas.*

Condition 6 *This licence entitles its holder to the specified shares in the available water from the specified water source as described in this licence*

Condition 10 *The licence holder must not take more water than is allowed pursuant to an applicable AWD* (available water determination) *unless the taking is pursuant to a lawful transfer or assignment under chapter 3 part 3 of the Act.*

In addition to WAL 11788, ProTen has recently entered in to a sale and purchase agreement for an additional 225 megalitres of water per year from the same water source, being the Lower Murrumbidgee Deep Groundwater Source under the *Water Sharing Plan for Lower Murrumbidgee Groundwater Sources 2003.* This additional allocation is being transferred from WAL 11833, which has a total allocation of 925 megalitres per year and is currently associated with a property approximately 4 kilometres to the northeast of the development site.

On this basis, the development site will have a licensed allocation of 713 megalitres per year of groundwater from the Lower Murrumbidgee Deep Groundwater Source (i.e. Calivil Formation aquifer).

In response to the NOW's request, the volume of water extracted will be limited by the development site's licensed water allocation and conditions on the WAL, not the development consent.

8. As part of the condition of consent all production bores are required to be constructed in accordance with the "Minimum Construction Requirements for Water Bores in Australia, Third Edition, February 2012".

Noted. The proposed groundwater bores within the development site will be constructed in accordance with the *Minimum Construction Requirements for Water Bores in Australia, Third Edition* (February 2012).

9. The EIS establish pre-development depth to water table and groundwater quality of the shallow groundwater source in areas targeted for shed wash and stormwater disposal and in the vicinity of on-site staff amenities and residences as well as chemical storage facility. Shallow piezometers are recommended with regular monitoring for water table depth and quality.

SLR (2015g) advises that the Calivil Formation aquifer (i.e. deep aquifer source) lies beneath around 50 metres of the Shepparton Formation at the development site. The Shepparton Formation in turn is overlain by 4 to 5 metres of topsoil and weathered silty clay, which provides low permeability cover to the Shepparton Formation. SLR (2015g) advises that the 4 to 5 metres of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation.

As outlined in the EIS (SLR 2015a), an engineered surface water drainage system will be implemented to provide long-term structural controls and management measures to mitigate the impact of surface water runoff throughout the life of the operation. The swale drains between the poultry sheds will be designed to allow infiltration of the water into the topsoil for nutrient uptake by the grass, which will be regularly slashed. During heavy rainfall events, excess water from the grassed swales will be directed to underground pipes and into a catch drain that will be installed around the perimeter of the poultry sheds. The construction of the perimeter catch drain will ensure that all rainfall runoff from the ground surfaces surrounding the sheds is contained within the controlled storm water management system.

The perimeter catch drain will convey the water to the four small storage dams (see **Figures 1** and **3**). These dams will each have a capacity of approximately 7 megalitres, which is equivalent to 170 percent of the capacity required to prevent runoff escaping the dams from a 1 in 100 year ARI, 72 hour event. The runoff to be captured in these dams will predominantly be clean runoff. While the water captured in the detention basins will have some level of nutrients, the levels are predicted to be low given that the poultry sheds will be thoroughly blown and swept prior to being washed and the grassed swales will provide a very effective means of nutrient removal. An analysis of the nutrient load in the wash down water was undertaken by GHD (2007) for one of ProTen's operating poultry farms, where litter is managed in the same way as proposed for the Euroley development. This analysis determined the typical nutrient concentration of wash down water to be:

- Total Suspended Solids - 2,500 milligrams per litre;
- Total Nitrogen - 65 milligrams per litre; and
- Total Phosphorus: 45 milligrams per litre.

The typical annual pollutant load removal efficiencies for vegetated swales according to *Australian Runoff Quality* (Engineers Australia 2006) are presented in **Table 13**.

Table 13 - Typical Annual Pollutant Load Removal Efficiencies for Vegetated Swales

Pollutant	Typical Removal
Total Suspended Solids	60-80 %
Total Nitrogen	25-40 %
Total Phosphorus	30-50 %

The nature of the strata, the surface water drainage system and mitigation measures to be employed at the development site will provide an adequate buffer against infiltration of wash down water and any potential pollutants to the shallow groundwater source. No detectable impacts to groundwater levels, yields or quality are expected in the Shepparton Formation aquifer.

To reiterate SLR's (2015g) advice following the groundwater bore drilling and pump testing analysis, the 4 to 5 metres of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation.

On this basis, the installation of piezometers to monitor the water table depth and quality within the shallow aquifer is not considered warranted.

In addition to the strata barrier, the following best management practices and mitigation measures will be implemented to safeguard water resources and/or minimise the potential adverse impacts:

Development Design

- Each poultry shed will be fully enclosed and have concrete flooring.
- Each poultry shed will be surrounded by a dwarf concrete bund wall to prevent rainwater and runoff entering the sheds and to allow for the controlled discharge of wash down water from the sheds.
- The engineered surface water drainage system described above will be implemented to provide long-term structural controls to manage surface water runoff and ensure no off-site impacts.
- On-site aerated wastewater management systems will be installed to manage the sewage generated by on-site staff amenities and dwellings in accordance with the manufacturer's specifications and Council requirements.

Operation

- The surface water management system will be visually inspected on a monthly basis and following significant rainfall events. Any required maintenance work (desilting, regrading and/or reshaping) will be promptly undertaken to ensure the system's design capacity is maintained.

- The grassed swale drains between the poultry sheds will be carefully managed to minimise soil disturbance and maximise infiltration of runoff, as well as regularly slashed to encourage continual grass growth and associated nutrient up-take.
- Dry-cleaning practices at the end of each production cycle will be maximised within the poultry sheds prior to washing with water to minimise the volume of wash water, along with the amount of poultry litter (and associated sediments and nutrients) washed out of the sheds.
- The waste management systems described in the EIS (SLR 2015a) will be implemented to ensure that each waste stream generated by the development is effectively managed and disposed of off site. There will not be any on-site stockpiling or disposal of waste materials.
- The best management practices and mitigation measures described in the EIS (2015a) for chemical use and storage will be implemented.
- The limited volumes of chemicals on site will be stored in appropriately sealed and bunded storage containers/sheds.
- Diesel and petrol will be stored in bunded tanks with overflow containers. These overflow containers will be regularly inspected and, when required, removed by a licensed contractor to prevent overflow and replaced. Any excess water collected in the bunded areas will also be removed by the contractor.

Groundwater Quality within the Shallow Aquifer

A water sample taken from the shallow aquifer source during the recent bore drilling and pump testing (see issues 3 and 5 above) has been tested by a NATA accredited laboratory. The laboratory analysis report is contained in **Appendix I** and the results are listed in **Table 14**.

Table 14 - Groundwater Quality in the Shallow Aquifer

Parameter	Result
pH	6.6
Conductivity	685 µS/cm
Total Organic Carbon	<0.5 mg/L
Ammonia as N	<0.2 mg/L
Nitrate as N	<0.5 mg/L
Phosphorus	0.04 mg/L
Sodium (dissolved)	84.3 mg/L
Potassium (dissolved)	1.89 mg/L
Sulphate	18.9 mg/L
Calcium (dissolved)	29.7 mg/L
Chloride	144 mg/L
Magnesium (acid extractable)	22 mg/L

2.4 Office of Environment and Heritage

2.4.1 Biodiversity

SLR undertook an assessment of the biodiversity issues associated with the Project in accordance with the requirements of the *Framework for Biodiversity Assessment* (FBA) (OEH 2014). Field survey and assessment of native vegetation and threatened species was conducted in January and February 2015. A copy of SLR's (2015b) *Biodiversity Assessment Report* was appended to the EIS and summarised within the EIS.

As described in the EIS (SLR 2015a) the development site contains a large expanse of cleared land and it represented the preferred option of several sites considered based on a range of economic, social and environmental criteria, including biodiversity. SLR (2015b) advises that unavoidable impacts on native vegetation within the development site are minor and include impacting a small area of Sandhill Pine EEC (endangered ecologically community) to allow construction of the internal access road and a small area of low condition Black Box Grassy Open Woodland in the south of the development site. SLR (2015b) determined appropriate biodiversity credits and offsetting to compensate for vegetation and habitat loss, comprising a small requirement of 16 ecosystem credits.

The OEH's submission dated 26 June 2015 recommends that the development consent be conditioned to avoid impacts to biodiversity. Following this submission, representatives of ProTen, OEH and SLR conducted a site meeting on 13 August 2015 to discuss and verify some of the issues raised by OEH. Subsequently, OEH revised their requirements in relation to biodiversity in an email on the 24 August 2015 (see **Appendix J**). The OEH's revised requirements and recommended conditions are identified below in ***bold italic text***, followed by the response in normal text.

It is now our understanding that the siting of residences and their access tracks, roads, and other project-related infrastructure will avoid disturbing or clearing individual trees and patches of open-woodland… SLR have agreed to use the 'Central Southern NSW' vegetation mapping to guide location of infrastructure to avoid biodiversity impacts.

The current biodiversity credit requirement to offset impacts of the proposal is 16 ecosystem credits…. there are no available like-for-like credits available to the proponent. The small credit requirement, the cost of establishing a BioBanking site for such as small area and lack of available matched ecosystem credits means that, the most appropriate option in this case would be use of the offset fund if it is available…

There is a patch of remnant vegetation in the north-west corner of Lot 41/750898 that is likely to represent Sandhill Pine Woodland EEC… we consider that the protection and improvement in condition of this area (approximately 18 ha) could provide a long-term contribution to regional biodiversity values.

We consider that the following actions would provide an acceptable outcome for loss of biodiversity values if Option 2 (as described in Section 7.4 of the BAR) does not result in the purchase and retirement of the 16 credits.

Suggested Biodiversity Offset Strategy Actions:

- ***A contribution is made to the offset fund when it is available, and credits are retired.***
- ***In the meantime, and to provide a short-term option in the event that the offset fund is delayed or it's development ceases:***
  - ***ProTen/SLR confirm that the patch of vegetation in north-west corner of Lot 41/750898 is Sandhill Pine Woodland EEC and undertake a BioBanking plot(s) to determine its condition and to identify appropriate management actions.***
  - ***ProTen erect a temporary fence to exclude stock and rabbits from the patch of Sandhill Pine Woodland EEC. Any site management actions undertaken by ProTen that benefit biodiversity after fencing will be considered when the offset strategy is finalised.***

- ***SLR/ProTen will contact NPWS to discuss the possibility of adding the vegetated north-west corner of Lot 41/750898 into the national park reserve system.***

Following the site visit with OEH on the 13 August 2015 and receipt of OEH's revised requirements (see **Appendix J**), SLR amended the biodiversity offset strategy presented in the EIS (SLR 2015a) and the revised version (2015h) is provided in **Appendix K.** In summary, ProTen's preferred approach to biodiversity offsetting for the Project is:

- Temporary fencing (to exclude sheep and other relevant stock animals) of the area mapped by OEH (2011) as White Cypress Pine Open Woodland (equivalent to Sandhill Pine Woodland EEC) within the northwestern corner of the development site (see **Figure 21**); plus
- Purchase and retirement of the 16 credits (or equivalent as permitted as the Variation Rules) should they become available over a 5 year period; or
- If the ecosystem credits do not become available, make a monetary contribution equivalent to the cost of the credits. The amount calculated will be deposited into a NSW Government fund or invested in another approved conservation fund.

The temporary offset area shown on **Figure 21** is currently subject to sheep grazing, which is likely to be having a debilitating effect on any native vegetation present through soil compaction, suppression of native seed germination, suppression of native seedling growth (through herbivory) and the spread of exotic grasses and herbaceous weeds. As such, the removal of grazing stock from this area, as proposed, will no doubt result in a substantial improvement in the condition of the native vegetation during the proposed temporary stock exclusion period (SLR 2015h).

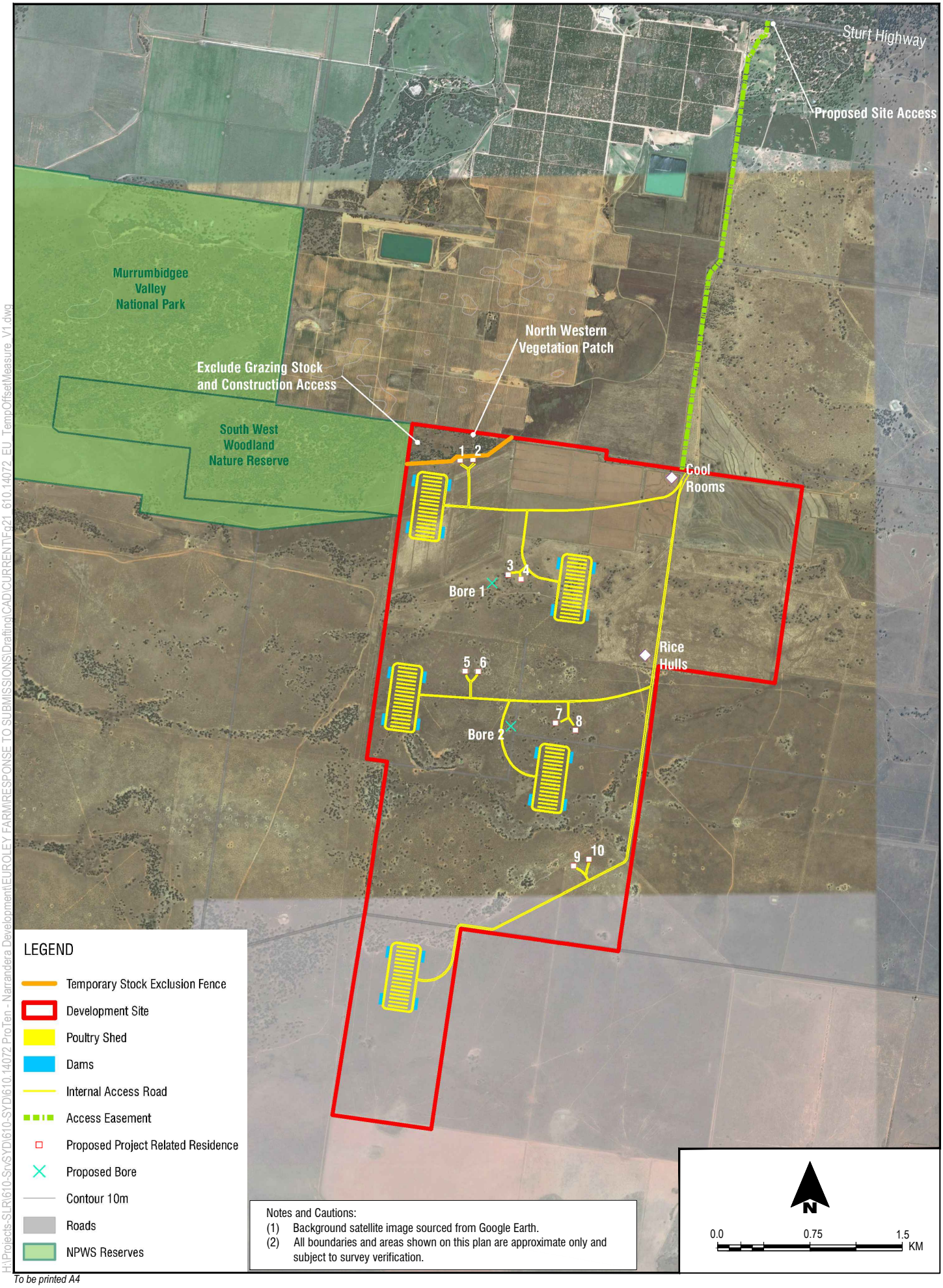
If no suitable credits are available after the end of the 5 year advertisement period, undertake the following actions:

- Survey the vegetation in the northwestern corner (including establishment of one Biobanking plot), as necessary, to confirm that the vegetation is Sandhill Pine Woodland EEC;
- Identify appropriate management actions (in consultation with OEH) for the northwestern vegetation patch, mainly stock exclusion and weed control; and
- Implement one of the two following options:
  - Consult National Parks and Wildlife Service (NPWS) on whether the land could be dedicated to the national park estate (i.e. added to the South West Woodland Nature Reserve); or
  - Make a monetary contribution equivalent to the cost of the credits. The total amount calculated would be the total credit value (as agreed with OEH) less any moneys expended by ProTen in implementing temporary offsetting measures. The agreed value will be deposited into a NSW Government fund.

Actions proposed to fulfil this preferred offset strategy will involve:

- Uploading an expression of interest (EOI) for the required ecosystem credits on the "Credit Wanted" register of the Biobanking Credit Register;
- Monitor the availability of matching ecosystem credits during the advertisement period (as required by OEH), including regularly checking the credit register for ecosystem credits that match the required type and number (including "variation credits" from the same vegetation formations);
- Consult regularly with the OEH Biobanking Team and the Albury office of OEH during the EOI period in relation to the availability of suitable credits or offset sites;
- During, or at the end of, the advertisement period, either:
  - Purchase like-for-like credits, or, if not available, purchase variation credits; or if both credit types not available, then:
  - Survey the vegetation in the northwestern corner (including establishment of one Biobanking plot), as necessary, to confirm that the vegetation is Sandhill Pine Woodland EEC; and

- Identify appropriate management actions (in consultation with OEH) for the northwestern vegetation patch, mainly stock exclusion and weed control; and
- Apply supplementary measures and calculate suitable monetary fund deposit; or
- Consult with NPWS on whether the land could be dedicated to the national park estate (i.e. potentially added to the South West Woodland Nature Reserve).



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Temporary Offset Measures

FIGURE 21

Areas dominated by Weeping Myall (Acacia pendula) in the vicinity of the proposed vehicle track between the eastern boundary of Lot 1 DP 1045064 and PPU 3 should be mapped and avoided during construction.

There are two small patches of Weeping Myall Woodland mapped by OEH (2011) within the development site. SLR's ecology field team inspected these areas during field surveys and noted that these patches comprise a monoculture of scattered Weeping Myall Acacia pendula, with a complete absence of native understorey or groundcover.

Regardless of the identity and conservation status of these patches of vegetation, they lie outside of the development footprint and will not be impacted by construction or operation of the development.

Revegetation works within 100 metres of threatened ecological communities and remnant native vegetation identified in the BAR or mapped in the 'Central-southern NSW' vegetation dataset (OEH 2011) should be with species that naturally occur within the relevant community. Pasture species, weed seeds from hay bales and non-local native plants should not be introduced into native remnant vegetation.

Noted. All revegetation works and landscaping undertaken within 100 metres of mapped threatened ecological communities and remnant native vegetation will be undertaken with species that are naturally occurring within the area.

Revegetation works and landscape plantings will be undertaken and managed during both the construction and operational phases through the CEMP and OEMP, respectively. The revegetation works and landscape plantings will be regularly inspected and assessed for maintenance requirements, including any necessary weed control practices.

A minimum 100 metre buffer should be maintained between the construction footprint (including revegetation sites and vehicle access tracks) and the boundary of areas of remnant vegetation and the South West Woodland Nature Reserve.

Noted. The proposed development layout, as shown on **Figure 1**, includes a minimum 100 metre buffer between the disturbance footprint and remnant vegetation and the South West Woodland Nature Reserve. These buffers will be ensured when the development is physically set-out by surveyors.

The development disturbance footprint, buffer requirements and vegetation management requirements will be detailed in the CEMP to be prepared for approval prior to commencement of construction works.

Develop a construction protocol for identification and management of rescued fauna that includes pre-construction liaison with animal welfare organisations to enable support if required.

The CEMP will include a construction protocol for the identification and management of rescued fauna. ProTen will liaise with the NSW Wildlife Information, Rescue and Education Service Inc. (WIRES) (or similar) during the development of the CEMP to seek their input in to the protocol and confirm their availability and resources for assistance during construction (if required).

2.4.2 Aboriginal Cultural Heritage

OzArk was engaged to undertake the appropriate assessment and reporting of Aboriginal heritage issues associated with the Project. The assessment was undertaken in accordance with the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water (DECCW) 2010) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs) (DECCW 2010). A copy of OzArk's (2015) *Aboriginal Heritage Impact Assessment* was appended to the EIS and summarised within the EIS.

OzArk (2015) surveyed the proposed development disturbance areas using a combination of vehicle and pedestrian survey methods. The more archaeologically sensitive landscape features, such as the fringes of ephemeral waterways and areas of lower disturbance, were surveyed on foot. Slow vehicle survey was considered appropriate in other area due to good ground surface visibility and an almost complete absence of nonartefactual material.

In consultation with the OEH, the location of the PPU 5 and alignment of the associated access road were moved following OzArk's field survey to avoid vegetation clearing. While the new locations were not directly surveyed by OzArk, they were witnessed by OzArk from the north during the survey and consultation was undertaken with the registered Aboriginal party, being the Leeton and District Local Aboriginal Land Council (LALC).

The OEH's submission dated 26 June 2015 recommends that the development consent be conditioned to avoid impacts to Aboriginal cultural heritage. Following this submission, representatives of ProTen, OEH and SLR conducted a site meeting on 13 August 2015 to discuss and verify some of the issues raised by OEH. Subsequently, OEH clarified their requirements in relation to Aboriginal heritage in an email on the 24 August 2015 (see **Appendix J**). The OEH's requirements/recommended conditions are identified below in ***bold italic text***, followed by the response in normal text.

A pre-clearance pedestrian archaeological survey should be undertaken for linear alignments. Representatives from relevant Registered Aboriginal Parties are to be included in this assessment.

The internal road alignment and impact area of PPU5, which was not assessed as part of the original survey, should be subject to a pre clearance archaeological survey. Representatives from relevant Registered Aboriginal Parties are to be included in this assessment.

There is a requirement to undertake further pedestrian archaeological survey, particularly associated with road works and PPU 5. The site inspection has confirmed that survey will not be necessary prior to development approval, but will be required before clearing occurs. The results of this survey will then need to be incorporated into any required management plans.

ProTen has engaged OzArk to undertake the additional field survey requested by OEH and this survey is scheduled for mid-September 2015 (pending weather and site access). OzArk's proposed survey methodology comprises the complete pedestrian survey of the relocated PPU 5 and relocated residences, and sampled survey (dictated by a set methodology) of the internal roads. The pedestrian survey sample of the internal access roads will take the form of eight 500 metre long sections designed to capture the most archaeologically sensitive landforms, as well as the range of landforms present within the development site. These eight sections will be walked and will include a nominal 100 metre wide assessment area. All internal roads will also be driven and spot checks made at the discretion of the archaeologist and/or Aboriginal community members. This survey methodology will enable the landforms traversed by the access roads to be characterised, as well as fully surveying all archaeologically sensitive landforms.

The site management plan for operation of the facility should include a section on ACH site management. The section is to describe management actions for the three known sites (EPPC-ST1, EPPC-ST2 and EPPC-H1) that are currently outside the disturbance footprint according to Appendix J, Section 6.2. Any sites found during pre-clearance assessments of linear infrastructure alignment and PPU 5 should be incorporated into this plan.

The site-specific OEMP to be prepared for approval prior to commencement of operations will include a section on Aboriginal cultural heritage that prescribes the management measures for all known sites and any additional sites identified during the pre-construction surveys.

Any subsequent alterations to the development footprint that are outside the study areas of the ACH assessment and pre-clearance surveys should be assessed in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.

Noted. Any proposed development modification will be assessed in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DEWWC 2010).

2.4.3 Flooding

SLR undertook an assessment of potential surface water issues associated with the Project, including a flooding assessment to define pre-development flooding behaviour and inform any building design, transport and safety provisions necessary during flooding events. A copy of SLR's *Flooding Assessment* (2015c) was appended to the EIS and summarised within the EIS. Conclusions of the flooding assessment included:

- The development site is unlikely to be flood affected during mainstream flood events up to and including the 1 in 100 year ARI event. In addition, it is considered unlikely that the site will be flood affected by Murrumbidgee River or Yanco Creek out of bank flows during an extreme flood event such as the probable maximum flood (PMF).
- Flood warnings are likely to be available via the SES at least several days prior to a mainstream flood occurring. Where a flood warning is issued, the flood management plan documented in the EIS (SLR 2015a) will be implemented to effectively manage the flood risk to the development.
- All PPUs will be constructed above the predicted 1 in 100 year ARI flood depth. Concrete bund walls will be constructed around each of the poultry sheds and swale drains between the sheds have been designed to safely convey flood flows.
- The stormwater management system has been designed with the total storage on site equivalent to 170 percent of the storage capacity required to contain runoff from a 1 in 100 year ARI, 72 hour flood event.

The OEH's submission dated 26 June 2015 advises that the assessment of flooding provided in the EIS (SLR 2015a) had been extensively revised following consultation with OEH and provided an adequate model of the potential impacts due to mainstream and local overland flooding. However OEH noted that some flood impacts on the development site during the 100 year ARI and PMF events had not been fully considered.

In response, SLR undertook additional flood modelling and this work is detailed in the *Flooding Addendum* (SLR 2015f) contained in **Appendix D**. The scope of this additional work comprised:

- One dimensional hydraulic modelling of local overland flood flows for the post-development scenario (the pre-development scenario was modelled previously by SLR (2015c)); and
- Comparison of flooding behaviour between pre-development and post-development scenarios to identify the impact of the proposed development.

The key outcomes from the *Flooding Addendum* (SLR 2015f) are outlined and illustrated above in **Section 2.3.1** (in response to NOW's submission) and below. The issues raised by OEH are identified below in ***bold italic text***, followed by the response in normal text.

The flooding assessment provides justification of the existing planned location of the PPUs based on the assumption that construction of raised floor levels (0.3m above ground level) will provide flood immunity in the 100 year ARI event. However, Figure 8 shows the current site conditions without the presence of PPUs. There are likely to be hydraulic impacts that have not been considered if PPUs are constructed in the proposed locations. Section 4.4 of the flooding assessment (page 19), states that hydraulic impact modelling was completed and that the afflux due to the PPUs was "less than 150mm" in the 100 year ARI event. The assessment does not address the potential for inundation of PPU floors due to these results….

OEH understands that the proposed site layout includes a minimum distance of 1000 metres between PPUs to reduce the risk of disease transmission between units (EIS Section 3.2, page 23). This design constraint appears to be restricting the ability of the proponent to consider the flooding impacts when locating the PPUs and to select more appropriate locations away from natural drainage lines. PPUs 1 and 3 would be less susceptible to potential flooding impacts if located to the east of their proposed location, PPU 4 to the north and PPU 2 to the south.

Altering the proposed location of PPU 5 has reduced the threat from flooding to that unit, however the proposed access road. Greater consideration of flooding impacts could also be applied to the location of residences, particularly 4, 7 and 8 (shown on EIS Figure 6.7, page 96), which are proposed in areas prone to flooding.

As outlined above in **Section 2.3.1**, the *Flooding Addendum* (SLR 2015f) contained in **Appendix D** concluded the following in terms of the impact of the proposed development on flooding behaviour:

- The maximum flood afflux as a result of the development is predicted to be experienced upstream of PPU 2 at 90 millimetres for the 100 year ARI flood event and 110 millimetres for the PMF event;
- The flood afflux impacts upstream of the development at the site's eastern boundary are predicted to be less than 50 millimetres for a 100 year ARI event and 80 millimetres during a PMF event;
- No flood afflux impacts are predicted to occur downstream of the development towards the site's western boundary; and
- The maximum average flood flow velocity increase is predicted to be 0.08 metres per second during a 100 year ARI event and 0.11 metres per second during a PMF event.
- There are no existing buildings or infrastructure items on neighbouring properties that are likely to be affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding.
- As the flood afflux is predicted to be relatively minor and flood velocities did not increase significantly, agricultural practices in neighbouring properties are unlikely to be affected by the flood impacts associated with the proposed development.

As outlined in the EIS (2015a), consideration of alternative PPU locations within the development site is dependent upon a number of factors, including environmental impact considerations and engineering design requirements. While other locations were considered, the proposed layout is considered optimal in terms of minimising the potential for adverse impact and required earthworks. In particular the proposed PPU locations ensure that tree clearing is minimised, whilst ensuring the required buffer distances between PPUs is maintained for biosecurity.

These considerations/design constraints have prevented the location of the PPUs from being relocated to less flood impacted areas as recommended by OEH. However, as detailed in Section 6.5.2 of the EIS (SLR 2015a), mainstream flooding is not considered to pose a significant risk to the development site. Notably, aerial photography of the 1974 flood event, which was estimated to be a 1 in 99 year ARI event (SKM 2000), taken within hours of the flood peak do not appear to show the development site to be flood affected.

The PPUs will all be constructed above the 100 year ARI event flood depth, at a minimum of 0.3 metres above the existing surface, and the poultry sheds will be constructed with concrete perimeter bund walls 0.4 metres high and swale drains between the sheds. On this basis, the ingress of floodwaters in to the poultry sheds during a 100 year ARI event is not anticipated. Whilst topographical depressions exist in the northern corner of the PPU 2, the southern corner of PPU 3 and the southern fringe of PPU 4, appropriate earthworks will be undertaken to fill in these depressions during site establishment works to ensure the risk of floodwater ingress is minimised.

The predicted 100 year ARI flood levels for the PPUs from the additional hydraulic modelling undertaken by SLR (2015f) are shown on **Figure 18** (above in **Section 2.3.1**) and listed in **Table 15.**

Table 15 - 100 Year ARI Flood Levels at the PPUs

PPU	100 Year ARI Flood Level (metres AHD)	Construction Details
PPU 1	133.98	Depth of 100 year ARI flooding less than 0.3 metres across the PPU. The PPU will be constructed a minimum of 0.3 metres above ground level.
PPU 2	134.39	Appropriate earthworks will be undertaken to fill in a depression in northwest corner of the PPU. The PPU will be constructed a minimum of 0.3 metres above adjacent ground level.
PPU 3	133.46	Appropriate earthworks will be undertaken to fill in a depression in southern portion of the PPU. The PPU will be constructed a minimum of 0.3 metres above adjacent ground level.
PPU 4	133.69	Depth of 100 year ARI flooding less than 0.3 metres across majority of the PPU. The PPU will be constructed a minimum of 0.3 metres above adjacent ground level. Appropriate earthworks will be undertaken to fill in lower ground in the southern fringe of the PPU location.
PPU 5	133.47	Depth of 100 year ARI flooding less than 0.3 metres across the PPU. The PPU will be constructed a minimum of 0.3 metres above adjacent ground level.

SLR (2015f) advises that the raising of the PPU pad level a minimum of 0.3 metres above adjacent ground level, infilling works at PPU 2, PPU 3 and PPU 4 and the 0.4 metre high concrete bund around the poultry sheds will adequately protect the sheds from flooding during a 100 year ARI event.

SLR's (2015f) predicted 100 year ARI flood levels for the proposed farm residences and proposed finished floor levels of these residences are listed in **Table 16.**

Table 16 - 100 Year ARI Flood Levels at the Farm Residences

Residence	100 Year ARI Flood Level (metres AHD)	Finished Floor Level (metres AHD)
1	134.05	134.35[1]
2	134.09	134.39[1]
3	134.11	134.41[1]
4	134.14	134.44[1]
5	133.48	133.89[2]
6	133.49	133.83[2]
7	133.66	133.96[2]
8	133.71	134.12[2]
9	133.72	134.02[1]
10	133.74	134.04[1]

1 – finished flow level set as 0.3 metres above the modelled ephemeral flow path 100 year ARI flood level.

2 – residence located outside ephemeral flow path 100 year ARI flood extent. Finished flow level set at 0.3 metres above adjacent ground level.

As recommended by OEH, residences 4, 7 and 8 have been relocated to reduce the flood risk. Residences 5, 6, 7 and 8 are located outside of the ephemeral flow path 100 year ARI flood extent, while the remaining residences are located in shallow flood depth zones (100 year ARI event) and will be constructed with finished floor levels 0.3 metres above the modelled flood level.

The implications of the flooding assessment should be considered in an Emergency and Evacuation Plan. Access to PPU 5 is likely to be restricted during local overland flooding events.

As recommended by the OEH, an Emergency and Evacuation Plan will be developed to outline a strategy for responding to local food events. This will be developed for approval prior to commencement of operations.

2.5 Roads and Maritime Services

RoadNet was engaged to undertake the appropriate assessment and reporting of traffic and transport-related issues associated with the Project. The assessment was prepared in accordance with relevant Council and RMS standards. A copy of RoadNet's *Traffic Impact Assessment* (2015a) was appended to the EIS and summarised within the EIS.

Key conclusions of RoadNet's (2015a) assessment included:

- Existing and future background traffic volumes on the Sturt Highway are relatively low and additional traffic from the Project can be easily accommodated; and
- Provided the recommendations made by RoadNet (2015a) are met, the Project is not expected to cause any significant impacts in terms of road safety or operation.

The RMS' submission dated 26 June 2015 advises that it raises no objection to the development proposal subject to the consent authority ensuring that the development is undertaken in accordance with the information submitted and with the inclusion of a number of consent conditions.

ProTen commits to implementing the RMS' recommended consent conditions. On this basis, no further response is required.

2.6 Department of Primary Industries

The DPI's submission dated 25 March 2015 advised that the development meets the requirements of the *Best Practice Management for Meat Chicken Production in NSW Guidelines – Manuals 1* and *2* (DPI 2012), with the exception of water treatment. The issue raised by DPI is identified below in ***bold italic text***, followed by the response in normal text.

The developer will need to ensure that the bore water for poultry is treated to drinking water standards in accordance with the recommendation by the National Water Biosecurity Manual – Poultry Production (DAFF 2009).

Section 3.8.3 of the EIS (SLR 2015a) advises the following:

> *Water extracted from the bores will be treated as per the recommendations by the National Water Biosecurity Manual – Poultry Production (DAFF 2009). Water will pumped from the bore and filtered through sand media. The water pH is monitored and if it is found to be high, citric acid will be added to maintain pH at approximately 7.0. The water will then be chlorinated to deliver approximately 3 ppm* (parts per million total dissolved solids) *into storage tanks. Finally, chlorine dioxide will be dosed into the water delivery system supplying the sheds at between 0.5 – 0.1 ppm.*

2.7 Narrandera Shire Council

Council's submission dated 26 June 2015 provided draft consent conditions for the Project. While the consent conditions will be provided by the DP&E as the consent authority for the Project, responses to selected conditions proposed by Council are provided in **Table 17**.

Table 17 - Comments on Consent Conditions Provided by Council

Proposed Consent Conditions		Comment / Amendment
Number	**Detail**	
A6 (a)	In accordance with Division 6 of Part 4 of the Act, the applicant shall pay the following section 94A monetary contribution: a) Amount of Contribution $680,000 (1% of construction cost)	**Calculation Error** The development's CIV, which has been confirmed by an independent cost review (Rider Levett Bucknall 2014) is $63,610,000. On this basis, a 1% contribution would actually be $636,100 (i.e. $43,900 less than what Council proposes in its submission). **Application for S94A Contribution Reduction** Council advised in an email from the Deputy General Manager Infrastructure (Mr Frank Dyrssen) on 27 July 2015 that ProTen's application to vary the S94A contribution for the Project to 0.5% (i.e. 318,050) had been approved.
A7 (a)	Prior to the issue of a Construction Certificate the Applicant shall submit to the satisfaction of the Principal Certifying Authority the following: a) An Environmental Management Plan (EMP), including a Construction Environmental Management Plan (CEMP) and an Operational Environmental Management Plan (OEMP) prepared in accordance with…	A CEMP will be prepared for approval by the DP&E prior to the commencement of construction works. An OEMP will be prepared for approval by the DP7E prior to the commencement of operation.
A7 (a) (ii)	Flood Management Plan - The Flood Management Plan shall show the proposed location and minimum floor level of the proposed structures in relation to the 1 in 100 year flood event. Habitable dwellings shall be protected against the 1 in 100 year flood event plus 500mm freeboard in accordance with the policy of Narrandera Shire Council.	As outlined in **Section 2.4.3**, residences 5, 6, 7 and 8 are located outside of the ephemeral flow path 100 year ARI flood extent and will have finished flow levels set at 0.3 metres above adjacent ground level. The remaining residences are located in shallow flood depth zones (100 year ARI event) and will be constructed with finished floor levels 0.3 metres above the modelled flood level.
A7 (f)	Prior to the issue of a Construction Certificate for a dwelling, the applicant shall submit a Land Contamination Report verifying that the land is appropriate for its proposed residential use.	The S*tage 1 Preliminary Site Investigation* (SLR 2015e) contained in **Appendix C** concludes: • The potential for significant widespread contamination to be present on the site, as a result of past and present land use activities, is considered to be low; and • The site is suitable, from a contamination perspective, for the proposed poultry broiler production farm and associated residences.

Proposed Consent Conditions		Comment / Amendment
Number	**Detail**	
A7 (g)	The applicant is required to consolidate all separate parcels - being lots 1, 41, 42, 44, 45 and 54 DP 750898; and lot 1 DP 1054064 into one allotment under one title in order to prevent future dealings in separately titled land.	Clause 4.2C of the *Narrandera Local Environmental Plan 2013* (LEP) contains development standards relating to the erection of dwelling houses in the RU1 Primary Production zone, one of which (clause 3a) states that consent must not be granted for the erection of a dwelling unless the land is a lot that is at least the minimum lot size shown on the Lot Size Map. The applicable minimum lot size for the development site is 400 hectares, which is greater than the individual lot sizes within the site on which the farm managers' houses are proposed to be constructed. ProTen sought legal advice on this issue from Gilbert and Tobin Lawyers, specifically whether there is a legal requirement to consolidate the lots within the development site to achieve the minimum lot size specified in the LEP. This advice, which was provided to the DP&E, concluded that the development controls in clause 4.2C of the LEP are not a relevant consideration to the Project. The objectives of clause 4.2C are "to minimise unplanned rural residential development, and to enable the replacement of lawfully erected dwelling houses in rural and environment protection zones". Clause 4.2C would therefore be a relevant matter for consideration if the application involved rural residential development or the erection of dwellings to replace lawfully erected dwellings. The Project is not a rural residential development, nor are dwelling houses being replaced. The houses proposed are ancillary to the operation of the PPUs and a necessary component given the 24 hour nature of the operation. Gilbert and Tobin Lawyers therefore conclude that clause 4.2C is not a relevant consideration for this project. No consolidation of lots is required.
B1 and B2	The applicant shall implement an environmental management system to ensure compliance with all conditions and take reasonable steps to ensure…	As advised in the EIS (SLR 2015a) a site-specific OEMP will be prepared for approval by the DP&E prior to commencing operations.
C18	The Applicant must design, construct, operate and maintain all stormwater and water storage facilities on site with the internal surfaces equivalent to, or better than, a clay liner of permeability 1 x 10^{-9} ms^{-1} or less and a thickness of no less than 900mm.	Subject to soil sampling and final engineering design, if necessary, the stormwater and water storage facilities will be compacted or lined to achieve a permeability of 10^{-9} metres per second. The requirement for a thickness of "no less than 900 mm" is not necessary.
C20	Stormwater management facilities must be designed to a standard so that in the event of a 1 in 100 ARI storm event there is no discharge from the development site.	The stormwater management system will be designed to cater for the design event, being a 20 year ARI, 24 hour event. The combined capacity of the four retention dams at each PPU is approximately 28,000 cubic metres, which is approximately 170 percent of the storage required to capture the predicted runoff volume for a 100 year ARI, 72 hour storm event. The proposed retention storage is therefore of sufficient capacity to prevent overflows for events up to and including the 100 year ARI event.

Proposed Consent Conditions		Comment / Amendment
Number	**Detail**	
C32	As a minimum the private access road is to be line marked to separate the sweep path of vehicles entering and exiting the site. Associated directional marking and signage is to be installed and maintained in accordance with Australian Standards.	The sealed 50 metre section of the site access road will be line marked.
C38	The internal road network and parking on site is to comply with Austroads Guidelines and Australian Standards AS 2890:1:23004 and AS 2890.2:2002.	Internal roads will be constructed as rural-type all-weather property internal roads able to carry the anticipated heavy vehicle movements. They will meet the minimum requirements of AS 2890.2 to accommodate the turning movements of the largest vehicles generated by the Project, which will initially be semi-trailers however may include B-doubles in the future.
C43	Heavy vehicle traffic routes associated with the development shall be limited to the existing classified road (Highway) system and the approved private access road.	Under normal operating conditions heavy vehicles will be limited to the Sturt Highway and the private access road. However, Section 6.5.6 of the EIS (SLR 2015a) describes the flood management plan, which includes the identification of alternate access routes in the event that the Sturt Highway is non-trafficable as a result of flooding. These alternate routes include roads other than the highway and the private access road, as shown on **Figure 9**. A condition of consent such as this would therefore not allow the flood management plan to be implemented.
C52	The development shall be protected from the 1 in 100 year flood event including the proposed access road between the development site and the Sturt Highway to facilitate safe egress during a flood event.	This is considered is inappropriate on the following grounds: • The development site is affected by overland flooding; • Overland flooding is likely to have also impacted the Sturt Highway; • The worst-case overland flooding relates to short duration storms and, therefore, it will be safer for farm employees to remain on site during significant rainfall events until flood waters have resided; • Floodwaters are unlikely to take more than a few hours to reside with the exception of the two topographical depressions and ephemeral flow paths; and • Significant raising of ground levels for flood protection works would impede floodwaters and further alter downstream flood behaviour. As recommended by the OEH, an Emergency and Evacuation Plan will be developed to outline a strategy for responding to local food events.
C53	Minimum floor levels for habitable buildings should be based on protection from the 1 in 100 year flood event plus 500mm freeboard.	As outlined in **Section 2.4.3**, residences 5, 6, 7 and 8 are located outside of the ephemeral flow path 100 year ARI flood extent and will have finished flow levels set at 0.3 metres above adjacent ground level. The remaining residences are located in shallow flood depth zones (100 year ARI event) and will be constructed with finished floor levels 0.3 metres above the modelled flood level.

2.8 Other

2.8.1 Griffith City Council

In its submission dated 16 July 2015, Griffith City Council advised:

> *it was deemed that the proposed development would not have any significant environmental impact on the Griffith Local Government Area.*

On this basis, no response is necessary.

2.8.2 Leeton Shire Council

In its submission dated 16 July 2015, Leeton Shire Council advised:

> *Council raises no objections to the proposed development, provided that:*
>
> 1. *The transport routes associated with the proposal are restricted to the classified road network as indicated by the Traffic Impact Statement, and*
> 2. *Conditions are imposed to regulate the environmental impacts of the proposal so that there are no adverse impacts to residents in the locality and the receiving environment.*

The transport routes to be utilised by the Project will utilised the classified road network as described in the EIS (SLR 2015a) and the *Traffic Impact Assessment* (RoadNet 2015a).

ProTen will prepare and implement a site-specific OEMP for the Project to ensure that the commitments made within the EIS (SLR 2015a), along with the conditions of development consent and environment protection licence, are fully implemented and complied with.

2.8.3 Murrumbidgee Shire Council

In its submission dated 17 July 2015, Murrumbidgee Shire Council advised:

> *…the DA and EIS for the proposal were on public exhibition from 26th May 2015 to 26th June 2015 in both the Murrumbidgee Shire's Darlington Point office and Coleambally branch office and received no public comment.*

On this basis, no response is necessary.

2.8.4 Essential Energy

In its submission dated 30 June 2015, Essential Energy advised:

> *… Essential Energy's Senior Environmental Engineer has reviewed the EIS and has no additional comment.*

On this basis, no response is necessary.

3 PUBLIC SUBMISSIONS

As listed in **Table 1**, a total of 14 public submissions were received following the exhibition of the EIS. Eleven of these submissions objected to the Project, while the remaining three provided comment. Only three of the objections received were from residents within the local area.

A summary of the issues raised in the public submissions and responses (grouped by issue) is provided below in **Table 18**.

Table 18 - Issues Raised in the Public Submissions

Issue	Raised by	Response
Water resources		
1. Contamination of groundwater, including from the operation of plant, mass burial and chemical runoff	• A. & M. Steiner (Narrandera NSW) • Randren House (Euroley NSW)	Mass Burial As advised in the mass mortality disposal strategy in the EIS (SLR 2015a), bird carcasses will not be buried on site in the event of an emergency animal disease (EAD) outbreak (unless directed to do so by the DPI) due to the relative proximity of the site to the Murrumbidgee River and Yanco Creek. This removes the risk to groundwater as a result of an EAD outbreak. In the unlikely event of an EAD outbreak and slaughter of farm stock is necessary, pending advice from the DPI and EPA at the time of a mass mortality, the following options will be available for the disposal of bird carcasses and fomites: • Rendering at Baiada's Hanwood protein recovery plant; or • In-shed composting; or • Off-site burial at ProTen's Jeanella property near Goolgowi within the Carrathool Shire LGA; or • Disposal at Carrathool Council's landfill in an appropriately quarantined area (see **Section 2.1.10**). Chemical Runoff The only chemicals that will be used at the site will be for sanitisation and disinfection purposes, along with pest, vermin and weed control. Chemicals will generally only be delivered to site a few days prior to the commencement of the cleaning phase in order to minimise on-site storage requirements. During this time chemicals will be stored in appropriately bunded areas or specifically-purchased chemical sheds, removing the potential risk of groundwater contamination from stored chemicals. As outlined in the EIS (SLR 2015a) and above in **Section 2.1.5**, an engineered surface water drainage system will be implemented to provide long-term structural controls and management measures to mitigate the impact of surface water runoff throughout the life of the operation. Potential for Groundwater Infiltration As outlined in **Section 2.3.2**, the additional hydrogeological assessment (SLR 2015g) advises that the Calivil Formation aquifer (i.e. deep aquifer source) lies beneath around 50 metres of the Shepparton Formation at the development site. The Shepparton Formation in turn is overlain by 4 to 5 metres of topsoil and weathered silty clay, which provides low permeability cover to the Shepparton Formation. SLR (2015g) further advises that the 4 to 5 metres of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation. The nature of the strata, the surface water drainage system and mitigation measures (see **Section 2.3.2**) to be employed will provide an adequate buffer against infiltration of wash down water and any potential pollutants to groundwater.

Issue	Raised by	Response
2. Excessive use of water resources by agricultural activities 3. Impacts on existing bores and water users in the area	• M. Kelly (Reservoir VIC) • Name withheld (Narrandera NSW)	The proposed extraction of groundwater to service the development's water supply requirements of approximately 460 megalitres per year (average 1.25 megalitres per day), will be serviced via the transfer of an existing water access licence (WAL 11788) from a bore located approximately 5 kilometres to the east of the development site. In addition, ProTen has recently entered in to a sale and purchase agreement for an additional 225 megalitres of water per year from the same water source from a property approximately 4 kilometres to the northeast of the development site. On this basis, the development will be using water that is already allocated under the *Water Sharing Plan for Lower Murrumbidgee Groundwater Sources 2003* (not additional water). As outlined in **Section 2.3.2**, the results of the groundwater pumping test indicate that the Calivil Formation aquifer has sufficient capacity to support the development's long-term water supply requirements and can support significantly higher rates of extraction. The pumped bore recorded a maximum drawdown of only 4.18 metres after 2 days of pumping at 45 litres per second (3.89 megalitres per day), with the observation bore located almost 1.2 kilometres away recording a maximum of 0.44 metres drawdown. The pump test analysis (SLR 2015g) indicates that the development's proposed groundwater abstraction levels will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the *NSW Aquifer Interference Policy* (NOW 2012) thresholds.
Flooding		
4. Site access cut off as a result of flooding 5. Isolation and resulting issues in removing birds from the site and transporting feed to the site	• A. & M. Steiner (Narrandera NSW) • Name withheld (Narrandera NSW)	The flood management plan presented in the EIS (SLR 2015a) identifies six different transport options for gaining access to and from the site during a flood event (see **Figure 9**). The flood management plan also identifies processes for the collection and storage of surplus food for birds and workers where a flood event is anticipated, noting there will be capacity on site to store at least eight days of feed. The *Flooding Assessment* (SLR 2015c) appended to the EIS (SLR 2015a) advised: • The development site is unlikely to be flood affected during mainstream events up to and including the 100 year ARI event. In addition, it is considered unlikely that the site will be flood affected by Murrumbidgee River or Yanco Creek out of bank flows during an extreme flood event. • Flood warnings are likely to be available via the SES at least several days prior to a mainstream flood occurring. Where a flood warning is issued, the flood management plan documented in the EIS (SLR 2015a) will be implemented to effectively manage the flood risk to the development. The *Flooding Addendum* (SLR 2015f) contained in **Appendix D** advises the following relevant points: • The site is affected by overland flooding, and overland flooding is likely to have also impacted the Sturt Highway; • The worst-case overland flooding relates to short duration storms and, therefore, it will be safer for farm employees to remain on site during significant rainfall events until flood waters have resided; • Floodwaters are unlikely to take more than a few hours to reside with the exception of the two topographical depressions and ephemeral flow paths; and • Significant raising of ground levels for access or flood protection works may impede floodwaters and further alter flood behaviour.

Issue	Raised by	Response
Air quality and odour		
6. Dust contaminating surrounding farms	• A. & M. Steiner (Narrandera NSW)	Particulate matter (dust) is typically not an issue for a well-run poultry broiler production farm. ProTen does not have any issues or receive complaints at its other poultry production complexes in relation to dust. Notwithstanding, the potential for dust impacts as a result of the poultry sheds was addressed in the *Air Quality Impact Assessment* (Pacific Environment 2015a) prepared as part of the EIS (SLR 2015a). The modelling assessment predicted that 24-hour maximum and annual average PM_{10} levels will be well below the applicable criteria at all of the surrounding receptors. In terms of wheel-generated dust from the internal road, Pacific Environment (2015a and 2015b) concluded that the potential for emissions will be low given the constructed nature of the roads and subsequent lower silt loading (compared to using unformed tracks). The internal roads will be constructed with a compacted clay base to 98 percent and 200 mm of road base. Pacific Environment (2015b) has assessed multiple poultry operations and found internal roadways are not a significant source of dust emissions. The emissions from roads will be managed though the CEMP and OEMP.
7. Odour levels affecting surrounding properties 8. Wind direction and distance from nearest dwellings	• A. & M. Steiner (Narrandera NSW) • Randren House (Euroley NSW) • P. Karunaharan (Rushcutters Bay NSW) • Name withheld (Narrandera NSW)	The *Air Quality Impact Assessment* (Pacific Environment 2015a) analysed meteorological data from the Bureau of Meteorology weather station at Narrandera Airport, selecting the year 2010 for use in the air quality model based on long term averages. Pacific Environment (2015a) generated wind roses, which show that wind commonly blows from all directions, although with a low frequency of southerly and south-easterly winds. The varying meteorological conditions were used by Pacific Environment (2015a) in the odour dispersion modelling to predict the worst case odour concentrations at surrounding receptors. The odour modelling was conservative (see **Section 2.2.2**) and predicted that the odour concentrations at all of the nearest receptors will be below 5 OU, which is below the adopted criteria. Pacific Environment (2015b) concludes that a combination of suitable separation distances and vegetation buffers represents the current best practice for poultry site management in terms of odour emissions. The nearest privately-owned residence is located over 2 kilometres from the nearest PPU and, as outlined in the (SLR 2015a), suitable tree and shrub species will be strategically planted around the perimeter of each PPU to provide a biological buffer of a minimum total width of 40 metres.
Noise		
9. Noise levels affecting surrounding properties	• A. & M. Steiner (Narrandera NSW) • Randren House (Euroley NSW) • P. Karunaharan (Rushcutters Bay NSW)	Noise is typically not an issue for a well-run poultry broiler production farm. ProTen does not have any issues or receive complaints at its other poultry production complexes in relation to noise. Notwithstanding, the potential for noise impacts as a result of the Project was addressed in the *Noise Impact Assessment* (Global Acoustics 2015) prepared as part of the EIS (SLR 2015a). This assessment considered three operational scenarios to assess various combinations of noise sources, including a worst case continuous operation scenario where all 18 ventilation fans were assumed to be operating on all poultry sheds and with feed silo re-filling taking place. In reality, it is highly unlikely that all fans will be running on all sheds at the same time, due to the staggering of the production cycle, however this was modelled as a conservative worst case. Global Acoustics (2015) concluded that construction, operational and sleep disturbance noise levels will comply with project-specific noise levels at all surrounding receptors for all scenarios. Furthermore, an assessment of road traffic noise showed no discernible impact.

Issue	Raised by	Response
Traffic		
10. Excessive traffic affecting surrounding properties	• A. & M. Steiner (Narrandera NSW)	RoadNet was engaged to undertake the appropriate assessment and reporting of traffic issues associated with the Project. Key conclusions of RoadNet's (2015a) assessment included: • Existing and future background traffic volumes on the Sturt Highway are relatively low and additional traffic from the Project can be easily accommodated; and • Provided the recommendations made by RoadNet (2015a) are met, the Project is not expected to cause any significant impacts in terms of road safety or operation. In terms of road traffic noise, given the proximity to a privately owned residence (R10), the largest potential impact from traffic in terms of noise would be road traffic on the site access road from the Sturt Highway. The *Noise Impact* Assessment (Global Acoustics 2015) concluded that no discernible noise impact will occur if a 60 kilometre per hour speed limit is adopted on this site access road. ProTen has committed to a 40 kilometre per hour speed limit on the access road and within the development site. In terms of wheel-generated dust from the internal road, Pacific Environment (2015a and 2015b) concluded that the potential for emissions will be low given the constructed nature of the roads and subsequent lower silt loading (compared to using unformed tracks). The internal roads will be constructed with a compacted clay base to 98 percent and 200 mm of road base. Pacific Environment (2015b) has assessed multiple poultry operations and found internal roadways are not a significant source of dust emissions. The emissions from roads will be managed though the CEMP and OEMP.
11. Visibility at the proposed intersection location on the Sturt Highway	• A. & M. Steiner (Narrandera NSW) • M. Rowe (Narrandera NSW)	RoadNet's (2015a) assessment included a site visit and inspection of the proposed intersection location along the Sturt Highway with representatives from RMS. RoadNet (2015a) recommended the proposed intersection location based on a Safe Intersection Sight Distance (SISD) which was calculated in accordance with the *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections,* and Stopping Sight Distance (SSD), which was calculated in accordance with *Ausroads Guide to Road Design Part 3: Geometric Design, Table 5.4* . The approaches from both the direction along the Sturt Highway exceed the SISD and SSD requirements.
12. Presence of an existing driveway opposite the proposed site entrance, including concerns over: a. Ability of the proposed intersection design to accommodate road train manoeuvres at the intersection b. Ability of the proposed intersection design to cater for the additional drainage and runoff requirements created by the larger road	• Name withheld (East Griffith, NSW)	To address these traffic-related issues, RoadNet prepared the letter report (2015b) contained in **Appendix G**. A summary of RoadNet's responses to each of the issues is provided below. a. As noted in EIS (SLR 2015a), the Sturt Highway is an approved road train route and the new intersection will not affect the use of the Highway by road trains in any way. The proposed intersection layout will retain the lane widths currently provided in each direction along the Sturt Highway for through traffic commensurate with its designation as both a B-double route and an approved road train route. The intersection will also be designed to allow vehicles up to the size of B-doubles to turn in and out of the proposed access simultaneously without impacting on the safety of other road users. The design features of the existing access driveway for Lot 30 will also be retained as part of any modifications required to accommodate the new intersection layout, such that the existing driveway will continue to be able to service the same types and sizes of vehicles that it currently accommodates. b. The proposed intersection will be designed and constructed to Austroads standards and will need to be approved by RMS. The need to cater for additional drainage and runoff requirements will be considered as part of the design process and appropriate provisions will be incorporated into the

Issue	Raised by	Response
surface area c. Impacts of road works during construction phase on operation of nearby properties/businesses d. Biosecurity measures, ensuring that weeds do not enter nearby properties via drainage runoff at the intersection e. Ability of the new intersection to manage vehicles entering from both access roads north and south of the Sturt Highway, and associated impacts on road safety for the driving public (i.e. general traffic) f. Visibility of the intersection due to its presence in a depression and occurrence of fog.		design as required. c. A Construction Traffic Management Plan and associated Traffic Control Plan satisfying the requirements of AS1742.3 will be developed prior to undertaking works on the Sturt Highway. These plans will set out the requirements to manage any impacts on existing road users during the construction of the new intersection. Short term shoulder and lane closures may be required at times. This will be undertaken in accordance with the appropriate traffic control guidelines and by approved traffic control contractors. The impact of this traffic control, in terms of delays and queuing, is expected to be minimal due to the relatively low existing traffic volumes on this section of the Sturt Highway. Importantly, access to Lot 30 will be maintained at all times to minimise any adverse impacts to the affected landowner. For the scale of works required at the intersection it is envisaged that only a couple of weeks would be required to complete the construction activities (weather permitting). d. As described in point b, the need to appropriately manage drainage and runoff will be considered as part of the design process and appropriate provisions will be incorporated in to the design as required. Weed control practices will be included in the CEMP and OEMP. e. RoadNet (2015b) note that the intersection between the proposed and existing access driveways and the Sturt Highway is not a cross-roads intersection. The two side-roads are private access driveways serving independent sites, with no cross-movements between the two access roads needing to be catered for. For traffic exiting from either of the access driveways, normal road rules will apply in the event that traffic arrives at the same time on each of the approaches. For traffic entering the access driveways from the Sturt Highway, in addition to the BAL and BAR treatments proposed as part of the new access driveway, the intersection will be designed to allow for right turning movements to occur simultaneously from either approach of the Sturt Highway should the need arise. Traffic turning left from the Sturt Highway into the existing access to Lot 30 will most of the time benefit from being able to use the wider sealed shoulder, constructed as part of the BAR treatment, to decelerate out of the path of eastbound through traffic. On those occasions when the BAR treatment is being used by through traffic; the situation will be similar to what it is at present. f. The proposed site access has been optimally located between the vertical crest curves that exist on each of the Sturt Highway approaches in order to maximise the available sight distance. As illustrated in the sight line diagram in RoadNet's letter report (2015b) in **Appendix G**, the minimum requirements for Stopping Sight Distance and Safe Intersection Sight Distance at the proposed intersection location are exceeded. With respect to the occurrence of fog, there are no specific design requirements to be addressed, however, motorists are generally expected to modify their driving behaviour to suit the conditions and this would equally apply at the subject location.
Other Issues		
13. Disposal of birds following a mass morality event. Disposal of birds during a flood event where site access is cut off.	• M. Rowe (Narrandera NSW) • J. Craig (Wagga Wagga NSW)	See response to point 1 above (under water resources).

Issue	Raised by	Response
14. Health issues associated with meat consumption	• M. Kelly (Reservoir VIC)	This is not an issue that is relevant to a planning application. The proposed development is permissible with development consent under the provisions of the *Narrandera Local Environmental Plan 2013*.
15. Devaluation of neighbouring properties	• A. & M. Steiner (Narrandera NSW) • J. Balfour (Wollongong NSW) • Name withheld (Narrandera, NSW)	Intensive livestock agriculture is permissible with consent in the RU1 Primary Production Zone, and is therefore permissible with consent in the development site. With the exception of the small area to the west comprising the Murrumbidgee National Park and South West Woodland Nature Reserve, all land surrounding the development site is also zoned RU1 Primary Production, indicating compatibility with surrounding lands. In addition, the various environmental impact assessments have concluded no significant adverse impact on surrounding properties. While intensive agricultural operations may have the potential to devalue properties when developed in close proximity to higher density living areas, such as residential and rural-residential developments, there is no evidence to suggest that they devalue agricultural properties. Throughout its history in the Australian poultry industry, ProTen has proven its commitment to best management practice at its numerous poultry production operations.
16. Animal welfare	• J. Balfour (Wollongong NSW) • M. Kelly (Reservoir VIC) • Name withheld (Mount Eliza VIC) • Name withheld (Leumeah NSW) • Name withheld (Georges Hall NSW) • Name withheld (Carrum Downs VIC)	The conditions under which broiler poultry are housed and the way that they are managed during their growing phase, transportation and processing are prescribed in several government and industry endorsed Codes of Practice designed to safeguard their health and welfare. ProTen has proven its commitment to high standards of bird welfare throughout its history within the poultry industry. The company understands that bird welfare, flock performance and economic functioning go hand-in-hand. ProTen has advised that it is committed to the standards of care and management detailed in the *National Animal Welfare Standards for the Chicken Meat Industry* (Australian Poultry CRC 2008), which is based on the Model Codes of Practice for poultry production and Australian Standards, along with international and national guidelines for animal welfare. Key features of this commitment are advised in Section 3.16 of the EIS (SLR 2015a).
17. Impacts on existing servicing infrastructure resulting in shortages of power and other services	• Randren House (Euroley NSW)	ProTen has conducted extensive consultation with Essential Energy regarding the power requirements of the development to ensure that appropriate infrastructure is put in place to service the needs of the development without affecting other users. New power supply infrastructure is proposed to be installed from the existing Coleambally sub-station to the development site. The Review of Environmental Factors (REF) (SLR 2015i) prepared for this new power supply infrastructure has been accepted by Essential Energy and SLR's understands that approval will be issued in the near future. In relation to water supply, as outlined above for issues 2 and 3, the proposed extraction of groundwater to service the development's water supply requirements will be serviced via the transfer of existing water access licences from bores located within the nearby area. On this basis, the development will be using water that is already allocated under the *Water Sharing Plan for Lower Murrumbidgee Groundwater Sources 2003* (not additional water). As outlined in **Section 2.3.2**, the results of the groundwater pumping test indicate that the development's proposed groundwater extraction will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the *NSW Aquifer Interference Policy* (NOW 2012) thresholds.

Issue	Raised by	Response
18. Biosecurity – outbreaks of disease requiring culling of the bird population	• Randren House (Euroley NSW)	Biosecurity is in integral part of any successful poultry operation, and ProTen has demonstrated strict biosecurity commitment over the years. A copy of the *National Farm Biosecurity Manual for Chicken Growers* (Australian Chicken Meat Federation 2010) will be kept at the development site and all staff will be provided with training in the relevant parts of the Manual and site-specific biosecurity measures. The key biosecurity measures that will be implemented are advised in Section 3.18 of the EIS (SLR 2015a), and a mass mortality disposal strategy (in the unlikely event of an emergency disease outbreak) is outlined in Section 6.12.2 of the EIS (SLR 2015a).
19. Greenhouse gas emissions and the contribution to climate change	• M. Kelly (Reservoir VIC) • Randren House (Euroley NSW)	As advised in Section 6.11 of the EIS (SLR 2015a), the following best management practices and mitigation measures will be implemented to improve energy efficiency and minimise greenhouse gas emissions: • Low lux internal shed lighting, which has a significantly reduced power demand compared to past lighting practices, will be installed within the poultry sheds. • External lighting will only be used when necessary during times of low light and/or heavy fog. • Lighting, temperature, humidity and static pressure within the poultry sheds will be continuously monitored and automatically adjusted to suit conditions. This will avoid unnecessary electricity and LPG usage. • Equipment such as ventilation fans and heaters will be regularly maintained and serviced to ensure optimal performance and efficiency.
20. Adverse visual amenity impacts from the construction of a poultry processing plant	• Randren House (Euroley NSW)	The Project does not involve the construction of a poultry processing plant. Rather, the Project involves the construction of a poultry broiler farm where chickens will be grown for processing off site. Five PPUs are proposed, each consisting of 16 poultry sheds and ancillary infrastructure. The nearest privately-owned residences, being R4 and R5, are located over 2 kilometres from the nearest PPU (PPU 1). There is also a slight change in topography between these residences and PPU1, which is likely to shield the view from these residences. Adverse visual impacts are therefore not anticipated due to the local topography combined with the distance to the nearest receptors.
21. Storage and disposal of waste materials will result in environmental risks and damage due to foul odours and atmospheric fall out	• Randren House (Euroley NSW)	In their submission Randren house refer to waste and odour generated by “plant operation”. The Project is a poultry farm, not a poultry processing facility. No processing of chickens or rendering will take place on site, and there will not be any on-site stockpiling or disposal of waste materials. As outlined in Section 3.10 of the EIS (SLR 2015a), appropriate systems will be implemented to ensure that all waste streams generated by the Project are effectively managed and/or disposed of off site.
22. The applicant and associated entities are under investigation by Fair Work Australia, the Ombudsman and the Australian Securities and Investment Commission	• Randren House (Euroley NSW)	The Applicant for the Euroley Poultry Production Complex is ProTen Holdings Pty Ltd. ProTen is not under investigation by Fair Work Australia, the Ombudsman, or the Australian Securities and Investment Commission.

Issue	Raised by	Response
23. Roads and enclosure permits – changes to Crown lands within the area and possible detrimental impacts to neighbouring properties	• Name withheld (Narrandera NSW)	Consultation with Crown Lands regarding the management of Crown land within the development site occurred in February 2015, as documented in Table 5.1 of the EIS (SLR 2015a). During this process Crown Lands advised ProTen to apply to close and purchase the Crown roads within the development site. In addition, due to the lengthy timeframes involved in processing closure applications, Crown Lands advised ProTen to simultaneously apply for a licence under Section 34 of the Crown Lands Act 1989 to allow access across the Crown roads so that, pending development consent from the DP&E, works could commence across the Crown roads as required by the development whilst the close and purchase application is being processed. Both of these applications were subsequently lodged by ProTen, with Crown Lands issuing a licence on 15 July 2015 to access the Crown roads in the development site, pursuant to Section 34 of the Act. This licence is attached in **Appendix B**.

4 SPECIALIST INTEREST GROUP SUBMISSION

The submission lodged by the specialist interest group "Voiceless - the animal protection institute" raised various issues associated with animal welfare, environmental impacts and socio-economic impacts. The issues are identified below in ***bold italic text***, followed by the response in normal text.

4.1 Animal welfare

The conditions under which broiler poultry are housed and the way that they are managed during their growing phase, transportation and processing are prescribed in several government and industry endorsed Codes of Practice designed to safeguard their health and welfare. ProTen has proven its commitment to high standards of bird welfare throughout its history within the poultry industry. The company understands that bird welfare, flock performance and economic functioning go hand-in-hand.

ProTen has advised that it is committed to the standards of care and management detailed in the *National Animal Welfare Standards for the Chicken Meat Industry* (the Standards) (Australian Poultry CRC 2008). The Standards were developed to help fulfil both the chicken meat industry's and the community's expectations of the high levels of quality assurance associated with chicken meat production, and have been based on the Model Codes of Practice for poultry production and Australian Standards, along with international and national guidelines for animal welfare. Key features of this commitment are advised in Section 3.16 of the EIS (SLR 2015a).

Denial of natural behaviours due to close confinement and stocking densities

Broiler birds are run in large open poultry sheds on bedding material. They are not kept in cages.

Stocking Density

The Standards (Australian Poultry CRC 2008) recommend a maximum stocking density target for tunnel-ventilated sheds with evaporative cooling and one air exchange per minute of 40 kilograms per square metre. ProTen's broiler "pick-ups" (shed thinning) are governed by customer bird weight specifications and maintaining a maximum stocking density of 40 kilograms per square metre in line with the Standards.

Feed and Water

Feed and water lines will run the length of each poultry shed and will be automatically supplied by external silos and water storage tanks. Feed pans and water nipple drinkers (with drip cups) will be spaced along these lines at regular intervals so that the birds are never more than a few metres from food and water.

Lighting

Uniform lighting will be provided within the poultry sheds to enable the birds to see the feed pans and water drinkers, with dark periods provided each day to allow the birds to rest. Reduced light has been found to minimise livestock stress and, as such, low lux internal lighting will be provided to promote calm. Control of light intensities will be via dimmer controls.

Ventilation

The sheds will be fully-enclosed climate-controlled and tunnel-ventilated. The use of tunnel-ventilated sheds has grown to steadily replace poultry housing that conventionally relied on natural ventilation. Tunnel ventilation is easier to manage then natural ventilation and enables the grower to provide close to optimum conditions for bird health, growth and performance throughout the year. Additional benefits include better control over shed moisture levels, which is directly related to odour production, and reduced consumption of power and water.

Disease – Antibiotic Use

Antibiotic use is important in chicken meat production to ensure the overall health and wellbeing of the flock. The Australian Chicken Meat Federation (http://www.chicken.org.au/page.php?id=6) recommends the use of antibiotics in farm animals in two important ways:

- Therapeutic agents - used to treat the symptoms of a bacterial infection; and
- Prophylactic (preventative) agents - used to prevent disease occurring in healthy animals.

Only antibiotics approved by Australia's regulatory authorities will be used and they will be administered in accordance with strict regulatory guidelines. Antibiotics are usually delivered via drinking water (not in feed) and only a veterinarian can authorise and supervise these treatments.

If antibiotics are required to be used, such use will be undertaken in accordance with the antibiotic policy of the Australian Chicken Meat Federation, which states that:

- Antibiotics must not be used to promote growth in chickens;
- Antibiotics are only to be used for therapeutic or preventative treatments against serious diseases such as necrotic enteritis;
- Antibiotics that are considered important for human use are not to be used in preventative treatments of chickens;
- Antibiotics must be used under veterinary supervision and according to good veterinary practice;
- At all times withholding periods set by regulatory authorities must be observed.

The Australian Chicken Meat Federation also supports the Australian Government's *National Residue Survey*, which conducts regular independent checks of residues of antibiotics in chicken meat and consistently shows that Australian chicken meat does not contain residues of antibiotics. The results from the latest animal product monitoring conducted in 2013-14 found that out of 300 samples collected, none contained levels of antibiotics above the maximum residue limit. In fact, no samples contained antibiotics levels above the limit of reporting. The results are published on the Australian Government's Department of Agriculture website at:
http://www.agriculture.gov.au/ag-farm-food/food/nrs/nrs-results-publications/animal-product-monitoring-2013-14.

Disease – Depopulation

Whilst robust biosecurity measures will be in place to ensure the risk of a disease outbreak is minimal, in the unlikely event of a major disease outbreak and depopulation was necessary, the site would be managed by the DPI in co-ordination with the EPA and technical service units of the poultry industry.

Depopulation would be undertaken in accordance with Standard 5 of the Standards (Australian Poultry CRC 2008) to ensure it occurs in a humane manner and using the most appropriate equipment and method according to the class/condition of the bird.

Growth and Mortality Rates

Chickens are not genetically engineered or modified. Around 50 to 60 percent of the improvement in broiler growth rates over the last 50 years is due to improved breeds of chicken. A further 20 to 25 percent is due to improved nutrition, with feed being specifically formulated to match the chicken's precise nutritional requirements throughout its lifecycle, thereby optimising growth. Other gains made in meat chicken growth and performance are due to better husbandry techniques and health management.

Hormones are not added to chicken feed or administered to commercial meat chickens in Australia. Hormone supplementation is a practice that has been banned internationally for over 40 years.

The cycle of a broiler production complex typically lasts about nine weeks, with a bird occupation of around eight weeks and a down-time of close to one week for cleaning in preparation for the next batch of birds. This cycle, which is typically standard across the broiler chicken industry, will be adopted at the Euroley Poultry Production Complex.

The Standards (Australian Poultry CRC 2008) do not set targets for bird mortality rates, rather stating that they are provided by the owner of the birds, which, in this case, is Baiada. As stated in the EIS the average mortality rates for broiler poultry housed within tunnel-ventilated sheds is:

- Week 1 of cycle (1 to 7 days of age) – 1 percent of population; and
- Weeks 2 to 8 of cycle (7 to 56 days of age) - 0.6 percent of the population per week.

The Standards (Australian Poultry CRC 2008) state, as a guide, that weak, ill or injured birds should not exceed 1 percent of the flock, which is consistent with the average mortality rates listed above. Maintaining a low mortality rate is obviously in the best interests of both the chickens and the growers. On this basis, both ProTen and Baiada monitor mortality rates very carefully to identify and eliminate any issues in the management of their flocks to ensure morality rates are kept as low as possible.

4.2 Environmental impact

A comprehensive environmental assessment of the Project has been carried out in accordance with the EP&A Act and its regulation, the SEARs and input received from other government agencies.

The potential for adverse impact on the local environment and surrounding populace has been minimised by selective siting of the PPUs and adoption of various development design features, best management practices and mitigation measures. While the Project may result in some externalised impacts associated with air quality, noise emissions and traffic generation, the specialist impact assessments predict that the Project will comply with all relevant impact assessment criteria and can co-exist with the surrounding land uses.

The EIS (SLR 2015a) concludes that the Project can proceed without resulting in significant or long-term adverse impacts to the local environment and surrounding populace. It will be managed on a day-to-day basis in accordance with a site-specific OEMP, which will ensure that the commitments made in the EIS (SLR 2015a), along with relevant statutory obligations and conditions of development consent (including environmental licensing requirements), are fully implemented and complied with.

It is relevant to note that ProTen has been operating in the Australian poultry industry, and specifically in the Griffith region, since 2002. They therefore have gained an extensive understanding of the environment in which they operate and of the potential impacts of their operations, as well as the suitable measures by which to eliminate or appropriately manage them.

Throughout its history in the Australian poultry industry, ProTen has proven its commitment to best management practice at its numerous poultry production operations.

4.3 Other Issues

Inconsistency with the aims of the Narrandera LEP and the objectives of Zone RU1

The proposal will increase impermeable surfaces on the land and diminish the area available for sustainable agricultural production.

The applicable aim of the *Narrandera Local Environmental Plan 2013* (Narrandera LEP), as listed in clause 1.2(2)(a) of the LEP, is *to protect, enhance and conserve agricultural land through the proper management, development and conservation of natural and man-made resources.*

As advised in the EIS (SLR 2015a), the footprint of the proposed development will be relatively small, comprising around 8 percent of the entire development site. The vast majority of the development site will therefore remain available for other agricultural activities as it is now under a lease or share farming arrangement. On this basis, the Project will not deny access to large areas of viable agricultural land, and will not significantly reduce the land area available for agricultural production.

Intensive livestock agriculture, such as that proposed, is permissible with development consent within the RU1 Primary Production Zone. The objectives of the RU1 Zone, and a comment on the consistency of the Project with these objectives, follows:

To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.

The use of natural resources as part of the Project has been carefully considered in the project design to ensure the use of natural resources is minimised through efficient use. Water supply for the 10 houses and staff amenities will be sourced via rainwater tanks and will therefore not place any demand on surface water or groundwater resources. Water required to service the poultry operation will be sourced via the transfer of an existing water access licence (WAL 11788) from a bore located approximately 5 kilometres to the east of the development site. In addition, ProTen has recently entered in to a sale and purchase agreement for an additional 225 megalitres of water per year from the same water source from a property approximately 4 kilometres to the northeast of the development site. On this basis, the Project will be using water that is already allocated under the *Water Sharing Plan for Lower Murrumbidgee Groundwater Sources 2003* (not additional water). As outlined in **Section 2.3.2**, the results of the groundwater pumping test indicate that the Calivil Formation aquifer has sufficient capacity to support the development's long-term water supply requirements and can support significantly higher rates of extraction. The pump test analysis also indicates that the development's proposed groundwater abstraction levels will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the *NSW Aquifer Interference Policy* (NOW 2012) thresholds.

A number of best practice measures have also been incorporated in the design of the proposed development to ensure a high level of energy efficiency. Low lux internal shed lighting, which has a significantly reduced power demand compared to past lighting practices, will be installed within the poultry sheds. In addition, lighting, temperature, humidity and static pressure within the poultry sheds will be continuously monitored and automatically adjusted to suit conditions. This will avoid unnecessary electricity and LPG usage.

To encourage diversity in primary industry enterprises and systems appropriate for the area.

Whilst a significant poultry industry exists in the nearby Griffith LGA, limited poultry production is undertaken in the Narrandera LGA. The introduction of a broiler farm to the Euroley/Narrandera area will therefore increase the diversity in the primary industries in the area.

The poultry industry within the wider Griffith region is a perfect example of vertical integration where a number of related operations (chicken hatchery, poultry feedmill, poultry processing plant and grower farms) produce a different product or service that combine to satisfy a common need. It is widely appreciated that the industry has a good strategic in the area. The proposed broiler farm at Euroley will form another important part of the industry that is already well-established in the wider region.

To minimise the fragmentation and alienation of resource lands.

As advised in the EIS (SLR 2015a), the footprint of the proposed development will be relatively small, comprising around 8 percent of the entire development site. The vast majority of the development site will therefore remain available for other agricultural activities as it is now under a lease or share farming arrangement. On this basis, the Project will not deny access to large areas of viable agricultural land, and will not significantly reduce the land area available for agricultural production.

To minimise conflict between land uses within this zone and land uses within adjoining zones.

Land use conflict is discussed in detail in Section 6.1 of the EIS (SLR 2015a). The primary surrounding land use is agriculture, consistent with the dominant land use across the region. The potential for conflict between the Project and the existing surrounding agricultural production activities is considered low. The footprint of the five proposed PPU sites will be relatively small at approximately 90 hectares and the commercial activity associated with the Project will be largely confined to this area. ProTen intends to continue using the land outside of the disturbance footprint for continued agricultural production purposes under a lease or share farming arrangement.

One exception to the surrounding agricultural landuse is where the development site abuts the "Banandra" portions of the South West Woodland Nature Reserve and Murrumbidgee Valley National Park. The nearest PPU will be located 100 metres from the development site boundary that abuts the National Park. All other project-related development will be considerably further away from the site boundary. Table 6.1 in the EIS (SLR 2015a) addresses the relevant issues in consideration of *Guidelines for developments adjoining land and water managed by the Department of Environment Climate Change and Water (DECC 2010*). This consideration did not identify any issues in terms of potential land use conflict between the Project and the adjoining nature reserve/national park.

No detailed economic impact assessment

Section 6.14.2 of the EIS (SLR 2015a) provides an overview of economic activity associated with the Project. As summarised in this section, the Project will result in the creation of 30 full-time equivalent jobs and numerous and significant flow-on benefits to the wider community. The development will also consume around 105,000 tonnes of poultry feed per annum, which represents a yearly recurrent spend of approximately $33 million (based on the average price of feed at the time the EIS was prepared). The economic benefits to the local community will therefore be significant.

The Project will put downward cost pressures on other local chicken farmers.

The development will drive out competition for local free range or organic farms.

Firstly, it is important to note that all intensive poultry growers in the region produce chickens for the same company, this being Baiada. The chickens are grown for Baiada and are ultimately processed by Baiada. Secondly, a downward cost pressure can result from an oversupply of a particular product and this assertion therefore assumes that the additional supply of chickens from the Project will be in excess of projected demand. Contrary to this, the increasing demand for chicken meat in Australia is well documented.

According to statistics published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES 2015), the popularity of chicken meat has grown enormously over the last 30 years to the extent that it is currently the most consumed meat in Australia. Chicken meat production in Australia has increased from approximately 380,000 tonnes in 1989-90 to around 1.08 million tonnes in 2013-14, and it is expected to continue increasing to around 1.32 million tonnes in 2019-20.

In 2012-13 Australians ate an average of 44.6 kilograms of chicken meat per person, compared to 36 kilograms in 2008-09 and just 13 kilograms in 1975. ABARES (2015) estimates that chicken meat consumption in Australia will continue to rise, reaching 49.2 kilograms per person in 2019-20. Around 525 million broiler birds were processed in 2011 to satisfy domestic consumption needs, with NSW enjoying a significant portion of this production. Based on current growth projections, it is estimated that by 2019 this well need to rise to close to 650 million birds per year.

In terms of driving out competition for local free range or organic farmers, for the reasons outlined, this will not be the case. While the increasing demand for chicken meat in the Australian market can be supplemented by local free range and organic farmers, the level of the demand will require intensive poultry production operations, such as that proposed. Furthermore, free range and organic farms supply a different type of product to a different consumer compared to the product that will be produced from the proposed development.

Land use conflict

Land use conflict is discussed in detail in Section 6.1 of the EIS (SLR 2015a) and addressed above under "to minimise conflict between land uses within this zone and land uses within adjoining zones". Table 6.1 in the EIS (SLR 2015a) addresses the relevant issues in consideration of *Guidelines for developments adjoining land and water managed by the Department of Environment Climate Change and Water (DECC 2010*). This consideration did not identify any issues in terms of potential land use conflict between the Project and the adjoining nature reserve/national park.

Do not accept the proponent's argument that the remaining land beyond the PPUs can remain productive agricultural land through being leased out to the current owners for grazing or other agricultural purposes.

As advised in the EIS (SLR 2015a), the footprint of the proposed development will be relatively small, comprising around 8 percent of the entire development site. This will leave over 1,000 hectares within the development site available for continued agricultural production under a lease or share farming arrangements. Such arrangements work successfully at some of ProTen's other poultry production sites within NSW and there is no evidence to suggest that such an arrangement can't be successfully implemented at the development site, particularly given the large area of land available.

Impermissibility of the farm managers' dwellings

Clause 4.2C of the Narrandera LEP contains development standards relating to the erection of dwelling houses in the RU1 Primary Production zone, one of which (clause 3a) states that consent must not be granted for the erection of a dwelling unless the land is a lot that is at least the minimum lot size shown on the Lot Size Map. The applicable minimum lot size for the development site is 400 hectares, which is greater than the individual lot sizes within the site on which the farm managers' houses are proposed to be constructed.

ProTen sought legal advice on this issue from Gilbert and Tobin Lawyers, specifically whether there is a legal requirement to consolidate the lots within the development site to achieve the minimum lot size specified in the LEP. This advice, which was provided to the DP&E, concluded that the development controls in clause 4.2C of the LEP are not a relevant consideration to the Project. The objectives of clause 4.2C are "to minimise unplanned rural residential development, and to enable the replacement of lawfully erected dwelling houses in rural and environment protection zones". Clause 4.2C would therefore be a relevant matter for consideration if the application involved rural residential development or the erection of dwellings to replace lawfully erected dwellings. The Project is not a rural residential development, nor are dwelling houses being replaced. The houses proposed are ancillary to the operation of the PPUs and a necessary component given the 24 hour nature of the operation. Gilbert and Tobin Lawyers therefore conclude that clause 4.2C is not a relevant consideration for this project. No consolidation of lots is required and the dwellings are permissible.

Unacceptable onsite hazard due to large quantities of LPG and exceedance of SEPP 33 threshold levels

A preliminary risk screening of the Project was undertaken by SLR (2015d) in accordance with SEPP 33. This initial risk screening exercise found the development to be potentially hazardous due to the volume of LPG to be stored on site (40 x 7,500 litre tanks). In accordance with SEPP 33, a preliminary hazard analysis (PHA) was conducted by SLR to determine the level of risk to people, property and the environment at the development site and in the presence of controls. The PHA (SLR 2015d) was appended to the EIS (SLR 2015a).

Based on the Project's design features for the use, storage and transport of LPG, the PHA (SLR 2015d) concluded that while the volumes of LPG will exceed the screening thresholds in SEPP 33, with suitable engineering controls in place and in consideration of all of the factors such as separation distances, the Project does not pose a significant off site risk and is not considered to be an offensive or hazardous development.

Inappropriate consideration of noise and odour, particularly on proposed farm managers' dwellings

Pacific Environment was engaged to undertake the appropriate assessment and reporting of air quality issues associated with the Project. The assessment was undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Approved Methods) (Department of Environment and Conservation (DEC) 2005) and *Assessment and Management of Odours from Stationary Sources in NSW* (DEC 2006). A copy of Pacific Environment's *Air Quality Impact Assessment* (2015a) was appended to the EIS and summarised within the EIS.

In summary, Pacific Environment (2015a) concluded the following:

- Odour concentrations at all of the nearest receptors are predicted to be at or below 5 OU; and
- Maximum 24 hour and annual average PM_{10} levels are predicted to be below the respective assessment criterion at all of the sensitive receptors.

Global Acoustics was engaged to undertake the appropriate assessment and reporting of noise issues associated with the Project. This assessment was undertaken in accordance with the *Interim Construction Noise Guideline* (DECC 2009), *Industrial Noise Policy* (EPA 2000) and the NSW *Road Noise Policy* (DECCW 2011). A copy of Global Acoustics *Noise Impact Assessment* (2015) was appended to the EIS and summarised within the EIS.

In summary, Global Acoustics (2015) concluded the following:

- The construction, operational and sleep disturbance noise levels will comply with project-specific noise levels at all surrounding receptors for all scenarios; and
- No discernible noise impact will occur if a 60 kilometre per hour speed limit is adopted on this site access road.

The 10 houses proposed as part of the Project will house the farm managers and assistant farm managers. The houses will therefore be project-related residences and as such are not considered sensitive receptors to be assessed in terms of odour and noise impacts. Due to the 24 hour nature of the operation, the farm managers must live in close proximity to the poultry sheds. Not only is this necessary from a logistics point of view, given the farm managers may be required to work at all hours of the day and night depending on the particular stage of the production cycle, but is also necessary to ensure animal welfare. Farm managers must live in close proximity to enable an immediate response in the event that an issue, such as failure of the shed ventilation system.

Inadequate arrangements for essential electricity services and water supply

<u>Water Supply</u>

As evident on **Figure 3**, four water storage tanks will be installed at each PPU for the storage of water extracted from the groundwater bores. These tanks will have a combined capacity of 1.4 megalitres, which is in excess of the 2 day's water supply for each PPU recommended in the *Best Practice Management for Meat Chicken Production in NSW* (DPI 2012).

Furthermore, measures to ensure security of water supply from the groundwater bores have also been incorporated into the Project design. Both of the proposed groundwater bore locations (see **Figure 1**) will include one production bore and one backup bore in case of pump failure.

The results of the groundwater pumping test (SLR 2015g) indicate that the Calivil Formation aquifer has sufficient capacity to support the development's long-term water supply requirements and can support significantly higher rates of extraction. The achieved yields demonstrate appropriate water supply security for the development.

Electricity Supply

Ensuring adequate electricity supply is critical to a poultry development, and is one of the key factors when undertaking a site selection process for a broiler farm.

ProTen has conducted extensive consultation with Essential Energy regarding the power requirements of the development to ensure that appropriate infrastructure is put in place to service the needs of the development without affecting other users. New power supply infrastructure is proposed to be installed from the existing Coleambally sub-station to the development site. The Review of Environmental Factors (REF) (SLR 2015i) prepared for this new power supply infrastructure has been accepted by Essential Energy and SLR's understands that approval will be issued in the near future.

Emergency standby diesel generators will be installed for when power from the electricity grid is lost.

Inadequate treatment of waste and associated contamination concerns

The proponent does not appear to have any treatment process for the wash down water from the poultry sheds.

As outlined in Section 3.10 of the EIS (SLR 2015a), appropriate systems will be implemented to ensure that all waste streams generated by the Project are effectively managed and/or disposed of off site.

As outlined in Section 3.11 of the EIS (SLR 2015a), an engineered surface water drainage system will be implemented to provide long-term structural controls and management measures to mitigate the impact of surface water runoff throughout the life of the operation.

A stage 1 preliminary site investigation has been undertaken to address the contamination potential and site suitability in accordance with *State Environmental Planning Policy No. 55 - Remediation of Land* (SEPP 55). The *Stage 1 Preliminary Site Investigation* report (SLR 2015e) detailing the methodology and results of the investigation is provided in **Appendix C**.

In summary, based on a review of the available site history data, SLR (2015e) concluded the following:

- The potential for significant widespread contamination to be present on the site, as a result of past and present land use activities, is considered to be low;
- The site is suitable, from a contamination perspective, for the proposed poultry broiler production farm and associated residences; and
- No further assessment is considered necessary.

Absence of effective monitoring and control systems

Large-scale, intensive animal facilities are at heighted risk of essential services failure. For example, during hot weather, mass bird deaths can result from small interruptions to ventilation and cooling equipment. Without appropriate monitoring and control systems, the animals within these facilities may be exposed to hazardous and potentially lethal conditions for extended periods of time.

It is for this reason that the poultry sheds at all of ProTen's farms, including the proposed sheds at Euroley, are fully computer controlled and alarm monitored, with back-up power available via emergency standby generators.

5 REFERENCES

Australian Chicken Meat Federation (2010) *National Farm Biosecurity Manual for Chicken Growers*

Australian Poultry CRC (2008) *National Animal Welfare Standards for the Chicken Meat Industry*

Department of Primary Industries (2012) *Best Practice Management for Meat Chicken Production in NSW - Manual 1 Site Selection and Development*

Department of Primary Industries (2012) *Best Practice Management for Meat Chicken Production in NSW - Manual 2 Meat Chicken Growing Management*

GHD (2007) *Drainage and Nutrient Management Plan, Report for Lot 701 Henderson Road, Hopelands*

GHD (2013) *Murrami Broiler Farm Audit, Audit Report*

Global Acoustics (2015) *ProTen Euroley Poultry Production Complex, Noise Impact Assessment*

Lance Ryan Consulting Engineers (2015) *Stormwater Report, ProTen Chicken Sheds, Euroley*

OzArk Environmental and Heritage Management (2015) *Aboriginal Heritage Impact Assessment*

Pacific Environment Limited (2015a) *Air Quality Impact Assessment – Euroley Poultry Project*

Pacific Environment Limited (2015b) *EPA Review of Euroley Odour and Dust Assessment*

Primary Industries Standing Committee (2006) *Model Code of Practice for the Welfare of Animals, Land Transport of Poultry*

Primary Industries Standing Committee (2002) *Model Code of Practice for the Welfare of Animals, Domestic Poultry*

Queensland Department of Natural Resources (1997) *Planning Guidelines Separating Agricultural and Residential Land Uses*

RoadNet (2015a) *Traffic Assessment, Impacts of Proposed Poultry Production Development at Sturt Highway, Euroley*

RoadNet (2015b) *Response to Submissions on Traffic and Road Design-Related Matters*

SLR Consulting Australia (2015a) *Euroley Poultry Production Complex SSD 6882, Environmental Impact Statement*

SLR Consulting Australia (2015b) *Euroley Poultry Production Complex, Biodiversity Assessment Report*

SLR Consulting Australia (2015c) *Flooding Assessment, Euroley Poultry Production Complex*

SLR Consulting Australia (2015d) *SEPP 33 - Preliminary Risk Screening & Hazard Assessment, Intensive Livestock Agriculture, Euroley Poultry Production Complex*

SLR Consulting Australia (2015e) *Stage 1 Preliminary Site Investigation (PSI), Proposed Poultry Broiler Production Farm*

SLR Consulting Australia (2015f) *Flooding Addendum, Euroley Poultry Production Complex*

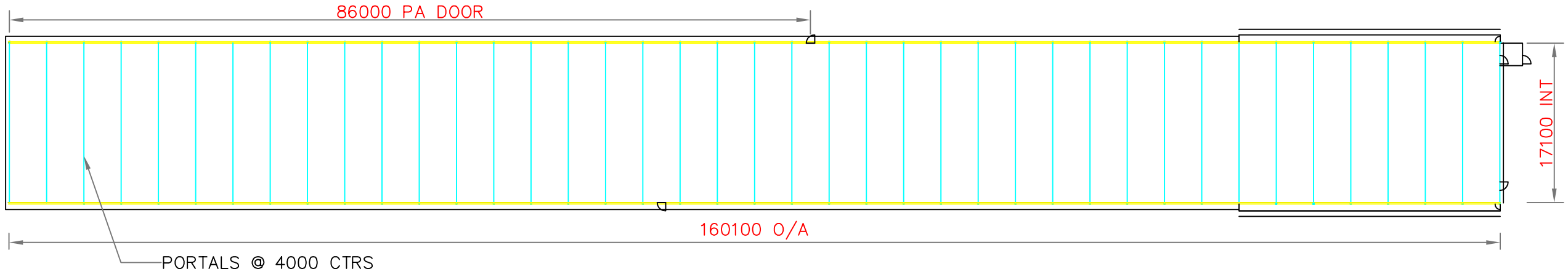
SLR Consulting Australia (2015g) *Euroley Poultry Production Complex - Groundwater Drilling and Testing*

SLR Consulting Australia (2015h) *Euroley Poultry Production Facility, Biodiversity Offset Strategy*

SLR Consulting Australia (2015i) *ProTen Euroley Powerline, Review of Environmental Factors*

APPENDIX A

Poultry Sheds



PLANVIEW
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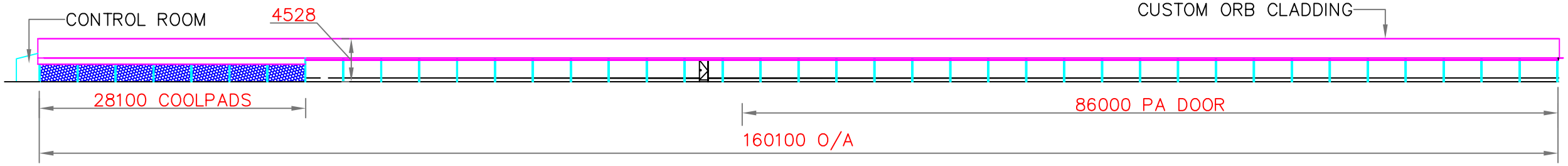

NORTH ELEVATION
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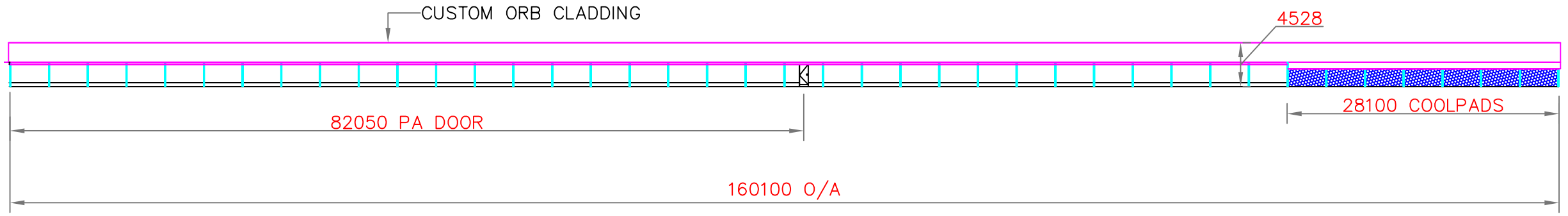

SOUTH ELEVATION
SCALE 1 :500 A3

FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DRAWINGS
CONTRACTORS SHALL VERIFY ALL DIMENSIONS BEFORE COMMENCING

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FAX (03) 9462 4866
MOB 0418 3888 42
Email: design@bmslots.com

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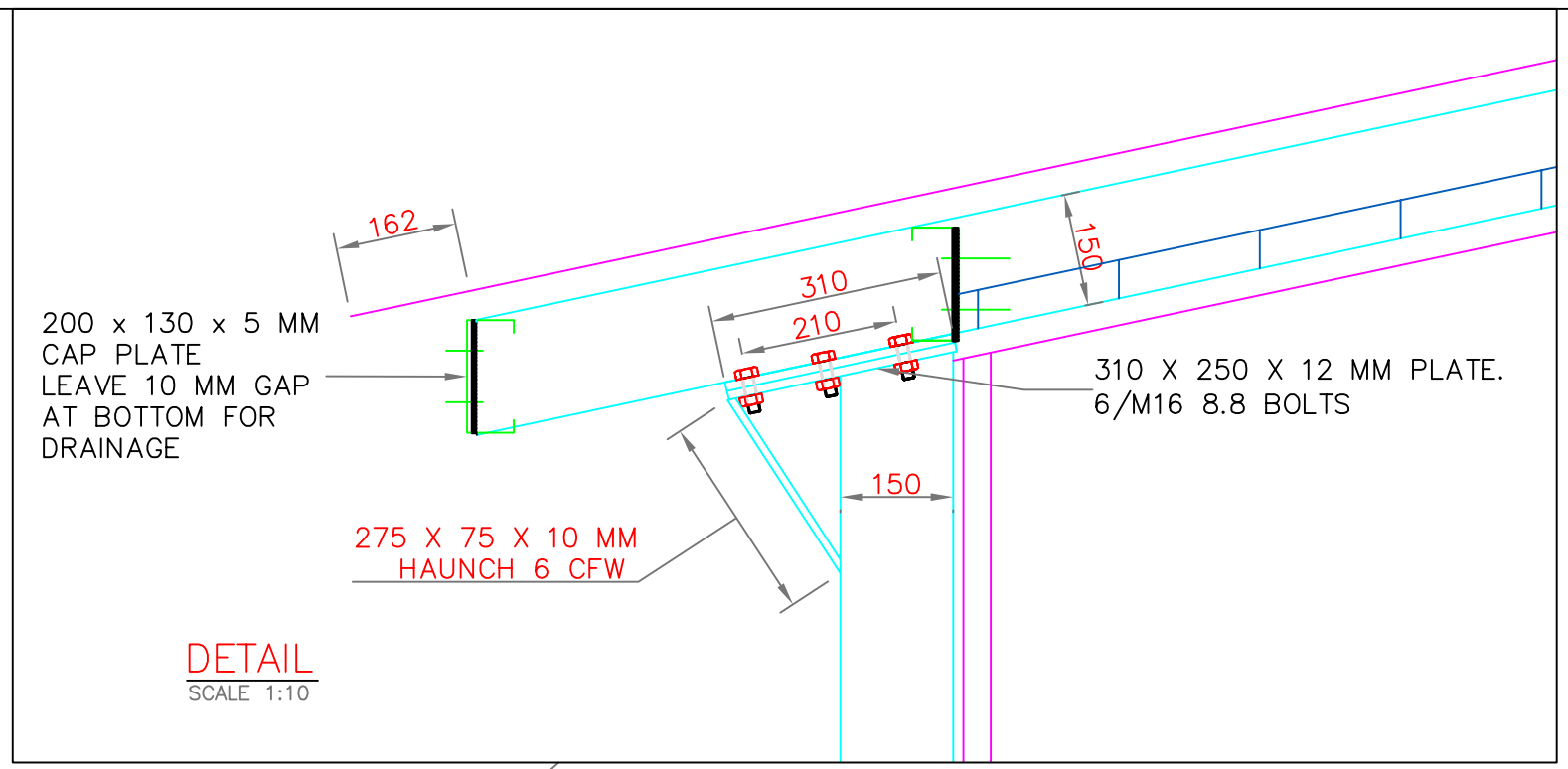
Thomastown
Vic 3074
Australia

ITEM	DESCRIPTION	REMARKS
SHEET No: 1 OF 5	TITLE: PLANVIEW & ELEVATIONS	SCALE: AS NOTED A3
	PROJECT: BROILER SHED	DATE: 1/08/2014
	CLIENT: PRO.TEN Ltd NARRANDERA LOT 42 STURT HIGHWAY EUROLEY NSW 2700	
		PLOT DATE
DRAWN: BS / TRACED: PB / CHECKED: KN	A3	DRAWING NUMBER: S1



DETAIL
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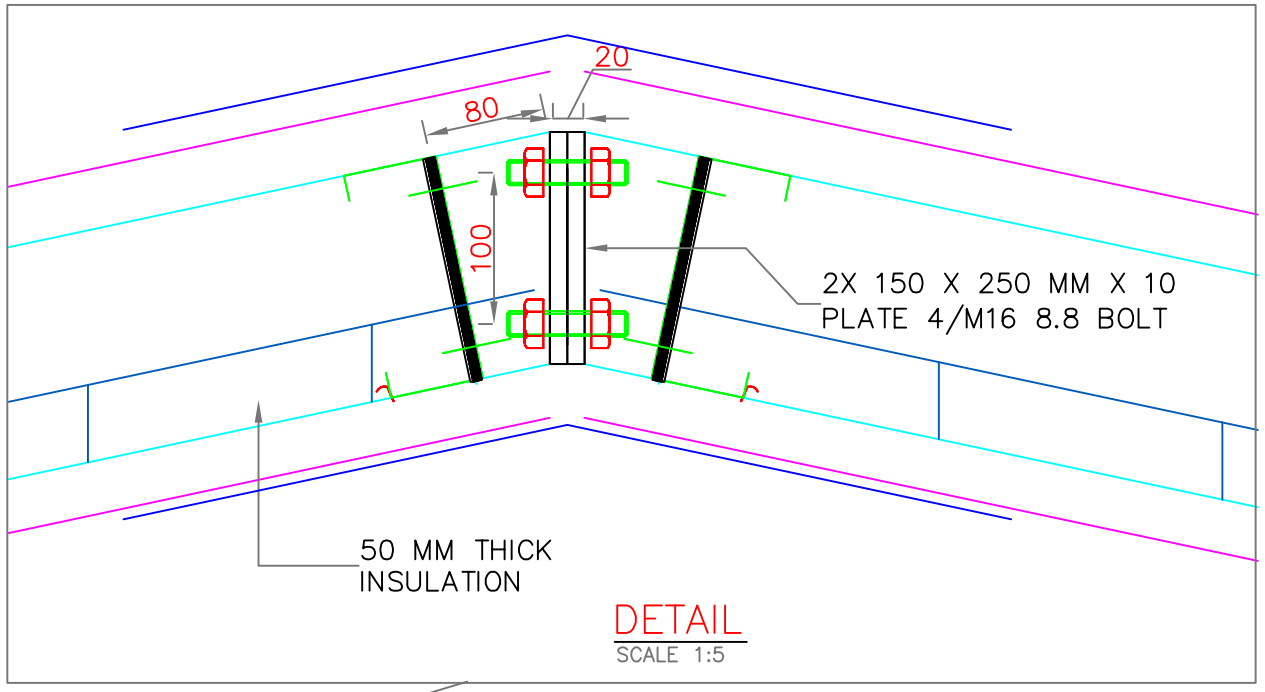

DETAIL
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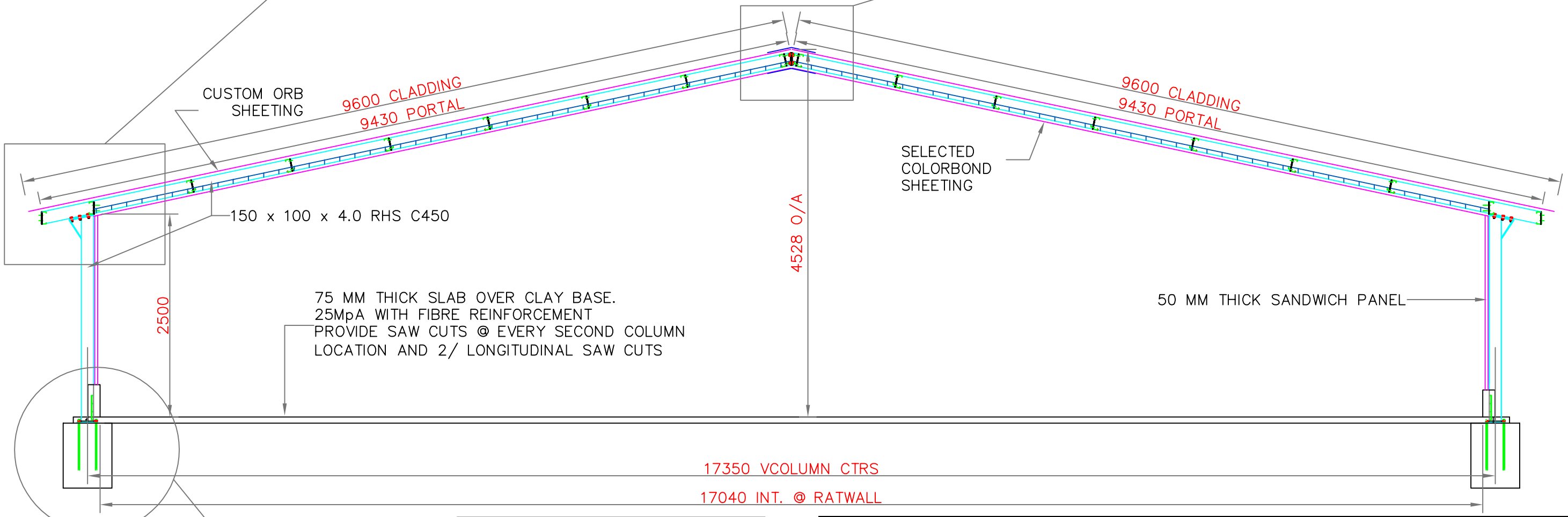

TYP.SECTION
SCALE 1:50

1
S3

REVISION: A DATED 20-10-14
CORRECTED DIMENSION OF PLATES IN RIDGE

FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DRAWINGS
CONTRACTORS SHALL VERIFY ALL DIMENSIONS BEFORE COMMENCING

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PH (03) 9462 4266
FAX (03) 9462 4866
MOB 0418 3888 42
Email: design@bmslots.com

13 Lucknow Cres.
Thomastown
Vic 3074
Australia

ITEM	DESCRIPTION	REMARKS

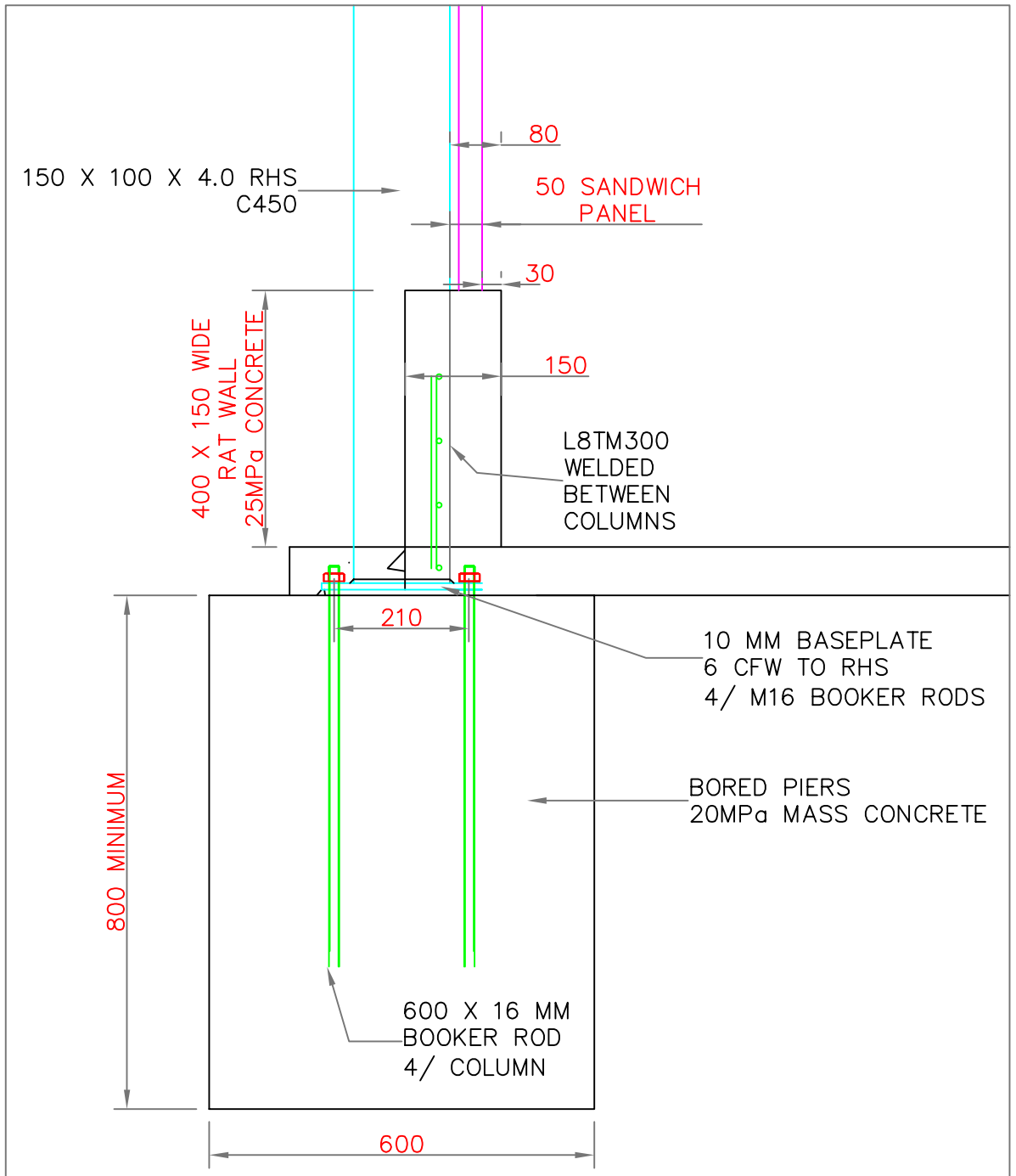
SHEET No: 2 OF 5

TITLE: TYP. SECTION & DETAILS
SCALE: AS NOTED A3
PROJECT: BROILER SHED
DATE: 1/08/2014
CLIENT: PRO.TEN Ltd NARRANDERA
LOT 42 STURT HIGHWAY
EUROLEY
NSW 2700
PLOT DATE

DRAWN	TRACED	CHECKED		DRAWING NUMBER
BS	PB	KN	A3	S2

MEMBER SCHEDULE

MARK	SIZE	REMARKS
COLUMNS	150 X 100 X 4	GRADE 450
RAFTERS	150 X 100 X 4	GRADE 450
ROOF PURLINS	C15012	GALVANISED
PURLINS @ EVAP. COOLING	C300–15	GALVANISED



DETAIL 1 S2
SCALE 1:5 A3

BRIEF SPECIFICATIONS

GENERAL SLAB AND FOOTING REQUIREMENTS:

1. TOP SOIL AND VEGETATION SHALL BE STRIPPED FROM SITE TO A MINIMUM DEPTH OF 100mm.
2. PRIOR TO THE PLACEMENT TO ANY CONTROLLED FILL, THE EXPOSED SUB GRADE SHALL BE COMPACTED TO A MINIMUM 95
3. % RELATIVE DENSITY.
   ALL ORGANIC MATTER AND SOFT AREAS SHALL BE REMOVED AND REPLACED WITH GRANULAR MATERIAL. ALL FILLING SHALL BE CLEAR GRANULAR MATERIAL PLACED IN MAXIMUM 150mm COMPACTED LAYERS AND COMPACTED BY WATERING AND USE OF VIBRATING ROLLER OR COMPACTOR TO ACHIEVE CONTROLLED FILL
4. AS PER AS2870. FILL SHALL BE COMPACTED TO MINIMUM AS1289.1.1 (1993), OR WHEN TESTED PASS THE REQUIRED MIN. 100kPa BEARING CAPACITY FOR THE FOOTING.
5. GROUND SURFACES AROUND THE PIGGERY TO BE GRADED SO THAT NO WATER PONDS AROUND THE FOOTINGS. PROVIDE 100mm FALL OVER THE FIRST 1000mm FROM THE BUILDINGS. THE BUILDER IS TO DETERMINE THE PRESENCE OF ANY ADDITIONAL FILLED AREAS, WHICH WOULD NECESSITATE THE USE OF MODIFIED FOOTINGS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE TO BE OBTAINED FROM THE ARCHITECTS DRAWINGS OR FROM SITE. ENGINEERS DRAWINGS MUST NOT BE
2. SCALED.
   THE APPROVAL OF A SUBSTITUTION BY THE ENGINEER IS NOT AN AUTHORIZATION FOR AN EXTRA. ANY EXTRA INVOLVED MUST BE
3. TAKEN UP WITH THE ARCHITECT BEFORE WORK COMMENCES. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.

STRUCTURAL STEEL

1. ALL STEELWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AS4100, SAA STEEL STRUCTURES CODE.
2. WELDS TO BE 6mm CONTINUOUS FILLET LAID DOWN WITH APPROVED COVERED ELECTRODE IN ACCORDANCE WITH AS1554 – WELDING CODE. BOLTS 20mm DIA, BLACK IN 22mm CLEARANCE
3. HOLES, GUSSET PLATES 10mm THICK UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS NOMINATED 'HS' TO BE SNUG TIGHTENED ONLY UNLESS NOTED.

CONCRETE

1. ALL CONCRETE WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SAA CONCRETE STRUCTURES CODE AS3600.
2. ALL CONCRETE SHALL BE:
   GRADE 25 MpA – FOOTINGS.
   GRADE 25 MpA – SLAB, PANELS U.N.O.
3. DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS. SLABS AND BEAMS ARE TO BE POURED TOGETHER.
4. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE PROPERLY FORMED AND LOCATED TO THE APPROVAL OF THE ENGINEER.
5. CONCRETE TO BE KEPT FREE OF SUPPORTING BRICKWORK BY TWO LAYERS OF A SUITABLE MEMBRANE (MALTHOID ETC.) OR AS DIRECTED BY THE ENGINEER. VERTICAL FACES OF CONCRETE TO BE KEPT FREE BY A 12 THICKNESS OF BITUMINOUS CANITE.
6. CHECK WITH THE ARCHITECT REGARDING V–JOINT ON RENDERED SURFACES.
7. BRICKWORK MUST NOT BE BUILT ON CONCRETE SLABS OR BEAMS UNTIL THE SUPPORTING FORMWORK HAS BEEN REMOVED.
8. REINFORCEMENT IS SHOWN DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
   REINFORCEMENT NOTATIONS:
   SL DENOTES HARD–DRAWN WIRE REINFORCING FABRIC TO AS1304.
   R DENOTES STRUCTURAL–GRADE PLAIN ROUND BARS TO
9. AS1302.
   Y DENOTES COLD–WORKED DEFORMED BAR TO AS1302.
   THE NUMBER IMMEDIATELY FOLLOWING THE BAR GRADE SYMBOL
10. REPRESENTS THE NOMINAL BAR DIAMETER IN MILLIMETERS.
11. AT OPENINGS IN WALLS ADD 2/N16 BARS ON ALL SIDES PROJECTING 600 PAST THE CORNERS UNLESS OTHERWISE NOTED ON THIS DRAWING.
12. ALL REINFORCEMENT FOR ANY ONE POUR SHALL BE COMPLETELY PLACED AND TIED PRIOR TO INSPECTION BY THE ENGINEER OR ARCHITECT. NO CONCRETE SHALL BE POURED UNTIL REINFORCEMENT HAS BEEN INSPECTED AND APPROVED. THE BUILDERS ATTENTION IS SPECIALLY DIRECTED TO THE TOP STEEL ON THIS JOB. REINFORCEMENT IS TO BE SECURELY TIED AND SUPPORTED IN ITS CORRECT POSITION SO AS NOT TO BE DISPLACED DURING CONCRETING.

CONCRETE DETAILS

STRENGTH:	
FLOORS –	EXPOSED TO PIGS32 MpA UNO
	ALL OTHER 25MPa UNO
U	REINFORCE USING SL72 MESH CENTRAL
WALLS –	25 MpA UNO
	REINFORCE USING SL82 MESH CENTRAL UNO
AGGREGATE:	20mm NOM. MAX
CEMENT TYPE:	A OR FA
REINFORCING:	AS SHOWN, 225 SIDE & END LAP
	40mm MIN COVER
CONTRACTION JOINTS:	5m MAX SPACING. NO JOINTS IN FLOORS
	EXPOSED TO MANURE
FILL:	100 mm COMPACTED SAND IF REQUIRED

PROVIDE WATER PROOFING MEMBRANE TO UNDERSIDE OF CONCRETE FLOORS THROUGHOUT. LAP 300 AND TAPE AS REQUIRED

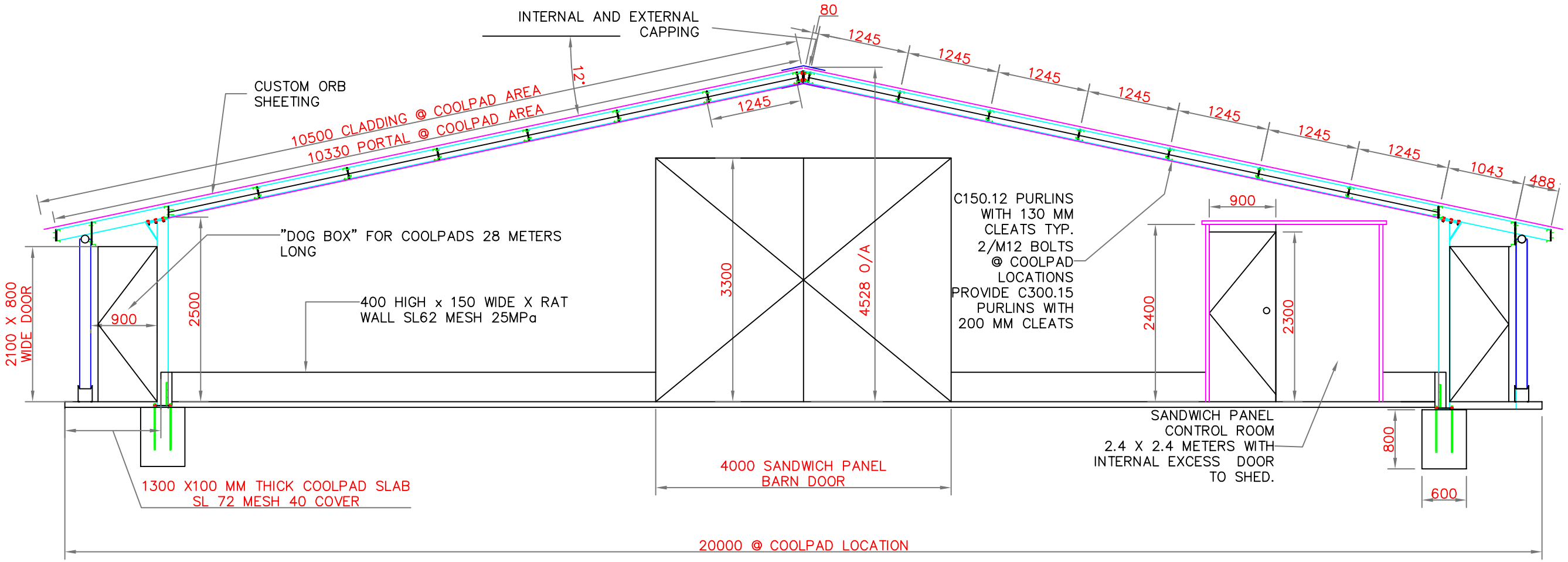
FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DRAWINGS
CONTRACTORS SHALL VERIFY ALL DIMENSIONS BEFORE COMMENCING

B & M SLOTS PTY LTD
INTENSIVE HUSBANDRY SOLUTIONS

PH (03) 9462 4266
FAX (03) 9462 4866
MOB 0418 3888 42
Email: design@bmslots.com

13 Lucknow Cres.
Thomastown
Vic 3074
Australia

ITEM	DESCRIPTION	REMARKS
SHEET No: 3 OF 5	TITLE: DETAIL, NOTES & MEMBER SCHEDULE	SCALE: AS NOTED A3
	PROJECT: BROILER SHED	DATE: 1/08/2014
	CLIENT: PRO.TEN Ltd NARRANDERA LOT 42 STURT HIGHWAY EUROLEY NSW 2700	
		PLOT DATE
DRAWN: BS	TRACED: PB	CHECKED: KN
A3		DRAWING NUMBER: S3



EAST ELEVATION
SCALE 1 :60 A3

FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DRAWINGS
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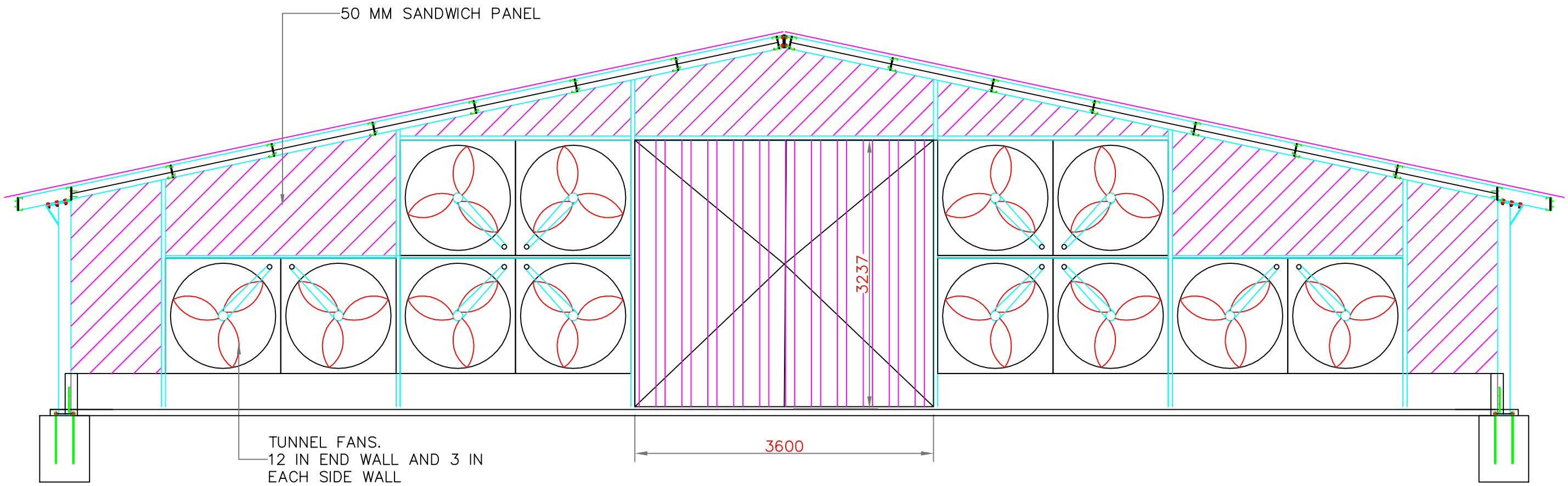
PH (03) 9462 4266
FAX (03) 9462 4866
MOB 0418 3888 42
Email: design@bmslots.com

13 Lucknow Cres.
Thomastown
Vic 3074
Australia

ITEM	DESCRIPTION	REMARKS
SHEET No: 4 OF 5	TITLE: ELEVATION	SCALE: AS NOTED A3
	PROJECT: BROILER SHED	DATE: 1/08/2014
	CLIENT: PRO.TEN Ltd NARRANDERA LOT 42 STURT HIGHWAY EUROLEY NSW 2700	
		PLOT DATE
	DRAWN: BS / TRACED: PB / CHECKED: KN	A3
		DRAWING NUMBER: S4



WEST ELEVATION
SCALE 1 :50 A3

FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DRAWINGS
CONTRACTORS SHALL VERIFY ALL DIMENSIONS BEFORE COMMENCING

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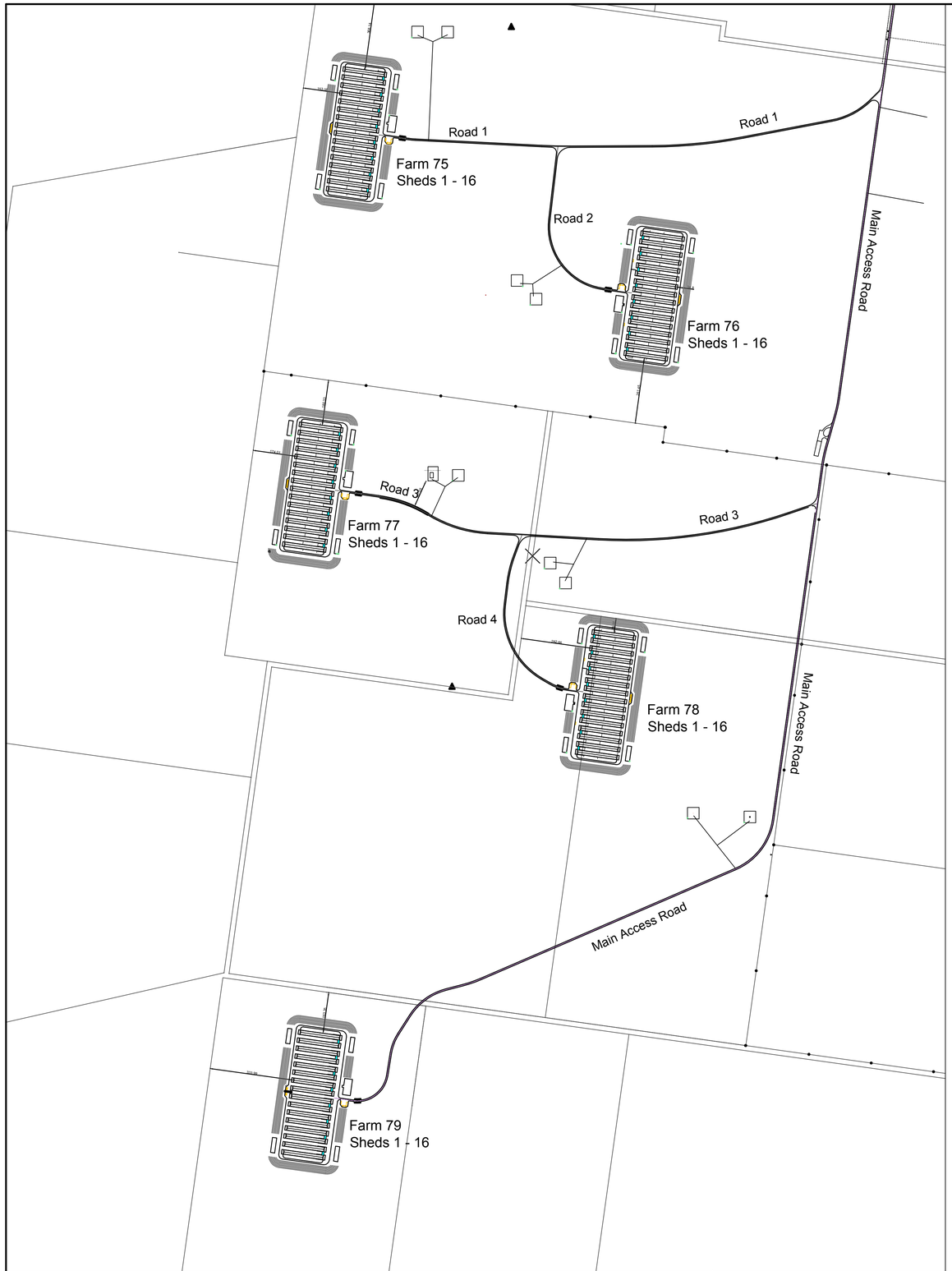
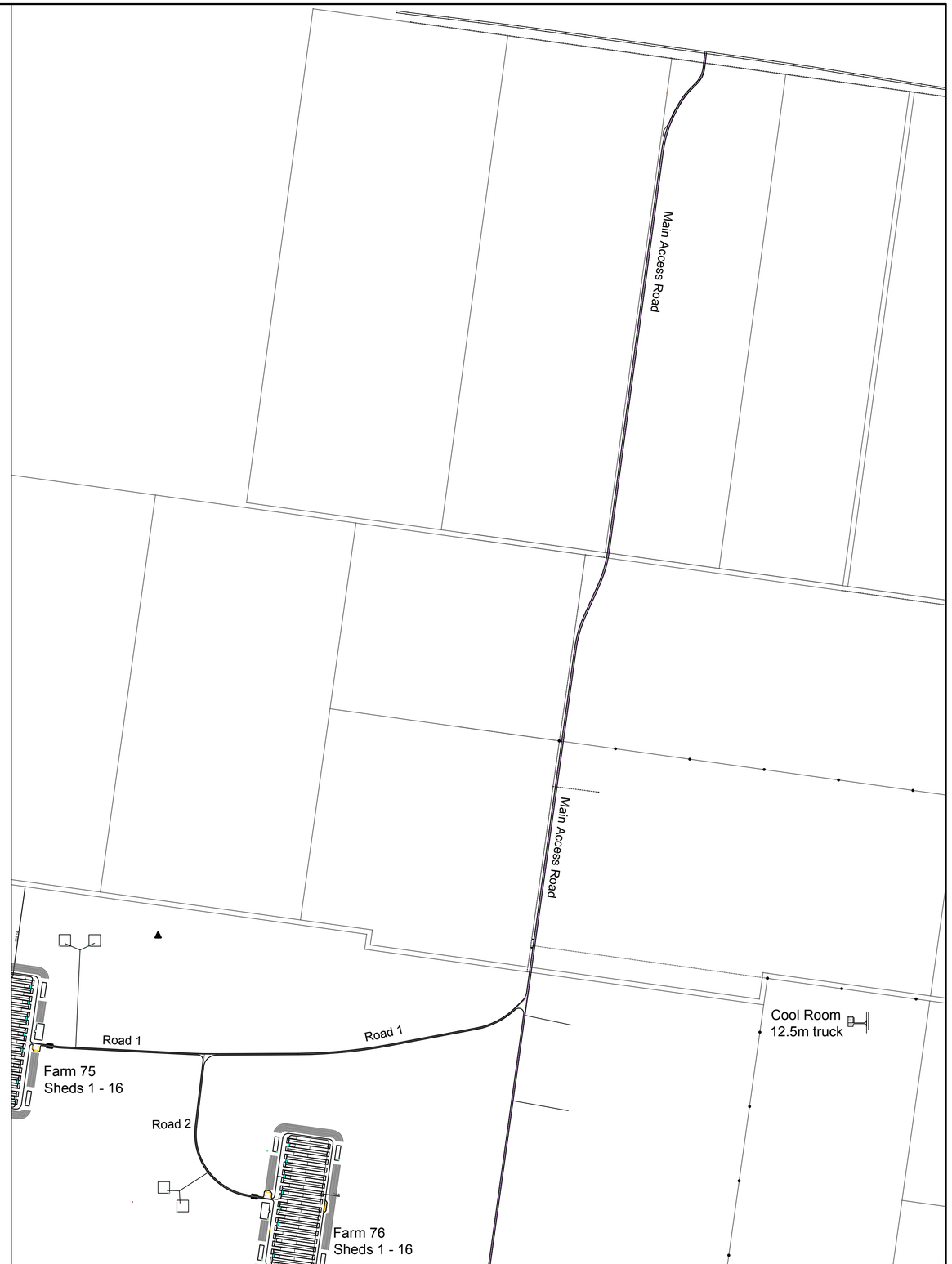
PH (03) 9462 4266
FAX (03) 9462 4866
MOB 0418 3888 42
Email: design@bmslots.com

13 Lucknow Cres.
Thomastown
Vic 3074
Australia

ITEM	DESCRIPTION	REMARKS
SHEET No: 5 OF 5	TITLE: ELEVATION	SCALE: AS NOTED A3
	PROJECT: BROILER SHED	DATE: 1/08/2014
	CLIENT: PRO.TEN Ltd NARRANDERA LOT 42 STURT HIGHWAY EUROLEY NSW 2700	
		PLOT DATE
DRAWN: BS / TRACED: PB / CHECKED: KN	A3	DRAWING NUMBER: S5

PPU Layout, Access Roads, and Cut and Fill





Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	28.04.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

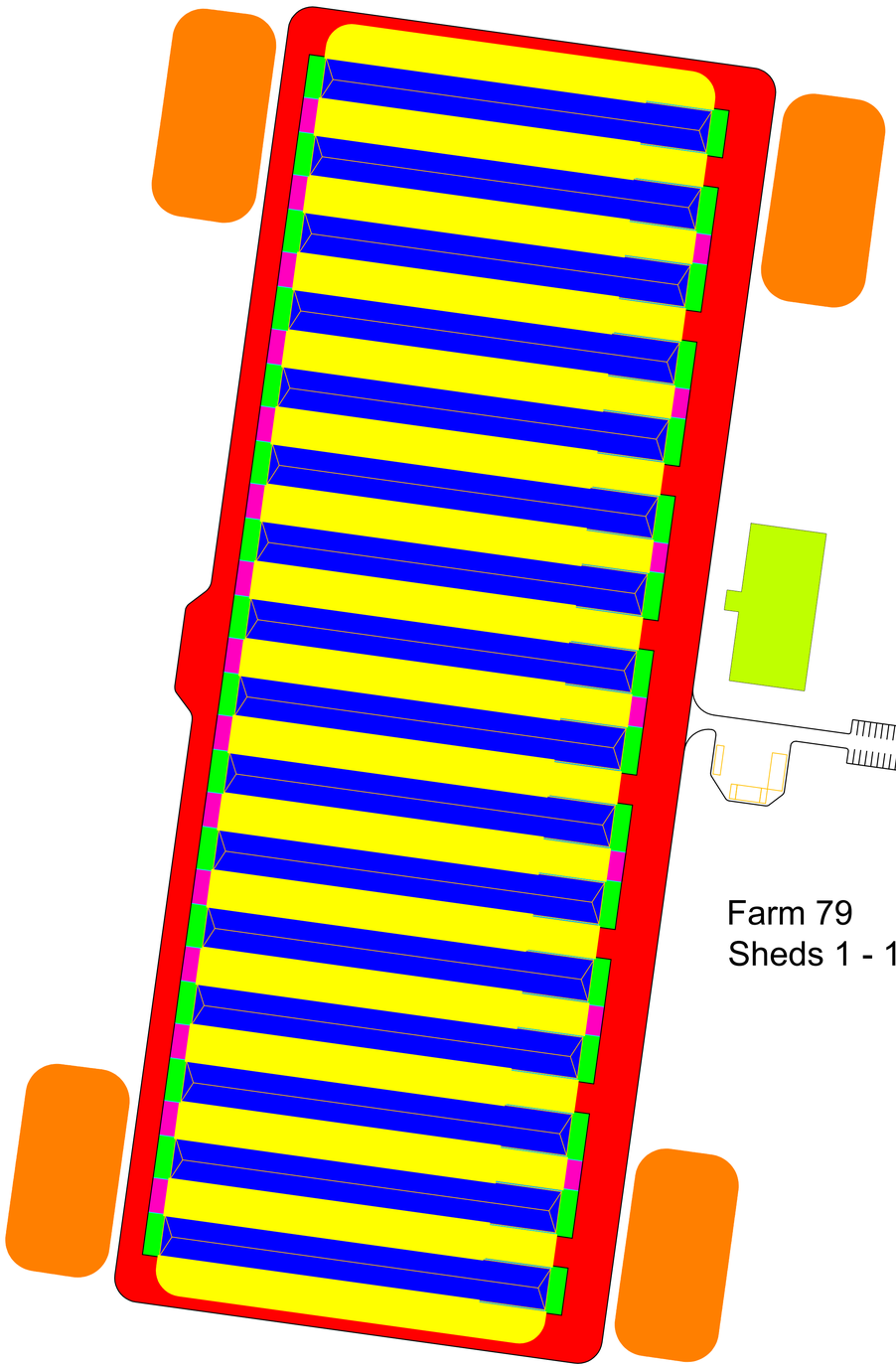
Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Overall Site Plan
Client	ProTen
Scales	1:10000
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C01
Sheet	01 of 76
Revision	1

0 100mm 200mm 300mm

A1 SHEET

LEGEND

- Road Pavement
  200mm thick gravel
  Area = 18350m²
- Sheds
  75mm thick concrete
- Swale Drains
- Concrete Slabs 100 thick
- 100mm thick Gravel



Farm 79
Sheds 1 - 16

Area 45,952m²
Area 38,121m²
Area 4,166m²
Area 2,120m²

No topsoil removed
Fill 23,876m³
Cut 1,293m³

50 topsoil removed
Only remove topsoil under buildings 5,363m³
Fill 27,969m³
Cut 827m³

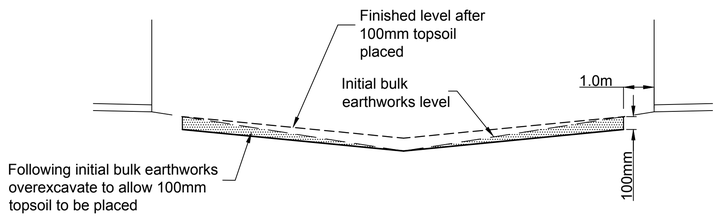
Sheds footprint (1m out from sheds) = 55,232m²
Fill required to replace 50mm topsoil removed 2,762m³
Fill 23,876 + 2,762 = 26,638m³
Cut 827m³

Sheds account for approx. 85% of fill which needs to be compacted to 98% standard. Remaining 15% of fill in swale drains to be compacted to 95% standard)

Area 18,422m³ — 200 roadbase 3,684m³
Fill 1,512m³
Cut 3,308m³

Area 14,124m³ — Cut 28,082m³

Area 2,063m³ — Stripping 206m³
Fill 560m³



SWALE DRAIN BETWEEN SHEDS

Additional excavation following initial bulk earthworks to allow for 100mm of topsoil to be placed

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Farm 79
Sheds 1 - 16 Quantities

Scales: 1:1000

Client Project No.

Project Number: 15W013

Dwg. No.: C03

Sheet: 03 of 76

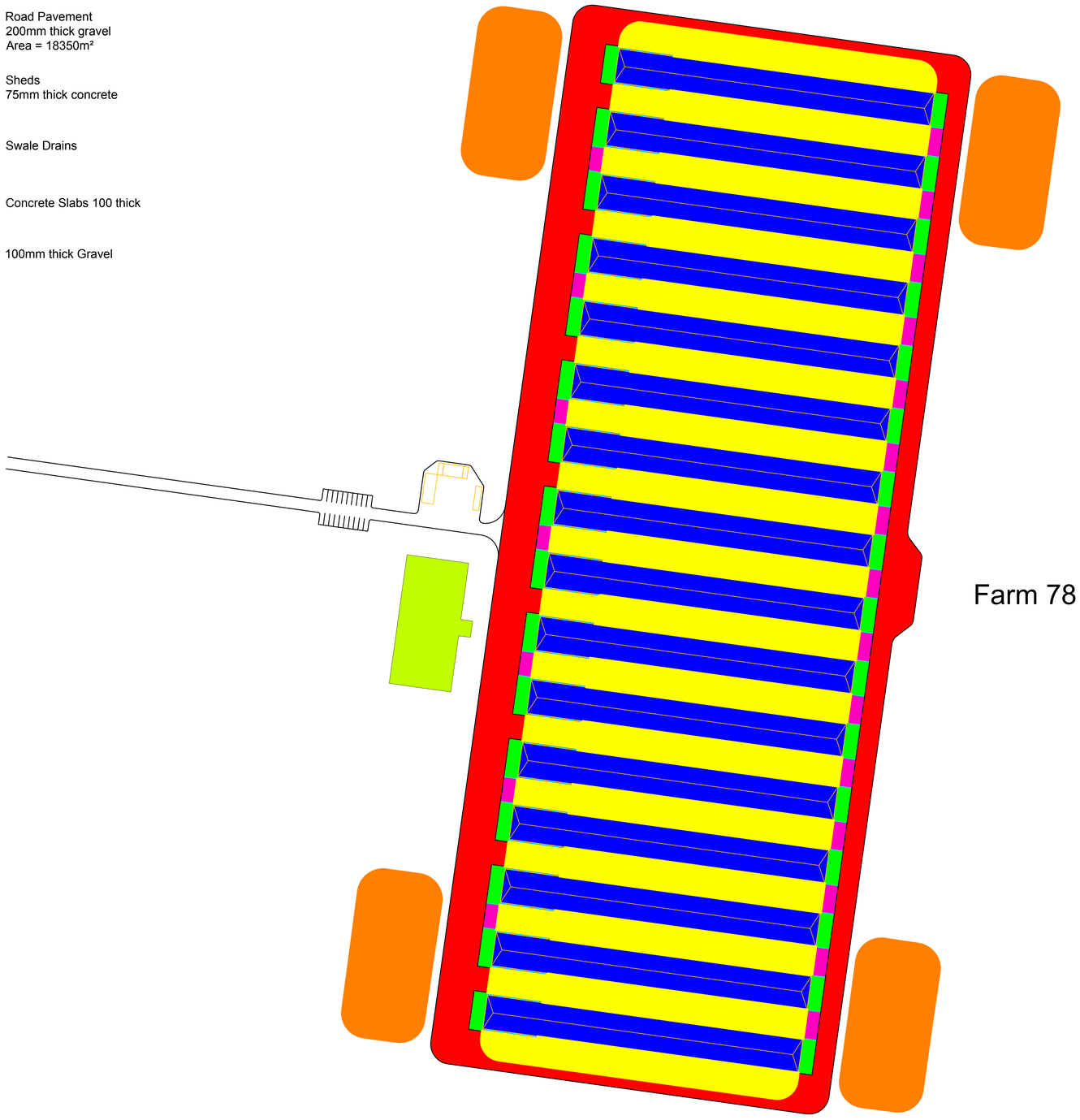
Revision: 1

A1 SHEET

0 100mm 200mm 300mm

LEGEND

- Road Pavement
  200mm thick gravel
  Area = 18350m²
- Sheds
  75mm thick concrete
- Swale Drains
- Concrete Slabs 100 thick
- 100mm thick Gravel



Area 45,952m²
Area 38,121m²
Area 4,166m²
Area 2,120m²

No topsoil removed
Fill 23,576m³
Cut 1,095m³

50 topsoil removed
Only remove topsoil under buildings 5,363m³
Fill 27,693m³
Cut 650m³

Sheds footprint (1m out from sheds) = 55,232m²
Fill required to replace 50mm topsoil removed 2,762m³
Fill 23,576 + 2,762 = 26,338m³
Cut 650m³

Sheds account for approx. 85% of fill which needs to be compacted to 98% standard. Remaining 15% of fill in swale drains to be compacted to 95% standard)

Area 18,422m³ — 100mm topsoil 2,559m³, Fill 2,161m³, Cut 3,064m³

Area 14,124m³ — Cut 28,081m³

Area 2,063m³ — Stripping 206m³, Fill 649m³

Farm 78 Sheds 1 - 16

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Farm 78
Sheds 1 - 16 Quantities

Scales: 1:1000

Client Project No.

Project Number: 15W013

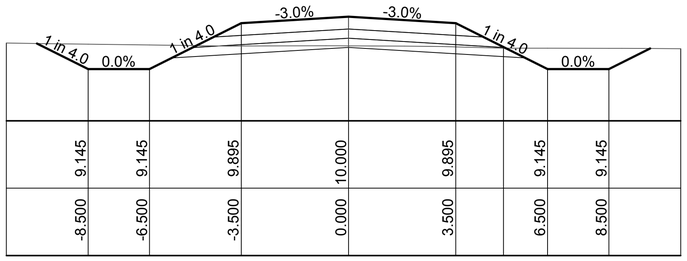
Dwg. No.: C04

Sheet: 04 of 76

Revision: 1

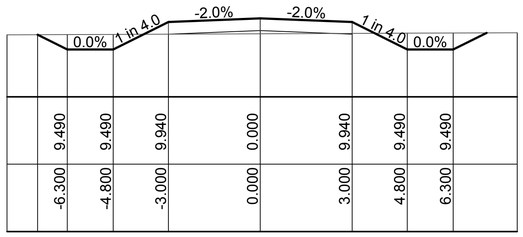
A1 SHEET

0 100mm 200mm 300mm



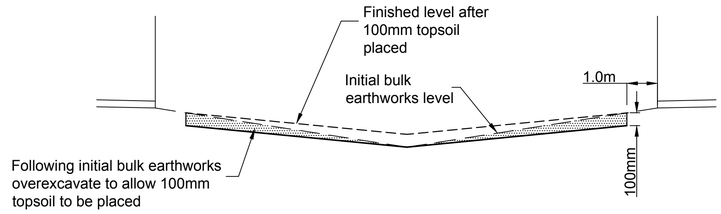
Typical Road Cross from Sturt Highway to first Intersection Ch 0 to Ch 3900

Pavement to consist of 300mm fill compacted in two layers fom material won from table drains and 200mm of Road base Gravel. Through the sand hills (Ch 200 to 800) the top 200mm layer of fill to stabilised with slag lime as per Geotechnical recommendations.



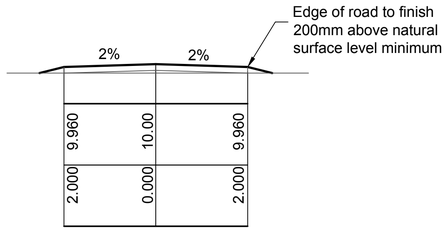
Typical Road Cross for all Internal Roads including main access road from CH 3900 to End

Pavement to consist of 200mm of Road base Gravel.



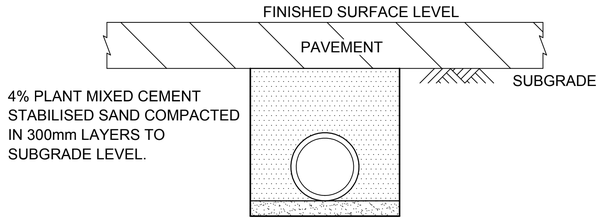
SWALE DRAIN BETWEEN SHEDS

Additional excavation following initial bulk earthworks to allow for 100mm of topsoil to be placed



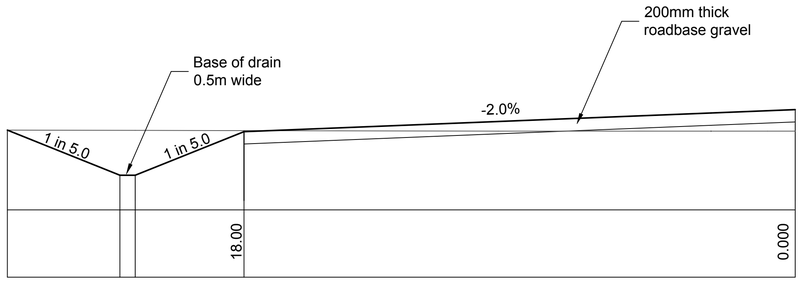
Scale Horizontal 1:100 Vertical 1:100

Typical Road Cross Section to Houses

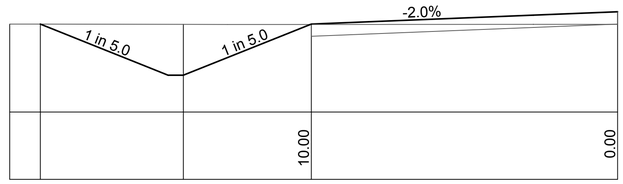


STORMWATER UNDER ROADS

SCALE 1:20



TYPICAL CROSS SECTION RING ROAD AT FRONT



TYPICAL CROSS SECTION RING ROAD AT BACK

TYPICAL SECTION THROUGH SHEDS

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by ✕ = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Typical Details

Client: ProTen

Scales: As Shown

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C02

Sheet: 02 of 76

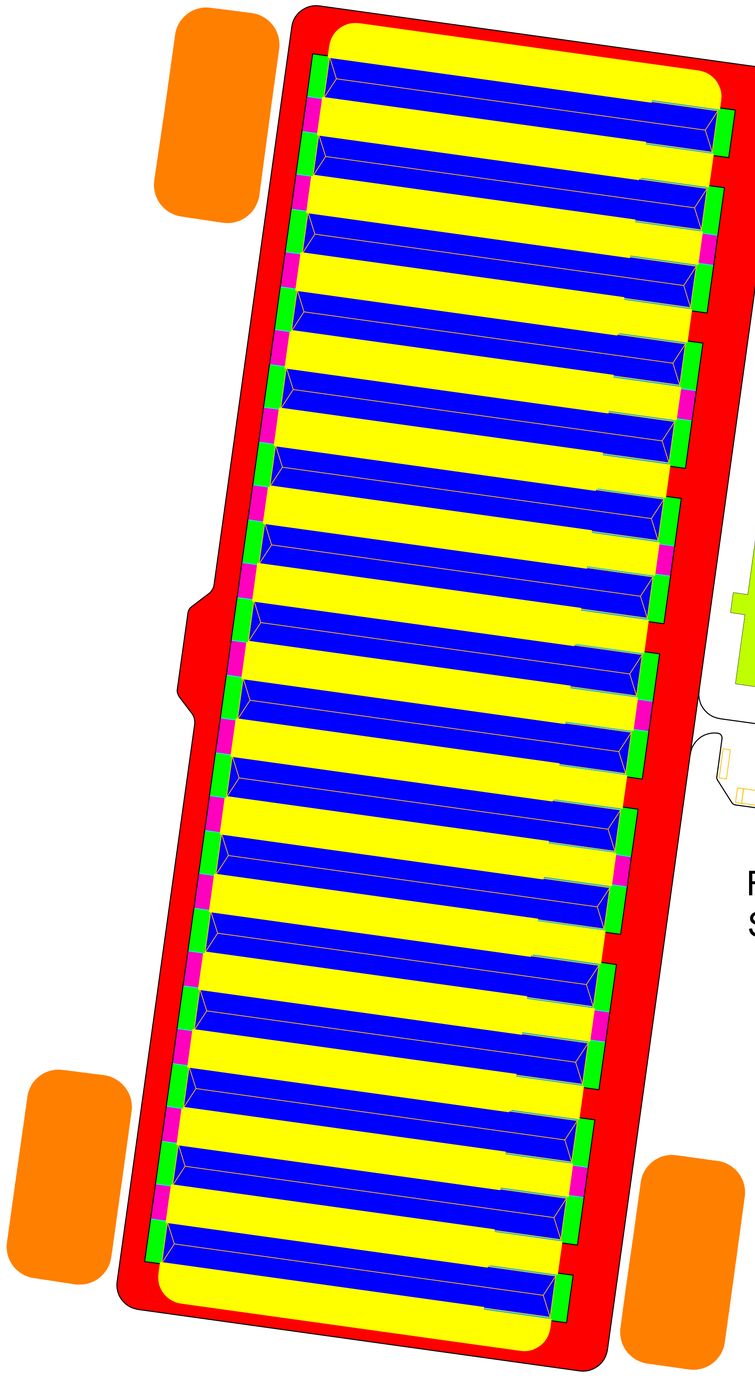
Revision: 1

A1 SHEET

0 100mm 200mm 300mm

LEGEND

- Road Pavement
  200mm thick gravel
  Area = 18350m²
- Sheds
  75mm thick concrete
- Swale Drains
- Concrete Slabs 100 thick
- 100mm thick Gravel



Area 45,952m²
Area 38,121m²
Area 4,166m²
Area 2,120m²

No topsoil removed
Fill 23,636m³
Cut 1,536m³

50 topsoil removed
Only remove topsoil under buildings 5,363m³
Fill 27,68m³
Cut 1,013m³

Sheds footprint (1m out from sheds) = 55,232m²
Fill required to replace 50mm topsoil removed 2,762m³
Fill 23,636 + 2,762 = 26,398m³
Cut 1,013m³

Sheds account for approx. 85% of fill which needs to be compacted to 98% standard. Remaining 15% of fill in swale drains to be compacted to 95% standard)

Area 18,422m³

100mm topsoil 2,664m³
200 roadbase 3,684m³
Fill 2,882m³
Cut 4,938m³

Area 14,124m³ — Cut 28,045m³

Area 2,063m³

Stripping 206m³
Fill 530m³

Farm 77
Sheds 1 - 16

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Farm 77
Sheds 1 - 16 Quantities

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C05

Sheet: 05 of 76

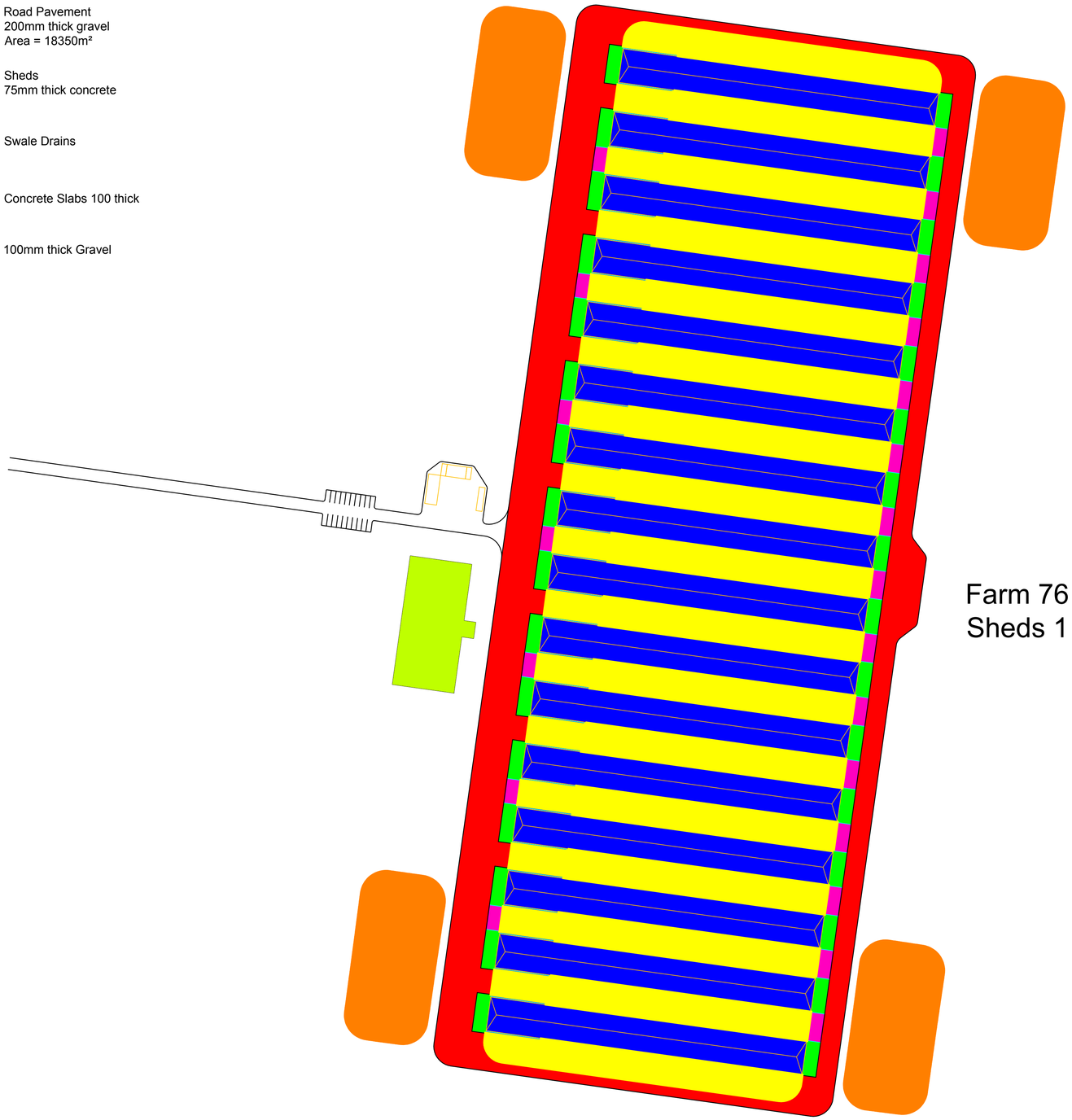
Revision: 1

A1 SHEET

0 100mm 200mm 300mm

LEGEND

- Road Pavement
  200mm thick gravel
  Area = 18350m²
- Sheds
  75mm thick concrete
- Swale Drains
- Concrete Slabs 100 thick
- 100mm thick Gravel



Farm 76
Sheds 1 - 16

Area 45,952m²
Area 38,121m²
Area 4,166m²
Area 2,120m²

No topsoil removed
Fill 23,429m³
Cut 1,732m³

50 topsoil removed
Only remove topsoil under buildings 5,363m³
Fill 27,432m³
Cut 1,181m³

Sheds footprint (1m out from sheds) = 55,232m²
Fill required to replace 50mm topsoil removed 2,762m³
Fill 23,429 + 2,762 = 26,191m³
Cut 1,181m³

Sheds account for approx. 85% of fill which needs to be compacted to 98% standard. Remaining 15% of fill in swale drains to be compacted to 95% standard)

Area 18,422m³

100mm topsoil 2,492m³
200 roadbase 3,684m³
Fill 1,673m³
Cut 3,299m³

Area 14,124m³

Cut 28,047m³

Area 2,063m³

Stripping 206m³
Fill 557m³

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Farm 76
Sheds 1 - 16 Quantities

Client: ProTen

Scales: 1:1000

Client Project No.

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C06

Sheet: 06 of 76

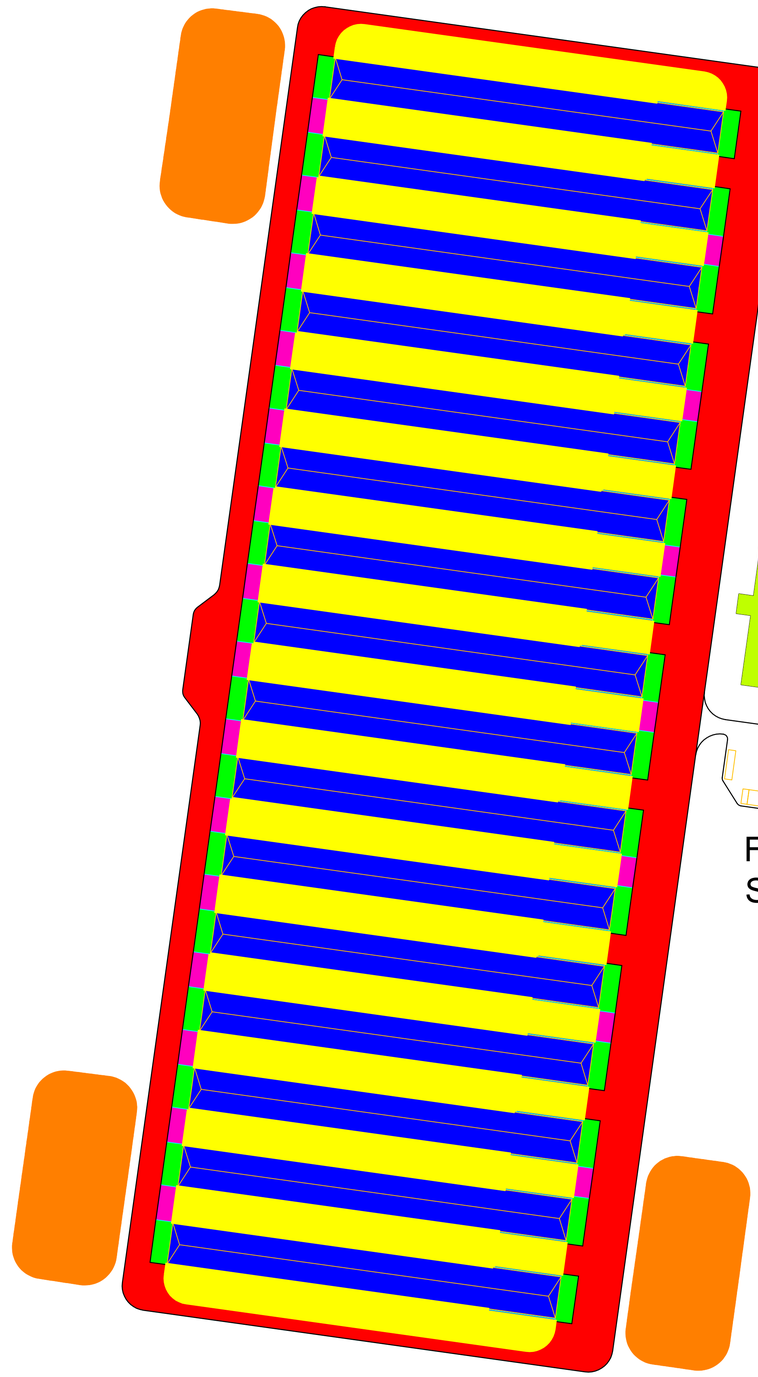
Revision: 1

A1 SHEET

0 100mm 200mm 300mm

LEGEND

- Road Pavement
  200mm thick gravel
  Area = 18350m²
- Sheds
  75mm thick concrete
- Swale Drains
- Concrete Slabs 100 thick
- 100mm thick Gravel



Farm 75
Sheds 1 - 16

Area 45,952m²
Area 38,121m²
Area 4,166m²
Area 2,120m²

No topsoil removed
Fill 23,295m³
Cut 1,803m³

50 topsoil removed
Only remove topsoil under buildings 5,363m³
Fill 27,285m³
Cut 1,241m³

Sheds footprint (1m out from sheds) = 55,232m²
Fill required to replace 50mm topsoil removed 2,762m³
Fill 23,295 + 2,762 = 26,638m³
Cut 1,241m³

Sheds account for approx. 85% of fill which needs to be compacted to 98% standard. Remaining 15% of fill in swale drains to be compacted to 95% standard)

Area 18,422m³
100mm topsoil 2,497m³
200 roadbase 3,684m³
Fill 1,668m³
Cut 3,471m³

Area 14,124m³
Cut 28,041m³

Area 2,063m³
Stripping 206m³
Fill 557m³

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by ✕ = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Farm 75
Sheds 1 - 16 Quantities

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

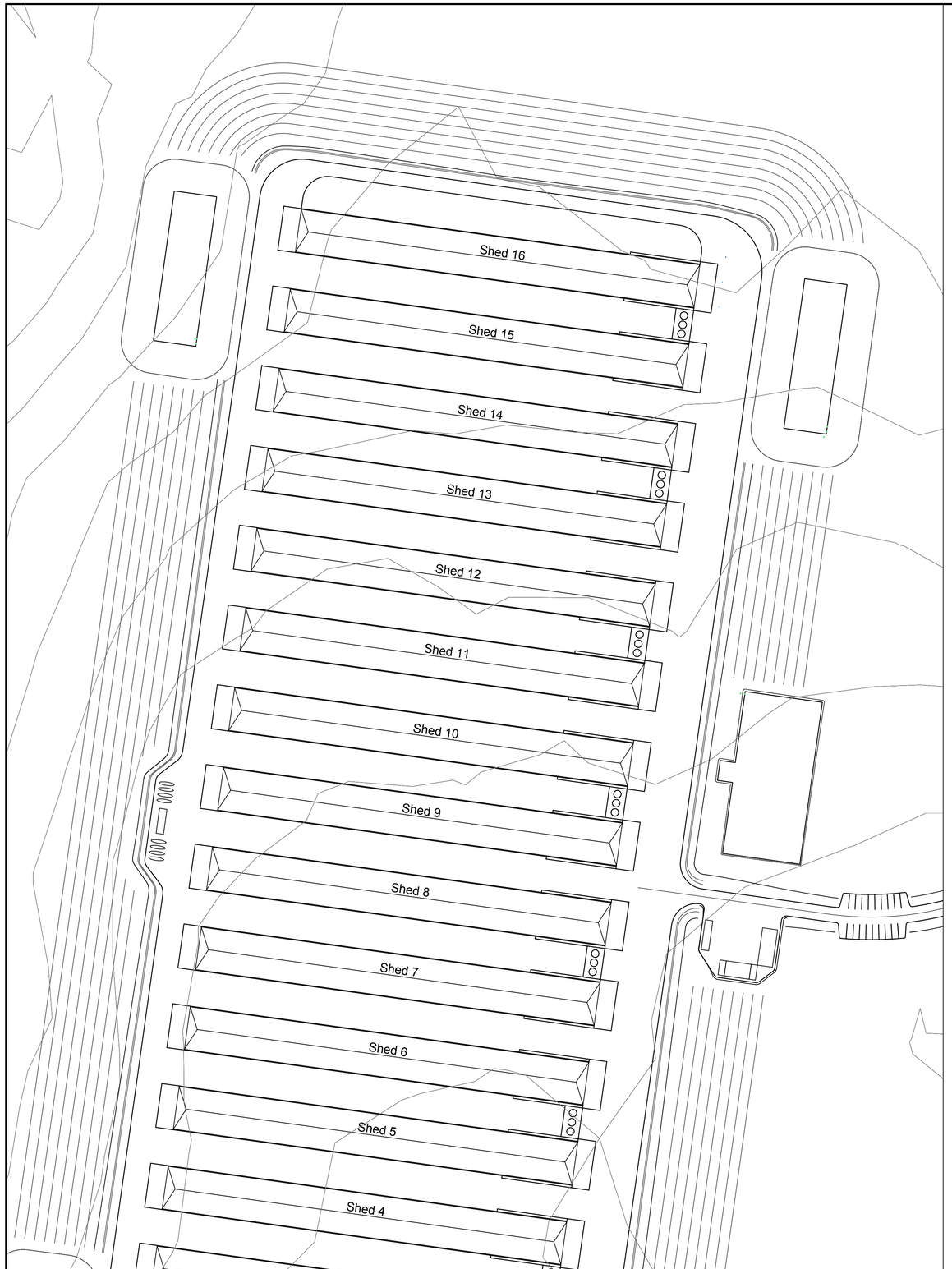
Dwg. No.: C07

Sheet: 07 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by ✕ = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 79
Sheds 1-16 Plan

Scales
1:1000

Client Project No.

Project Number
15W013

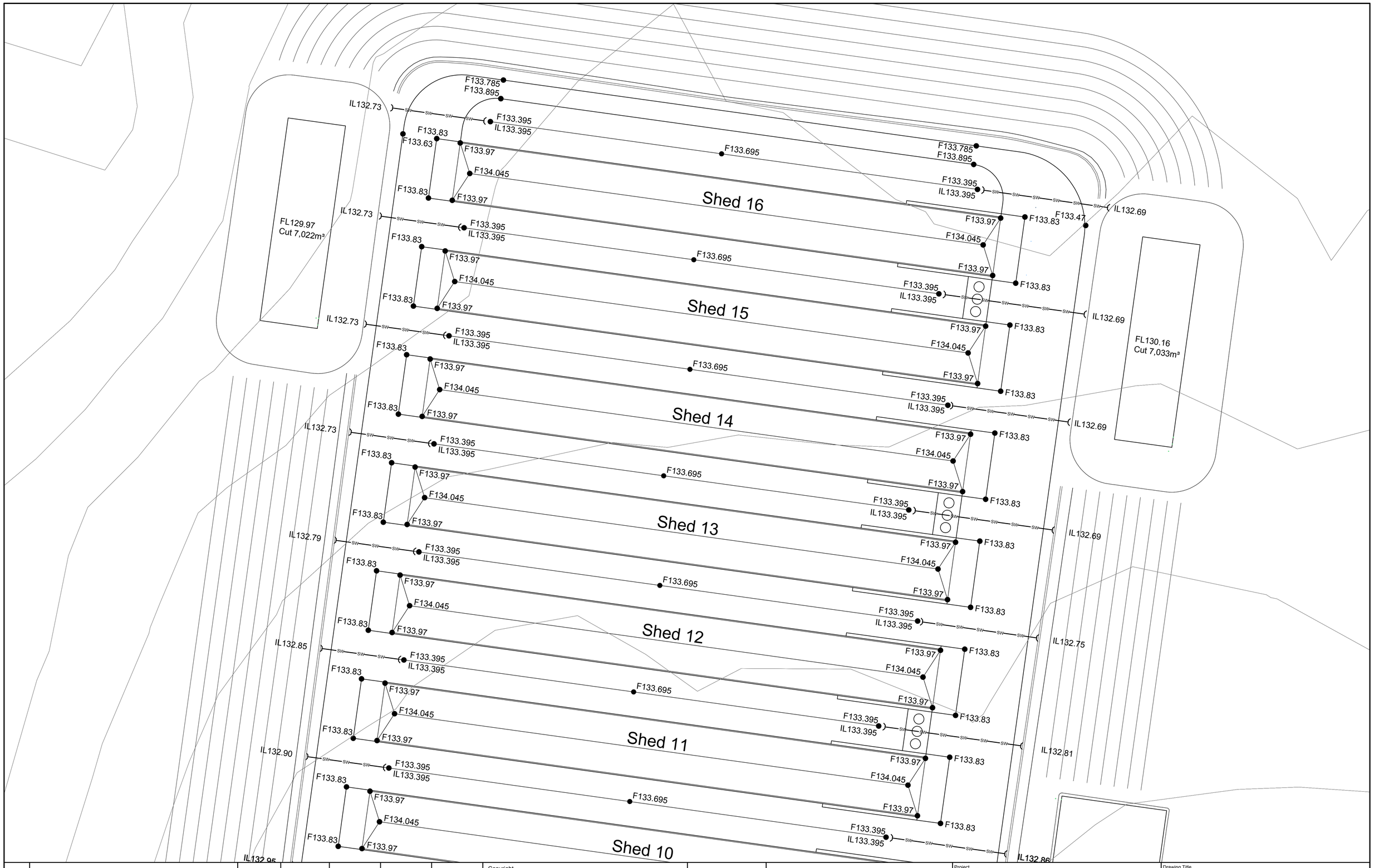
Dwg. No.
C08

Sheet
08 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Farm 79 Sheds 1-16 Plan
Client	ProTen
Architect / Project Manager	
Scales	1:500
Client Project No.	
Project Number	15W013
Dwg. No.	C09
Sheet	09 of 76
Revision	1

A1 SHEET

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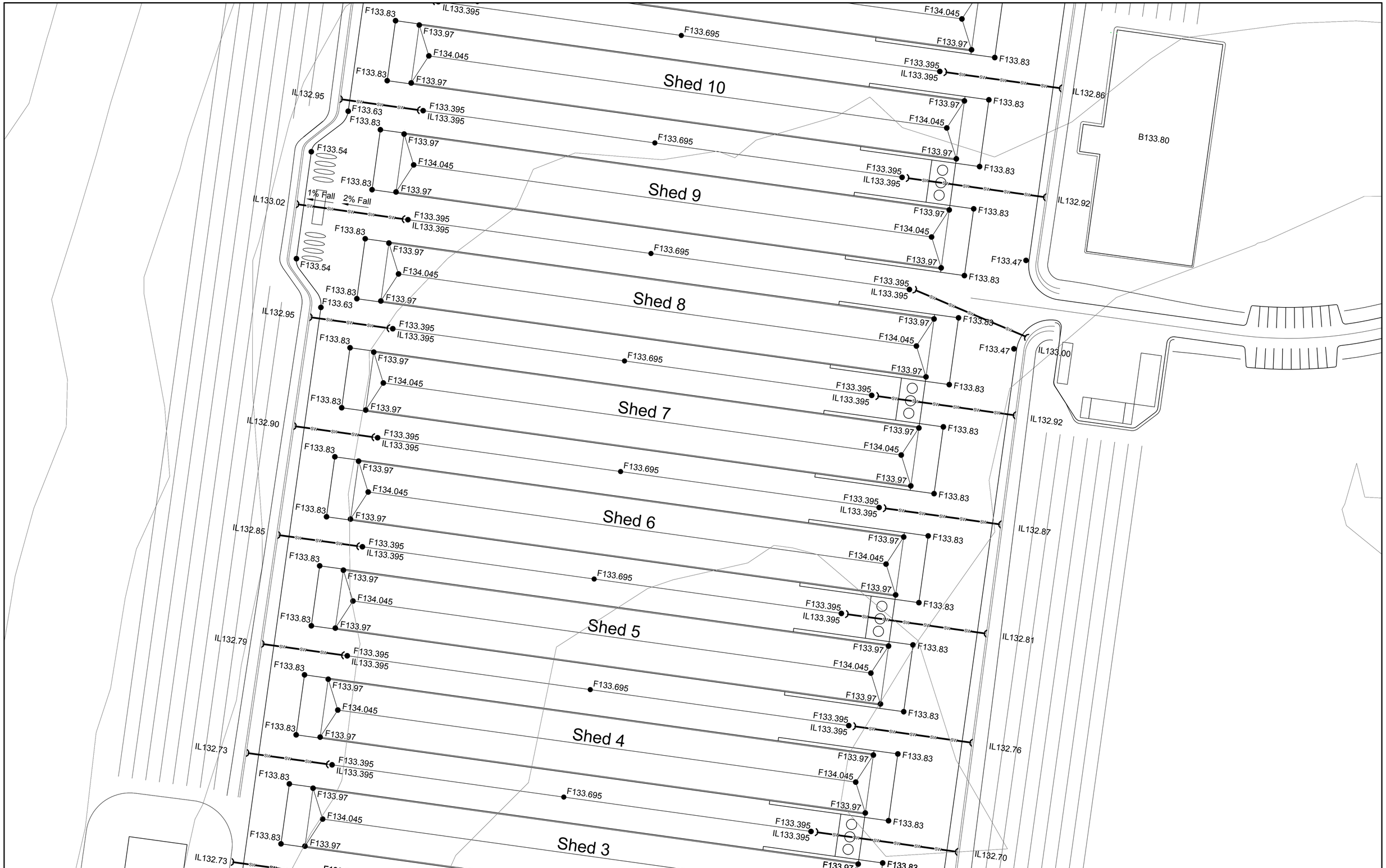

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 79
Sheds 1-16 Plan

Client: ProTen

Scales: 1:500

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C10

Sheet: 10 of 76

Revision: 1

A1 SHEET

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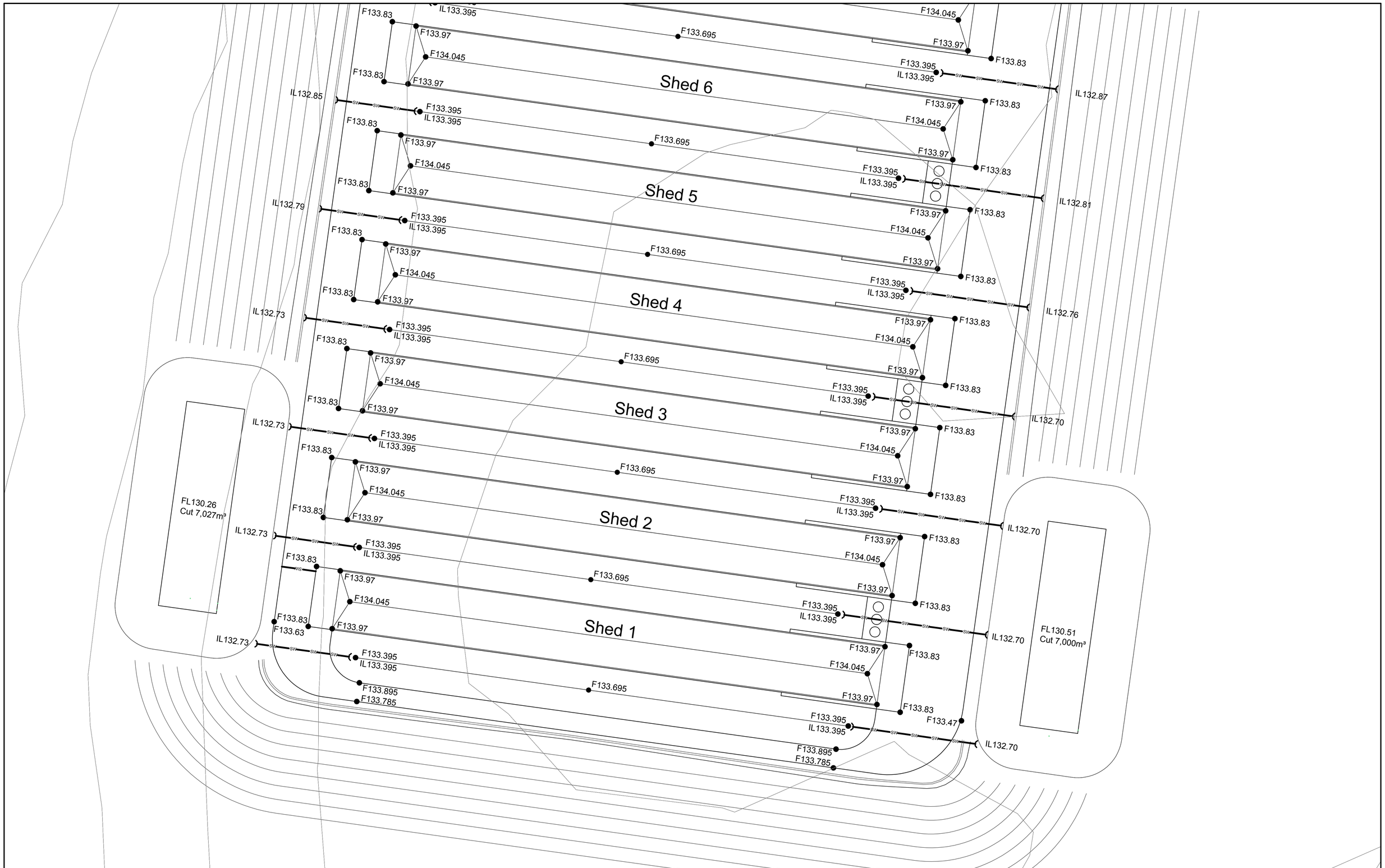

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 79
Sheds 1 -16 Plan

Scales
1:500

Client Project No.

Project Number
15W013

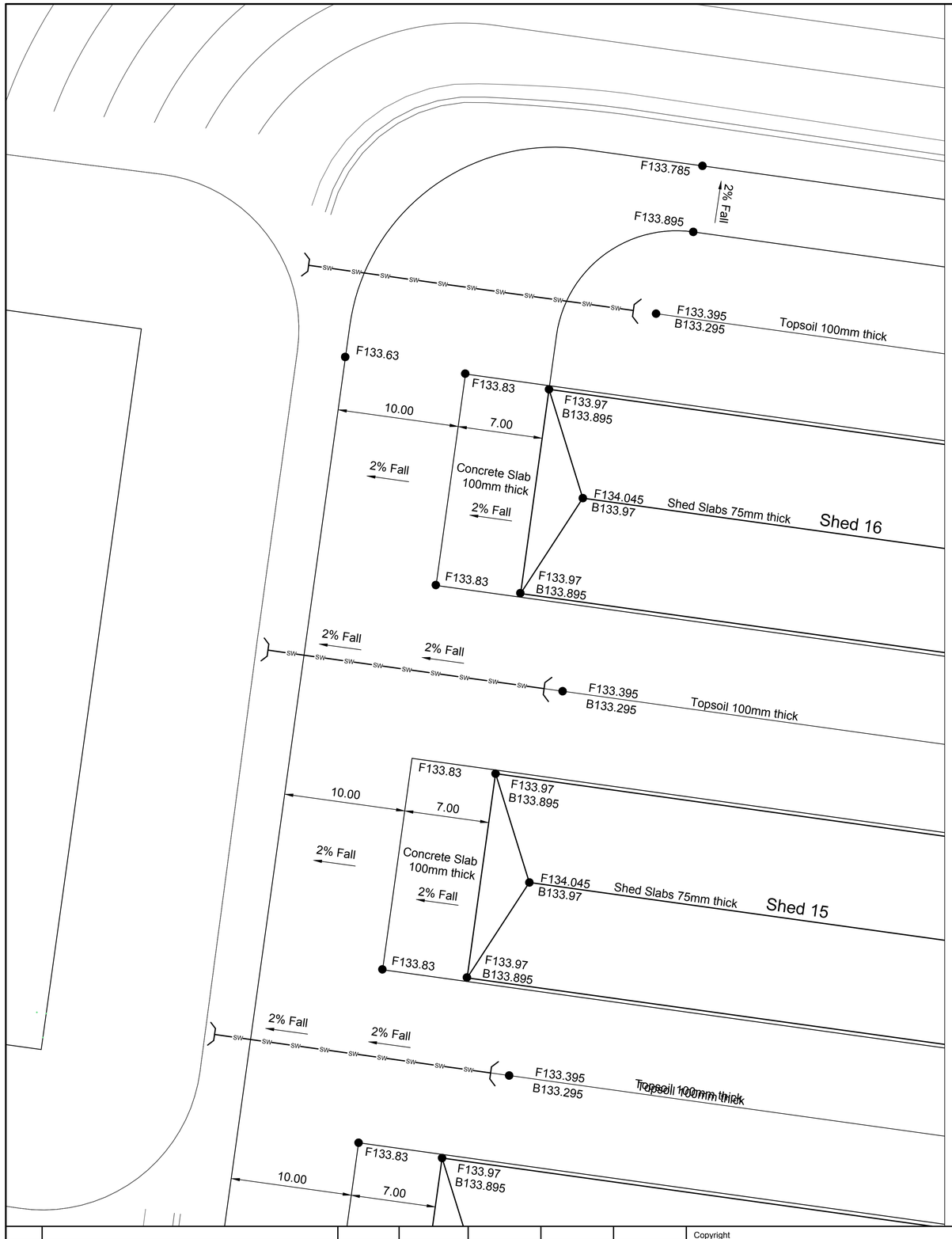
Dwg. No.
C11

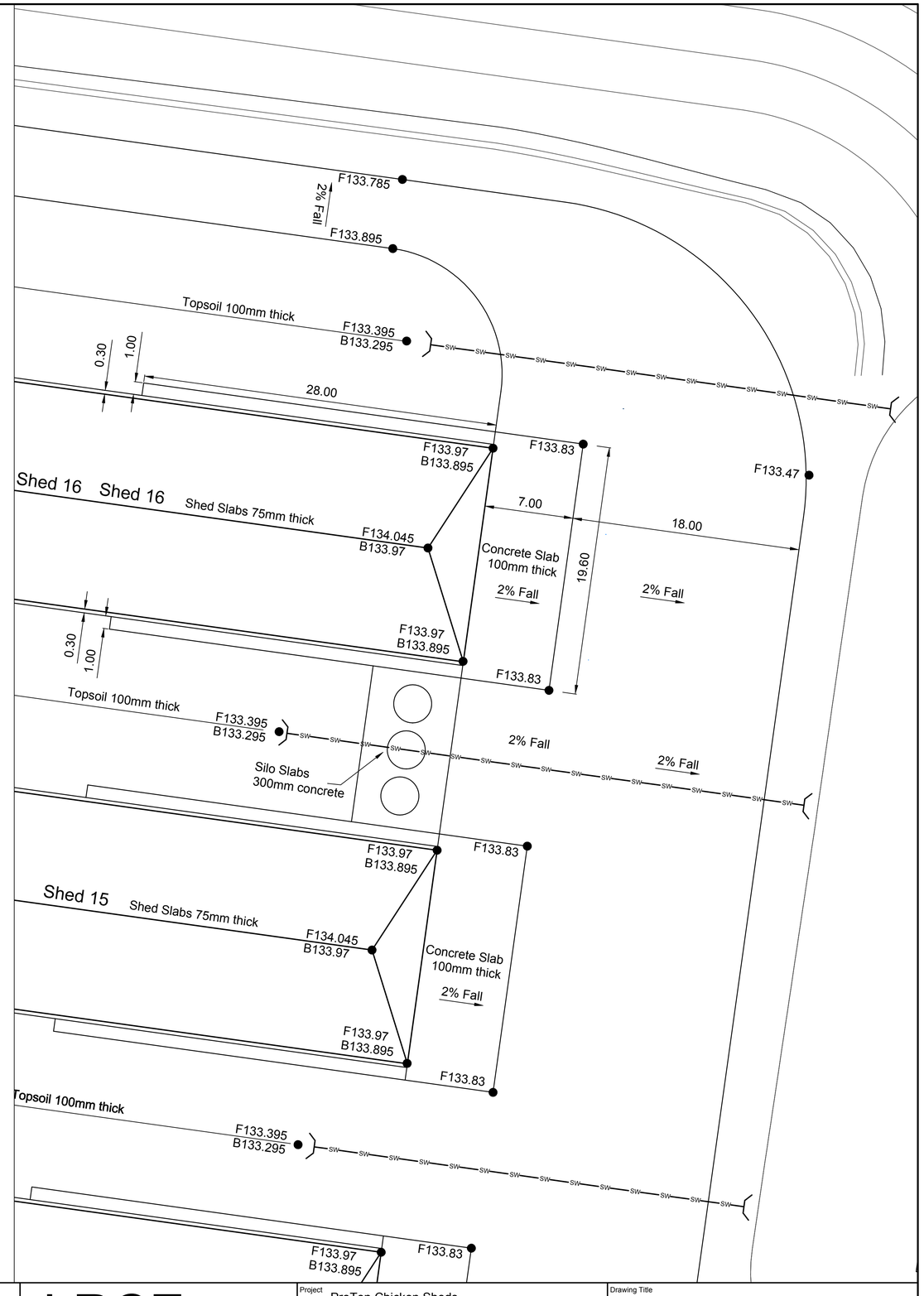
Sheet
11 of 76

Revision
1

0 100mm 200mm 300mm

A1 SHEET





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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Client	ProTen
Architect / Project Manager	
Drawing Title	Farm 79 Sheds 1-16 Plan
Scales	1:200
Client Project No.	
Project Number	15W013
Dwg. No.	C12
Sheet	12 or 76
Revision	1

A1 SHEET

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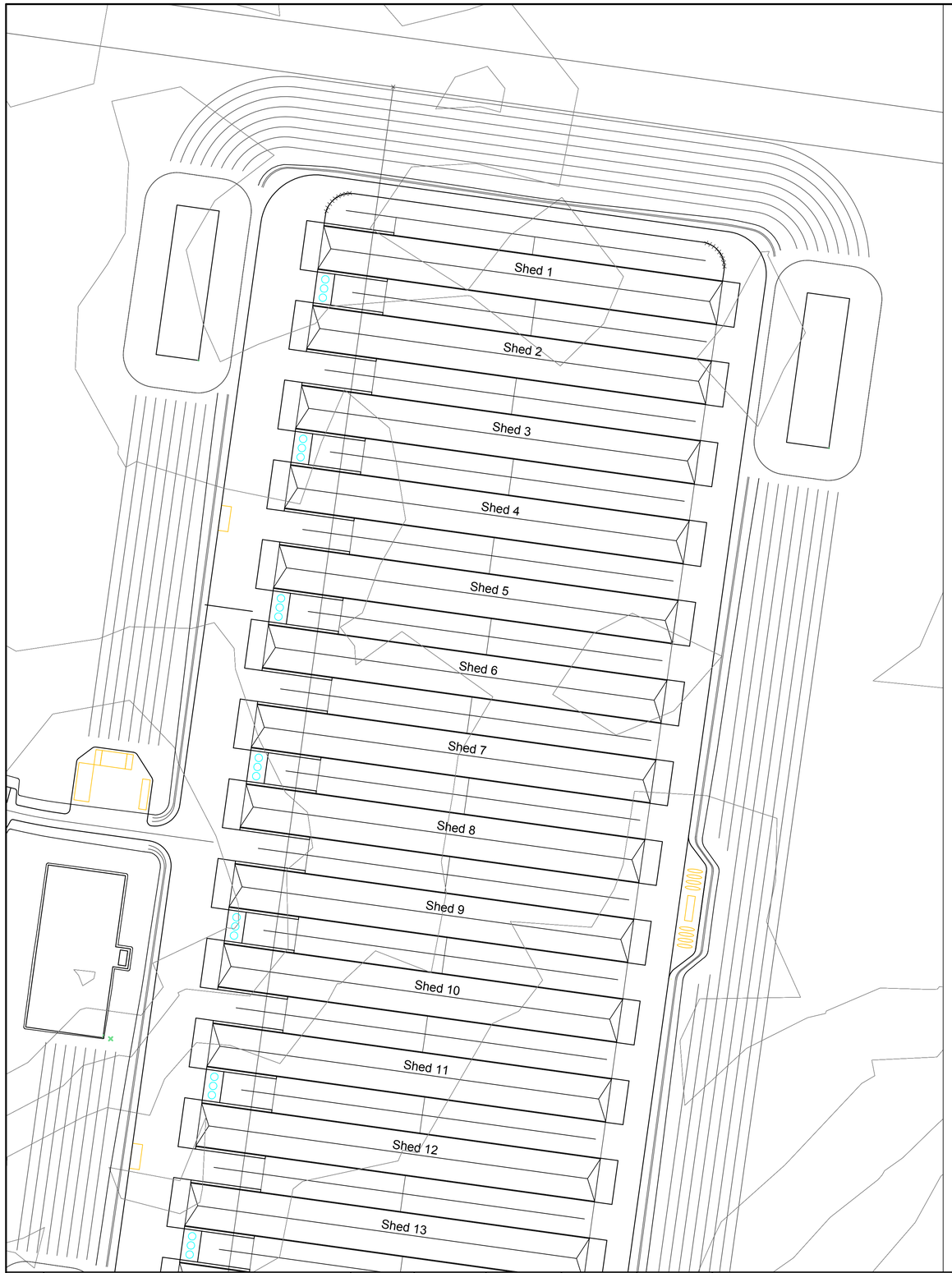

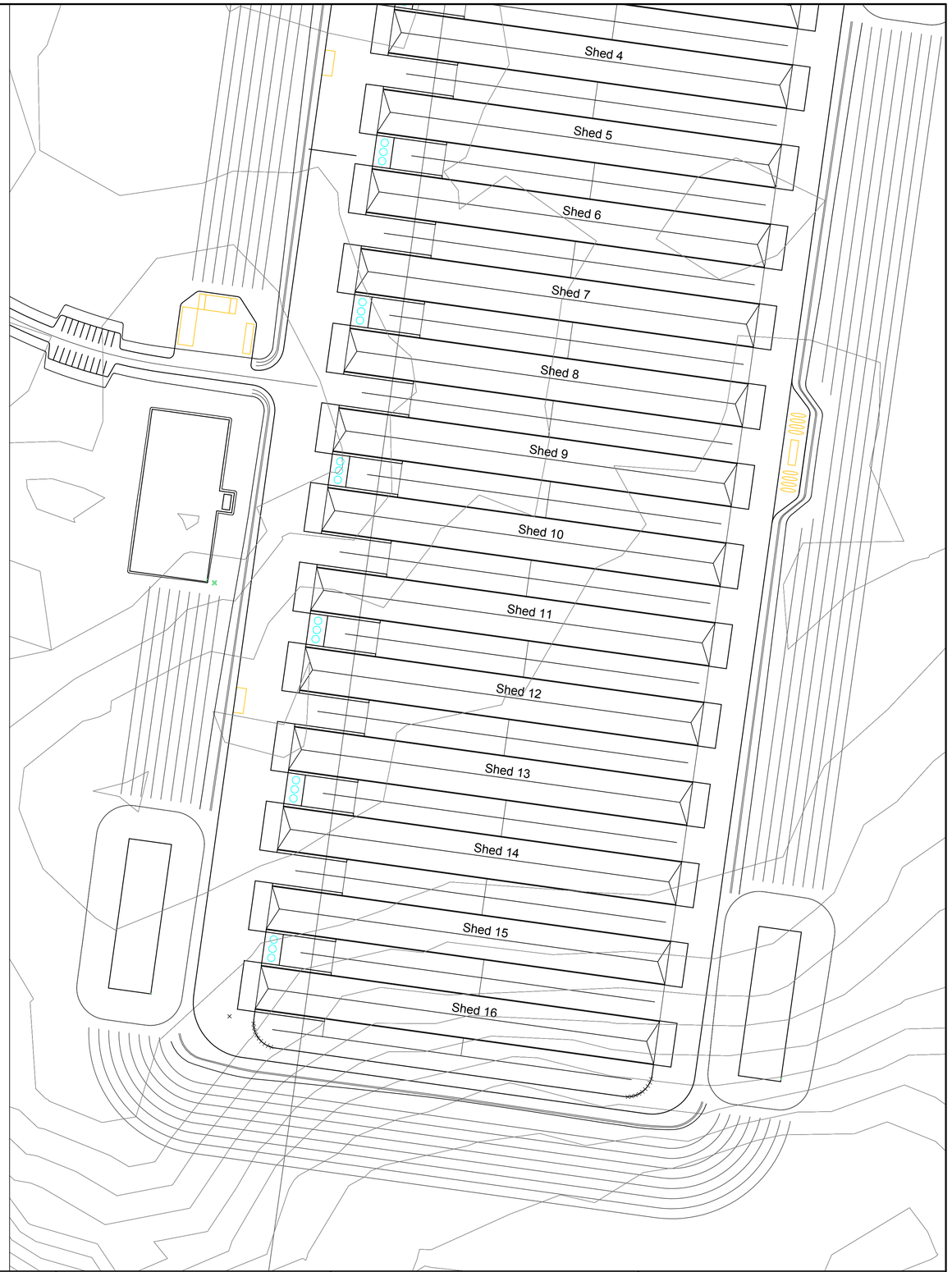

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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 78
Sheds 1-16 Plan

Scales
1:1000

Client Project No.

Project Number
15W013

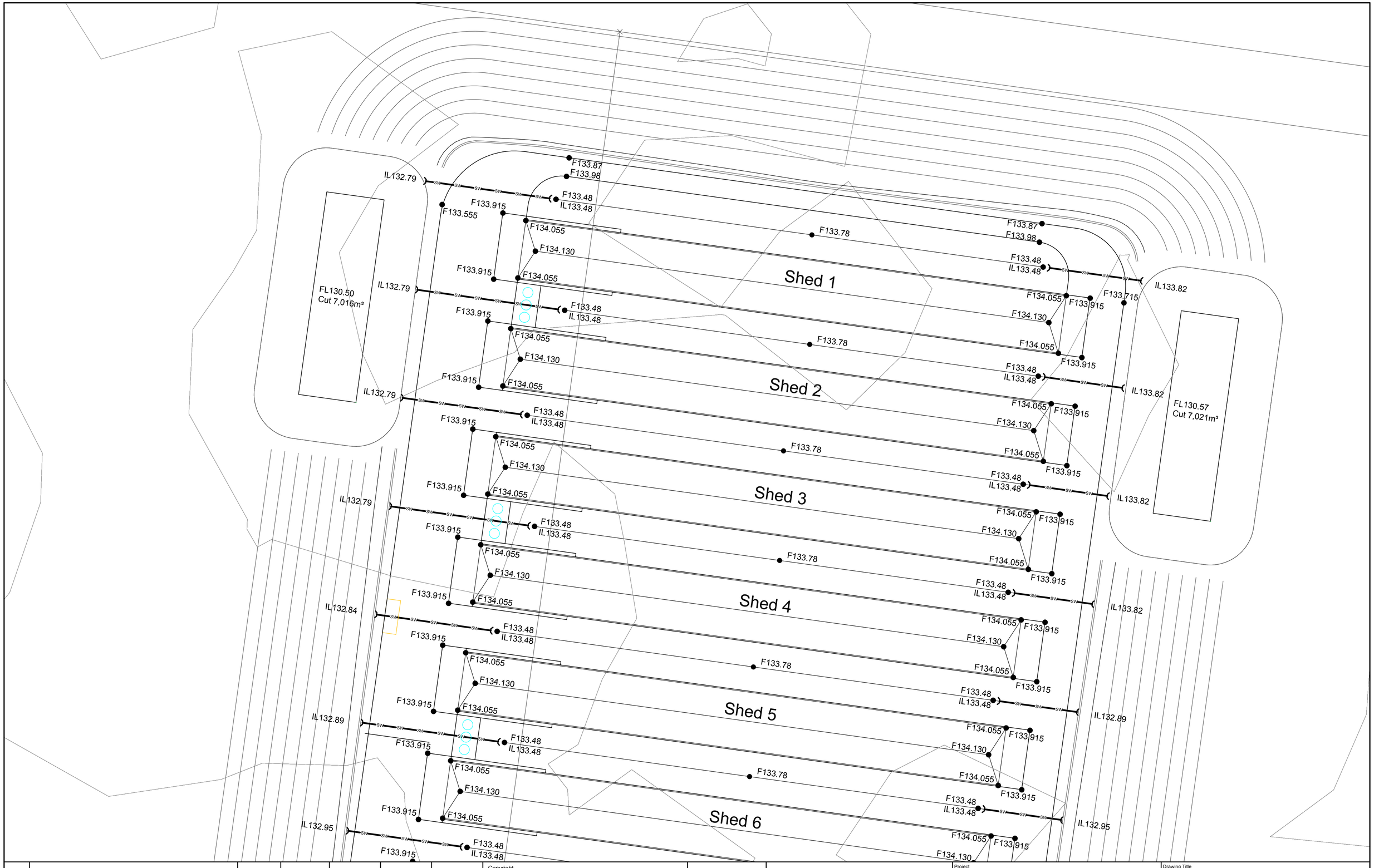
Dwg. No.
C13

Sheet
13 of xx

Revision
1

0 100mm 200mm 300mm

A1 SHEET



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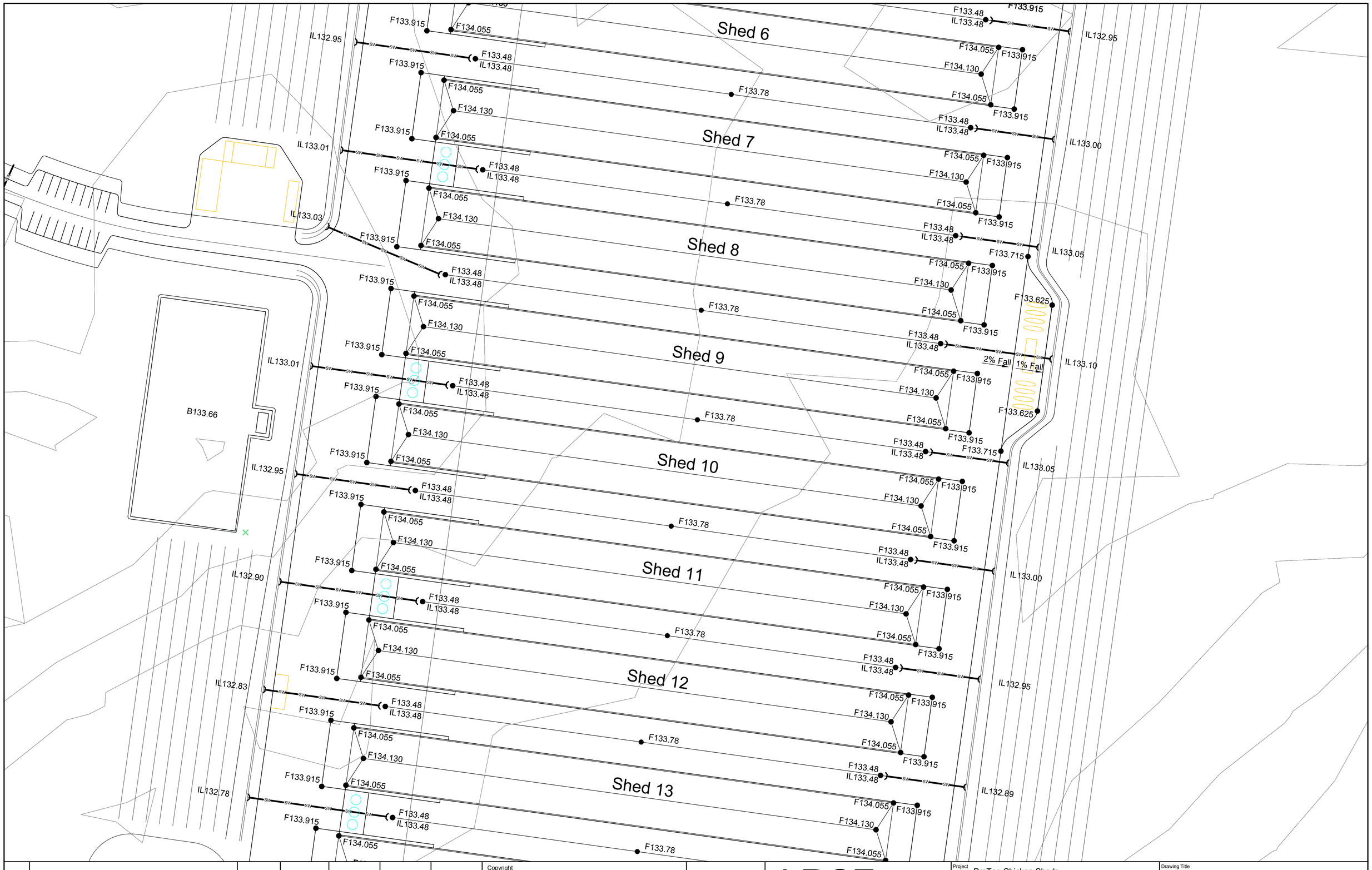
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Farm 78 Sheds 1-16 Plan
Client	ProTen
Scales	1:500
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C14
Sheet	14 of 76
Revision	1

0 100mm 200mm 300mm

A1 SHEET



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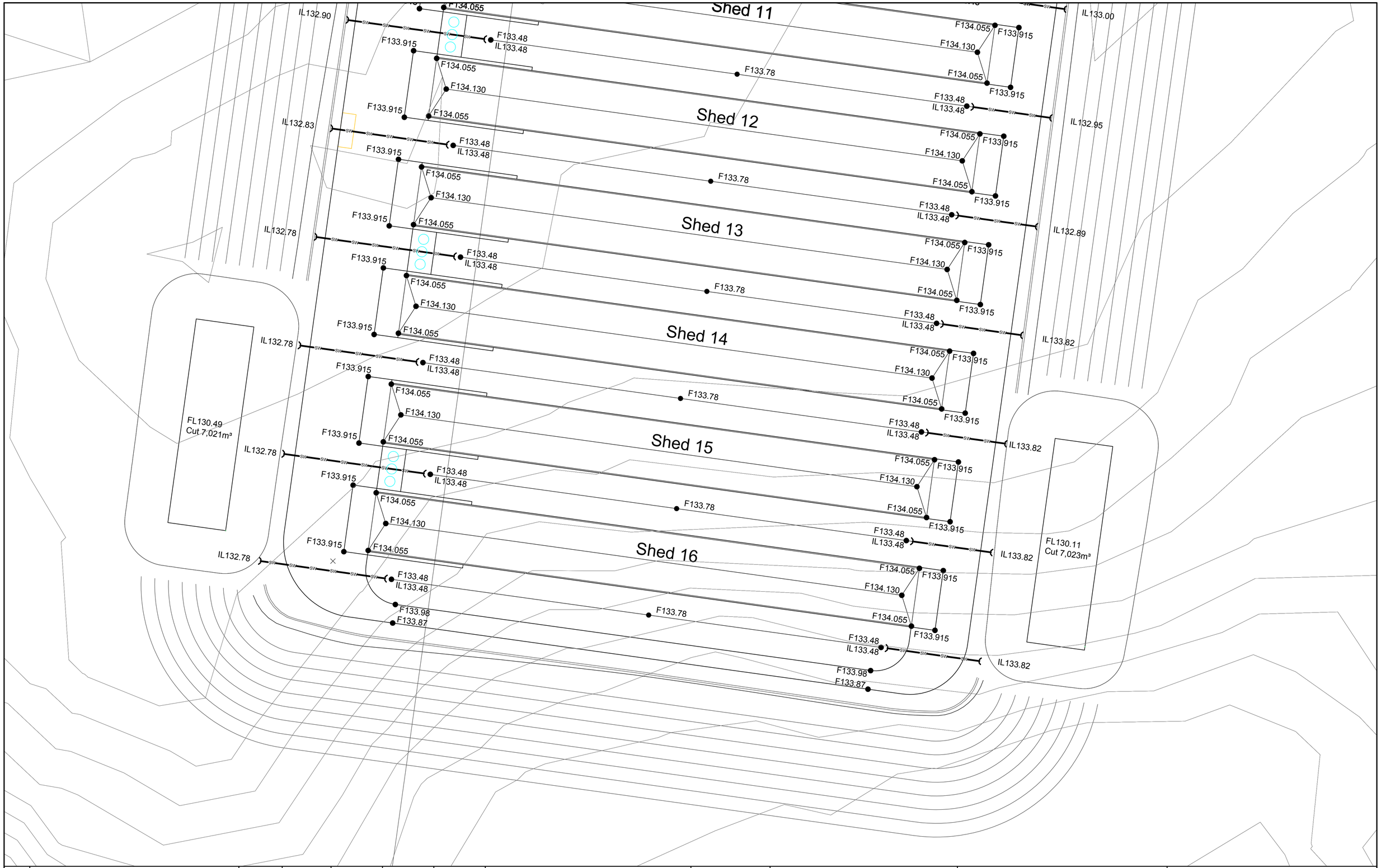
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Farm 78 Sheds 1-16 Plan
Client	ProTen
Scales	1:500
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C15
Sheet	15 of 76
Revision	1

A1 SHEET

0 100mm 200mm 300mm



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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 78
Sheds 1-16 Plan

Scales
1:500

Client Project No.

Project Number
15W013

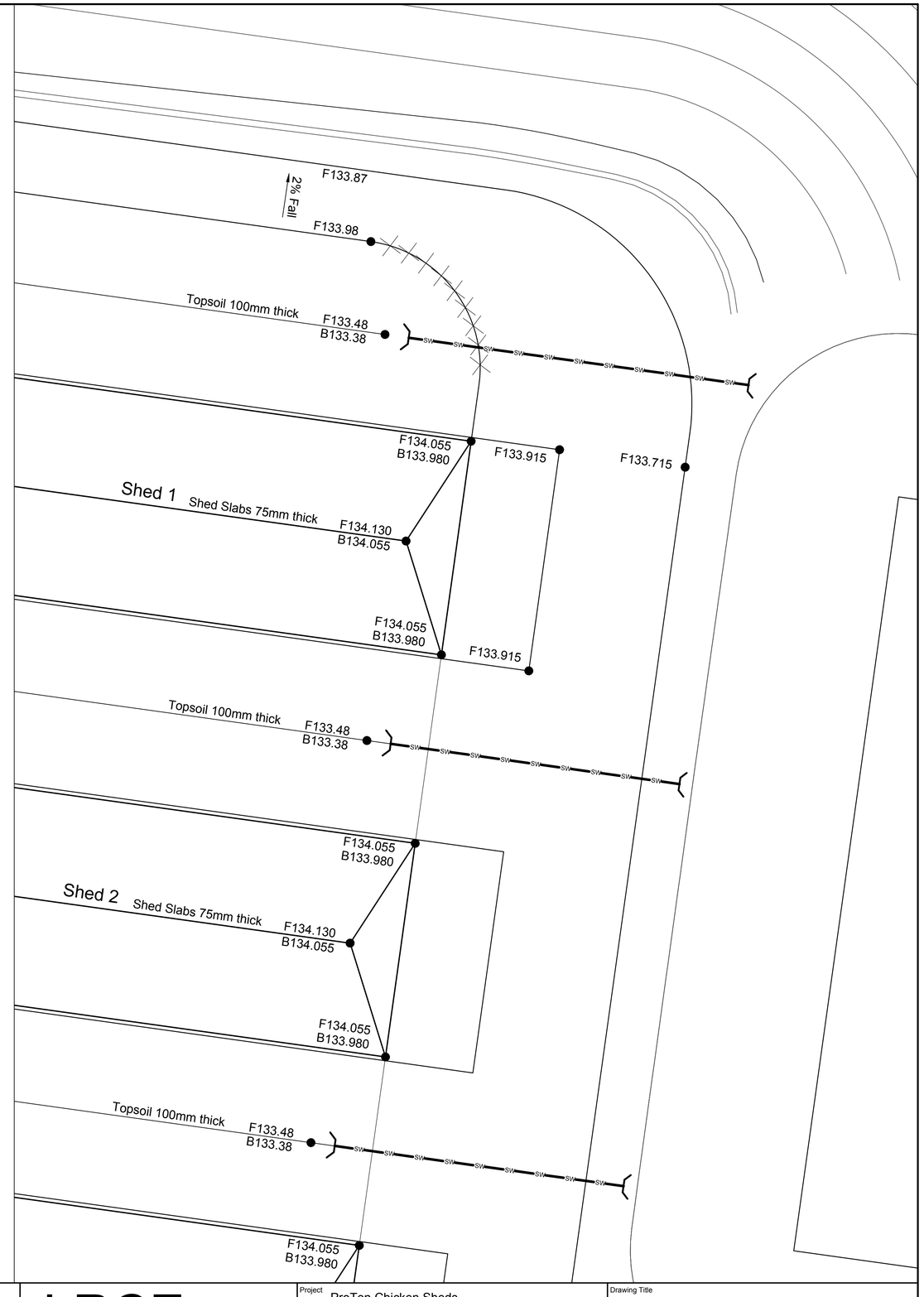
Dwg. No.
C16

Sheet
16 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 78
Sheds 1-16 Plan

Client
ProTen

Scales
1:200

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C17

Sheet
17 or 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 77
Sheds 1-16 Plan

Scales
1:1000

Client Project No.

Project Number
15W013

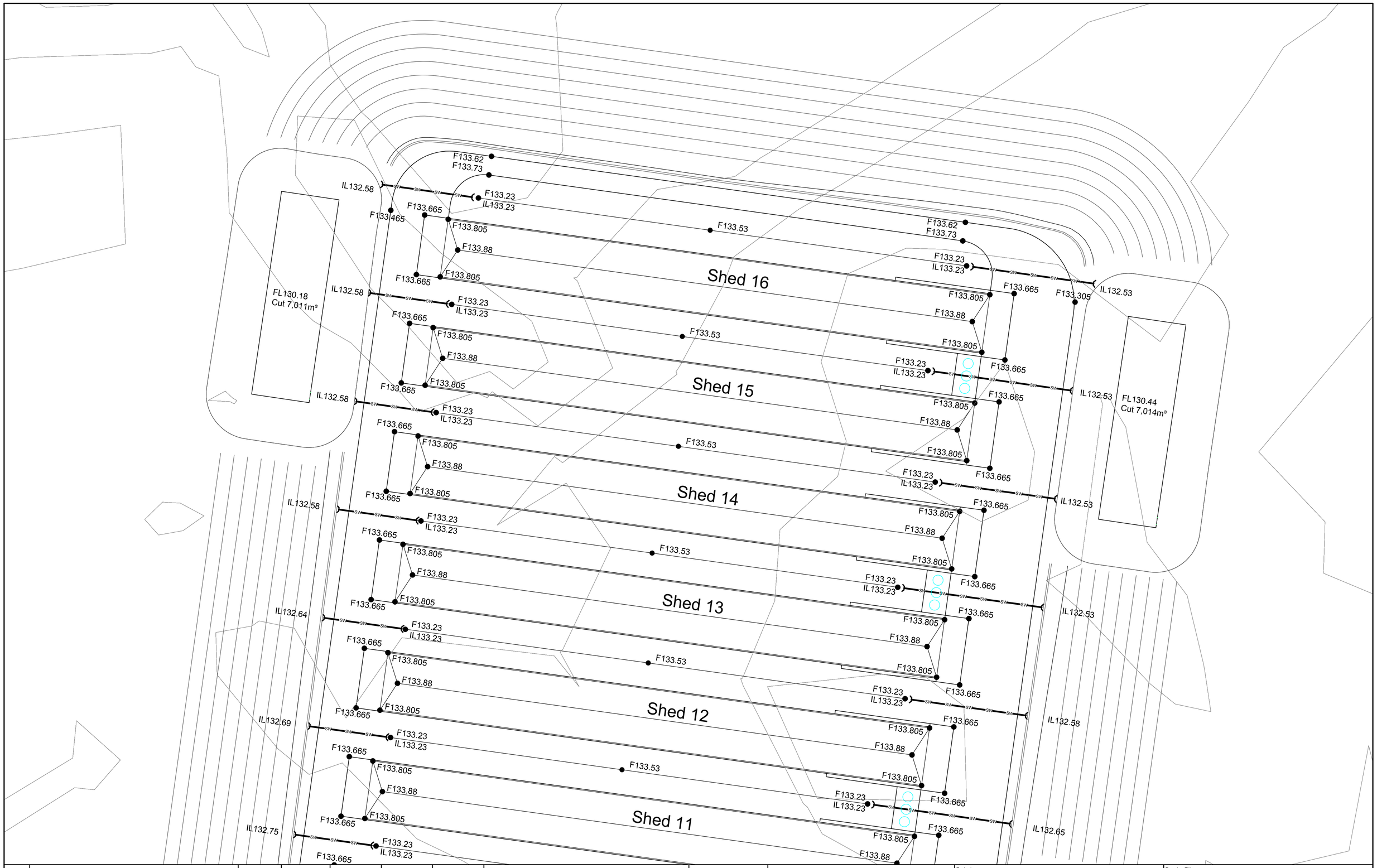
Dwg. No.
C18

Sheet
18 of 76

Revision
1

0 100mm 200mm 300mm

A1 SHEET



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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 77
Sheds 1-16 Plan

Client: ProTen

Scales: 1:500

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C19

Sheet: 19 of 76

Revision: 1

A1 SHEET

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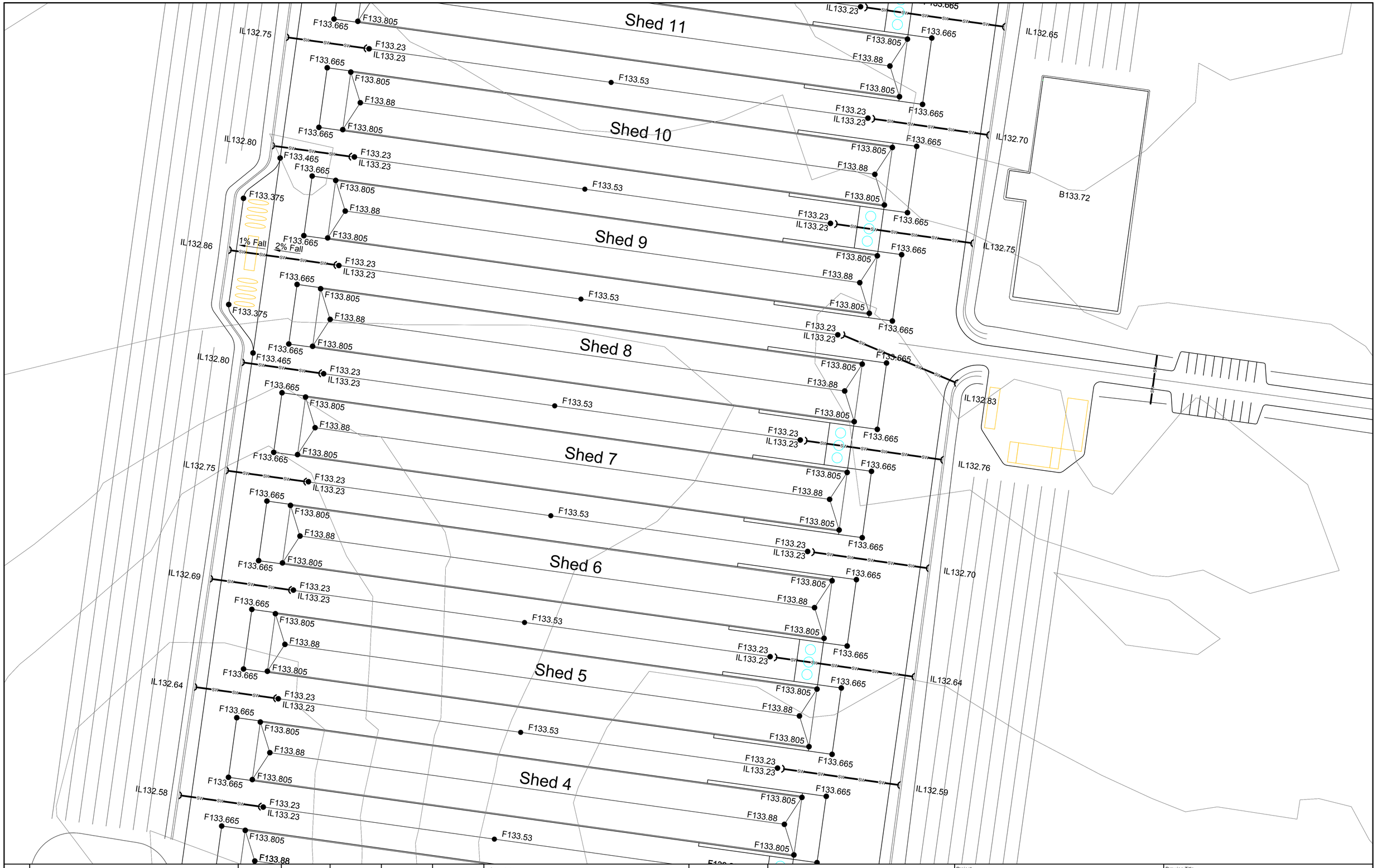

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Farm 77
Sheds 1-16 Plan

Client: ProTen

Scales: 1:500

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C20

Sheet: 20 of 76

Revision: 1

A1 SHEET

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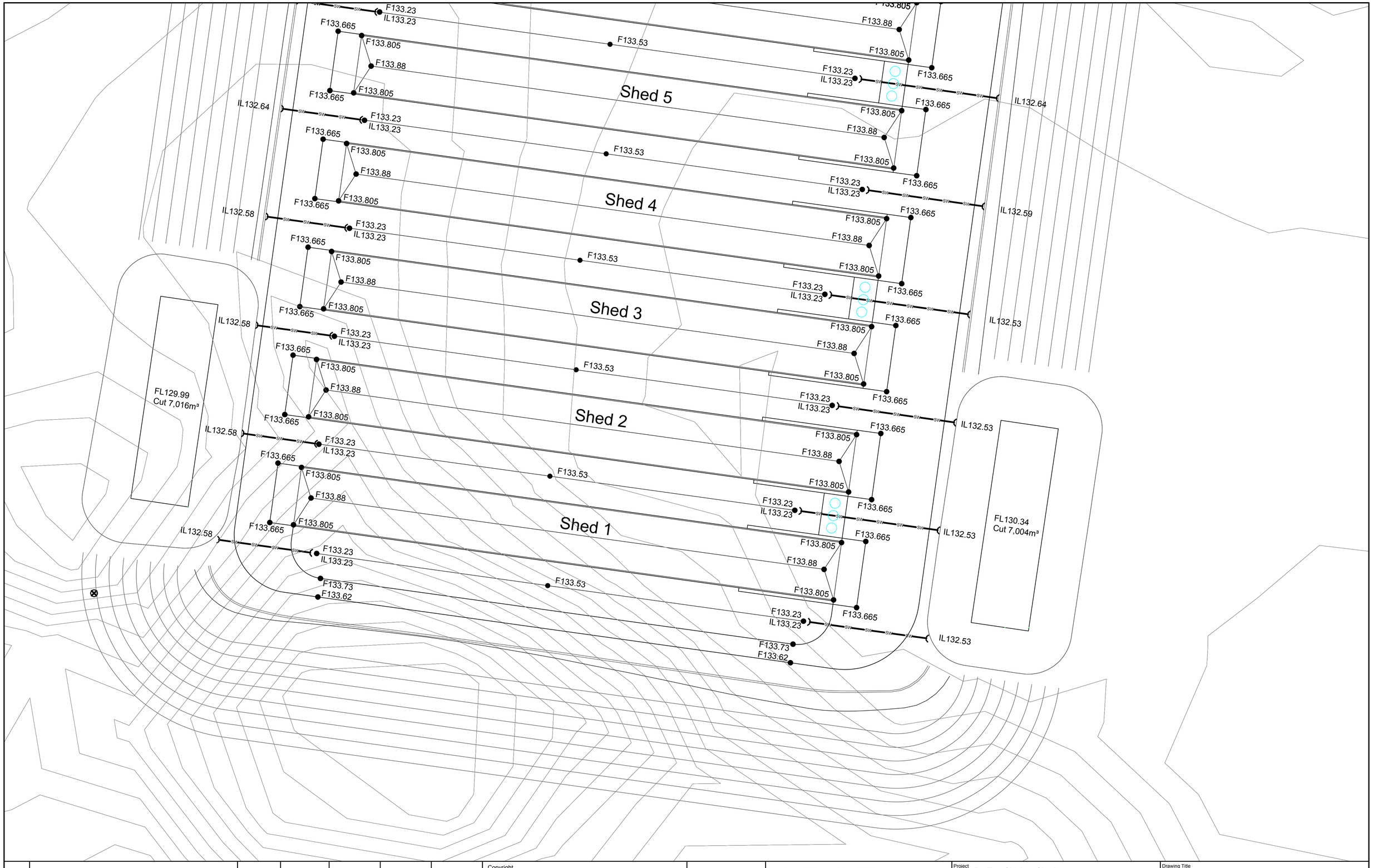

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Farm 77
Sheds 1-16 Plan

Scales: 1:500

Client Project No.

Project Number: 15W013

Dwg. No.: C21

Sheet: 21 or 76

Revision: 1

A1 SHEET

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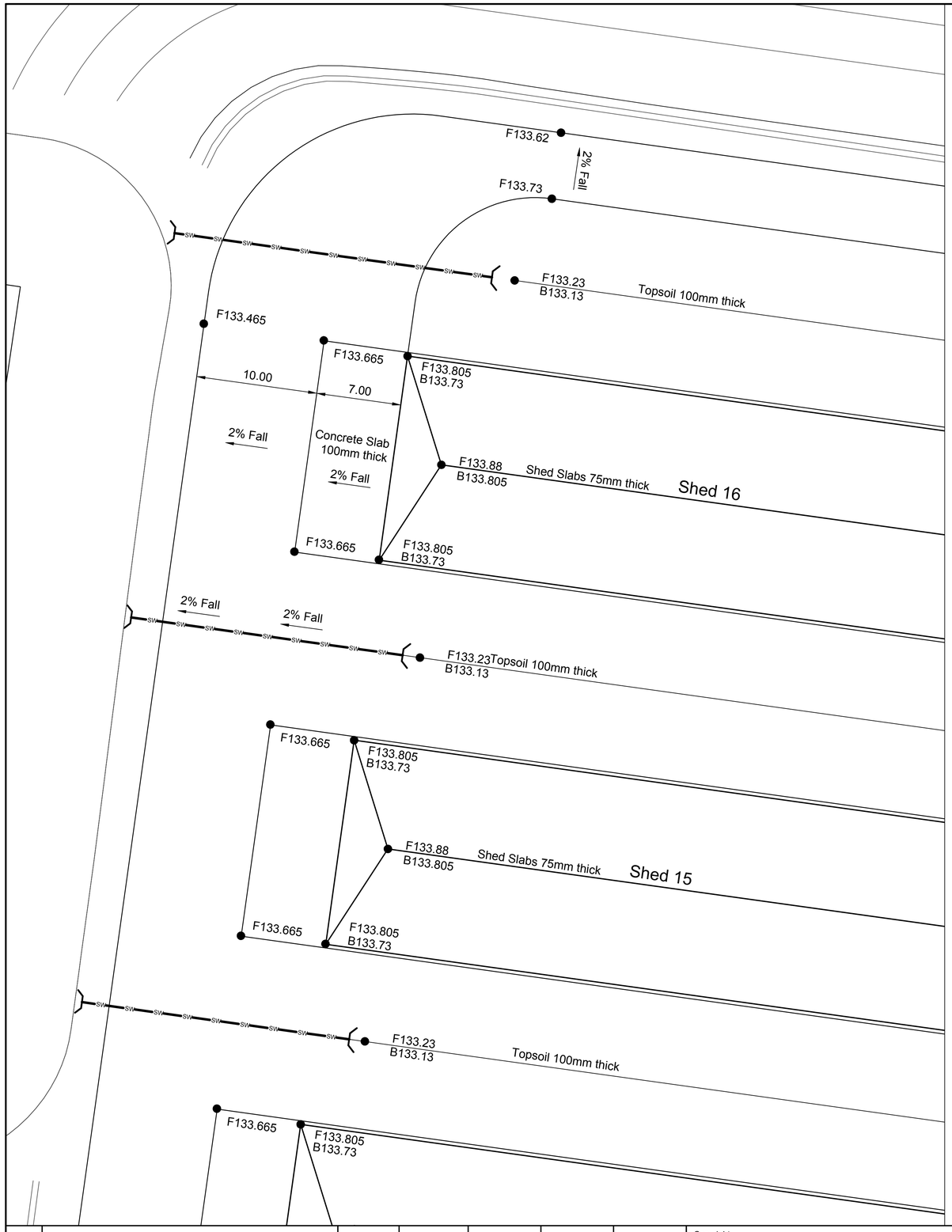

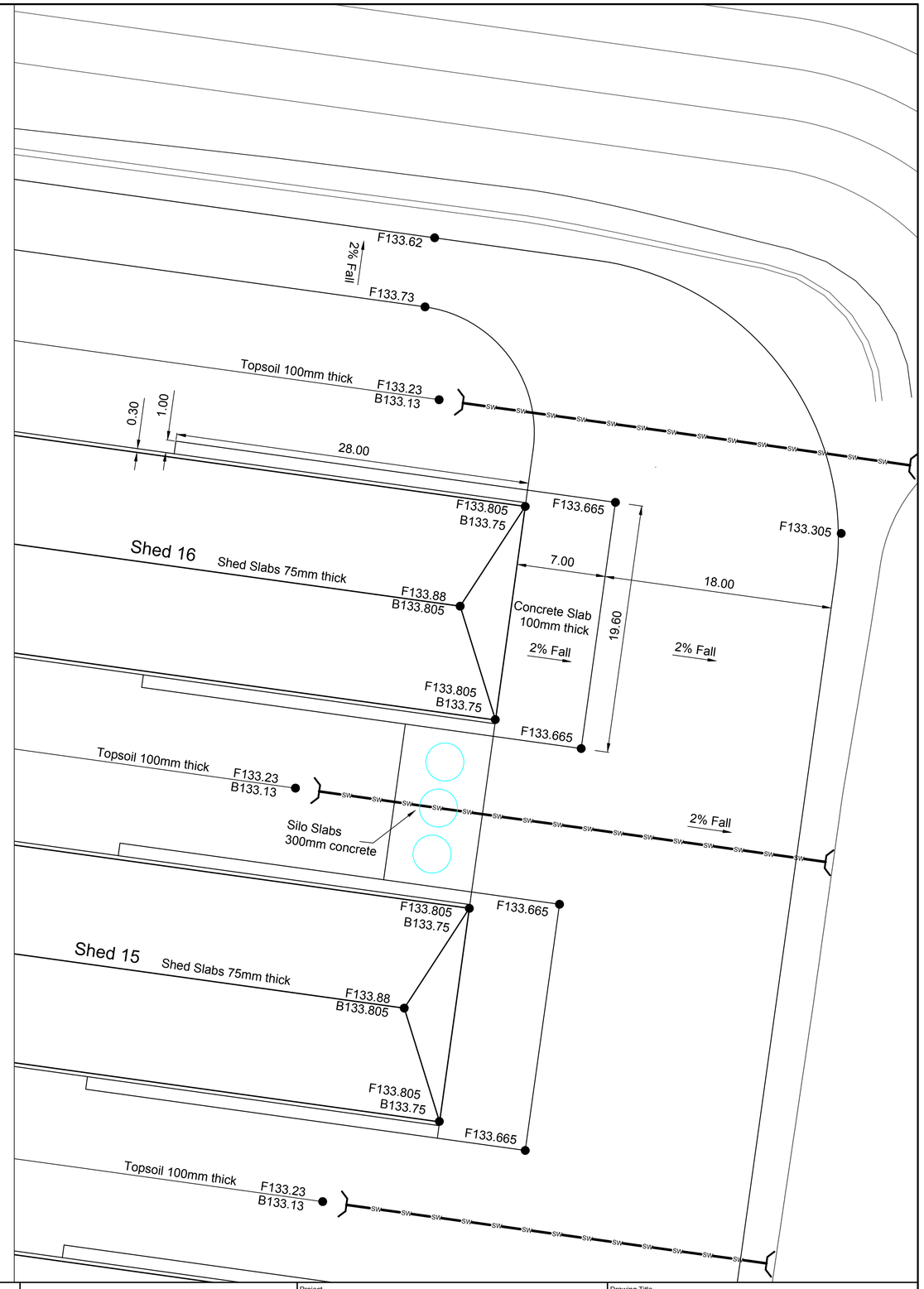

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
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WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 77
Sheds 1-16 Plan

Scales
1:200

Client Project No.

Project Number
15W013

Dwg. No.
C22

Sheet
22 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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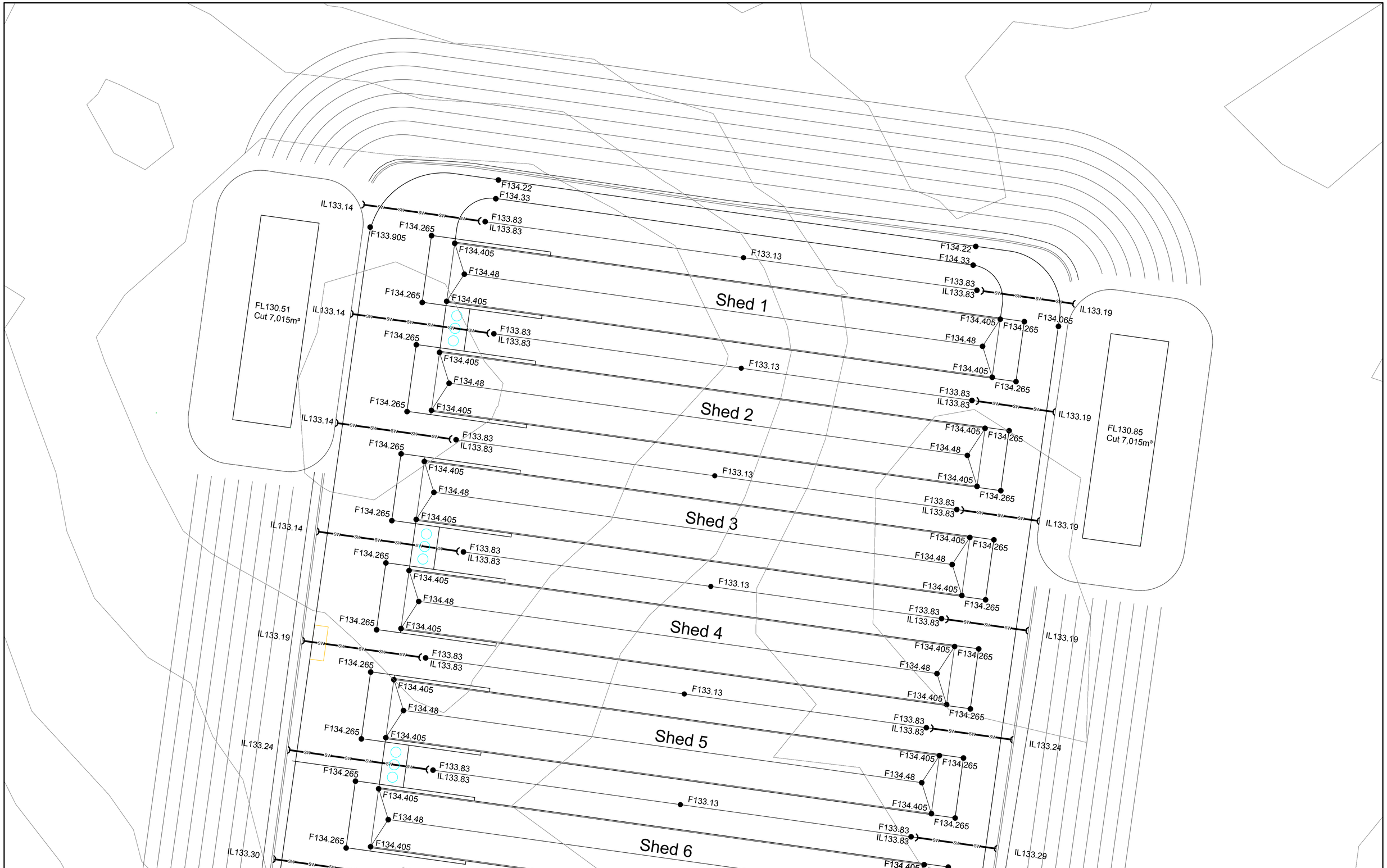
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Farm 76 Sheds 1-16 Plan
Client	ProTen
Scales	1:1000
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C23
Sheet	23 of 76
Revision	1

A1 SHEET

0 100mm 200mm 300mm



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1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 76
Sheds 1-16 Plan

Client: ProTen

Scales: 1:500

Client Project No.:

Architect / Project Manager

Project Number: 15W013

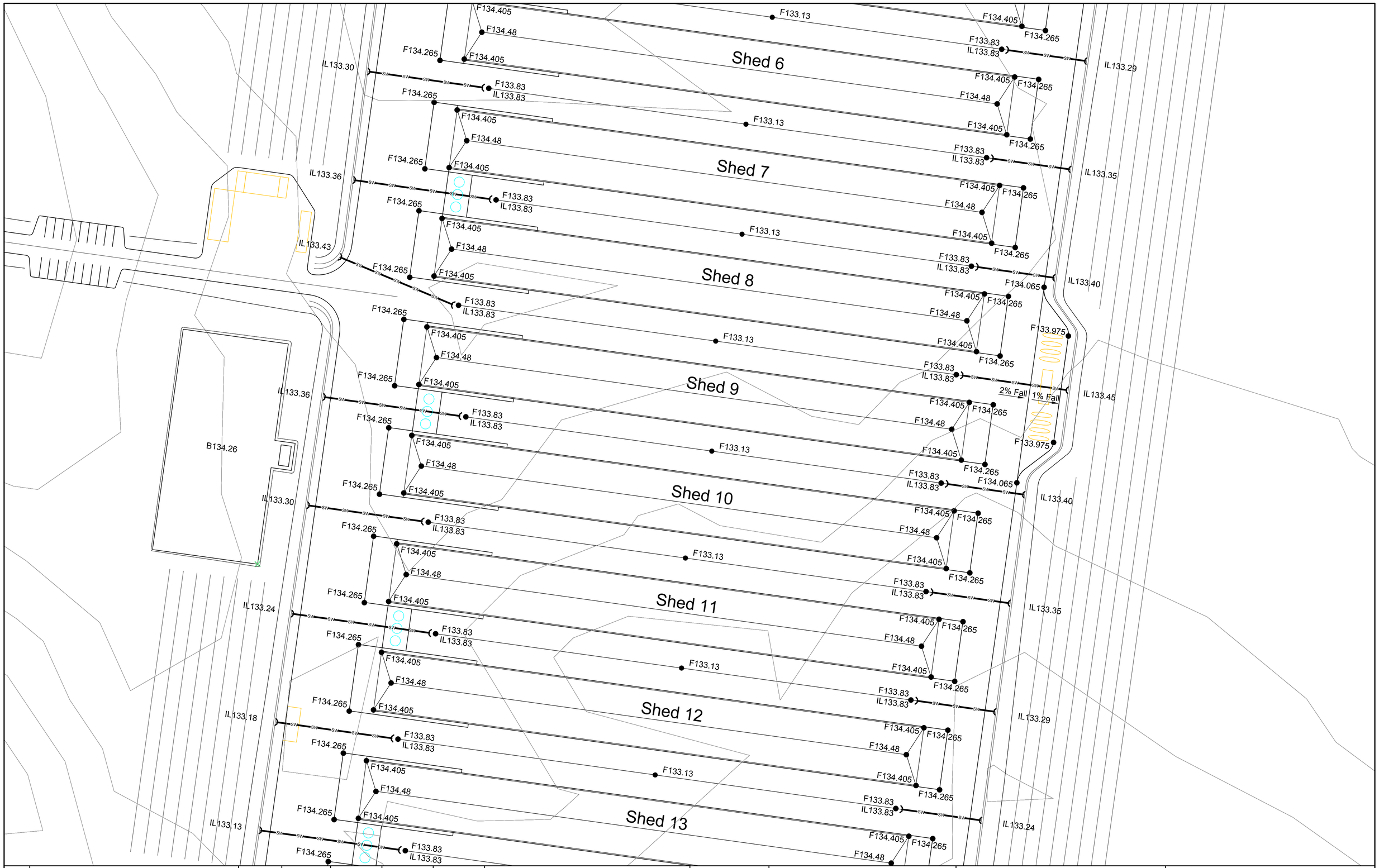
Dwg. No.: C24

Sheet: 24 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 76
Sheds 1-16 Plan

Client: ProTen

Scales: 1:500

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

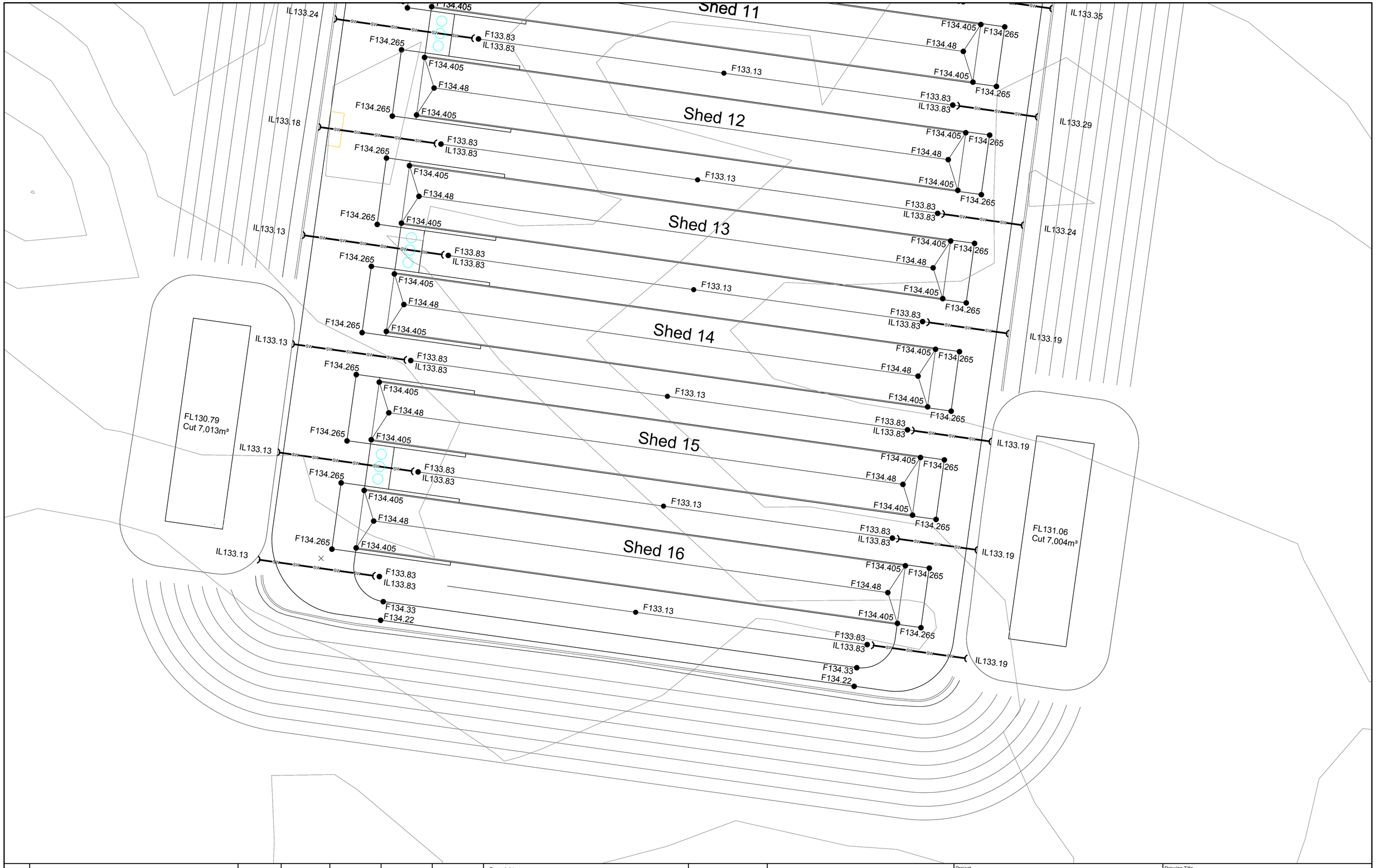
Dwg. No.: C25

Sheet: 25 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	
Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 76
Sheds 1-16 Plan

Scales
1:500

Client Project No.

Project Number
15W013

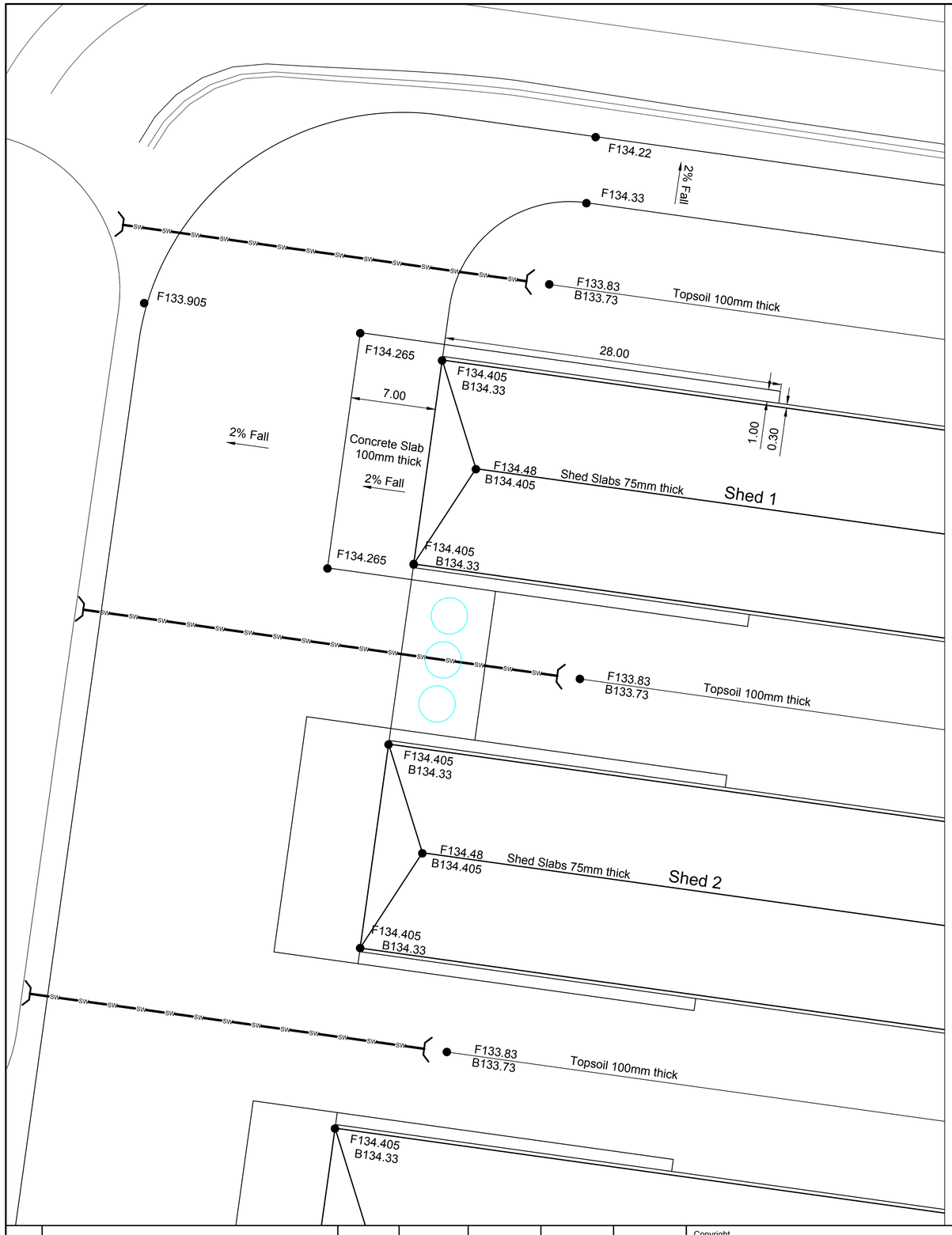
Dwg. No.
C26

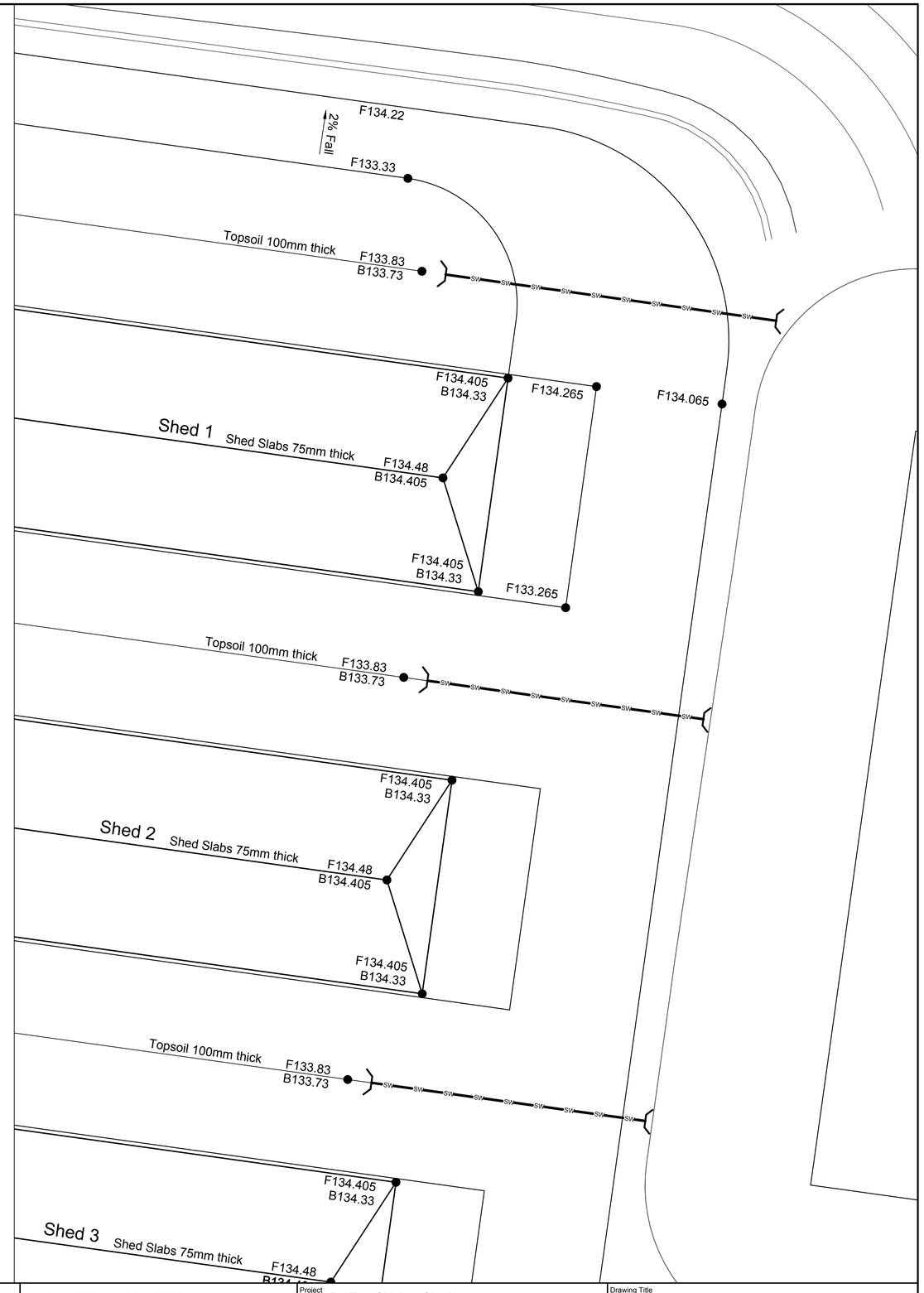
Sheet
26 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm





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1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 76
Sheds 1-16 Plan

Client: ProTen

Scales: 1:200

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C27

Sheet: 27 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 75
Sheds 1-16 Plan

Scales
1:1000

Client Project No.

Project Number
15W013

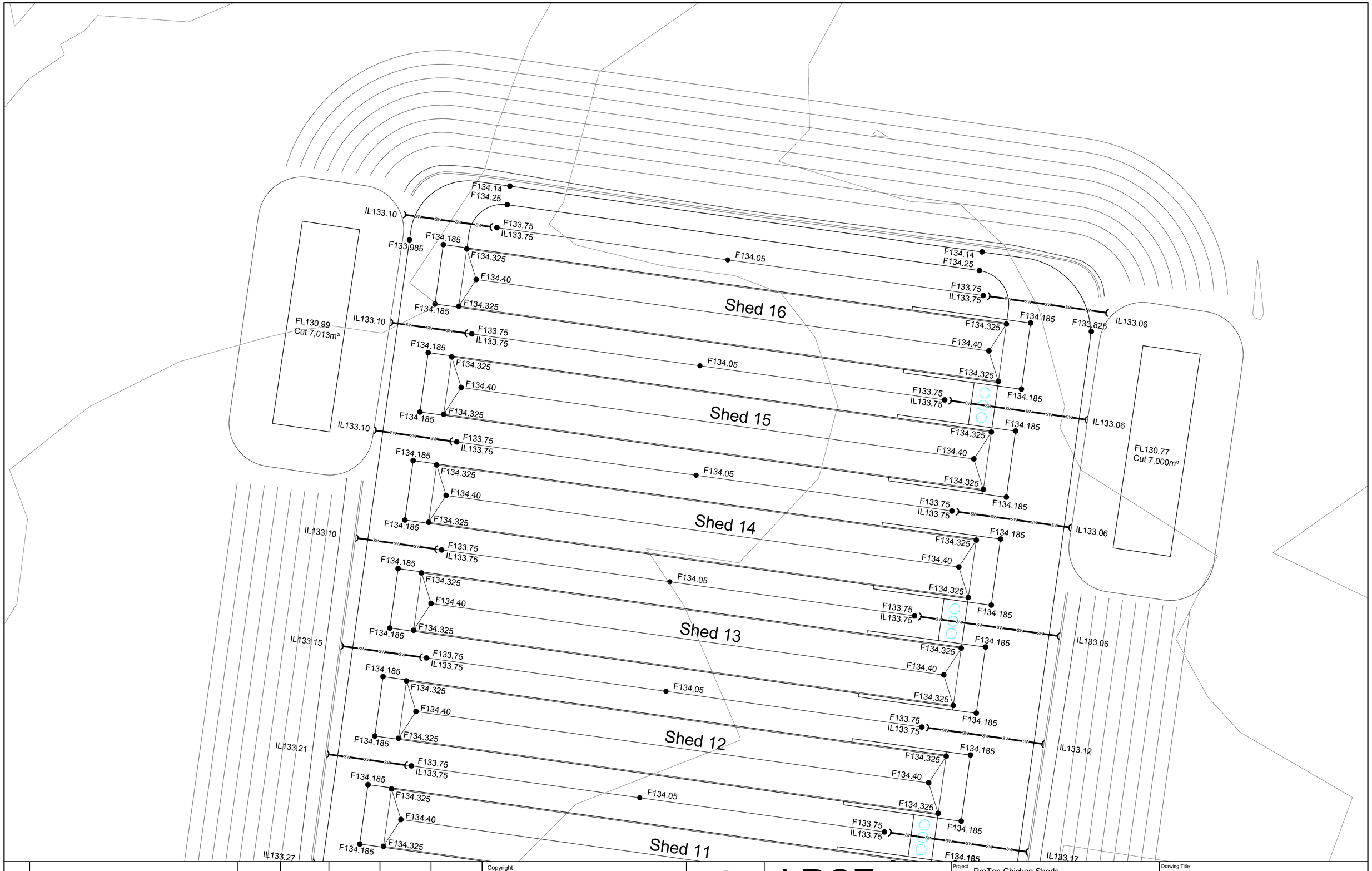
Dwg. No.
C28

Sheet
28 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

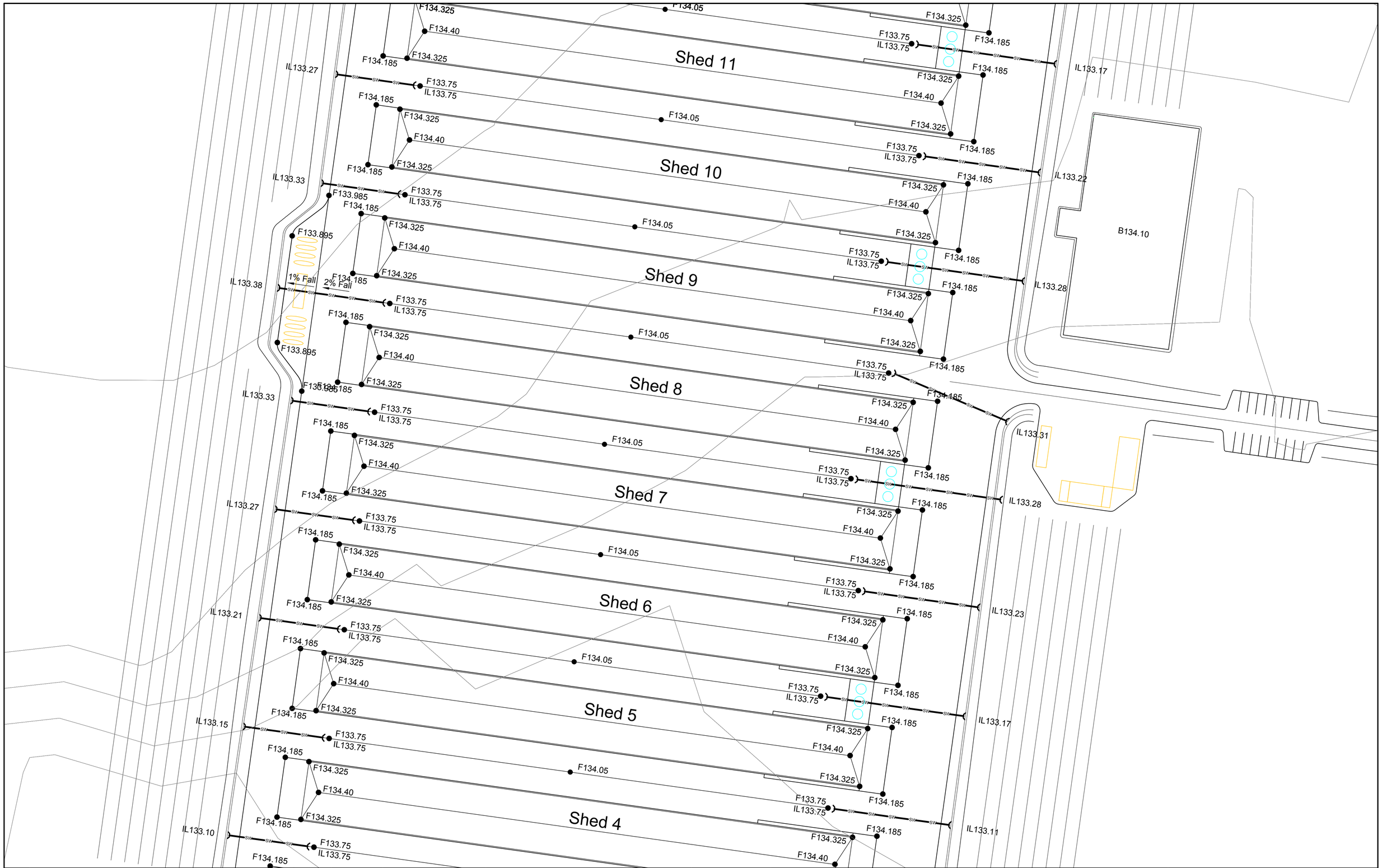
Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Farm 75
Sheds 1-16 Plan

Client: ProTen
Scales: 1:500
Client Project No.:
Architect / Project Manager:
Project Number: 15W013
Dwg. No.: C29
Sheet: 29 of 76
Revision: 1

0 100mm 200mm 300mm

A1 SHEET



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

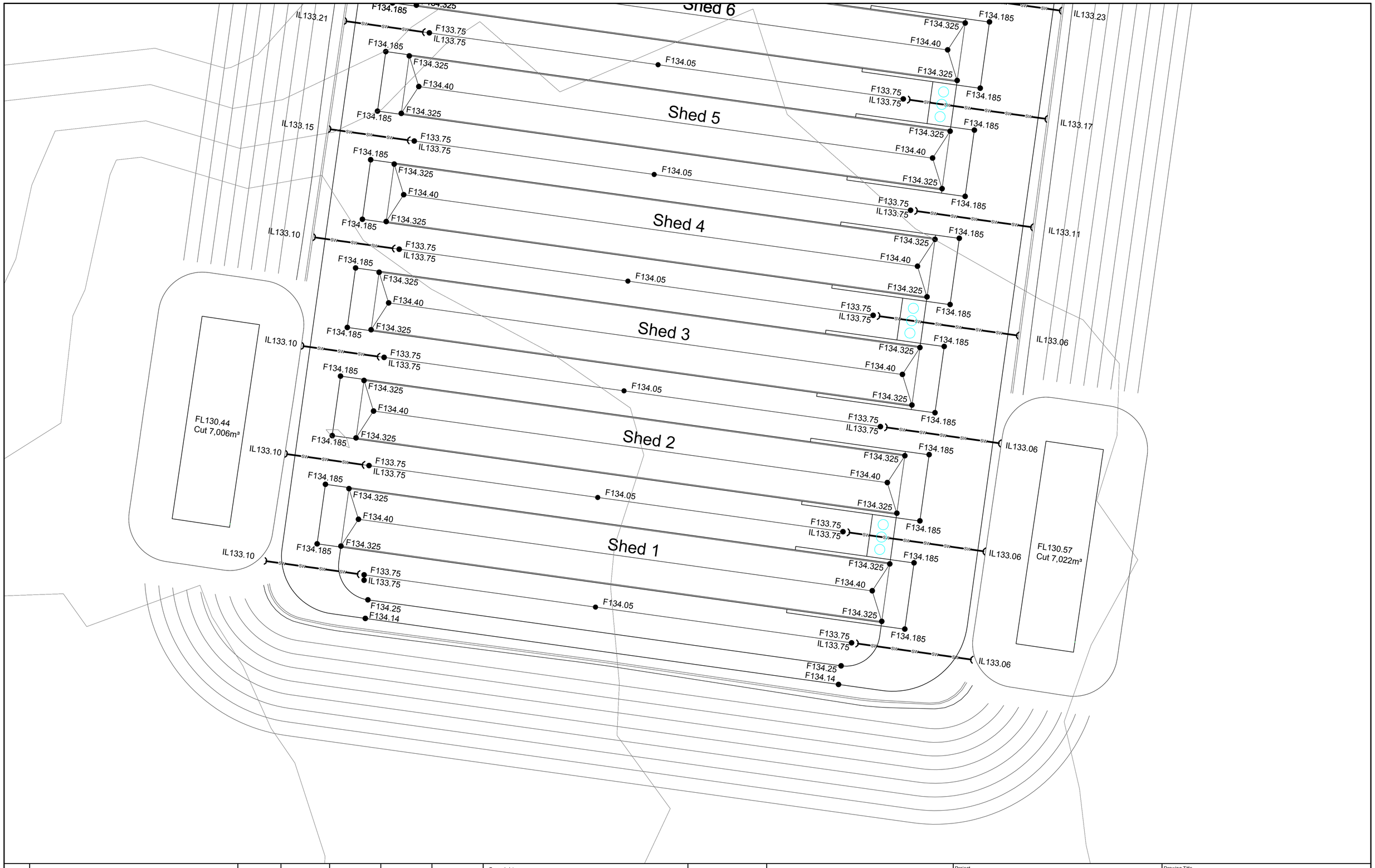
Client
ProTen

Architect / Project Manager

Drawing Title
Farm 75
Sheds 1-16 Plan

Scales	Client Project No.		
1:500			
Project Number	**Dwg. No.**	**Sheet**	**Revision**
15W013	C30	30 of 76	1

0 100mm 200mm 300mm A1 SHEET



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Farm 75
Sheds 1-16 Plan

Scales
1:500

Client Project No.

Project Number
15W013

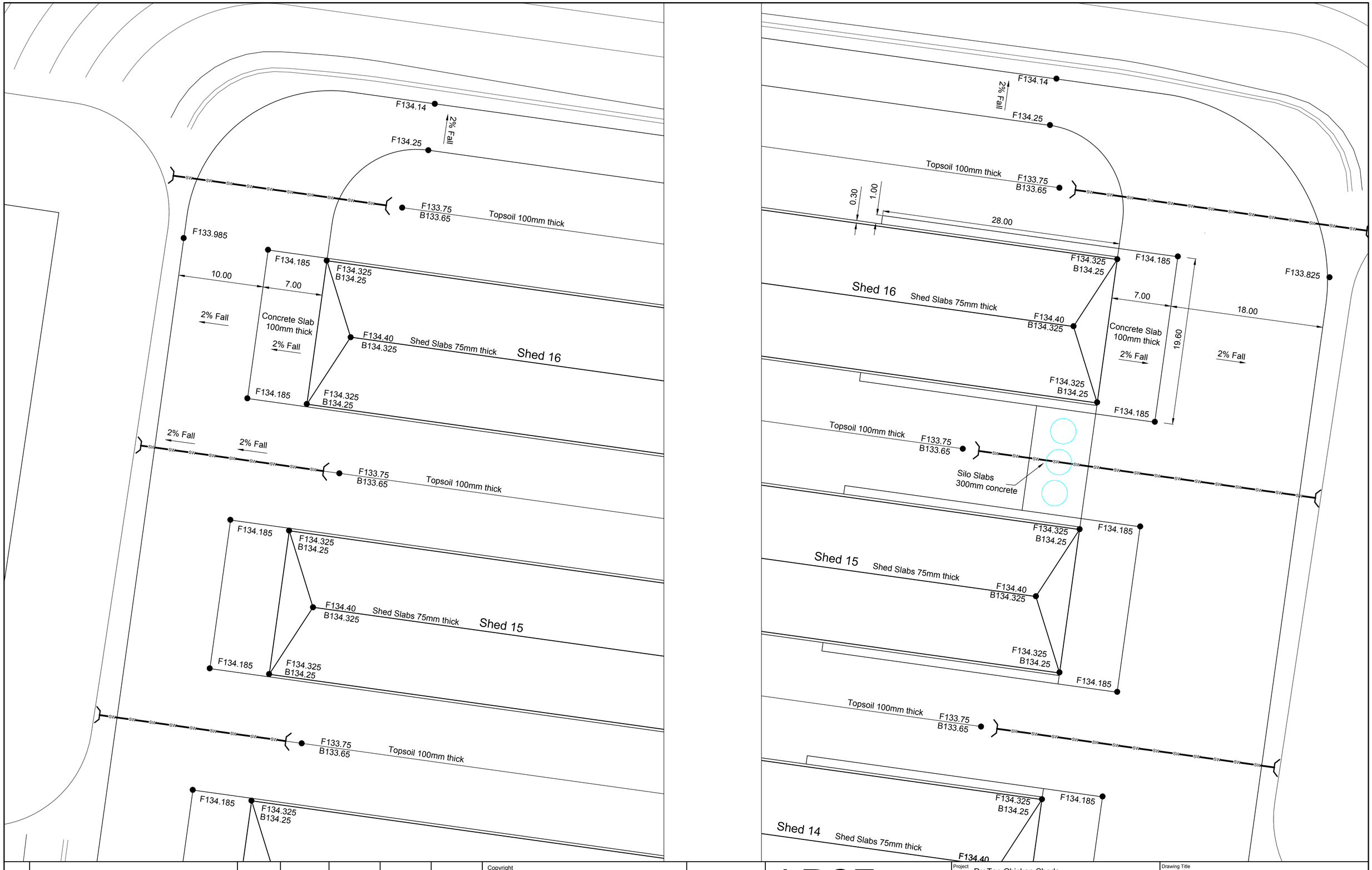
Dwg. No.
C31

Sheet
31 or 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by ✕ = Not verified	Issue authorised (*)
1	Issued for Information	20.05.2015	L.V.R.	L.V.R.	L.V.R.	

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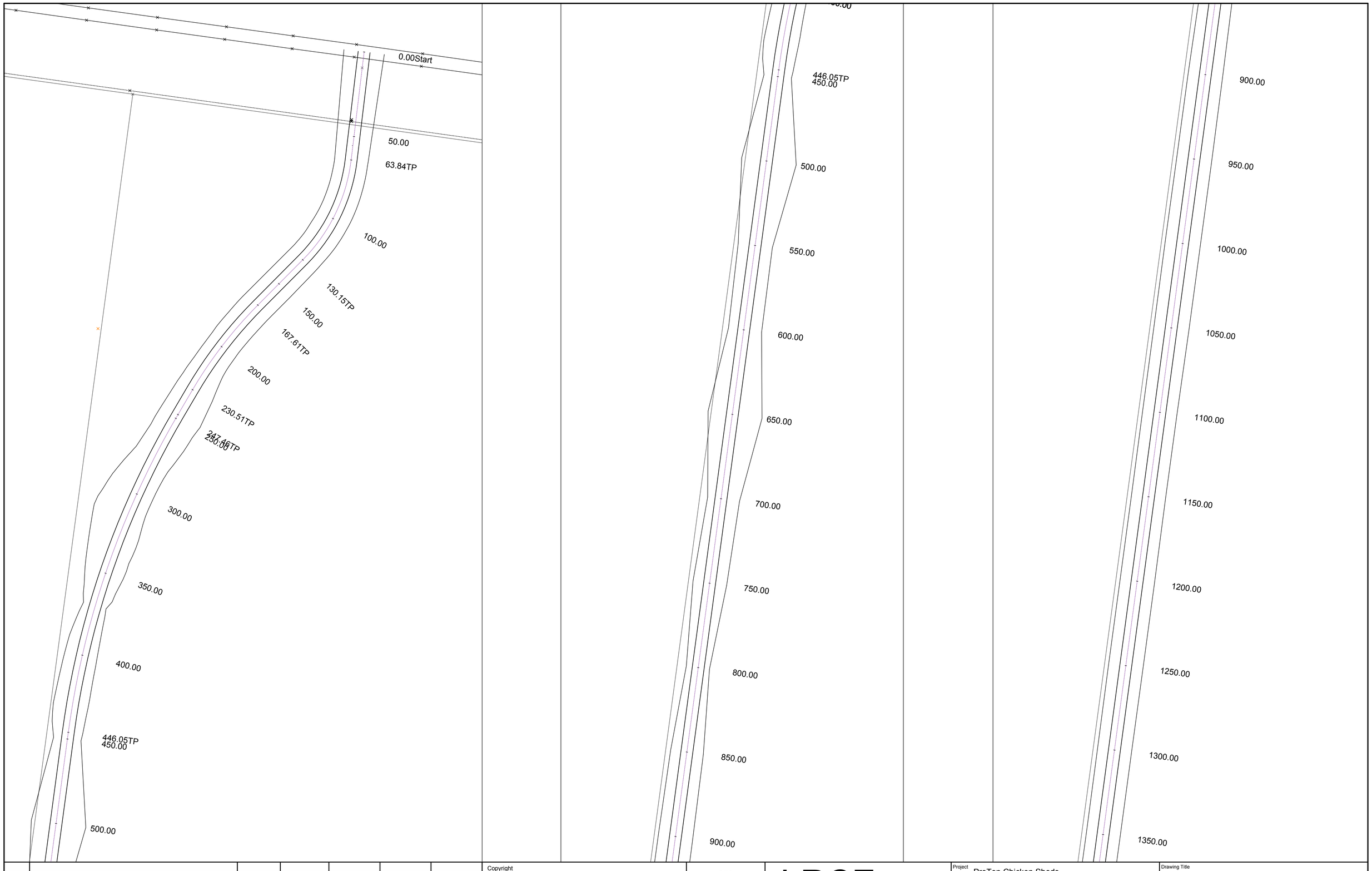
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Client	ProTen
Architect / Project Manager	
Drawing Title	Farm 75 Sheds 1-16 Plan
Scales	1:200
Client Project No.	
Project Number	15W013
Dwg. No.	C32
Sheet	32 of 76
Revision	1

0 100mm 200mm 300mm A1 SHEET



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Plan 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

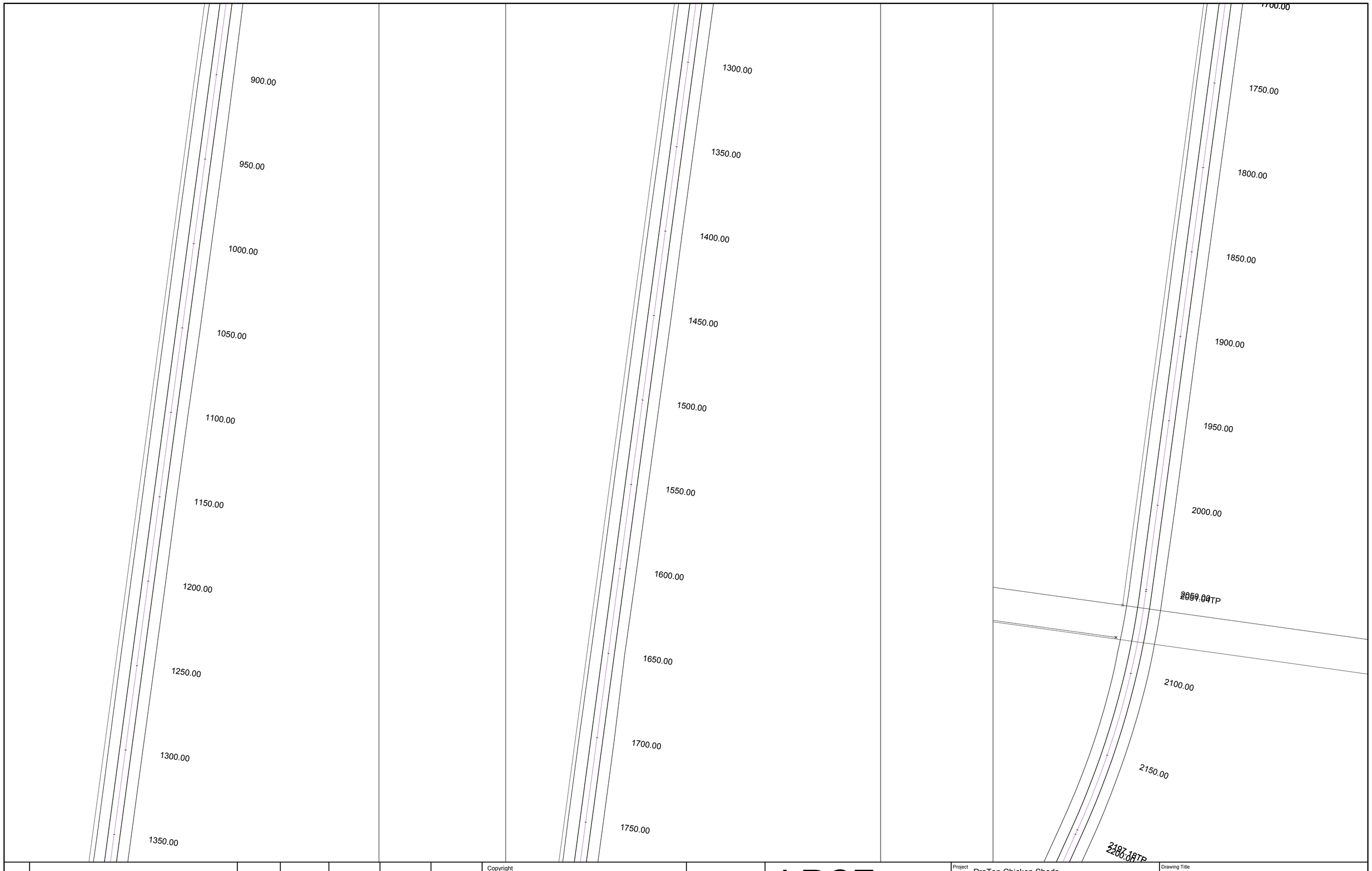
Dwg. No.: C33

Sheet: 33 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Plan 02

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C34

Sheet: 34 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Plan 03

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C35

Sheet
35 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

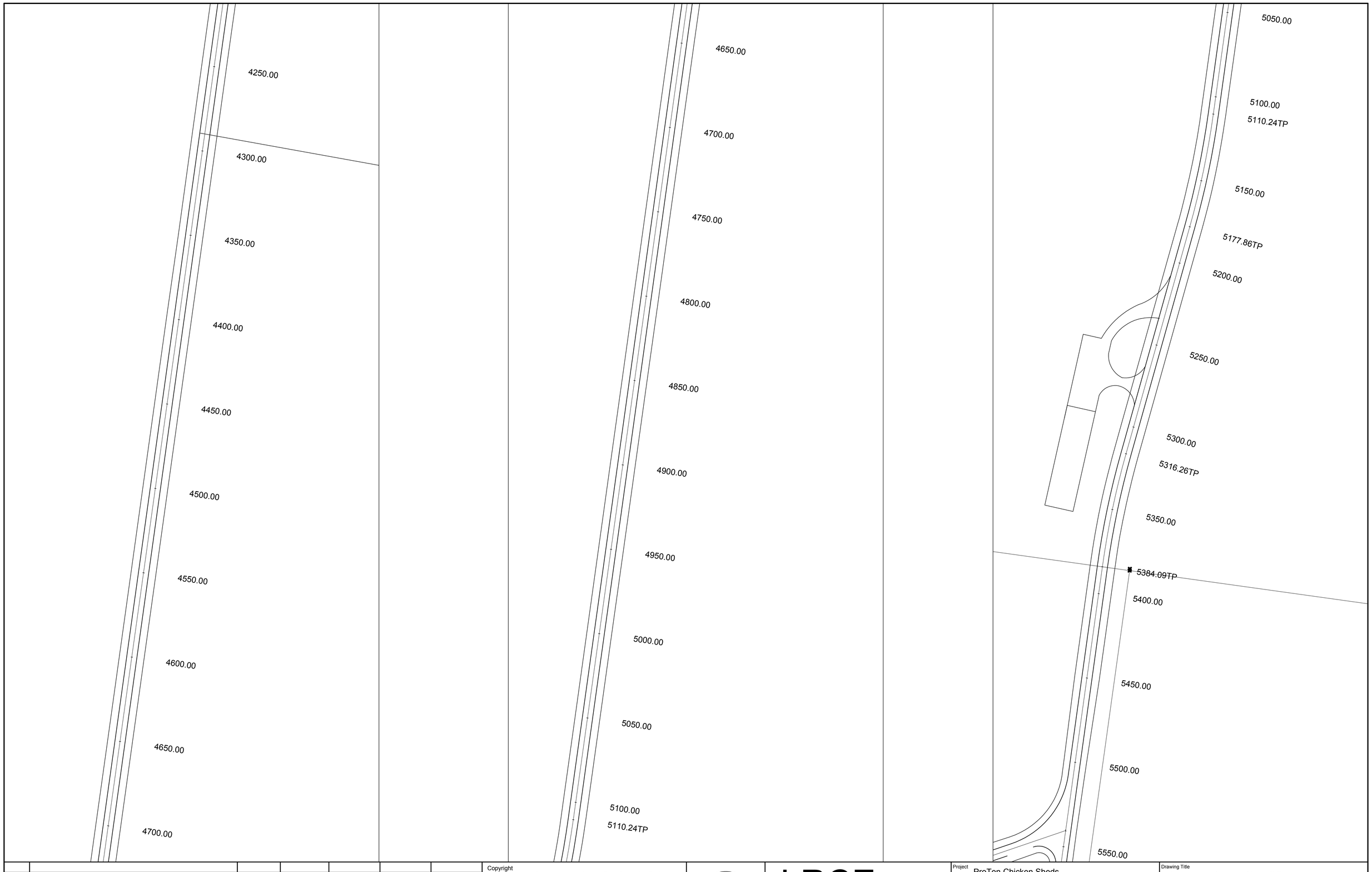
Client
ProTen

Architect / Project Manager

Drawing Title
Access Road Plan 04

Scales	Client Project No.		
1:1000			
Project Number	**Dwg. No.**	**Sheet**	**Revision**
15W013	C36	36 of 76	1

0 100mm 200mm 300mm A1 SHEET



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	28.04.2015	L.V.R.	L.V.R.	L.V.R.	

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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Plan 05

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

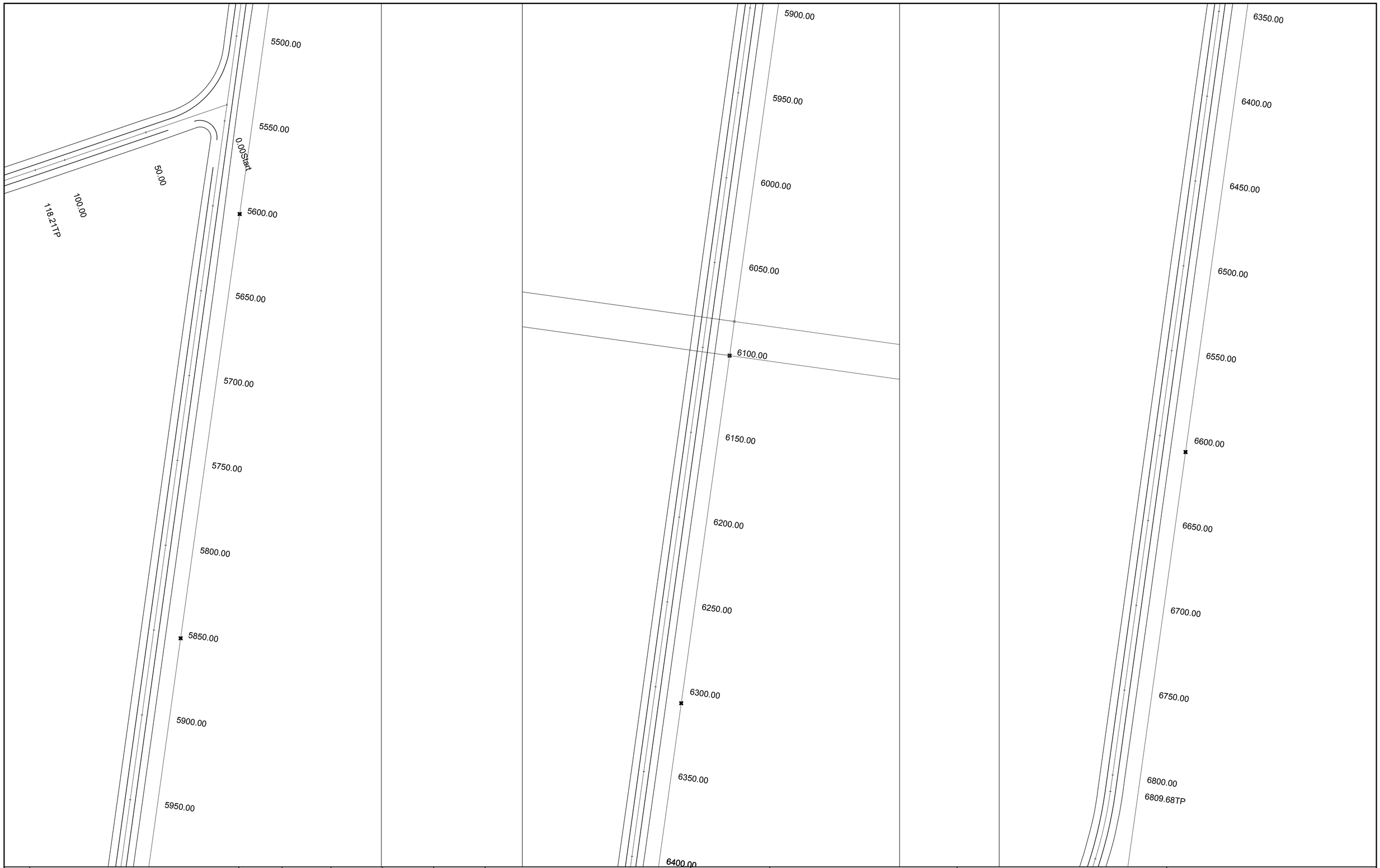
Dwg. No.
C37

Sheet
37 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Access Road Plan 06

Scales
1:1000

Client Project No.

Project Number
15W013

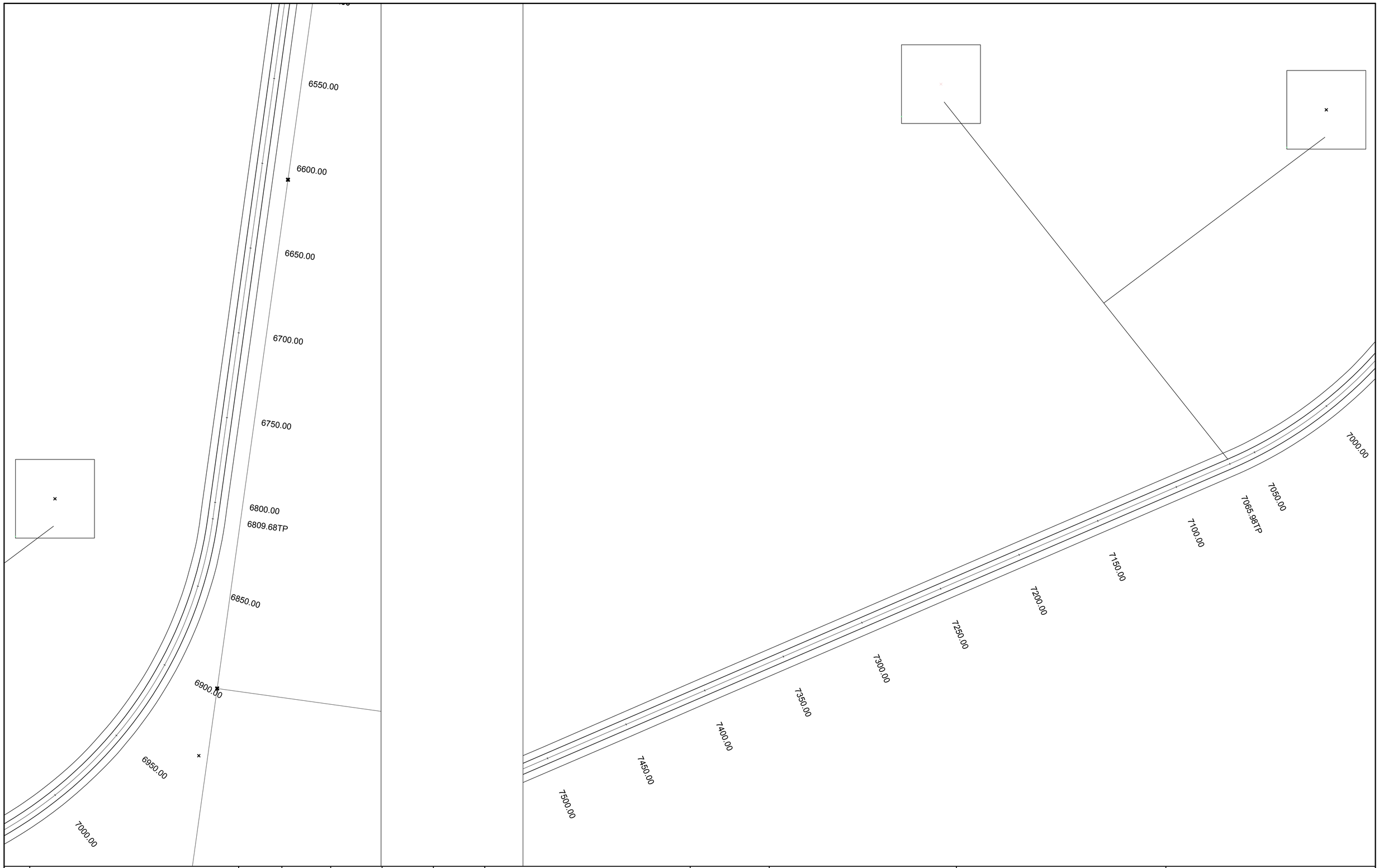
Dwg. No.
C38

Sheet
38 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Access Road Plan 07

Scales: 1:1000

Client Project No.

Project Number: 15W013

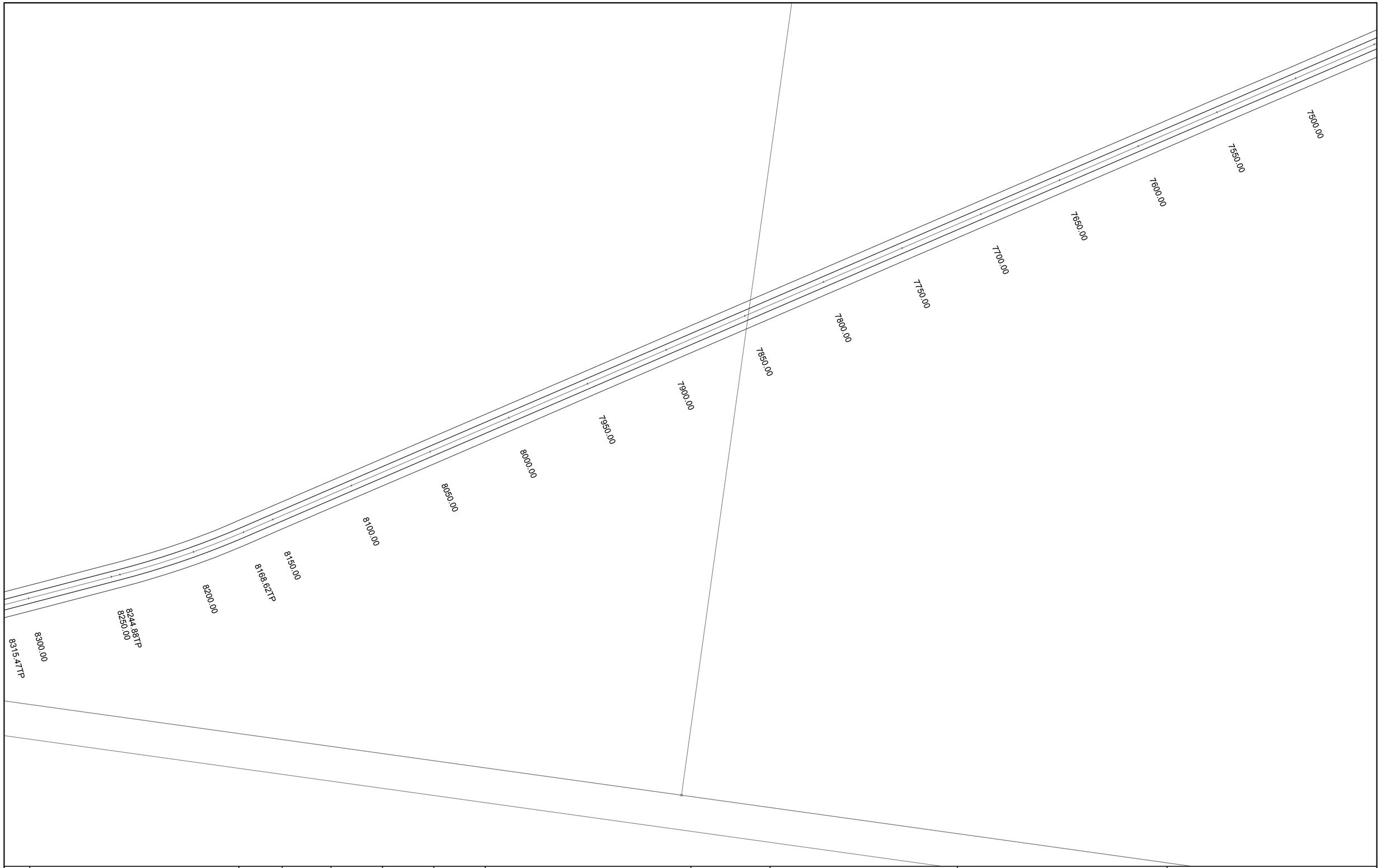
Dwg. No.: C39

Sheet: 39 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Plan 08

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

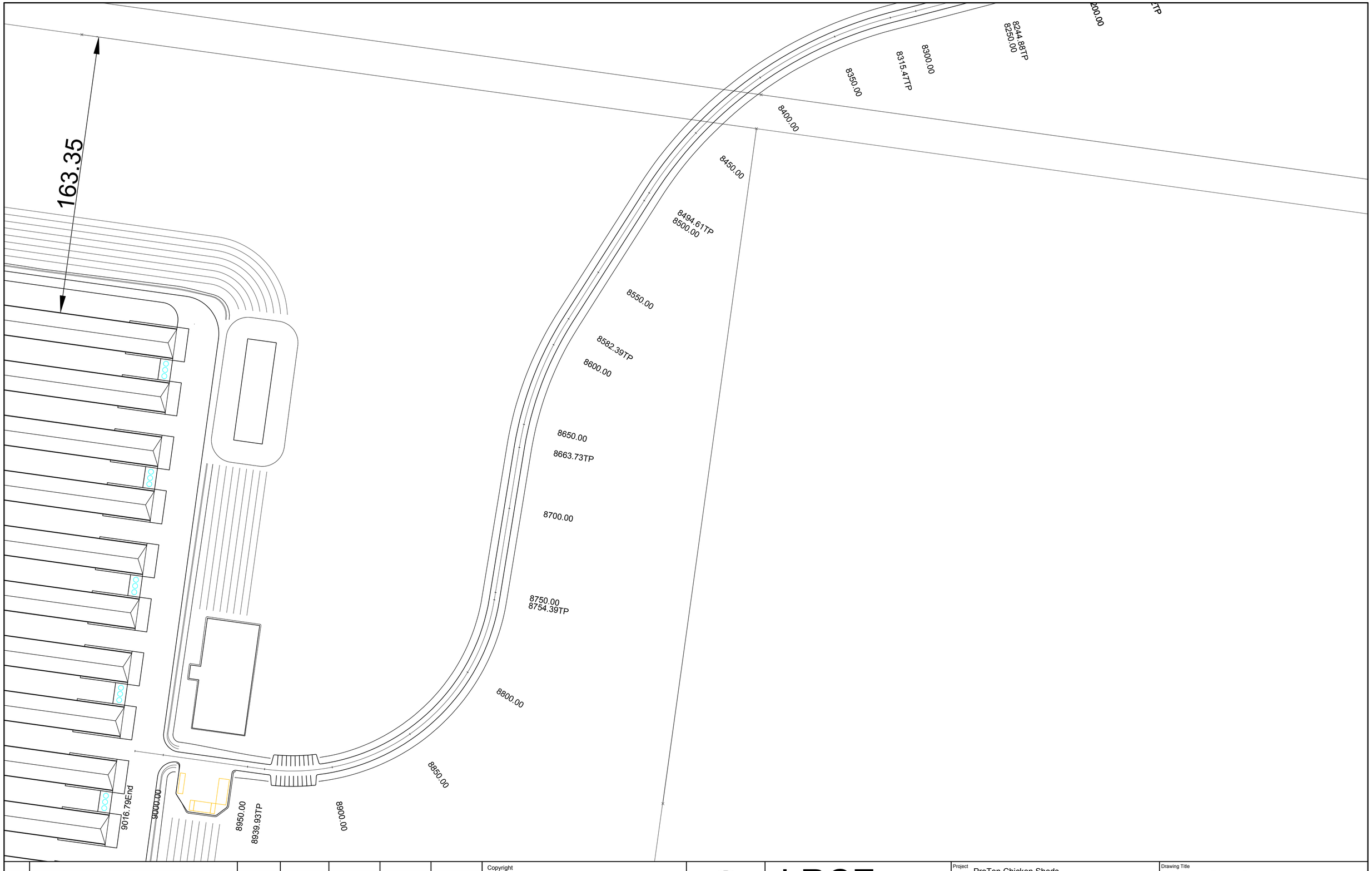
Dwg. No.
C40

Sheet
40 or 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



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1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Plan 09

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

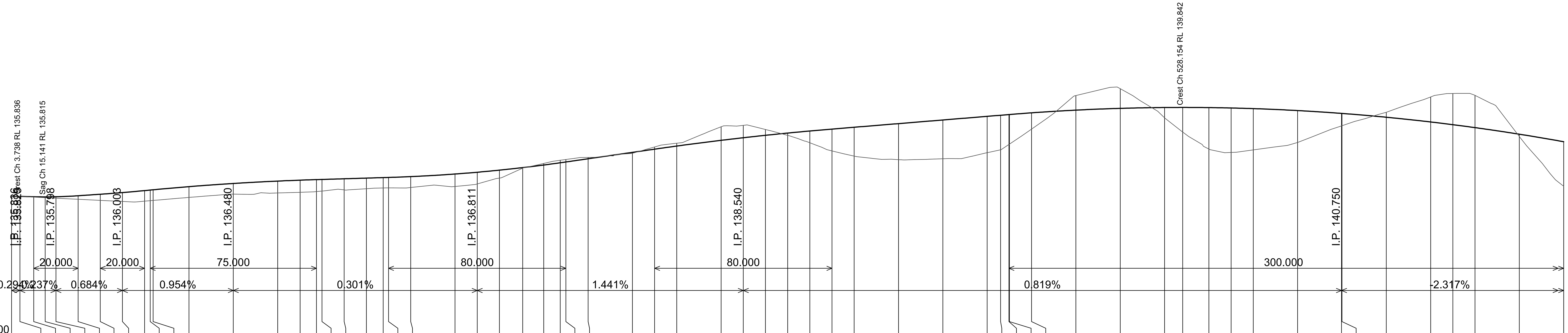
Dwg. No.: C41

Sheet: 41 or 76

Revision: 1

0 100mm 200mm 300mm

A1 SHEET

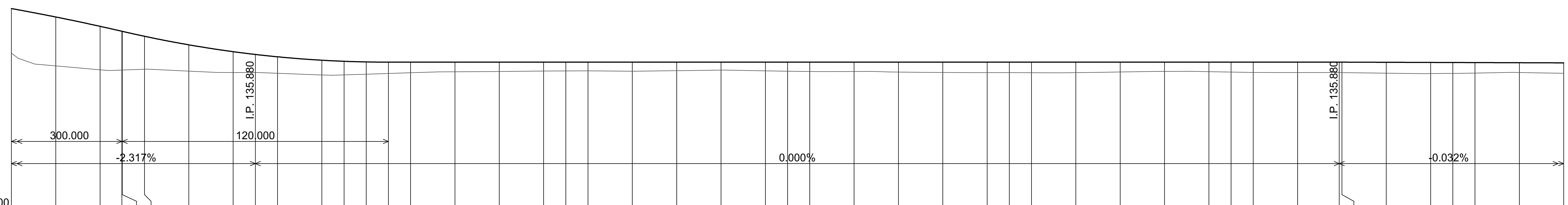


R.L. 129.600

CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
0.000	135.825	135.83
3.738	135.836	135.84
10.000	135.821	135.80
15.141	135.815	135.78
20.000	135.821	135.76
30.000	135.866	135.71
40.000	135.934	135.66
50.000	136.010	135.61
60.000	136.098	135.62
62.500	136.122	135.64
63.839	136.135	135.66
80.000	136.276	135.79
100.000	136.419	135.94
120.000	136.527	135.99
130.148	136.568	136.02
137.500	136.593	136.05
140.000	136.600	136.08
150.000	136.630	136.13
160.000	136.660	136.18
167.612	136.683	136.22
170.000	136.691	136.22
180.000	136.728	136.24
200.000	136.845	136.28
210.000	136.925	136.40
220.000	137.019	136.66
230.508	137.133	137.11
240.000	137.250	137.32
247.458	137.351	137.46
250.000	137.387	137.50
260.000	137.531	137.59
280.000	137.820	137.78
290.000	137.964	138.06
300.000	138.104	138.23
320.000	138.361	138.97
330.000	138.478	139.04
340.000	138.587	138.85
350.000	138.689	138.59
360.000	138.782	138.25
370.000	138.868	137.89
380.000	138.950	137.65
400.000	139.114	137.49
420.000	139.277	137.53
440.000	139.441	137.81
446.047	139.491	137.93
449.799	139.521	138.17
450.000	139.523	138.19
460.000	139.600	138.87
480.000	139.721	140.38
500.000	139.801	140.69
520.000	139.839	139.38
528.154	139.842	138.73
540.000	139.835	137.97
550.000	139.817	137.81
560.000	139.789	137.93
580.000	139.702	138.27
599.799	139.574	139.01
600.000	139.573	139.02
620.000	139.401	139.63
640.000	139.189	140.32
650.000	139.066	140.47
660.000	138.934	140.39
680.000	138.637	138.53
700.000	138.299	136.29

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road



R.L. 129.300

CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
700.000	138.299	136.29
720.000	137.919	135.71
740.000	137.497	135.54
749.799	137.275	135.52
750.000	137.270	135.52
760.000	137.048	135.56
780.000	136.662	135.47
800.000	136.353	135.41
810.000	136.228	135.41
820.000	136.121	135.38
840.000	135.967	135.30
850.000	135.919	135.31
860.000	135.890	135.34
870.000	135.880	135.37
880.000	135.880	135.40
900.000	135.880	135.45
920.000	135.880	135.46
940.000	135.880	135.48
950.000	135.880	135.48
960.000	135.880	135.49
980.000	135.880	135.47
1000.000	135.880	135.49
1020.000	135.880	135.52
1040.000	135.880	135.49
1050.000	135.880	135.47
1060.000	135.880	135.46
1080.000	135.880	135.46
1100.000	135.880	135.43
1120.000	135.880	135.42
1140.000	135.880	135.41
1150.000	135.880	135.41
1160.000	135.880	135.40
1180.000	135.880	135.41
1200.000	135.880	135.44
1220.000	135.880	135.46
1240.000	135.880	135.45
1250.000	135.880	135.43
1260.000	135.880	135.42
1280.000	135.880	135.41
1298.788	135.880	135.41
1300.000	135.880	135.41
1320.000	135.873	135.38
1340.000	135.867	135.36
1350.000	135.864	135.37
1360.000	135.860	135.39
1380.000	135.854	135.41
1400.000	135.848	135.38

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager:

Drawing Title: Access Road Long Sections 01

Scales: 1:1000

Client Project No.:

Project Number: 15W013

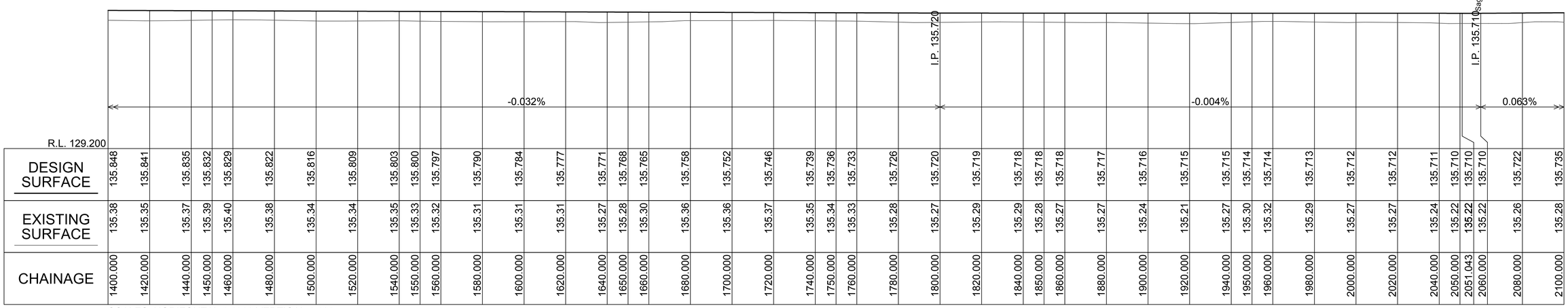
Dwg. No.: C42

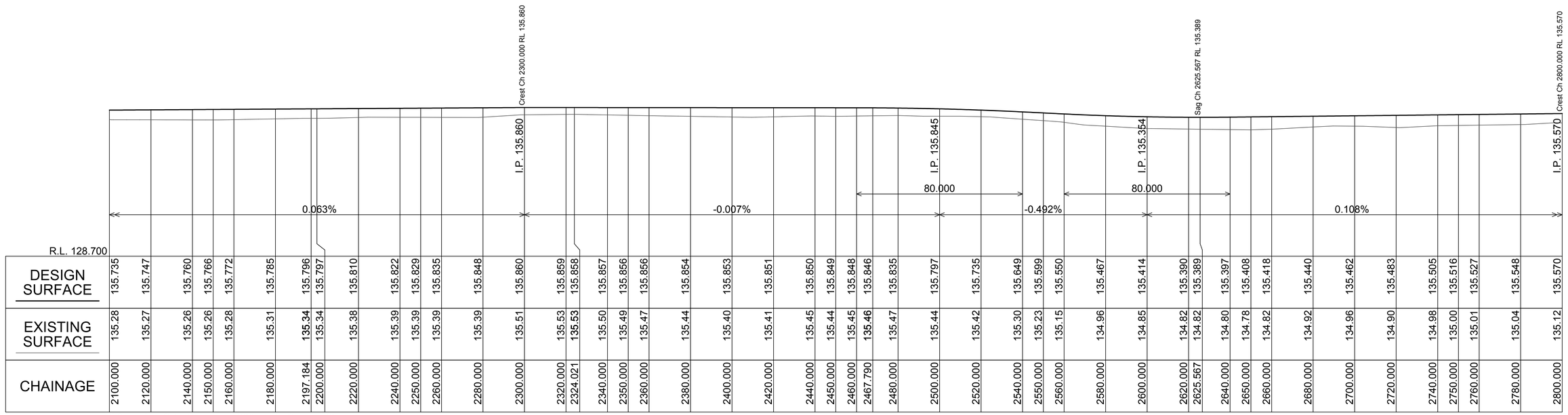
Sheet: 42 of 76

Revision: 1

0 100mm 200mm 300mm

A1 SHEET





Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Access Road Long Sections 02

Scales: 1:1000

Client Project No.

Project Number: 15W013

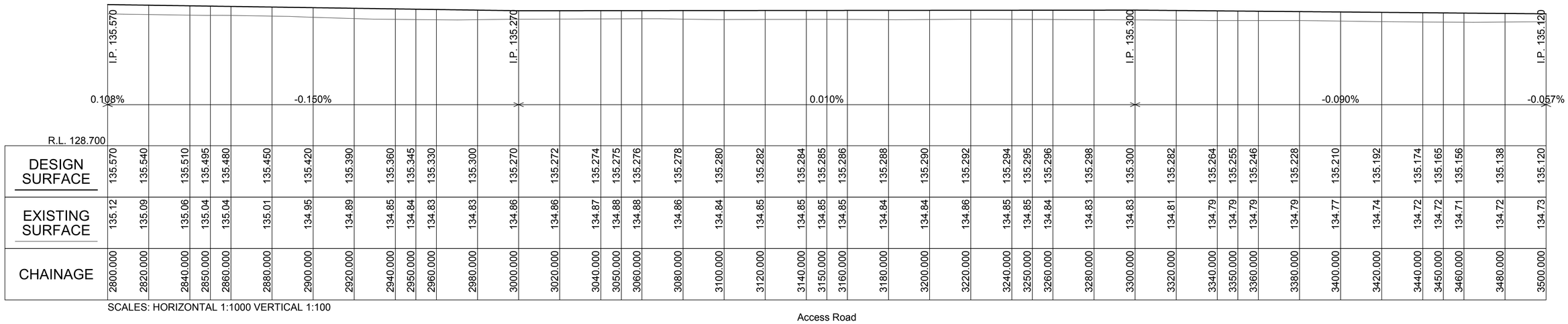
Dwg. No.: C43

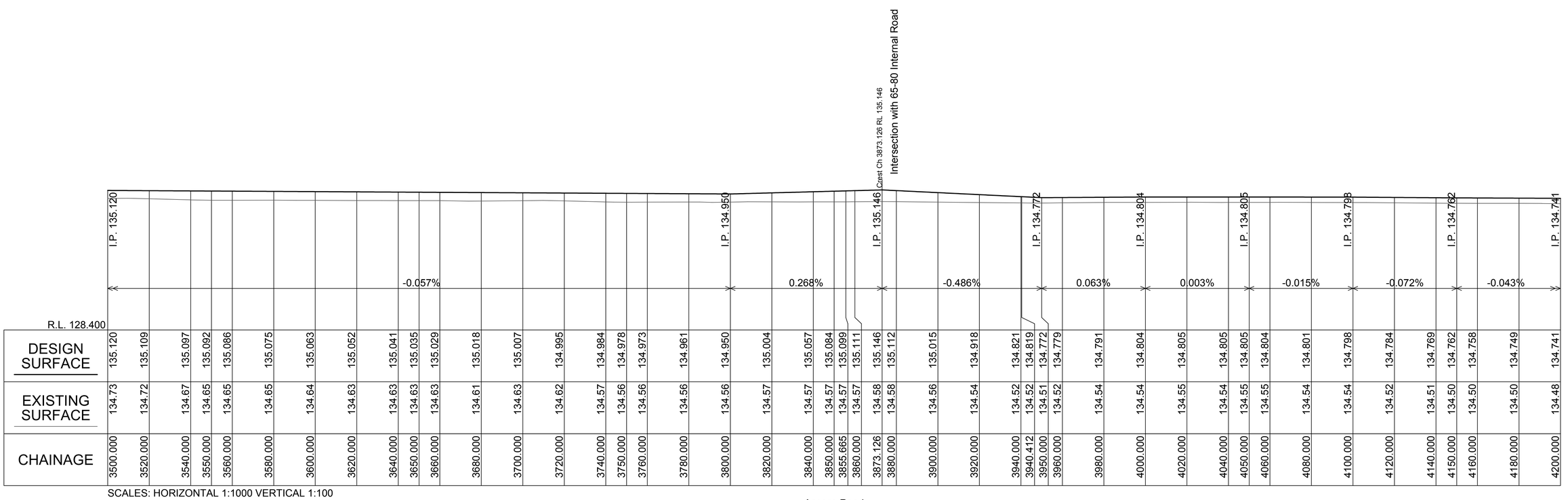
Sheet: 43 of 76

Revision: 1

0 100mm 200mm 300mm

A1 SHEET





Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Access Road Long Sections 03

Scales: 1:1000

Client Project No.

Project Number: 15W013

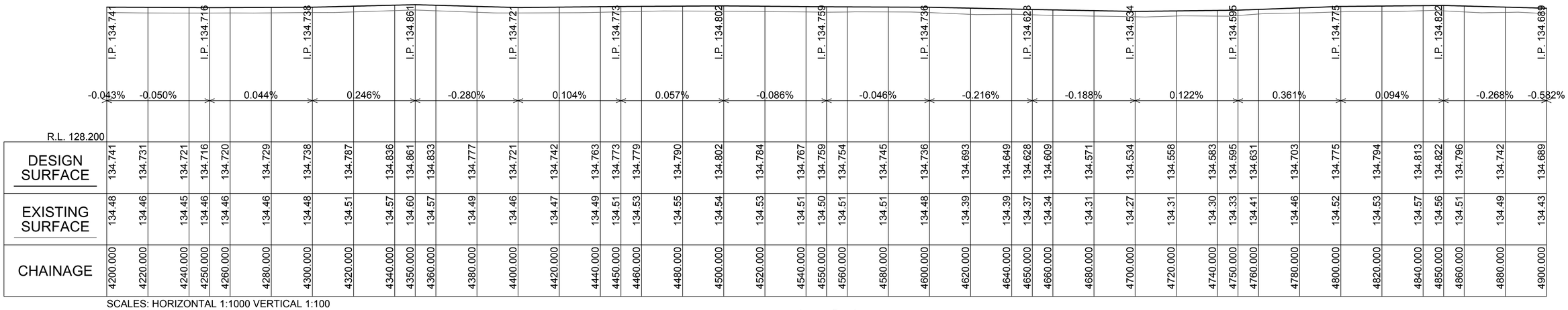
Dwg. No.: C44

Sheet: 44 or 76

Revision: 1

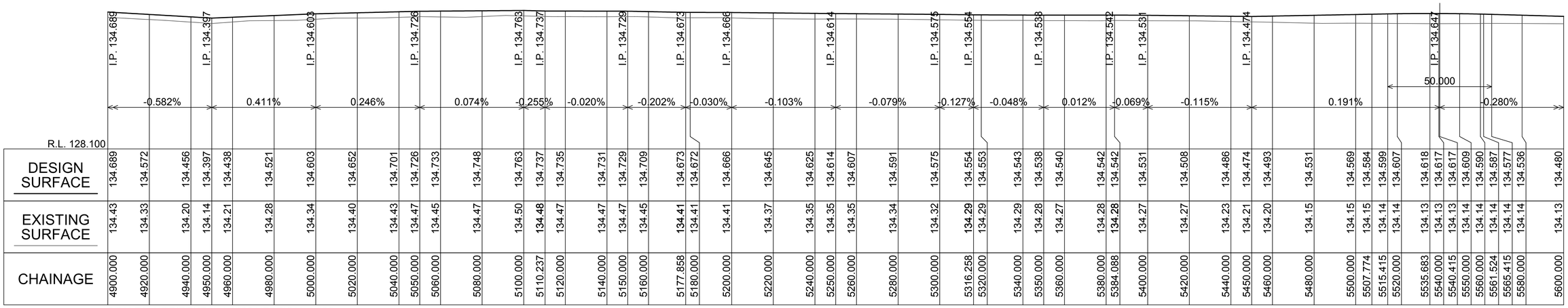
A1 SHEET

0 100mm 200mm 300mm



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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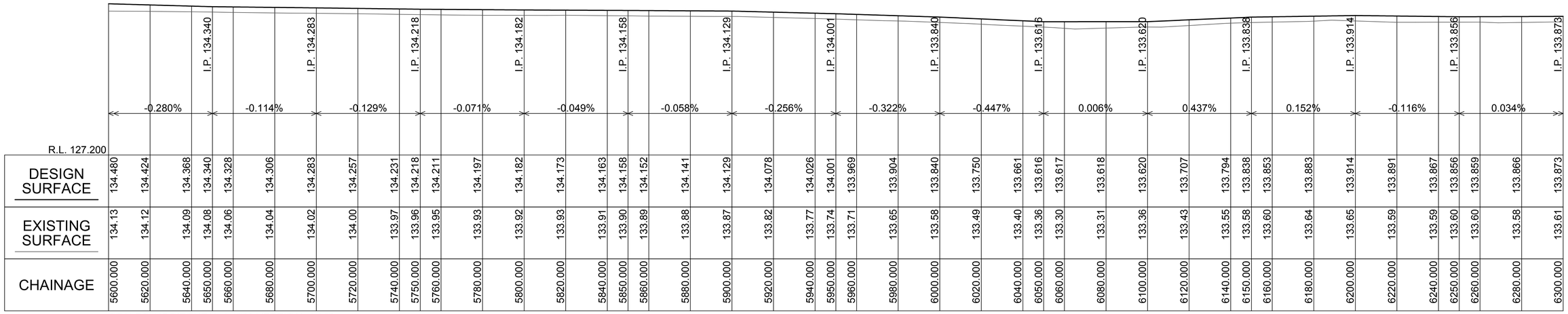
LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Access Road Long Sections 04
Client	ProTen
Scales	1:1000
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C45
Sheet	45 of 76
Revision	1

A1 SHEET

0 100mm 200mm 300mm



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Long Sections 05

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C46

Sheet: 46 or 76

Revision: 1

A1 SHEET

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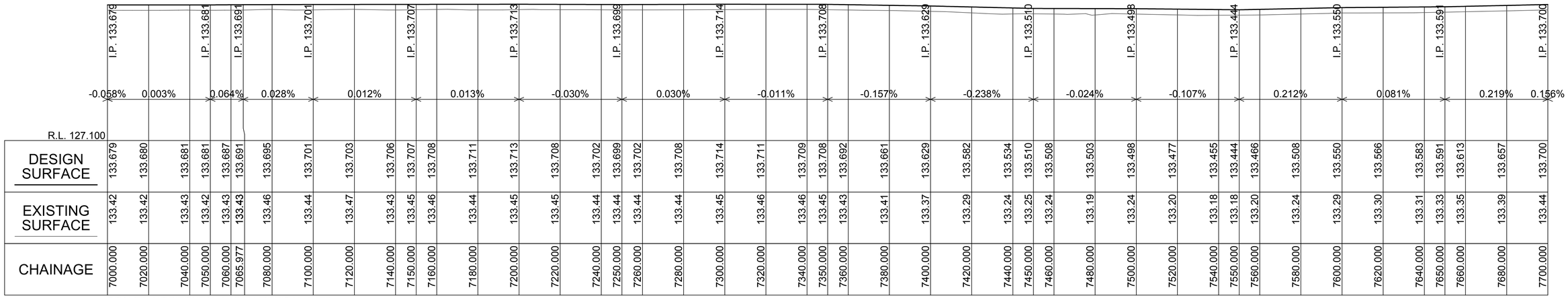
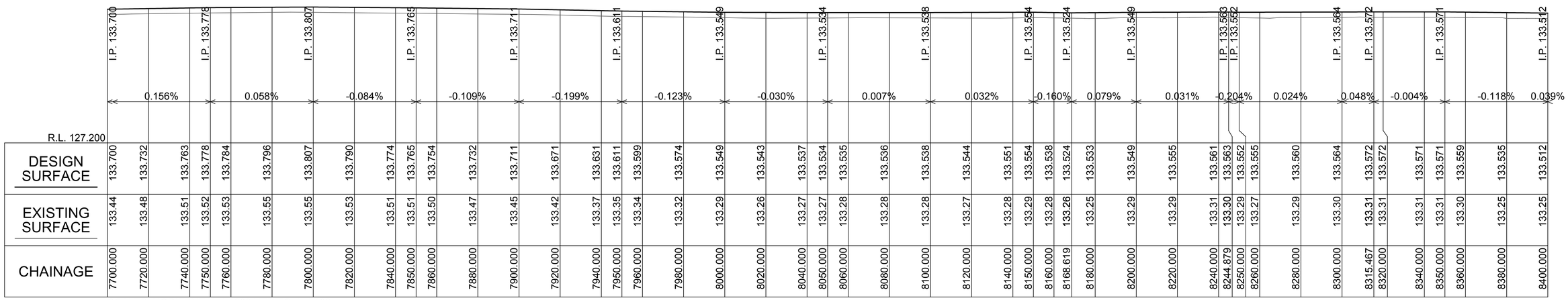


SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Access Road Long Sections 06

Scales: 1:1000

Client Project No.

Project Number: 15W013

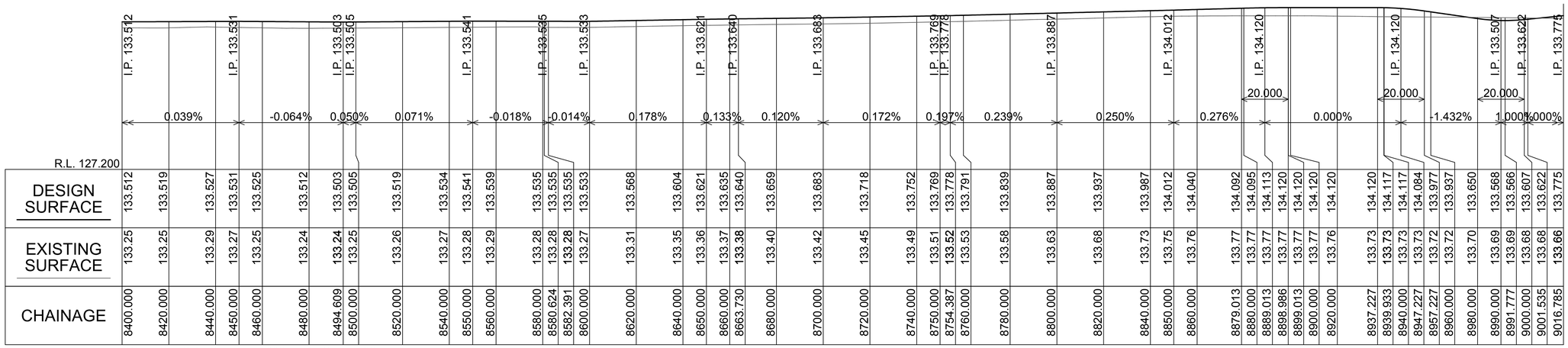
Dwg. No.: C47

Sheet: 47 or 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Access Road

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Long Sections 07

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C48

Sheet: 48 or 76

Revision: 1

A1 SHEET

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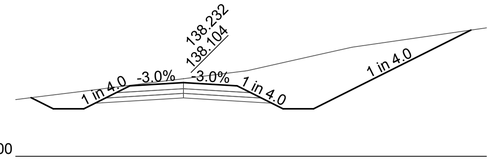
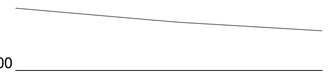


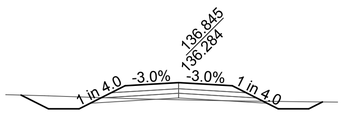
R.L. 135.700

Ch 300.000



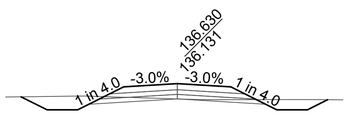
R.L. 135.900

Ch 250.000



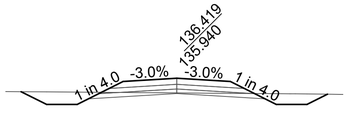
R.L. 134.400

Ch 200.000



R.L. 134.200

Ch 150.000



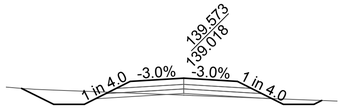
R.L. 134.000

Ch 100.000

R.L. 134.100

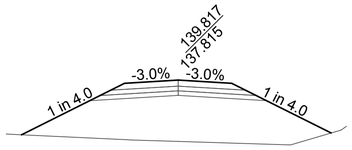
Scales: H 1 in200V 1 in100

Ch 50.000



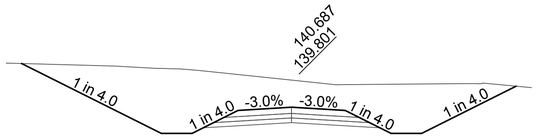
R.L. 137.200

Ch 600.000



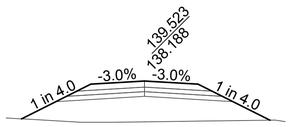
R.L. 136.100

Ch 550.000



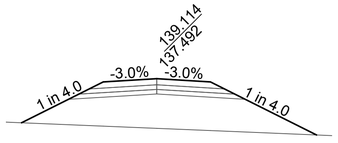
R.L. 137.400

Ch 500.000



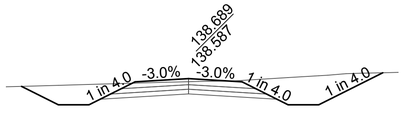
R.L. 136.600

Ch 450.000



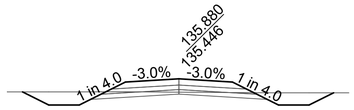
R.L. 135.700

Ch 400.000



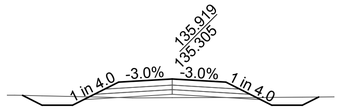
R.L. 136.300

Ch 350.000



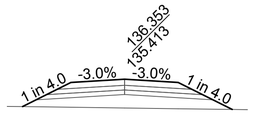
R.L. 133.500

Ch 900.000



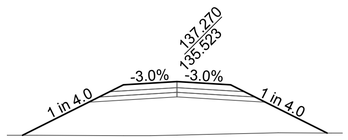
R.L. 133.500

Ch 850.000



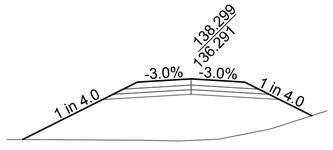
R.L. 133.800

Ch 800.000



R.L. 134.000

Ch 750.000



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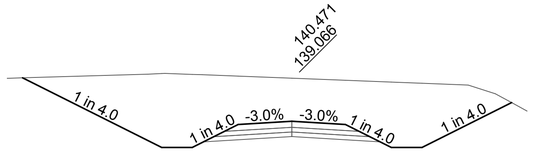
Ch 700.000



R.L. 136.700

Ch 650.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Cross Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

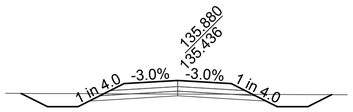
Dwg. No.: C49

Sheet: 49 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



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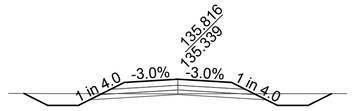

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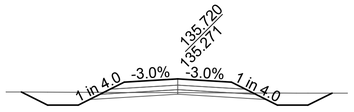

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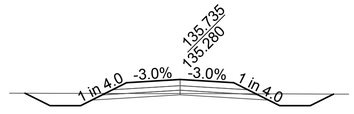

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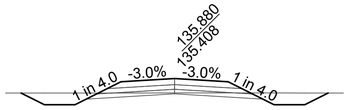

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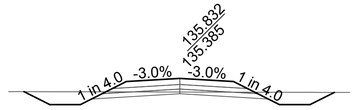

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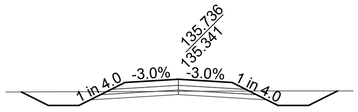

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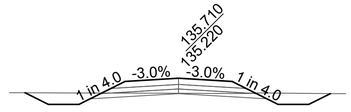

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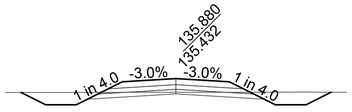

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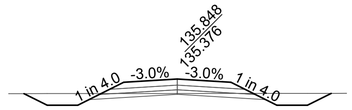

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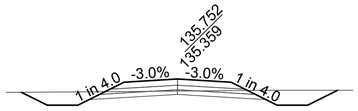

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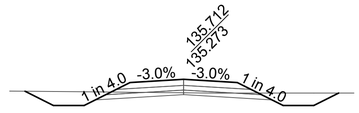

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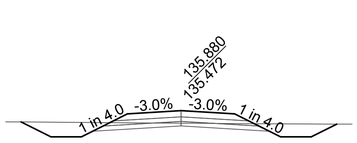

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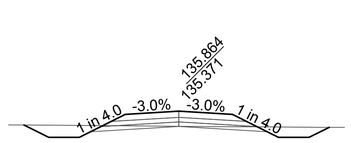

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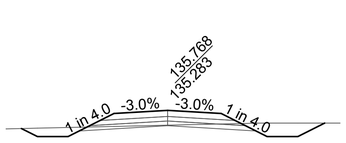

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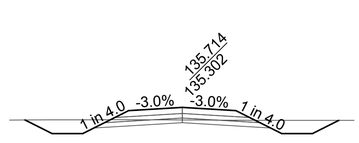

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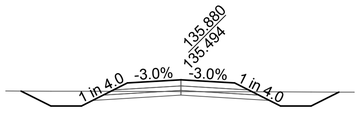

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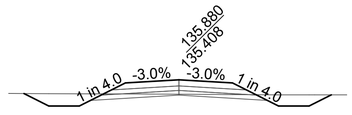

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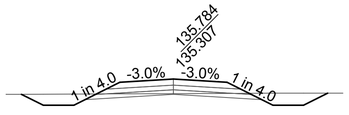

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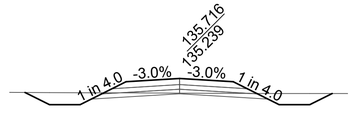

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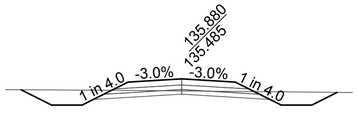

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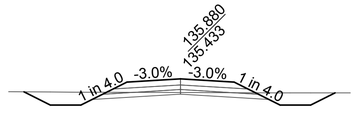

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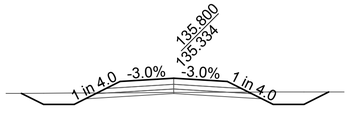

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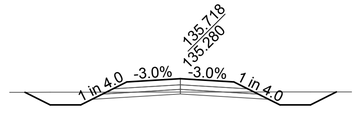

R.L. 133.300

Ch 1850.000

Scales: H 1 in200V 1 in100

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Cross Sections 02

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

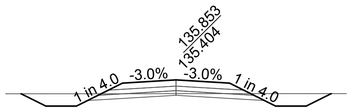
Dwg. No.
C50

Sheet
50 of 76

Revision
1

0 100mm 200mm 300mm

A1 SHEET



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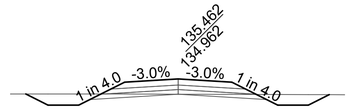
Ch 2400.000



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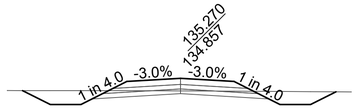
Ch 2700.000



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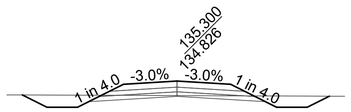

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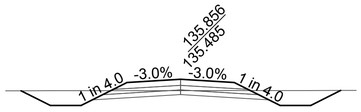

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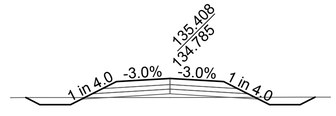

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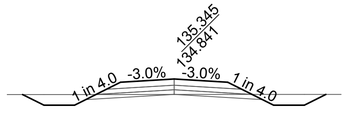

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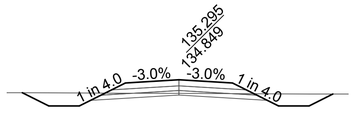

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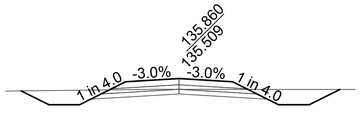

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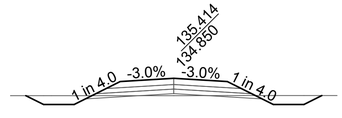

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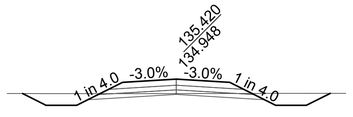

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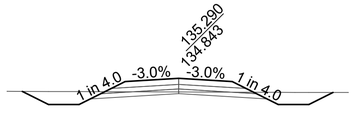

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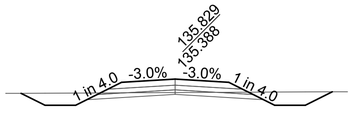

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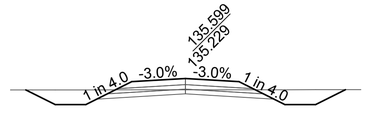

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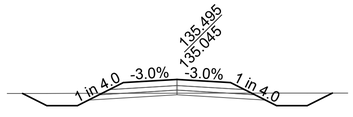

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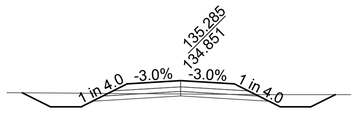

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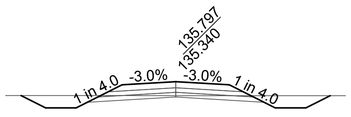

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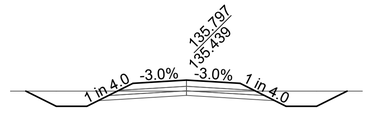

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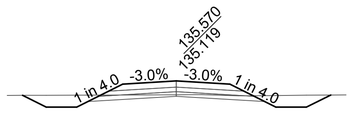

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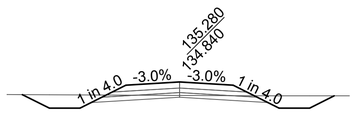

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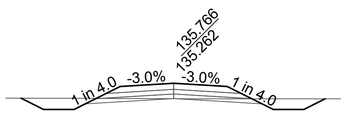

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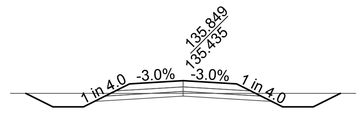
Scales: H 1 in200V 1 in100

Ch 2150.000



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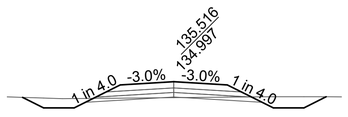

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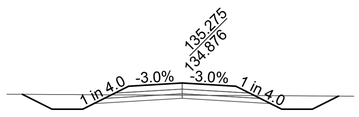

R.L. 132.900

Ch 3050.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Cross Sections 03

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

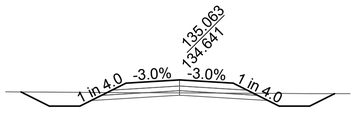
Dwg. No.
C51

Sheet
51 of 76

Revision
1

A1 SHEET

0 100mm 200mm 300mm



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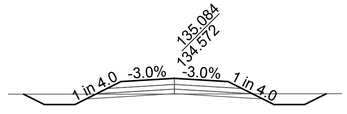
Ch 3600.000



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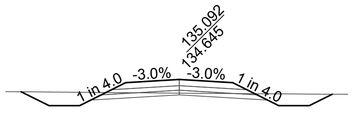

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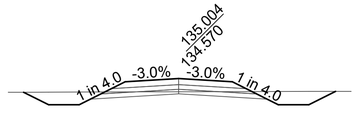

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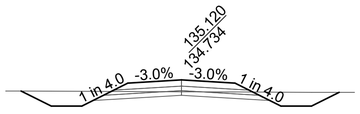

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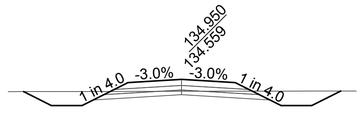

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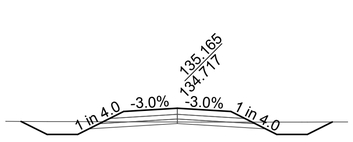

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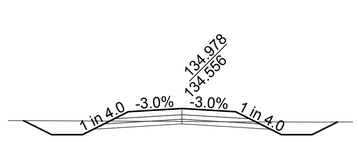

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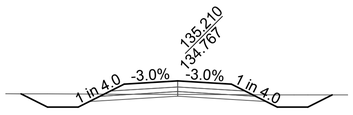

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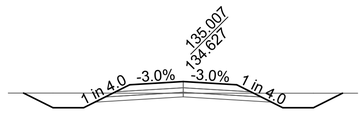

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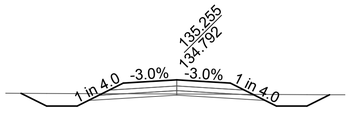

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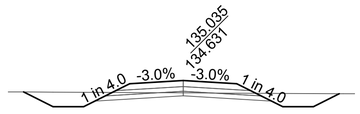

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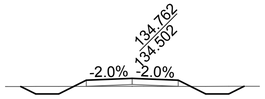
Ch 4200.000



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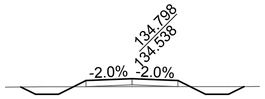

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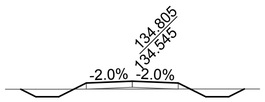

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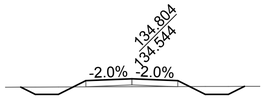

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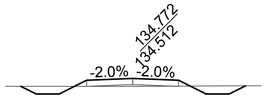

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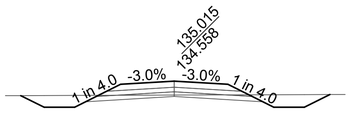

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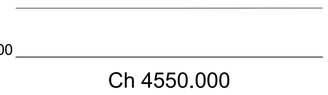

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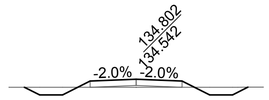

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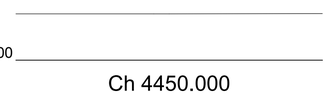

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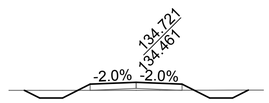

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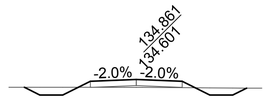

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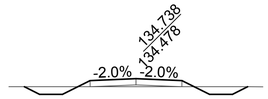

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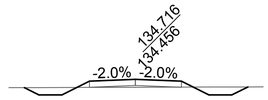
Ch 4300.000



R.L. 132.700

Ch 4250.000

Scales: H 1 in200V 1 in100

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Cross Sections 04

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

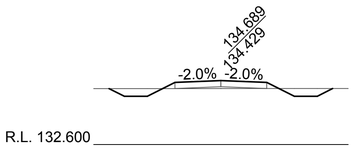
Dwg. No.
C52

Sheet
52 of 76

Revision
1

A1 SHEET

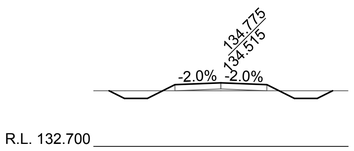
0 100mm 200mm 300mm



Ch 4900.000

R.L. 133.000

Ch 4850.000



Ch 4800.000

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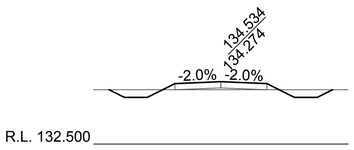
Ch 4750.000



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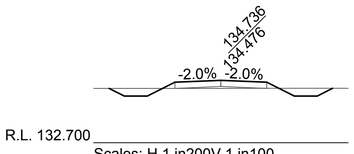

Scales: H 1 in200V 1 in100

Ch 4600.000

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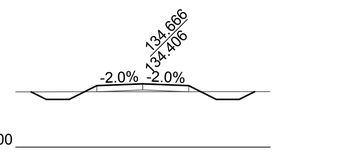

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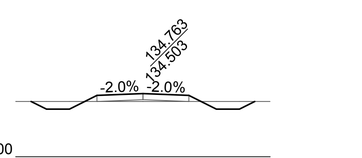

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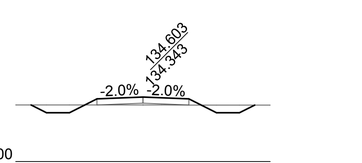

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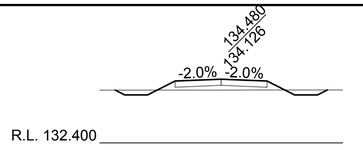

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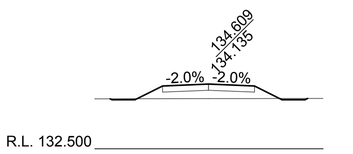

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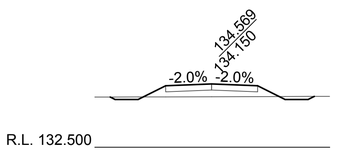

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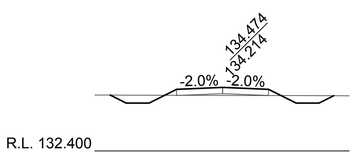

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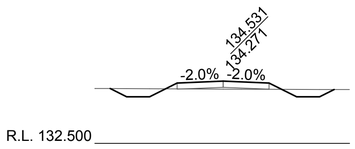

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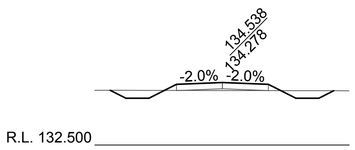

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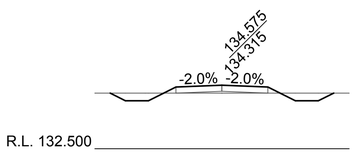

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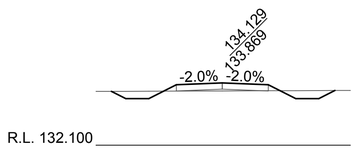
Ch 5950.000



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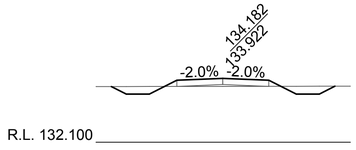
Ch 5850.000



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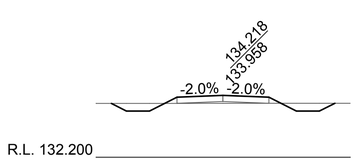

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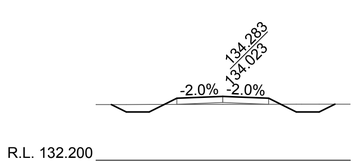

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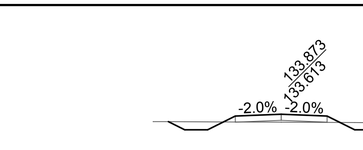
Ch 5650.000



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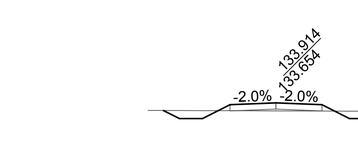
Ch 6250.000



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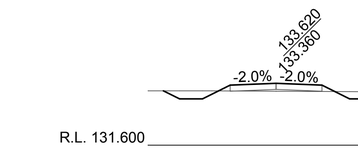
Ch 6150.000



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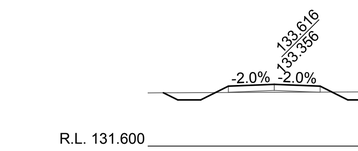

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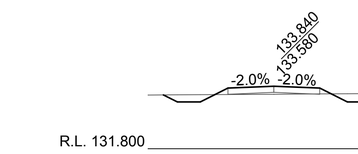

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Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
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WAGGA WAGGA NSW 2650
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FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Cross Sections 05

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

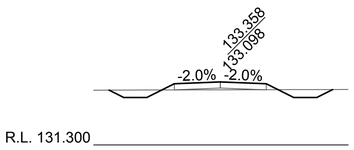
Dwg. No.: C53

Sheet: 53 of 76

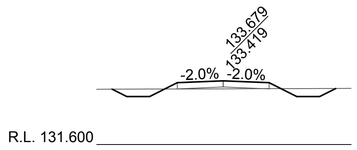
Revision: 1

A1 SHEET

0 100mm 200mm 300mm



Ch 6650.000



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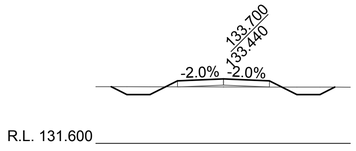
Ch 7350.000



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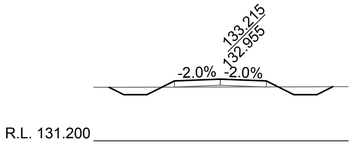

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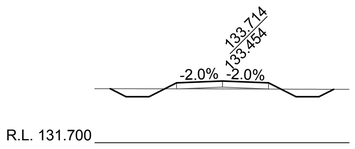

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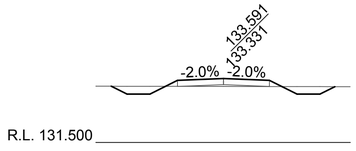

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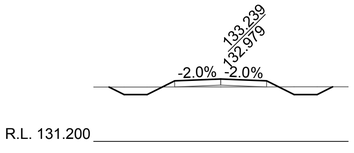

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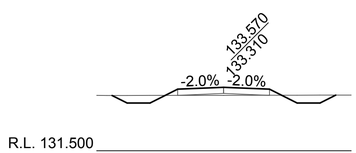

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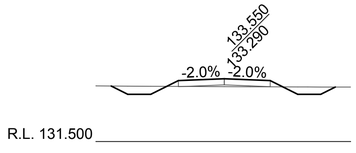

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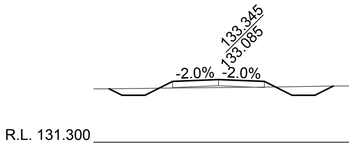

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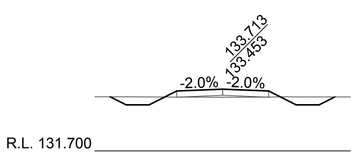
Ch 6850.000



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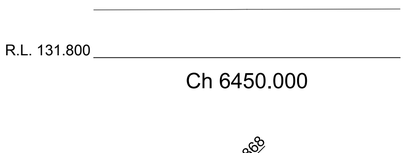

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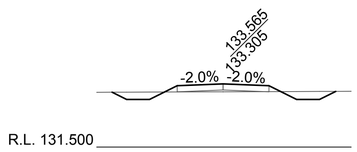

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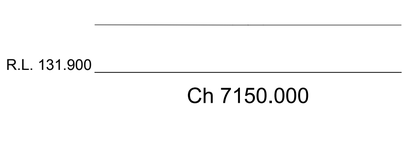

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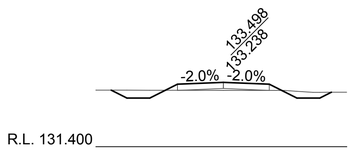

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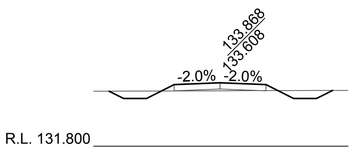
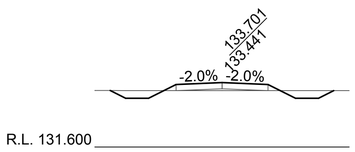


Ch 6400.000

Ch 6750.000



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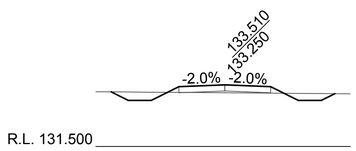

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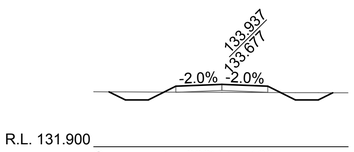

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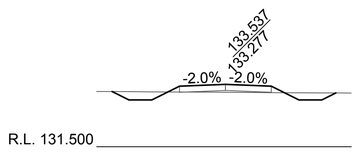
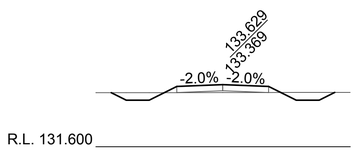


Ch 6700.000

Ch 7050.000



Ch 7400.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Access Road Cross Sections 06

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C54

Sheet
54 or 76

Revision
1

A1 SHEET

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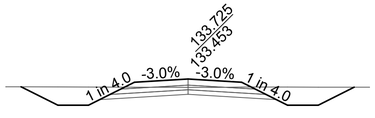
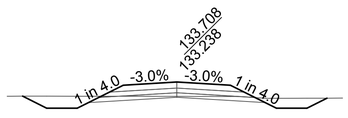


R.L. 131.300

Ch 7200.000



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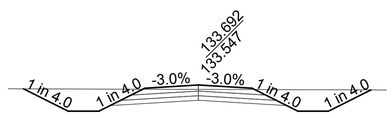

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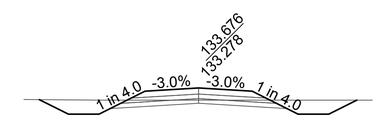

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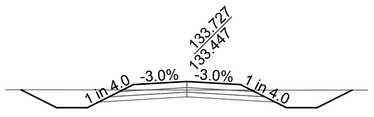

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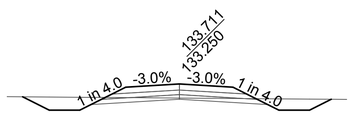

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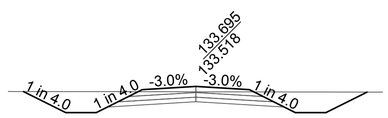

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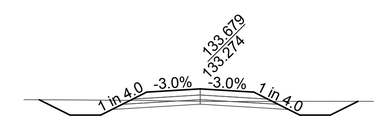

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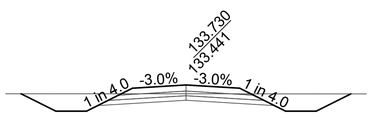

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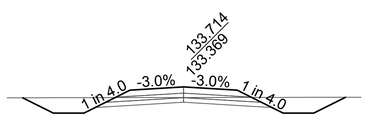

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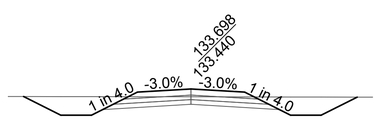

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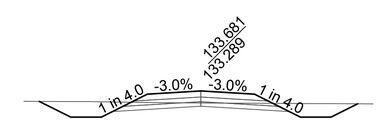

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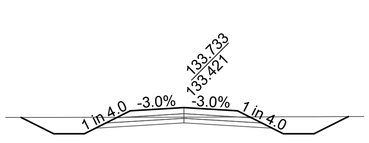

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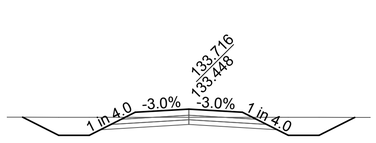

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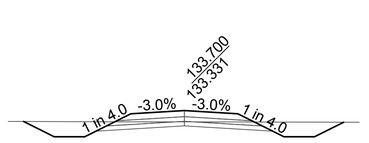

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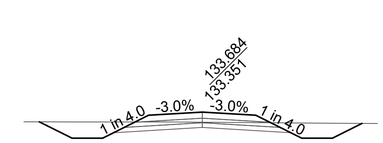

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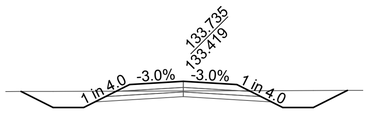

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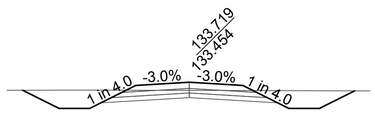

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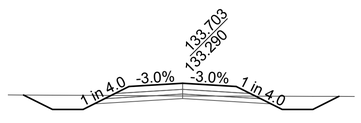

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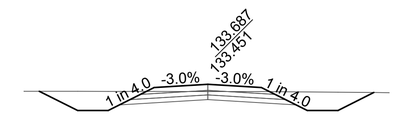

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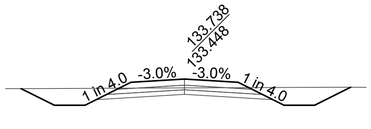

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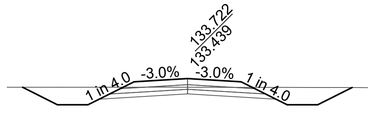
Ch 6950.000



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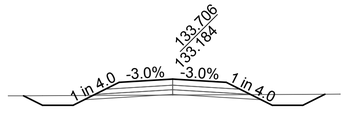

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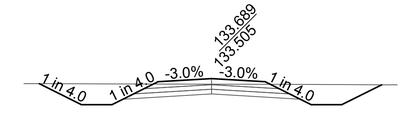


R.L. 131.300

Ch 7850.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Cross Sections 07

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C55

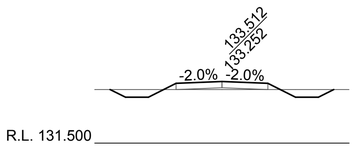
Sheet: 55 of 76

Revision: 1

0 100mm 200mm 300mm

A1 SHEET

Ch 8050.000



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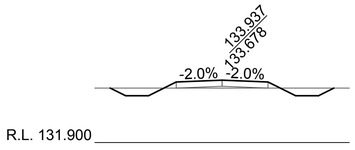

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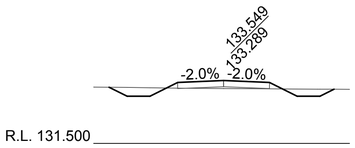

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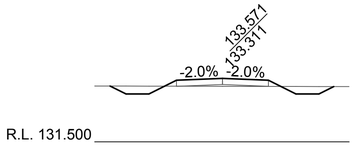

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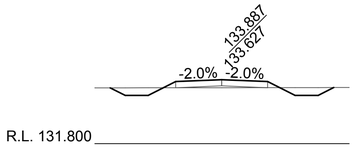

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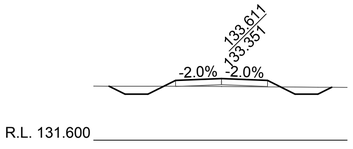

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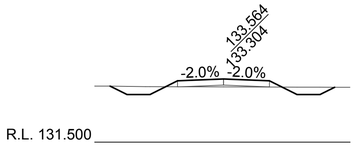
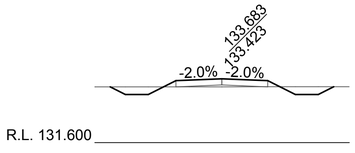
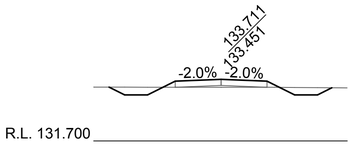


Ch 8300.000



Ch 8700.000



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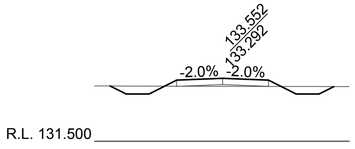

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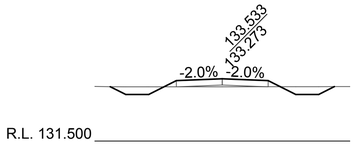
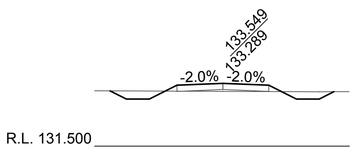


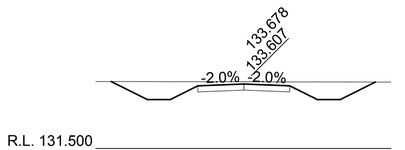
Ch 8600.000

Ch 7850.000



Ch 8200.000

Ch 8550.000



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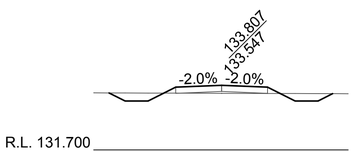
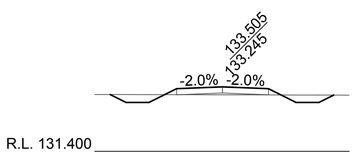
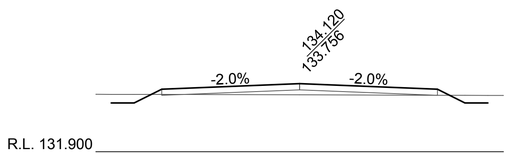


Ch 7800.000

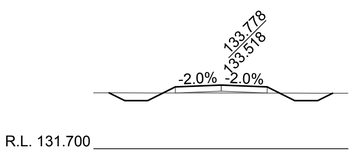
Ch 8150.000



Ch 8500.000

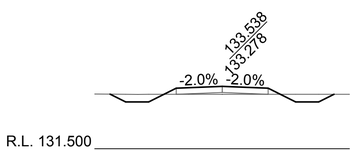


Ch 8920.000



Scales: H 1 in200V 1 in100

Ch 7750.000



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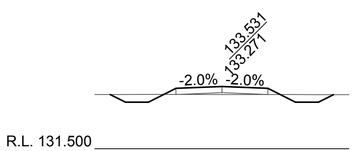
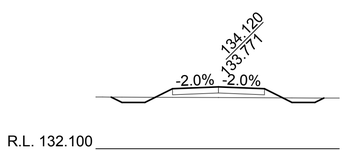


Ch 8450.000



Ch 8900.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Access Road Cross Sections 08

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

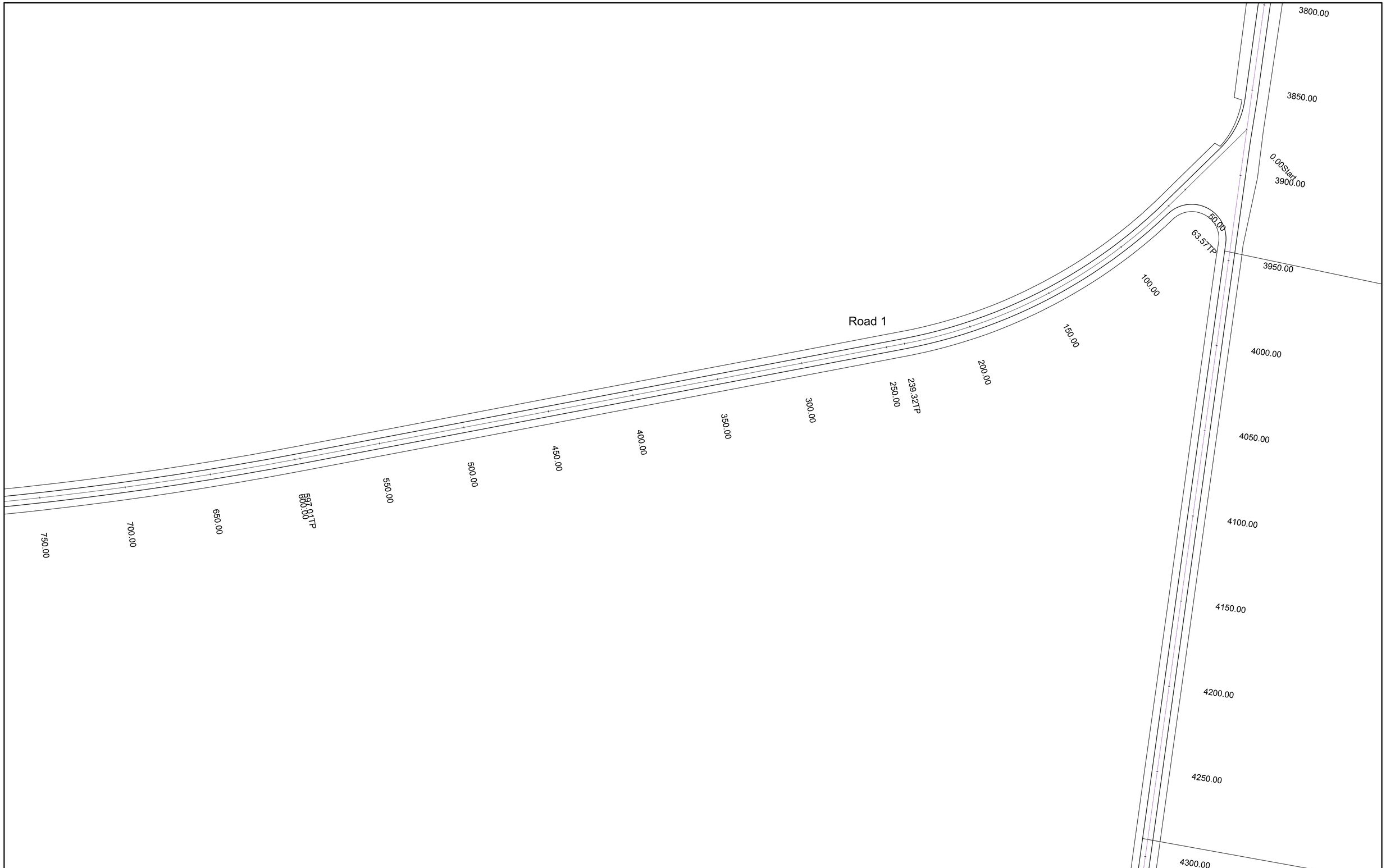
Dwg. No.: C56

Sheet: 56 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 1 Plan 01

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C57

Sheet
57 of 76

Revision
1

A1 SHEET

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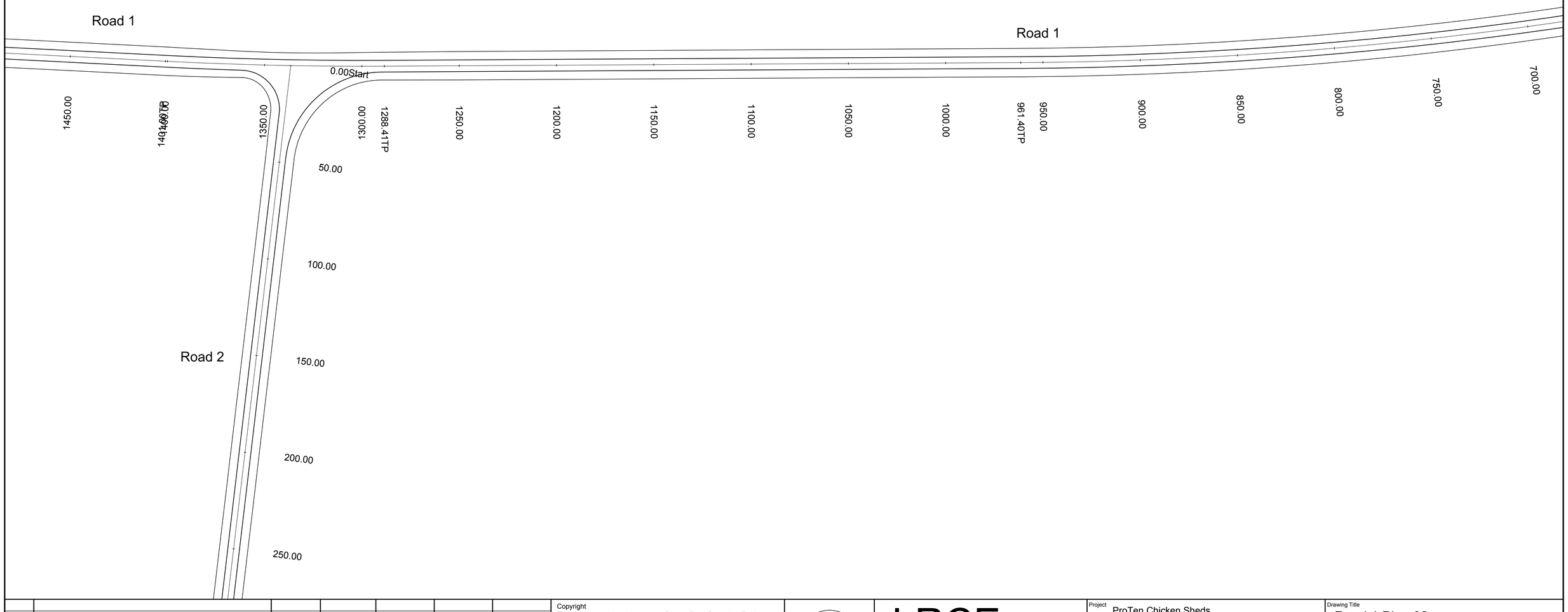

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 1 Plan 02

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

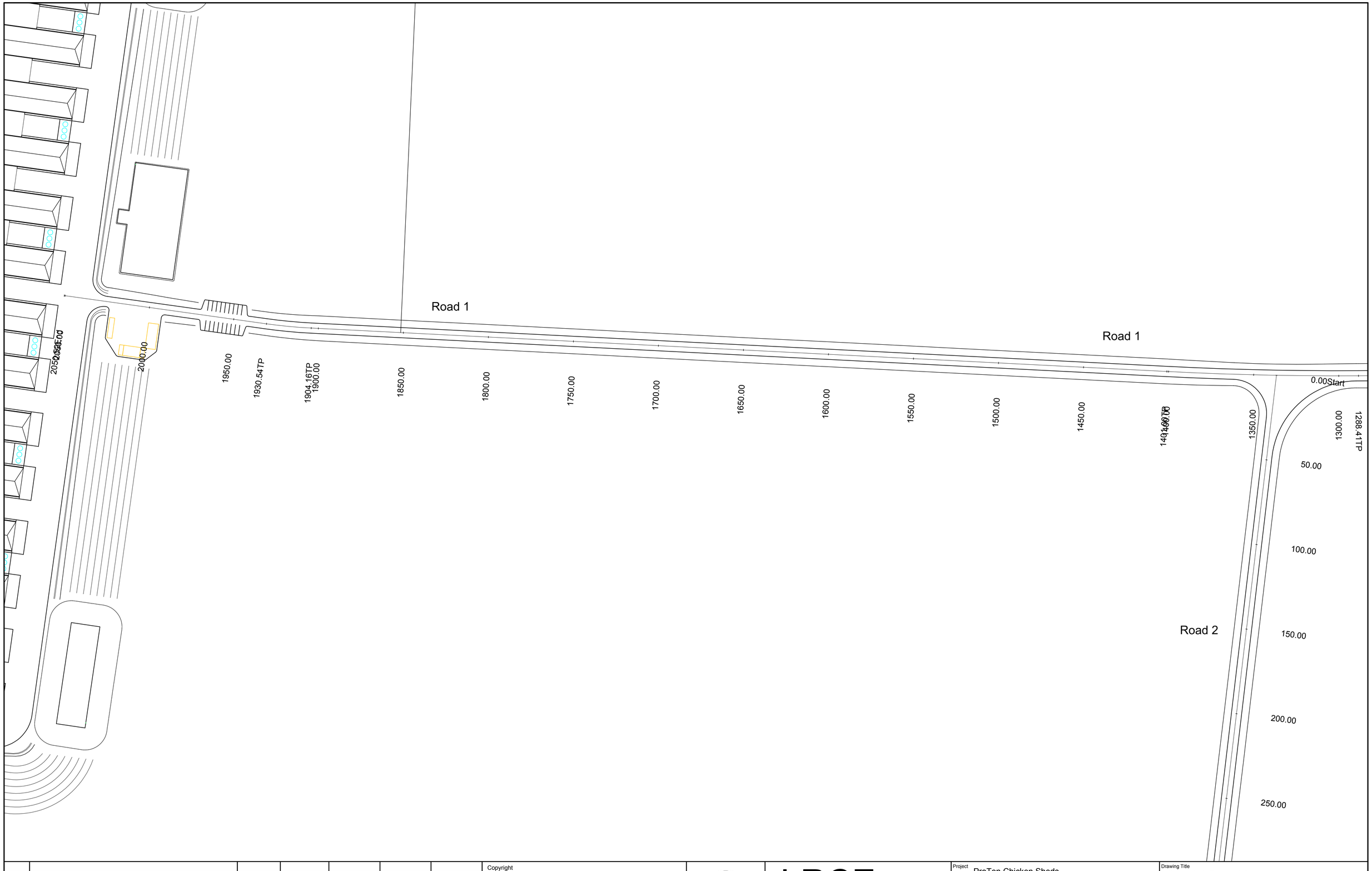
Dwg. No.
C58

Sheet
58 of 76

Revision
1

0 100mm 200mm 300mm

A1 SHEET



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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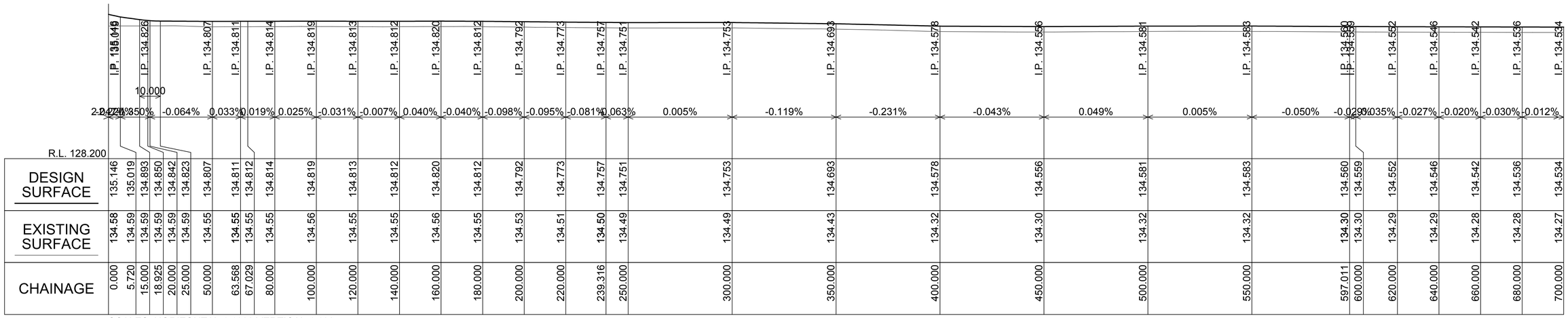
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

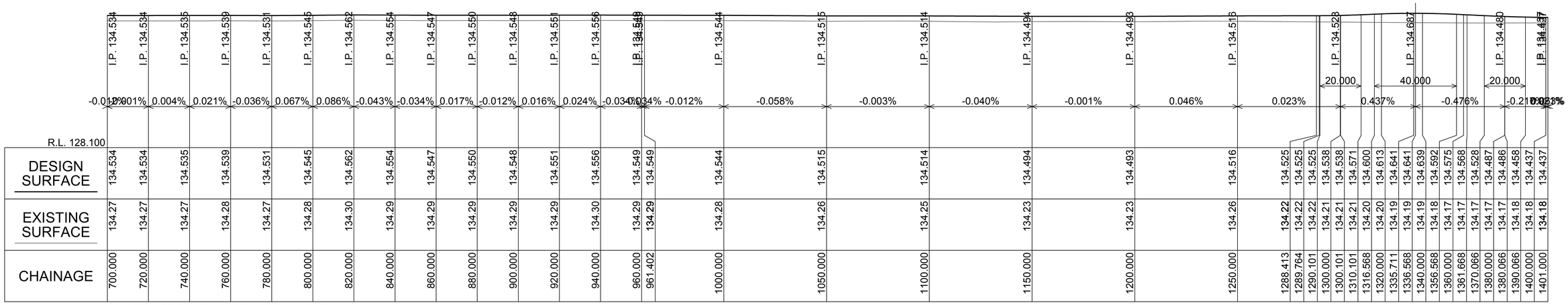
Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Road 1 Plan 03
Client	ProTen
Scales	1:1000
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C59
Sheet	59 of 76
Revision	1

0 100mm 200mm 300mm A1 SHEET



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 1



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 1

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Road 1 Long Sections 01

Scales: 1:1000

Client Project No.

Project Number: 15W013

Dwg. No.: C60

Sheet: 60 or 76

Revision: 1

A1 SHEET

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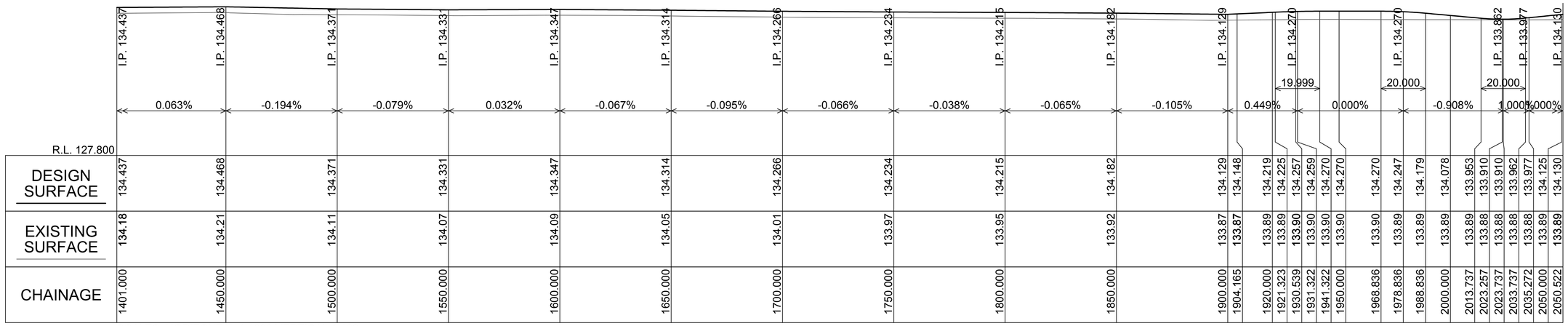

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 1

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 1 Long Sections 02

Client: ProTen

Architect / Project Manager

Scales: 1:1000

Client Project No.

Project Number: 15W013

Dwg. No.: C61

Sheet: 61 or 76

Revision: 1

A1 SHEET

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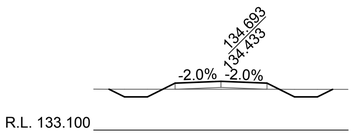

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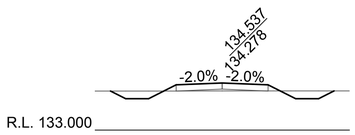

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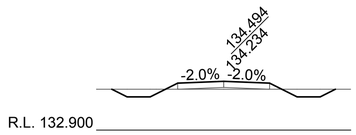

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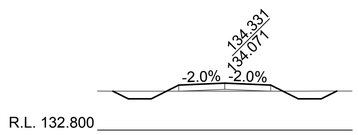

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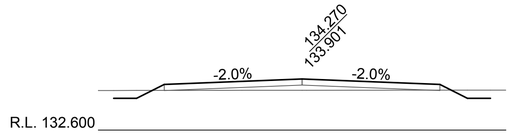

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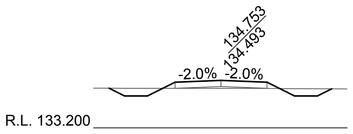

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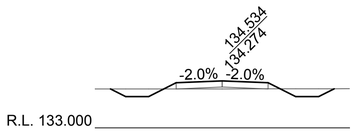

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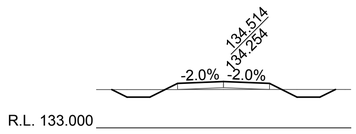

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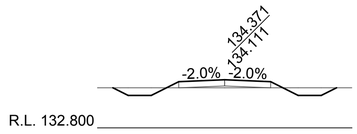

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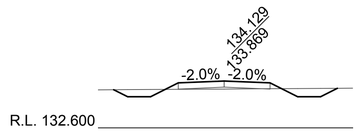

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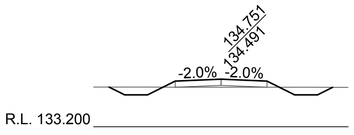

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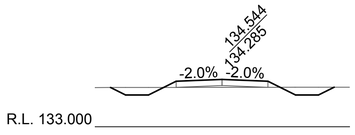
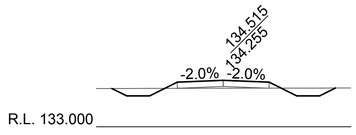


Ch 650.000



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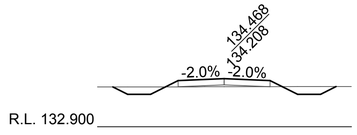

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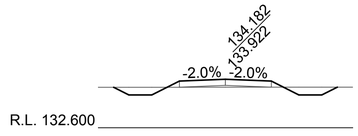
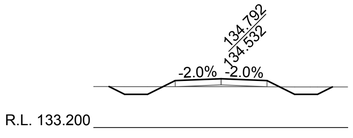
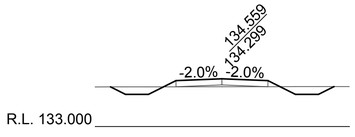


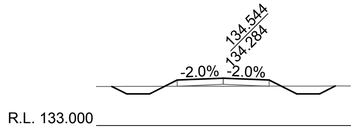
Ch 1850.000



Ch 200.000



Ch 600.000



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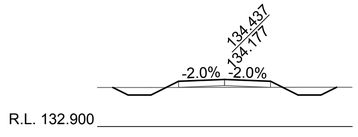

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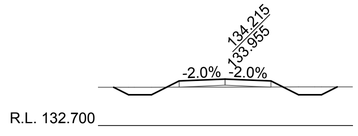

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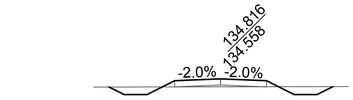
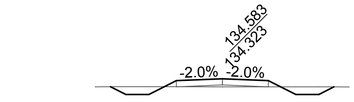


Ch 150.000



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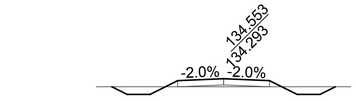
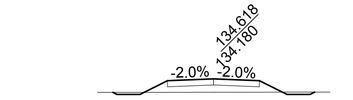
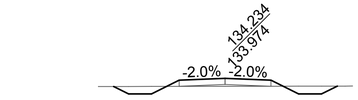


Ch 950.000



Ch 1350.000



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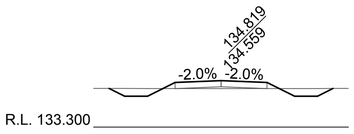

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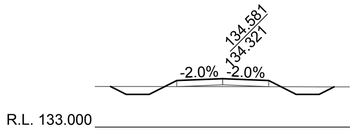

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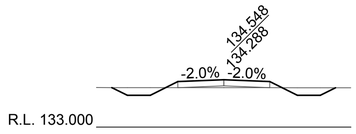

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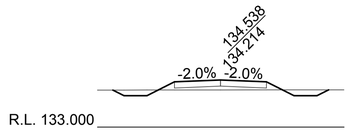

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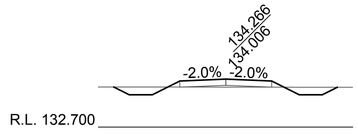

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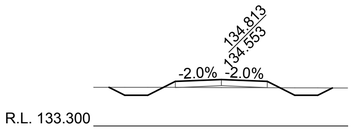

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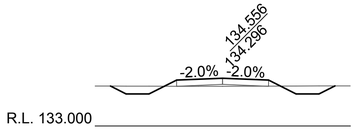

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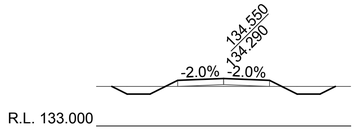

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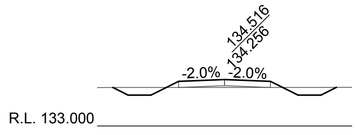

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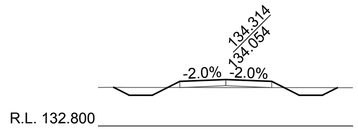
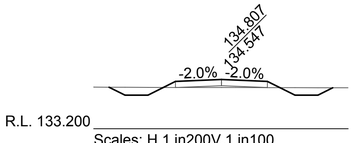
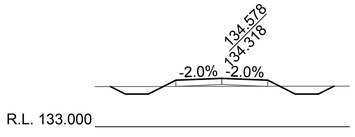


Ch 1650.000



Scales: H 1 in200V 1 in100

Ch 50.000



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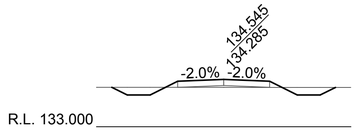

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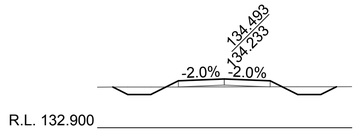

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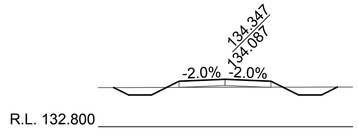

Ch 1600.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Road 1 Cross Sections 01

Scales: 1:1000

Client Project No.

Project Number: 15W013

Dwg. No.: C62

Sheet: 62 of 76

Revision: 1

A1 SHEET

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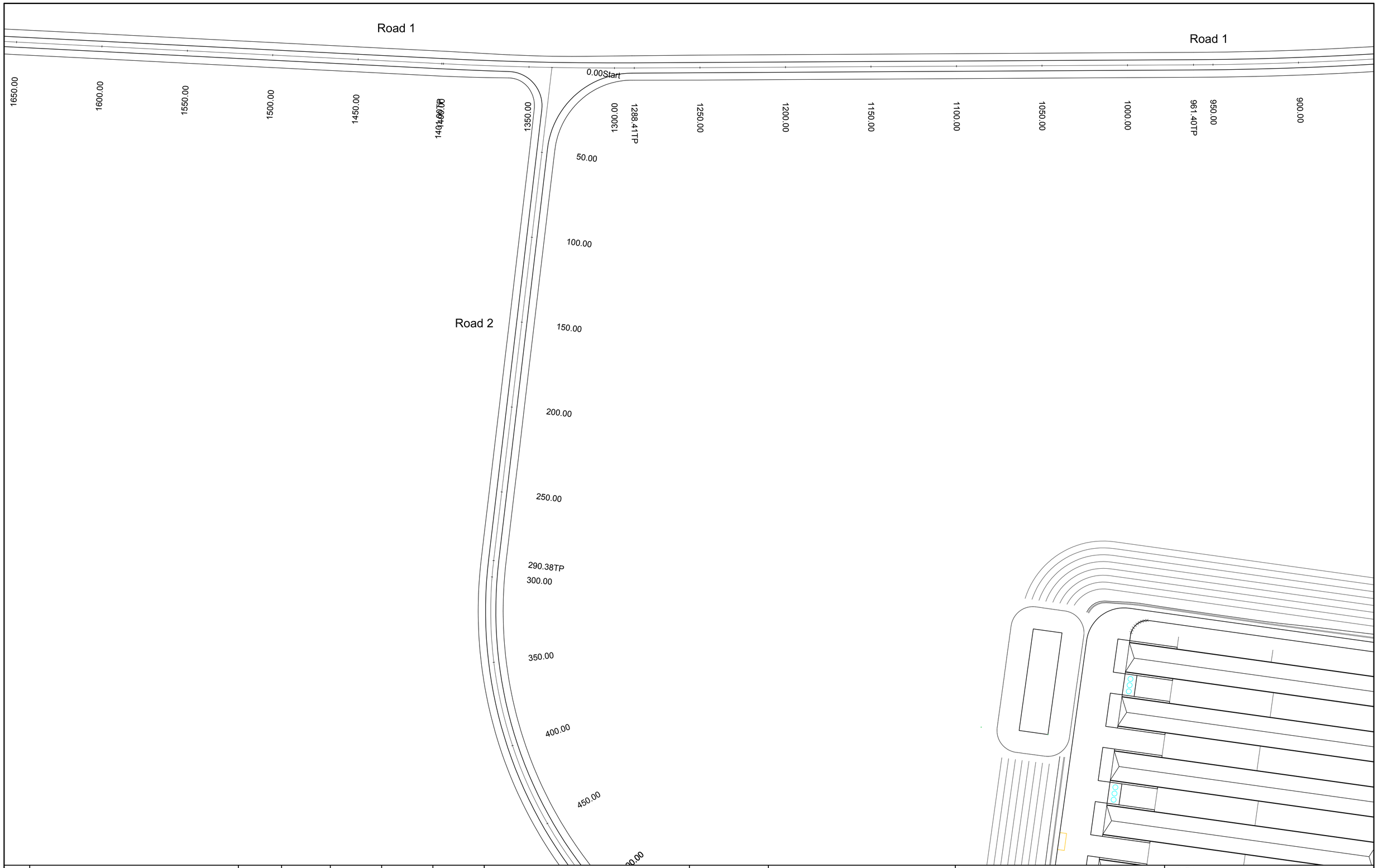

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 2 Plan 01

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C63

Sheet
63 of 76

Revision
1

A1 SHEET

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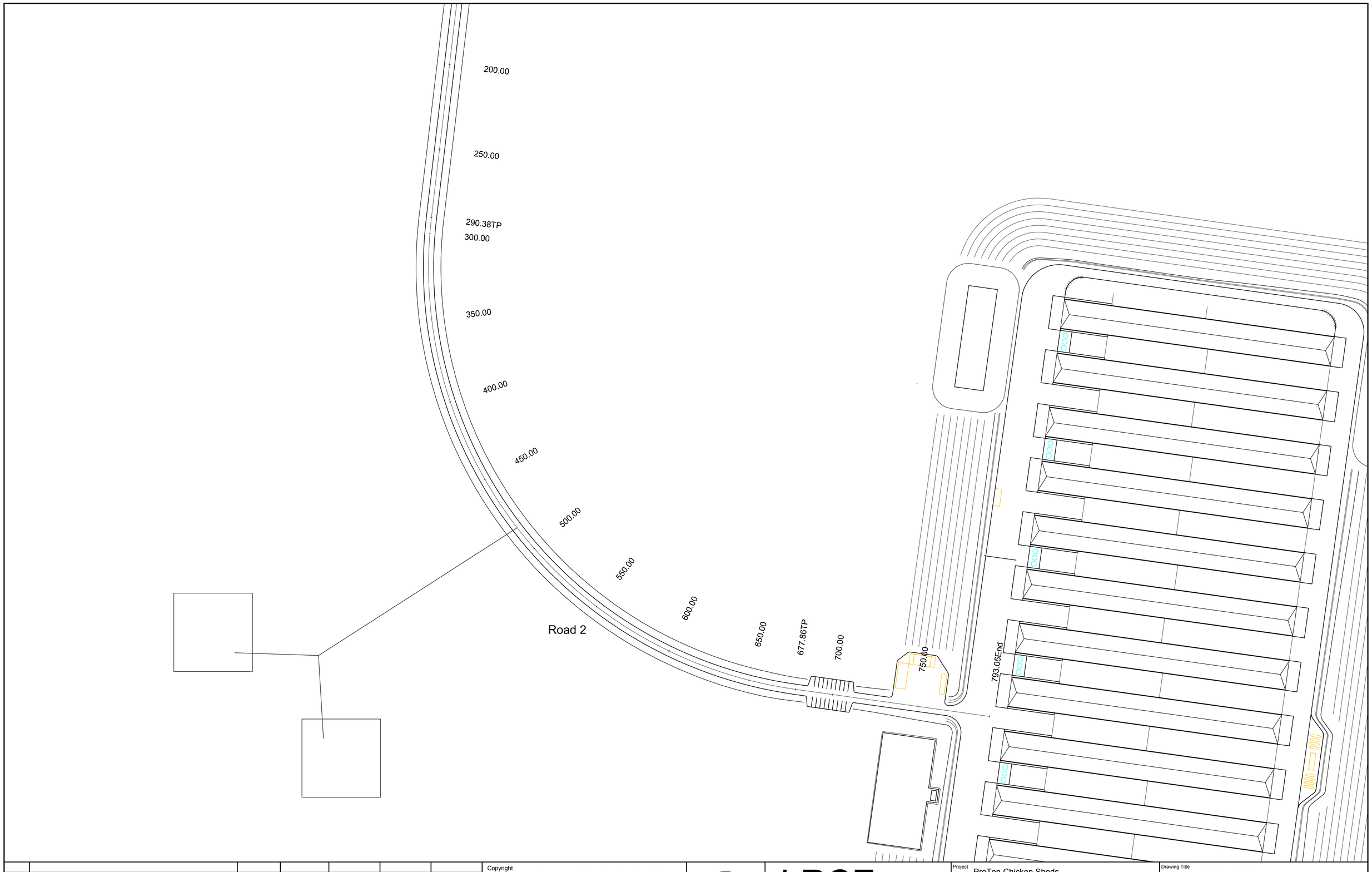

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 2 Plan 02

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C64

Sheet
64 of 76

Revision
1

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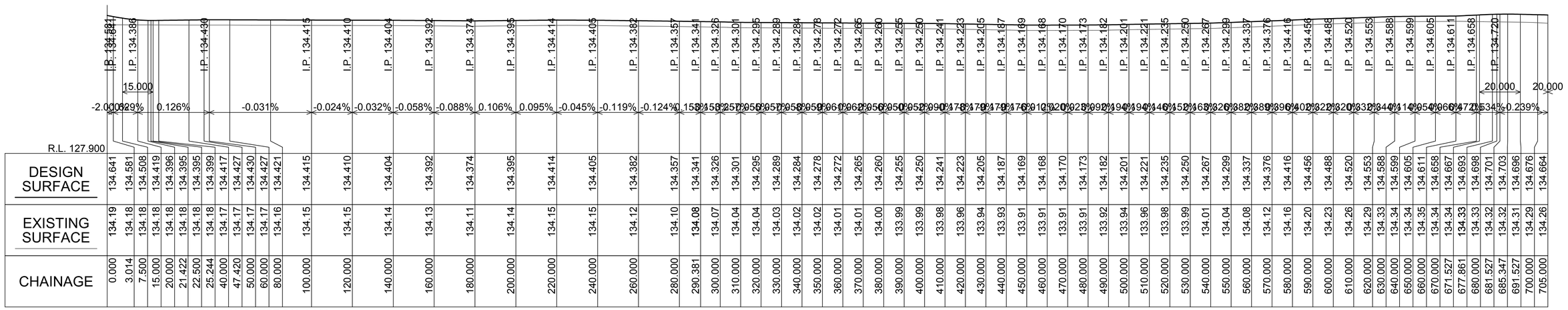
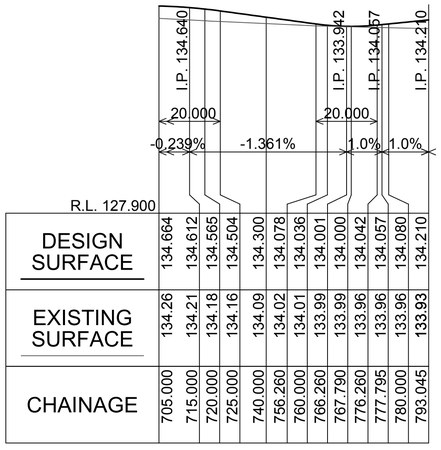
A1 SHEET



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 2



Road 2

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH : (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 2 Long Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

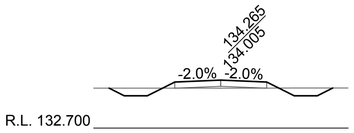
Dwg. No.: C65

Sheet: 65 of 76

Revision: 1

0 100mm 200mm 300mm

A1 SHEET



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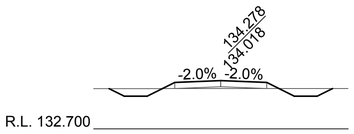

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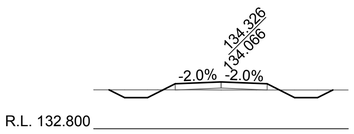

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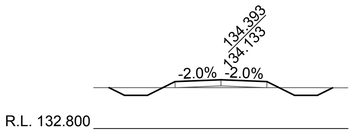

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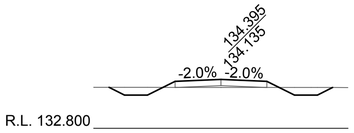

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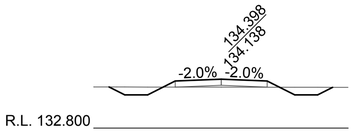

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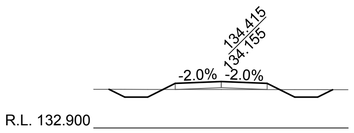

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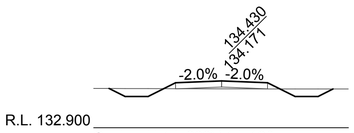

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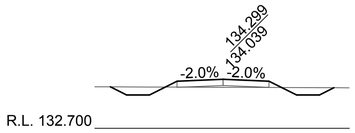

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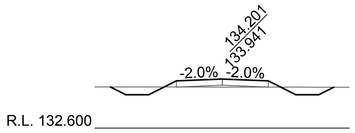

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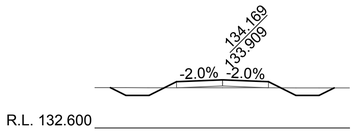

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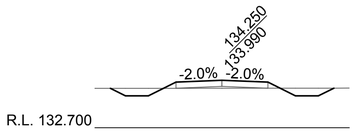

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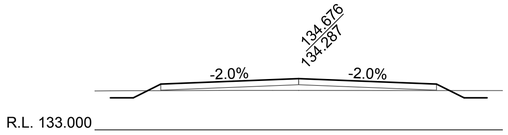

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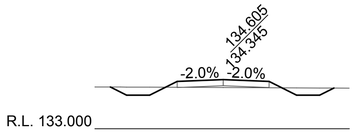

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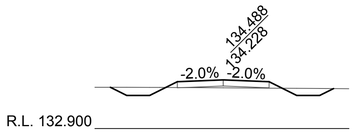

Ch 600.000

Scales: H 1 in200V 1 in100

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 2 Cross Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C66

Sheet: 66 of 76

Revision: 1

A1 SHEET

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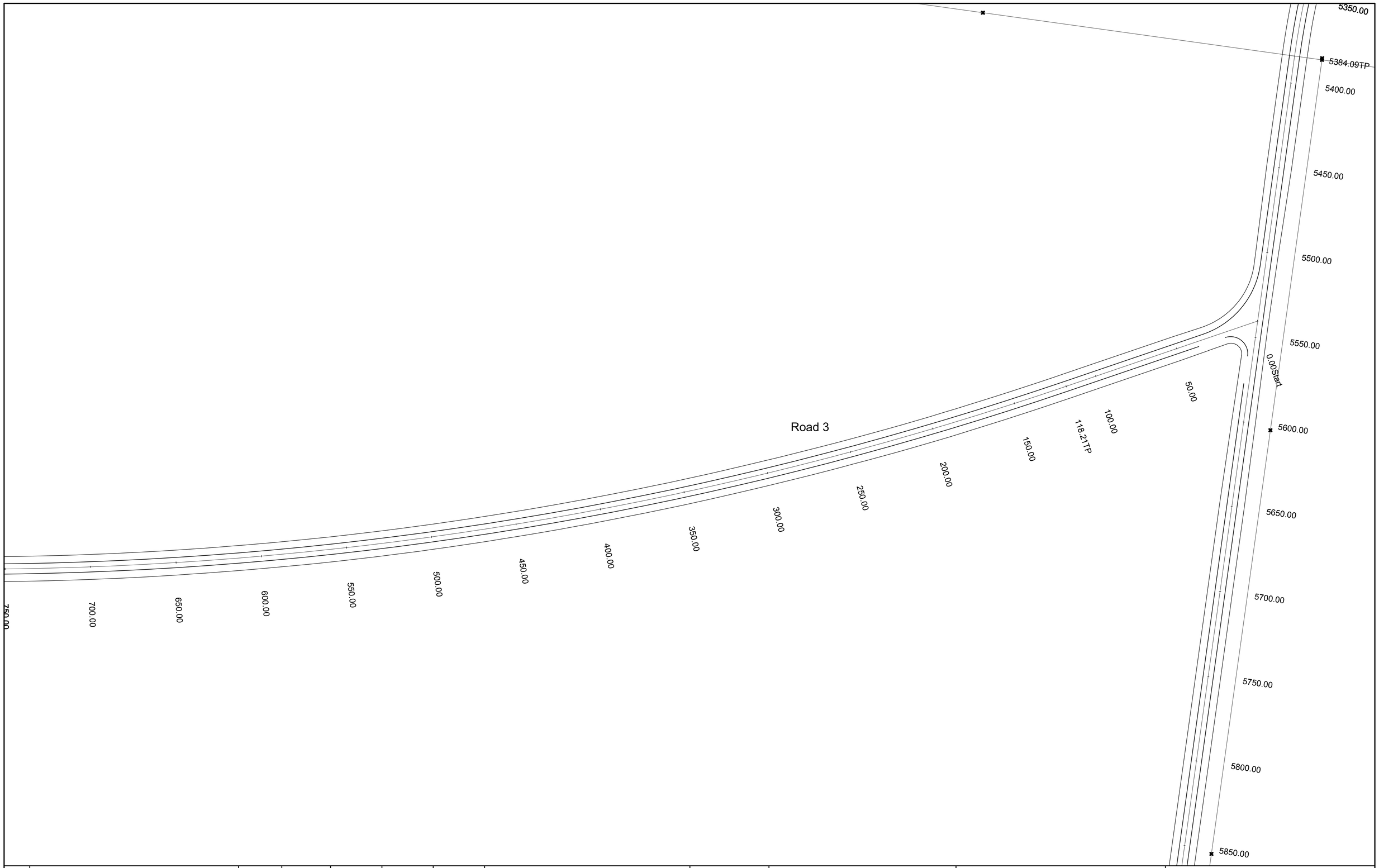

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project	ProTen Chicken Sheds ProTen Narrandera Lot 42, Sturt Highway Euroley NSW 2700
Drawing Title	Road 3 Plan 01
Client	ProTen
Scales	1:1000
Client Project No.	
Architect / Project Manager	
Project Number	15W013
Dwg. No.	C67
Sheet	67 of 76
Revision	1

A1 SHEET

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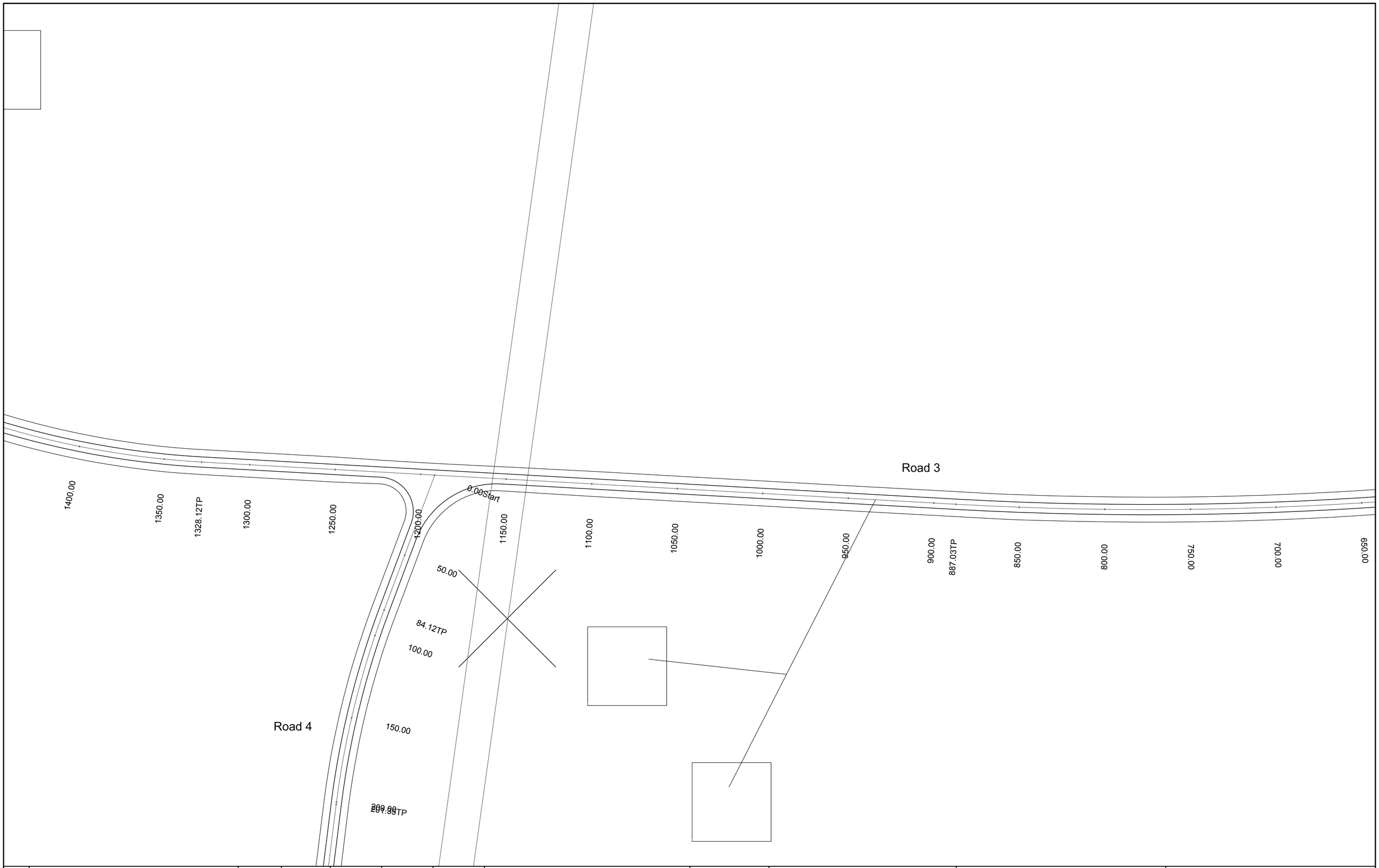

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7,
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 3 Plan 02

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C68

Sheet: 68 of 76

Revision: 1

A1 SHEET

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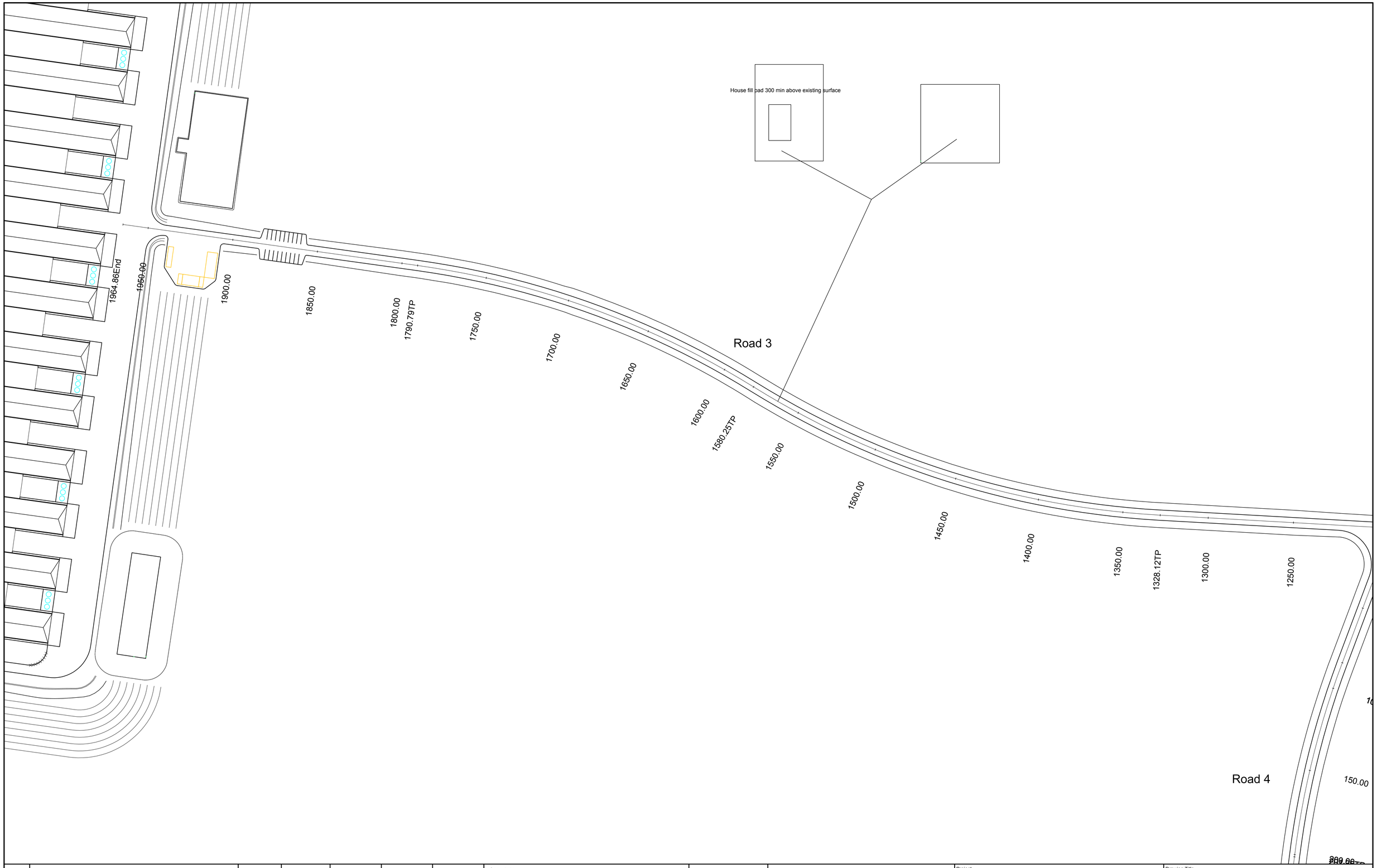

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH : (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 3 Plan 03

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

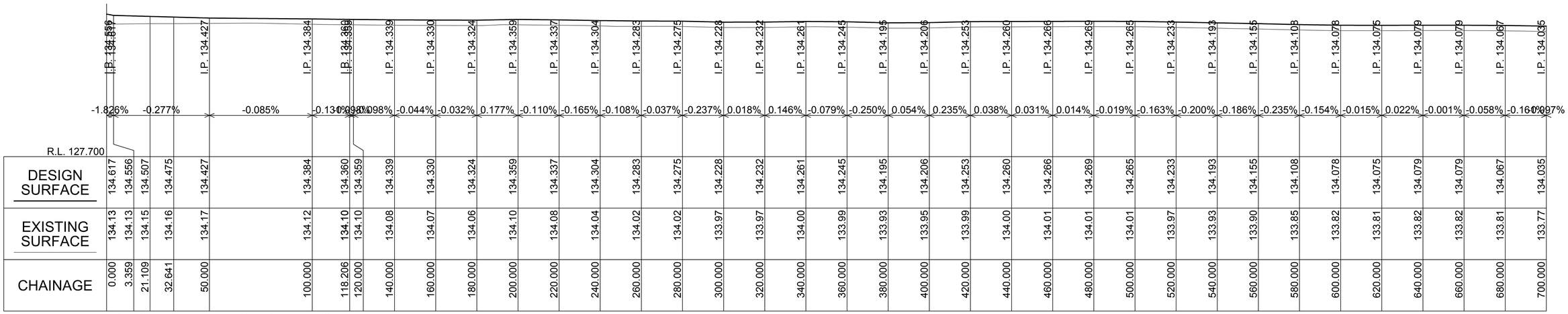
Dwg. No.
C69

Sheet
69 of 76

Revision
1

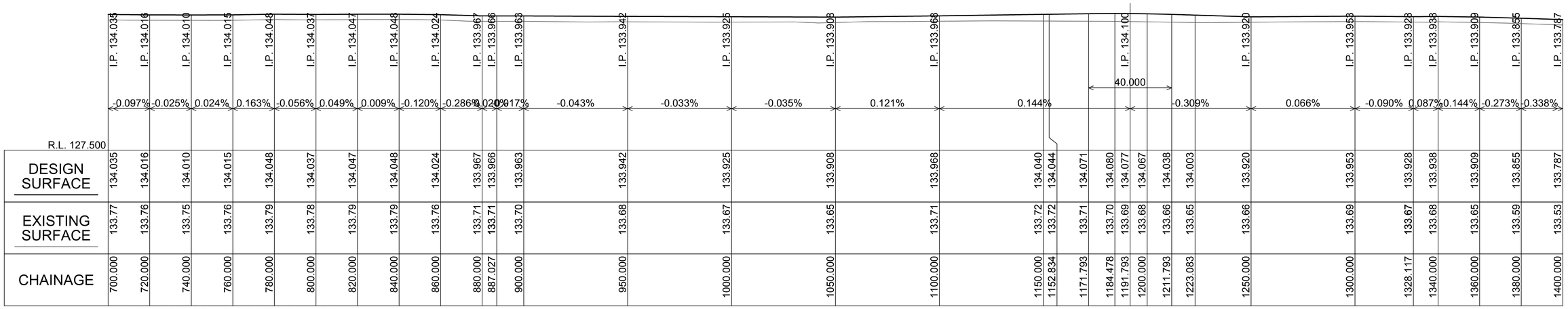
0 100mm 200mm 300mm

A1 SHEET



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 3



SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 3

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
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LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 3 Long Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C70

Sheet: 70 of 76

Revision: 1

A1 SHEET

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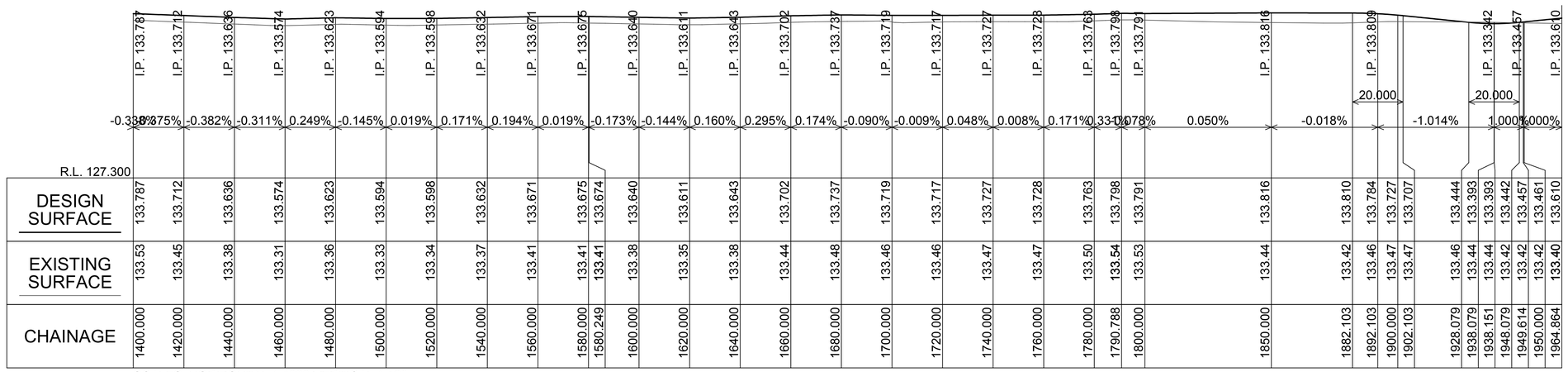

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 3

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
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WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
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Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 3 Long Sections 02

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager

Project Number: 15W013

Dwg. No.: C71

Sheet: 71 or 76

Revision: 1

A1 SHEET

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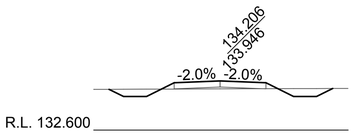

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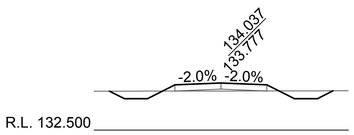

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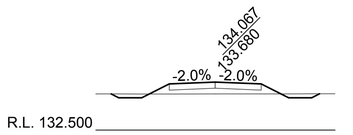

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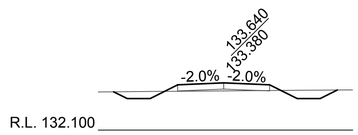

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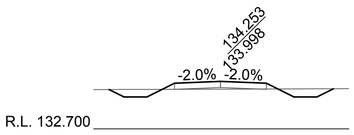

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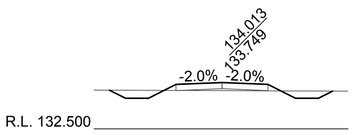

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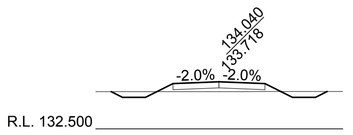

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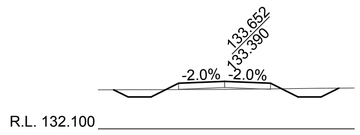

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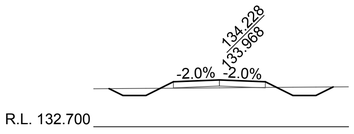

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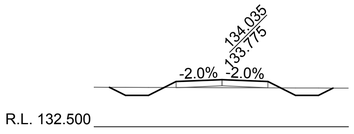

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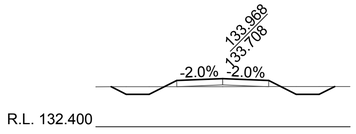

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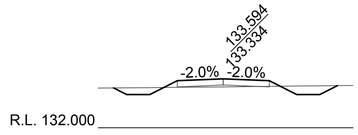

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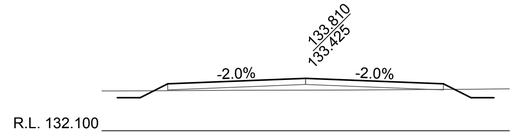

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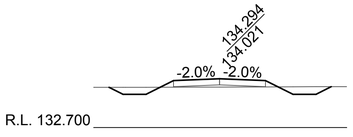

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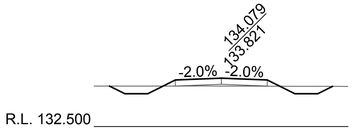

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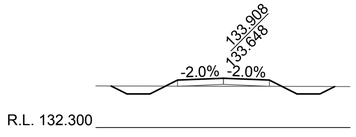

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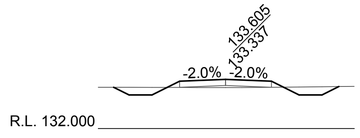

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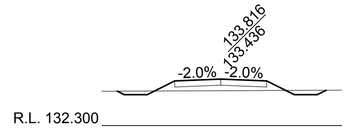

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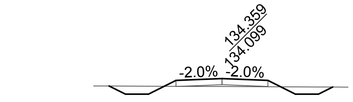

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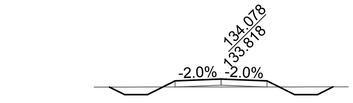

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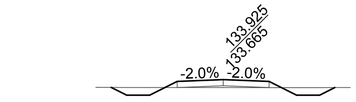

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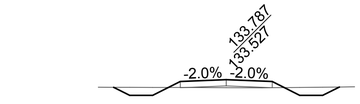

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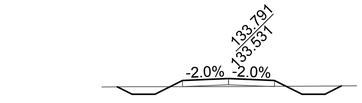

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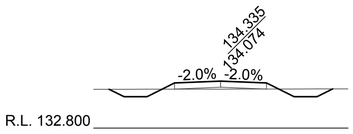

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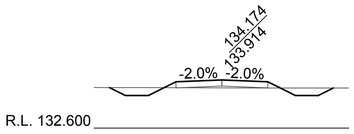

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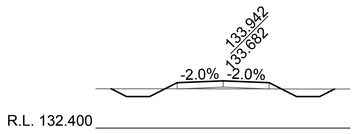

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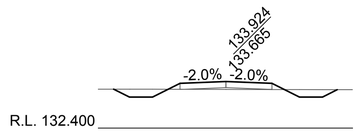

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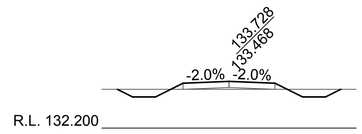

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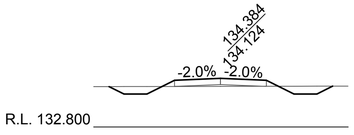

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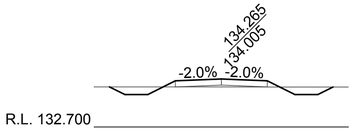

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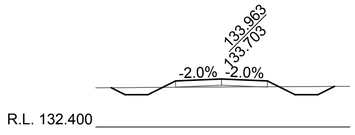

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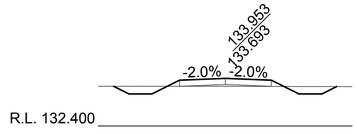

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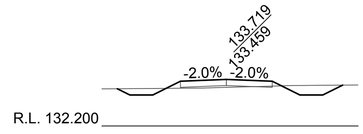

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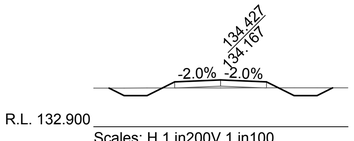

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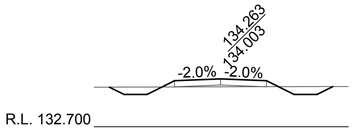
Ch 50.000



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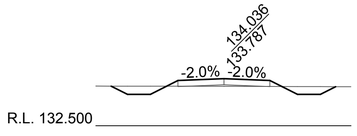

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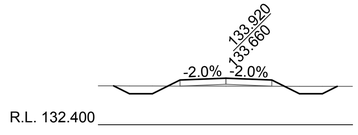

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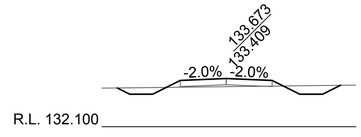

Ch 1650.000

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1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

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EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client: ProTen

Architect / Project Manager

Drawing Title: Road 3 Cross Sections 01

Scales: 1:1000

Client Project No.

Project Number: 15W013

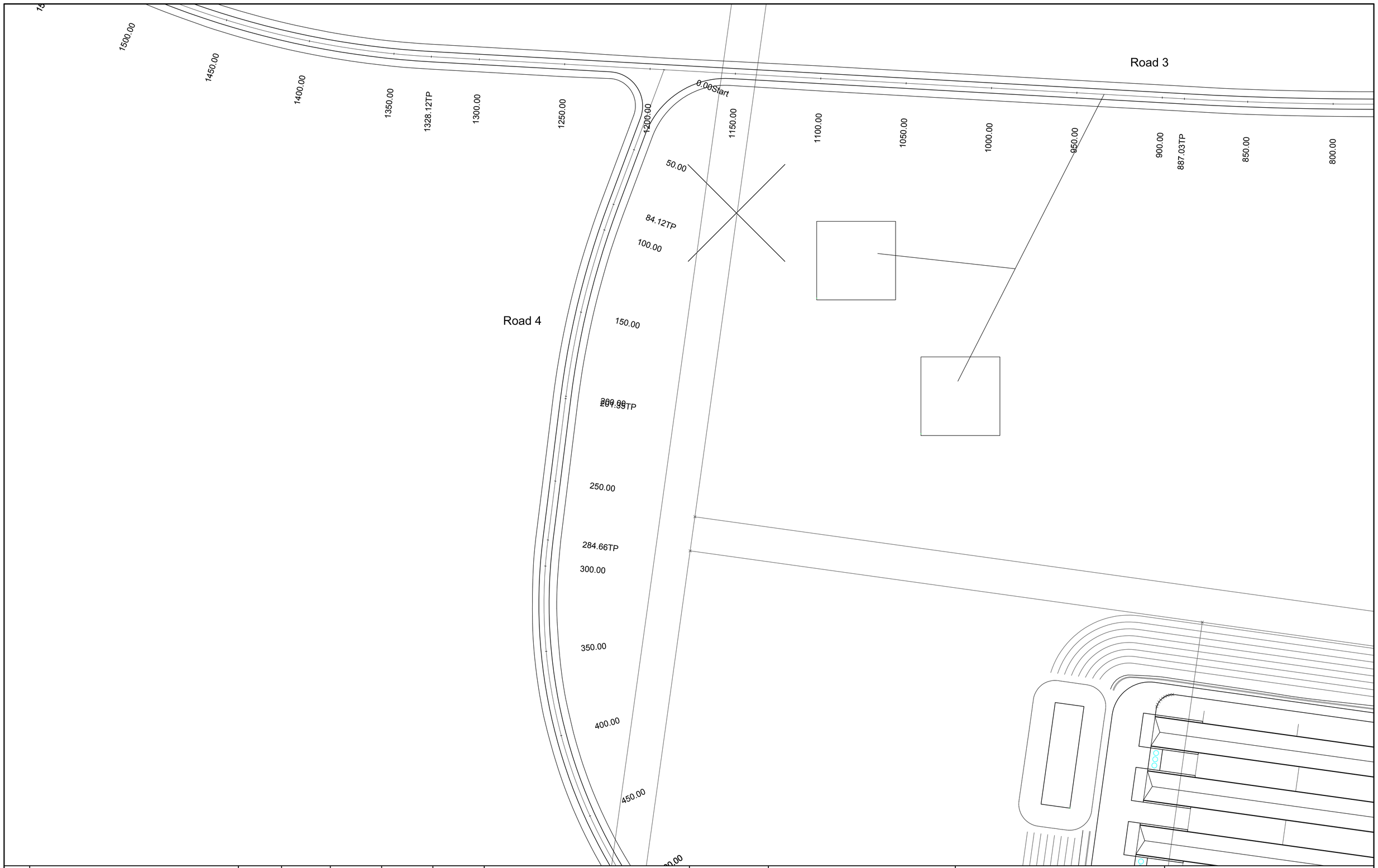
Dwg. No.: C72

Sheet: 72 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm



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WAGGA WAGGA NSW 2650
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FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title
Road 4 Plan 01

Client
ProTen

Scales
1:1000

Client Project No.

Architect / Project Manager

Project Number
15W013

Dwg. No.
C73

Sheet
73 of 76

Revision
1

A1 SHEET

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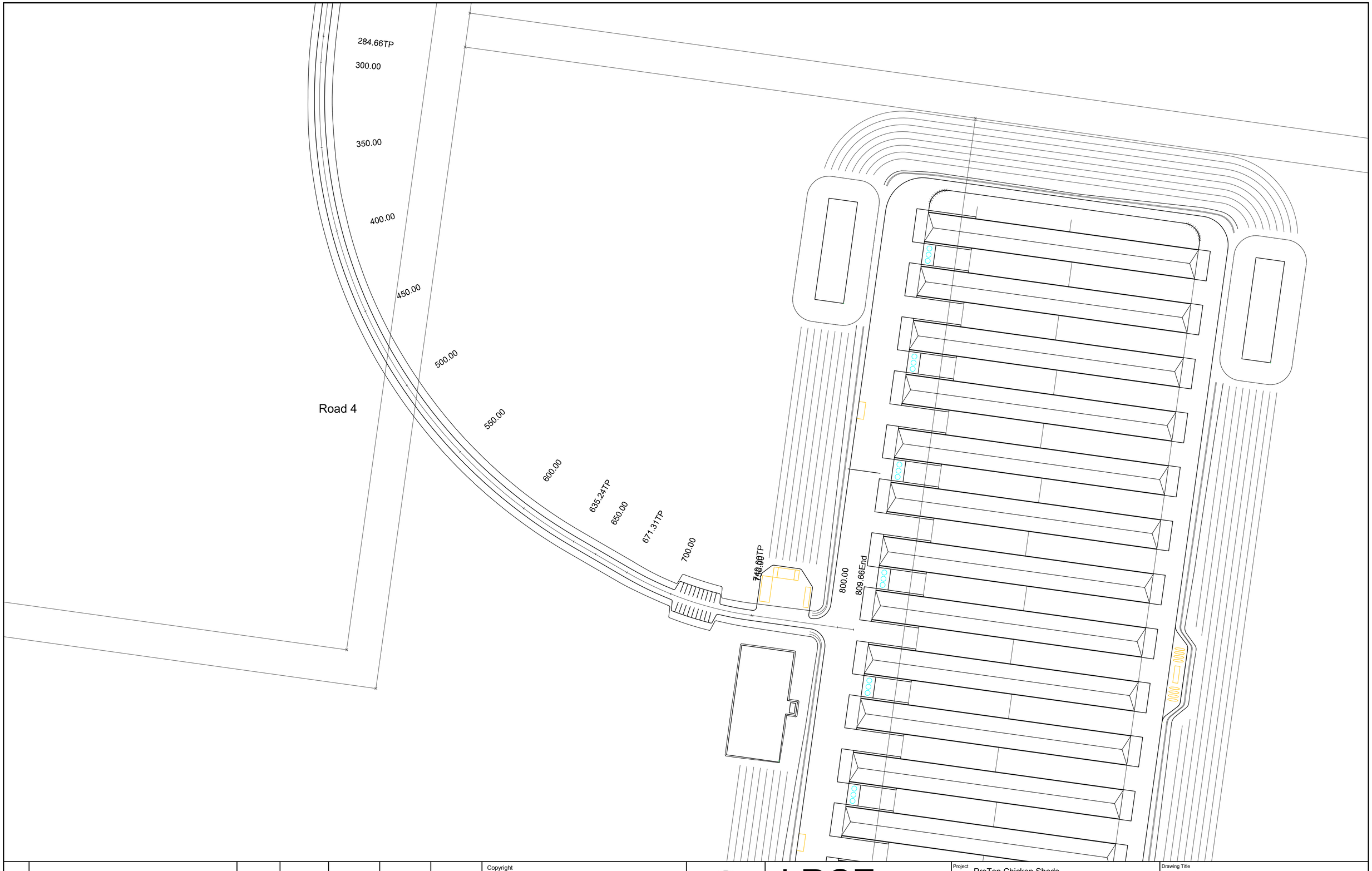

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Project
ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Client
ProTen

Architect / Project Manager

Drawing Title
Road 4 Plan 02

Scales
1:1000

Client Project No.

Project Number
15W013

Dwg. No.
C74

Sheet
74 of 76

Revision
1

A1 SHEET

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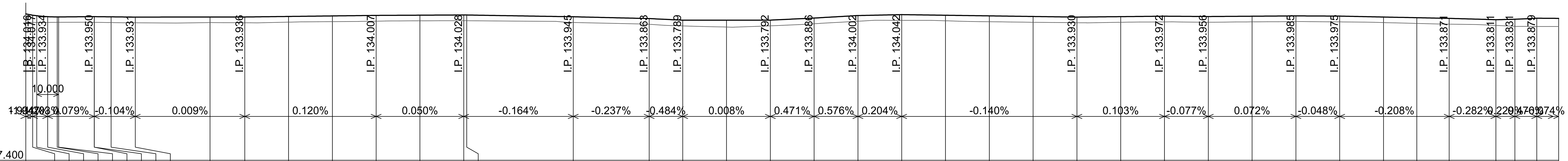

R.L. 127.400

CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
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10.000	133.950	133.69
14.384	133.937	133.69
15.000	133.938	133.69
31.281	133.950	133.69
31.291	133.950	133.69
38.957	133.942	133.68
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120.000	133.960	133.70
140.000	133.984	133.72
160.000	134.007	133.75
180.000	134.018	133.76
200.000	134.028	133.77
201.353	134.025	133.76
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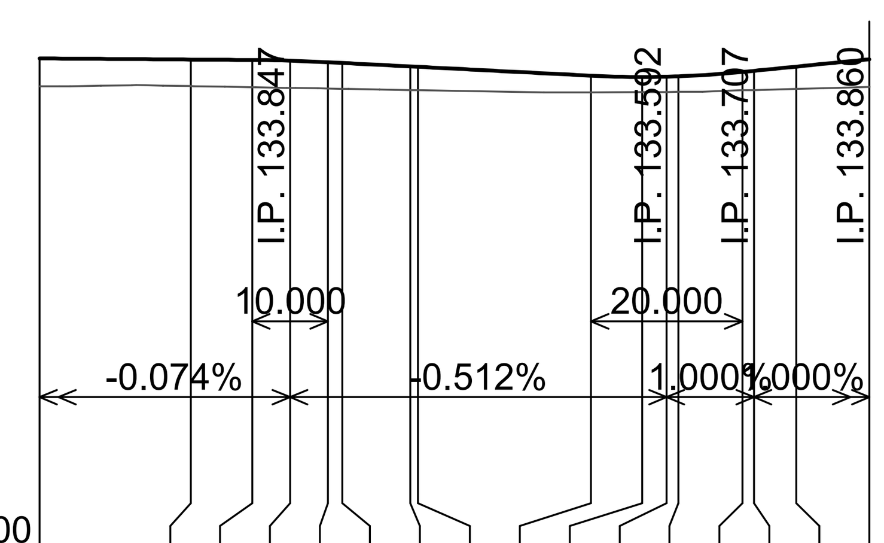
300.000	133.789	133.53
320.000	133.791	133.48
340.000	133.792	133.53
360.000	133.886	133.63
380.000	134.002	133.74
400.000	134.042	133.78
420.000	134.014	133.76
440.000	133.986	133.72
460.000	133.958	133.69
480.000	133.930	133.67
500.000	133.951	133.69
520.000	133.972	133.71
540.000	133.956	133.69
560.000	133.971	133.71
580.000	133.985	133.72
600.000	133.975	133.71
620.000	133.934	133.68
635.236	133.902	133.64
650.000	133.871	133.61
671.313	133.811	133.55
680.000	133.831	133.51
690.000	133.879	133.50
700.000	133.871	133.50

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 4



R.L. 127.400

CHAINAGE	DESIGN SURFACE	EXISTING SURFACE
700.000	133.871	133.50
720.000	133.857	133.51
728.110	133.850	133.49
733.110	133.841	133.48
738.110	133.821	133.47
740.000	133.812	133.47
749.001	133.765	133.45
750.000	133.760	133.45
772.874	133.643	133.42
779.643	133.626	133.43
782.874	133.630	133.43
784.409	133.635	133.43
792.874	133.692	133.45
794.408	133.707	133.45
800.000	133.763	133.47
809.658	133.860	133.49

SCALES: HORIZONTAL 1:1000 VERTICAL 1:100

Road 4

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds, ProTen Narrandera, Lot 42, Sturt Highway, Euroley NSW 2700

Drawing Title: Road 4 Long Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

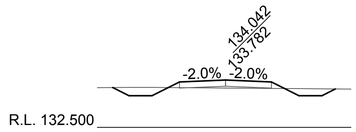
Dwg. No.: C75

Sheet: 75 of 76

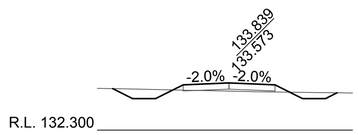
Revision: 1

0 100mm 200mm 300mm

A1 SHEET



Ch 400.000



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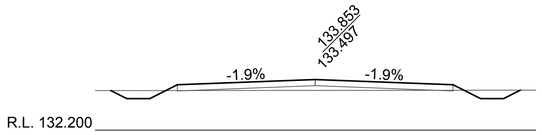

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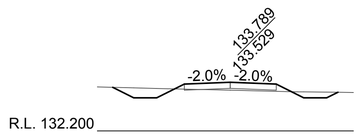

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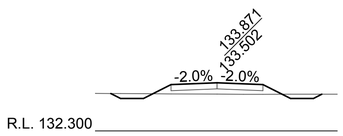

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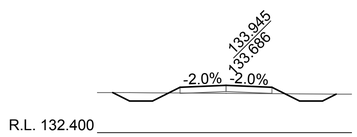

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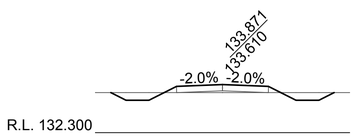

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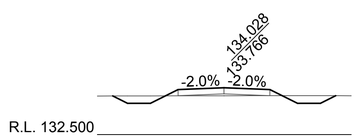

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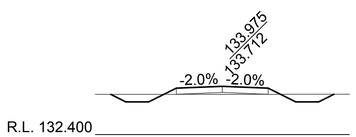

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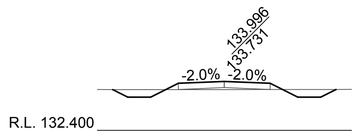

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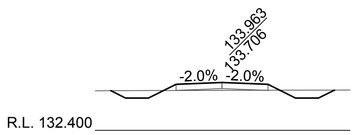
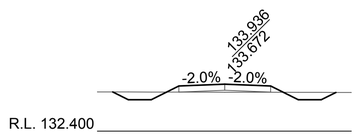
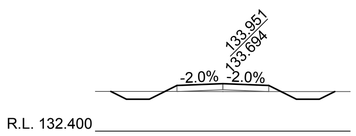


Ch 550.000



Ch 100.000



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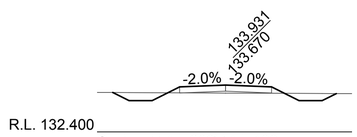
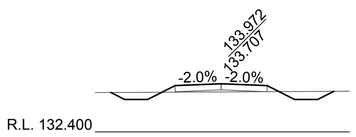


Scales: H 1 in200V 1 in100

Ch 50.000



Ch 450.000

Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	2.06.2015	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 831 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lancevryan@gmail.com

Project: ProTen Chicken Sheds
ProTen Narrandera
Lot 42, Sturt Highway
Euroley NSW 2700

Drawing Title: Road 4 Cross Sections 01

Client: ProTen

Scales: 1:1000

Client Project No.:

Architect / Project Manager:

Project Number: 15W013

Dwg. No.: C76

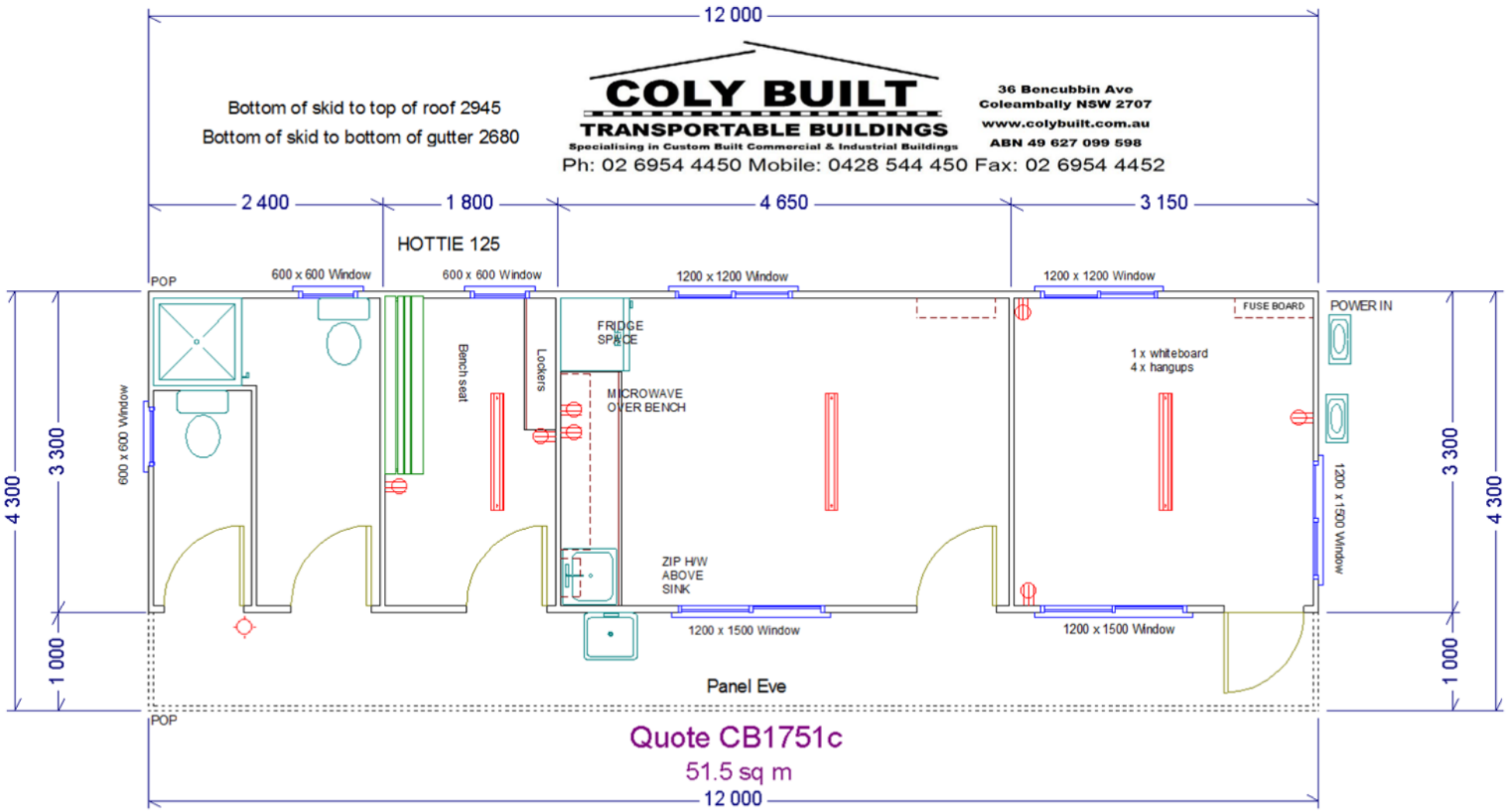
Sheet: 76 of 76

Revision: 1

A1 SHEET

0 100mm 200mm 300mm

Amenities Buildings


12 000
Bottom of skid to top of roof 2945
Bottom of skid to bottom of gutter 2680
COLY BUILT
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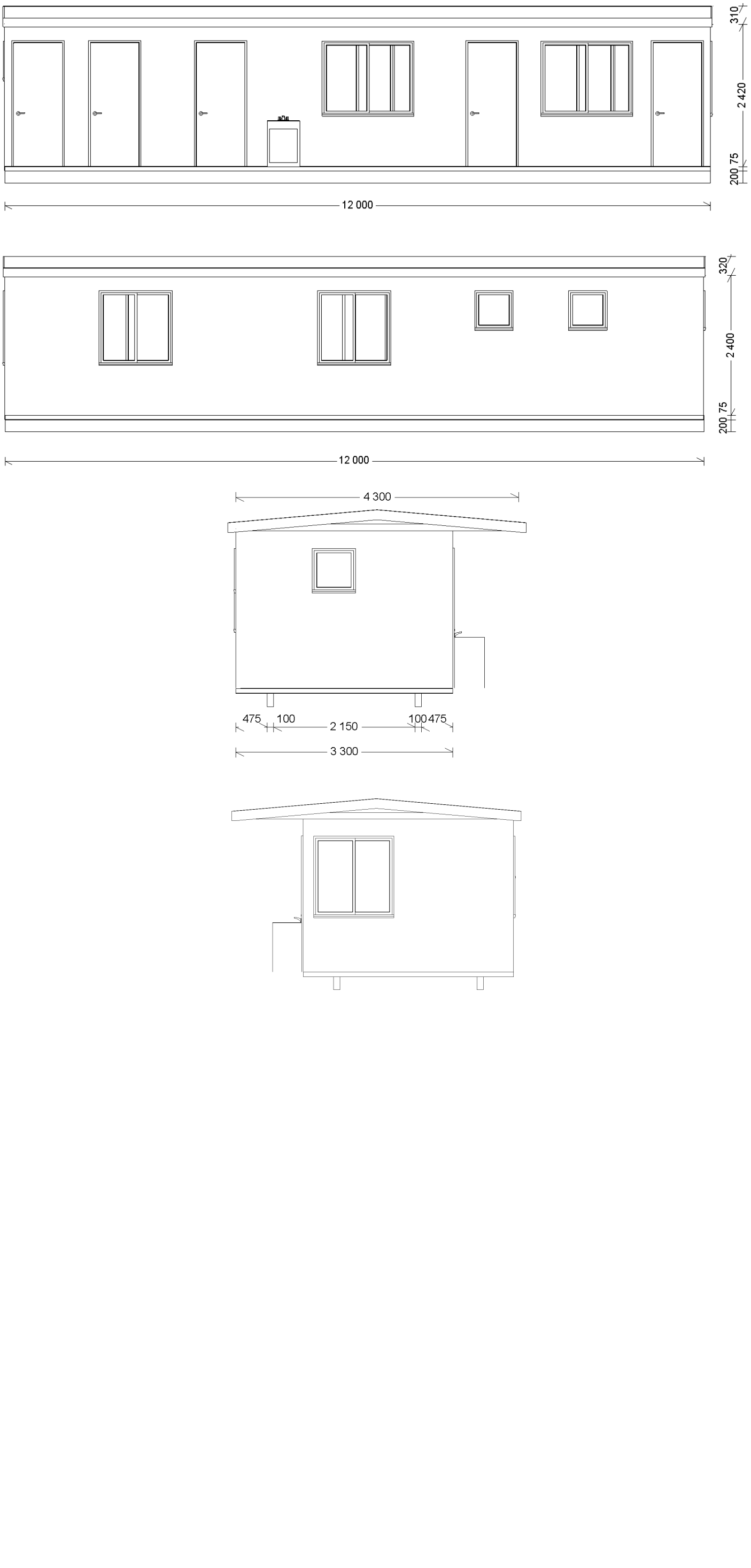
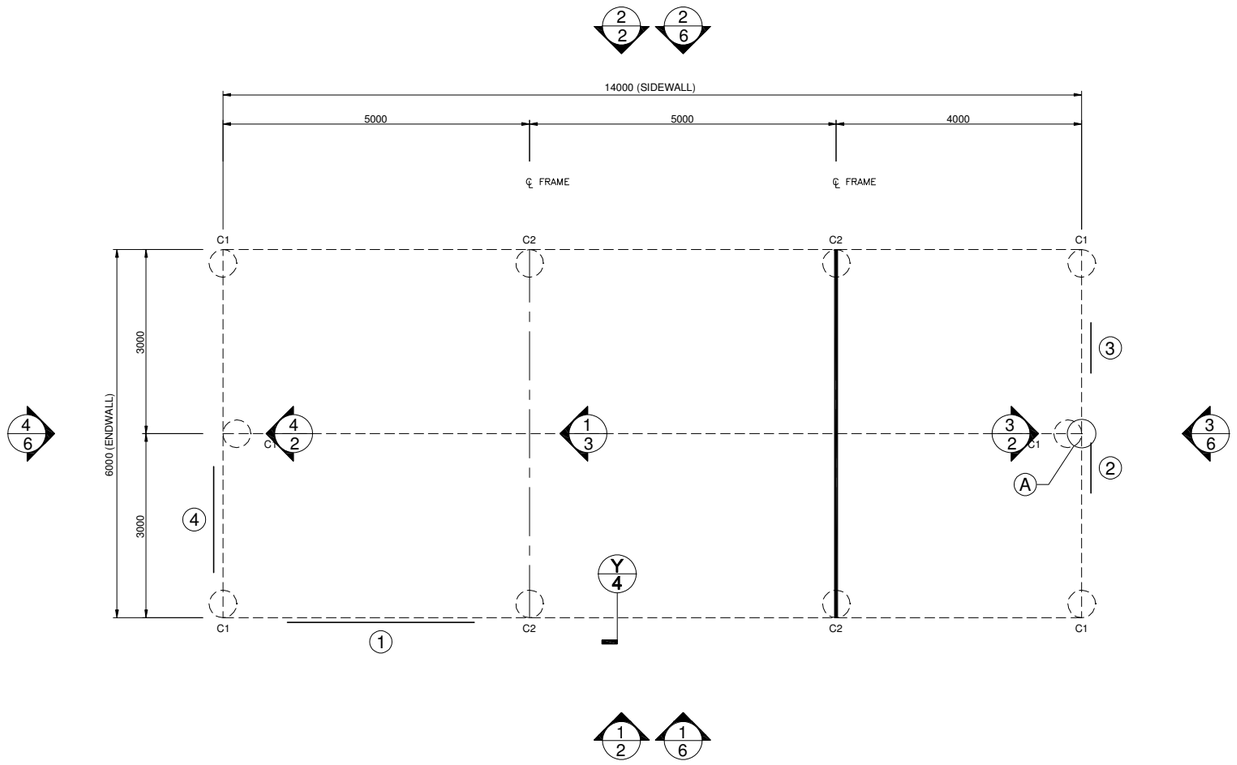
ABN 49 627 099 598
Ph: 02 6954 4450 Mobile: 0428 544 450 Fax: 02 6954 4452
2 400
1 800
4 650
3 150
HOTTIE 125
POP
600 x 600 Window
600 x 600 Window
1200 x 1200 Window
1200 x 1200 Window
FUSE BOARD
POWER IN
FRIDGE SPACE
Bench seat
Lockers
MICROWAVE OVER BENCH
1 x whiteboard
4 x hangups
600 x 600 Window
1200 x 1500 Window
ZIP H/W ABOVE SINK
1200 x 1500 Window
1200 x 1500 Window
Panel Eve
4 300
3 300
1 000
POP
Quote CB1751c
51.5 sq m
12 000

Jeanella South Farm 74 Lot 79 Merrondale Lane Goolgowi



Workshop



1/1 FOUNDATION PLAN AND MEMBER LAYOUT
SCALE: 1 = 100

FOR INTERNAL WALLS USE MULLION SPECIFICATIONS

MAIN FRAME COLUMN LEGEND

C1	C15012
C2	C15024

DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS TO BE VERIFIED ON SITE.

SHEET 1 OF 6
JOB NO. GRIF15712
DATE 3/8/2015
CHECKED TM
DRAWN FDS

STEEL BUILDING BY (CONTACT)
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR PROTEN NARRANDERA (WORK SHOP)
AT LOT 42 STURT HWY
EUROLEY

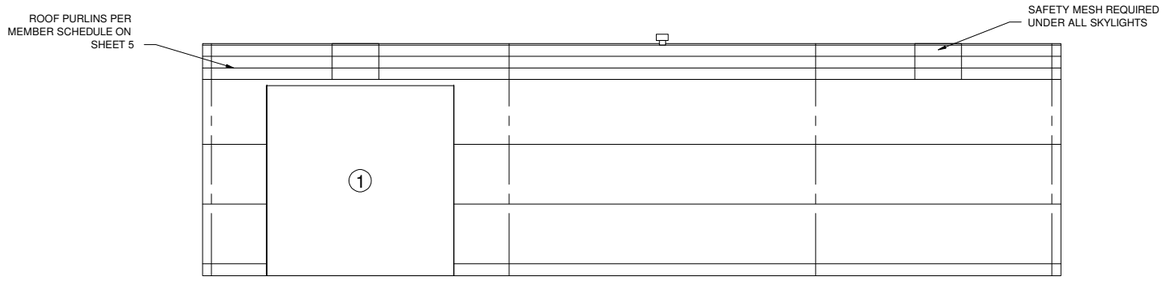
SHED SAFE accredited

fairdinkum SHEDS

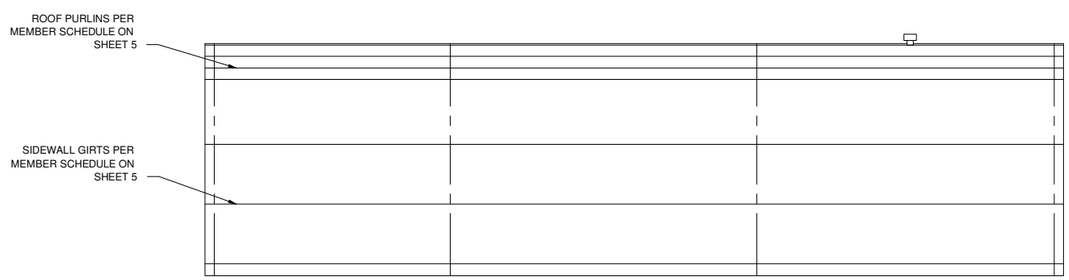
NORTHERN CONSULTING engineers
Civil & Structural Engineers
50 Punari Street
Currajong, Qld 4812
Fax: 07 4725 5850
Email: design@nceng.com.au
ABN 341 008 173 56

Registered Chartered Professional Engineer — Regn. No. 2558980
Registered Professional Engineer (Civil & Structural) QLD — Regn. No. 9985
Registered Certifying Engineer (Structural) N.T. — Regn. No. 116373ES
Registered Engineer - (Civil) VIC — Regn. No. EC36692
Registered Engineer - (Civil) TAS — Regn. No. CC5648M

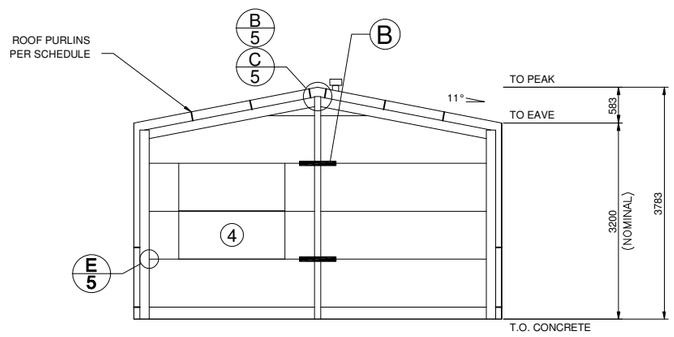
Mr Timothy Roy Messer BE MIEAust RPEQ
Registered Professional Engineer 2558980
Signature .....
Date 3/8/2015
Registered on the NPER in the areas of practice of Civil & Structural National Professional Engineers Register



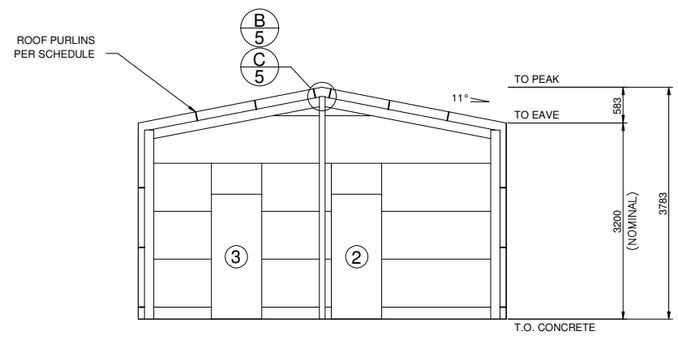
1/2 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 100



2/2 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 100



4/2 ENDWALL INTERIOR ELEVATION
SCALE: 1 = 100



3/2 ENDWALL INTERIOR ELEVATION
SCALE: 1 = 100

Diagonal X Bracing not required in this building.
Cladding Diaphragm Sufficient. Fly Bracing is included in this building to be placed on every second Purlin/Girt.

SHEET 2 OF 6
JOB NO. GRIF15712
DATE 3/8/2015
CHECKED TM
DRAWN FDS

STEEL BUILDING BY (CONTACT)
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR PROTEN NARRANDERA (WORK SHOP)
AT LOT 42 STURT HWY
EUROLEY

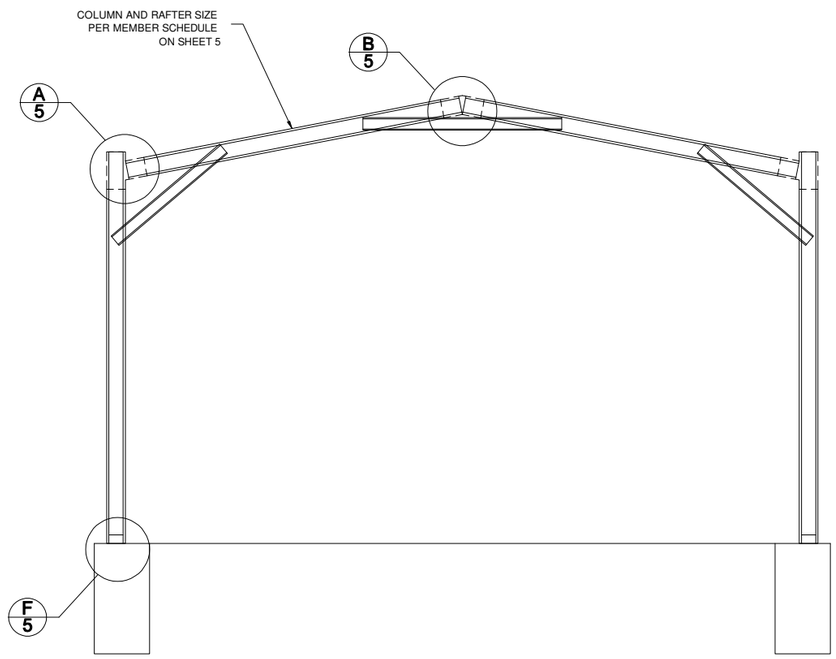
SHED SAFE accredited™

fairdinkum SHEDS

NORTHERN CONSULTING engineers
Civil & Structural Engineers
50 Punari Street
Currajong, Qld 4812
Fax: 07 4725 5850
Email: design@nceng.com.au
ABN 341 008 173 56

Registered Chartered Professional Engineer — Regn. No. 2558980
Registered Professional Engineer (Civil & Structural) QLD — Regn. No. 9985
Registered Certifying Engineer (Structural) N.T. — Regn. No. 116373ES
Registered Engineer - (Civil) VIC — Regn. No. EC36692
Registered Engineer - (Civil) TAS — Regn. No. CC5648M

Mr Timothy Roy Messer BE MIEAust RPEQ
Registered Professional Engineer 2558980
Signature .....
Date 3/8/2015
Registered on the NPER in the areas of practice of Civil & Structural National Professional Engineers Register



1/3 INTERNAL FRAME SECTION
SCALE: 1 = 50

Refer to Sheet #4 for concrete specification.

SHEET 3 OF 6

JOB NO. GRIF15712

DATE 3/8/2015

CHECKED TM

DRAWN FDS

STEEL BUILDING BY (CONTACT)
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR PROTEN NARRANDERA (WORK SHOP)
AT LOT 42 STURT HWY
EUROLEY

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fairdinkum SHEDS

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Registered Engineer - (Civil) TAS — Regn. No. CC5848M

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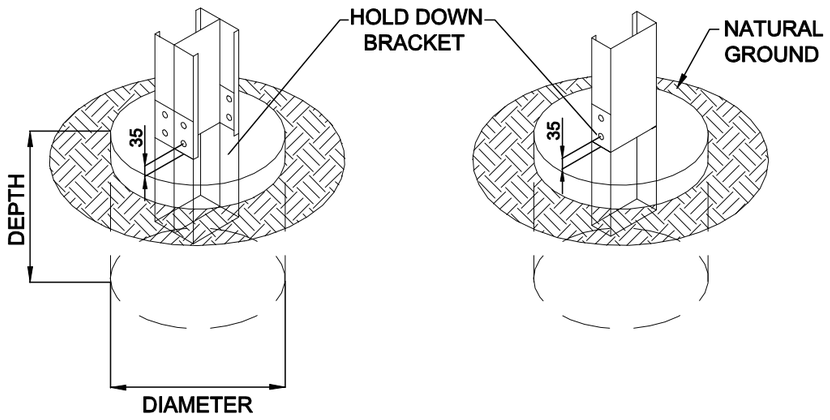
Signature .....
Date 3/8/2015
Registered on the NPER in the areas of practice of Civil & Structural National Professional Engineers Register



Diameter x Depth (mm)

450 x 900

BACK TO BACK COLUMNS

SINGLE COLUMN

Y	BORED FOOTING DETAIL	DWG NO: BOHDB

STRUCTURAL GENERAL NOTES

1. **GOVERNING CODE:** BUILDING CODE OF AUSTRALIA (BCA), LOADING TO AS1170 - ALL SECTIONS. BUILDING SUITABLE FOR DOMESTIC/LIGHT INDUSTRIAL USE UNLESS OTHERWISE SPECIFICALLY NOTED.
2. **DRAWING OWNERSHIP:**
THESE DRAWINGS REMAIN THE PROPERTY OF FBHS (AUST) PTY LIMITED. ENGINEERING SIGNATURE AND CERTIFICATION IS ONLY VALID WHEN BUILDING IS SUPPLIED BY A DISTRIBUTOR OF FBHS. DRAWINGS ARE PROVIDED FOR THE DUAL PURPOSE OF OBTAINING BUILDING PERMITS AND AIDING CONSTRUCTION. ANY OTHER USE OR REPRODUCTION IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM FBHS.
3. **DRAWING SIGNATURE REQUIREMENTS:**
THESE DRAWINGS ARE NOT VALID UNLESS SIGNED BY THE ENGINEER. THE ENGINEER ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR DRAWINGS WITHOUT A SIGNATURE. EACH TITLE BLOCK CONTAINS A WATER MARK UNDER THE CUSTOMERS NAME CONTAINING THE DATE OF PRODUCTION OF THE DRAWINGS; THE DRAWINGS ARE TO BE SUBMITTED TO COUNCIL WITHIN 21 DAYS OF THIS DATE. THIS IS TO ENSURE THAT ONLY CURRENT DRAWINGS ARE IN CIRCULATION.
4. **CONTRACTOR RESPONSIBILITIES:**
CERTIFIER AND CONTRACTOR TO CONFIRM [ON SITE] THAT THE WIND LOADINGS APPLIED TO THIS DESIGN ARE TRUE AND CORRECT FOR THE ADDRESS STATED IN THE TITLE BLOCK.
CONTRACTOR SHALL VERIFY AND CONFIRM ALL EXISTING CONDITIONS AND DIMENSIONS. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN DRAWINGS AND EXISTING CONDITIONS PRIOR TO START OF WORK.
CONTRACTOR MUST NOT MAKE ANY DEVIATION FROM THE PROVIDED PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM ONE THE UNDERSIGNING ENGINEERS. THE ENGINEER / FBHS TAKE NO RESPONSIBILITY FOR CHANGES MADE WITHOUT WRITTEN APPROVAL.
CONTRACTOR IS RESPONSIBLE FOR ENSURING NO PART OF THE STRUCTURE BECOMES OVERSTRESSED DURING CONSTRUCTION.
BUILDING IS NOT STRUCTURALLY ADEQUATE UNTIL THE INSTALLATION OF ALL COMPONENTS AND DETAILS SHOWN IS COMPLETED IN ACCORDANCE WITH THESE DRAWINGS.
THE INDICATED DRAWING SCALES ARE APPROXIMATE. DO NOT SCALE DRAWINGS FOR CONSTRUCTION PURPOSES.
FOR FUTHER DIRECTIONS ON CONSTRUCTION THE CONTRACTOR SHOULD CONSULT THE APPROPRIATE INSTRUCTION MANUAL.
5. **ENGINEERING:**
THE ENGINEER / FBHS ARE NOT ACTING AS PROJECT MANAGERS FOR THIS DEVELOPMENT, AND WILL NOT BE PRESENT DURING CONSTRUCTION.
THE UNDERSIGNING ENGINEERS HAVE REVIEWED THIS BUILDING FOR CONFORMITY ONLY TO THE STRUCTURAL DESIGN PORTIONS OF THE GOVERNING CODE. THE PROJECT MANAGER IS RESPONSIBLE FOR ADDRESSING ANY OTHER CODE REQUIREMENTS APPLICABLE TO THIS DEVELOPMENT.
THESE DOCUMENTS ARE STAMPED ONLY AS TO THE COMPONENTS SUPPLIED BY FBHS. IT IS THE RESPONSIBILITY OF THE PURCHASER TO COORDINATE DRAWINGS PROVIDED BY FBHS WITH OTHER PLANS AND/OR OTHER COMPONENTS THAT ARE PART OF THE OVERALL PROJECT. IN CASES OF DISCREPANCIES, THE LATEST DRAWINGS PROVIDED BY FBHS SHALL GOVERN.
NO ALTERATIONS TO THIS STRUCTURE (INCLUDING REMOVAL OF CLADDING) ARE TO BE UNDERTAKEN WITHOUT THE CONSENT OF THE CERTIFYING ENGINEER"
6. **INSPECTIONS:**
NO SPECIAL INSPECTIONS ARE REQUIRED BY THE GOVERNING CODE ON THIS JOB. ANY OTHER INSPECTIONS REQUESTED BY THE LOCAL BUILDING DEPARTMENT SHALL BE CONDUCTED AT THE OWNER'S EXPENSE.
7. **SOIL REQUIREMENTS:**
SITE CLASSIFICATION TO BE A, S OR M ONLY. SOIL SAFE BEARING CAPACITY VALUE INDICATED ON DRAWING SHEET 4 OCCURS AT 100mm BELOW FINISH GRADE, EXISTING NATURAL GRADE, OR AT FROST DEPTH SPECIFIED BY LOCAL BUILDING DEPARTMENT, WHICHEVER IS THE LOWEST ELEVATION. REGARDLESS OF DETAIL Y ON SHEET 4 THE MINIMUM FOUNDATION DEPTH SHOULD BE 100MM INTO NATURAL GROUND OR BELOW FROST DEPTH SPECIFIED BY LOCAL COUNCIL. ROLLED OR COMPACTED FILL MAY BE USED UNDER SLAB, COMPACTED IN 150mm LAYERS TO A MAXIMUM DEPTH OF 900mm.
CONCRETE FOUNDATION EMBEDMENT DEPTHS DO NOT APPLY TO LOCATIONS WHERE ANY UNCOMPACTED FILL OR DISTURBED GROUND EXISTS OR WHERE WALLS OF THE EXCAVATION WILL NOT STAND WITHOUT SUPPLEMENTAL SUPPORT, IN THIS CASE SEEK FURTHER ENGINEERING ADVICE.
8. **CLASS 10a FOOTING DESIGNS:**
THE FOUNDATION DOCUMENTED IS ALSO APPROPRIATE FOR CLASS 10a BUILDING DESIGNS ON 'M-D', 'H', 'H-D' OR 'E' CLASS SOILS, IF TOTAL SLAB AREA IS UNDER 100m² AND THE MAXIMUM SLAB DIMENSION (LENGTH AND WIDTH) IS LESS THAN 12m.
PLEASE BE AWARE THAT THE SLAB DESIGN FOR H & E CLASS SOILS IN THESE INSTANCES ARE DESIGNED TO EXPERIENCE SOME CRACKING. THIS CRACKING IS NOT CONSIDERED A STRUCTURAL FLAW OR DESIGN ISSUE, AND IS SIMPLY COSMETIC IN NATURE. IF THIS IS A CONCERN TO THE CLIENT IT IS ADVISED THEY DISCUSS OTHER OPTIONS WITH THE RELEVANT DISTRIBUTOR PRIOR TO THE POURING OF THE SLAB.
9. **CONCRETE REQUIREMENTS:**
ALL CONCRETE DETAILS AND PLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH AS2870 AND AS3600.
CONCRETE SHALL HAVE A MIN. 28-DAY STRENGTH OF 20MPa FOR EXPOSURE A1 & B1, 25MPa FOR EXPOSURE A2 & B2 AND 32MPa FOR EXPOSURE C, IN ACCORDANCE WITH SECTION 4, AS3600. CEMENT TO BE TYPE A. MAX AGGREGATE SIZE OF 20mm. SLUMP TO BE 80mm +-15mm. SLABS TO BE CURED FOR 7 DAYS BY WATERING OR COVERING WITH A PLASTIC MEMBRANE, AFTER WHICH CONSTRUCTION CAN BEGIN, DUE CARE GIVEN NOT TO OVER-TIGHTEN HOLD DOWN BOLTS. GIVEN ALLOWABLE SOIL TYPES 1 LAYER OF SL72 REINFORCING MESH IS TO BE INSTALLED ON STANDARD SLABS WITH A MINIMUM 30MM COVER FROM CONCRETE SURFACE. CONCRETE REINFORCING TO CONFORM TO AS 1302, AS1303 & AS 1304. ALL REINFORCING COVER TO BE A MINIMUM OF 30mm.
10. **STRUCTURAL STEEL REQUIREMENTS:**
ALL STRUCTURAL STEEL, INCLUDING SHEETING THOUGH EXCLUDING CONCRETE REINFORCING, SHALL CONFORM TO AS 1397 (GAUGE <= 1mm fy = 550MPa, GAUGE > 1mm < 1.5mm fy = 500MPa, GAUGE >= 1.5mm fy = 450MPa).
NO WELDING IS TO BE PERFORMED ON THIS BUILDING.
ALL STRUCTURAL MEMBERS AND CONNECTIONS DESIGNED TO AS4600. ALL BOLT HOLE DIAMETERS TO STRAMIT GENERAL PUNCHINGS.
11. **DESIGN WIND REQUIREMENT:**
THE FRAME AS A BASIC STRUCTURE IS DESIGNED AS AN "AIR LEAKY BUILDING" IN COMPLIANCE WITH AS 1170.5.3, AS SUCH, SHOULD A WINDOW OR DOOR FAIL, INTEGRITY OF THE BUILDING WILL BE MAINTAINED.
12. **FOOT TRAFFIC:**
FOR ERECTION AND MAINTENANCE PLEASE NOTE THE FOLLOWING DEFINED FOOT TRAFFIC ZONES:
- CORRUGATED: WALK ONLY WITHIN 200MM OF SCREW LINES. FEET SPREAD OVER AT LEAST TWO RIBS.
- MONOCLAD: WALK ONLY IN PANS, OR ON RIBS AT SCREW LINES.

PROJECT DESIGN CRITERIA

ROOF LIVE LOAD:	0.25 kPa
BASIC WIND SPEED:	VR 45 m/s
SITE WIND SPEED:	Vsit,B 41 m/s
WIND REGION:	Reg A
TOPOGRAPH FACTOR, k_t :	1
SHIELDING FACTOR, k_s :	1
MAX GROUND SNOW LOAD:	NA
MAX ROOF SNOW LOAD:	NA
SITE ALTITUDE:	NA
TERRAIN CATEGORY:	TCat 2
SOIL SAFE BEARING CAPACITY:	100 kPa
RETURN PERIOD:	1:500
LIMITING CPI 1:	-0.3
LIMITING CPI 2:	0
IMPORTANCE LEVEL:	2

DETAIL KEYS

- (A) ENDWALL VERTICAL MULLION (SEE DETAIL C/5 FOR TOP CONN. AND F/5 FOR BASE CONN.)
- (B) FLYBRACING PER DETAIL L/5
- (C) X-BRACING IN ROOF ABOVE (SEE DETAIL M/5)
- (D) DOUBLE X-BRACING IN ROOF ABOVE (SEE DETAIL M/5)

DOOR SCHEDULE

DOOR	WIDTH	HEIGHT	OPENING TYPE	HEADER GIRT	OPENING JAMBS
1	3050	3100	3.10H X 3.10 CB "SERIES A #	SINGLE	
2	820	2040	PA DOOR 3 CB SPECIAL	SINGLE	
3	820	2040	PA DOOR 3 CB SPECIAL	SINGLE	
4	1730	790	WINDOW	SINGLE	

NOTES: 1) SEE SHEET 5 FOR DOOR OPENING FRAMING INFORMATION.
2) ALL DOOR SCHEDULE MEASUREMENTS ARE ACTUAL DOOR/WINDOW SIZE NOT OPENING SIZE.

SHEET 4 OF 6

JOB NO. GRIF15712

DATE 3/8/2015

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STEEL BUILDING BY (CONTACT)
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02 6964 9991

FOR PROTEN NARRANDERA (WORK SHOP)

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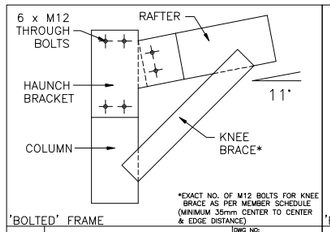
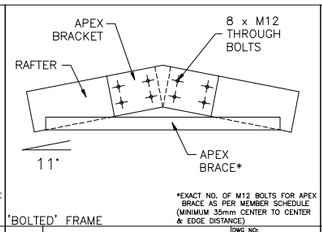
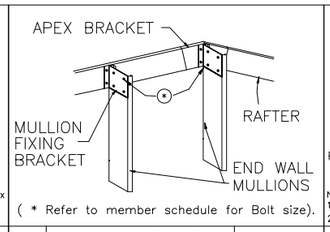


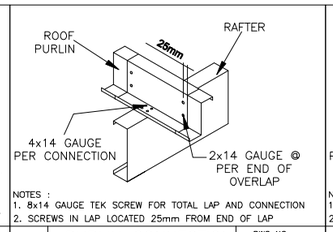
A	HAUNCH CONNECTION	DWG NO: K21BB



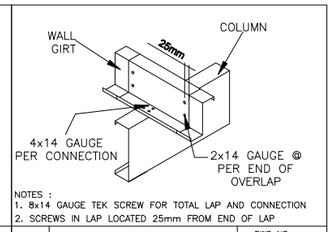
B	APEX CONNECTION	DWG NO: AP21BB



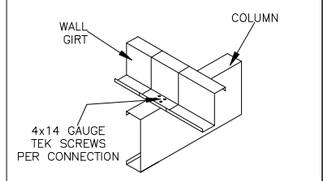
C	MULLION FIXING ANGLE BRACKET	DWG NO MFA4



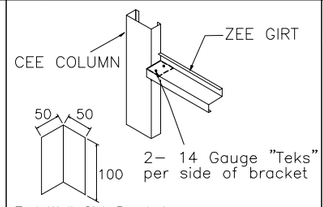
D_P	PURLIN CONNECTION DETAIL	DWG NO PCON5L



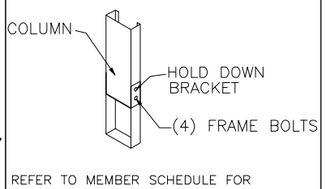
D_G	GIRT CONNECTION DETAIL	DWG NO GCON5L



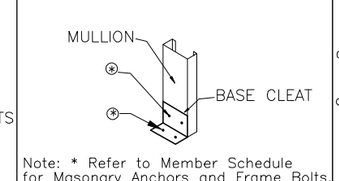
E_G	ENDWALL GIRT CONNECTION DETAIL	DWG NO EGCON5N



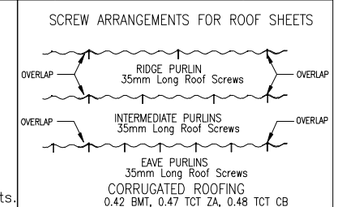
E	END WALL GIRT CONNECTION	DWG NO EG5



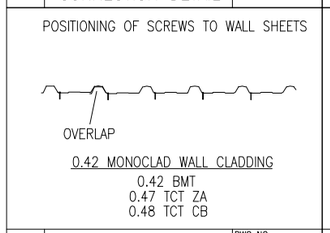
F	BASE CONNECTION	DWG NO HDB7



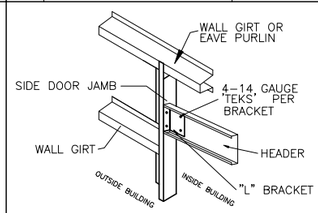
F_E	BASE CONNECTION	DWG NO MBC1



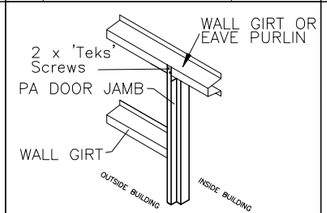
G	ROOF SHEETING PROFILE	DWG NO R0NC3



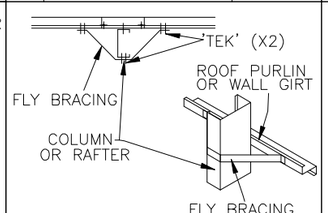
H	WALL SHEET PROFILE	DWG NO W1NC4



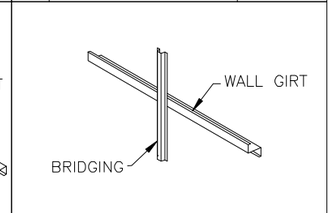
I	SIDE DOOR SUPPORT CONNECTION	DWG NO DFRS



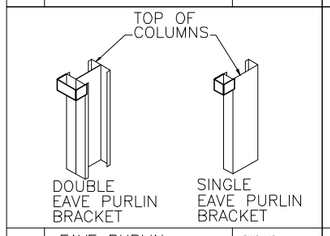
K	PERSONAL ACCESS DOOR	DWG NO PADD1



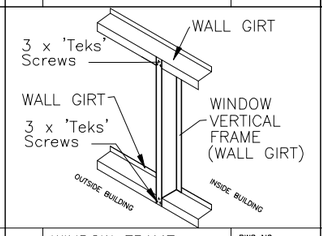
L	FLYBRACING	DWG NO FBRZ



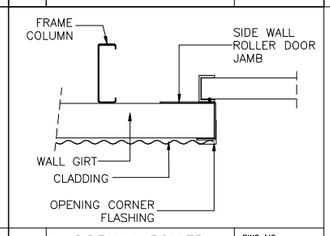
N	BRIDGING DETAIL	DWG NO PGBZ



O	EAVE PURLIN BRACKET	DWG NO EPB2



W	WINDOW FRAME ATTACHMENT DETAIL	DWG NO WADZ



U	SIDEWALL ROLLER DOOR JAMB	DWG NO SRDJ

MEMBER AND MATERIAL SCHEDULE

1	END WALL RAFTER	Single C15012
2	C.S. FRAME RAFTER	Single C15015
3	END FRAME COLUMN (C1)	Single C15012
4	C.S. FRAME COLUMN (C2)	Single C15024
5	MULLION (C1)	Single C15012
6	C.S. FRAME KNEE BRACE	Single C10010 @ 1.35 LONG 3 bolts each end
7	KNEE BRACE HEIGHT UP COLUMN	2.43m
8	KNEE BRACE LENGTH UP RAFTER	0.86m
9	C.S. FRAME APEX BRACE	Single C10010 @ 1.62 LONG 2 bolts each end
10	APEX POSITION FROM RAFTER END	0.83m
11	END ANCHOR BRACKETS (# PER DETS.)	HOLD DOWN BRKTS 150 X 50 X 4-400 DEEP GAL FLAT
12	MAIN SNG ANCHOR BRACKETS (# PER DETS.)	Hold Down Brackets 150 X 50 X 4 Gal Flat
13	MULLION ANCHOR BOLTS (# PER DETS.)	Sleeve Anchor 12.0x75 Z/Y
14	EAVE PURLIN	C10015 (Eave Purlin Bracket 0mm from top of column)
15	TYP. ROOF PURLIN SIZE	Z10010
16	MAIN BLDG. PURLIN SPACING	0.98 m. (3 rows) (Max Allow. 1.00m)
17	ROOF PURLIN BRIDGING	Tophat 64 x 0.75
18	TYP. SIDEWALL GIRT SIZE	Z10010
19	MAIN BLDG. SIDEWALL GIRT SPACING	0.97 m. (3 rows) (Max Allow. 1.00m)
20	SIDEWALL GIRT BRIDGING	Tophat 64 x 0.75
21	TYP. ENDWALL GIRT SIZE	Z10010
22	MAIN BLDG. ENDWALL GIRT SPACING	0.78 m. (4 rows) (Max Allow. 1.00m)
23	MAIN BLDG. ENDWALL GIRT LENGTH	2.85 m. (0.1m Overlap)
24	FRAME SCREW FASTENERS	14-13x22 Hex C/S (SP HD 5/16" Hex Drive)
25	FRAME BOLT FASTENERS	Purlin Assy M12x30 Z/P
26	X-BRACING STRAP AND FASTENERS	None required for this building. Cladding Diaphragm Sufficient.
27	WALL COLOUR	PALE_EUCALYPT
28	ROOF COLOUR	PALE_EUCALYPT
29	ROLLER DOOR COLOUR	PALE_EUCALYPT
30	P.A. DOOR COLOUR	PALE_EUCALYPT
31	WINDOW COLOUR	PALE_EUCALYPT
32	ROOF VENT COLOUR	PALE_EUCALYPT
33	DOWNPIPE COLOUR	PALE_EUCALYPT
34	GUTTER COLOUR	PALE_EUCALYPT
35	CORNER FLASHING COLOUR	PALE_EUCALYPT
36	BARGE FLASHING COLOUR	PALE_EUCALYPT
37	OPENING FLASHING COLOUR	PALE_EUCALYPT
38	OPEN BAY HEADER HEIGHT	0.5

"C.S." = CLEARSPAN "L." = LEFT "R." = RIGHT

PURLIN AND GIRT LENGTHS

BAY	WIDTH	PURLIN LENGTH	GIRT LENGTH
1	5m	5.25 m. (0.25m Lap)	5.25 m. (0.25m Lap)
2	5m	5.45 m. (0.45m Lap)	5.45 m. (0.45m Lap)
3	4m	4.25 m. (0.25m Lap)	4.25 m. (0.25m Lap)

SHEET 5 OF 6

JOB NO. GRIF15712

DATE 3/8/2015

CHECKED TM

DRAWN FDS

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AT LOT 42 STURT HWY
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Civil & Structural Engineers
50 Punari Street
Currajong, Qld 4812
Fax: 07 4725 5850
Email: design@nceng.com.au
ABN 341 008 173 56

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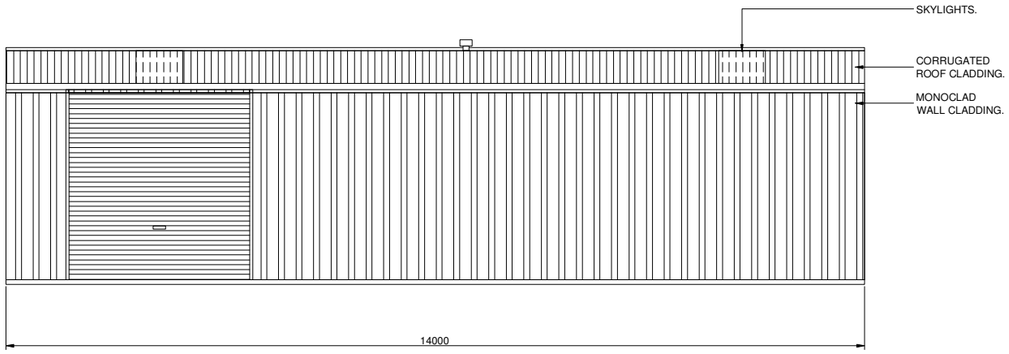
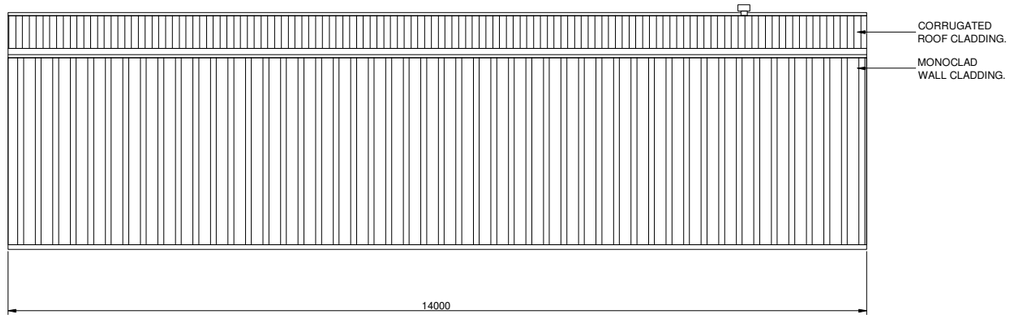
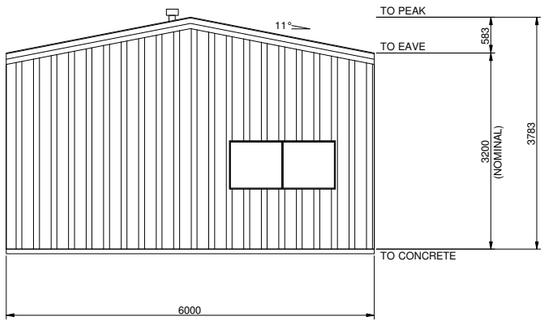


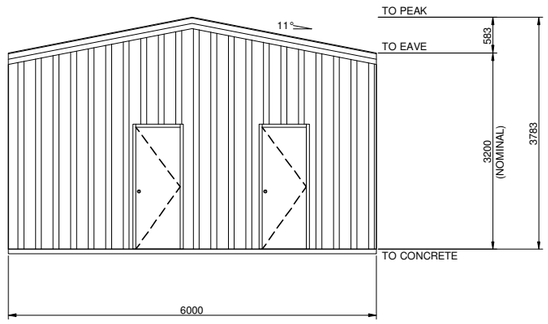
1/6 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 100



2/6 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 100



4/6 ENDWALL EXTERIOR ELEVATION
SCALE: 1 = 100



3/6 ENDWALL EXTERIOR ELEVATION
SCALE: 1 = 100

BUILDING COLOURS

WALL	PALE EUCALYPT
ROOF	PALE EUCALYPT
ROLLER DOOR	PALE EUCALYPT
P.A. DOOR	PALE EUCALYPT
WINDOW	PALE EUCALYPT
ROOF VENT	PALE EUCALYPT
DOWNPIPE	PALE EUCALYPT
GUTTER	PALE EUCALYPT
CORNER FLASHING	PALE EUCALYPT
BARGE FLASHING	PALE EUCALYPT
OPENING FLASHING	PALE EUCALYPT

SHEET 6 OF 6
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GUIDE TO THE INSTALLATION OF TEMPORARY BRACING

(REFER TO FDHS INSTALLATION GUIDE MANUAL FOR THE TWO METHODS OF CONSTRUCTION)

NOTES:

BRACING MATERIALS - THE SHED ERECTOR TO SUPPLY SPECIFIC BRACING. SUITABLE RIGID MEMBERS CAPABLE OF TENSION AND COMPRESSION OR OPPOSING CHAINS OR OPPOSING LOAD RATED RATCHET STRAPS TO BE USED. (RIGID BRACING AS SHOWN ON DIAGRAM) ROPE BRACING SUITABLE ONLY FOR SMALLER STRUCTURES IN IDEAL CONDITIONS.

BRACING LOCATION - TEMPORARY BRACING TO BE ERECTED AS CLOSE TO 45 DEGREE ANGLE AND FIXED TO THE TOP OF THE COLUMN OR MULLION TO ACHIEVE THE OPTIMUM EFFECTIVENESS. IF THERE IS NOT ENOUGH SPACE FOR A 45 DEGREE ANGLE, THEN 20 DEGREE ANGLE IS TO BE THE MINIMUM ANGLE ALLOWED (REFER TO DIAGRAM). RIGID TEMPORARY BRACING MEMBER TO BE BOLTED TO HEAVY ANGLE PEGS HAMMERED INTO THE GROUND OR TO A BRACKET, MASONRY ANCHORED TO THE SLAB.

BRACING REMOVAL - TEMPORARY BRACING TO REMAIN IN PLACE UNTIL CLADDING IS FULLY INSTALLED WHERE POSSIBLE. IN NO CASE SHOULD TEMPORARY BRACING BE REMOVED UNTIL ALL PURLINS, GIRTS (AND PERMANENT CROSS BRACING WHERE USED) ARE FIXED.

SITE SAFETY - DUE CONSIDERATION TO BE GIVEN TO SITE SAFETY IN REGARD TO LOCATIONS OF BRACING AND PEGS.

GUIDE APPLICATION - TEMPORARY BRACING AS DESCRIBED IS A MINIMUM REQUIREMENT FOR AN AVERAGE, STANDARD SITE CONDITION. PROVIDE ADDITIONAL BRACING FOR MORE SEVERE AND/OR HIGH EXPOSURE SITE CONDITIONS.
ADDITIONAL BRACING TO BE USED AS AND WHERE NECESSARY TO ENSURE THAT ENTIRE FRAME IS RIGID THROUGHOUT CONSTRUCTION.
RESPONSIBILITY FOR ENSURING STABILITY OF STRUCTURE REMAINS WITH THE BUILDER.

TILT UP METHOD
FOR STRUCTURES UNDER 9M SPAN, LESS THAN 3M HIGH AND LESS THAN 12M LONG

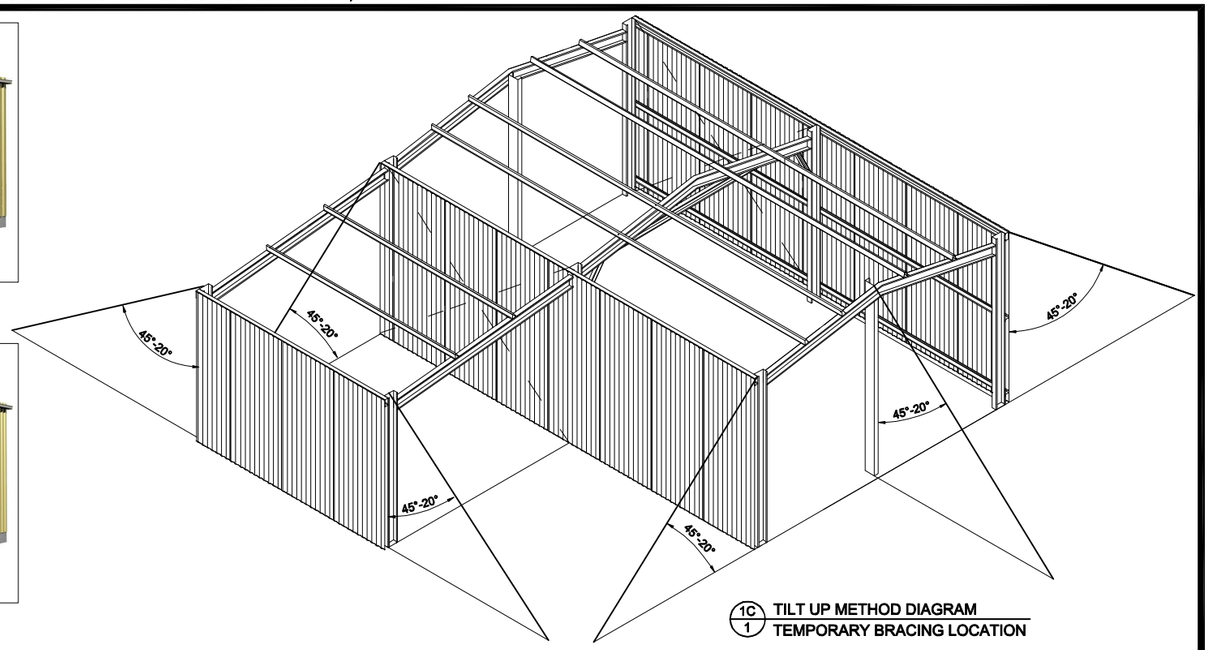
A. ASSEMBLE THE FIRST SIDEWALL FRAME (COMPLETE WITH WALL SHEETING, BRACING AND GUTTER) ON THE GROUND AND LIFT ASSEMBLED SIDEWALL FRAME INTO POSITION. FIX OFF TEMPORARY SIDE BRACING TO EACH END (REFER TO DIAGRAM). FIX BASE CLEATS.
B. ASSEMBLE THE SECOND SIDEWALL FRAME AS PER FIRST SIDEWALL FRAME. LIFT INTO POSITION. FIX OFF TEMPORARY WALL BRACING TO EACH END (REFER TO DIAGRAM) FIX BASE CLEATS.
C. FIX GABLE END RAFTERS TO COLUMNS TO TIE WALLS. PROP APEX UNTIL ENDWALL MULLION AND APEX TEMPORARY BRACE ARE FIXED OFF. IF NO MULLION IS REQUIRED THEN PROP AND BRACE APEX UNTIL CLADDING IS COMPLETE.
D. INSTALL REMAINING RAFTERS. AS EACH RAFTER PAIR IS INSTALLED, AT LEAST ONE PURLIN PER 3M OF RAFTER LENGTH IS TO BE INSTALLED TO SECURE RAFTERS.
E. INSTALL REMAINING PURLINS
F. INSTALL KNEE AND APEX BRACES IF AND WHERE APPLICABLE.
G. REPEAT FOR LEANTO'S.

FRAME FIRST METHOD
FOR STRUCTURES OVER 9M SPAN, GREATER THAN 3M HIGH AND GREATER THAN 12M LONG

A. ASSEMBLE PORTAL FRAMES ON THE GROUND (WITH KNEE AND APEX BRACES IF AND WHERE APPLICABLE). LIFT THE FIRST PORTAL FRAME ASSEMBLY INTO POSITION. FIX OFF TEMPORARY END BRACING (REFER TO DIAGRAM). FIX BASE CLEATS.
B. PROP APEX UNTIL ENDWALL MULLION AND APEX TEMPORARY BRACE ARE FIXED OFF. IF NO MULLION IS REQUIRED THEN PROP AND BRACE APEX UNTIL CLADDING IS COMPLETE.
C. THE SECOND PORTAL FRAME ASSEMBLY TO BE LIFTED INTO POSITION. FIX EAVE PURLINS AND AT LEAST ONE PURLIN PER 3M OF RAFTER TO SECURE FRAME ASSEMBLY. FIX BASE CLEATS. FIX TEMPORARY SIDEWALL BRACING.
D. STAND REMAINING PORTAL FRAME ASSEMBLY AS PER STEP C, FIXING TEMPORARY SIDE WALL BRACING TO EVERY SECOND BAY. BRACE OTHER END PORTAL FRAME AS PER FIRST PORTAL FRAME.
E. INSTALL REMAINING PURLINS AND GIRTS.
F. REPEAT FOR LEANTO'S.

1A/1 FIRST SIDEWALL FRAME
REFER 1C FOR TEMPORARY BRACING LOCATION

1B/1 SECOND SIDEWALL FRAME
REFER 1C FOR TEMPORARY BRACING LOCATION

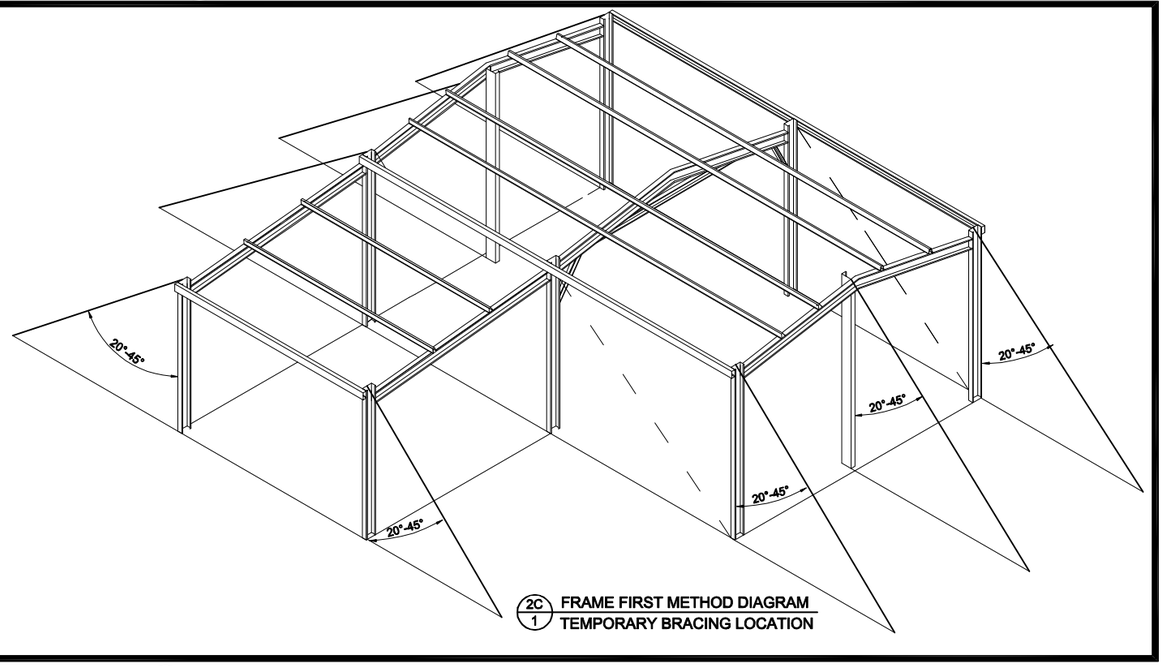


1C/1 TILT UP METHOD DIAGRAM
TEMPORARY BRACING LOCATION

1/1 TILT UP METHOD DIAGRAM
SCALE: NTS

2A/1 FIRST & SECOND PORTAL FRAME ASSEMBLY
REFER 2C FOR TEMPORARY BRACING LOCATION

2B/1 COMPLETE PORTAL FRAME ASSEMBLY
REFER 2C FOR TEMPORARY BRACING LOCATION



2C/1 FRAME FIRST METHOD DIAGRAM
TEMPORARY BRACING LOCATION

2/1 FRAME FIRST METHOD DIAGRAM
SCALE: NTS

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fairdinkum SHEDS

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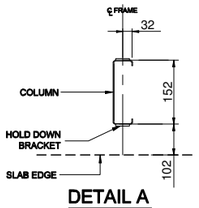
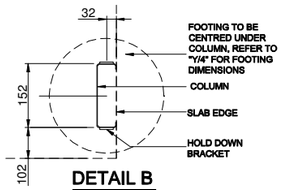
Civil & Structural Engineers
50 Punari Street
Currajong, Qld 4812
Fax: 07 4725 5850
Email: design@nceng.com.au
ABN 341 008 173 56

Registered Chartered Professional Engineer — Regn. No. 2558980
Registered Professional Engineer (Civil & Structural) QLD — Regn. No. 9985
Registered Certifying Engineer (Structural) N.T. — Regn. No. 116373ES
Registered Engineer - (Civil) VIC — Regn. No. EC36892
Registered Engineer - (Civil) TAS — Regn. No. CC5648M

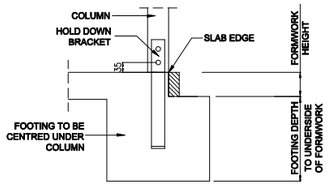
Mr Timothy Roy Messer BE MIEAust RPEQ
Registered Professional Engineer 2558980
Signature .....
Date 3/8/2015
Registered on the NPER in the areas of practice of Civil & Structural National Professional Engineers Register



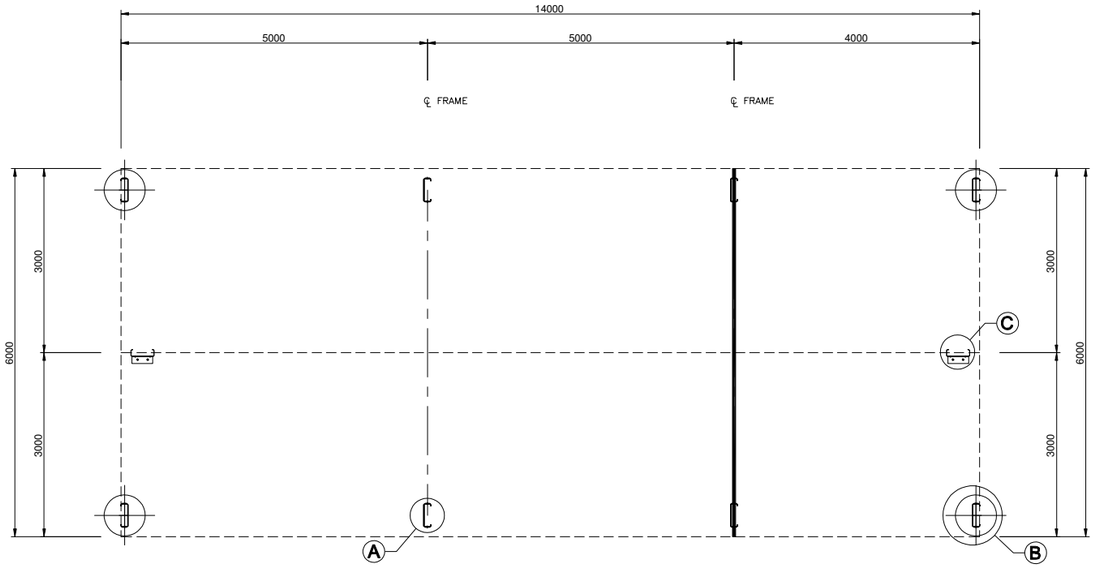
DETAIL A
SCALE: NTS



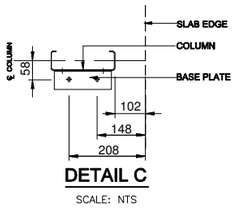
DETAIL B
SCALE: NTS



CORNER SECTION DETAIL (TYP.)
SCALE: NTS



1 / 1 HOLD DOWN BRACKET LAYOUT
SCALE: 1 = 100



DETAIL C
SCALE: NTS

IF YOU HAVE A ROLLER DOOR IN THE GABLE END OF YOUR SHED, CONTACT YOUR DISTRIBUTOR TO SEE IF MULLION NEEDS TO BE ROTATED FOR USE AS A DOOR JAMB.

NOT PART OF COUNCIL APPLICATION DOCUMENTATION

JOB NO.	DATE	CHECKED	DRAWN
GRIF15712	3/8/2015	TM	FDS

STEEL BUILDING BY
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR
PROTEN NARRANDERA (WORK SHOP)
AT
LOT 42 STURT HWY
EUROLEY

3/8/2015

SHED SAFE accredited

fairdinkum SHEDS

BRACKET LAYOUT

COMPLIANCE CERTIFICATE FOR BUILDING DESIGN

Property Description
Street address (include number, street, suburb/locality & postcode)

LOT 42 STURT HWY *	
EUROLEY	**Postcode :** 2700

*** - Certifier to confirm on site that the wind loadings for this design are true and correct for the address stated**

Description of Component/s Certified
Clearly describe the extent of work covered by this certificate.

Steel Portal Frame Structure.
6m span x 14m O/A length x 3.2m eaves height.
Consisting of 3 bays at 5m, 5m, 4m spacings.

Basis of Certification
Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

Australian Standards (list) AS/NZS 4600-2005, AS/NZS 1170.0,.1,2,3-2011, AS2870-2011, AS3600-2009	
2015 National Construction Code of Australia	
Region AS1170.2 = Reg A	**Factor for Region =** NA
NCC Importance Level = 2	**NCC Equivalent Wind class =** NA
Annual Probability Exceedance wind = 1:500	**Design Roof Live Load =** 0.25 kPa
Regional 3 s Gust Wind Speed for annual probability of exceedance V_R = 45 **m/s**	
Wind directional multipliers for the 8 cardinal directions Md = 1	
Terrain/Height multiplier (Mz, Cat) = 0.91	**Shielding Multiplier M_s =** 1
Topographic multiplier Mt = 1	**Site Wind Speed $V_{sit,B}$ =** 40 **m/s**
Ext. Pressure Coefficient cpe = −0.65, 1.00	**Int. Pressure Coefficient cpi =** −0.3, 0

Reference Documentation
Clearly identify any relevant documentation, e.g numbered structural engineering plans

Drawing Nos: 'Fair Dinkum Sheds' Structural Design Drawing
To be read in conjunction with Pages 1 to 6
For Job Number: GRIF15712 **DATED :** 3/8/2015
Specifications:
Computations:
Test Reports:
Other Documentation:

Competent Person Details
A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in aspect of the design, building or inspection of the building work because of the person's skill and experience in the aspect. The competent person must also be registered or licensed under a law applying in the state to practice the aspect.

A COPY OF A CURRENT CV AND PROFESSIONAL REGISTRATION DETAILS MUST BE PROVIDED WITH THE CERTIFICATE

Name:	**Timothy Roy Messer**		
Company Name (If applicable):	**Northern Consulting Engineers**		
Postal Address:	**50 Punari Street, Currajong 4812**		
Contact Person:	**Timothy Roy Messer**		
Telephone Number:	**07 4725 5550**		
Mobile Number:	**N/A**		
Fax Number:	**07 4725 5850**		
Email Address:	**design@nceng.com.au**		
License or Registration Number:	**2558980**	**Copy of CV Attached:**	**Tick Box**
			Y ☐ or N ☒

Signature of Competent Person
This form may be used by competent persons to certify the design of a material, system, method of building, building element design or other thing.

If the competent person is a licensed company the authorised person of the company is to sign the form.

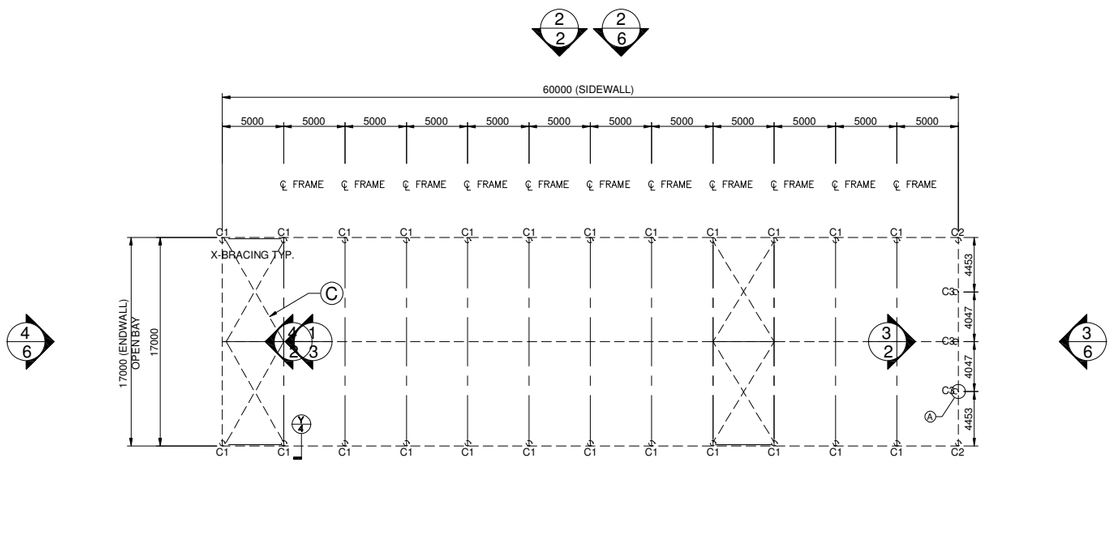
I certify that the item/s described above, if installed or carried out in accordance with the information conatined in this certificate, including any referenced documentation, will comply with the National Construction Code of Australia/relevant Australian or International Standard.

Signature of competent person: T. Messer **Date:** 3/8/2015

LOCAL GOVERNMENT USE ONLY

Date received		**Reference Number/s**		

Rice Hull Shed



1/1 FOUNDATION PLAN AND MEMBER LAYOUT
SCALE: 1 = 500

DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS TO BE VERIFIED ON SITE.

MAIN FRAME
COLUMN LEGEND

C1	2C25024
C2	C25019
C3	C25024

ROOF STRAP BRACING TO BE CONNECTED TO THE PURLIN CLOSEST TO THE LINE OF THE END WALL MULLION.

SHEET 1 OF 6
JOB NO. GRIF15831
DATE 31/7/2015
CHECKED TM
DRAWN FDS

STEEL BUILDING BY (CONTACT)
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AT
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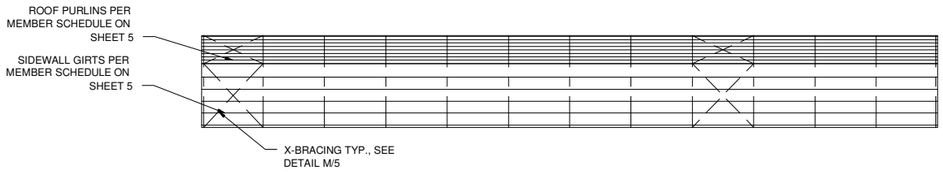
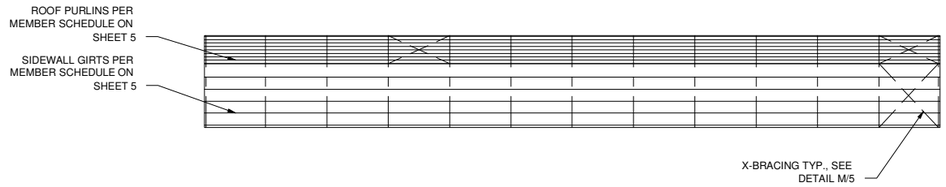
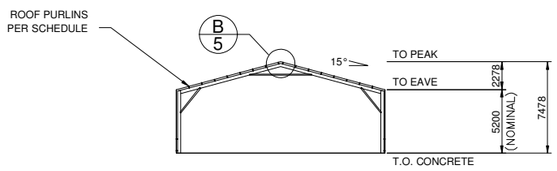


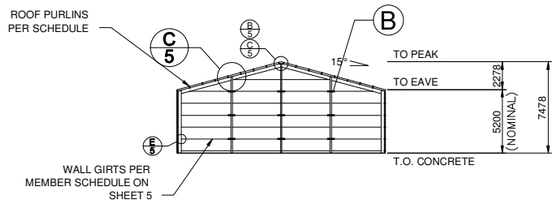
1/2 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 500



2/2 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 500



4/2 ENDWALL INTERIOR ELEVATION
SCALE: 1 = 500



3/2 ENDWALL INTERIOR ELEVATION
SCALE: 1 = 500

X Bracing is required in 3 side bay(s) and 2 roof bay(s) (both sides).
Fly Bracing is included in this building to be placed on every second Purlin/Girt.

SHEET 2 OF 6
JOB NO. GRIF15831
DATE 31/7/2015
CHECKED TM
DRAWN FDS

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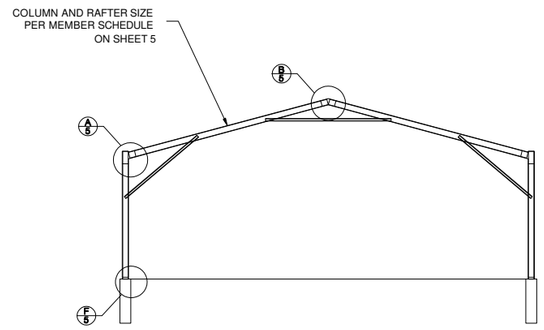

1/3 INTERNAL FRAME SECTION
SCALE: 1 = 250

Refer to Sheet #4 for concrete specification.

SHEET 3 OF 6

JOB NO. GRIF15831

DATE 31/7/2015

CHECKED TM

DRAWN FDS

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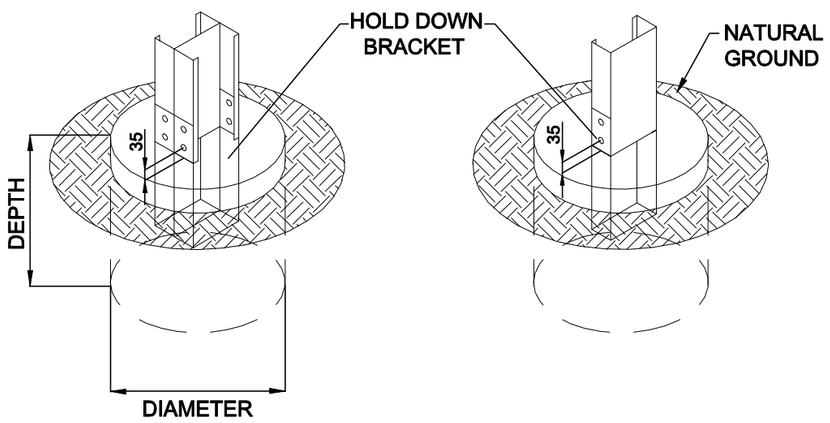
DEEP FOOTINGS:
All Footings Deeper than 1200mm to Be Reinforced as Follows:
- Diameter or Width <= 450mm, Use Min. 4 x N12 Vertical Bars, R6 Helix / Rings @ 300mm Spacings
- Diameter or Width > 450mm, Use Min. 6 x N12 Vertical Bars, R6 Helix / Rings @ 200mm Spacings



Diameter x Depth (mm)

450 x 1800

BACK TO BACK COLUMNS

SINGLE COLUMN

Y	BORED FOOTING DETAIL	DWG NO: BOHDB

STRUCTURAL GENERAL NOTES

1. **GOVERNING CODE:** BUILDING CODE OF AUSTRALIA (BCA), LOADING TO AS1170 - ALL SECTIONS. BUILDING SUITABLE FOR DOMESTIC/LIGHT INDUSTRIAL USE UNLESS OTHERWISE SPECIFICALLY NOTED.
2. **DRAWING OWNERSHIP:**
THESE DRAWINGS REMAIN THE PROPERTY OF FBHS (AUST) PTY LIMITED. ENGINEERING SIGNATURE AND CERTIFICATION IS ONLY VALID WHEN BUILDING IS SUPPLIED BY A DISTRIBUTOR OF FBHS. DRAWINGS ARE PROVIDED FOR THE DUAL PURPOSE OF OBTAINING BUILDING PERMITS AND AIDING CONSTRUCTION. ANY OTHER USE OR REPRODUCTION IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM FBHS.
3. **DRAWING SIGNATURE REQUIREMENTS:**
THESE DRAWINGS ARE NOT VALID UNLESS SIGNED BY THE ENGINEER. THE ENGINEER ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR DRAWINGS WITHOUT A SIGNATURE. EACH TITLE BLOCK CONTAINS A WATER MARK UNDER THE CUSTOMERS NAME CONTAINING THE DATE OF PRODUCTION OF THE DRAWINGS; THE DRAWINGS ARE TO BE SUBMITTED TO COUNCIL WITHIN 21 DAYS OF THIS DATE. THIS IS TO ENSURE THAT ONLY CURRENT DRAWINGS ARE IN CIRCULATION.
4. **CONTRACTOR RESPONSIBILITIES:**
CERTIFIER AND CONTRACTOR TO CONFIRM [ON SITE] THAT THE WIND LOADINGS APPLIED TO THIS DESIGN ARE TRUE AND CORRECT FOR THE ADDRESS STATED IN THE TITLE BLOCK.
CONTRACTOR SHALL VERIFY AND CONFIRM ALL EXISTING CONDITIONS AND DIMENSIONS. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN DRAWINGS AND EXISTING CONDITIONS PRIOR TO START OF WORK.
CONTRACTOR MUST NOT MAKE ANY DEVIATION FROM THE PROVIDED PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM ONE THE UNDERSIGNING ENGINEERS. THE ENGINEER / FBHS TAKE NO RESPONSIBILITY FOR CHANGES MADE WITHOUT WRITTEN APPROVAL.
CONTRACTOR IS RESPONSIBLE FOR ENSURING NO PART OF THE STRUCTURE BECOMES OVERSTRESSED DURING CONSTRUCTION.
BUILDING IS NOT STRUCTURALLY ADEQUATE UNTIL THE INSTALLATION OF ALL COMPONENTS AND DETAILS SHOWN IS COMPLETED IN ACCORDANCE WITH THESE DRAWINGS.
THE INDICATED DRAWING SCALES ARE APPROXIMATE. DO NOT SCALE DRAWINGS FOR CONSTRUCTION PURPOSES.
FOR FUTHER DIRECTIONS ON CONSTRUCTION THE CONTRACTOR SHOULD CONSULT THE APPROPRIATE INSTRUCTION MANUAL.
5. **ENGINEERING:**
THE ENGINEER / FBHS ARE NOT ACTING AS PROJECT MANAGERS FOR THIS DEVELOPMENT, AND WILL NOT BE PRESENT DURING CONSTRUCTION.
THE UNDERSIGNING ENGINEERS HAVE REVIEWED THIS BUILDING FOR CONFORMITY ONLY TO THE STRUCTURAL DESIGN PORTIONS OF THE GOVERNING CODE. THE PROJECT MANAGER IS RESPONSIBLE FOR ADDRESSING ANY OTHER CODE REQUIREMENTS APPLICABLE TO THIS DEVELOPMENT.
THESE DOCUMENTS ARE STAMPED ONLY AS TO THE COMPONENTS SUPPLIED BY FBHS. IT IS THE RESPONSIBILITY OF THE PURCHASER TO COORDINATE DRAWINGS PROVIDED BY FBHS WITH OTHER PLANS AND/OR OTHER COMPONENTS THAT ARE PART OF THE OVERALL PROJECT. IN CASES OF DISCREPANCIES, THE LATEST DRAWINGS PROVIDED BY FBHS SHALL GOVERN.
NO ALTERATIONS TO THIS STRUCTURE (INCLUDING REMOVAL OF CLADDING) ARE TO BE UNDERTAKEN WITHOUT THE CONSENT OF THE CERTIFYING ENGINEER"
6. **INSPECTIONS:**
NO SPECIAL INSPECTIONS ARE REQUIRED BY THE GOVERNING CODE ON THIS JOB. ANY OTHER INSPECTIONS REQUESTED BY THE LOCAL BUILDING DEPARTMENT SHALL BE CONDUCTED AT THE OWNER'S EXPENSE.
7. **SOIL REQUIREMENTS:**
SITE CLASSIFICATION TO BE A, S OR M ONLY. SOIL SAFE BEARING CAPACITY VALUE INDICATED ON DRAWING SHEET 4 OCCURS AT 100mm BELOW FINISH GRADE, EXISTING NATURAL GRADE, OR AT FROST DEPTH SPECIFIED BY LOCAL BUILDING DEPARTMENT, WHICHEVER IS THE LOWEST ELEVATION. REGARDLESS OF DETAIL Y ON SHEET 4 THE MINIMUM FOUNDATION DEPTH SHOULD BE 100MM INTO NATURAL GROUND OR BELOW FROST DEPTH SPECIFIED BY LOCAL COUNCIL. ROLLED OR COMPACTED FILL MAY BE USED UNDER SLAB, COMPACTED IN 150mm LAYERS TO A MAXIMUM DEPTH OF 900mm.
CONCRETE FOUNDATION EMBEDMENT DEPTHS DO NOT APPLY TO LOCATIONS WHERE ANY UNCOMPACTED FILL OR DISTURBED GROUND EXISTS OR WHERE WALLS OF THE EXCAVATION WILL NOT STAND WITHOUT SUPPLEMENTAL SUPPORT, IN THIS CASE SEEK FURTHER ENGINEERING ADVICE.
8. **CLASS 10a FOOTING DESIGNS:**
THE FOUNDATION DOCUMENTED IS ALSO APPROPRIATE FOR CLASS 10a BUILDING DESIGNS ON 'M-D', 'H', 'H-D' OR 'E' CLASS SOILS, IF TOTAL SLAB AREA IS UNDER 100m² AND THE MAXIMUM SLAB DIMENSION (LENGTH AND WIDTH) IS LESS THAN 12m.
PLEASE BE AWARE THAT THE SLAB DESIGN FOR H & E CLASS SOILS IN THESE INSTANCES ARE DESIGNED TO EXPERIENCE SOME CRACKING. THIS CRACKING IS NOT CONSIDERED A STRUCTURAL FLAW OR DESIGN ISSUE, AND IS SIMPLY COSMETIC IN NATURE. IF THIS IS A CONCERN TO THE CLIENT IT IS ADVISED THEY DISCUSS OTHER OPTIONS WITH THE RELEVANT DISTRIBUTOR PRIOR TO THE POURING OF THE SLAB.
9. **CONCRETE REQUIREMENTS:**
ALL CONCRETE DETAILS AND PLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH AS2870 AND AS3600.
CONCRETE SHALL HAVE A MIN. 28-DAY STRENGTH OF 20MPa FOR EXPOSURE A1 & B1, 25MPa FOR EXPOSURE A2 & B2 AND 32MPa FOR EXPOSURE C, IN ACCORDANCE WITH SECTION 4, AS3600. CEMENT TO BE TYPE A. MAX AGGREGATE SIZE OF 20mm. SLUMP TO BE 80mm +-15mm. SLABS TO BE CURED FOR 7 DAYS BY WATERING OR COVERING WITH A PLASTIC MEMBRANE, AFTER WHICH CONSTRUCTION CAN BEGIN, DUE CARE GIVEN NOT TO OVER-TIGHTEN HOLD DOWN BOLTS. GIVEN ALLOWABLE SOIL TYPES 1 LAYER OF SL72 REINFORCING MESH IS TO BE INSTALLED ON STANDARD SLABS WITH A MINIMUM 30MM COVER FROM CONCRETE SURFACE. CONCRETE REINFORCING TO CONFORM TO AS 1302, AS1303 & AS 1304.
ALL REINFORCING COVER TO BE A MINIMUM OF 30mm.
10. **STRUCTURAL STEEL REQUIREMENTS:**
ALL STRUCTURAL STEEL, INCLUDING SHEETING THOUGH EXCLUDING CONCRETE REINFORCING, SHALL CONFORM TO AS 1397 (GAUGE <= 1mm fy = 550MPa, GAUGE > 1mm < 1.5mm fy = 500MPa, GAUGE >= 1.5mm fy = 450MPa).
NO WELDING IS TO BE PERFORMED ON THIS BUILDING.
ALL STRUCTURAL MEMBERS AND CONNECTIONS DESIGNED TO AS4600. ALL BOLT HOLE DIAMETERS TO STRAMIT GENERAL PUNCHINGS.
11. **DESIGN WIND REQUIREMENT:**
THE FRAME AS A BASIC STRUCTURE IS DESIGNED AS AN "AIR LEAKY BUILDING" IN COMPLIANCE WITH AS 1170.5.3, AS SUCH, SHOULD A WINDOW OR DOOR FAIL, INTEGRITY OF THE BUILDING WILL BE MAINTAINED.
12. **FOOT TRAFFIC:**
FOR ERECTION AND MAINTENANCE PLEASE NOTE THE FOLLOWING DEFINED FOOT TRAFFIC ZONES:
- CORRUGATED: WALK ONLY WITHIN 200MM OF SCREW LINES. FEET SPREAD OVER AT LEAST TWO RIBS.
- MONOCLAD: WALK ONLY IN PANS, OR ON RIBS AT SCREW LINES.

PROJECT DESIGN CRITERIA

ROOF LIVE LOAD:	0.25 kPa
BASIC WIND SPEED:	VR 41 m/s
SITE WIND SPEED:	Vsit,B 38 m/s
WIND REGION:	Reg A
TOPOGRAPH FACTOR, k_t :	1
SHIELDING FACTOR, k_s :	1
MAX GROUND SNOW LOAD:	NA
MAX ROOF SNOW LOAD:	NA
SITE ALTITUDE:	NA
TERRAIN CATEGORY:	TCat 2
SOIL SAFE BEARING CAPACITY:	100 kPa
RETURN PERIOD:	1:100
LIMITING CPI 1:	-0.65
LIMITING CPI 2:	0.7
IMPORTANCE LEVEL:	1

DETAIL KEYS

- (A) ENDWALL VERTICAL MULLION (SEE DETAIL C/5 FOR TOP CONN. AND F/5 FOR BASE CONN.)
- (B) FLYBRACING PER DETAIL L/5
- (C) X-BRACING IN ROOF ABOVE (SEE DETAIL M/5)
- (D) DOUBLE X-BRACING IN ROOF ABOVE (SEE DETAIL M/5)

SHEET 4 OF 6 | JOB NO. GRIF15831 | DATE 31/7/2015 | CHECKED TM | DRAWN FDS

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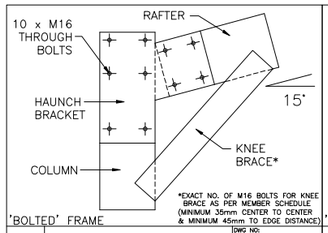
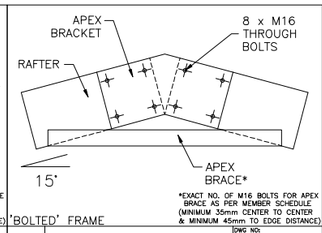
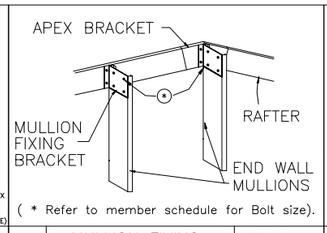


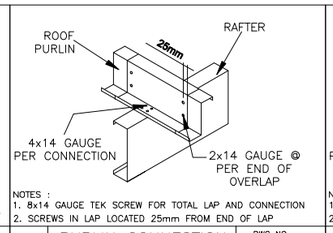
A | HAUNCH CONNECTION | DWG NO: K42BB



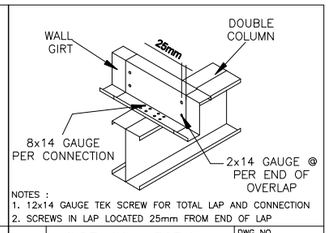
B | APEX CONNECTION | DWG NO: AP42BB



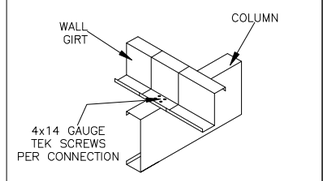
C | MULLION FIXING ANGLE BRACKET | DWG NO MFA13



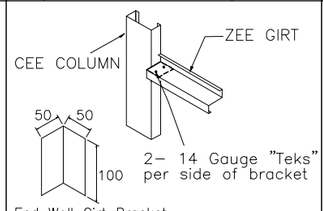
D_P | PURLIN CONNECTION DETAIL | DWG NO PCON8L



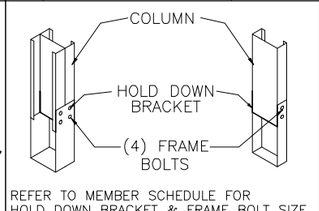
D_G | GIRT CONNECTION DETAIL | DWG NO GCON8LD



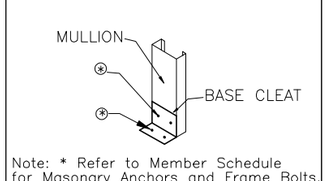
E_G | ENDWALL GIRT CONNECTION DETAIL | DWG NO EGCON8N



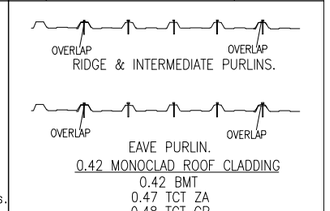
E | END WALL GIRT CONNECTION | DWG NO EG8



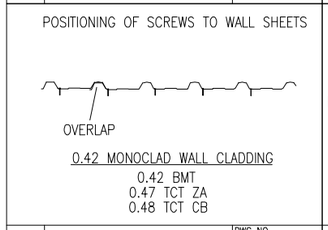
F | BASE CONNECTION | DWG NO HDB30



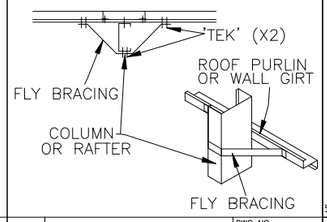
F_E | BASE CONNECTION | DWG NO MBC1



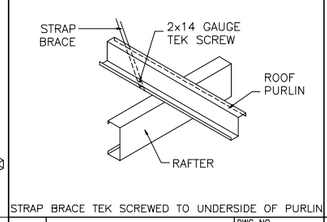
G | ROOF SHEETING PROFILE | DWG NO R1NC4



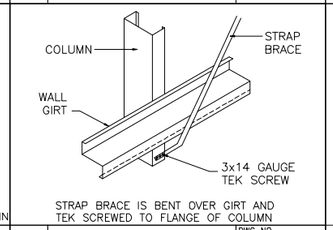
H | WALL SHEET PROFILE | DWG NO W1NC4



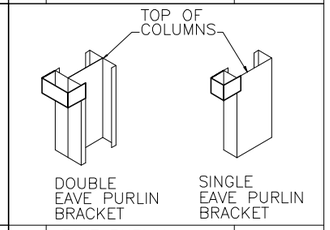
L | FLYBRACING | DWG NO FBRZ



M | STRAP BRACING | DWG NO PZSB



M | STRAP BRACING | DWG NO GZSB



O | EAVE PURLIN BRACKET | DWG NO EPB5

MEMBER AND MATERIAL SCHEDULE

1	END WALL RAFTER	Single C25019
2	C.S. FRAME RAFTER	Single C25024
3	END FRAME COLUMN (C2)	Single C25019
4	C.S. FRAME COLUMN (C1)	Double C25024
5	MULLION (C3)	Single C25024
6	C.S. FRAME KNEE BRACE	Single C20019 @ 4.05 LONG 3 bolts each end
7	KNEE BRACE HEIGHT UP COLUMN	3.28m
8	KNEE BRACE LENGTH UP RAFTER	2.99m
9	C.S. FRAME APEX BRACE	Single C20019 @ 5.10 LONG 2 bolts each end
10	APEX POSITION FROM RAFTER END	2.64m
11	END DBL ANCHOR BRACKETS (# PER DETS.)	HDB Double 250 X 150 X 5 - 400 DEEP - Gal Flat
12	MAIN DBL ANCHOR BRACKETS (# PER DETS.)	HDB Double 250 X 150 X 5 Gal Flat
13	END ANCHOR BRACKETS (# PER DETS.)	HOLD DOWN BRKTS 250 X 75 X 5-400 DEEP GAL FLAT
14	MULLION ANCHOR BOLTS (# PER DETS.)	Sleeve Anchor 16.0x110 Z/Y
15	EAVE PURLIN	C15015 (Eave Purlin Bracket 15mm down from top of column)
16	TYP. ROOF PURLIN SIZE	Z15012
17	MAIN BLDG. PURLIN SPACING	1.08 m. (8 rows) (Max Allow. 1.20m)
18	MAIN BLDG. PURLIN LENGTH	5.5 m. (0.5m Overlap)
19	ROOF PURLIN BRIDGING	Tophat 64 x 0.75
20	TYP. SIDEWALL GIRT SIZE	Z15012
21	MAIN BLDG. SIDEWALL GIRT SPACING	0.97 m. (5 rows) (Max Allow. 1.00m)
22	MAIN BLDG. SIDEWALL GIRT LENGTH	5.5 m. (0.5m Overlap)
23	TYP. ENDWALL GIRT SIZE	Z15012
24	MAIN BLDG. ENDWALL GIRT SPACING	0.97 m. (7 rows) (Max Allow. 1.00m)
25	MAIN BLDG. ENDWALL GIRT LENGTH	4.15 m. (0.1m Overlap)
26	FRAME SCREW FASTENERS	14-13x22 Hex C/S (SP HD 5/16" Hex Drive)
27	FRAME BOLT FASTENERS	8.8 Hex BN+2W M16x40 Z/P
28	X-BRACING STRAP AND FASTENERS	Single Bracing Strap Per Roll Heavy
29	WALL COLOUR	PALE_EUCALYPT
30	ROOF COLOUR	PALE_EUCALYPT
31	DOWNPIPE COLOUR	PALE_EUCALYPT
32	GUTTER COLOUR	PALE_EUCALYPT
33	CORNER FLASHING COLOUR	PALE_EUCALYPT
34	BARGE FLASHING COLOUR	PALE_EUCALYPT
35	OPENING FLASHING COLOUR	PALE_EUCALYPT
36	OPEN BAY HEADER HEIGHT	0.5

"C.S." = CLEARSPAN "L." = LEFT "R." = RIGHT

SHEET 5 OF 6 | JOB NO. GRIF15831 | DATE 31/7/2015 | CHECKED TM | DRAWN FDS

STEEL BUILDING BY (CONTACT)
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR
PROTEN NARRANDERA
AT
LOT 42 STURT HIGHWAY
EUROLEY

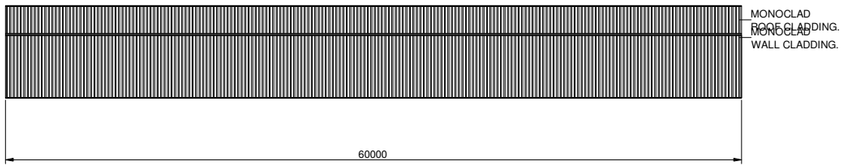
SHED SAFE accredited

fairdinkum SHEDS

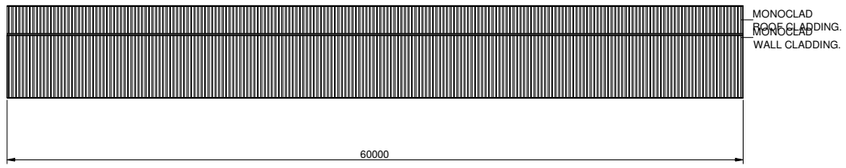
NORTHERN CONSULTING engineers
Civil & Structural Engineers
50 Punari Street
Currajong, Qld 4812
Fax: 07 4725 5850
Email: design@nceng.com.au
ABN 341 008 173 56

Registered Chartered Professional Engineer — Regn. No. 2558980
Registered Professional Engineer (Civil & Structural) QLD — Regn. No. 9985
Registered Certifying Engineer (Structural) N.T. — Regn. No. 116373ES
Registered Engineer - (Civil) VIC — Regn. No. EC36692
Registered Engineer - (Civil) TAS — Regn. No. CC5648M

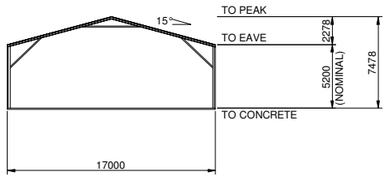
Mr Timothy Roy Messer BE MIEAust RPEQ
Registered Professional Engineer 2558980
Signature .....
Date 31/7/2015
Registered on the NPER in the areas of practice of Civil & Structural National Professional Engineers Register



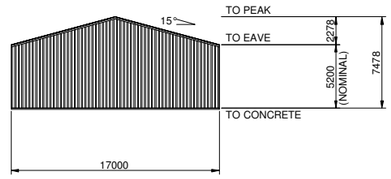
1/6 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 500



2/6 SIDEWALL EXTERIOR ELEVATION
SCALE: 1 = 500



4/6 ENDWALL EXTERIOR ELEVATION
SCALE: 1 = 500



3/6 ENDWALL EXTERIOR ELEVATION
SCALE: 1 = 500

BUILDING COLOURS

WALL	PALE EUCALYPT
ROOF	PALE EUCALYPT
DOWNPIPE	PALE EUCALYPT
GUTTER	PALE EUCALYPT
CORNER FLASHING	PALE EUCALYPT
BARGE FLASHING	PALE EUCALYPT
OPENING FLASHING	PALE EUCALYPT

SHEET 6 OF 6
JOB NO. GRIF15831
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GUIDE TO THE INSTALLATION OF TEMPORARY BRACING

(REFER TO FDHS INSTALLATION GUIDE MANUAL FOR THE TWO METHODS OF CONSTRUCTION)

NOTES:

BRACING MATERIALS - THE SHED ERECTOR TO SUPPLY SPECIFIC BRACING. SUITABLE RIGID MEMBERS CAPABLE OF TENSION AND COMPRESSION OR OPPOSING CHAINS OR OPPOSING LOAD RATED RATCHET STRAPS TO BE USED. (RIGID BRACING AS SHOWN ON DIAGRAM) ROPE BRACING SUITABLE ONLY FOR SMALLER STRUCTURES IN IDEAL CONDITIONS.

BRACING LOCATION - TEMPORARY BRACING TO BE ERECTED AS CLOSE TO 45 DEGREE ANGLE AND FIXED TO THE TOP OF THE COLUMN OR MULLION TO ACHIEVE THE OPTIMUM EFFECTIVENESS. IF THERE IS NOT ENOUGH SPACE FOR A 45 DEGREE ANGLE, THEN 20 DEGREE ANGLE IS TO BE THE MINIMUM ANGLE ALLOWED (REFER TO DIAGRAM). RIGID TEMPORARY BRACING MEMBER TO BE BOLTED TO HEAVY ANGLE PEGS HAMMERED INTO THE GROUND OR TO A BRACKET, MASONRY ANCHORED TO THE SLAB.

BRACING REMOVAL - TEMPORARY BRACING TO REMAIN IN PLACE UNTIL CLADDING IS FULLY INSTALLED WHERE POSSIBLE. IN NO CASE SHOULD TEMPORARY BRACING BE REMOVED UNTIL ALL PURLINS, GIRTS (AND PERMANENT CROSS BRACING WHERE USED) ARE FIXED.

SITE SAFETY - DUE CONSIDERATION TO BE GIVEN TO SITE SAFETY IN REGARD TO LOCATIONS OF BRACING AND PEGS.

GUIDE APPLICATION - TEMPORARY BRACING AS DESCRIBED IS A MINIMUM REQUIREMENT FOR AN AVERAGE, STANDARD SITE CONDITION. PROVIDE ADDITIONAL BRACING FOR MORE SEVERE AND/OR HIGH EXPOSURE SITE CONDITIONS.
ADDITIONAL BRACING TO BE USED AS AND WHERE NECESSARY TO ENSURE THAT ENTIRE FRAME IS RIGID THROUGHOUT CONSTRUCTION.
RESPONSIBILITY FOR ENSURING STABILITY OF STRUCTURE REMAINS WITH THE BUILDER.

TILT UP METHOD
FOR STRUCTURES UNDER 9M SPAN, LESS THAN 3M HIGH AND LESS THAN 12M LONG

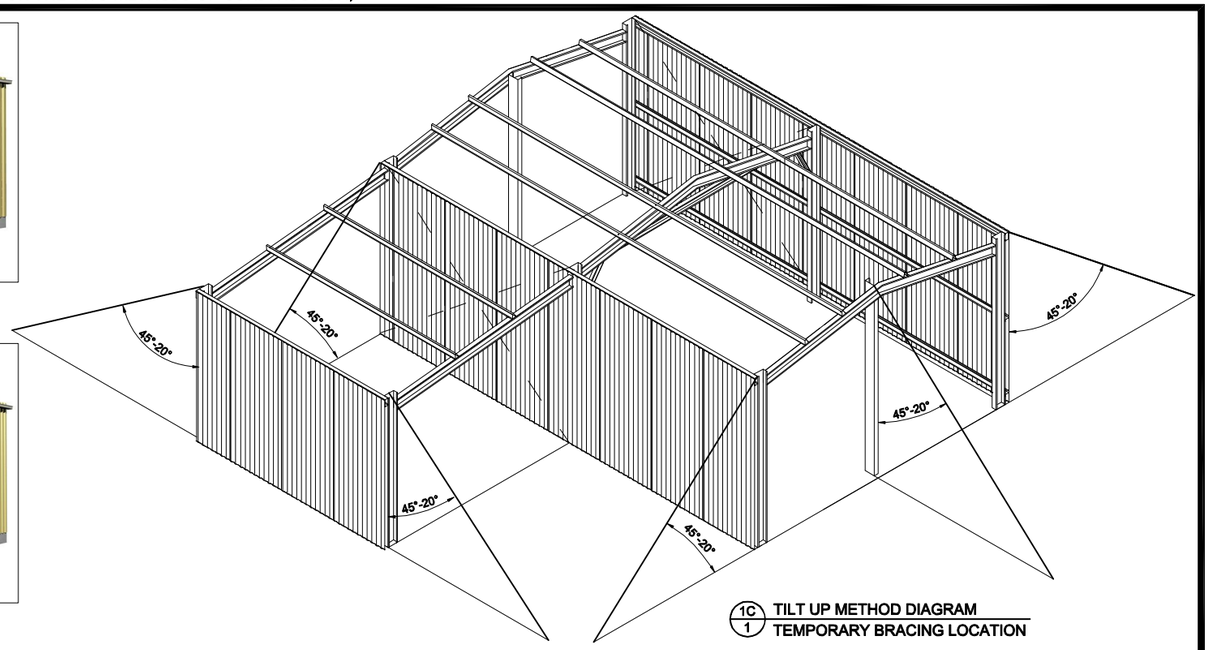
A. ASSEMBLE THE FIRST SIDEWALL FRAME (COMPLETE WITH WALL SHEETING, BRACING AND GUTTER) ON THE GROUND AND LIFT ASSEMBLED SIDEWALL FRAME INTO POSITION. FIX OFF TEMPORARY SIDE BRACING TO EACH END (REFER TO DIAGRAM). FIX BASE CLEATS.
B. ASSEMBLE THE SECOND SIDEWALL FRAME AS PER FIRST SIDEWALL FRAME. LIFT INTO POSITION. FIX OFF TEMPORARY WALL BRACING TO EACH END (REFER TO DIAGRAM) FIX BASE CLEATS.
C. FIX GABLE END RAFTERS TO COLUMNS TO TIE WALLS. PROP APEX UNTIL ENDWALL MULLION AND APEX TEMPORARY BRACE ARE FIXED OFF. IF NO MULLION IS REQUIRED THEN PROP AND BRACE APEX UNTIL CLADDING IS COMPLETE.
D. INSTALL REMAINING RAFTERS. AS EACH RAFTER PAIR IS INSTALLED, AT LEAST ONE PURLIN PER 3M OF RAFTER LENGTH IS TO BE INSTALLED TO SECURE RAFTERS.
E. INSTALL REMAINING PURLINS
F. INSTALL KNEE AND APEX BRACES IF AND WHERE APPLICABLE.
G. REPEAT FOR LEANTO'S.

FRAME FIRST METHOD
FOR STRUCTURES OVER 9M SPAN, GREATER THAN 3M HIGH AND GREATER THAN 12M LONG

A. ASSEMBLE PORTAL FRAMES ON THE GROUND (WITH KNEE AND APEX BRACES IF AND WHERE APPLICABLE). LIFT THE FIRST PORTAL FRAME ASSEMBLY INTO POSITION. FIX OFF TEMPORARY END BRACING (REFER TO DIAGRAM). FIX BASE CLEATS.
B. PROP APEX UNTIL ENDWALL MULLION AND APEX TEMPORARY BRACE ARE FIXED OFF. IF NO MULLION IS REQUIRED THEN PROP AND BRACE APEX UNTIL CLADDING IS COMPLETE.
C. THE SECOND PORTAL FRAME ASSEMBLY TO BE LIFTED INTO POSITION. FIX EAVE PURLINS AND AT LEAST ONE PURLIN PER 3M OF RAFTER TO SECURE FRAME ASSEMBLY. FIX BASE CLEATS. FIX TEMPORARY SIDEWALL BRACING.
D. STAND REMAINING PORTAL FRAME ASSEMBLY AS PER STEP C, FIXING TEMPORARY SIDE WALL BRACING TO EVERY SECOND BAY. BRACE OTHER END PORTAL FRAME AS PER FIRST PORTAL FRAME.
E. INSTALL REMAINING PURLINS AND GIRTS.
F. REPEAT FOR LEANTO'S.

1A/1 FIRST SIDEWALL FRAME
REFER 1C FOR TEMPORARY BRACING LOCATION

1B/1 SECOND SIDEWALL FRAME
REFER 1C FOR TEMPORARY BRACING LOCATION

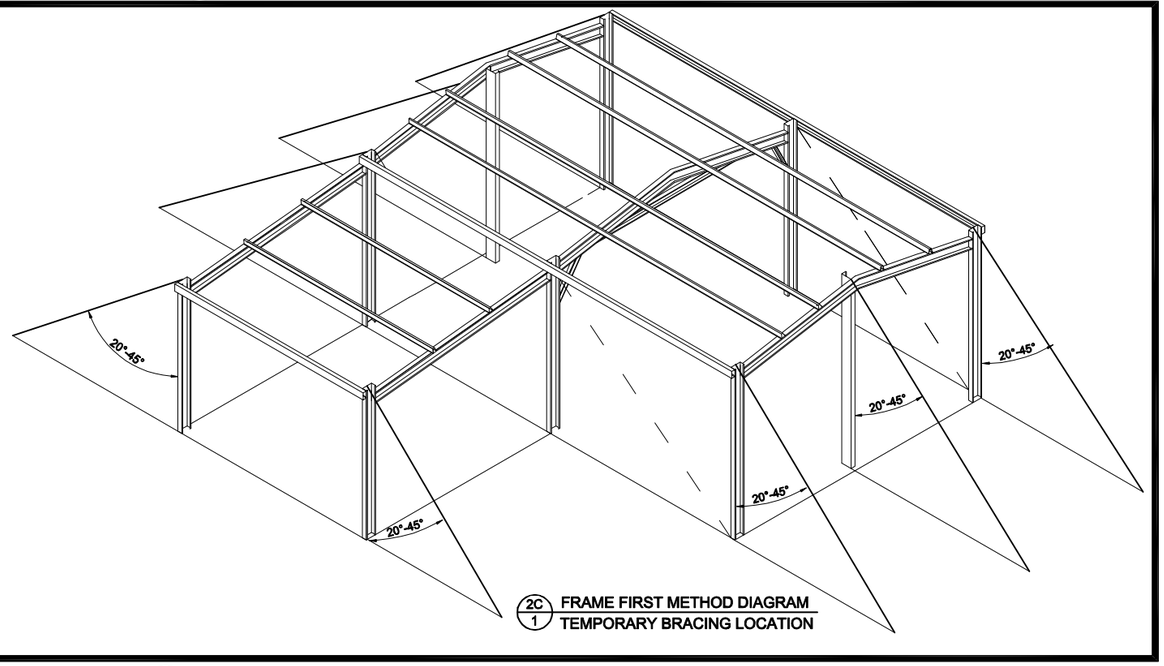


1C/1 TILT UP METHOD DIAGRAM
TEMPORARY BRACING LOCATION

1/1 TILT UP METHOD DIAGRAM
SCALE: NTS

2A/1 FIRST & SECOND PORTAL FRAME ASSEMBLY
REFER 2C FOR TEMPORARY BRACING LOCATION

2B/1 COMPLETE PORTAL FRAME ASSEMBLY
REFER 2C FOR TEMPORARY BRACING LOCATION



2C/1 FRAME FIRST METHOD DIAGRAM
TEMPORARY BRACING LOCATION

2/1 FRAME FIRST METHOD DIAGRAM
SCALE: NTS

JOB NO. GRIF15831
DATE 31/7/2015
CHECKED TM
DRAWN FDS

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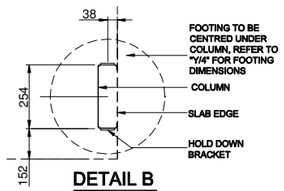
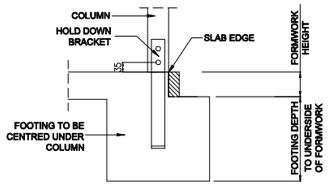


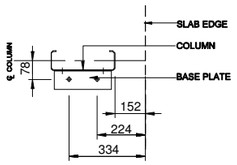
DETAIL B

SCALE: NTS



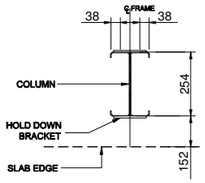
CORNER SECTION DETAIL (TYP.)

SCALE: NTS



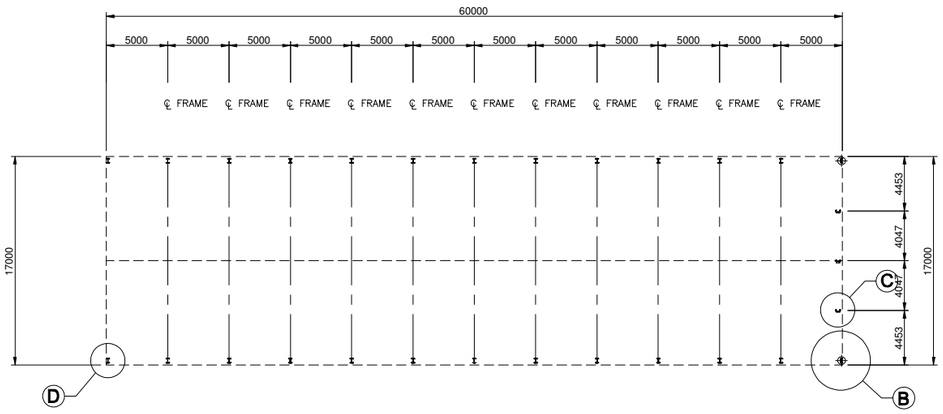
DETAIL C

SCALE: NTS



DETAIL D

SCALE: NTS



1 / 1 HOLD DOWN BRACKET LAYOUT

SCALE: 1 = 500

IF YOU HAVE A ROLLER DOOR IN THE GABLE END OF YOUR SHED, CONTACT YOUR DISTRIBUTOR TO SEE IF MULLION NEEDS TO BE ROTATED FOR USE AS A DOOR JAMB.

NOT PART OF COUNCIL APPLICATION DOCUMENTATION

JOB NO.	DATE	CHECKED	DRAWN
GRIF15831	31/7/2015	TM	FDS

STEEL BUILDING BY
GRIFFITH SHEDS AND GARAGES
02 6964 9991
FOR
PROTEN NARRANDERA
AT
LOT 42 STURT HIGHWAY
EUROLEY

31/7/2015

SHED SAFE accredited

fairdinkum SHEDS

BRACKET LAYOUT

COMPLIANCE CERTIFICATE FOR BUILDING DESIGN

Property Description
Street address (include number, street, suburb/locality & postcode)

LOT 42 STURT HIGHWAY *
EUROLEY **Postcode :** 2700

*** - Certifier to confirm on site that the wind loadings for this design are true and correct for the address stated**

Description of Component/s Certified
Clearly describe the extent of work covered by this certificate.

Steel Portal Frame Structure.
17m span x 60m O/A length x 5.2m eaves height.
Consisting of 12 bays at 5m spacing.

Basis of Certification
Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

Australian Standards (list) AS/NZS 4600-2005, AS/NZS 1170.0,.1,2,3-2011, AS2870-2011, AS3600-2009	
2015 National Construction Code of Australia	
Region AS1170.2 = Reg A	**Factor for Region =** NA
NCC Importance Level = 1	**NCC Equivalent Wind class =** NA
Annual Probability Exceedance wind = 1:100	**Design Roof Live Load =** 0.25 kPa
Regional 3 s Gust Wind Speed for annual probability of exceedance V_R = 41 **m/s**	
Wind directional multipliers for the 8 cardinal directions Md = 1	
Terrain/Height multiplier (Mz, Cat) = 0.934	**Shielding Multiplier M_s =** 1
Topographic multiplier Mt = 1	**Site Wind Speed $V_{sit,B}$ =** 38 **m/s**
Ext. Pressure Coefficient cpe = −1.35, 1.35	**Int. Pressure Coefficient cpi =** −0.65, 0.7

Reference Documentation
Clearly identify any relevant documentation, e.g numbered structural engineering plans

Drawing Nos: 'Fair Dinkum Sheds' Structural Design Drawing
To be read in conjunction with Pages 1 to 6
For Job Number: GRIF15831 **DATED :** 31/7/2015
Specifications:
Computations:
Test Reports:
Other Documentation:

Competent Person Details
A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in aspect of the design, building or inspection of the building work because of the person's skill and experience in the aspect. The competent person must also be registered or licensed under a law applying in the state to practice the aspect.

A COPY OF A CURRENT CV AND PROFESSIONAL REGISTRATION DETAILS MUST BE PROVIDED WITH THE CERTIFICATE

Name:	**Timothy Roy Messer**		
Company Name (If applicable):	**Northern Consulting Engineers**		
Postal Address:	**50 Punari Street, Currajong 4812**		
Contact Person:	**Timothy Roy Messer**		
Telephone Number:	**07 4725 5550**		
Mobile Number:	**N/A**		
Fax Number:	**07 4725 5850**		
Email Address:	**design@nceng.com.au**		
License or Registration Number:	**2558980**	**Copy of CV Attached:**	**Tick Box**
			Y ☐ or N ☒

Signature of Competent Person
This form may be used by competent persons to certify the design of a material, system, method of building, building element design or other thing.

If the competent person is a licensed company the authorised person of the company is to sign the form.

I certify that the item/s described above, if installed or carried out in accordance with the information conatined in this certificate, including any referenced documentation, will comply with the National Construction Code of Australia/relevant Australian or International Standard.

Signature of competent person: T. Messer **Date:** 31/7/2015

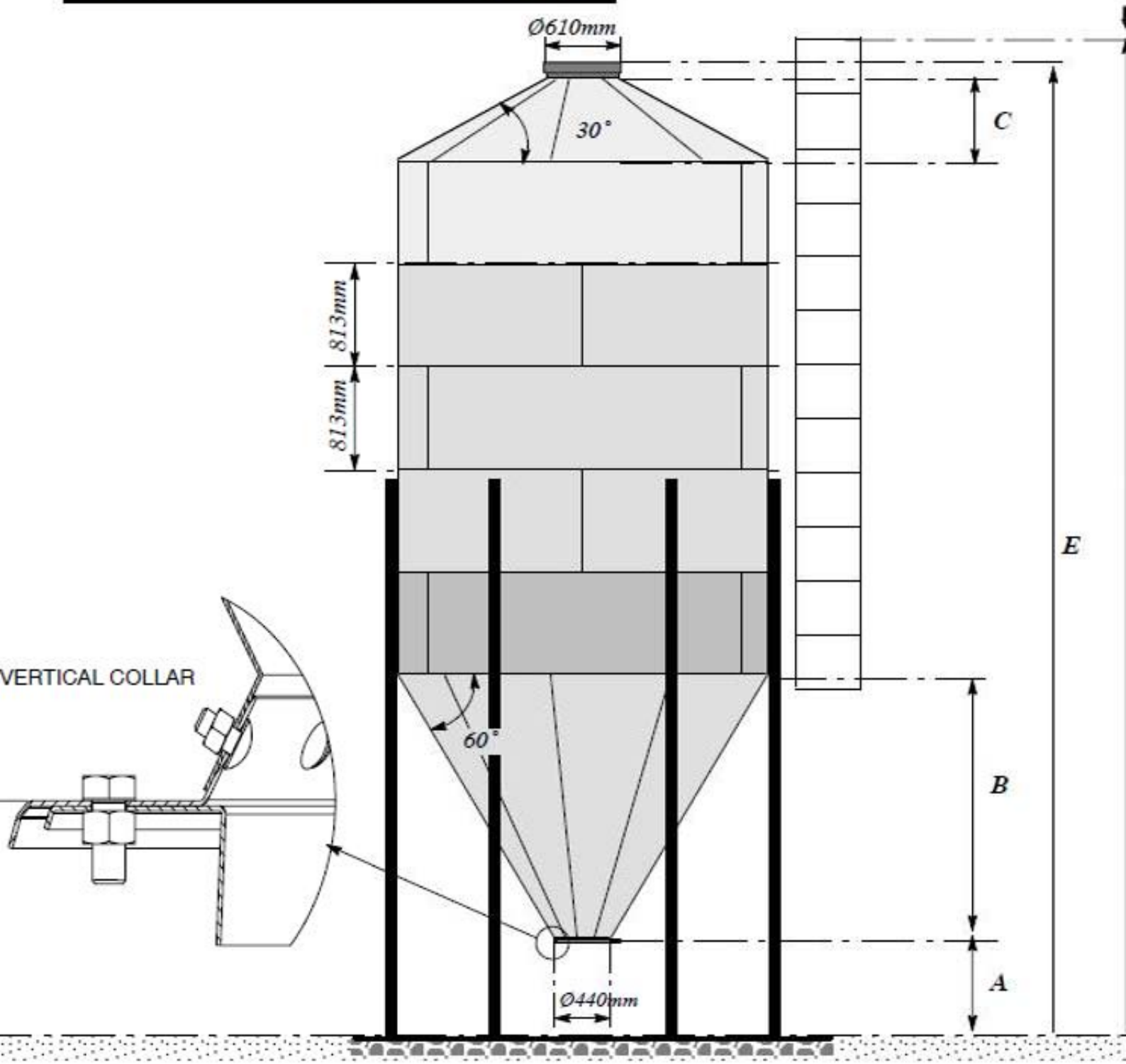
LOCAL GOVERNMENT USE ONLY

Date received		**Reference Number/s**		

Feed Silos

BIN DIAMETER 2.75m/3.2m

ANCHORING 3mm IN



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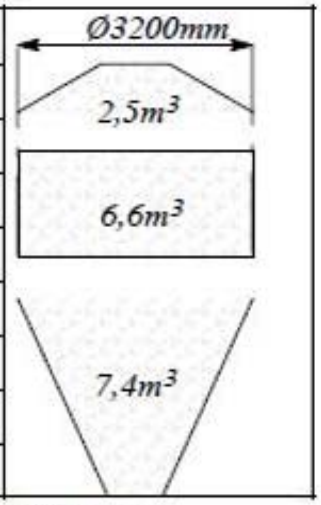
B	*2452*
C	*772*
D	*8960*
E	*9047*
Contents - m³	*49,8*
Contents - M.ton	*32,4*

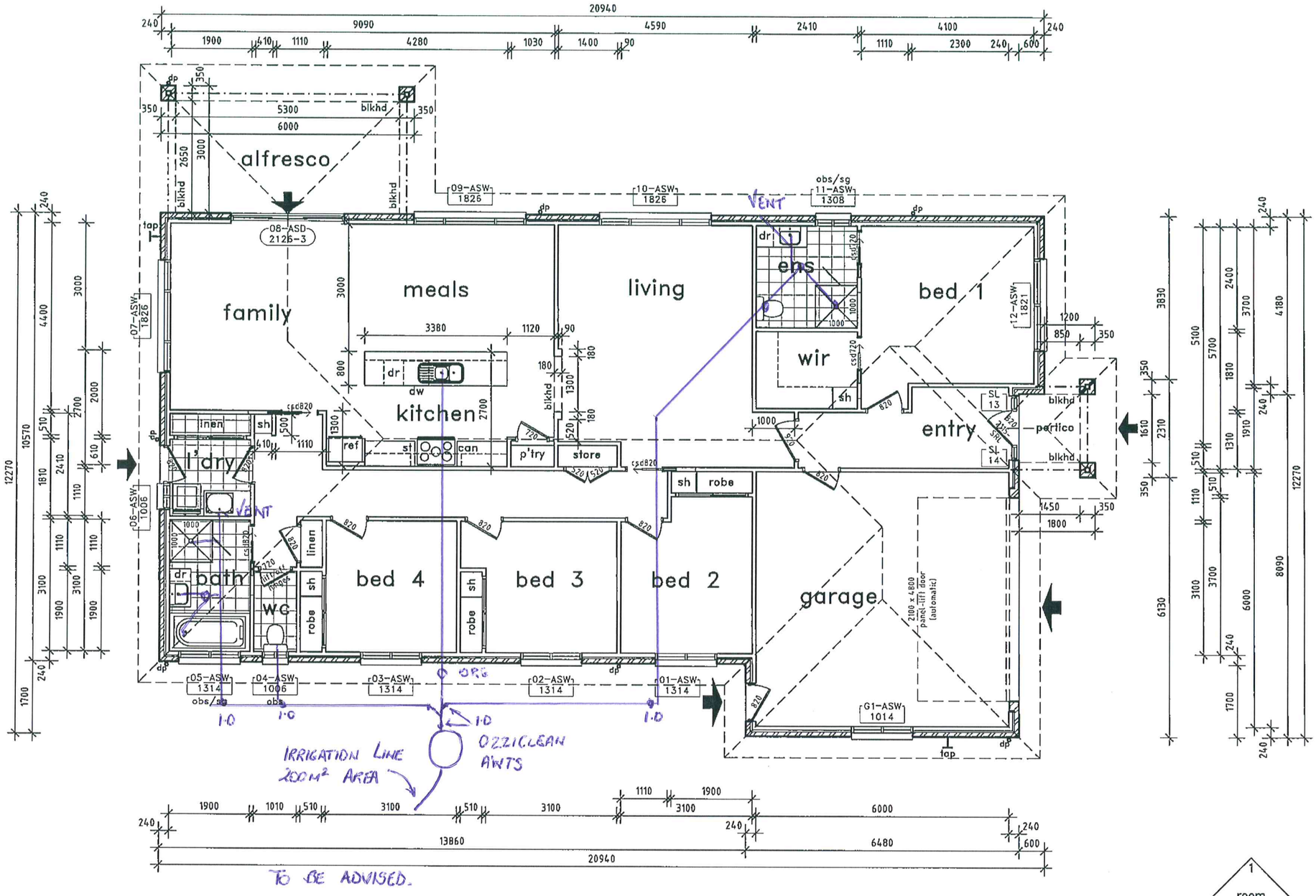


**Max. weight (incl. ladders & safety cage).*

Thickness of Rings -

Ring 1 - 1.5mm
Ring 2 - 1.5mm
Ring 3 - 1.25mm
Ring 4 - 1 mm
Ring 5 - 1 mm
Ring 6 - 1 mm
Bottom Cone Section 1.5mm
Top Cone Section 1.5mm

House Design



room orientation

north

Working Drawing

Project/Client

Proposed dwellings for
Proten Holdings Pty Ltd
Lot 42 Sturt Highway
Euroley, NSW 2700
DP pending

ground floor plan (dwelling 1 & 2)

floor area: 189.1m²
garage area: 39.4m²
portico area: 4.0m²
alfresco area: 18.0m²

external walls: 240mm
internal walls: 90mm
glazing to AS1288

Inclusion: S2/Shelby187/Standard/modified

Scale	1:100
Drawing Start	20.10.14
Signed off	
Project Number	P2260
Drawing Number	2 of 10
Plot date	16.07.15
revision :	P03_W03

DAVIS SANDERS HOMES

Davis Sanders Homes Pty Limited.
ABN 85-057-370-822
Licence No's NSW 41757C & Victoria DB-U25641

21 Bennu Circuit, Albury NSW 2640
PO Box 7285, Albury East NSW 2640
Telephone 02 6057 4777 Fax 02 6057 4778
www.davissandershomes.com.au

Aerated Wastewater Treatment Systems

Owner's Manual

OzziKleen
Sewerage Systems

Ozzi Kleen

RP10
RP10A

Please contact your Ozzi Kleen Service Provider with any queries:

Manufactured by: Suncoast Waste Water Management
59 Industrial Avenue, Kunda Park, QLD, 4556
Head Office: 07 5459 4900
Fax: 07 5456 4677 Email: info@ozzikleen.com
www.ozzikleen.com

SPECIFICATIONS

Parameter	Raw Wastewater Characteristics
Wastewater treatment capacity	10 persons EP at 200 l/person/day
Maximum hydraulic load	2,000 l/day
Biological Oxygen Demand (BOD_5)	350 mg/litre or 70 g/day/person
Total Suspended Solids (TSS)	350 mg/litre or 70 g/day/person
Fats, Oils and Grease (FOG)	75 mg/litre. For restaurant applications, a grease trap must be fitted upstream of the treatment plant to remove grease and oils.
pH	6<pH<10
Wastewater temperature range	10°C to 38°C

Treatment Plant Construction:

Tank and components	Polyethylene (MDPE)
All Pipe work	PVC

Electrical Equipment:

Air Blower	LP80HN
Effluent Pump	Submersible
Controls	Electronic (OK1 Control Board)

Alarm System:

Alarm System	24VDC Audio/Visual
Alarm signal	Indicator lights for High Water Power & Blower

Aeration Tank:

Operating Volume	4.1m^3
Aeration tank volume	5.3 m^3
Residence time	46 hr
Buffer Zone	1m^3 (approx.)

Disinfection equipment:

Chlorinator Type	Tablet Dispenser Cassette
Chlorine min contact time (max flow)	30 min

Motor Box:

Equipment Contained	Air Blower, Control Board, Decanter Solenoid Valve equipment

Effluent Pump (standard):

Effluent pump duty	100 litres/min @ 8 m head
Pump Mounting	Suspended on discharge pipe

Optional Equipment

Rapid Sand Filtration Equipment:

Flow rate (max)	250 litre/min

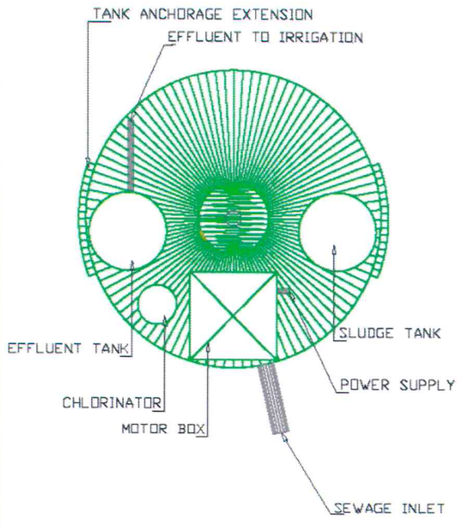
Nutrient Reduction Equipment:

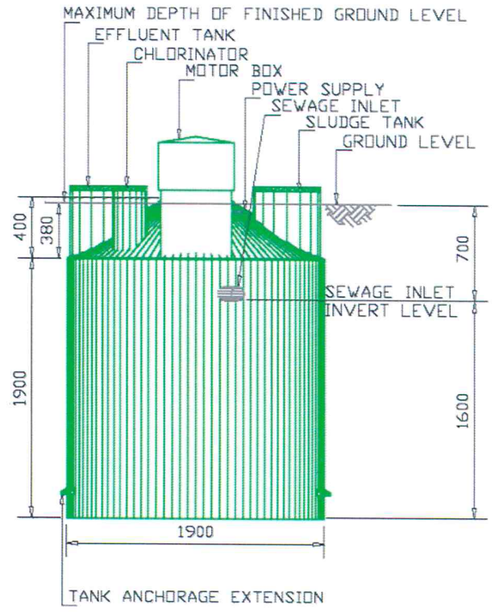
Process control	Electronic
Phosphate reduction process	Chemical dosing / Sludge wasting

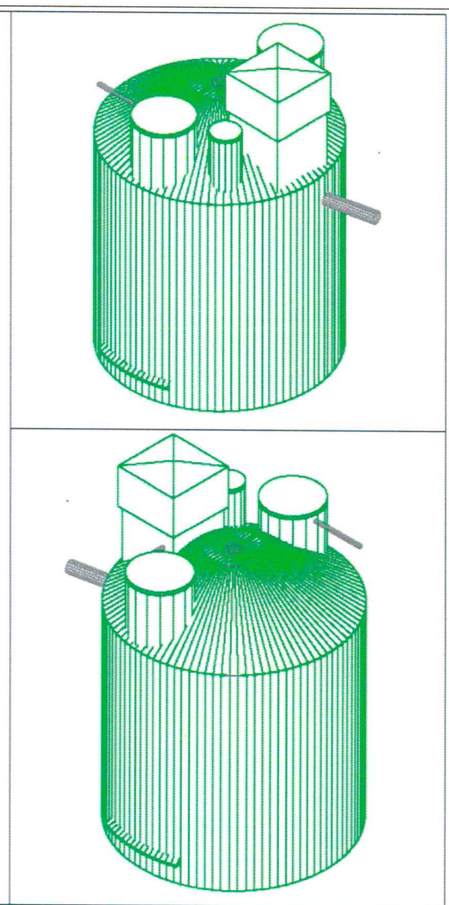
Sock Filters	120/210/Other Microns
Lifting/Pump Stations	SLS250, PT500, other sizes available
Other Customization available	Please enquire

Irrigation Equipment: Basic irrigation equipment is supplied with the treatment plant. The irrigation system could be of several different formats. Check with Local Authority requirements.

SYSTEM DRAWING







25/05/08	REPLACE SIPHON BY DECANTER	1	DC
DATE	DESCRIPTION	REV.	BY

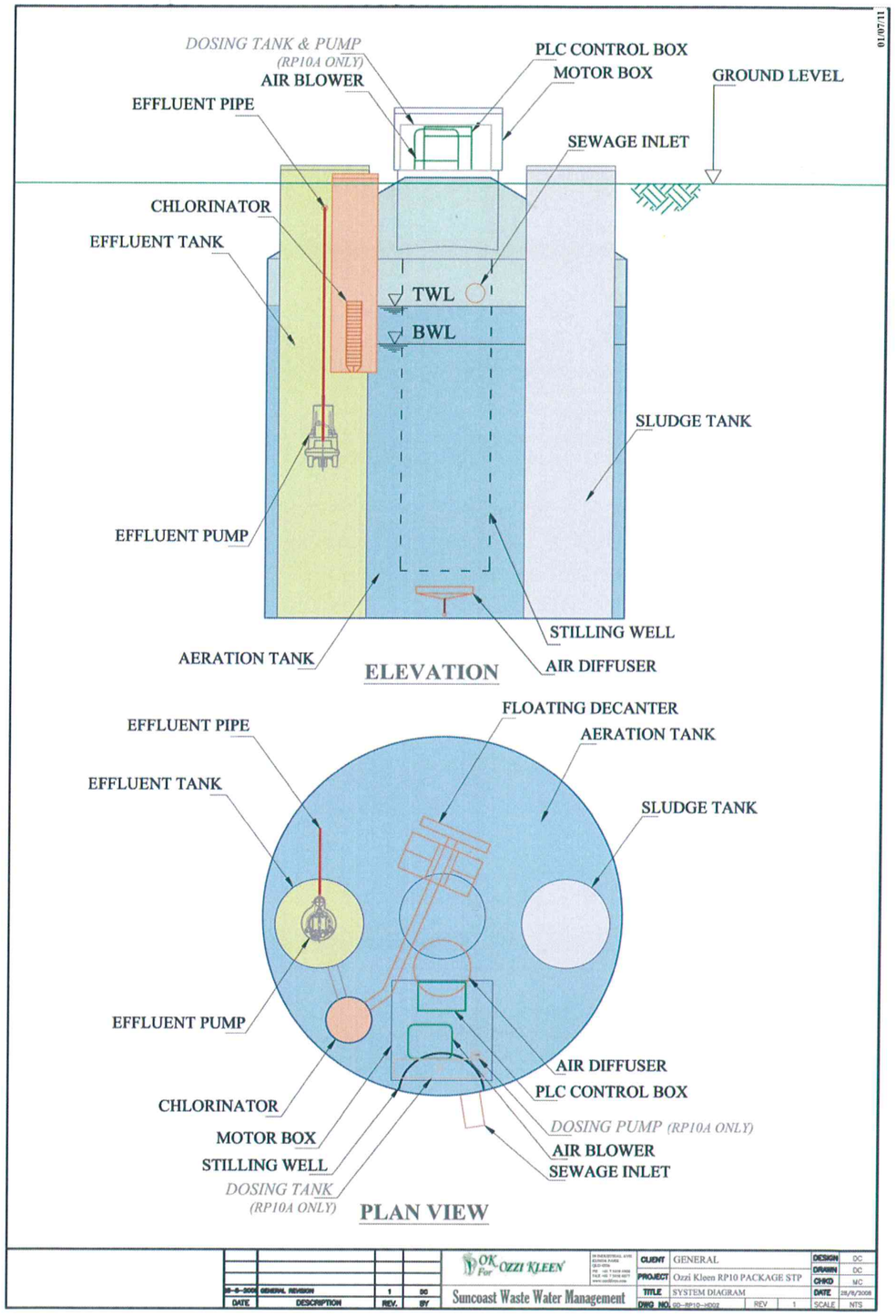
OK For OZZI KLEEN®

23 INDUSTRIAL AVE
HUNDIA PARK
QLD 4226
PH +61 7 5436 4600
FAX+61 7 5436 4677
WWW.OZZIKLEEN.COM

Suncoast Waste Water Management

CLIENT	GENERAL			DESIGN	DC
PROJECT	OZZI KLEEN AWTS RP10			DRAWN	DC
				CHKD	MC
TITLE	SYSTEM DETAILS			DATE	25/05/08
DWG NO.	GD–RP10–HD01	REV	1	SCALE	NTS

SYSTEM FLOW DIAGRAM



SAFETY INFORMATION

Never enter any compartment of the treatment plant.

There could be potential hazards from:

- Drowning in the tanks,
- Asphyxiation from an oxygen depleted atmosphere within the tanks.

There are five accessible compartments:

- The motor box control compartment, which is accessible through the top lid.
- The main aeration tank, which is accessible by tilting the motor box on its hinges.
- The effluent tank with its pump, which is accessible through one of the large round lids.
- The sludge waste tank, which is accessible through the other large round lid.
- The chlorinator, which is accessible through the small round lid between the motor box and effluent tank.

All access lids are normally secured with set screws. The Owner should ensure that they are all in place after any site inspection has been carried out.

Signs indicating that the treated water is recycled and is not fit for drinking have been provided and are to be erected in the irrigation area. This is a State Regulatory Authority requirement in all areas.

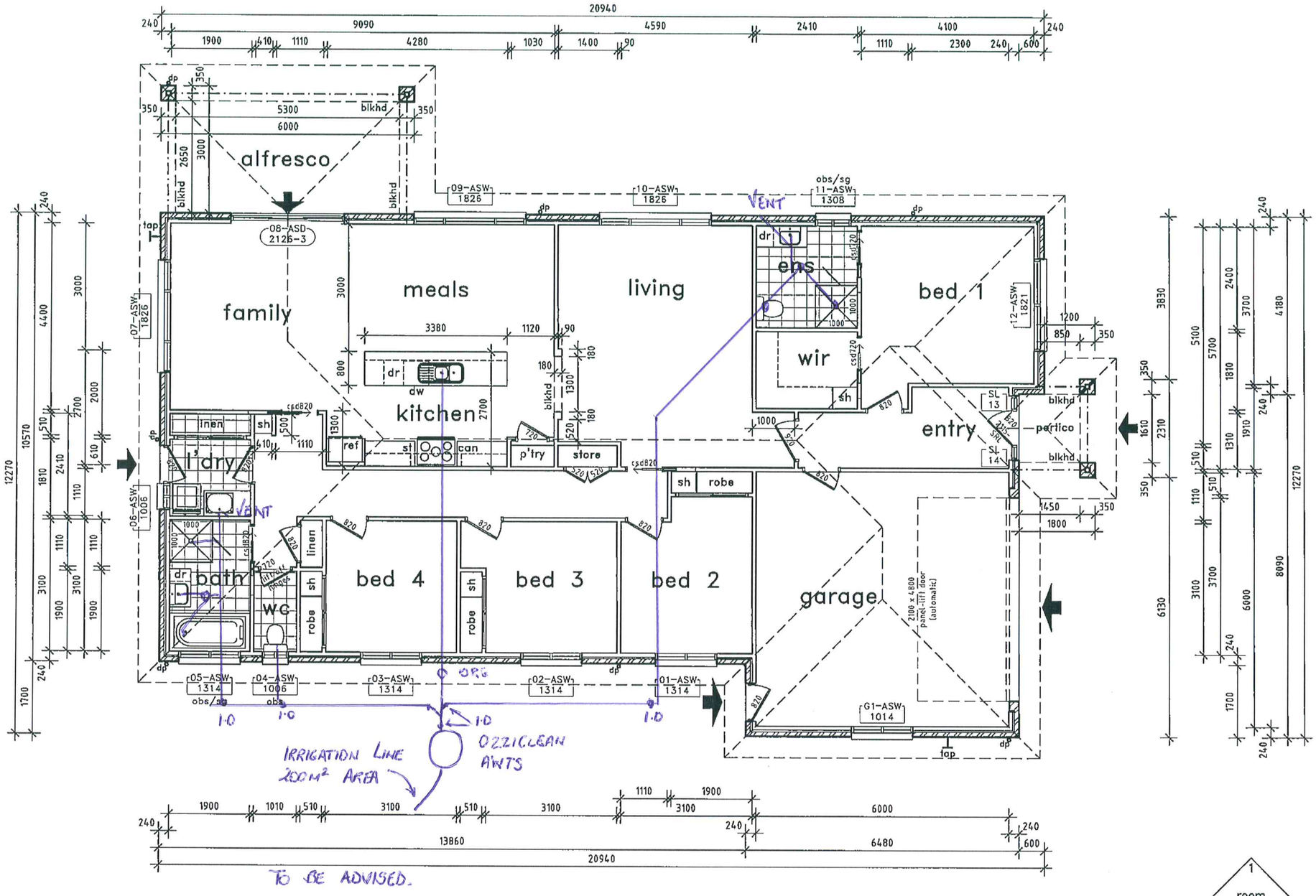
The Ozzi Kleen system operates on a 240 V power supply.

The main power outlets within the motor box are intended for the use of the treatment plant equipment only. These should be kept plugged in at all times. The power outlets cannot be used for any other power appliances. Plugging anything else into these outlets will affect the systems controls, and may void warranty.

Ensure all household drains are never dry.
Check with your plumber that they have been installed correctly. Floor waste gully traps in your home require to be charged with water to prevent odours from the drains. If odours occur have your plumbing checked.

OPTIONAL RAPID SAND FILTRATION SYSTEM OPERATING INSTRUCTIONS

The Sand Filter is a tertiary treatment process. Under normal operation, the sand filter will have to be backwashed at infrequent intervals. Backwashing will be required approximately every three months, at each treatment plant service, or more often as required. Please observe and check the sand filter regularly.



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Scale	1:100
Drawing Start	20.10.14
Signed off	
Project Number	P2260
Drawing Number	2 of 10
Plot date	16.07.15
revision :	P03_W03

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Generators

C13 TE2A

330 kW (1500 rpm) - 360 kW (1800 rpm)

1/ GENERAL		1500 rpm	1800 rpm
Engine model		C13 TE2A	
Basic engine type		F3BE0685A*B101 - 8050770 XZ	
Number of cylinders		6	
Firing order (N° 1 nearest to fan)		1-4-2-6-3-5	
Cylinder arrangement		in line	
Valves per cylinder		4	
Cycle		diesel 4 stroke	
Injection system		direct E.U.I	
Electronic engine control unit		BOSCH EDC7 UC31	
Induction System		turbo aftercooler air/air	
Bore	mm	135	
Stroke	mm	150	
Total displacement	lit	12,88	
Mean piston speed	m/s	7,5	9
Compression ratio		16,5 : 1	
Flywheel rotation		anti clockwise viewed on flywheel	
Housing flywheel		SAE 1	
Flywheel		14"	
Moment of inertia			
without flywheel	kgm^2	1,05	
flywheel only	kgm^2	1,44	
BMEP gross			
Prime Power	bar/kPa	19,5 / 1948,1	18,1 / 1811,6
Stand-by Power	bar/kPa	21,4 / 2142,9	19,9 / 1992,8
Dry weight (including cooling package)	kg	~ 1180	
Energy to coolant	kcal/kWh	216	293
Energy to charge cooler	kcal/kWh	179	199
Energy to radiation	kcal/kWh	30	25
Dimensions L x W x H	mm	2272 x 1055 x 1468	

2/ PERFORMANCES			1500 rpm	1800 rpm
Continuous Power	(gross)	kWm	254,8	286,7
Prime Power	(gross)	kWm	314,9	352,2
Stand-By Power	(gross)	kWm	345	385
Fan consumption		kWm	15	25
Continuous Power	(net)	kWm	240	262
Prime Power	(net)	kWm	300	327
Stand-By Power	(net)	kWm	330	360
Performance condition				
temperature		°C	≤ 40	
altitude a.s.l		m	≤ 1000	
Derating				
temperature > T 40°C		%/5°C	4%	
altitude >1000 <3000 m		%/500m	3%	
altitude >3000 m		%/500m	6%	

FPT POWERTRAIN TECHNOLOGIES

3/ COOLING SYSTEM		1500 rpm	1800 rpm
Type		liquid	
Recommanded coolant		water + 50 % paraflu 11	
Coolant capacity			
engine only	liter	19,5	
radiator and hoses	liter	47,5	
Coolant pump flow	l/min	461	552,63
Pressure cap setting	kPa (bar)	70 (0,7)	
Shutdown switch setting	°C	103	
Maximum additional restriction	Pa	196	
Air To Boil Prime Power	°C	61,5	62,4
Fan			
diameter	mm	700	
number of blades		8	
drive ratio		1,37 : 1	
speed	rpm	2055	2466
air flow	m^3/s	6,8	8,5
power consumption	kWm	15	25

4/ LUBRICATION SYSTEM		1500 rpm	1800 rpm
Oil sump capacity			
max	liter	27	
min	liter	14	
Oil system capacity including filter	liter	35	
Oil pressure at rated speed	kPa	250-500	
Oil temperature			
normal	°C	---	
max	°C	120	
Engine Angularity			
longitudinal	degrees	30°	
transverse	degrees	30°	
Servicing interval	hours	600	
Oil specification		ACEA E3/E5	
Oil consumption	%fuel	< 0,2	

5/ INTAKE SYSTEM		1500 rpm	1800 rpm
Air consumption at 100 % of load	m^3/h (Kg/h)	1495 (1800)	1777 (2140)
Air intake restriction, clean filter	kPa (mbar)	2 (20)	
Air intake restriction, dirty filter	kPa (mbar)	5 (50)	
Air filter type		dry	

6/ EXHAUST SYSTEM		1500 rpm	1800 rpm
Gas flow at stand-by Power	kg/h	1865	2216
Max temperature at PRP (25°C)	°C	479	451
Max allowable back pressure	kPa (mbar)	5 (50)	
Energy to exhaust	kcal/kWh	648	647

FPT POWERTRAIN TECHNOLOGIES

7/ FUEL SYSTEM

		1500 rpm	1800 rpm
Fuel consumption at			
Stand-By	gr/kWh (l/h) [kg/h]	189,6 (77,9) [65,4]	198,4 (91,0) [76,4]
Full load	gr/kWh (l/h) [kg/h]	187,5 (70,0) [58,8]	182,6 (76,1) [63,9]
80%	gr/kWh (l/h) [kg/h]	191,8 (57,3) [48,1]	202,2 (67,4) [56,6]
50%	gr/kWh (l/h) [kg/h]	207,8 (38,8) [32,6]	210,2 (43,8) [36,8]
Fuel specifications		EN 590	
Feed pump max suction head	m	---	

8/ ELECTRIC SYSTEM

		1500 rpm	1800 rpm
Voltage (negative to ground)	V	24	
Starter motor			
make		DENSO	
power	kW	5,5	
pull current	Amp	12	
hold current	Amp	12	
break away current +20°C	Amp	1250	
cranking current +20°C	Amp	0	
Number of teeth on starter motor		10	
Number of teeth on flywheel		155	
Starting batteries			
recommended capacity	Ah 2x	185	
discharge current	Amp	1200	
(EN 50342)			
Alternator			
voltage	V	28	
charge	Amp	90	

9/ COLD STARTING

		1500 rpm	1800 rpm
Without air preheating	°C	-10	
With air preheating	°C	-25	

10/ EMISSION GASEOUS AND PARTICLES

			1500 rpm	1800 rpm
No_x	Oxides of nitrogen	gr/kWh	5,2	-
HC	Hydrocarbons	gr/kWh	0,13	-
No_x+HC		gr/kWh	5,33	-
CO	Carbon monoxide	gr/kWh	0,35	-
PT	Particles	gr/kWh	0,061	-

FPT POWERTRAIN TECHNOLOGIES

N67 TM2A

125 kW (1500 rpm) - 140 kW (1800 rpm)

1/ GENERAL		1500 rpm	1800 rpm
Engine model		N67 TM2A	
Basic engine type		F4GE0685D*F650 - 504241370	
Number cylinders		6	
Firing order (N° 1 nearest to fan)		1-5-3-6-2-4	
Cylinder arrangement		in line	
Valves per cylinder		2	
Cycle		diesel 4 stroke	
Injection system		direct	
Induction System		Turbocharged aftercooled air/air	
Bore	mm	104	
Stroke	mm	132	
Total displacement	lit	6,7	
Mean piston speed	m/s	6,6	7,9
Compression ratio		17,5 : 1	
Flywheel rotation		anti clockwise viewed on flywheel	
Housing flywheel		SAE 3	
Flywheel		11"1/2	
Moment of inertia			
without flywheel	kgm^2	0,31	
flywheel only	kgm^2	0,71	
BMEP gross			
Prime Power	bar/kPa	14,1 / 1411,1	13,4 / 1338,8
Stand-by Power	bar/kPa	15,5 / 1552,2	14,7 / 1472,6
Dry weight (including cooling package)	kg	~ 640	
Energy to coolant	kcal/kWh	458,4	463,1
Energy to charge cooler	kcal/kWh	97,9	118,2
Energy to radiation	kcal/kWh	66	51
Dimensions L x W x H	mm	1697 x 789 x 1318	

2/ PERFORMANCES			1500 rpm	1800 rpm
Continuous Power	(gross)	kWm	95,7	109,4
Prime Power	(gross)	kWm	118,5	134,8
Stand-By Power	(gross)	kWm	129,5	147,8
Fan consumption		kWm	4	6,9
Continuous Power	(net)	kWm	91,2	101,6
Prime Power	(net)	kWm	114	127
Stand-By Power	(net)	kWm	125	140
Performance condition				
temperature		°C	≤ 40	
altitude a.s.l		m	≤ 1000	
Derating				
temperature > T 40°C		%/5°C	1%	
altitude >1000 <3000 m		%/500m	2%	
altitude >3000 m		%/500m	4%	

FPT POWERTRAIN TECHNOLOGIES

3/ COOLING SYSTEM		1500 rpm	1800 rpm
Type		liquid	
Recommanded coolant		water + 50 % paraflu 11	
Coolant capacity			
engine only	liter	10,5	
radiator and hoses	liter	15	
Coolant pump flow	l/min	141	169
Pressure cap setting	kPa (bar)	100 (1,0)	
Shutdown switch setting	°C	103	
Maximum additional restriction	Pa	196	
Air To Boil Prime Power	°C	61,5	59,1
Fan			
diameter	mm	600	
number of blades		12	
drive ratio		1,41 : 1	
speed	rpm	2115	2538
air flow	m^3/s	3,2	3,9
power consumption	kWm	4	6,9

4/ LUBRICATION SYSTEM		1500 rpm	1800 rpm
Oil sump capacity			
max	liter	12	
min	liter	8	
Oil system capacity including filter	liter	17,2	
Oil pressure at rated speed	kPa	300-500	
Oil temperature			
normal	°C	---	
max	°C	120	
Engine angularity			
longitudinal	degrees	25°	
transverse	degrees	25°	
Servicing interval	hours	600	
Oil specification		ACEA E3/E5	
Oil consumption	%fuel	< 0,1	

5/ INTAKE SYSTEM		1500 rpm	1800 rpm
Air consumption at 100 % of load	m^3/h (Kg/h)	559 (672,5)	693 (833,9)
Air intake restriction, clean filter	kPa (mbar)	2 (20)	
Air intake restriction, dirty filter	kPa (mbar)	5 (50)	
Air filter type		dry	

6/ EXHAUST SYSTEM		1500 rpm	1800 rpm
Gas flow at stand-by Power	kg/h	699	866
Max temperature at PRP (25°C)	°C	467,8	489,2
Max allowable back pressure	kPa (mbar)	5 (50)	
Energy to exhaust	kcal/kWh	628,8	711,5

FPT POWERTRAIN TECHNOLOGIES

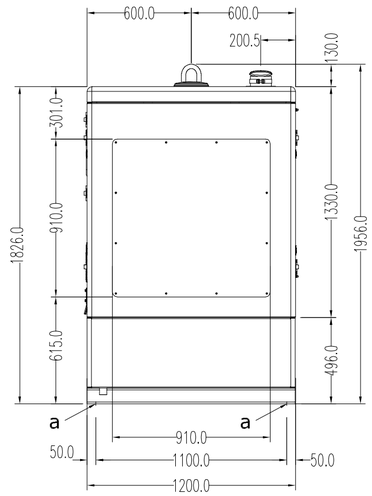
7/ FUEL SYSTEM		1500 rpm	1800 rpm
Fuel consumption at			
Stand-By	gr/kWh (l/h) [kg/h]	206,9 (32,0) [26,9]	216,1 (38,1) [32,0]
Full load	gr/kWh (l/h) [kg/h]	208,1 (29,3) [24,6]	217,1 (34,8) [29,2]
80%	gr/kWh (l/h) [kg/h]	228,0 (24,1) [20,2]	237,6 (28,5) [24,0]
50%	gr/kWh (l/h) [kg/h]	225,0 (15,8) [13,3]	239,4 (19,2) [16,1]
Fuel specifications		EN 590	
Feed pump max suction head	m	---	
Injection pump	type STANADYNE	DB 4629-5932	

8/ ELECTRIC SYSTEM		1500 rpm	1800 rpm
Voltage (negative to ground)	V	12	
Starter motor			
make		Bosch	
power	kW	3	
pull current	Amp	60	
hold current	Amp	12	
break away current +20°C	Amp	1580	
cranking current +20°C	Amp	---	
Number of teeth on starter motor		10	
Number of teeth on flywheel		125	
Starting batteries			
recommended capacity Ah	1x	100	
discharge current (EN 50342)	Amp	650	
Stop solenoid energized to run	Amp	---	
Alternator			
voltage	V	14	
charge	Amp	90	

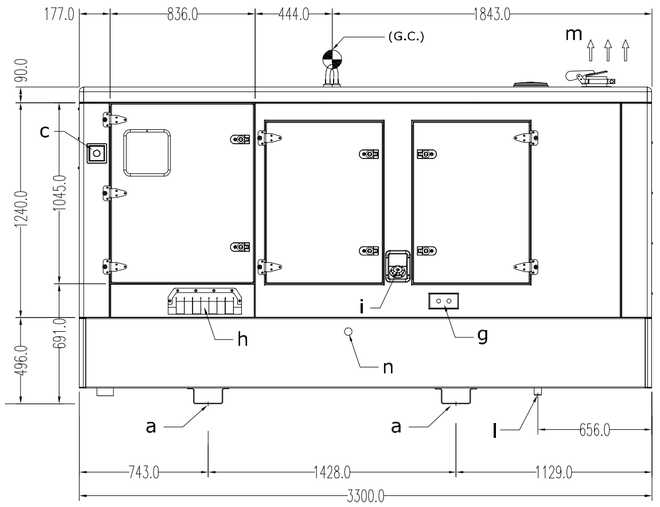
9/ COLD STARTING		1500 rpm	1800 rpm
Without air preheating	°C	-10	
With air preheating	°C	-25	

10/ EMISSION GASEOUS AND PARTICLES			1500 rpm	1800 rpm
No_x	Oxides of nitrogen	gr/kWh	5,42	-
HC	Hydrocarbons	gr/kWh	0,1	-
No_x+HC		gr/kWh	5,52	-
CO	Carbon monoxide	gr/kWh	0,5	-
PT	Particles	gr/kWh	0,131	-

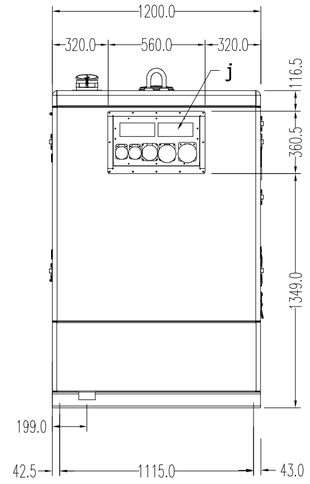
FPT POWERTRAIN TECHNOLOGIES



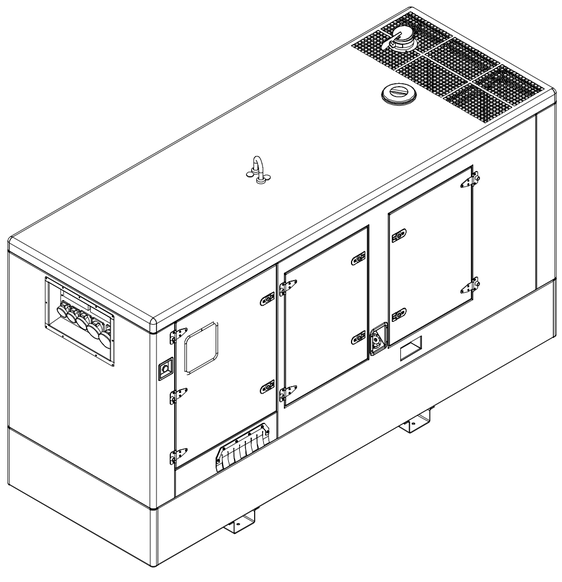
VISTA LATERAL IZQUIERDA
LEFT SIDE VIEW



VISTA FRONTAL
FRONT VIEW

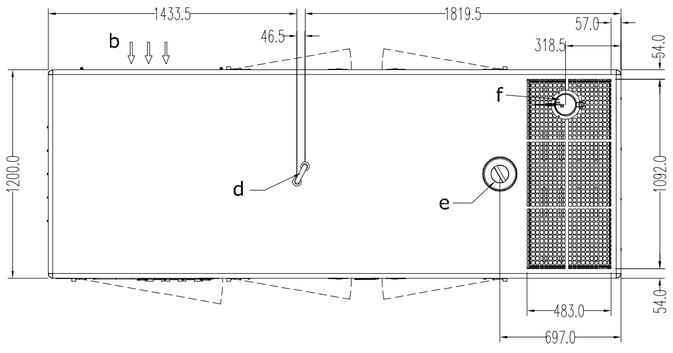


VISTA LATERAL DERECHA
RIGHT VIEW



VISTA ISOMETRICA
ISOMETRIC VIEW

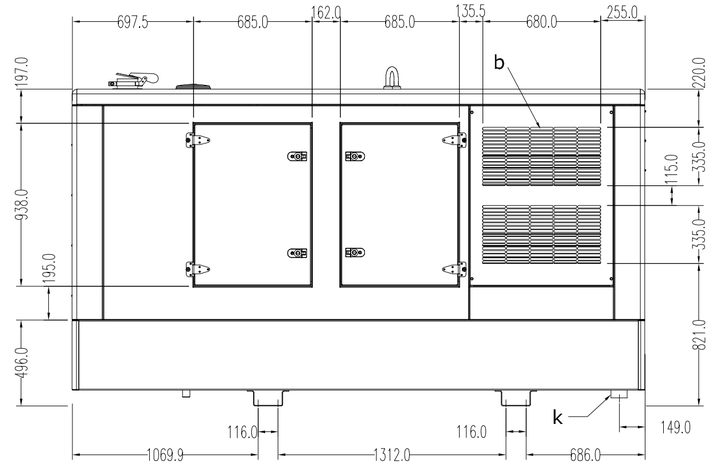
Motor / Engine	Modelo Motor / Engine model
IVECO	NEF67 TE 2A
IVECO	NEF67 TM 2A
IVECO	NET67 TM 3A



VISTA SUPERIOR
UPPER VIEW

OPCIONES DEPOSITOS / FUEL TANKS OPTIONS:
450 LITRES (POLIETILENO / POLYETHYLENE)
600 LITRES (METAL)

ITEM	DESCRIPCIÓN	DESCRIPTION
a	PUNTO DE FIJACIÓN (4x□16mm)	MOUNTING POINT (4X□16mm)
b	ENTRADA DE AIRE	AIR INLET
c	PARADA DE EMERGENCIA	EMERGENCY STOP
d	GANCHO DE IZADO	LIFTING POINT
e	ACCESO RADIADOR	RADIATOR ACCESS TO
f	SALIDA DE ESCAPE □120mm	EXHAUST OUTLET □120mm
g	CONEXIONES EXTERNAS DE COMBUSTIBLE (VALVULA DE 3 VÍAS OPCIONAL)	EXTERNAL FUEL SUPPLY CONNECTIONS (OPTIONAL 3 WAYS MANIFOLD)
h	ENTRADA CABLE	CABLE ENTRANCE
i	ENTRADA EXTERNA DE COMBUSTIBLE	EXTERNAL FUEL FILLING
j	CUADRO DE BASES OPCIONAL	OPTIONAL RECEPTACLE BOX
k	TAPÓN DRENAJE	ACCESS TO DRAIN
l	DRENAJE DE CHASIS	DRAIN OF BASE FRAME
m	SALIDA DE AIRE	AIR OUTLET
n	SALIDA DE DRENAJE DE ACEITE	OIL DRAIN OUTLET



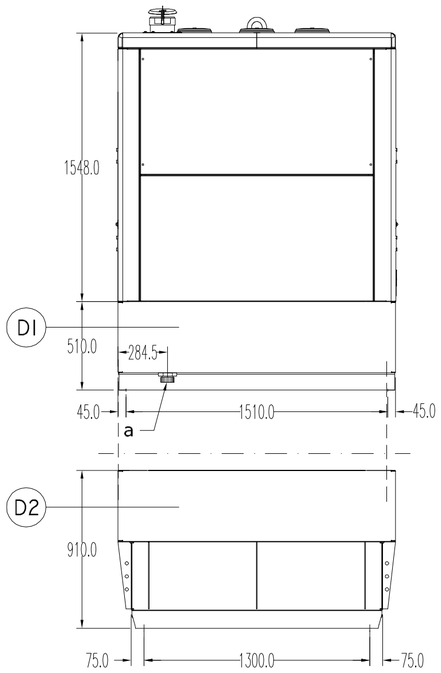
VISTA POSTERIOR
REAR VIEW

HIMOINSA®
THE ENERGY

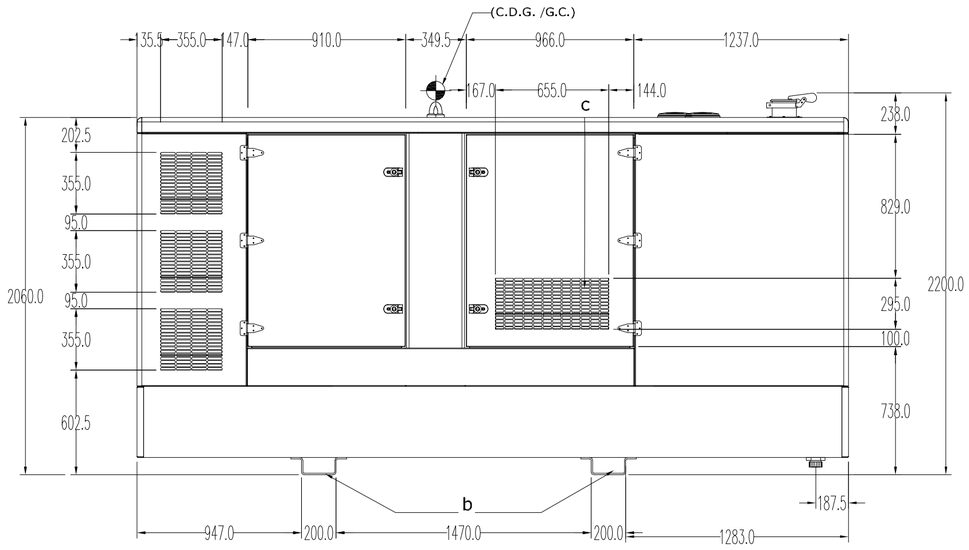
	DATE:	NAME:		OLD CODE:
DESIGNED:	14/10/11	SK.		NEW CODE:
REVISED:	14/10/11	A.P.		
APPROVED:	14/10/11	A.P.		

DESIGNACIÓN / DESIGNATION:
GRUPO ELECTROGENO INSONORIZADO / SOUNDPROOF GENSET
MOTOR / ENGINE: IVECO
CARROCERIA MODELO / CANOPY MODELL: E10

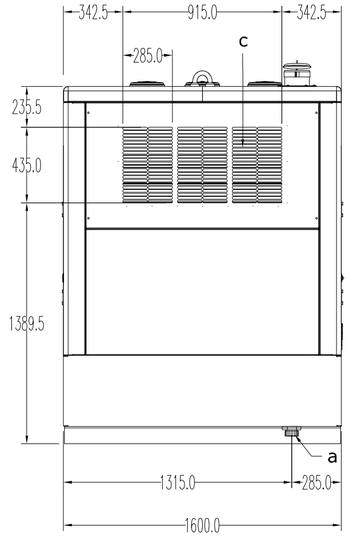
DRAWING Nº:
CODE: GI-00078-E10
REVISION: DIN- A2
UNIT: mm SCALE: 1/25



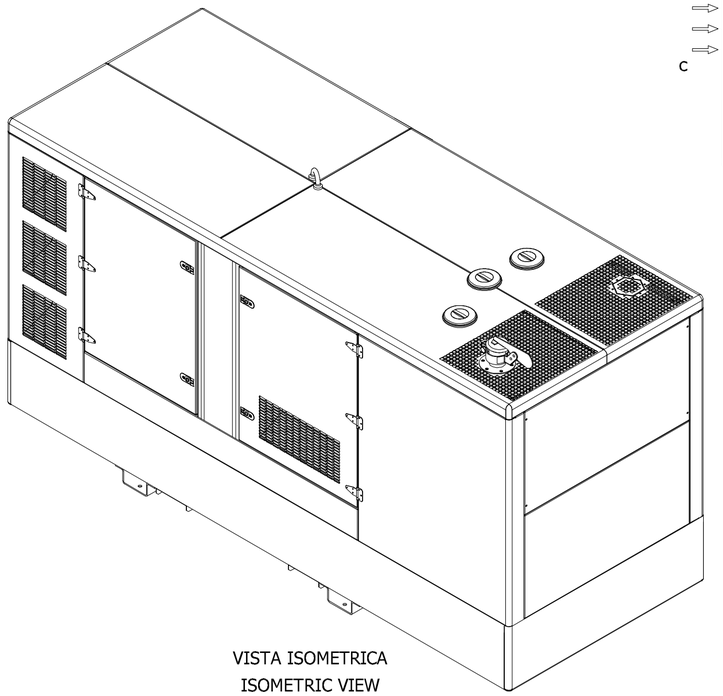
VISTA LATERAL IZQUIERDA
LEFT SIDE VIEW



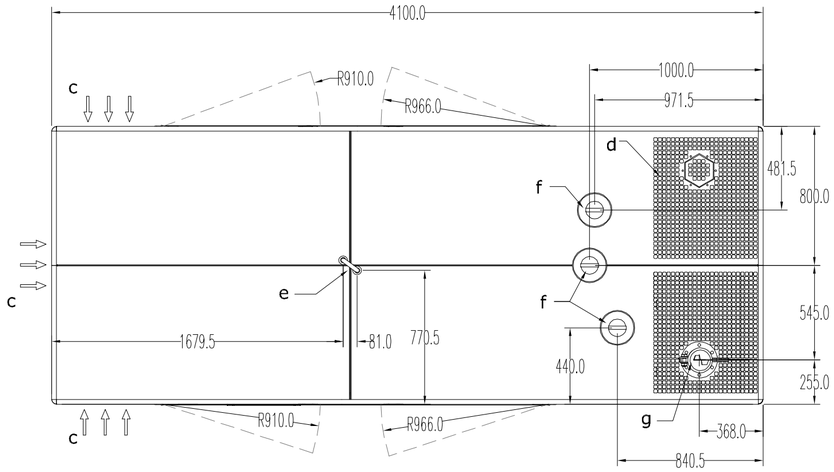
VISTA FRONTAL
FRONT VIEW



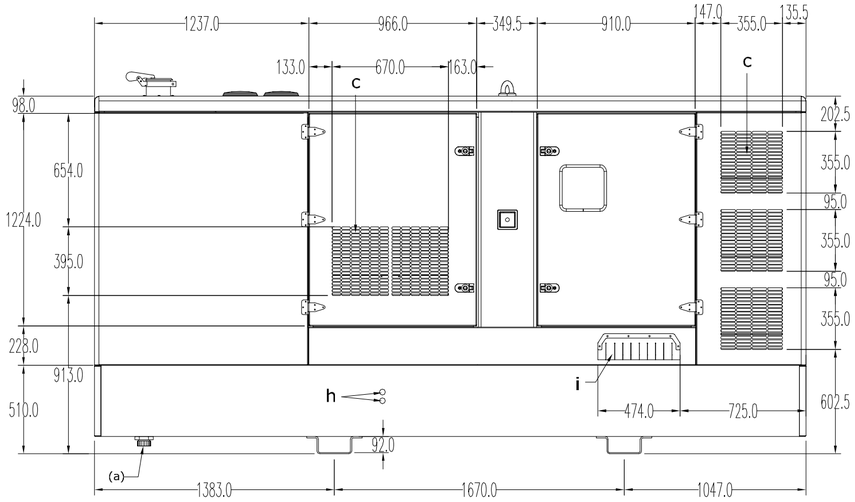
VISTA LATERAL DERECHA
RIGHT VIEW



VISTA ISOMETRICA
ISOMETRIC VIEW



VISTA SUPERIOR
UPPER VIEW



VISTA POSTERIOR
REAR VIEW

Motor/Engine	Modelo Motor / Engine model
IVECO	C13 ENTX 60.00
IVECO	C13 TE 2S
IVECO	C13 TE 3S

	NOTAS	NOTES
a	TAPÓN DRENAJE	ACCESS TO DRAIN
b	FIJACIÓN GRUPO (4 x Ø22 mm)	MOUNTING POINT (4 x Ø22 mm)
c	ENTRADA AIRE	AIR INLET
d	SALIDA DE AIRE	AIR OUTLET
e	GANCHO IZADO	LIFTING POINT
f	ACCESO RADIADOR	RADIATOR ACCESS
g	SALIDA DE ESCAPE Ø140 mm	EXHAUST OUTLET Ø140 mm
h	PASAMUROS	FOR EXTERNAL FUEL SUPPLY CONNECTIONS Ø42mm
i	SALIDA DE POTENCIA	POWER OUTLET

D1 CAPACIDAD DEL DEPOSITO / TANK CAPACITY : 597 LITRES

D2 CAPACIDAD DEL DEPOSITO / TANK CAPACITY : 1660 LITRES

HIMOINSA®
THE ENERGY

	DATE:	NAME:	
DESIGNED:	17/06/09	A.M.	
REVISED:	01/02/13	SK	
APPROVED:	01/02/13	A.P.	

OLD CODE:
NEW CODE:

DESIGNACIÓN / DESIGNATION:
GRUPO ELECTROGENO INSONORIZADO / SOUNDPROOF GENSET
MOTOR / ENGINE: IVECO
CARROCERIA MODELO / CANOPY MODELL: G1

DRAWING Nº:
CODE: GI-00041-G1
REVISION: 02 DIN- A2
UNIT: mm SCALE: 1/25

APPENDIX B

LICENCE

File Reference	Crown Lands Act 1989 - Section 34	Licence Number
15/03809		LI 550786

MINISTER

The Minister administering the Crown Lands Act 1989, (hereinafter referred to as the Minister)

grants to

LICENSEE name & address

PROTEN HOLDINGS PTY LTD
PO Box 1746
NORTH SYDNEY NSW 2060
(hereinafter referred to as the Holder)

a Licence pursuant to the provisions of Section 34 of the Crown Lands Act 1989 in respect of the land described hereunder in Parts 1 and 2 and subject to the terms and conditions contained in the following pages and Schedule 1, and in any additional Schedules or documents referred to in Schedule 1.

EXECUTION

Dated this 15th day of July 20 15

THE MINISTER

as delegate of the Minister

Corinne Shields
Senior Group Leader - Reserves & Licences C...
name and position

THE HOLDER

In consideration of the grant of this Licence, the Company agrees to be bound by the terms, conditions and provisions of the Licence.

~~The Common Seal of ..... was affixed in accordance with its articles of association in the presence of (See note below):~~

signature

position

9-7-15
Date

signature

CFO
position

9-7-15.
Date

(Note: To be ruled through if executing this licence without seal - Corporations Law s. 127)

DESCRIPTION OF LANDS

PART 1

Local Govt. Area	NARRANDERA		
County	BOYD		
Parish	OURENDUMBEE		
Locality	EUROLEY		
Status:	**Lot**	**Section**	**Plan**
Crown land located near	42		DP: 750898
Crown land located near	44		DP: 750898
Crown land located near	45		DP: 750898

PART 2

Plan/diagram: Schedule 3	Area: 15ha

TEXT DESCRIPTION: Crown land being the Crown roads adjoining the Lots 44 & 45 DP 750898 and inclusive to the Crown road adjoining the northern boundary of Lot 42 DP 750898 in Euroley as shown in red on Schedule 3.

Note - a Table of Contents appears at the end of this Licence (6.001)

******** **End of Description of Land (Crown Land)** ********

1. Definitions

In this Licence unless the contrary intention appears:

"*CLA*" means the Crown Lands Act 1989

"*Commencement Date*" means the date on which this Licence is stated to commence.

"*Holder*" means the person described as the Holder on the front page of this Licence.

"*Improvements*" means all buildings structures facilities works and pontoons situated on or in the land or which under the terms of this Licence are to be situated on or in the land.

"*Land*" means the land specified in Parts 1 and 2 of this Licence under the heading "DESCRIPTION OF LAND" (including any submerged land and waterway) or where the context so admits any part thereof.

"*Licence*" means this Licence including the Schedules and Annexures hereto.

"*Minister*" means the Minister referred to on the front page of this Licence as the Minister and where not repugnant to the context includes the Successors of Minister and the servants and agents of the Minister.

"*Pontoon*" means a floating landing stage.

"*Premises*" means the Land the Improvements and the Holder's Plant and where the context so permits any part of the foregoing.

"*Rent*" means the rent provided for in this Licence.

"*Term*" means the period commencing on the "Commencement Date" and terminating on the "Termination Date".

"*Termination Date*" means the date on which the Licence is revoked or ceases to have effect in accordance with the provision of this Licence. (6.002)

2. Plurals and Genders

(a) Words importing the singular number shall include the plural and vice versa.

(b) Words importing the masculine gender shall include the feminine or neuter and vice versa.

(c) Any reference to a person shall be deemed to include a reference to a corporation and vice versa. (6.004)

3. Contra Proferentum

No rules of construction shall apply to the disadvantage of a party on the basis that that party was responsible for the preparation of this Licence or any part of it. (6.005)

4. Headings Plans and Code Numbers

(a) Headings (and subheadings within clauses) marginal notes the matter appearing in Column 1 of Schedule 1 and the Table of Contents have been inserted for guidance only and shall be deemed not to form any part of the Licence.

(b) Any plan or diagram attached or annexed to this licence, which purports to depict the land shall be deemed not to form any part of the licence unless that plan or diagram is referred to in PART 2 in the DESCRIPTION OF LAND.

(c) The code number appearing at the end of each clause of the Licence shall be deemed not to form part of the Licence. (6.006)

5. Clauses and Schedules

References to Clauses Parts and Schedules are references to clauses parts and schedules of this Licence. (6.007)

6. Statutes

(a) A reference to a statute statutory instrument or ordinance includes amendments to that statute statutory instrument or ordinance whether by subsequent statutes statutory instruments or ordinances or otherwise and any statute statutory instrument or ordinance passed in substitution for the statute statutory instrument or ordinance referred to or incorporating any of its provisions.

(b) A reference to a statute includes a reference to any regulation made thereunder. (6.008)

7. Joint and Several Covenants

Any covenant or agreement on the part of two or more persons shall be deemed to bind them jointly and severally. (6.009)

8. Severability

Any provision of this Licence which is prohibited or unenforceable in any jurisdiction shall as to such jurisdiction be ineffective to the extent of such prohibition or inability to enforce without invalidating the remaining provisions of such provision in any other jurisdiction. (6.010)

9. Applicable Law

This Licence shall be construed and interpreted in accordance with the law of New South Wales. (6.011)

10. Licence a "Holding" for purposes of the CLA

The Holder acknowledges that this Licence is a Holding within the meaning of the CLA and the Holder is a Holder within the meaning of that Act and the provisions of that Act relating to holdings and holders apply to this Licence and the Holder. (6.012)

11. Performance of Functions etc

Any power authority duty or function conferred or imposed upon the Minister under this Licence may be exercised or performed by any person authorised by the Minister. (6.013)

12. Authorised Officer

Where under this Licence the Minister is empowered to authorise any person to perform or exercise any power authority duty or function under this Licence such person shall be validly authorised if he is

authorised to exercise any power authority duty or function conferred by any Licence granted by the Minister or any Licence of a specified type or any Licence within a specified locality. (6.014)

13. Minister as Public Authority

The Minister and Holder acknowledge that nothing in this Licence can in any way restrict or otherwise affect the Minister's unfettered discretion as to the use of the Minister's statutory powers as a public authority. (6.015)

14. Approval by the Minister

(a) In any case where pursuant to this Licence the doing or executing of any act matter or thing by the Holder is dependent upon the approval or consent of the Minister such approval or consent shall not be effective unless given in writing and may be given or withheld by the Minister in the Minister's absolute discretion and may be given subject to such conditions as the Minister may determine unless otherwise herein provided.

(b) The Holder expressly agrees that any failure to comply with a condition imposed by the Minister will constitute a failure by the Holder to comply with a condition of this Licence. (6.016)

15. Opinion of the Minister

Any opinion to be formed by the Minister for the purposes of this Licence may be formed by the Minister on such grounds and material as the Minister determines to be sufficient after consultation if the Minister deems it necessary with any New South Wales Government Department or other public authority the Standards Association of Australia or any other body whose objects and functions are relevant. In forming any such opinion the Minister shall be deemed to be exercising merely administrative functions. (6.017)

16. Holder to pay Cost of Work

Whenever the Holder is required in this Licence to do or effect any act matter or thing then the doing of such act matter or thing shall unless this Licence otherwise provides be at the sole risk cost and expense of the Holder. (6.018)

17. Notices

(a) All notices or communications required to be or which may be given or served by the Minister to or upon the Holder under this Licence or which may be convenient to be given or served in connection with this Licence shall be in writing and shall be sufficiently given or served if left at or sent by ordinary post addressed to the Holder at his address specified in Column 2 of Item 1 of Schedule 1 or at the Premises or at such other place as notified in writing by the Holder to the Minister.

(b) All notices or communications required to be or which may be given or served by the Holder to or upon the Minister under this Licence or which may be convenient to be given or served in connection with this Licence shall be in writing and shall be sufficiently given or served if signed by the Holder or if the Holder is a corporation by the Secretary of the Holder or the person acting as such for the time being and if left at or sent by ordinary post addressed to the person specified in Column 2 of Item 2 of Schedule 1.

(c) Any notice or communication given or served by post shall be deemed to have been duly given or served at the time when it would in the ordinary course be delivered. (6.019)

18. Manner of Payment of Rent and Other Moneys

The rent and other moneys payable in accordance with this Licence shall be paid to the Minister at the address specified in Column 2 of Item 3 of Schedule 1 or to such other person or at such other address as the Minister may from time to time direct by notice in writing served on the Holder. (6.020)

19. Time to be of the Essence

The Minister and the Holder expressly agree that where in any provision of this Licence the Holder is given or allowed a specified time within which to undertake or do any act or thing or any power is conferred or any event occurs after the lapsing of a specified time time shall be the essence of the contract in that regard. (6.021)

20. Permitted Use

(a) This Licence confers on the Holder a right to occupy the Premises for the purpose specified or referred to in Column 2 of Item 4 in Schedule 1.

(b) The Holder will not use the Premises or allow them to be used for any purpose other than the purpose specified in Column 2 of Item 4 in Schedule 1. (6.023)

21. No Exclusive Possession

The Holder acknowledges that this licence does not confer exclusive Possession of the Premises upon the Holder. (6.023A)

22. Holder not to Commit Nuisance etc

The Holder will not at any time during the Term of this Licence:

(a) carry on or permit to be carried on at the premises any noxious nuisance or offensive trade business.

(b) do or permit to be carried on at the premises any act matter or thing which results in nuisance damage or disturbance to the Minister or owners or occupiers of adjoining or neighbouring lands or buildings.

(c) use the premises for any illegal activity. (6.024)

23. No Residence on Premises

The Holder will not reside or permit any other person to reside on the Premises other than as may be specified or referred to in Column 2 of Item 4A of Schedule 1. (6.025)

24. Premises not to be Used for Business Purposes

The Holder will not use the Premises or any part thereof for any business purpose calling or trade or permit any form of business calling or trade to be conducted therein. (6.026)

25. Commencement and Revocation of Licence

(a) This Licence shall commence on the date specified or referred to in Column 2 of Item 5 of Schedule 1 and shall continue in force until it is revoked in accordance with the provisions of this clause.

(b) The Minister may in his absolute discretion revoke this Licence at any time by serving on the Holder a notice in writing revoking this Licence.

(c) A revocation made under this clause shall take effect on the date specified in the notice or where no date is specified in the notice on the date on which the notice is served on the Holder.

(d) Except as may be expressly provided for in this Licence the Holder acknowledges and agrees that the Holder will not be entitled to any compensation costs or damages in respect of the revocation of this Licence. (6.027)

26. Termination of Licence on Determination of Native Title

(a) Notwithstanding any other provision of this Licence this Licence shall terminate in the event that an approved determination is made under any statute relating to native title that native title exists in the land or part thereof.

(b) Except as may be expressly provided for in this Licence the Holder acknowledges and agrees that the Holder will not be entitled to any compensation costs or damages in respect of the termination of this Licence by operation of this clause. (6.029A)

27. Payment of Rent (CPI)

(a) For the purposes of this clause:

"*Initial Rent*" means the rent specified in Column 2 of Item 11 of Schedule 1.

"*CPI Review Date*" means each anniversary date of the Commencement Date.

"*CPI Review Period*" means the period between each CPI Review Date.

"*Due Date*" means each anniversary date of the Commencement Date.

"*Market Rent Review Date*" means the date of the expiration of each period of years as specified in Column 2 of Item 12 of Schedule 1 calculated from the Commencement Date.

"*Market Rent Review Period*" means the period between each Market Rent Review Date.

(b) The Holder covenants with the Minister that the Holder will during the whole of the Term pay to the Minister in accordance with the provisions of this clause without demand free of exchange and without deduction whatsoever the rent hereinafter provided.

(c) The Holder will pay to the Minister on the commencement Date the Initial Rent and thereafter shall pay on each Due Date rent in advance adjusted as hereinafter provided.

(d) (i) On the CPI Review Date the rent shall be adjusted in accordance with the following formula:

$$R = B \times \frac{C}{D}$$

where:

R represents the adjusted rent;

B represents the annual rent payable during the year preceding the CPI Review Date;

C represents the Consumer Price Index number for the last quarter for which such a number was published before the CPI Review Date; and

D represents the Consumer Price Index number for the last quarter for which such a number was published before the immediately preceding CPI Review Date (or if there is no immediately preceding CPI Review Date then the Commencement Date).

(ii) In this clause "Consumer Price Index number" in relation to a quarter means the number for that quarter appearing in the Consumer Price Index (All Groups Index) for Sydney published by the Australian Statistician. In the event that such index be discontinued or abolished the Minister may at his absolute discretion nominate another Index.

(iii) If the reference base for the Consumer Price Index is changed regard shall be had only to Index numbers published in terms of the new reference base or to Index numbers converted to the new reference base in accordance with an arithmetical conversion factor specified by the Australian Statistician.

(iv) Any rent adjusted under this subclause shall be adjusted to the nearest whole dollar.

(e) In addition to the indexation review provided for in subclause (d) on the first Market Rent Review Date after commencement and thereafter on each Market Rent Review Date the rent may be redetermined by the Minister pursuant to the provisions of Sections 142 and 143 of the CLA.

(f) A redetermination of rent for the purposes of subclause (e) shall be deemed to have been made on the Market Rent Review Date if it is made at any time within the period of six months before the market Rent Review Date.

(g) Where the Minister does not redetermine the rent as provided for in subclause (e) he may redetermine the rent pursuant to the provisions of Sections 142 and 143 of the CLA at any time prior to the next Market Rent Review Date and no succeeding Market Rent Review Date shall be postponed by reason of the operation of this subclause.

(h) Where the Minister does not redetermine the rent on the First Market Rent Review Date or a Market Rent Review Date as provided for in subclause (e) the Holder may by notice in writing served on the Minister require that the Minister redetermine the rent pursuant to the provisions of Sections 142 and 143 of the CLA. Where the Holder requires the Minister to redetermine the rent under this subclause he shall pay on demand the costs of the Minister (or so much of the cost as the Minister may require) in making that determination.

(i) Subject to the provision of subclause (j) a redetermination of rent as provided for in subclauses (e) (g) and (h) shall take effect and be due and payable from the date of issue of the notice of redetermination under Section 142 of the CLA even if an objection or appeal under that Section has been lodged. On the completion of the objection and appeal process any necessary adjustments shall be made.

(j) A redetermination of rent made before its relevant Market Rent Review Date as provided for in subclause (f) shall take effect from the relevant Market Rent Review Date even if an objection or appeal under Section 142 of the CLA has been lodged. On the completion of the objection and appeal process any necessary adjustments shall be made.

(k) The Holder acknowledges that the Minister may make a direction under Section 152 of the CLA in respect of any rent payable under this Licence. (6.031)

28. Continuing Obligation

The obligation of the Holder to pay the Rent shall be a continuing one during the term of this Licence and shall not abate in whole or in part or be affected by any cause whatsoever. (6.037)

29. Holder to Pay Rates etc

The Holder will when the same become due for payment pay all (or in the first and last year of the term of this Licence the appropriate proportionate part) rates taxes (including Land Tax) assessments duties charges and fees whether municipal local government parliamentary or otherwise which are at any time during the currency of this Licence lawfully charged upon imposed or levied in respect of the Premises or on the Minister or the Holder on account thereof and will if required by the Minister produce to the Minister the receipts for such payments within ten business days after the respective due dates for payment AND in case such rates taxes duties and fees so covenanted to be paid by the Holder are not paid when the same shall become due the Minister may if the Minister thinks fit pay the same and any such sum or sums so paid may be recovered by the Minister as if such sums were rent in arrears. (6.039)

30. Holder to Pay Other Charges

The Holder will pay all other fees charges and impositions which are at any time during the Term payable in respect of the Premises or on account of the use and occupation of the Premises by the Holder. (6.040)

31. Goods and Services Tax

(a) Definitions

In this clause the expressions "GST", "supply", and "taxable supply" have the meanings given to those expressions in the A New Tax System (Goods and Services Tax) Act 1999.

(b) Amounts GST Exclusive

With the exception of any amount payable under this clause, unless otherwise expressly stated all amounts stated to be payable under this Licence are exclusive of GST.

(c) Responsibility for GST

(i) Despite any other provision in this Licence, if GST is imposed on any supply made under this Licence, the recipient must pay to the supplier an amount equal to the GST payable on the taxable supply.

(ii) The recipient must pay the amount referred to in subclause (c)(i) in addition to and at the time payment for the taxable supply is required to be made under this Licence.

(d) Valuer/Umpire to return GST Exclusive Value

Any valuer or umpire returning a valuation must return a GST exclusive market value for it in any case where the valuation is for the purpose of determining a supply value to which GST is to be added under this Licence. (6.040A)

32. Holder not to Impose Liability on Minister

Subject to any other provision of this Licence the Holder will not without the written consent of the Minister by any act matter or deed or by failure or omission cause or permit to be imposed on the Minister any liability of the Holder under or by virtue of this Licence. (6.042)

33. Holder not to undertake development without consent notwithstanding any other provision of this Licence

The Holder will not undertake any development within the meaning of the Environmental Planning and Assessment Act 1979 contrary to the provisions of that Act or in breach of any restriction condition or prohibition imposed by an Environmental Planning Instrument or condition of a development consent. (6.043)

34. Development Consent

The Holder will not undertake any activity on or within the Premises for which consent is required under the Environmental Planning and Assessment Act 1979 or any Instrument made thereunder without first obtaining such consent and in accordance with any condition or requirement of that consent. (6.044)

35. Compliance with Statutes

(a) The Holder will comply with the requirements of all statutes regulations or by-laws and requirements of all relevant public and local authorities in so far as they apply in relation to the use and occupation of the premises.

(b) The Holder will forthwith on being served with a notice by the Minister comply with any notice or direction served on the Minister by a competent authority relating to the destruction of noxious animals or plants or pests or the carrying out of repairs alterations or works on or to the Premises. (6.045)

36. Work Health and Safety

The Holder must comply with the *Work Health and Safety Act 2011* (NSW), the *Work Health and Safety Regulation 2011* (NSW) and all other requirements of any other legislation or statutory authority in this regard whilst on the Crown Land. (6.046)

37. Holder not to deal with Licence or part with possession of Premises

Subject to any other provision of this Licence the Holder will not during the Term of this Licence transfer or create any interest in the Licence or authorise or permit any person to occupy the Premises. (6.047)

38. Revocation on the Request of the Holder

The Holder may at any time by notice served on the Minister request that this Licence be revoked and the Minister if he is satisfied that the Holder has complied with the conditions and provisions of this Licence or the CLA will as soon as practicable comply with such a request. (6.051)

39. Interest on Overdue Money

The Holder shall pay interest on any money due and payable under this Licence to the Minister at the rate prescribed from time to time under the provisions of Section 148 of the CLA and any such interest shall for the purposes of this Licence be deemed to be Rent in arrears. (6.052)

40. Failure to pay money or Undertake Works

(a) Where under this Licence the Holder is required to pay any money to a third party and neglects to do so for a period of 14 days after the money became due and payable it shall be lawful for but not obligatory upon the Minister (and without prejudice to any rights and powers arising from such default) to pay such money as if it were the Holder and the Holder will reimburse the Minister in respect of any such payments on demand.

(b) Where under this Licence the Holder is required to do or cause to be done any work or thing and the Holder neglects to do the work or thing for a period of 14 days after that work or thing was due or required to be done it shall be lawful for but not obligatory upon the Minister (and without prejudice to any rights and powers arising from such default) to do or effect such work or thing as if the Minister were the Holder and for that purpose the Minister the Minister's officers agents contractors and workmen may enter upon the whole or any part of the Premises and there remain for the purposes of doing or effecting any such work or thing and the Holder will reimburse the Minister for the cost of the doing or effecting the work or thing on demand. For the purposes of this clause the word cost shall include any sums paid for any insurance indemnities under the laws relating to workers compensation.

(c) The Holder expressly agrees that any money or cost payable to the Minister under this clause shall constitute a debt owed by the Holder to the Minister and may be recovered by the Minister accordingly.

(d) Where the Premises has a common boundary with other land owned leased or held by the Holder (hereinafter called the "other land"). The Holder irrevocably grants to the Minister the Minister's officers agents contractors and workmen a licence to enter upon the said other land for the purpose of gaining access to the Premises or for the purpose of undertaking any work or thing authorised permitted or contemplated by this Clause.

In exercising any power conferred by this subclause the Minister the Minister's servants employees and agents will not be liable for any reasonable damage suffered or occasioned to the other land or anything constructed thereon.

(e) The Holder expressly agrees that the provisions of this clause shall continue after the expiration or sooner determination of this Licence and the Minister may make any payment or effect any work or thing authorised by this clause after the expiration or sooner determination of this Licence as if such expiration or sooner determination had not taken place. (6.053)

41. Indemnity

(a) For the purposes of this clause the term Minister shall include Her Majesty the Queen Her heirs and Successors the State of New South Wales the Minister and the agents servants employees and contractors of Her Majesty Her Majesty's Heirs and Successors the State of New South Wales and the Minister.

(b) The Holder agrees that the Holder will indemnify and keep indemnified the Minister from and against all actions suits claims and demands of whatsoever nature and all costs charges and expenses in respect of any accident or injury to any person or property which may arise out of the use of the Premises or the construction or maintenance of works as may be authorised under the Licence notwithstanding that the conditions of this Licence shall in all respects have been observed by the Holder or that any such accident or injury shall arise from any act or

thing which he may be authorised or compelled to do hereunder except to the extent that any such claims and demands arise from any negligence or wilful act or omission on the part of the Minister.

(c) The Holder expressly agrees that the obligations of the Holder under this clause shall continue after the expiration or other determination of this Licence in respect of any act deed matter or thing happening before such expiration or determination except to the extent that any such claims and demands arise from any negligence or wilful act or omission on the part of the Minister. (6.054)

42. Insurance - Public Risk

The Holder will (without in any way limiting the liability of the Holder under any other provision of this Licence) forthwith take out and thereafter during the Term keep current a public risk insurance policy for the amount specified in Column 2 of Item 19 of Schedule 1 for any one claim (or such other reasonable amount as the Minister may from time to time specify in writing to the Holder) whereby the Minister shall during the continuance of this Licence be indemnified against claims and demands of every kind arising from death or bodily injury or damage to property arising out of the Holder's use of the Premises. (6.057)

43. Provisions Re Policies

(a) The following provisions apply to all policies of insurance required to be effected by the Holder under this Licence:

(i) Where the Minister serves a notice on the Holder directing the Holder to enter into a policy with an insurer approved by the Minister the policy is to be entered into with an insurer approved by the Minister. The Minister shall specify a list of approved insurers in any notice served under this paragraph. Where the Minister does not serve a notice as provided for in this paragraph policies of insurance shall be entered into with an insurer carrying on business in Australia.

(ii) Where a provision of this Licence specifies an amount for which a policy is to be entered into for (or makes provision for such an amount to be specified) then the policy shall be entered into for the amount specified. Where a provision does not specify the amount for which a policy is to be entered into for the policy shall be entered into for an amount sufficient to cover the risks likely to be encountered having regard to the type of activity undertaken on the Premises and the nature of the Premises.

(iii) All policies are to contain conditions and exclusions commonly effected in relation to the type of activity undertaken on the Premises and the nature of the Premises provided that the Minister may by notice served on the Holder direct the Holder to enter into a policy containing specified provisions or which does not contain specified provisions or exclusions and the Holder shall use his best endeavours to comply with the direction.

(iv) All policies are to be taken out in the names of the Minister and the Holder for their respective rights and interests and in the name of such other parties having an insurable interest as the Minister may require.

(v) Duplicate or certified copies of the policies and all renewal certificates and endorsement slips are to be lodged by the Holder with the Minister if required by the Minister.

(vi) All premiums payable in respect of policies and renewals of policies are to be paid punctually by the Holder and the receipt for each premium payable in respect of each policy (or other proof of payment to the Minister's satisfaction) is to be produced by the Holder to the Minister at the request of the Minister.

(vii) Where the Minister has served a notice on the Holder under paragraph (i) the Holder will use all reasonable endeavours to ensure that the insurer which issues a policy advises the Minister of any failure by the Holder to renew any policy or pay any premium in respect thereof.

(viii) The Holder will not at any time during the Term do or bring upon the Premises anything whereby any insurance relating to the Premises against damage by fire and other risks may be rendered void or voidable. If the Holder does or brings anything upon the Premises whereby the premium on the insurance shall be liable to be increased the Holder will obtain insurance cover for the increased risk and pay all additional premiums (if any) required to be paid.

(ix) The Holder will use all reasonable endeavours to ensure that full true and particular information is given to the insurer with which the insurances are effected of all matters and things the non-disclosure of which might in any way prejudice or affect any policy of insurance or the payment of all or any moneys thereunder.

(b) The Minister in his own name or as the attorney of the Holder in the name of the Holder shall be entitled to institute all proceedings against any insurer which issues a policy of insurance required by this Licence to recover from it any amount for loss damage or injury or other money payable under any indemnity in favour of the Minister. The Holder hereby appoints the Minister the attorney of the Holder for the purpose as aforesaid.

(c) The Holder expressly agrees that the provisions of subclause (b) continue in force after the Termination Date. (6.065)

44. Premises to be kept in clean and tidy condition

The Holder will at all times during the Term keep the Premises in a clean and tidy condition and will (subject to any other provision of this Licence) on the Termination Date leave the Premises in a clean and tidy condition. (6.088)

45. Maintenance of Ground Areas

The Holder will at all times during the Term keep the ground areas of the land landscaped and in good order and condition. If the Holder fails to keep such grounds in the said condition in the reasonable opinion of the Minister the Holder will at the request of the Minister enter into a contract with an appropriate person skilled in landscaping maintaining and caring for grounds with a view to keeping the grounds professionally landscaped clean tidy and in healthy condition. (6.089)

46. Relics

(a) Unless authorised to do so by a permit under Section 87 or a consent under Section 90 of the National Parks and Wildlife Act 1974 and subject to observance and compliance with any conditions imposed on the grant of such permit or consent the Holder will not knowingly disturb destroy deface or damage any aboriginal relic or place or other item of archaeological significance within the land and shall take every precaution in drilling excavating or carrying out other operations or works in the Land against any such disturbance destruction defacement or damage.

(b) If the Holder becomes aware of any aboriginal relic or place or other item of archaeological significance within the Land the Holder will within 24 hours notify the Director General National Parks and Wildlife Service of the existence of such relic place or item.

(c) The Holder will not continue any operations or works on the Land likely to interfere with or disturb any relic place or item referred to in subclause (b) without the approval of the Director General National Parks and Wildlife Service and the Holder will observe and comply with all reasonable requirements of the Director General in relation to the carrying out of the operations or works. (6.107)

47. Artefacts

All fossils artefacts coins articles of value articles of antiquity structure and other remains or things of geological historical or archaeological interest discovered on or under the surface of the Premises shall as between the Minister and the Holder be deemed to be the absolute property of the Minister and the Holder will as authorised by the Minister watch or examine any excavations and the Holder will take every precaution to prevent such articles or things being removed or damaged and shall immediately upon discovery thereof notify the Minister of such discovery and carry out at the reasonable expense of the Holder the Minister's orders as to the delivery up or disposal of such articles or things. (6.108)

48. Holder not to remove Materials

(a) The Holder will not mine remove extract dig up or excavate any sand stone gravel clay loam shell or similar substance or permit any other person to undertake any such action without the prior consent in writing of the Minister and subject to such conditions as the Minister may determine.

(b) Subclause (a) shall not apply to any removal digging up or excavation as may be necessary to construct or undertake any improvement authorised by or under this Licence provided that any such removal digging up or excavation is undertaken in accordance with the requirements of that authority.

(c) The Minister and the Holder expressly agree that a failure by the Holder to comply with any condition imposed pursuant to subclause (a) shall constitute a failure by the Holder to comply with a provision or covenant of this Licence. (6.194)

49. Holder to Yield Up

The Holder will forthwith upon the revocation of this Licence peaceably surrender and yield up to the Minister the Premises in good condition reasonable wear and tear excepted together with all conveniences amenities and appurtenances relating thereto clear and free from rubbish and in good and substantial repair order and condition in every case having regard to the age of what is being surrendered or yielded up. (6.199)

50. No Right to Purchase etc

The Holder expressly acknowledges that the grant of this Licence does not confer a right to purchase the land or to the grant of a lease or to the grant of a further licence. (6.200)

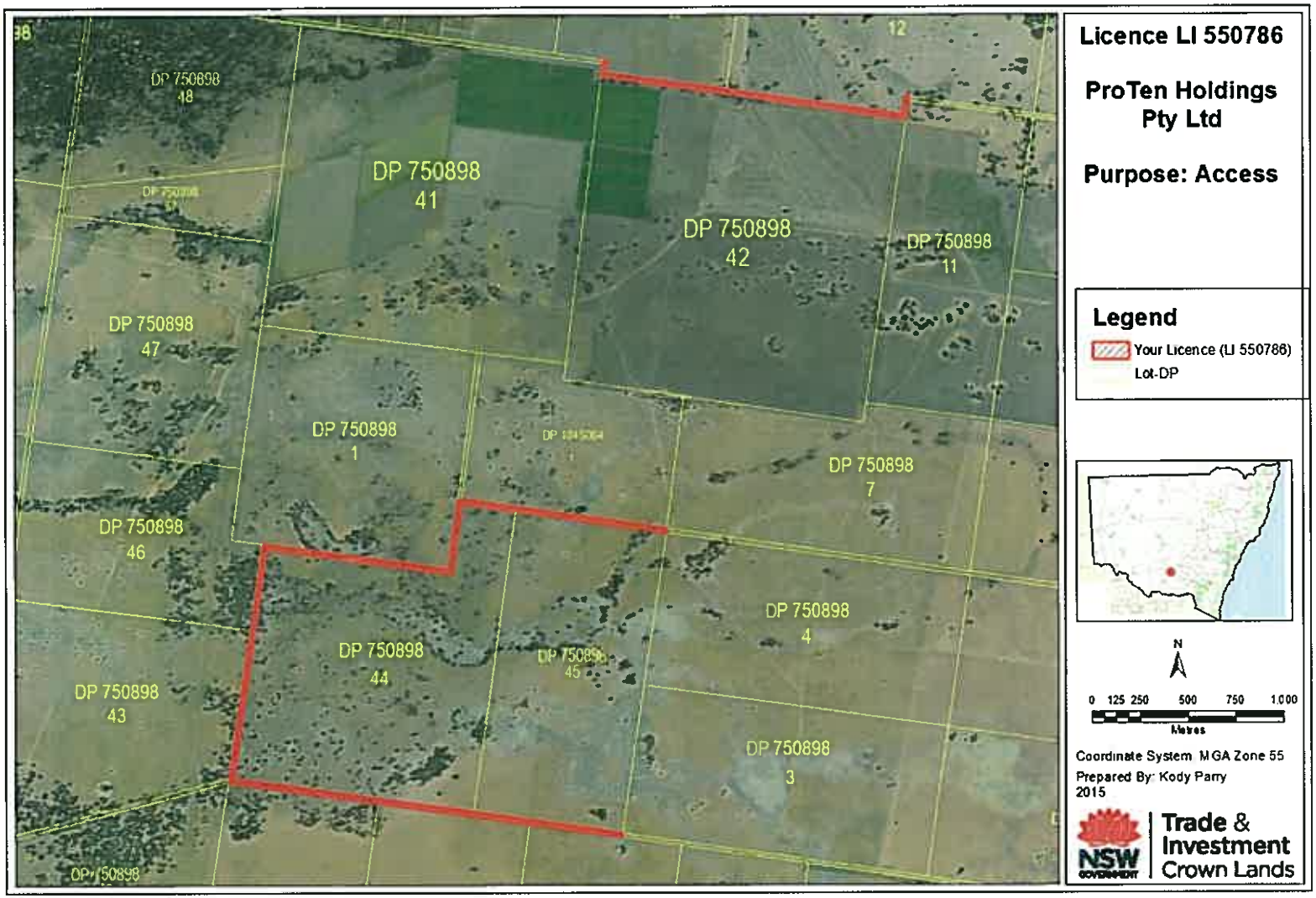
******** **End of Licence Clauses** ********

SCHEDULE 1

Item	Paragraph No	Column 1 (description of variable particulars)	Column 2 - (particulars)
1	17	Holder's Address for service of notices	PO Box 1746 NORTH SYDNEY NSW 2060
2	17	Minister's Address for service of notices	NSW Trade & Investment, Crown Lands, PO Box 2185 DANGAR NSW 2309
3	18	Address for payment of rent	NSW Trade & Investment, Crown Lands, PO Box 2155 DANGAR NSW 2309
4	20	Purpose for which Premises may be used	Access
4A	23	No Residence on Premises	No residence
5	25	Commencement Date	The date specified on page 1 of the Licence being the date of the execution of the Licence.
11	27	Initial Rent	$464.00
12	27	Market Rent Review Period	3 years
19	42	Insurance - Public Risk	$20 Million

******** End of Schedule 1 ********

SCHEDULE 3


DP 750898
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Licence LI 550786
ProTen Holdings Pty Ltd
Purpose: Access
Legend
Your Licence (LI 550786)
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Metres
Coordinate System MGA Zone 55
Prepared By: Kody Parry
2015
NSW GOVERNMENT
Trade & Investment
Crown Lands

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Stage 1 Preliminary Site Investigation (PSI)

Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064

Proposed Poultry Broiler Production Farm

Report Number 610.14072-R1

26 August 2015

ProTen Holdings Pty Limited

PO Box 1746

North Sydney

NSW 2060

Version: Revision 0

Stage 1 Preliminary Site Investigation (PSI)

Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064

Proposed Poultry Broiler Production Farm

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
2 Lincoln Street
Lane Cove NSW 2066 Australia
(PO Box 176 Lane Cove NSW 1595 Australia)
T: +61 2 9427 8100 F: +61 2 9427 8200
sydney@slrconsulting.com www.slrconsulting.com

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
610.14072-R1	Revision 0	26 August 2015	Abanish Nepal	Nalin De Silva	

Executive Summary

SLR Consulting Pty Ltd (SLR) was engaged by ProTen Holdings Pty Limited (ProTen) to undertake a Stage 1 Preliminary Site Investigation (PSI) to assess for the potential presence of contamination at Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064 within the Local Government Area (LGA) of Narrandera, NSW (the site).

The objectives of this PSI are to:

- assess the potential for contamination to be present on the site, as a result of past and present land use activities;
- provide advice on the suitability of the land (with respect to contamination) for the proposed poultry production complex including rural residential land use; and
- provide recommendations on further contamination assessment, management or remediation works (if required).

SLR undertook the following scope of works to address the project objectives:

- a desktop review of available information; and
- data assessment and reporting.

Based on a review of the available site history data, SLR concludes the following:

- The potential for significant widespread contamination to be present on the site, as a result of past and present land use activities, is considered to be low;
- The site is suitable, from a contamination perspective, for the proposed poultry broiler production farm and associated residences; and
- No further assessment is considered necessary.

These conclusions must be read in conjunction with the limitations set out in Section 9 of this report.

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1 INTRODUCTION

1.1 General

SLR Consulting Pty Ltd (SLR) was engaged by ProTen Holdings Pty Limited (ProTen) to undertake a Stage 1 Preliminary Site Investigation (PSI) to assess for the potential presence of contamination at Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064 within the Local Government Area (LGA) of Narrandera, NSW (the site).

1.2 Background

ProTen is seeking development consent to establish an intensive poultry broiler production farm at the site. Following public exhibition of the Environmental Impact Statement (EIS) (SLR, 2015)[1] prepared for the proposed development, the NSW Department of Planning and Environment (DP&E) requested a Stage 1 PSI to address the contamination potential and site suitability in accordance with the *State Environmental Planning Policy NO. 55 – Remediation of Land* (SEPP 55). The DP&E's provided further clarification in an email to SLR on 29 July 2015 advising *we require further information from a desktop analysis to confirm there have been no cattle dips, chemical storage or similar uses within and adjoining the site.*

Based on the review of the EIS (SLR 2015), SLR understands the following:

- the site consists of seven registered lots (Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064), along with sections of Crown road, and occupies an approximate area of 1,160 hectares (ha);
- the site comprises rural land and the long-standing and existing land use has been traditional agricultural production;
- ProTen intends to develop an intensive poultry broiler production farm, known as Euroley Poultry Production Complex, comprising of 5 poultry production units (PPUs); and
- The proposed development also includes construction of ancillary infrastructure and improvements required to support the poultry production including 10 houses to accommodate farm managers and assistant managers.

1.3 Objectives

The objectives of this PSI are to:

- assess the potential for contamination to be present on the site, as a result of past and present land use activities;
- provide advice on the suitability of the land (with respect to contamination) for the proposed poultry production complex including rural residential land use; and
- provide recommendations on further contamination assessment, management or remediation works (if required).

1.4 Scope of works

SLR undertook the following scope of works to address the project objectives:

- a desktop review of available information; and
- data assessment and reporting[2].

[1] SLR 2015: 'Euroley Poultry Production Complex SSD 6882, Environmental Impact Statement, Main Report, Volume 1, dated 20 May 2015.'
[2] A site walkover was not considered necessary given the site has not been developed and the information that was available in the EIS was considered sufficient for this purpose. Refer to Section 5 of this report.

2 SITE IDENTIFICATION

The locality of the site is presented in Figure 1 attached.

The site is legally identified as Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064, along with sections of Crown road.

The site is somewhat heptagonal in shape and occupies an area of approximately 1,160ha.

3 SITE SETTINGS

3.1 Geology

The NSW Department of Industry – Resources and Energy Narrandera 1:250,000 Geological Series Sheet SI 55-10 Edition II (1977) indicates that the site is located within Quaternary period lithology comprising of flood plains of black and red clayey silt, sand and gravel.

3.2 Topography

The EIS (SLR, 2015) describes the topography of the site to be relatively flat with the elevation ranging between 133m Australian Height Datum (AHD) and 138m AHD. The EIS (SLR, 2015) further states that there are no natural water courses on site with only some small depressions which may hold water during significant rainfall events.

The survey plan of the site indicates that the site is relatively flat with elevation ranging between 132m AHD and 134m AHD.

3.3 Hydrogeology

The nearest surface water body is Black Creek located approximately 8km to the east from the eastern most end of the site. Main Canal (constructed irrigation channel) from the Murrumbidgee River is also located approximately 8km to the northwest from the site. Black Creek flows to the north towards Murrumbidgee River located approximately 9km to the north of the site.

A search of the NSW Department of Primary Industries – Office of Water Groundwater Map (http://waterinfo.nsw.gov.au/gw/) conducted on 14 August 2015 located the following groundwater features within 1km from the site:

- A groundwater monitoring bore (Well ID # GW050372) located approximately 300m to the north of the north-western corner of the site in a vacant property identified as Lot 50 in DP 750898 (Northing 6158990 and Easting 430034). The well was constructed to a depth of 45.70m below ground level (mbgl) with threaded steel casing from 0 to 30.50mbgl. The outside diameter of the well is 152mm. No other information (such as geology or depth to water) was available for this well;
- An irrigation bore (Well ID # GW401901) located approximately 1km to the north of the site in a vacant property identified as Lot 53 in DP 750898 (Northing 6159395 and Easting 432116). The well was constructed in 1999 to a final depth of 103mbgl with steel casing from 0 to 103mbgl. The well yield was recorded at 170L/s in the groundwater summary report. No other information (such as geology or depth to water) was available for this well;
- A domestic bore (Well ID # GW416468) located approximately 500m to the east of the north-eastern corner of the site in a vacant property identified as Lot 11 in DP 750898 (Northing 6158207 and Easting 433559). The well was constructed in 1940 to a final depth of 31.7mbgl. The standing water level and the well yield recorded for this well in the groundwater summary report was 24mbgl and 0.5L/s. No other information (such as screen depth or the geology) was available for this well; and
- A domestic bore (Well ID # GW416374) located approximately 800m to the east of the site in a vacant property identified as Lot 6 in DP 750898 (Northing 6156595 and Easting 43367). The well was constructed in 2013 to a final depth of 58mbgl with PVC Class 12 casing from 0 to 56mbgl and Wedge Wire screen from 56 to 58mbgl. The standing water level, well yield and the salinity recorded for this well in the groundwater summary report was 25mbgl, 2L/s and 200mg/L respectively. The geological information for this well was not available in the report.

A copy of the registered groundwater bore search plan and the groundwater summary reports are provided in Appendix A.

3.4 Acid Sulfate Soils

Australian Soil Resource Information System (www.asris.csiro.au) doesn't provide Acid Sulfate Soil (ASS) occurrence probability information for the site potentially indicating that the site has a low or negligible probability of occurrence of acid sulfate soils.

The NSW Office and Environment and Heritage (OEH) do not provide Acid Sulfate Soil (ASS) Risk Map coverage for the site.

The Narrandera Shire Council's Narrandera Local Environmental Plan 2013 does not provide information regarding the Acid Sulfate Soils for the site.

Based on the information reviewed, SLR considers that the risk of encountering acid sulfate soils during construction works as part of the proposed development is low.

4 SITE HISTORY

The site history, ascertained through the desktop review, is presented below.

4.1 Aerial Photography

SLR undertook a review of a selection of historical and recent aerial photographs. Observations made during the review are presented in Table 2. Aerial photographs reviewed are also attached in Appendix B.

The preliminary review of the historical aerial photographs provided by NSW Land & Property Information (LPI) indicated that three out of six images obtained had not captured parts of the subject site. The images that do not show the entire site extent are presented in Table 1 below.

Table 1 Images not displaying the Entire Site Extent

Year of Photograph	Comments
1945	The available image does not display the western sections of the western lots (i.e. approximately the western 5-10% of the site area along north-south direction). However, this part of the site is captured in the other images obtained.
1967	The available image does not display the northern 10% (approximately) of the site area. However, this part of the site is captured in the other images obtained (except 1997).
1997	The available image does not display approximately the northern 5% of the site area. However, this part of the site is captured in the other images obtained (except 1967).

SLR considers that parts of the site not being captured in three of the aerial photographs obtained will not have a significant impact on the useability of the data given that these parts were captured in other photographs obtained.

Table 2 Aerial Photography Review

Year of Photograph	Site Land Use Observations	Surrounding Land Use Observations
1945 (black and white)	The displayed portion of the site appears to be vacant with sparse vegetation. There appears to be water courses flowing through the site as indicated by meandering dry creek beds visible in the image. However, the EIS (SLR 2015) states that no notable natural water	The available image only shows the surrounding lands to the east, north and south and is seen to be vacant. The land use surrounding the site appears to be agricultural. Although the surrounding areas to the west of the site were not shown in this image,

Year of Photograph	Site Land Use Observations	Surrounding Land Use Observations
	courses traverse the site. Although the entire area of the site was not shown in the image, the areas missing in this image were visible in 1958 image and were observed to be vacant. Based on that, the land use of areas not shown in this image to be agricultural or grazing could not be precluded. The land use within the visible portions of the site appears to be agricultural and grazing.	these areas were visible in 1958 image and were observed to be vacant. Based on that, the land use of areas not shown in this image, particularly to the west of the site, to be agricultural or grazing could not be precluded.
1958 (two images, 1958A and 1958B – black and white)	The site is vacant with thin presence of vegetation. The land use at the site appears to be agricultural and grazing. The dry creek beds observed in 1945 image was replaced by vacant land.	The lands immediately surrounding the site are vacant and the land use appears to be agricultural and grazing.
1967 (black and white)	No change to the land use within the displayed portion of the site from 1958 images. Although the northern portion of the site was not shown in this image, this portion of the site was visible in 1977 image and was observed to be vacant. Based on this, the northern portion of the site to have remained vacant for agricultural land use in this image cannot be precluded.	No change to the land use surrounding the site from 1958 images. Although the lands to the north of the site were not shown in this image, these lands were visible in 1977 image. Based on this, the areas immediately surrounding the site to the north to have remained vacant for agricultural land use in this image cannot be precluded.
1977 (two images, 1977 and 1977A – black and white)	The site is vacant with thin presence of vegetation. The land use at the site appears to be agricultural and grazing.	The lands immediately surrounding the site are vacant and the land use appears to be agricultural and grazing.
1988 (black and white)	No change to the land use at the site from 1977 image.	No change to the land use surrounding the site from 1977 image.
1997 (colour)	The available image does not show the northern 1/3 of the site. No change in land use to the visible portion of the site from 1988 image. Although the northern 1/3 of the site was not shown in this image, this portion of the site was visible in 2005 image and was observed to be vacant. Based on this, the northern 1/3 of the site to have remained vacant for agricultural land use in this image cannot be precluded	The available image does not show the surrounding lands to the north. No change in land use within the visible surrounding lands immediately surrounding the site from 1988 image.
2005 (colour – Google Earth)	No change to the land use at the site from 1997 image.	A significant cropping operation is visible immediately to the north of the site. Two large water reservoirs (approximately 8ha and 9ha in area) are visible within the cropping operation. Crop appears to be large trees, though it cannot be identified from the imagery. Given that the north of the site was not visible in the 1997 aerial photograph, and this development was not present in the 1988 aerial photograph, the cropping operation could have commenced anytime between 1988 and 2005. No change to surrounding land use to

Year of Photograph	Site Land Use Observations	Surrounding Land Use Observations
		the east, west and south of the site from 1997 image.
2014 (colour – Google Earth)	No change to the land use at the site from 2005 image. The land use at the site appears to be agricultural and grazing.	No change to the land use surrounding the site from 2005 image. The land use surrounding the site appears to be agricultural and grazing.

The aerial photography review suggests that the potential for land contaminating activities including sheep and cattle dips or significant widespread contamination to be present on the site as a result of previous land use (on-site and offsite) is low. Significant contamination of the site from the cropping operation that is present immediately to the north of the site is considered unlikely.

4.2 Land Titles

A review of the titles documents contained within the contracts for the sale of the site was undertaken on 20 August 2015. The review indicated the following in relation to ownership:

Lots 41 and 42 in DP 750898

- Currently owned by Graham Stuart Heath and Ann Letitia Heath as joint tenants.

Lots 1, 44, 45 and 54 in DP 750898

- Currently owned by Benjamin George Mahy and Emma Karyn Mahy as joint tenants.

SLR understands that ProTen Holdings Pty Limited has entered in to a conditional contract for the purchase of the land with settlement subject to receiving development consent; and

The review of titles documentation suggests private ownership of the land by individuals. As such, SLR considers that the land is unlikely to have been subject to significant commercial operations that could cause significant widespread contamination. A copy of the title search record is presented in Appendix C.

4.3 Regulatory Authorities

4.3.1 NSW Environment Protection Authority

A search of the NSW EPA contaminated land public register of record of notices was undertaken on 14 August 2015. The search did not identify any records with regard to the site, implying that there are no:

- orders made under Part 3 of the Contaminated Land Management Act 1997 (CLM Act);
- approved voluntary management proposals under the CLM Act that have not been fully carried out and where the approval of the EPA has not been revoked;
- site audit statements provided under Section 53B of the CLM Act that relate to significantly contaminated land;
- actions taken by EPA under Section 35 or 36 of the Environmentally Hazardous Chemicals Act 1985;

pertaining to the site. The search did not identify any records for the Narrandera Shire Council Local Government Area (LGA)

A search of the NSW EPA's Protection of the Environment Operations Act 1997 (POEO Act) public register of licences, applications and notices was undertaken on 14 August 2015. The search did not identify any records for the site, indicating that the EPA has not licensed any scheduled activities (within the meaning of the POEO Act) being undertaken on the site. The search also did not identify any records for the suburb of Euroley.

A search of the NSW EPA public register of contaminated sites notified to NSW EPA under Section 60 of the CLM Act was undertaken on 14 August 2015. The search did not identify any records for the site. The search did not identify any records for the suburb of Euroley.

A copy of the search records is presented in Appendix D.

4.3.2 WorkCover NSW

A search of the Stored Chemical Information Database (SCID) and microfiche records held by WorkCover NSW was not conducted as part of this assessment. Based on the findings of the review of historical aerial images, it is considered unlikely that registrable dangerous goods including underground storage tanks would have been stored on the site.

4.3.3 Council Records

Two planning certificates related to the site dated 12 January 2015 and 13 January 2015 and issued by Narrandera Shire Council under Section 149 (2) of the Environmental Planning and Assessment Act 1979, were reviewed on 20 August 2015.

Although the planning certificates were dated more than eight months old, SLR considers that the condition of the site that is relevant to land contamination (such as presence of stockpiles, burial of asbestos) is likely to remain same from the date the certificates were issued. This is further supported by the review of aerial images which indicate that the site has been undeveloped since 1945.

The planning certificates indicate that, in the context of the CLM Act and at the date the certificates were issued, the site:

- is not declared to be significantly contaminated land;
- being subject of a voluntary management order is not applicable;
- being subject of an approved voluntary management proposal is not applicable;
- being subject of an ongoing maintenance order is not applicable; and
- being subject of a site audit statement within the meaning of the CLM Act is not applicable.

Copies of the planning certificates are presented in Appendix E.

4.4 Previous Contamination Assessments

No previous contamination assessment reports pertaining to the site were made available for review during this investigation.

4.5 Review of Environmental Impact Statement (SLR, 2015)

4.5.1 SLR, 2015a Biodiversity Assessment Report

SLR's Biodiversity Assessment (2015a) states that the site is a vacant land with small areas of vegetation. SLR's Jeremy Pepper (Principal Ecologist), who undertook the biodiversity assessment (including site surveys), advised[3] that the areas of the site observed did not contain visible evidence of significant or widespread contamination, and that there were no illegally dumped rubbish or significant fillings (e.g. soil mounds or stockpiles) on the site. Mr Pepper indicated that no visible asbestos containing materials or the storage of oil and fuel products (waste oil drums or petrol drums) were seen during the walkover, though the site soils appeared to have been re-worked in some areas for cropping purpose and the plants on site appeared to be healthy with no phytotoxic impacts (plant stress or die-back) observed.

The site consisted of the following main features:

- Wire fences;
- Livestock water areas (dams); and
- Irrigation points.

Photographs presented in the biodiversity assessment are presented below to illustrate the general site conditions.

Photo 4.5.1.1 – Photo taken within the southern portion of Lot 44 – looking north

[3] Verbal advice provided during a telephone conversation between the report author and Mr Jeremy Pepper on 21 August 2015

Photo 4.5.1.2 – Photo showing the areas of the site between the proposed PPUs 4 and 5 – looking west

Photo 4.5.1.3 – Photo showing the middle potion of site – looking south

Photo 4.5.1.4 - Photo showing the middle potion of site – looking southeast

Photo 4.5.1.5 – Photo showing the middle portion of the site – looking southwest from the north of Lot 44 DP750898

Photo 4.5.1.6 – Photo showing the middle portion of the site – looking northeast towards proposed PPU4 location

Photo 4.5.1.7 – Photo taken from the southern boundary of Lot 1 DP 750898 – looking north and northwest towards proposed PPU3 location

Photo 4.5.1.8 - Photo taken from the southern boundary of Lot 1 DP 750898 – looking south and southeast towards proposed PPU5 location

Photo 4.5.1.9 – Photo showing the central portion of the site – looking northwest towards proposed PPU3 location

Photo 4.5.1.10 – View of the site showing the western site boundary of Lot 44 DP 750898 (trees in the background are the approximate site boundary)

Photo 4.5.1.11 – View of the site sowing the eastern portion of Lot 44 DP 750898. The photo was taken from close to the western boundary of the lot (i.e. the western site boundary)

4.5.2 OzArk, 2015 Aboriginal Archaeological Assessment

The Aboriginal Heritage Impact Assessment (OzArk, 2015) states that intensive agriculture has taken place at the site mainly within the northern portion while the southern portion appears to be used for grazing. These were indicated by vehicle tracks, fences and irrigation ditches observed during the site walkover undertaken by OzArk on 10 and 11 February 2015.

Photo 4.5.2.1 - Photo showing the proposed coolroom location – looking south from the northern boundary of the site

Photo 4.5.2.2 - Photo showing the proposed rice hull shed location – looking west from the eastern end of Lot 1 DP 1054064

Photo 4.5.2.3 - Photo showing the areas between proposed PPUs (PPU3 and PPU1) – looking northwest

Photo 4.5.2.4 - Photo showing the areas between proposed PPUs (PPU4 and PPU3) – looking northwest

Photo 4.5.2.5 - Photo showing the northeastern portion of the site – area to the northeast of proposed PPU2

Photo 4.5.2.6 - Photo showing the southern portion of the site – view towards proposed PPU5

4.5.3 SLR, 2015 Environmental Impact Statement

The review of the EIS (SLR, 2015) indicated that the site has been subject to long standing and existing agricultural land use that comprises of paddocks that have been cropped and grazed.

The land contamination section within the EIS (SLR, 2015) states that the risk of discovering significant land contamination within the site is considered to be minimal given that:

- The long-term and existing use of the site as traditional agricultural production primarily comprising cropping and grazing areas;
- There were no identified previous or existing land use activities that may have caused or attributed to significant soil contamination; and
- There were no known areas within the site where toxic wastes, poisons or the like have been dumped or buried to cause or attribute to soil contamination.

SLR, 2015 also states that the land use surrounding the site comprises of vacant land with very low density residential dwellings. The nearest populated area is identified as Narrandera township located approximately 26 kilometres to the east of the site.

4.5.4 Summary

Based on observations review of the EIS (SLR, 2015), including appended specialist reports, SLR considers that the potential for the past land use to have caused significant soil/groundwater contamination is low. Contamination of the site due to surrounding land use is also considered unlikely.

5 SITE WALKOVER

Based on the findings of the desktop review, SLR considered that a site walkover, specifically for the purpose of the PSI, was not required. SLR has relied on the information presented within the EIS (SLR 2015), including appended specialist reports, historical aerial photography, public registers and discussions with SLR's Principal Ecologist who undertook a site walkover.

6 DATA QUALITY ASSESSMENT

The sources of data relied upon for this assessment included:

- EIS (SLR, 2015), including the Biodiversity Assessment (SLR, 2015a) and Aboriginal Heritage Impact Assessment (OzArk, 2015);
- NSW Environment Protection Authority;
- NSW Department of Primary Industries – Office of Water Groundwater Map;
- NSW Land and Property Information Division;
- Nearmap;
- Google Earth;
- Narrandera Shire Council; and
- observations made in the field by SLR ecologist.

Field observations were made by SLR's Principal Ecologist (Jeremy Pepper). The aspects of field observations relevant to land contamination were discussed with Jeremy Pepper by suitably experienced SLR environmental engineer (Abanish Nepal).

The data obtained is considered suitable for the purpose of this assessment.

7 AREAS OF ENVIRONMENTAL CONCERN AND CONTAMINANTS OF POTENTIAL CONCERN

A review of available site history data and observations made during the site walkover did not identify areas of environmental concern (AEC) and contaminants of potential concern (COPC) that could pose a contamination risk to future site users.

8 CONCLUSIONS AND RECOMMENDATIONS

Based on a review of the available site history data, review of observations made during the field observation, SLR concludes the following:

- The potential for significant widespread contamination to be present on the site, as a result of past and present land use activities, is considered to be low;
- The site is suitable for the proposed poultry broiler production farm (commercial and industrial land use), including the proposed farm residences (rural residential land use); and
- No further assessment is considered necessary.

These conclusions must be read in conjunction with the limitations set out in Section 9 of this report.

9 LIMITATIONS

This report has been prepared by SLR with reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected (data, surveys, analyses, designs, plans and other information), which has been accepted in good faith as being accurate and valid.

It should be noted that many investigations are based upon an assessment of potentially contaminating processes which may have occurred historically on the site. This assessment is based upon historical records associated with the site. Such records may be inaccurate, absent or contradictory. In addition documents may exist which are not readily available for public viewing.

Except where it has been stated in this report, SLR has not verified the accuracy or completeness of the data relied upon. Statements, opinions, facts, information, conclusions and/or recommendations made in this report ("conclusions") are based in whole or part on the data obtained, those conclusions are contingent upon the accuracy and completeness of the data. SLR cannot be held liable should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to SLR leading to incorrect conclusions.

Should the report be reviewed for any reason, the report must be reviewed in its entirety and in conjunction with the associated Scope of Services. It should be understood that where a report has been developed for a specific purpose, for example a due diligence report for a property vendor, it may not be suitable for other purposes such as satisfying the needs of a purchaser or assessing contamination risks for classifying the site. The report should not be applied for any purpose other than that originally specified at the time the report was issued.

Report logs, figures, laboratory data, drawings, etc. are generated for this report by SLR consultants (unless otherwise stated) based on their individual interpretation of the site conditions at the time the site visit was undertaken. Although SLR consultants undergo training to achieve a standard of field reporting, individual interpretation still varies slightly. Information should not under any circumstances be redrawn for inclusion in other documents or separated from this report in any way.

10 REFERENCES

NSW DEC 2006, 'Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd edition)'.

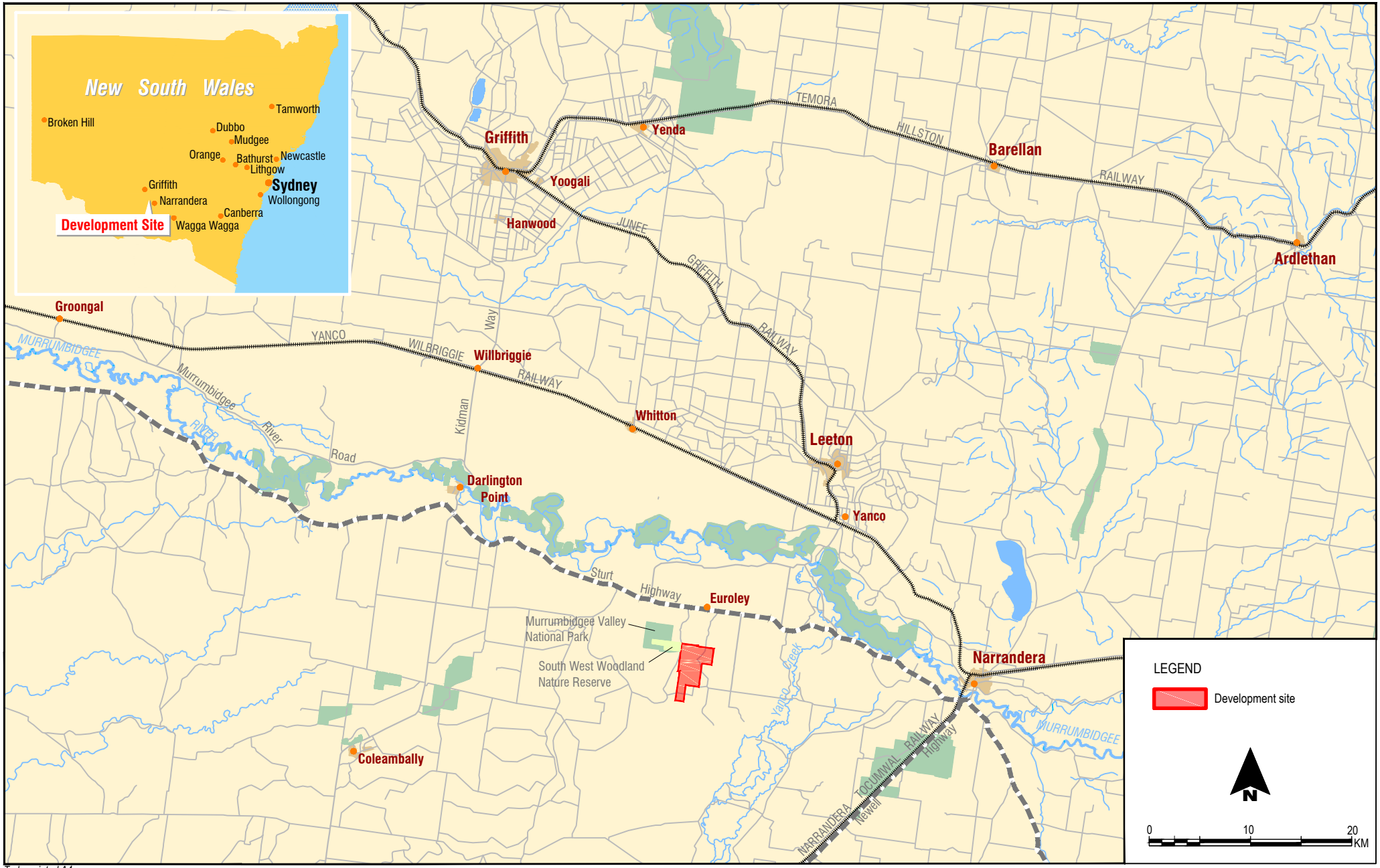
NSW OEH 2011, 'Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites'.

SLR, 2015, 'Euroley Poultry Production Complex SSD 6882, Environmental Impact Statement, Main Report, Volume 1, dated 20 May 2015.'

SLR, 2015a,'Euroley Poultry Production Complex, Environmental Impact Statement, Biodiversity Assessment Report, 23 April 2015, Report Number 610.14072.00400-BAR-REV0.'

OzArk, 2015, 'Aboriginal Archeological Assessment, Euroley Poultry Production Complex, Narrandera Local Government Area, March 2015.'

Discussion with Mr Jeremy Pepper, SLR's Principal Ecologist, on 21 August 2015 regarding evidence of significant contamination.



To be printed A4

SLR

Regional Locality

FIGURE 1

Appendix A

REGISTERED GROUNDWATER FEATURE SEARCH PLAN

Report Number 610.14072-R1

home · help · login
customise

All Groundwater
find a site
All Groundwater Map

bandwidth ○ high ◉ low
glossary and metadata

All Groundwater

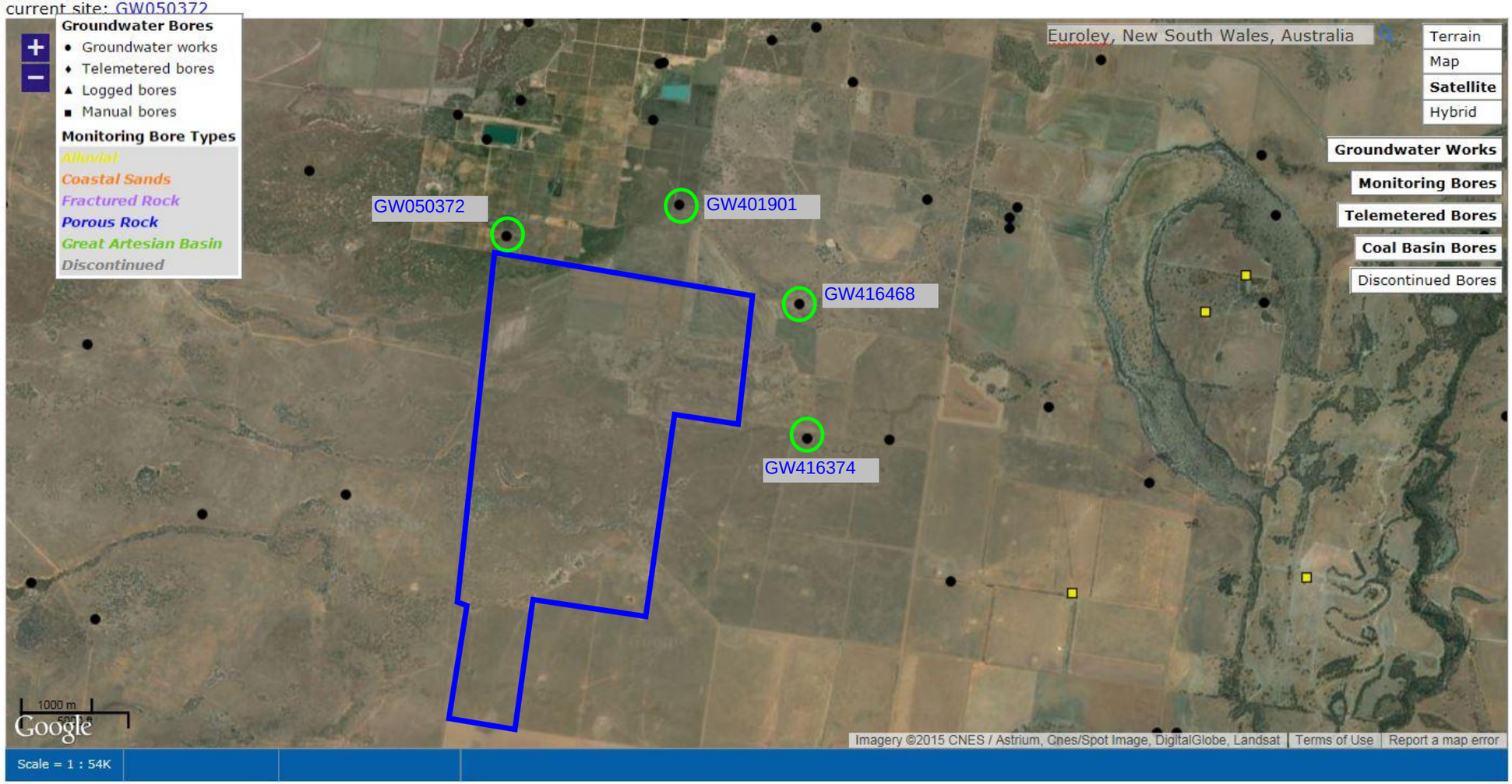
All Groundwater Map

bookmark this page

All data times are Eastern Standard Time

Map | Info

current site: GW050372



NSW Office of Water
Work Summary

GW050372

Licence: 40BL112931 **Licence Status:** CONVERTED

Authorised Purpose(s): DOMESTIC,STOCK
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date:
Final Depth: 45.70 m
Drilled Depth:

Contractor Name:
Driller:
Assistant Driller:

Property: CARINGAL
GWMA: -
GW Zone: -
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	BOYD	BOYD.027	50
Licensed:	BOYD	OURENDUMBEE	Whole Lot 50//750898

Region: 40 - Murrumbidgee
River Basin: 410 - MURRUMBIDGEE RIVER
Area/District: 45
CMA Map: 8128-4S
Grid Zone:
Scale:

Elevation: 131.00 m (A.H.D.)
Elevation Source: Est. Contour >15M.
Northing: 6158990.0
Easting: 430034.0
Latitude: 34°42'31.5"S
Longitude: 146°14'09.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Threaded Steel	0.00	30.50	152			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

***** End of GW050372 *****

NSW Office of Water
Work Summary

GW401901

Licence: 40BL187100 **Licence Status:** CONVERTED

Authorised Purpose (s): IRRIGATION
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Cable Tool
Owner Type: Private

Commenced Date:
Completion Date: 30/07/1999
Final Depth: 103.00 m
Drilled Depth:

Contractor Name: PETER SIMONS
Driller: Peter Walter Simons
Assistant Driller:

Property: BELVEDERE STURT HIGHWAY NARRANDERA 2700
GWMA: 002 - LOWER MURRUMBIDGEE (D/S NARRANDERA)
GW Zone: 001 - EUROLEY
Standing Water Level:
Salinity: Excellent
Yield: 170.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	BOYD	BOYD.027	LT 53 DP 750898
Licensed:	BOYD	OURENDUMBEE	Whole Lot 53//750898

Region: 40 - Murrumbidgee
River Basin: 410 - MURRUMBIDGEE RIVER
Area/District: 45
CMA Map: 8128-1S
Grid Zone:
Scale:

Elevation: 132.22 m (A.H.D.)
Elevation Source: R.L. at Surface
Northing: 6159395.0
Easting: 432116.0
Latitude: 34°42'18.8"S
Longitude: 146°15'31.4"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	103.00	500			Cable Tool
1	1	Casing	Steel	0.00	103.00	457			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

*** End of GW401901 ***

NSW Office of Water
Work Summary

GW416468

Licence: 40WA416210
Licence Status: CURRENT

Authorised Purpose (s): STOCK,DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/01/1940
Final Depth: 31.70 m
Drilled Depth: 31.70 m

Contractor Name:
Driller:
Assistant Driller:

Property: N/A STURT HIGHWAY VIA NARRANDERA 2700
GWMA:
GW Zone:
Standing Water Level: 24.000
Salinity:
Yield: 0.500

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:			
Licensed:	BOYD	BOYD.27	11//750898

Region: 40 - Murrumbidgee
River Basin: 410 - MURRUMBIDGEE RIVER
Area/District:
CMA Map: 8128-1S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6158207.0
Easting: 433559.0
Latitude: 34°42'57.7"S
Longitude: 146°16'27.8"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	31.70	0			Unknown
1	1	Casing	Steel	0.00	0.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/01/1940: Form A Remarks:
Helen Lester: Coordinates are taken from charted licence location.
Form AG
Completion date given as approx. 1940. Entered 1/1/1940.
Casing - steel
No other details were provided.

***** End of GW416468 *****

NSW Office of Water
Work Summary

GW416374

Licence: 40WA416010 **Licence Status:** CURRENT

Authorised Purpose(s): STOCK,DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 25/09/2013
Final Depth: 58.00 m
Drilled Depth:

Contractor Name:
Driller: Shaun O'toole
Assistant Driller:

Property: CARINGAL STURT HIGHWAY VIA NARRANDERA 2700
GWMA:
GW Zone:
Standing Water Level: 25.000
Salinity:
Yield: 2.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	BOYD	BOYD.27	6//750898
Licensed:			

Region: 40 - Murrumbidgee
River Basin: 410 - MURRUMBIDGEE RIVER
Area/District:
CMA Map: 8128-1S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6156595.0
Easting: 433677.0
Latitude: 34°43'50.1"S
Longitude: 146°16'32.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	72.00	200			Rotary Mud
1	1	Casing	Pvc Class 12	0.00	56.00	175			Suspended in Clamps, Glued
1	1	Opening	Screen - Wedge Wire	56.00	58.00	125		1	Stainless Steel 316, Welded - Collar, A: 0.80mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
56.00	58.00	2.00	Unknown	25.00		2.00		03:00:00	200.00

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.00	3.00	topsoil	Topsoil	
3.00	11.00	8.00	clay	Clay	
11.00	15.00	4.00	sand, light	Sand	
15.00	20.00	5.00	clay, brown	Clay	
20.00	25.00	5.00	clay and sand	Clay Loam	
25.00	41.00	16.00	sand	Sand	
41.00	45.00	4.00	clay, brown	Clay	
45.00	46.50	1.50	sand	Sand	
46.50	53.00	6.50	clay	Clay	
53.00	60.00	7.00	sand	Sand	
60.00	65.00	5.00	clay, grey, silt	Clay	
65.00	72.00	7.00	clay,	Clay	

Remarks

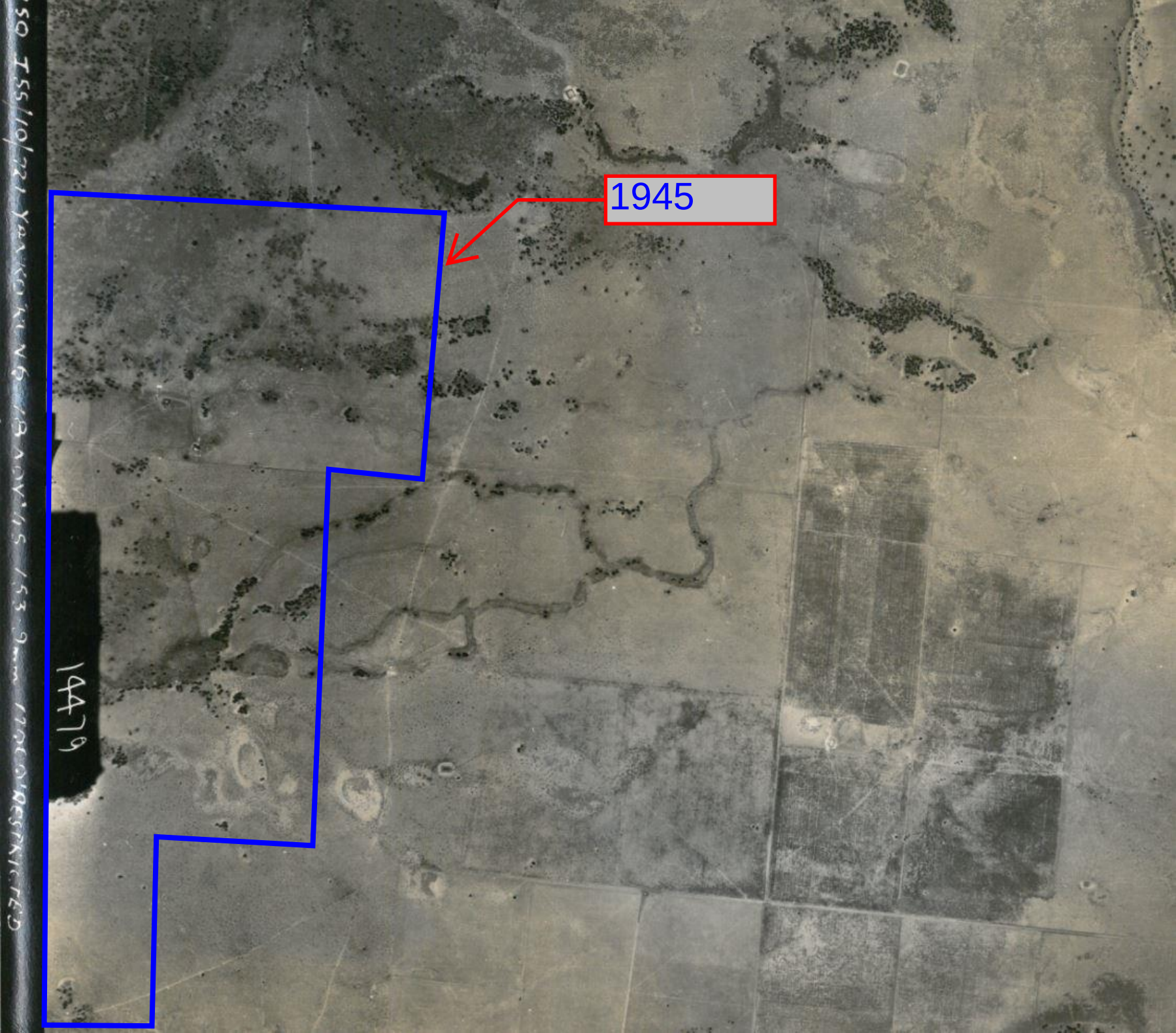
25/09/2013: Form A Remarks:
Helen Lester: Coordinates are taken from charted licence location.

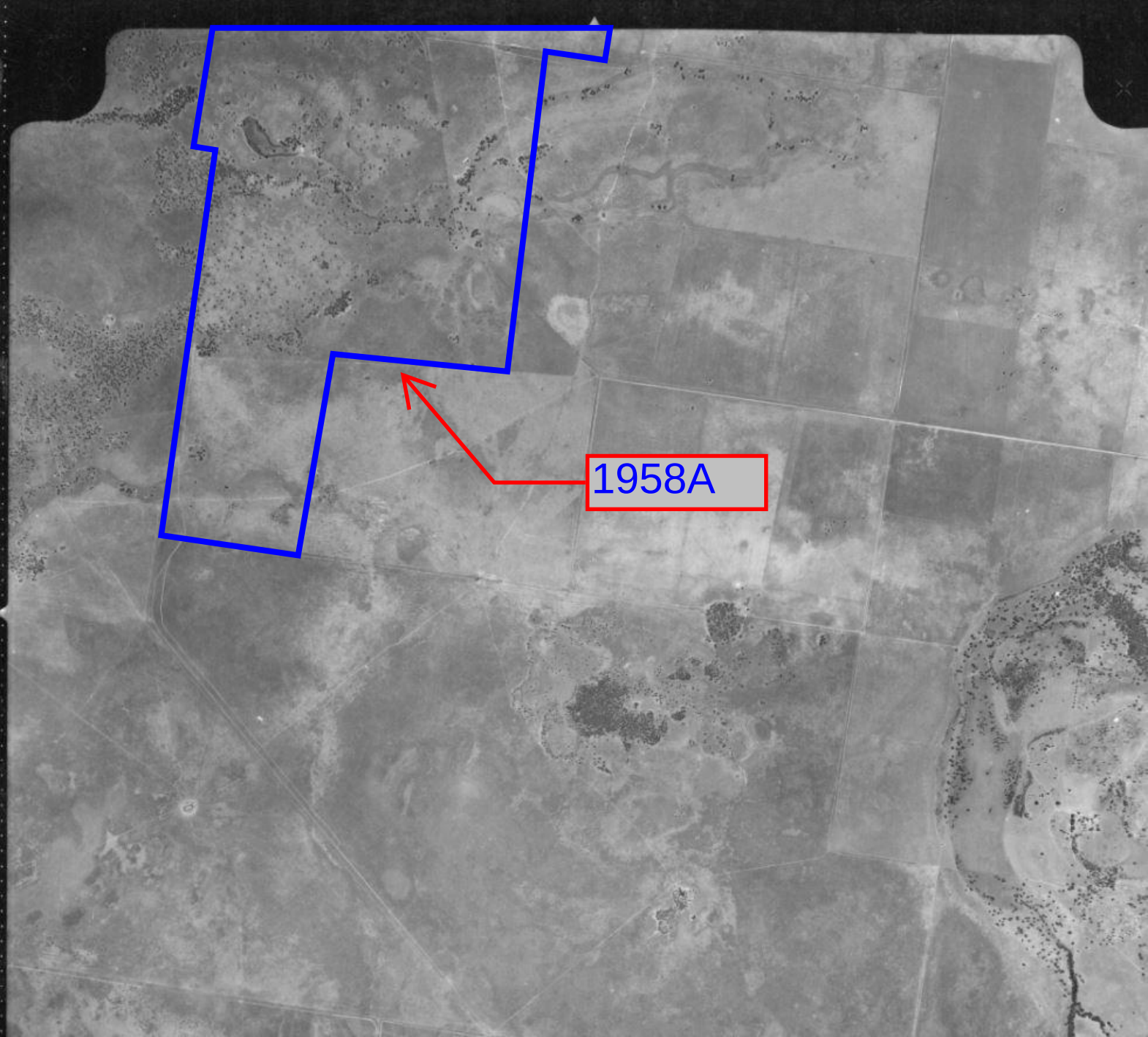
***** End of GW416374 *****

Appendix B

HISTORICAL AERIAL PHOTOGRAPHS

Report Number 610.14072-R1

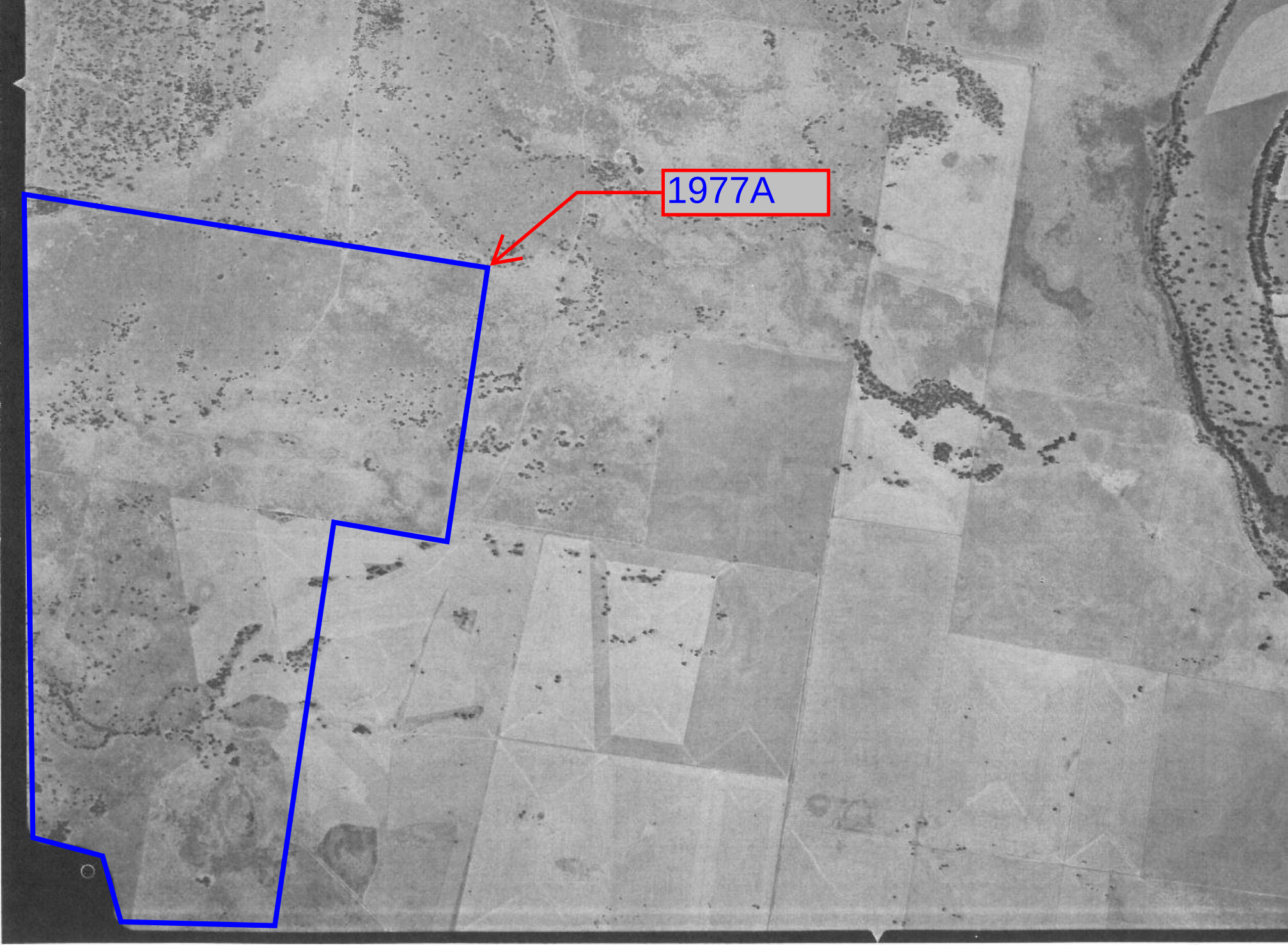

1945
14479


1958A


1958B

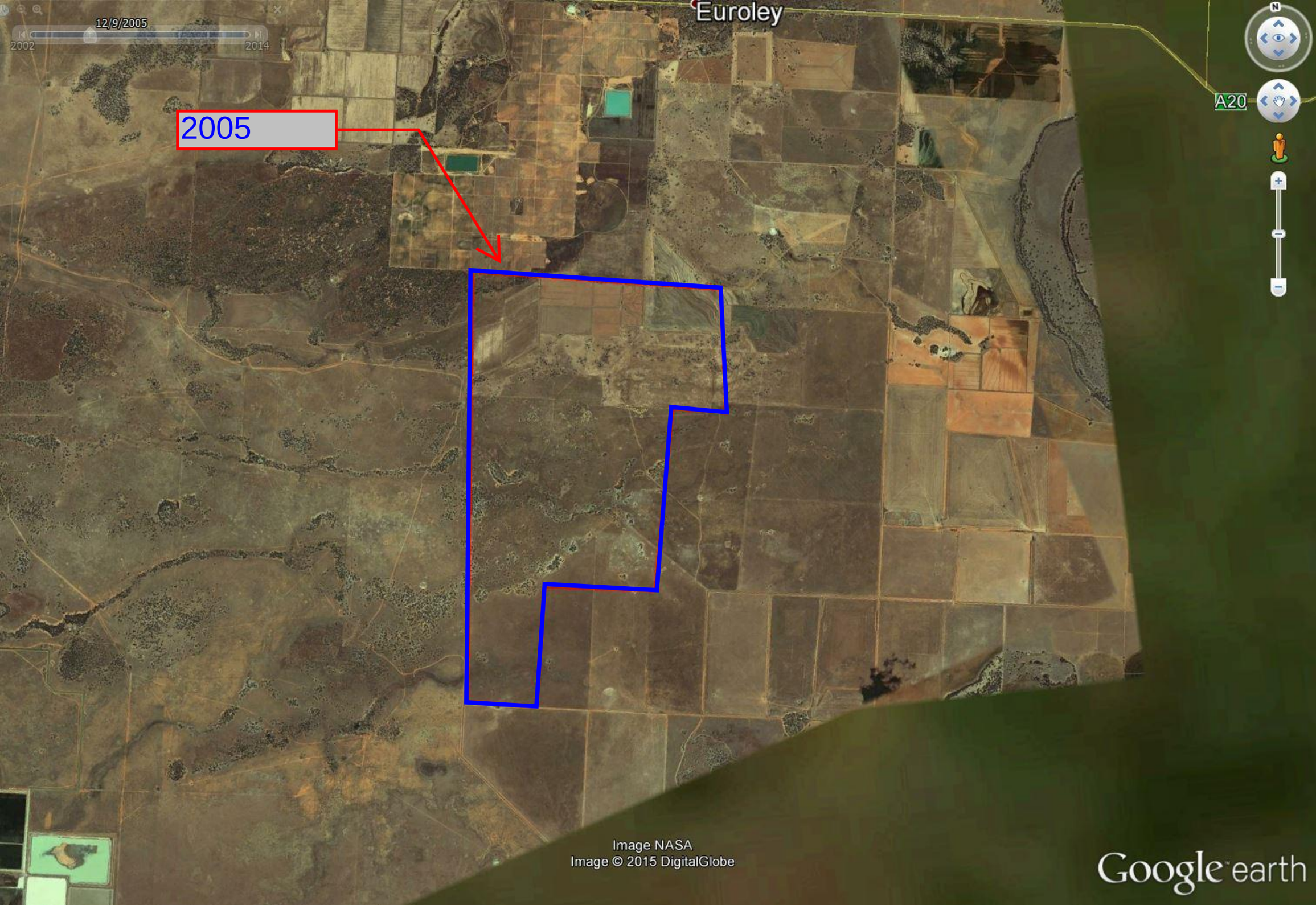
1967

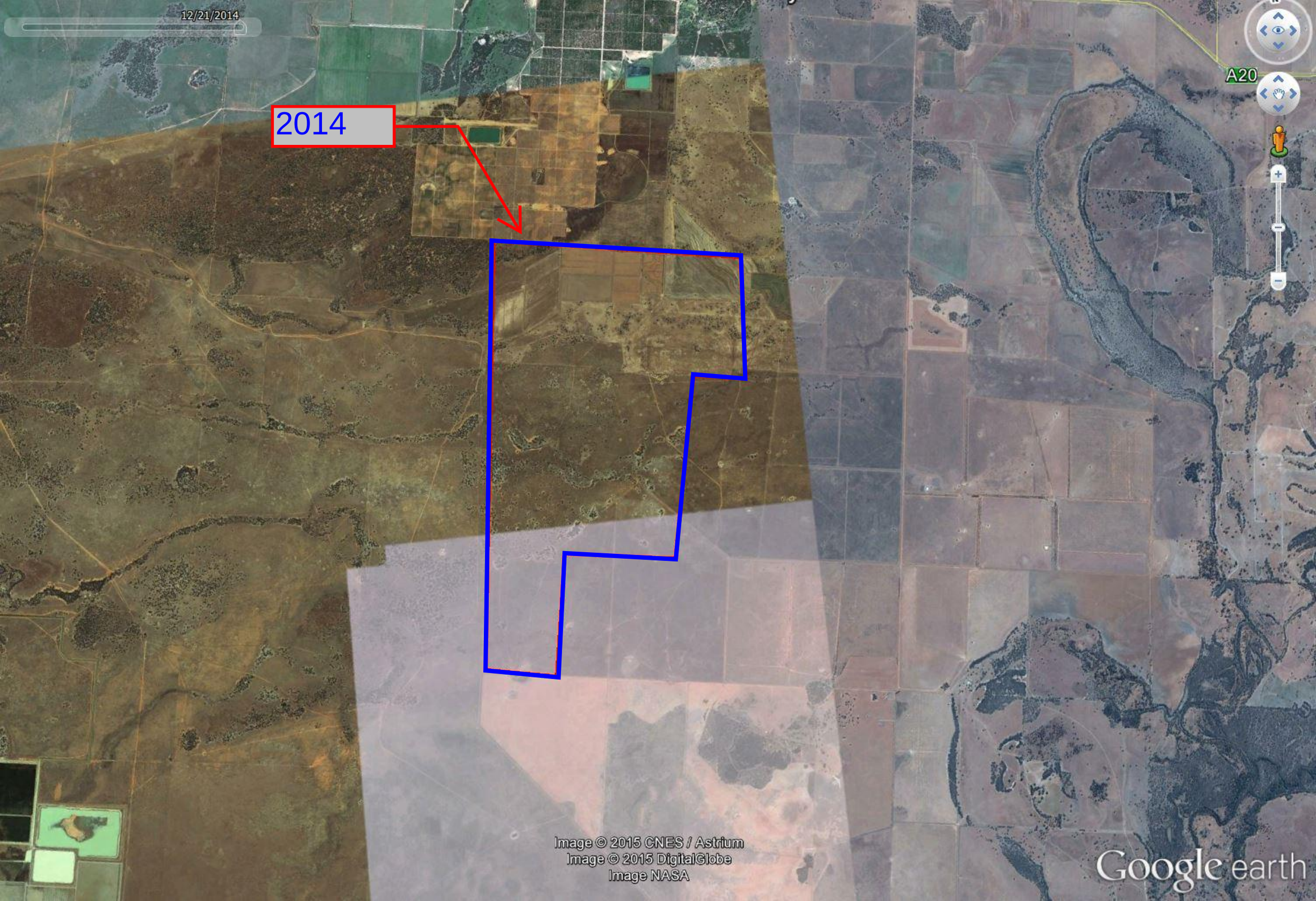

1977
NSW
2483
277
YANCO
1:45 000
NSW 2483
RUN 4
4.12.77
6950m ASL
151.45mm


1977A


1988


1997


12/9/2005
2002
2014
Euroley
A20
2005
Image NASA
Image © 2015 DigitalGlobe
Google earth


12/21/2014
2014
A20
Image © 2015 CNES / Astrium
Image © 2015 DigitalGlobe
Image NASA
Google earth

Appendix C

COPY OF TITLE SEARCH RECORDS

Report Number 610.14072-R1

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 20007-107

SEARCH DATE	TIME	EDITION NO	DATE
17/12/2014	8:53 AM	2	8/10/2013

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
AT UROLY
LOCAL GOVERNMENT AREA NARRANDERA
PARISH OF OURENDUMBEE COUNTY OF BOYD
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

BENJAMIN GEORGE MAHY
EMMA KARYN MAHY
AS JOINT TENANTS (T AI49666)

SECOND SCHEDULE (6 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LAND EXCLUDES MINERALS - SEE CROWN GRANT
3 Q456874 RIGHT OF CARRIAGEWAY AFFECTING THE PART SHOWN SO BURDENED IN PLAN WITH Q456874 AS REGARDS LOT 75 IN DP750898
4 Q456874 EASEMENT FOR WATER SUPPLY AFFECTING LOT 56 IN DP750898
5 Q456874 EASEMENT FOR WATER SUPPLY APPURTENANT TO LOT 56 IN DP750898 AFFECTING LOT 24 IN DP750898
6 AI49667 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

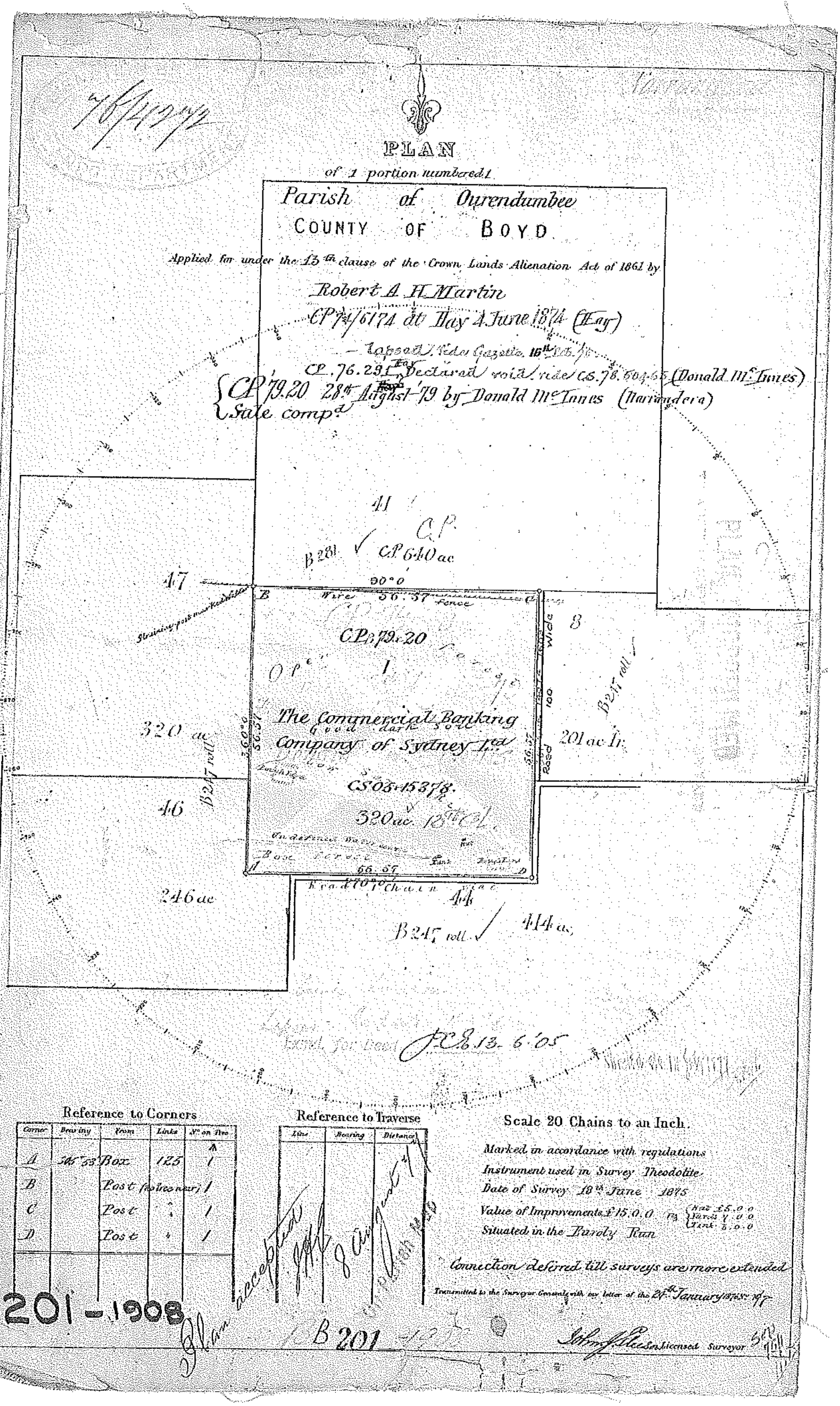
NOTATIONS

NOTE: THIS FOLIO MAY BE ASSOCIATED WITH A CROWN TENURE WHICH IS SUBJECT TO PAYMENT OF AN ANNUAL RENT. FOR FURTHER DETAILS CONTACT THE LOCAL CROWN LANDS OFFICE AT GRIFFITH. NOT ALL PARCELS WITHIN THIS TITLE MAY BE AFFECTED BY A CROWN TENURE.
UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT 1 IN DP750898	CROWN PLAN 201.1908
LOTS 44-45 IN DP750898	CROWN PLAN 247.1908
LOTS 54-56 IN DP750898	CROWN PLAN 300.1908
LOT 75 IN DP750898	CROWN PLAN 952.1908
LOT 1 IN DP1045064	DP1045064.

*** END OF SEARCH ***

141913 PRINTED ON 17/12/2014

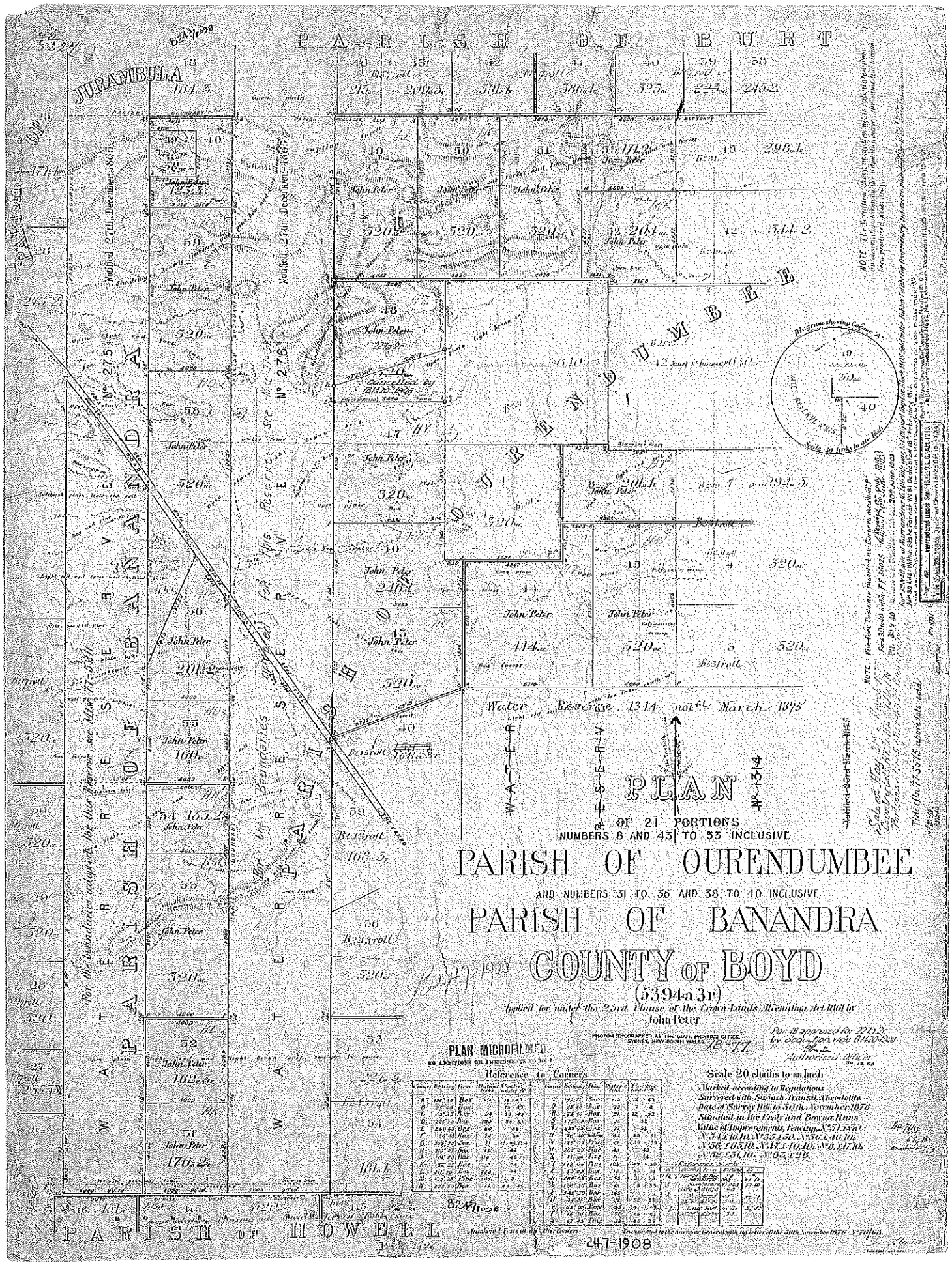

76/4272
PLAN
of 1 portion numbered 1
Parish of Ourendumbee
COUNTY OF BOYD
Applied for under the 13th clause of the Crown Lands Alienation Act of 1861 by
Robert A H Martin
CP 74/6174 at Hay 4 June 1874 (Hay)
– Lapsed Vide Gazette 16th Oct. 76
CP. 76.281 Hay Declared void vide CS.78.50465 (Donald McInnes)
CP 79.20 Hay 28th August 79 by Donald McInnes (Narrandera)
Sale compd
41
B 281 CP 640 ac
90°0
B
Wire 56.57 Fence
C
CP 79.20
1
The Commercial Banking Company of Sydney Ltd
CS 03-15378
320 ac 18th Cl.
47
320 ac
B 247 roll
8
201 ac In
B 217 roll
46
246 ac
Undefined Boundary
Box Fence
A
56.57
D
Road 100 Links wide
Road 1 Chain wide
44
B 247 roll
414 ac
Exd. for Deed JCE 13.6.05
Scale 20 Chains to an Inch.
Marked in accordance with regulations
Instrument used in Survey Theodolite
Date of Survey 18th June 1875
Value of Improvements £15.0.0
Situated in the Baroly Run
Connection deferred till surveys are more extended
Transmitted to the Surveyor General with my letter of the 24th January 1875 77
Licensed Surveyor
Plan accepted 8 August
B 201
201-1908

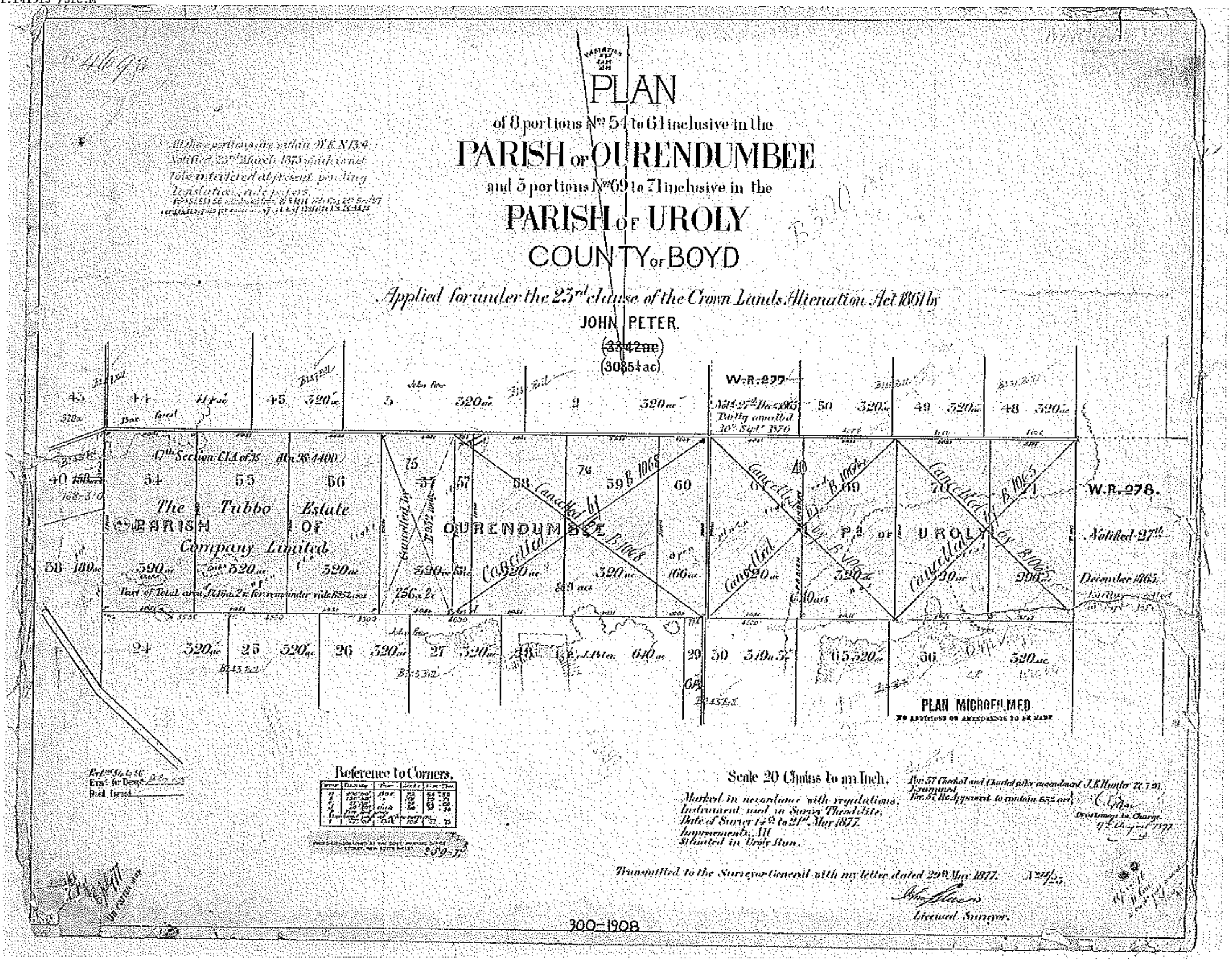
Reference to Corners

Corner	Bearing	From	Links	No. on Tree
A	305° 53	Box	125	1
B		Post (posts near)		1
C		Post		1
D		Post		1

Reference to Traverse

Line	Bearing	Distance




PLAN
of 8 portions Nos 54 to 61 inclusive in the
PARISH OF OURENDUMBEE
and 3 portions Nos 69 to 71 inclusive in the
PARISH OF UROLY
COUNTY OF BOYD
Applied for under the 23rd clause of the Crown Lands Alienation Act 1861 by
JOHN PETER.
(3342 ac)
(3085¼ ac)
W.R. 277
W.R. 278.
Notified 27th December 1865.
The Tubbo Estate Company Limited
PARISH OF OURENDUMBEE
P. OF UROLY
Scale 20 Chains to an Inch.
Reference to Corners.
PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE
Licensed Surveyor.
300-1908

Exchange Survey

Plan of Portion 75

Parish of Ourendumbee County of Boyd

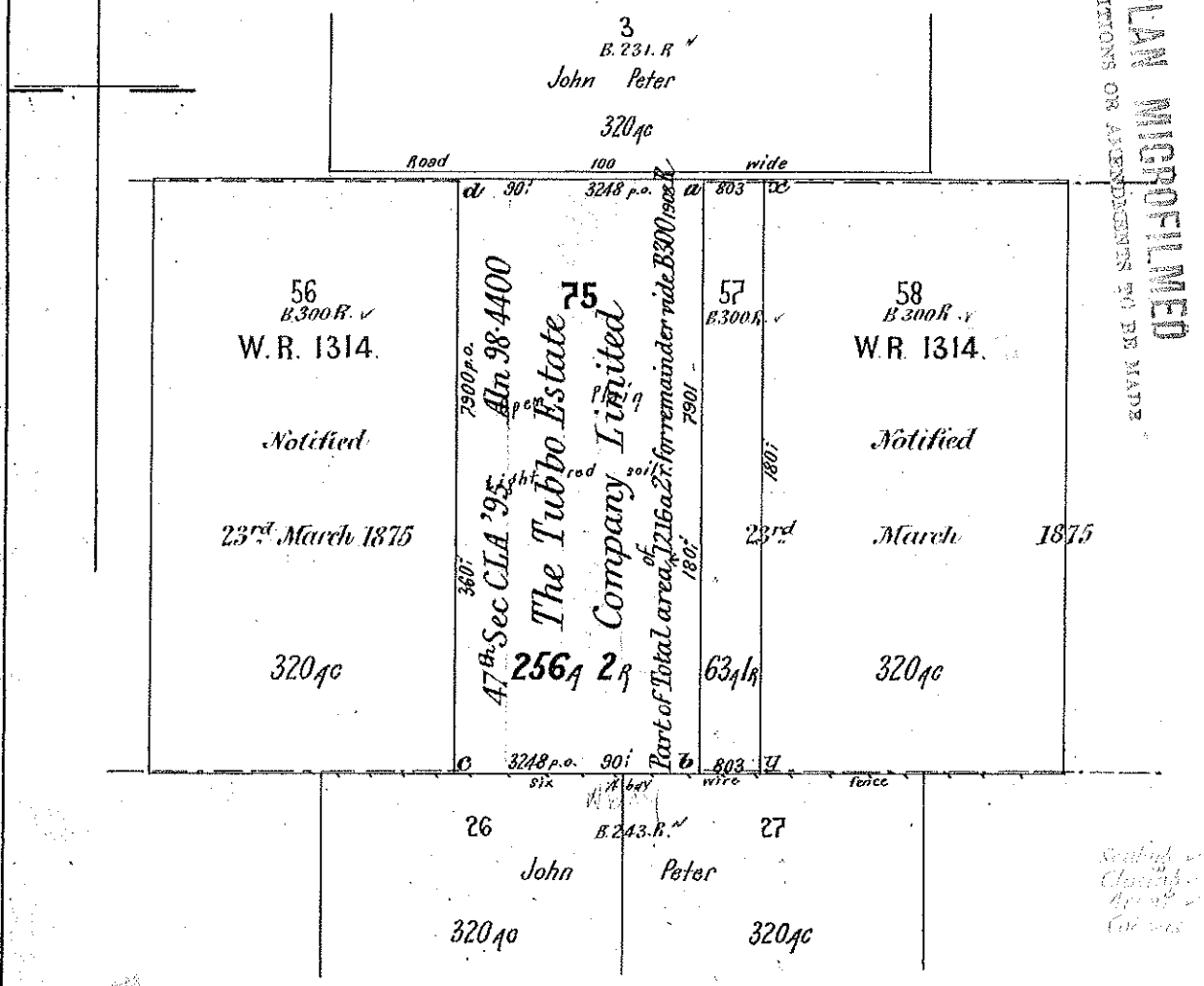
Land District of Narrandera Land Board District of Wagga Wagga

Applied for by under the 46th Sec.n of the C.L.Act of 1889

Scale 20 chains to One Inch

Cancels part of B300 1908 R.

Within W.R. 1314 Notified 23rd March 1875 Revoked 24th Dec. 1897



Reference to Corners

Cor:	Bearing	From	Dist:	Noon Tree
a	Numbered	Peg		57.75
b	27½ 0'	Oak	108	57.75
c	Post at	Cor:		75.56
d	Peg at Cor:			75.56
x	Peg at Cor:			57.58
y	Peg at Cor:			57.58

Improvements:- Fence £6.10.0.

Field Book Vol: 6541. Folio 46

Azimuth taken from x.y.

Exm.d for Descp.n 11.5.98.

Deed Issued.....

Charted on Head Office Maps
L.D.G. 14.10.97
Examined C.A.W.F.
30.10.97

Voucher No. 97. 27. Passed (Rs.8.3) 17th Augt 1897

Calculation Book. No 1887 Folio 47

Checked and Charted J.B.Hunter 22.7.97.

Examined.

Plan Approved C Clare

Draftsman in Charge

17th Augt 1897

I hereby certify that I in person made and on the 2nd June 1897 completed the survey represented on this plan on which are written the bearings and lengths of the lines measured by me and I declare that the survey has been executed in accordance with the regulations published for the guidance of Licensed Surveyors and the practice of the Department of Lands.

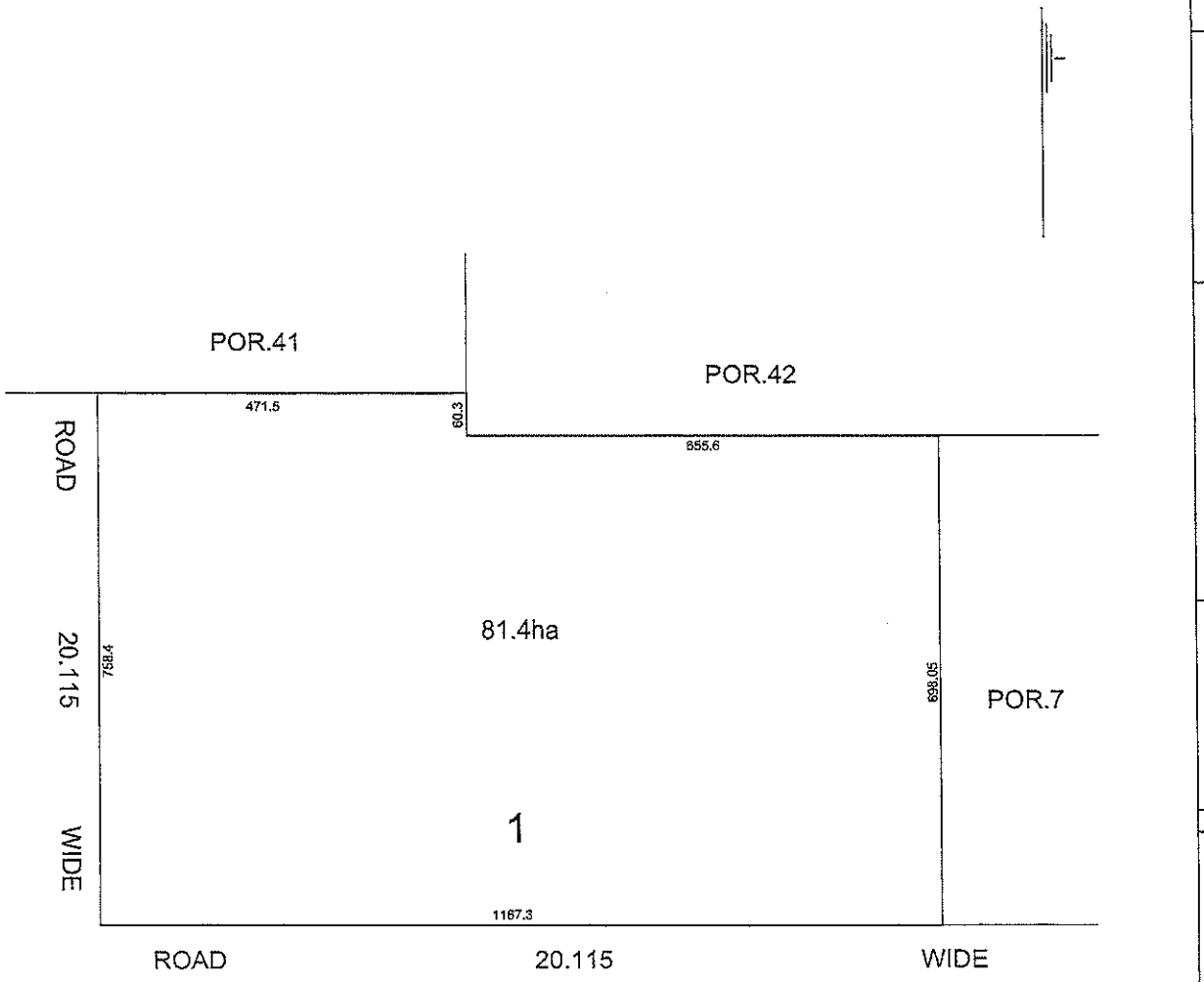
Jasmaster

Licensed Surveyor

952 - 1908

Transmitted to the District Surveyor with my letter of 23rd June No 97/28

B.952 1908



DP 1045064

Registered : 6/9/2002

Title System : TORRENS

Purpose : DEPARTMENTAL

Ref. Map : PARISH#

Last Plan : 247.1908

PLAN OF PART PORTION 8 FORMERLY COMPRISED IN VOL.13660 FOL.160

Lengths are in metres.
Reduction Ratio - NTS

LPI Ref. :SM

L.G.A.: NARRANDERA

LOCALITY: UROLY

PARISH: OURENDUMBEE

COUNTY: BOYD (27)

LOT	PRIOR IDENTITY

RP 13A

(1) 87034 GBB N.F. Mahy Pty Ltd (NT)

17 NOV 9 A9:38

REGISTRAR GENERAL NEW SOUTH WALES

19:47

SOUTH WALES

Q 456874 B

OFFICE USE ONLY

A	EX
$ 20	

MEMORANDUM OF TRANSFER

REAL PROPERTY ACT, 1900

This form is for use where the short form of transfer is not suitable.

Typewriting and handwriting should be clear, legible and in permanent black non-copying ink. No alterations should be made by erasure; the words rejected must be ruled through and verified by signature or initials in the margin.

(a) Full name, address and occupation of transferor.

(a) CARINGAL (NARRANDERA) PTY. LIMITED

hereinafter referred to as the TRANSFEROR,

(b) If a less estate strike out in fee simple and add appropriate estate.

being registered proprietor of an estate in fee simple(b)

in the land hereinafter described, subject to the following encumbrances and interests

(c) A short note will suffice. If an encumbrance is not yet registered particulars sufficient for identification must be furnished.

(c)

in consideration of One hundred & eighteen thousand four hundred & eighty three dollars ($118,483.00)

(d) Insert appropriate words. If desired, this space may be used in the case of a transfer by direction.

(the receipt whereof is hereby acknowledged), paid to the transferor by(d) N.F. Mahy Pty. Limited

hereby transfers to

(e) Full name, address and occupation of transferee. If more than one transferee state whether joint tenants or tenants in common. Unless otherwise stated tenants in common will be presumed to hold in equal shares.

(e) N.F. MAHY PTY. LIMITED a Company duly incorporated in New South Wales having its registered office at 154 Yambil Street, Griffith

hereinafter referred to as the TRANSFEREE

an estate in fee simple(b)

in the land described in the following schedule

Reference to title		Whole or Part	Description of land if part only(f)	County	Parish
Volume	Folio				
8390	177	Part	Portions 16,17,18,19,20,21,22,23,24,25,26,27,28, and 29	Boyd	Ourendumbee

TOGETHER WITH as appurtenant to the land hereby transferred:-
(a) A right of carriage way over all that piece of land 20 metres wide shown as "Proposed right of carriage way 20 wide" in the plan annexed hereto and marked with the letter "A"; and
(b) Full and free right for the transferee its successors in title and every person authorised by it from time to time and at all times to take stock water provided by a windmill in Portion 56 Parish of Ourendumbee County Boyd sufficient to keep filled a 24' water trough within Portion 26 and the transferor for itself and its assigns covenants to take reasonable measures at all times to keep the windmill and means of water supply in proper working order but the transferor or its assigns shall not be responsible for loss and damage to livestock on the land hereby transferred caused by break down of the windmill or failure to repair the windmill or any tank unless such break down or failure to repair is wilful or due to gross carelessness on the part of the transferor or its assigns or servants.

For the purpose of Section 88 of the Conveyancing Act, 1919, as amended, it is agreed:-
(1) The land to which the benefit of the foregoing right of carriage way is appurtenant is the land hereby transferred.

(f) Insert lot and plan number, portion &c. See also sections 327 and 327AA Local Government Act, 1919.

X 1168 BT 4574

RULE UP ALL BLANKS

8390-177 22/11

(ii) The land to which the benefit of the foregoing easement referred to in (b) above is appurtenant is Portion 26 Parish of Ourondumbee County of Boyd.

(iii) The land subject to the said right of carriage way is the place of land shown as "Proposed right of carriage way 20 wide" being part of the land comprised in Certificate of Title Volume 8390 Folio 177 and the land subject to the said easement referred to in (b) is Portion 56 in the Parish of Ourondumbee being part of the land in Certificate of Title Volume 8390 Folio 177.

(iv) The foregoing easements may be released, varied or modified by the transferee or its assigns.

AND reserving unto the transferor as appurtenant to Portion 54 in the Parish of Ourondumbee being part of the land in Certificate of Title Volume 8390 Folio 177 full and free right for the transferor its successors in title and every person authorised by it from time to time and at all times to take stock water provided by a windmill in Portion 24 Parish of Ourondumbee sufficient to keep filled a 24' water trough within Portion 54 and the transferee for itself and its assigns covenants to take reasonable measures at all times to keep the windmill and means of water supply in proper working order but the transferee or its assigns shall not be responsible for loss and damage to livestock on the residue after this transfer of the land comprised in Certificate of Title Volume 8390 Folio 177 caused by break down of the windmill or failure to repair the windmill or any tank unless such break down or failure to repair is wilful or due to gross carelessness on the part of the transferee or its assigns or servants.

For the purpose of Section 88 of the Conveyancing Act, 1919, as amended, it is agreed:-

(i) The land to which the benefit of the foregoing easement is appurtenant is Portion 54 in the Parish of Ourondumbee County of Boyd part of land in Certificate of Title Volume 8390 Folio 177.

(ii) The land subject to the said easement is Portion 24 part of the land hereby transferred.

(iii) The foregoing easement may be released, varied or modified by the transferor or its assigns.

Dated at Sydney this 21st day of October 19 97

(h) Further proof of execution will not normally be required if signed or acknowledged before any of the following persons, not being a party to the dealing, to whom the transferor is known:

Where executed in New South Wales — bank manager, barrister, clerk of petty sessions, commissioned officer in the Defence Force of the Commonwealth of Australia, commissioner for taking affidavits, headmaster of a school, judge, justice of the peace, magistrate, mayor or other chief officer of any local government corporation, medical practitioner, member of parliament of the Commonwealth or of a State, member of the police force of the Commonwealth or of a State or a Territory, minister of religion, notary public, postmaster, solicitor, town or shire clerk or other executive officer administering local government;

Where executed in any part of the Commonwealth of Australia or its Territories or in any part of the British Commonwealth — any of the persons referred to above, and in addition, an Australian or British Consular Officer exercising his functions in the part, Governor, Government Resident, Chief Secretary or Registrar of Titles of the part;

Where executed in foreign country — an Australian or British Consular Officer exercising his functions in that country, commissioned officer in the Defence Force of the Commonwealth of Australia, commissioner for taking affidavits, judge, justice of the peace, magistrate, mayor or other chief officer of any local government corporation, officer in charge of a police station, notary public, town or shire clerk or other executive officer administering local government.

) Repeat attestation clause &c., if necessary.

) Section 117 Real Property Act, 1900, requires that this certificate be signed by the transferee or, where his signature cannot be obtained without difficulty and delay, by his solicitor or conveyancer by his own name, which should be typewritten or printed below his signature, and not that of his firm. Any person falsely or negligently certifying is liable to the penalties provided by section 117.

) May be witnessed by any responsible person not being a party to this dealing.

(b) Signed in my presence by the transferor who is personally known to me

The Common Seal of CARINGAL (NARRABUNDAH) PTY. LIMITED was hereunto affixed in the presence of

Signature of witness

Name of witness (BLOCK LETTERS)

Qualification of witness

(i)

CARINGAL (NARRABUNDAH) PTY. LIMITED Common Seal

Secretary

Director

(j) Accepted and certified correct for the purposes of the Real Property Act, 1900.

(k) Signed in my presence by the transferee who is personally known to me

The Common Seal of N.F. MAHY PTY. LIMITED was hereunto affixed in the presence of

Signature of witness

Name of witness (BLOCK LETTERS)

Address of witness

(l)

Transferee

N.F. MAHY PTY. LIMITED Common Seal

Secretary

Director

Q456874

DEPARTMENTAL USE ONLY

TRANSFER (together with a right of carriageway and easement for water supply and reserving an easement for water supply.

Checked RA2 RD9	REGISTERED 3-5-1978
Passed 27.1.78	
Signed RS1	Registrar General

Mtge Q 456875 to follow c/s

NCs TO issue see sheet of Q453688 for full forms of notifn.

24.5.78

6.6.78
8.6.78

1.8.78

13660 161 to 174

TO BE COMPLETED BY LODGING PARTY

Lodged by: Rural Bank

Address:

Phone No.:

Documents lodged herewith

1. Plan
2. 2 letters.
3.
4. 1404

Received Documents 1&2 Receiving Clerk 2

AUTHORITY FOR USE OF INSTRUMENT OF TITLE(l)

Authority is hereby given for the use of ______ lodged
(insert reference to certificate, grants or dealings)
in connection with ______ for the
(insert number of plan or dealing)
registration of this dealing and for delivery to ______

______
(BLOCK LETTERS)

______
Signature

______
Name (BLOCK LETTERS)

(l) Unless the instrument of title has been lodged by the person lodging the dealing, or its use has been authorized previously, the authority must be furnished by the person otherwise entitled to delivery of the certificate of title, grant &c.

MEMORANDUM AS TO NON-REVOCATION OF POWER OF ATTORNEY
(To be signed at the time of executing the within dealing)

The undersigned states that he has no notice of the revocation of the Power of Attorney registered No. Miscellaneous Register under the authority of which he has just executed the within dealing.

Signed at

the day of 19 .

______
Signature of attorney

______
Signature of witness

CERTIFICATE OF J.P., &c., TAKING DECLARATION OF ATTESTING WITNESS(m)

I certify that ______

the attesting witness to this dealing, appeared before me at

the day of 19 ,

and declared that he personally knew ______

______

the person signing the same, and whose signature thereto he has attested, and that the name purporting to be such signature of the said ______

______

is his own handwriting and that he was of sound mind and freely and voluntarily signed the same.

______
Signature

______
Name (BLOCK LETTERS)

______
Qualification

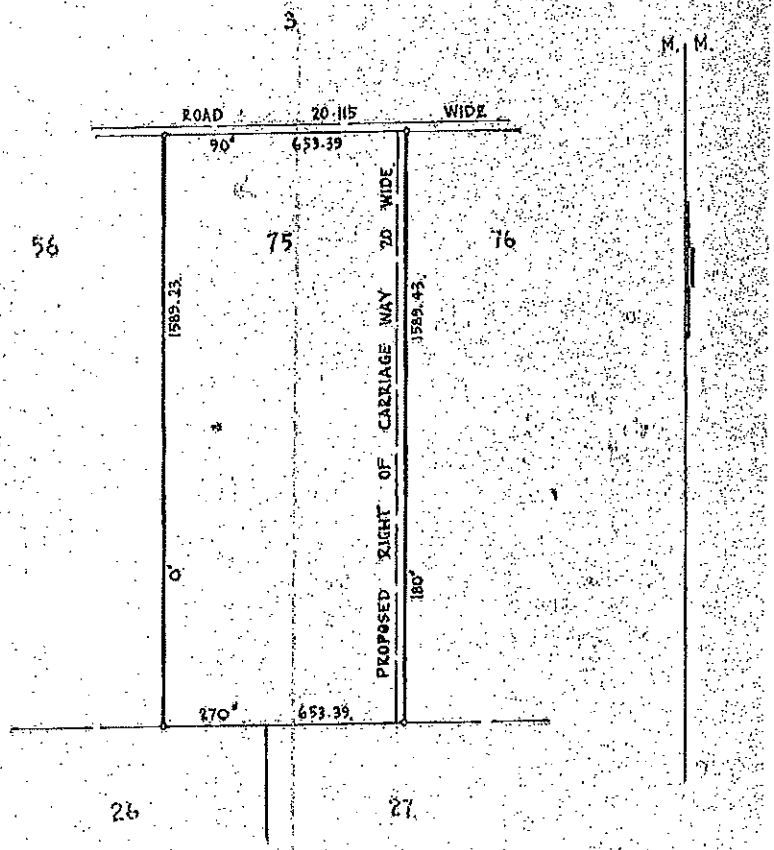
(m) Not required where dealing attested in accordance with note (b); in other cases to be signed by one of the persons referred to in note (b).

13660 161 to 174

BY AUTH. K 1184 D. WEST, GOVERNMENT PRINTER 1974

PLAN

SHOWING SITE OF PROPOSED RIGHT OF CARRIAGE WAY 20 WIDE WITHIN PORTION 75 APPURTENANT TO PORTIONS 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 28 AND 29.
PARISH OF OURENDUMBEE COUNTY OF BOYD.
SHIRE OF NARRANDERA.
SCALE:- 1: 12 500.



THIS IS THE PLAN MARKED "A" REFERRED TO IN MEMORANDUM OF TRANSFER CARINGAL (NARRANDERA) PTY. LIMITED TO N.F. MAHY PTY. LIMITED.

CARINGAL (NARRANDERA) PTY. LIMITED Common Seal

LODGED WITH DEALING

N.F. MAHY PTY. LIMITED Common Seal

Director

Secretary

Director

Secretary

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 20007-110

SEARCH DATE	TIME	EDITION NO	DATE
17/12/2014	9:02 AM	2	17/9/2013

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
AT UROLY
LOCAL GOVERNMENT AREA NARRANDERA
PARISH OF OURENDUMBEE COUNTY OF BOYD
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

GRAHAM STUART HEATH
ANN LETITIA HEATH
AS JOINT TENANTS (T AI26400)

SECOND SCHEDULE (3 NOTIFICATIONS)

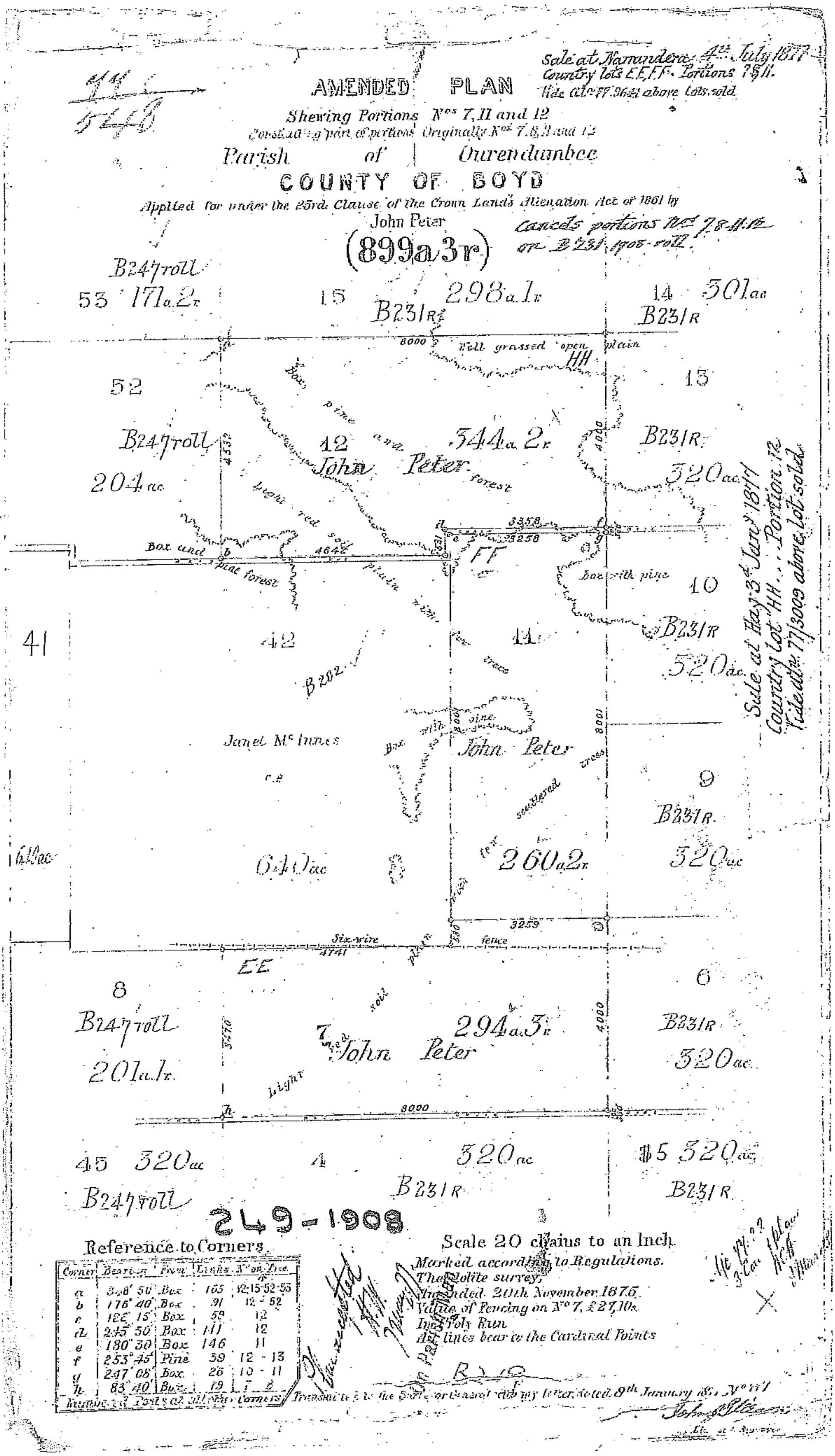
1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LAND EXCLUDES MINERALS - SEE CROWN GRANT
3 AI26401 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

NOTE: THIS FOLIO MAY BE ASSOCIATED WITH A CROWN TENURE WHICH IS SUBJECT TO PAYMENT OF AN ANNUAL RENT. FOR FURTHER DETAILS CONTACT THE LOCAL CROWN LANDS OFFICE AT GRIFFITH. NOT ALL PARCELS WITHIN THIS TITLE MAY BE AFFECTED BY A CROWN TENURE.
UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT 12 IN DP750898	CROWN PLAN 249.1908
LOT 13 IN DP750898	CROWN PLAN 231.1908
LOT 41 IN DP750898	CROWN PLAN 281.1908
LOT 42 IN DP750898	CROWN PLAN 282.1908.

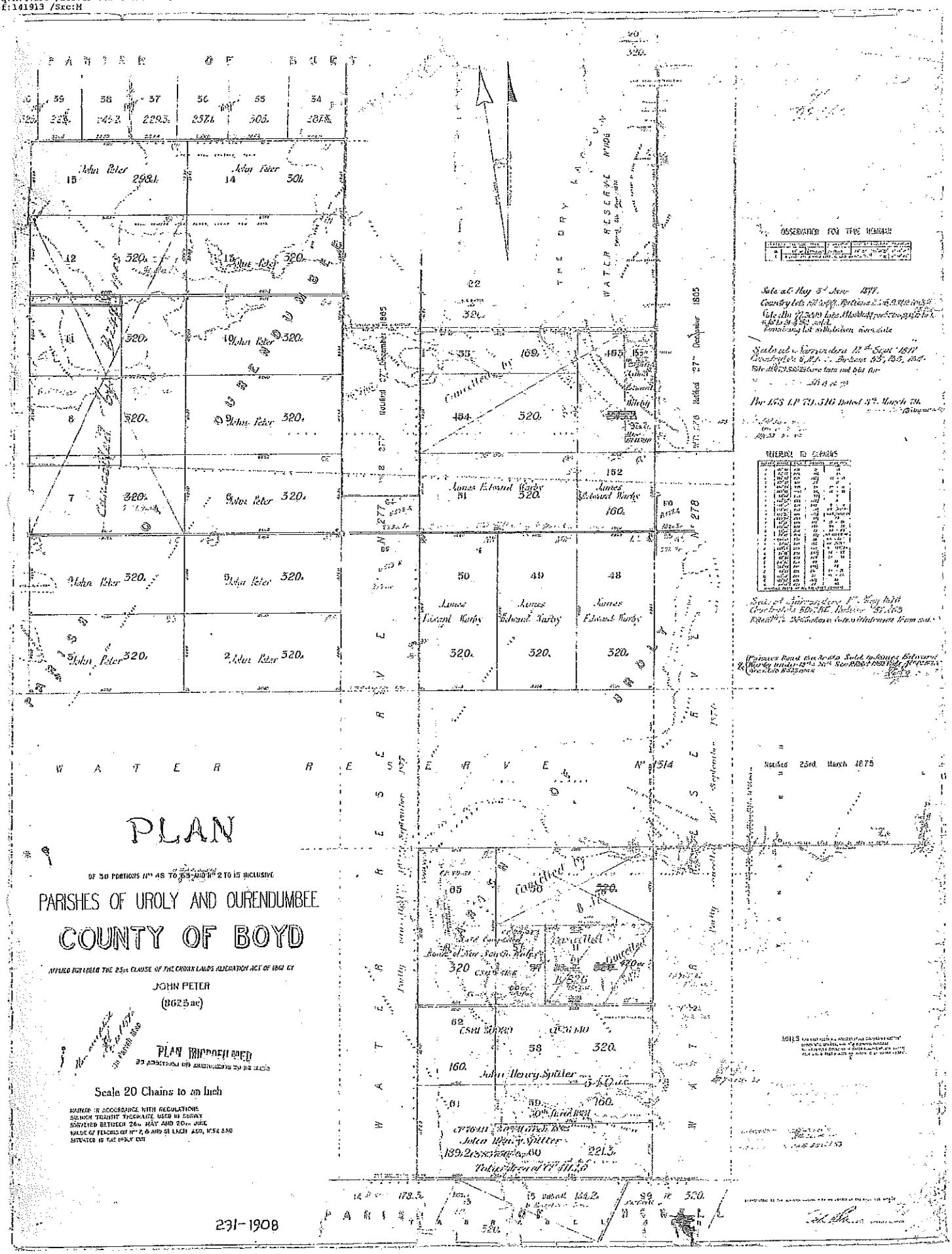
*** END OF SEARCH ***


AMENDED PLAN
Shewing Portions Nos 7, 11 and 12
Consisting part of portions Originally Nos 7, 8, 11 and 12
Parish of Ourendumbee
COUNTY OF BOYD
Applied for under the 23rd Clause of the Crown Lands Alienation Act of 1861 by
John Peter
(899a 3r)
Sale at Narrandera 4th July 1877
Country lots EE, FF. Portions 7 & 11.
Vide Al.77.3642 above lots sold.
Canceds portions Nos 7.8.11.12
on B231.1908-roll.
Sale at Hay 3rd Jany 1877
Country Lot HH ... Portion 12
Vide Al. 77/3009 above lot sold
53 171a.2r
B247roll
15 298a.1r
B231R
14 301ac
B231R
52
B247roll
204ac
12 544a.2r
John Peter
13
B231R
320ac
Well grassed open plain
Box pine and forest
Light red soil plain with
Box and pine forest
Box with pine
10
B231R
320ac
41
640ac
42
B202
Janet Mc Innes
640ac
11
John Peter
260a.2r
9
B231R
320ac
Six-wire fence
EE
FF
HH
8
B247roll
201a.1r
7
John Peter
294a.3r
Light red soil
6
B231R
320ac
45 320ac
B247roll
4 320ac
B231R
5 320ac
B231R
249-1908
Scale 20 chains to an Inch.
Marked according to Regulations.
Theodolite survey.
Inspected 20th November 1876.
Value of Fencing on No 7, £27,10s.
In Tholy Run
All lines bear to the Cardinal Points
Transmitted to the Surveyor General with my letter dated 8th January 1877 No 117

Reference to Corners

Corner	Bearing	Tree	Links	No. on Tree
a	348° 50'	Box	165	12-15-52-53
b	176° 40'	Box	91	12 - 52
c	122° 15'	Box	59	12
d	245° 50'	Box	111	12
e	180° 30'	Box	146	11
f	253° 45'	Pine	59	12 - 13
g	247° 08'	Box	26	10 - 11
h	83° 40'	Box	19	7 - 8

Numbered Posts at all the Corners



PLAN

of portion No 41

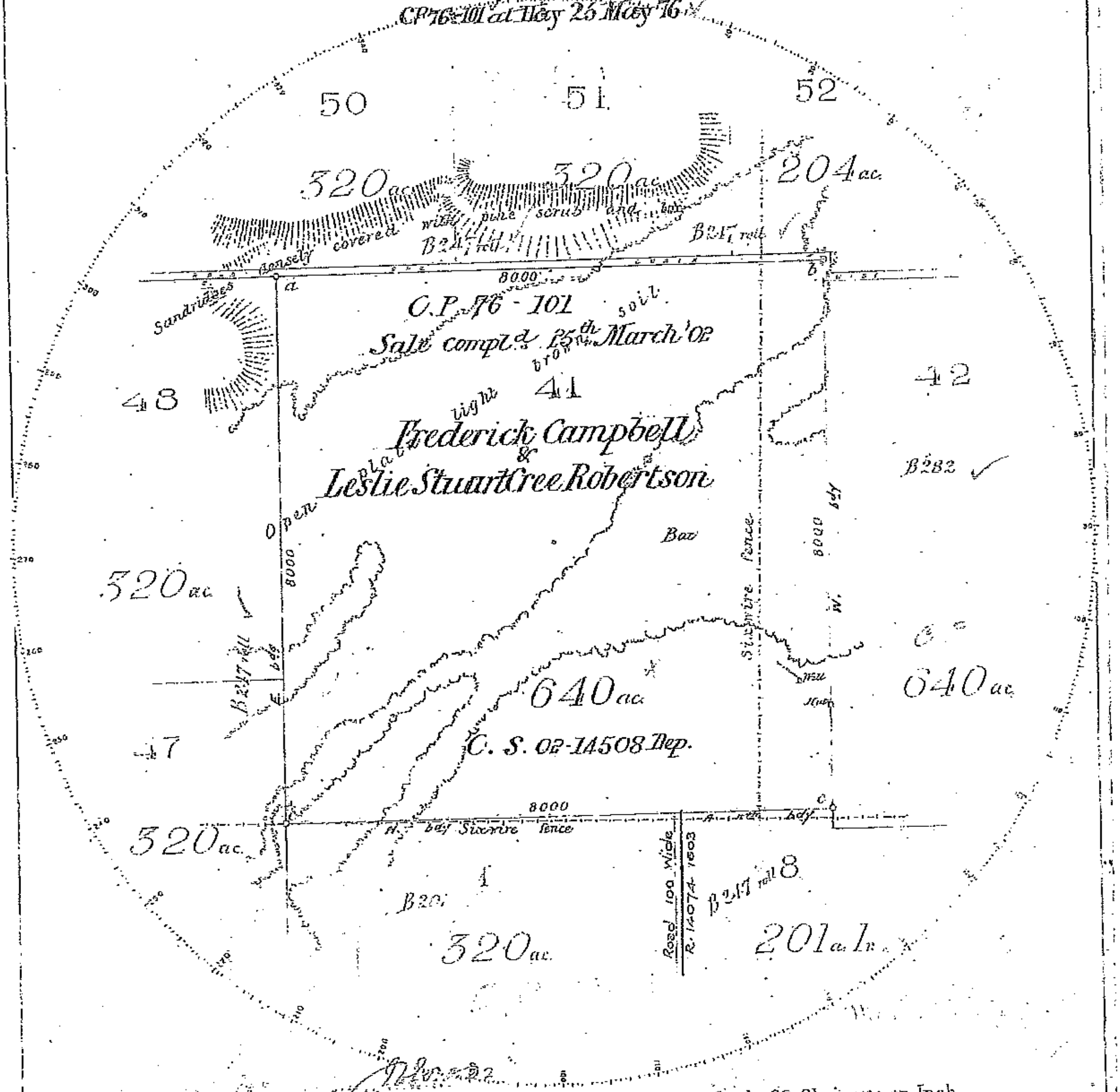
Parish of Ourendumbee

COUNTY OF BOYD

Applied for under the 13th clause of the Crown Lands Act Amendment Act of 1875 by

Nicholas Bornholt

CP 76-101 at Hay 25 May 76



Scale 20 Chains to an Inch.

Reference to Corners

Corner	Bearing	From	Links	No. in Sec.
a	85° 00'	Pine	53	41 - 48
b	100° 00'	Box	44	41
c	Numbered		Posts	

Reference to Traverse

Line	Bearing	Distance

Marked in accordance with regulations
Instrument used in Survey Six Inch Theodolite
Date of Survey 7th and 21st November 1875
Value of Improvements £150 (Hut and ... £30, Fencing ... £60)
Situated in the Uroly Run

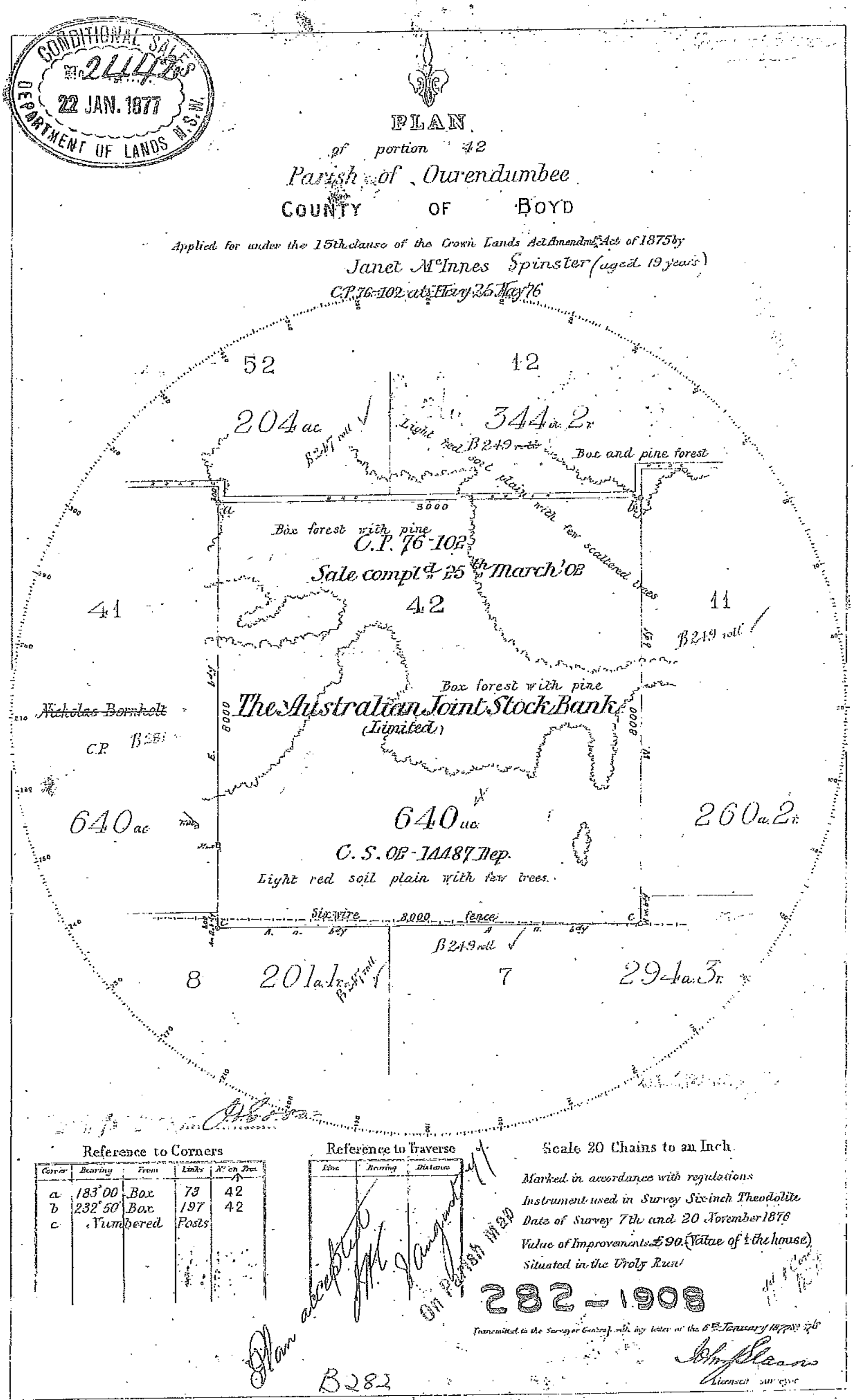
Plan accepted H.H. 11 Sept 77

281-1908

Transmitted to the Surveyor General with my letter of the 6th January 1877

John ... Licensed Surveyor

B281


CONDITIONAL SALES
No. 2442s
22 JAN. 1877
DEPARTMENT OF LANDS N.S.W.
PLAN
of portion 42
Parish of Ourendumbee
COUNTY OF BOYD
Applied for under the 15th clause of the Crown Lands Act Amendmt Act of 1875 by
Janet McInnes Spinster (aged 19 years)
C.P. 76-102 at Hay 25 May 76
52
204 ac.
12
344 a. 2 r.
Light red soil plain with few scattered trees
Box and pine forest
Box forest with pine
C.P. 76-102
Sale compl.d 25th March '02
41
42
11
B 249 roll
Box forest with pine
The Australian Joint Stock Bank (Limited)
Nicholas Bornholt
C.P.
640 ac.
640 ac.
260 a. 2 r.
C. S. 02-14487 Dep.
Light red soil plain with few trees.
Six wire 8,000 fence
8000
8000
8
201 a. 1 r.
7
294 a. 3 r.
B 249 roll
Scale 20 Chains to an Inch.
Marked in accordance with regulations
Instrument used in Survey Six-inch Theodolite
Date of Survey 7th and 20 November 1876
Value of Improvements £90. (Value of ½ the house)
Situated in the Uroly Run
On Parish Map
Plan accepted
282-1908
Transmitted to the Surveyor General with my letter of the 6th January 1877
Licensed Surveyor
B282

Reference to Corners

Corner	Bearing	From	Links	No. on Tree
a	183°00	Box	73	42
b	232°50	Box	197	42
c	Numbered	Posts		

Reference to Traverse

Line	Bearing	Distance

Appendix D

NSW EPA SEARCH RECORD

Report Number 610.14072-R1

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues

Home > Contaminated land > Record of notices

Search results

Your search for: LGA: Narrandera Shire Council

Search Again Refine Search

did not find any records in our database.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.
This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the POEO public register

14 August 2015

Environment protection licences

+ Licensing under the POEO Act
Guide to licensing
Licence forms
Licence fees
+ Risk-based licensing
+ Load-based licensing
+ Emissions trading
– POEO Public Register
Terms of use: POEO public register
Search for licences, applications and notices
Search for penalty notices
Search for prosecutions and civil proceedings
Enforceable undertakings
Exemptions and approvals
Licensing FAQs
List of licences
Unlicensed premises still regulated by the EPA
National Pollutant Inventory
+ Compliance audit program
+ Reporting and managing incidents
+ Wind farm regulation
NSW Gas Plan Regulation
+ Gas industry in NSW

Home > Environment protection licences > POEO Public Register > Search for licences, applications and notices

Search results

Your search for: **General Search** with the following criteria

Suburb - euroley

returned 0 result

Search Again

ERINA	Former Frozen Food Distribution Depot 1 Aston ROAD	Other Petroleum	Contamination currently regulated under CLM Act
ERINA	Caltex Service Station 155 The Entrance ROAD	Service Station	Under assessment
ERINA	Coles Express Erina 211 The Entrance ROAD	Service Station	Under assessment
ERINA	7 Eleven Erina Service Station 214 The Entrance ROAD	Service Station	Under assessment
ERINA	7-Eleven Service Station 96 The Entrance ROAD	Service Station	Regulation under CLM Act not required
ERMINGTON	Caltex Service Station 560-562 Victoria ROAD	Service Station	Under assessment
ERSKINEVILLE	Redevelopment Site 36/1A Coulson STREET	Unclassified	Regulation under CLM Act not required
ERSKINEVILLE	Department of Housing 52 John STREET	Other Industry	Regulation under CLM Act not required
ERSKINEVILLE	RailCorp land Coulson STREET	Other Industry	Under assessment
EUABALONG WEST	Euabalong West Depot (Reliance Petroleum) Corner Illawong Street and Murrin Street OTHER	Other Petroleum	Under assessment
EVANS HEAD	Evans Head Residential subdivision Bounded by Currajong, Woodburn, Carrabeen Streets and Tuckeroo Cres OTHER	Unclassified	Regulation under CLM Act not required
EVANS HEAD	Evans Head Aerodrome Memorial Airport DRIVE	Other Industry	Regulation under CLM Act not required
EVANS HEAD	Bundjalung National Park The Gap ROAD	Unclassified	Under assessment
EVELEIGH	Macdonaldtown Triangle Burren STREET	Gasworks	Contamination being managed via the planning process (EP&A Act)
EVELEIGH	Australian Technology Park Henderson ROAD	Other Industry	Regulation under CLM Act not required
FAIRFIELD	Endeavour Energy Fairfield Zone Substation 22 Hedges STREET	Other Industry	Regulation under CLM Act not required
FAIRFIELD	Speedway Petroleum 251 The Horsley DRIVE	Service Station	Regulation under CLM Act not required
FAIRFIELD WEST	7 Eleven Fairfield West 234 Hamilton Road Cnr The Boulevarde OTHER	Service Station	Under assessment
FAIRY MEADOW	Caltex Fuel Depot 46 Montague Street and adjoining land OTHER	Service Station	Contamination formerly regulated under the CLM Act

Appendix E

SECTION 149 (2) PLANNING CERTIFICATES

Report Number 610.14072-R1

Narrandera
Shire Council

PLANNING CERTIFICATE
Issued under s 149 of the
Environmental Planning & Assessment Act, 1979 & cl 279 & Sch 4
Environmental Planning & Assessment Regulation, 2000
(as amended)

Certificate Number	3/2015		
County of	Boyd	**Parish of**	Euroley
Address	Devlins Bridge Road Euroley		
Legal Description	Lot: 1,44,45,54,56,75	DP: 750898,1045064	Sec:
Area	1000.26ha		
Owner	BG & EK Mahy		
The Information in this Certificate is true and accurate as at this date	13/01/2015		
Signature:			
Manager Planning and Environmental Services	Trent Cormie		

SECTION 149(2)

1 NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments

a) The following is a list of Local Environmental Plans that apply to the Narrandera Shire Council area.

Narrandera Local Environmental Plan 2013

b) The following is a list of State Environmental Planning Policies that apply to the Narrandera Shire Council area. The policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the policy for the necessary details.

Any enquiries regarding State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website –
www.planning.nsw.gov.au

SEPP No. 6	Number of Storeys in a Building
SEPP No. 21	Caravan Parks
SEPP No. 22	Shops and Commercial Premises
SEPP No. 30	Intensive Agriculture
SEPP No. 32	Urban Consolidation (Redevelopment of Urban Land)
SEPP No. 33	Hazardous and Offensive Development
SEPP No. 36	Manufactured Home Estates
SEPP No. 44	Koala Habitat Protection
SEPP No. 50	Canal Estates
SEPP No. 52	Farm Dams and Other Works in Land and Water Management Plan Areas
SEPP No. 53	Transitional Provisions 2011

SEPP No. 55	Remediation of Land
SEPP No. 62	Sustainable Aquaculture
SEPP No. 64	Advertising and Signage
SEPP No. 65	Design Quality of Residential Flat Development
SEPP	Housing for Seniors of People with a Disability 2004
SEPP	Building Sustainability Index (BASIX) 2004
SEPP	Major Development 2005
SEPP	Mining, Petroleum Production and Extractive Industries 2007
SEPP	Temporary Structures and Places of Public Entertainment 2007
SEPP	Infrastructure 2007
SEPP	Rural Lands 2008
SEPP	Affordable Rental Housing 2009
SEPP	State and Regional Development 2011
SEPP	Urban Renewal 2010

(2) Proposed Environmental Planning Instruments

a) There are no draft local environmental plans which apply to the land.

b) The following is a list of proposed State Environmental Planning Policies that apply to the Narrandera Shire Council area. The draft policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the draft policy for the necessary details.

Any enquiries regarding the draft State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website – www.planning.nsw.gov.au

Draft SEPP	Competition 2010

(3) Development Control Plans

DCP.	Narrandera Development Control Plan 2013

2 ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Zoning

The subject land is within **RU1 Primary Production** as identified in Part 2 of Narrandera Local Environmental Plan 2013 and on the LEP zoning maps.

(b) Development that may be carried out within the zone without the need for development consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

(c) Development that may not be carried out within the zone except with development consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm
stay accommodation; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities;
Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Mooring pens; Moorings; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls;
Rural industries; Rural workers' dwellings; Sewerage systems; Veterinary hospitals; Waste or resource management facilities; Water recreation structures; Water supply systems

(d) Development that is prohibited within the zone

Any development not specified in item 2 or 3.

(e) Development standards applying to the land that fixes the minimum land dimension for the erection of a dwelling house on the land

The Narrandera Local Environmental Plan 2013 contains development standards that fix the minimum land dimension for the erection of 400ha for a dwelling house with RU1 zone.

(f) Critical habitat

Council has a record of the following critical habitat as per the Vegetation of Central Southern NSW ADS40 Program Final Report

Refer to attached map

(g) Conservation Areas

The land does not contain any conservation areas

(h) Items of Environmental Heritage

The land does not contain an item of environmental heritage.

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

The provisions of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 do not apply to land within the boundaries of Narrandera Shire Council.

3. COMPLYING DEVELOPMENT

Is the land on which complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?

Complying development cannot be carried out under the provisions Part 3 (General Housing Code) of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 because:

(a) land identified as containing critical habitat

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that Council has been so notified by the Department of Public Works?

The land is not affected by the operation of section 38 or 39 of the Coastal Protection Act, 1979.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

The land has not been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961.

6. ROAD WIDENING AND ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or
(b) any environmental planning instrument; or
(c) any resolution of the council?

Not applicable

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land is affected by a policy adopted by the council, or adopted by any other public authority and notified to the council for the express purpose of adoption by that authority being referred to in planning certificates issued by Council that restricts the development of land because of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils, or any other risk (other than flooding)?

Not applicable

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling houses, residential flat buildings (not including development for the purposes of group homes or seniors housing) or for any other purpose subject to flood related development controls?

Council considers the land in question to be above the Flood Planning Level (FPL).

8. LAND RESERVED FOR ACQUISITION

Is there an Environmental Planning Instrument, deemed Environmental Planning Instrument or Draft Environmental Planning Instrument applying to the land providing for the acquisition of the land by a public authority, as referred to in section 27 of the Environmental Planning and Assessment Act 1979?

Not applicable

9. CONTRIBUTIONS PLANS

A Contribution Plan applies to the Shire of Narrandera. The plan has been compiled within the provisions of Section 94A of the Environmental Planning and Assessment Act 1979. All development over $100,000 in value within the Shire of Narrandera will attract a contribution of one percent (1%). The funding raised by this plan will be used to assist in the funding of public works.

The plan does not apply to single residential dwellings to be used solely as a residence by the occupants.

10. BIOBANKING AGREEMENTS

Is the land subject to a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995?

Council has not received notification from the Director-General of Department of Environment, Climate Change and Water of any bio-banking agreement on this site.

11. BUSH FIRE PRONE LAND

Is the land or some of the land bush fire prone land (as defined in the Act)?

The land is NOT shown as being within a bushfire prone area under maps provided to the Council by the Commissioner of the NSW Rural Fire Service.

12. PROPERTY VEGETATION PLANS

Is there a *property vegetation plan* under the *Native Vegetation Act, 2003* applying to the land?

Records available to Council indicate that there is no property vegetation plan applying to this land.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land?

Not applicable

14. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that the provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

Not applicable

15. SITE COMPATABILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Is there a current site compatibility certificate issued under clause 25 of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning.

Has a condition of consent been imposed on a development application granted after 11 October 2007 which sets out terms of a kind referred 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Is there a valid site compatibility certificate issued under clause 195 of *State Environmental Planning Policy (Infrastructure) 2007*?

Not Applicable

Where a valid certificate exists, a copy may be obtained from the head office of the Department of Planning.

17. SITE COMPATIBILITY CERTIFICATES FOR AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land?

Not Applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning. Have conditions of consent been imposed on a development application in respect of the land with regard to clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*?

Not Applicable

ADDITIONAL MATTERS

18. MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1979 TO BE SPECIFIED IN A PLANNING CERTIFICATE

a) Is the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

Not known

b) Is the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

c) Is the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

Not Applicable

d) Is the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

e) Is the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

SECTION 149(5) OTHER RELEVANT MATTERS AFFECTING THE LAND

The following information is provided in good faith and Council shall not incur any liability in respect of such advice in accordance with section 149(6) of the Environmental Planning and Assessment Act 1979.

19. TREE PRESERVATION ORDER

Under clause 5.9 of the Narrandera Local Environmental Plan 2013 the Council has not adopted a development control plan which restricts the removal or lopping of trees or other vegetation within the RU1 zone.

20. RESOLUTION OF COUNCIL TO PREPARE AMENDING LOCAL ENVIRONMENTAL PLANS

Nil

21. CONTAMINATED LAND

Not Applicable

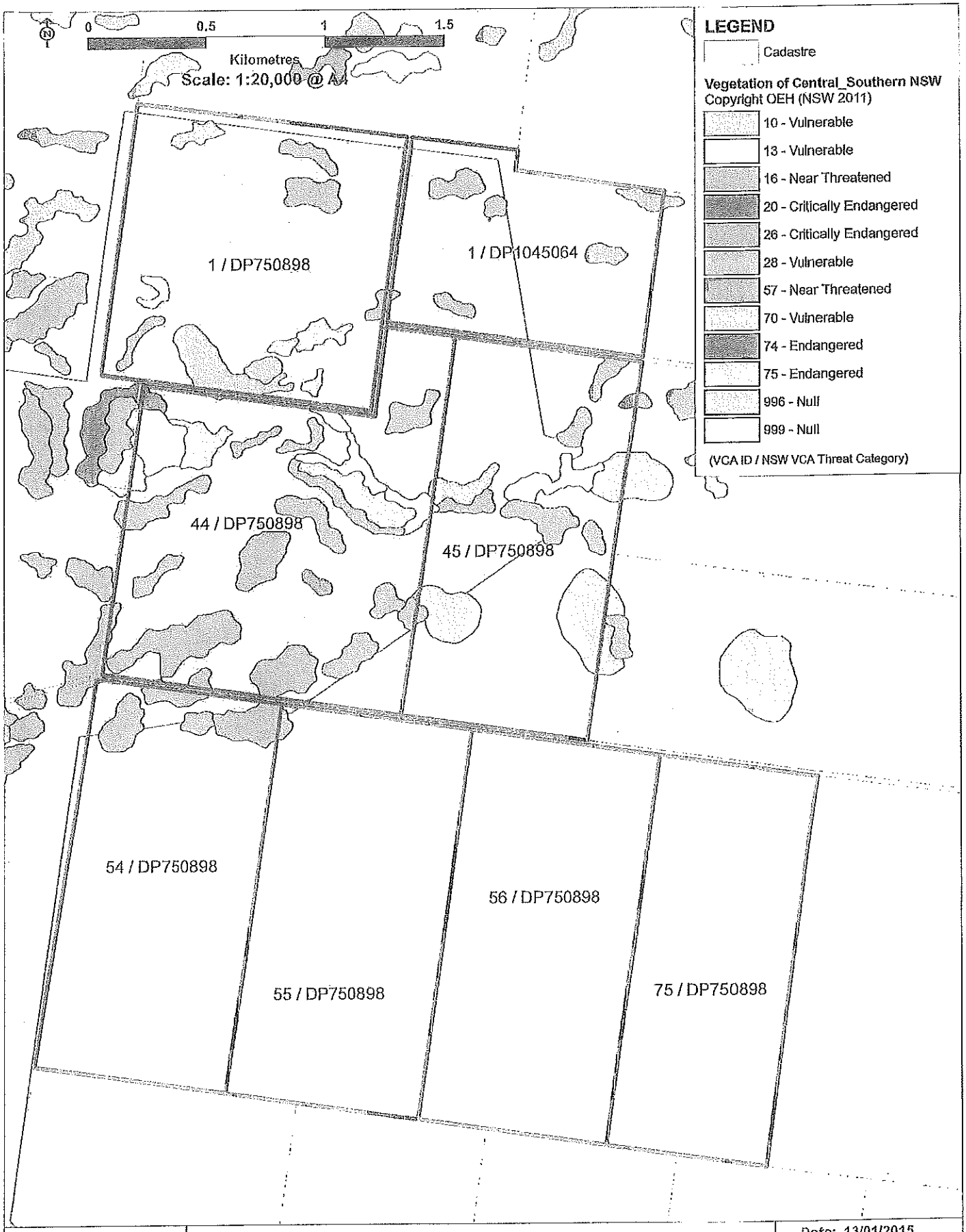
22. GENERAL

Nil

REFERENCES

Applicant:	**SWAAB Attorneys**
Address:	**Level 1, 20 Hunter Street SYDNEY 2000**
Reference:	**141913:AXP**
Council Assessment No:	**931-46**
Fee:	**$133**
Receipt No:	**89553**

"AN IMPORTANT MESSAGE ABOUT PRIVACY - All information, including personal information, collected by Narrandera Shire Council is protected by the Privacy & Personal Information Protection Act, 1998. The collection of such information by Council shall be used for Council purposes only and will assist Council to carry out its statutory obligations in accordance with the Local Government Act, 1993 and other associated legislation. Such information may be passed on to those third parties authorised by law to receive it."



Narrandera Shire Council
NARRANDERA SHIRE COUNCIL
141 East Street
Narandera NSW 2700
Ph: 02 6959 5510

BG & EK Mahy

Assess 931-46

Date: 13/01/2015

Compiled by:
GIS Narrandera

Co-ordinate System:
MGA 94 Zone 55

Ref: 2015-04

(2)

Narrandera
Shire Council

PLANNING CERTIFICATE
Issued under s 149 of the
Environmental Planning & Assessment Act, 1979 & cl 279 & Sch 4
Environmental Planning & Assessment Regulation, 2000
(as amended)

Certificate Number	**3/2015**		
County of	**Boyd**	**Parish of**	**Euroley**
Address	**Devlins Bridge Road Euroley**		
Legal Description	**Lot: 1,44,45,54,56,75**	**DP: 750898,1045064**	**Sec:**
Area	**1000.26ha**		
Owner	**BG & EK Mahy**		
The Information in this Certificate is true and accurate as at this date	**13/01/2015**		
Signature:			
Manager Planning and Environmental Services	**Trent Cormie**		

SECTION 149(2)

1 NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments

a) The following is a list of Local Environmental Plans that apply to the Narrandera Shire Council area.

Narrandera Local Environmental Plan 2013

b) The following is a list of State Environmental Planning Policies that apply to the Narrandera Shire Council area. The policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the policy for the necessary details.

Any enquiries regarding State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website –
www.planning.nsw.gov.au

SEPP No. 6	Number of Storeys in a Building
SEPP No. 21	Caravan Parks
SEPP No. 22	Shops and Commercial Premises
SEPP No. 30	Intensive Agriculture
SEPP No. 32	Urban Consolidation (Redevelopment of Urban Land)
SEPP No. 33	Hazardous and Offensive Development
SEPP No. 36	Manufactured Home Estates
SEPP No. 44	Koala Habitat Protection
SEPP No. 50	Canal Estates
SEPP No. 52	Farm Dams and Other Works in Land and Water Management Plan Areas
SEPP No. 53	Transitional Provisions 2011

SEPP No. 55	Remediation of Land
SEPP No. 62	Sustainable Aquaculture
SEPP No. 64	Advertising and Signage
SEPP No. 65	Design Quality of Residential Flat Development
SEPP	Housing for Seniors of People with a Disability 2004
SEPP	Building Sustainability Index (BASIX) 2004
SEPP	Major Development 2005
SEPP	Mining, Petroleum Production and Extractive Industries 2007
SEPP	Temporary Structures and Places of Public Entertainment 2007
SEPP	Infrastructure 2007
SEPP	Rural Lands 2008
SEPP	Affordable Rental Housing 2009
SEPP	State and Regional Development 2011
SEPP	Urban Renewal 2010

(2) Proposed Environmental Planning Instruments

a) There are no draft local environmental plans which apply to the land.

b) The following is a list of proposed State Environmental Planning Policies that apply to the Narrandera Shire Council area. The draft policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the draft policy for the necessary details.

Any enquiries regarding the draft State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website – www.planning.nsw.gov.au

Draft SEPP	Competition 2010

(3) Development Control Plans

DCP.	Narrandera Development Control Plan 2013

2 ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Zoning

The subject land is within **RU1 Primary Production** as identified in Part 2 of Narrandera Local Environmental Plan 2013 and on the LEP zoning maps.

(b) Development that may be carried out within the zone without the need for development consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

(c) Development that may not be carried out within the zone except with development consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm
stay accommodation; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities;
Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Mooring pens; Moorings; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls;
Rural industries; Rural workers' dwellings; Sewerage systems; Veterinary hospitals; Waste or resource management facilities; Water recreation structures; Water supply systems

(d) Development that is prohibited within the zone

Any development not specified in item 2 or 3.

(e) Development standards applying to the land that fixes the minimum land dimension for the erection of a dwelling house on the land

The Narrandera Local Environmental Plan 2013 contains development standards that fix the minimum land dimension for the erection of 400ha for a dwelling house with RU1 zone.

(f) Critical habitat

Council has a record of the following critical habitat as per the Vegetation of Central Southern NSW ADS40 Program Final Report

Refer to attached map

(g) Conservation Areas

The land does not contain any conservation areas

(h) Items of Environmental Heritage

The land does not contain an item of environmental heritage.

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

The provisions of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 do not apply to land within the boundaries of Narrandera Shire Council.

3. COMPLYING DEVELOPMENT

Is the land on which complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?

Complying development cannot be carried out under the provisions Part 3 (General Housing Code) of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 because:

(a) land identified as containing critical habitat

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that Council has been so notified by the Department of Public Works?

The land is not affected by the operation of section 38 or 39 of the Coastal Protection Act, 1979.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

The land has not been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961.

6. ROAD WIDENING AND ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or
(b) any environmental planning instrument; or
(c) any resolution of the council?

Not applicable

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land is affected by a policy adopted by the council, or adopted by any other public authority and notified to the council for the express purpose of adoption by that authority being referred to in planning certificates issued by Council that restricts the development of land because of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils, or any other risk (other than flooding)?

Not applicable

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling houses, residential flat buildings (not including development for the purposes of group homes or seniors housing) or for any other purpose subject to flood related development controls?

Council considers the land in question to be above the Flood Planning Level (FPL).

8. LAND RESERVED FOR ACQUISITION

Is there an Environmental Planning Instrument, deemed Environmental Planning Instrument or Draft Environmental Planning Instrument applying to the land providing for the acquisition of the land by a public authority, as referred to in section 27 of the Environmental Planning and Assessment Act 1979?

Not applicable

9. CONTRIBUTIONS PLANS

A Contribution Plan applies to the Shire of Narrandera. The plan has been compiled within the provisions of Section 94A of the Environmental Planning and Assessment Act 1979. All development over $100,000 in value within the Shire of Narrandera will attract a contribution of one percent (1%). The funding raised by this plan will be used to assist in the funding of public works.

The plan does not apply to single residential dwellings to be used solely as a residence by the occupants.

10. BIOBANKING AGREEMENTS

Is the land subject to a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995?

Council has not received notification from the Director-General of Department of Environment, Climate Change and Water of any bio-banking agreement on this site.

11. BUSH FIRE PRONE LAND

Is the land or some of the land bush fire prone land (as defined in the Act)?

The land is NOT shown as being within a bushfire prone area under maps provided to the Council by the Commissioner of the NSW Rural Fire Service.

12. PROPERTY VEGETATION PLANS

Is there a *property vegetation plan* under the *Native Vegetation Act, 2003* applying to the land?

Records available to Council indicate that there is no property vegetation plan applying to this land.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land?

Not applicable

14. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that the provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

Not applicable

15. SITE COMPATABILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Is there a current site compatibility certificate issued under clause 25 of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning.

Has a condition of consent been imposed on a development application granted after 11 October 2007 which sets out terms of a kind referred 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Is there a valid site compatibility certificate issued under clause 195 of *State Environmental Planning Policy (Infrastructure) 2007*?

Not Applicable

Where a valid certificate exists, a copy may be obtained from the head office of the Department of Planning.

17. SITE COMPATIBILITY CERTIFICATES FOR AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land?

Not Applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning. Have conditions of consent been imposed on a development application in respect of the land with regard to clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*?

Not Applicable

ADDITIONAL MATTERS

18. MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1979 TO BE SPECIFIED IN A PLANNING CERTIFICATE

a) Is the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

Not known

b) Is the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

c) Is the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

Not Applicable

d) Is the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

e) Is the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

SECTION 149(5) OTHER RELEVANT MATTERS AFFECTING THE LAND

The following information is provided in good faith and Council shall not incur any liability in respect of such advice in accordance with section 149(6) of the Environmental Planning and Assessment Act 1979.

19. TREE PRESERVATION ORDER

Under clause 5.9 of the Narrandera Local Environmental Plan 2013 the Council has not adopted a development control plan which restricts the removal or lopping of trees or other vegetation within the RU1 zone.

20. RESOLUTION OF COUNCIL TO PREPARE AMENDING LOCAL ENVIRONMENTAL PLANS

Nil

21. CONTAMINATED LAND

Not Applicable

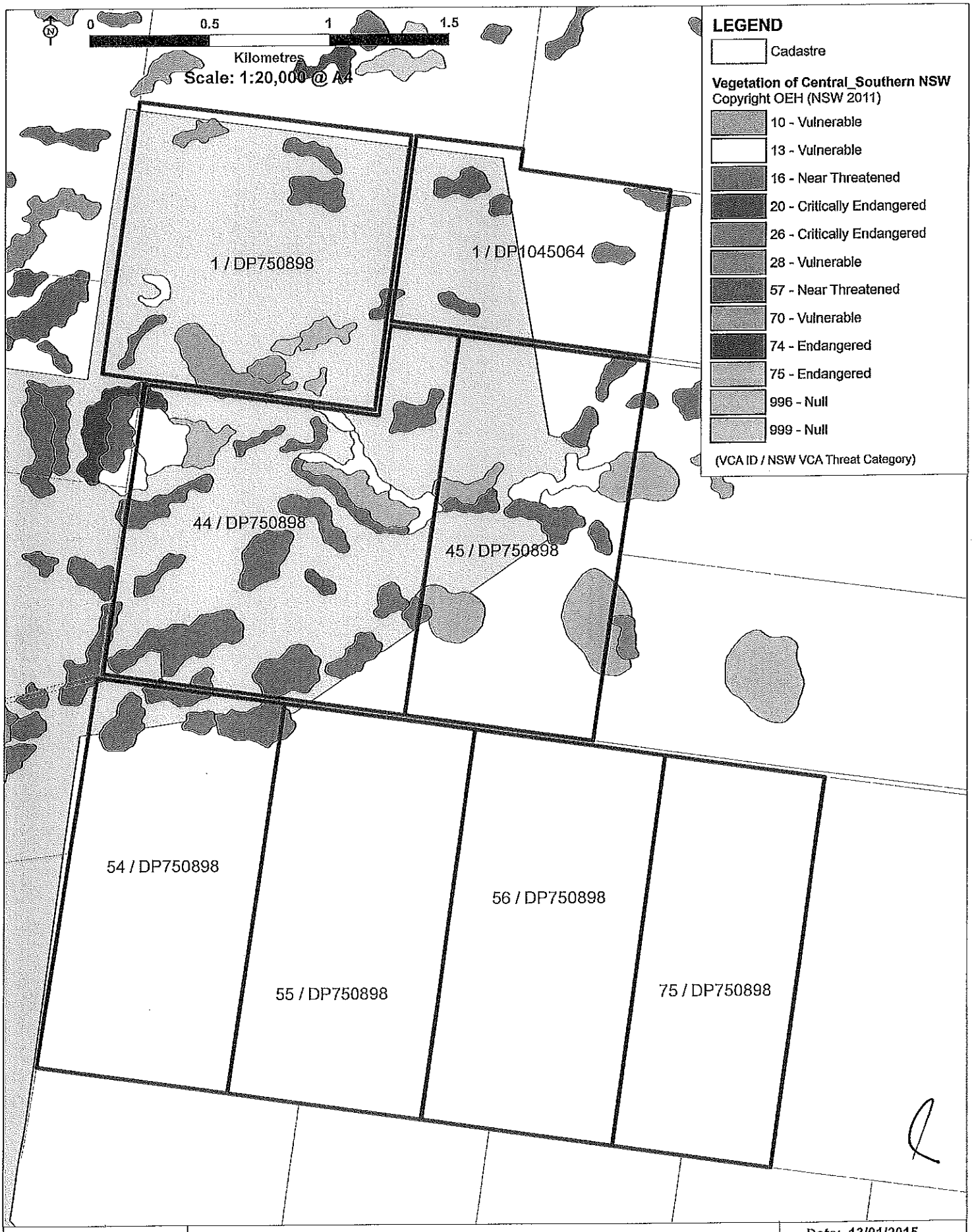
22. GENERAL

Nil

REFERENCES

Applicant:	**SWAAB Attorneys**
Address:	**Level 1, 20 Hunter Street SYDNEY 2000**
Reference:	**141913:AXP**
Council Assessment No:	**931-46**
Fee:	**$133**
Receipt No:	**89553**

"AN IMPORTANT MESSAGE ABOUT PRIVACY - All information, including personal information, collected by Narrandera Shire Council is protected by the Privacy & Personal Information Protection Act, 1998. The collection of such information by Council shall be used for Council purposes only and will assist Council to carry out its statutory obligations in accordance with the Local Government Act, 1993 and other associated legislation. Such information may be passed on to those third parties authorised by law to receive it."



Narrandera Shire Council

NARRANDERA SHIRE COUNCIL
141 East Street
Narrandera NSW 2700
Ph: 02 6959 5510

BG & EK Mahy

Assess 931-46

Date: 13/01/2015

Compiled by:
GIS Narrandera

Co-ordinate System:
MGA 94 Zone 55

Ref: 2015-04

Narrandera
Shire Council

PLANNING CERTIFICATE
Issued under s 149 of the
Environmental Planning & Assessment Act, 1979 & cl 279 & Sch 4
Environmental Planning & Assessment Regulation, 2000
(as amended)

Certificate Number	**9/2015**		
County of	**Boyd**	**Parish of**	**OurenDumbee**
Address	**Mundarra Road Euroley**		
Legal Description	**Lot: 12-13, 41-42**	**DP: 750898**	**Sec:**
Area	**786.92 ha**		
Owner	**GS & AL Heath**		
The Information in this Certificate is true and accurate as at this date	**12/01/2015**		
Signature:			
Manager Planning and Environmental Services	**Trent Cormie**		

SECTION 149(2)

1 NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments

a) The following is a list of Local Environmental Plans that apply to the Narrandera Shire Council area.

Narrandera Local Environmental Plan 2013

b) The following is a list of State Environmental Planning Policies that apply to the Narrandera Shire Council area. The policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the policy for the necessary details.

Any enquiries regarding State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website –
www.planning.nsw.gov.au

SEPP No. 6	Number of Storeys in a Building
SEPP No. 21	Caravan Parks
SEPP No. 22	Shops and Commercial Premises
SEPP No. 30	Intensive Agriculture
SEPP No. 32	Urban Consolidation (Redevelopment of Urban Land)
SEPP No. 33	Hazardous and Offensive Development
SEPP No. 36	Manufactured Home Estates
SEPP No. 44	Koala Habitat Protection
SEPP No. 50	Canal Estates
SEPP No. 52	Farm Dams and Other Works in Land and Water Management Plan Areas
SEPP No. 53	Transitional Provisions 2011

SEPP No. 55	Remediation of Land
SEPP No. 62	Sustainable Aquaculture
SEPP No. 64	Advertising and Signage
SEPP No. 65	Design Quality of Residential Flat Development
SEPP	Housing for Seniors of People with a Disability 2004
SEPP	Building Sustainability Index (BASIX) 2004
SEPP	Major Development 2005
SEPP	Mining, Petroleum Production and Extractive Industries 2007
SEPP	Temporary Structures and Places of Public Entertainment 2007
SEPP	Infrastructure 2007
SEPP	Rural Lands 2008
SEPP	Affordable Rental Housing 2009
SEPP	State and Regional Development 2011
SEPP	Urban Renewal 2010

(2) Proposed Environmental Planning Instruments

a) There are no draft local environmental plans which apply to the land.

b) The following is a list of proposed State Environmental Planning Policies that apply to the Narrandera Shire Council area. The draft policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the draft policy for the necessary details.

Any enquiries regarding the draft State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website – www.planning.nsw.gov.au

Draft SEPP	Competition 2010

(3) Development Control Plans

DCP.	Narrandera Development Control Plan 2013

2 ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Zoning

The subject land is within **RU1 Primary Production** as identified in Part 2 of Narrandera Local Environmental Plan 2013 and on the LEP zoning maps.

(b) Development that may be carried out within the zone without the need for development consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

(c) Development that may not be carried out within the zone except with development consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm
stay accommodation; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities;
Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Mooring pens; Moorings; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls;
Rural industries; Rural workers' dwellings; Sewerage systems; Veterinary hospitals; Waste or resource management facilities; Water recreation structures; Water supply systems

(d) Development that is prohibited within the zone

Any development not specified in item 2 or 3.

(e) Development standards applying to the land that fixes the minimum land dimension for the erection of a dwelling house on the land

The Narrandera Local Environmental Plan 2013 contains development standards that fix the minimum land dimension for the erection of 400ha for a dwelling house with RU1 zone.

(f) Critical habitat

Council has a record of the following critical habitat as per the Vegetation of Central Southern NSW ADS40 Program Final Report

Refer to attached map.

(g) Conservation Areas

The land does not contain any conservation areas

(h) Items of Environmental Heritage

The land does not contain an item of environmental heritage.

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

The provisions of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 do not apply to land within the boundaries of Narrandera Shire Council.

3. COMPLYING DEVELOPMENT

Is the land on which complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?

Complying development cannot be carried out under the provisions Part 3 (General Housing Code) of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 because:

(a) land identified as containing critical habitat

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that Council has been so notified by the Department of Public Works?

The land is not affected by the operation of section 38 or 39 of the Coastal Protection Act, 1979.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

The land has not been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961.

6. ROAD WIDENING AND ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or
(b) any environmental planning instrument; or
(c) any resolution of the council?

Not applicable

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land is affected by a policy adopted by the council, or adopted by any other public authority and notified to the council for the express purpose of adoption by that authority being referred to in planning certificates issued by Council that restricts the development of land because of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils, or any other risk (other than flooding)?

Not applicable

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling houses, residential flat buildings (not including development for the purposes of group homes or seniors housing) or for any other purpose subject to flood related development controls?

Council considers the land in question to be above the Flood Planning Level (FPL).

8. LAND RESERVED FOR ACQUISITION

Is there an Environmental Planning Instrument, deemed Environmental Planning Instrument or Draft Environmental Planning Instrument applying to the land providing for the acquisition of the land by a public authority, as referred to in section 27 of the Environmental Planning and Assessment Act 1979?

Not applicable

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A Contribution Plan applies to the Shire of Narrandera. The plan has been compiled within the provisions of Section 94A of the Environmental Planning and Assessment Act 1979. All development over $100,000 in value within the Shire of Narrandera will attract a contribution of one percent (1%). The funding raised by this plan will be used to assist in the funding of public works.

The plan does not apply to single residential dwellings to be used solely as a residence by the occupants.

10. BIOBANKING AGREEMENTS

Is the land subject to a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995?

Council has not received notification from the Director-General of Department of Environment, Climate Change and Water of any bio-banking agreement on this site.

11. BUSH FIRE PRONE LAND

Is the land or some of the land bush fire prone land (as defined in the Act)?

The land is NOT shown as being within a bushfire prone area under maps provided to the Council by the Commissioner of the NSW Rural Fire Service.

12. PROPERTY VEGETATION PLANS

Is there a *property vegetation plan* under the *Native Vegetation Act, 2003* applying to the land?

Records available to Council indicate that there is no property vegetation plan applying to this land.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land?

Not applicable

14. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that the provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

Not applicable

15. SITE COMPATABILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Is there a current site compatibility certificate issued under clause 25 of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning.

Has a condition of consent been imposed on a development application granted after 11 October 2007 which sets out terms of a kind referred 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Is there a valid site compatibility certificate issued under clause 195 of *State Environmental Planning Policy (Infrastructure) 2007*?

Not Applicable

Where a valid certificate exists, a copy may be obtained from the head office of the Department of Planning.

17. SITE COMPATIBILITY CERTIFICATES FOR AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land?

Not Applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning.
Have conditions of consent been imposed on a development application in respect of the land with regard to clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*?

Not Applicable

ADDITIONAL MATTERS

18. MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1979 TO BE SPECIFIED IN A PLANNING CERTIFICATE

a) Is the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

Not known

b) Is the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

c) Is the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

Not Applicable

d) Is the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

e) Is the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

SECTION 149(5) OTHER RELEVANT MATTERS AFFECTING THE LAND

The following information is provided in good faith and Council shall not incur any liability in respect of such advice in accordance with section 149(6) of the Environmental Planning and Assessment Act 1979.

19. TREE PRESERVATION ORDER

Under clause 5.9 of the Narrandera Local Environmental Plan 2013 the Council has not adopted a development control plan which restricts the removal or lopping of trees or other vegetation within the RU1 zone.

20. RESOLUTION OF COUNCIL TO PREPARE AMENDING LOCAL ENVIRONMENTAL PLANS

Nil

21. CONTAMINATED LAND

Not Applicable

22. GENERAL

Nil

REFERENCES

Applicant:	SWAAB
Address:	Level 1, 20 Hunter Street SYDNEY 2001
Reference:	141913
Council Assessment No:	931-44
Fee:	$133
Receipt No:	89553

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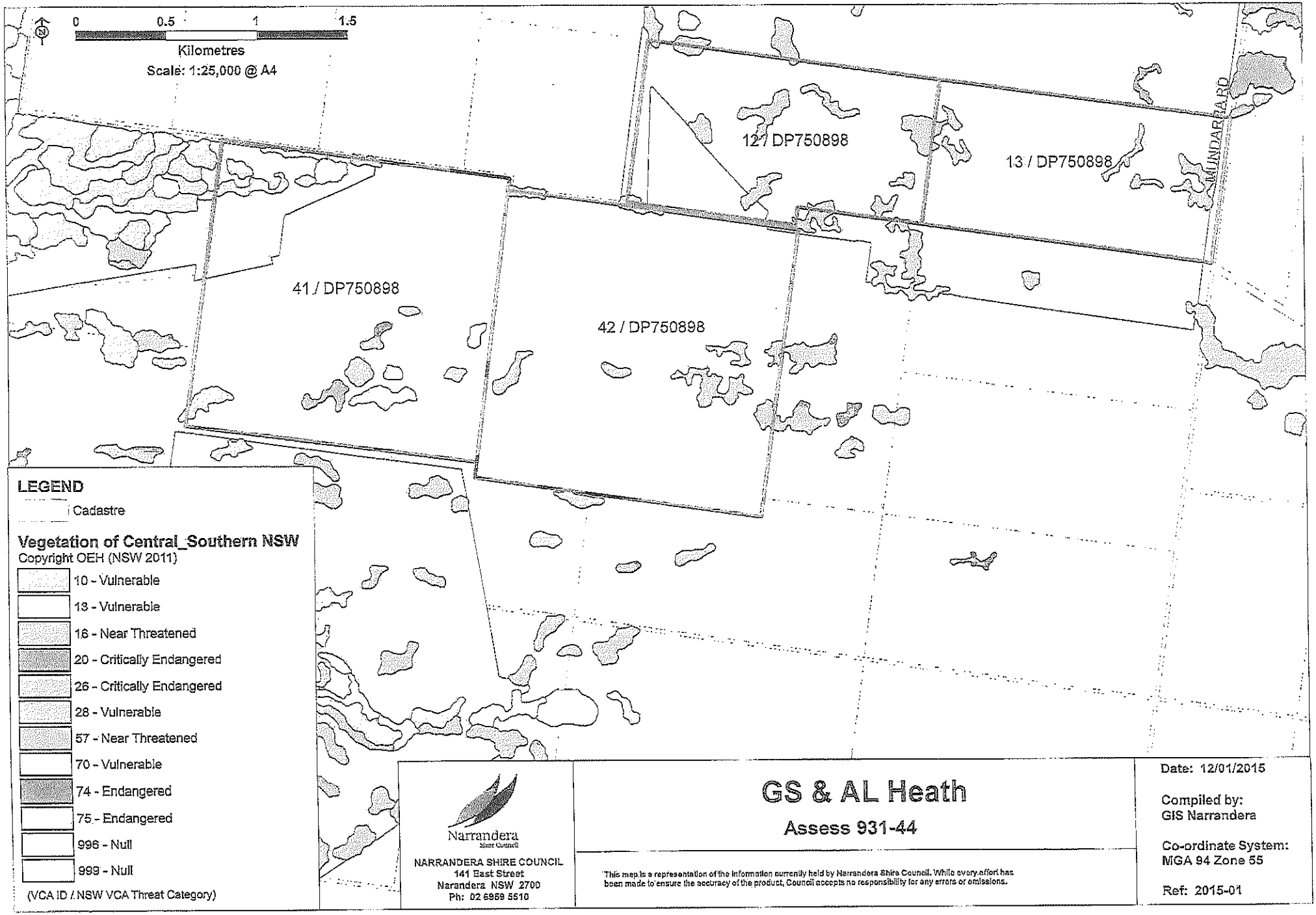
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1
1.5
Kilometres
Scale: 1:25,000 @ A4
12 / DP750898
13 / DP750898
MUNDARRA RD
41 / DP750898
42 / DP750898
LEGEND
Cadastre
Vegetation of Central_Southern NSW
Copyright OEH (NSW 2011)
10 - Vulnerable
13 - Vulnerable
16 - Near Threatened
20 - Critically Endangered
26 - Critically Endangered
28 - Vulnerable
57 - Near Threatened
70 - Vulnerable
74 - Endangered
75 - Endangered
996 - Null
999 - Null
(VCA ID / NSW VCA Threat Category)
Narrandera
Shire Council
NARRANDERA SHIRE COUNCIL
141 East Street
Narrandera NSW 2700
Ph: 02 6959 5510
GS & AL Heath
Assess 931-44
This map is a representation of the information currently held by Narrandera Shire Council. While every effort has been made to ensure the accuracy of the product, Council accepts no responsibility for any errors or omissions.
Date: 12/01/2015
Compiled by:
GIS Narrandera
Co-ordinate System:
MGA 94 Zone 55
Ref: 2015-01

Narrandera
Shire Council

PLANNING CERTIFICATE
Issued under s 149 of the
Environmental Planning & Assessment Act, 1979 & cl 279 & Sch 4
Environmental Planning & Assessment Regulation, 2000
(as amended)

Certificate Number	**1/2015**		
Address	**12307 Sturt Highway EUROLEY NSW 2700**		
County of	**BURT**	**Parish of**	**BOYD**
Legal Description	**Lot(s): 38 & 39**	**DP: 750876**	**Sec: n/a**
County of	**OURENDUMBEE**	**Parish of**	**BOYD**
Legal Description	**Lot(s): 14 & 15**	**DP: 750898**	**Sec: n/a**
Owner	**G B & H M Heath**		
The Information in this Certificate is true and accurate as at this date	**9 January 2015**		
Signature:			
Manager Planning and Environmental Services	**Trent Cormie**		

SECTION 149(2)

1 NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments

a) The following is a list of Local Environmental Plans that apply to the Narrandera Shire Council area.

Narrandera Local Environmental Plan 2013

b) The following is a list of State Environmental Planning Policies that apply to the Narrandera Shire Council area. The policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the policy for the necessary details.

Any enquiries regarding State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website –
www.planning.nsw.gov.au

SEPP No. 6	Number of Storeys in a Building
SEPP No. 21	Caravan Parks
SEPP No. 22	Shops and Commercial Premises
SEPP No. 30	Intensive Agriculture
SEPP No. 32	Urban Consolidation (Redevelopment of Urban Land)
SEPP No. 33	Hazardous and Offensive Development
SEPP No. 36	Manufactured Home Estates
SEPP No. 44	Koala Habitat Protection
SEPP No. 50	Canal Estates
SEPP No. 52	Farm Dams and Other Works in Land and Water Management

	Plan Areas
SEPP No. 53	Transitional Provisions 2011
SEPP No. 55	Remediation of Land
SEPP No. 62	Sustainable Aquaculture
SEPP No. 64	Advertising and Signage
SEPP No. 65	Design Quality of Residential Flat Development
SEPP	Housing for Seniors of People with a Disability 2004
SEPP	Building Sustainability Index (BASIX) 2004
SEPP	Major Development 2005
SEPP	Mining, Petroleum Production and Extractive Industries 2007
SEPP	Temporary Structures and Places of Public Entertainment 2007
SEPP	Infrastructure 2007
SEPP	Rural Lands 2008
SEPP	Affordable Rental Housing 2009
SEPP	State and Regional Development 2011
SEPP	Urban Renewal 2010

(2) Proposed Environmental Planning Instruments

a) There are no draft local environmental plans which apply to the land.

b) The following is a list of proposed State Environmental Planning Policies that apply to the Narrandera Shire Council area. The draft policy may or may not be specifically applicable to the land that is the subject of this certificate. You will need to examine the draft policy for the necessary details.

Any enquiries regarding the draft State Environmental Planning Policies should be directed to the Department of Planning on (02) 9391 2222 or see their website – www.planning.nsw.gov.au

Draft SEPP	Competition 2010

(3) Development Control Plans

DCP.	Narrandera Development Control Plan 2013

2 ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Zoning

The subject land is within **RU1 Primary Production** as identified in Part 2 of Narrandera Local Environmental Plan 2013 and on the LEP zoning maps.

(b) Development that may be carried out within the zone without the need for development consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

(c) Development that may not be carried out within the zone except with development consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm
stay accommodation; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities;
Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Mooring pens; Moorings; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls;
Rural industries; Rural workers' dwellings; Sewerage systems; Veterinary hospitals; Waste or resource management facilities; Water recreation structures; Water supply systems

(d) Development that is prohibited within the zone

Any development not specified in item 2 or 3.

(e) **Development standards applying to the land that fixes the minimum land dimension for the erection of a dwelling house on the land**

The Narrandera Local Environmental Plan 2013 contains development standards that fix the minimum land dimension for the erection of 400ha for a dwelling house with RU1 zone.

(f) **Critical habitat**

Council has a record of the following critical habitat as per the Vegetation of Central Southern NSW ADS40 Program Final Report

Common Name: White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone.

Common Name: Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion

Common Name: Plains Grass grassland on alluvial mainly clay soils in the Riverina and NSW South-western Slopes Bioregions

Common Name: Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

Common Name: Derived corkscrew grass grassland/forbland on sandplains and plains in the semi-arid (warm) climate zone

(g) **Conservation Areas**

The land does not contain any conservation areas

(h) **Items of Environmental Heritage**

The land does not contain an item of environmental heritage.

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

The provisions of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 do not apply to land within the boundaries of Narrandera Shire Council.

3. COMPLYING DEVELOPMENT

Is the land on which complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?

The land is land on which complying development may be carried out under the provisions of

- Part 3 (General Housing Code)
- Part 4 (Housing Internal Alterations Code)
- Part 4a (General Development Code)
- Part 5 (General Commercial and Industrial Code)
- Part 6 (Subdivision Code)
- Part 7 (Demolition Code)

Disclaimer: This certificate only addresses matters raised in Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure to comply with any other general requirements of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is invalid.

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that Council has been so notified by the Department of Public Works?

The land is not affected by the operation of section 38 or 39 of the Coastal Protection Act, 1979.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

The land has not been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961.

6. ROAD WIDENING AND ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or
(b) any environmental planning instrument; or
(c) any resolution of the council?

Not applicable

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land is affected by a policy adopted by the council, or adopted by any other public authority and notified to the council for the express purpose of adoption by that authority being referred to in planning certificates issued by Council that restricts the development of land because of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils, or any other risk (other than flooding)?

Not applicable

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling houses, residential flat buildings (not including development for the purposes of group homes or seniors housing) or for any other purpose subject to flood related development controls?

Council considers the land in question to be above the Flood Planning Level (FPL).

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Is there an Environmental Planning Instrument, deemed Environmental Planning Instrument or Draft Environmental Planning Instrument applying to the land providing for the acquisition of the land by a public authority, as referred to in section 27 of the Environmental Planning and Assessment Act 1979?

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A Contribution Plan applies to the Shire of Narrandera. The plan has been compiled within the provisions of Section 94A of the Environmental Planning and Assessment Act 1979. All development over $100,000 in value within the Shire of Narrandera will attract a contribution of one percent (1%). The funding raised by this plan will be used to assist in the funding of public works.

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Is there a *property vegetation plan* under the *Native Vegetation Act, 2003* applying to the land?

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Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land?

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14. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that the provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

Not applicable

15. SITE COMPATABILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Is there a current site compatibility certificate issued under clause 25 of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

Not applicable

Where a current certificate exists, a copy may be obtained from the head office of the Department of Planning.

Has a condition of consent been imposed on a development application granted after 11 October 2007 which sets out terms of a kind referred 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*?

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16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Is there a valid site compatibility certificate issued under clause 195 of *State Environmental Planning Policy (Infrastructure) 2007*?

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ADDITIONAL MATTERS

18. MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1979 TO BE SPECIFIED IN A PLANNING CERTIFICATE

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Not known

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Not Applicable

c) Is the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

Not Applicable

d) Is the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

Not Applicable

e) Is the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

SECTION 149(5) OTHER RELEVANT MATTERS AFFECTING THE LAND

The following information is provided in good faith and Council shall not incur any liability in respect of such advice in accordance with section 149(6) of the Environmental Planning and Assessment Act 1979.

19. TREE PRESERVATION ORDER

Under clause 5.9 of the Narrandera Local Environmental Plan 2013 the Council has not adopted a development control plan which restricts the removal or lopping of trees or other vegetation within the RU1 zone.

20. RESOLUTION OF COUNCIL TO PREPARE AMENDING LOCAL ENVIRONMENTAL PLANS

Nil

21. CONTAMINATED LAND

Not Applicable

22. GENERAL

Ni

REFERENCES

Applicant:	**SWAAB**
Address:	**Level 1, 20 Hunter Street SYDNEY NSW 2000**
Reference:	**141913**
Council Assessment No:	**00931-43**
Fee:	**$133.00**
Receipt No:	**89538**

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APPENDIX D

global environmental solutions

Flooding Addendum

Euroley Poultry Production Complex

Euroley, NSW

Report Number 610.14072-FA1

20 August 2015

ProTen Holdings Pty Ltd

Version: Revision 1

Flooding Addendum

Euroley Poultry Production Complex

Euroley, NSW

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia

(PO Box 176 Lane Cove NSW 1595 Australia)
T: 61 2 9428 8100 F: 61 2 9427 8200
E: sydney@slrconsulting.com www.slrconsulting.com

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
610.14072-FA1	Revision 1	20 August 2015	Will Legg	Eryn Bath	Eryn Bath
610.14072-FA1	Revision 0	17 August 2015	Will Legg	Eryn Bath	

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TABLES

FIGURES

1 INTRODUCTION

1.1 Background

This Flooding Addendum has been prepared in relation to the application submitted by ProTen Holdings Pty Limited (ProTen) seeking development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to develop an intensive poultry broiler production farm known as the Euroley Poultry Production Complex, within a rural property near Euroley in south-western New South Wales (NSW) (the Site).

This report is an addendum to the Flooding Assessment report (SLR, 2015a) prepared by SLR Consulting Australia (SLR) in May 2015 which was included as an appendix to the Environmental Impact Statement (EIS) for SSD 6682 (SLR, 2015b).

The objective of this addendum is to present the additional information in relation to flooding requested by the NSW Office of Water (NOW) and the NSW Office of Environment and Heritage (OEH) as detailed in their responses to the EIS (referenced OUT15/16271 and DOC15/167915 respectively). In summary, the NOW and OEH raised the following issues:

NOW:

Appendix H (Flooding Assessment) provides modelled information on the flood extent on the site for the 1 in 100yr ARI flood event and the PMF. An interpretation has been provided of the potential impacts of the projects which indicates a local increase in flood heights of 150mm for the 1 in 100yr ARI and a 300mm increase of the PMF. This however has not been confirmed with a detailed hydraulic assessment. Clarification is requested of the project impacts on-site and to the neighbouring properties in terms of changes to the flood extent, flood velocities, and flood depths due to the project.

OEH:

The assessment of flooding provided in the draft EIS has been extensively revised following consultation with OEH and provides an adequate model of the potential impacts due to mainstream and local overland flooding. The revised modelling does show some flood impacts on the development site during the 100 year Annual Recurrence Interval (ARI) and Probable Maximum Flood events that have not been fully considered.

Flood Modelling (Appendix H. Section 4)

Figure 8 (page 18) demonstrates that some of the PPUs are impacted by shallow flows. The flooding assessment provides justification of the existing planned location of the PPUs based on the assumption that construction of raised floor levels (0.3m above ground level) will provide flood immunity in the 100 year ARI event. However, Figure 8 shows the current site conditions without the presence of PPUs. There are likely to be hydraulic impacts that have not been considered if PPUs are constructed in the proposed locations. Section 4.4 of the flooding assessment (page 19), states that hydraulic impact modelling was completed and that the afflux due to the PPUs was "less than 150mm" in the 100 year ARI event. The assessment does not address the potential for inundation of PPU floors due to these results. In a situation where the PPU floor level is 0.3 m above ground level and the "pre-development" flood levels are around 0.3 m, any impediment to this flow (such as presence of a PPU) that would cause an associated afflux could potentially result in inundation of the PPU.

OEH understands that the proposed site layout includes a minimum distance of 1000 metres between PPUs to reduce the risk of disease transmission between units (EIS Section 3.2, page 23). This design constraint appears to be restricting the ability of the proponent to consider the flooding impacts when locating the PPUs and to select more appropriate locations away from natural drainage lines. PPUs 1 and 3 would be less susceptible to potential flooding impacts if located to the east of their proposed location, PPU 4 to the north and PPU 2 to the south. Altering the proposed location of PPU 5 has reduced the threat from flooding to that unit, however the proposed access road . Greater consideration of flooding impacts could also be applied to the location of residences, particularly 4, 7 and 8 (shown on EIS Figure 6.7, page 96), which are proposed in areas prone to flooding.

Emergency and Evacuation Plan

The implications of the flooding assessment should be considered in an Emergency and Evacuation Plan. Access to PPU 5 is likely to be restricted during local overland flooding events.

Based on consideration of the above, we recommend the following conditions of development consent:

- *Develop an Emergency and Evacuation Plan that includes consideration of the implications of the flooding assessment, particularly access to Poultry Production Unit 5 during local flood events.*

1.2 Scope of Work

To address the issues raised by NOW and OEH, SLR undertook the following additional works:

- One dimensional hydraulic modelling of local overland flood flows for the post-development scenario (the pre-development scenario was modelled previously by SLR (2015a));
- Comparison of flooding behaviour between pre-development and post-development scenarios to identify the impact of the proposed development; and
- Preparation of flood maps and reporting.

1.3 Limitations

The assessment was undertaken with consideration to the project constraints and the following limitations:

- No detailed topographical data for land surrounding the Site;
- No topographical data at the eastern and southern fringes of the Site;
- No detailed historical flood flow or level data.

Due to the limitations above, a conservative, but simplified approach was adopted for assessing flooding across the Site as detailed in the Section **2**.

2 FLOOD MODELLING

Flood modelling, including hydrological modelling and one dimensional (1D) hydraulic modelling, was undertaken to assess flood levels across the Site in relation to overland flow via ephemeral flow paths which run through the site as part of the Flooding Assessment (SLR, 2015a).

2.1 Hydrology

The hydrological model detailed in the Flooding Assessment (SLR, 2015a) was adopted for use to assess post-development flooding impacts. This is considered to be appropriate as onsite stormwater detention facilities will be provided to manage the impact of additional runoff generated as a result of the increase in impervious surfaces onsite (i.e. building roofs) and the peak flow rates are associated with the wider local overland catchment runoff rather than runoff generated onsite.

2.1.1 Peak flow rates

The peak flow rates applied within the 1D hydraulic model are detailed in **Table 1** below. These flow rates relate to the peak flow at the downstream end of the Site.

Table 1 Predicted peak flow rates

ARI	Southern Catchment Flow Rate (m^3/s)	Northern Catchment Flow Rate (m^3/s)
100 year	60.6	13.5
PMF	686	172

2.2 Hydraulic Model

2.2.1 Model development

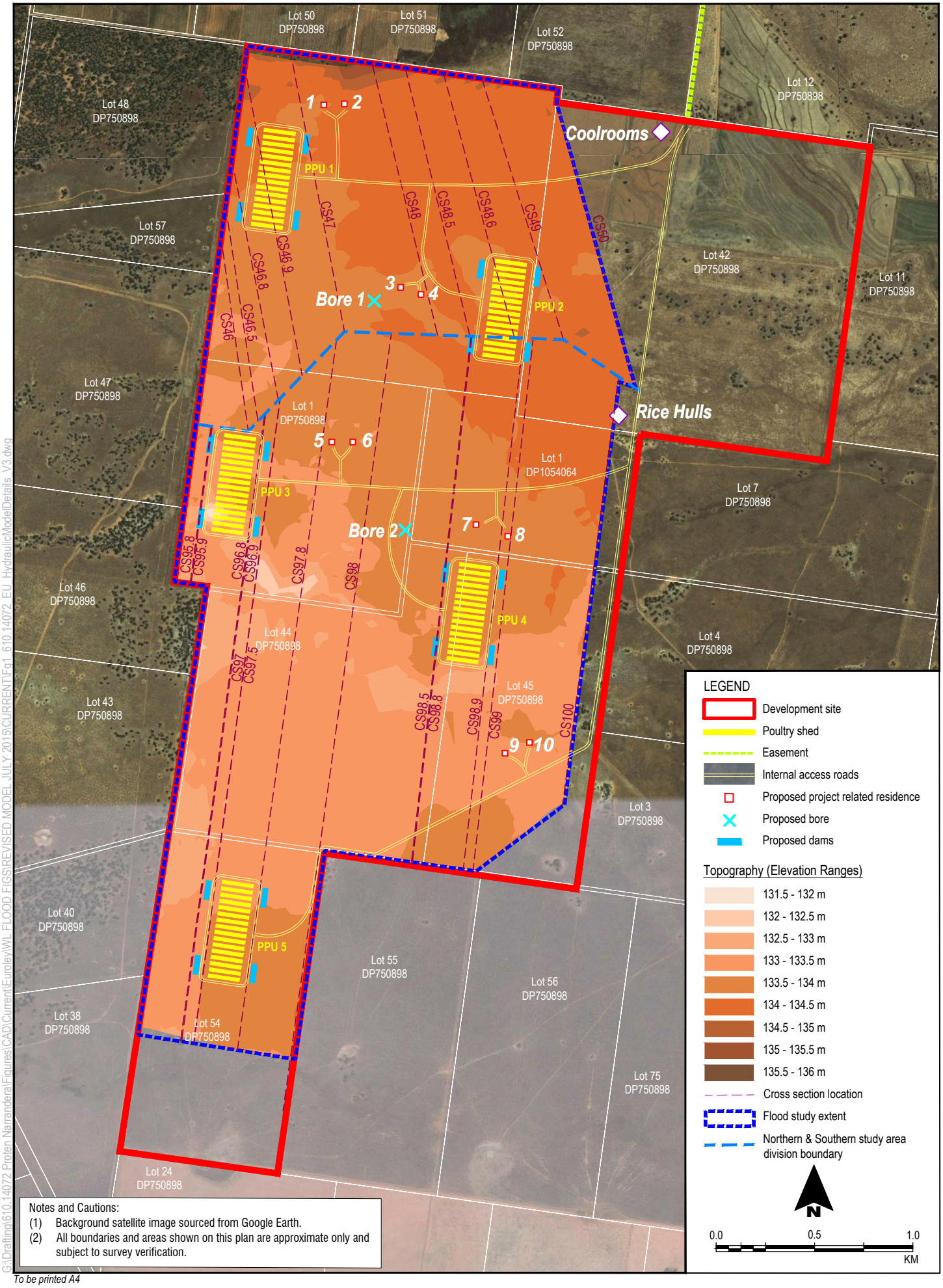
Two hydraulic models were developed for the pre-development Site (SLR, 2015), one to simulate the northern ephemeral flow path and one to simulate both the combined southern and northern ephemeral flow paths (with the worst case flood level for the northern ephemeral flow path selected). To address the issues raised by NOW and OEH, both of these hydraulic models were modified to account for the construction of the five proposed poultry production units (PPUs) (i.e. post-development scenario). Additional cross sections were added to both the pre-development and post-development hydraulic models as required to develop the model and enable the change in hydraulic conditions to be identified and assessed. The cross section elevations were raised to block flow at the proposed PPUs. Each PPU was assumed to be a solid structure with no allowance for flow in between the buildings. This is considered to be a conservative approach to assessing flood afflux.

The modelled peak flow rates as detailed in **Table 1** were applied to all cross sections in each of the hydraulic models.

A roughness value (Manning's coefficient) of 0.04, which is commensurate with floodplains with pasture/farmland or light brush, was adopted for the entire Site. A roughness value of 0.025, which is commensurate with masonry or corrugated metal buildings, was adopted for the building walls.

The post-development hydraulic model was used to assess the post-development flood extent and flood afflux and flood velocity impacts.

A schematic of the hydraulic models is outlined in **Figure 1**.



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Hydraulic Model Details

FIGURE 1

2.2.2 Model Limitations

Computer simulations of flooding within the Site were undertaken using HEC-RAS software. This 1D hydraulic modelling approach was adopted due to project constraints (refer to Section **1.3**). The limitations of this 1D modelling are that it tends to slightly overestimate flood levels within the main ephemeral flow paths (i.e. running east to west) and slightly underestimate flood levels where low risk shallow lateral minor flows and sheet flow (i.e. from north to south) occur between the main ephemeral flow paths. As with any computer modelling, it is a predictive tool only.

The proposed residences were not incorporated into the modelling given their size in the context of the overall 100 year ARI flood extent would pose a negligible impact to flood levels and flood velocities.

The assessment of flood levels along internal roadways is beyond the limitations of the 1D hydraulic modelling. The raising of road levels may slightly alter flood behaviour locally up gradient of the roadway but it is unlikely to pose a significant impact to flooding on or offsite providing the road level is not raised significantly. Recommendations in relation to road levels are provided in Section **3**.

2.3 Flood Impacts

The pre-development and post-development flood levels and associated flood afflux impacts for the 100 year ARI flood event and the PMF are presented for comparison in **Table 2** and **Table 3**, respectively, below.

Flood Afflux impacts for the northern and southern ephemeral flow paths are also shown in **Figure 2**.

The pre-development and post-development average flood velocities and associated average flood velocity impacts for the 100 year ARI and the PMF are presented for comparison in **Table 4** and **Table 5**, respectively, below.

The 100 year ARI flood levels for the PPUs and farm residences and proposed finished floor levels for the farm residences are presented in **Table 6** and **Table 7**. PPU construction details are outlined in **Figure 5**.

Flood mapping showing the flooding extent and flood depths for the pre-development 100 year ARI and PMF events in relation to the ephemeral flow paths is provided in **Figure 3** and **Figure 4**.

Flood mapping showing the flooding extent and flood depths for the post-development 100 year ARI and PMF events in relation to the ephemeral flow paths is provided in **Figure 5** and **Figure 6**.

The modelling indicates that the maximum 100 year ARI flood afflux will be 90 mm upstream of PPU 2 and the maximum PMF flood afflux will be 110 mm upstream of PPU 2. No flood afflux impacts were shown to occur downstream of the buildings near the western boundary. The impact at the eastern boundary was shown to be less than 50 mm during a 100 year ARI event and 80 mm during a PMF event. There are no existing buildings or infrastructure items on the properties to the east of the Site that will to be adversely affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding.

The maximum average velocity increase is predicted to be 0.08 m/s during a 100 year ARI event and 0.11 m/s during the PMF event.

There are no existing buildings or infrastructure items on neighbouring properties that are likely to be affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding.

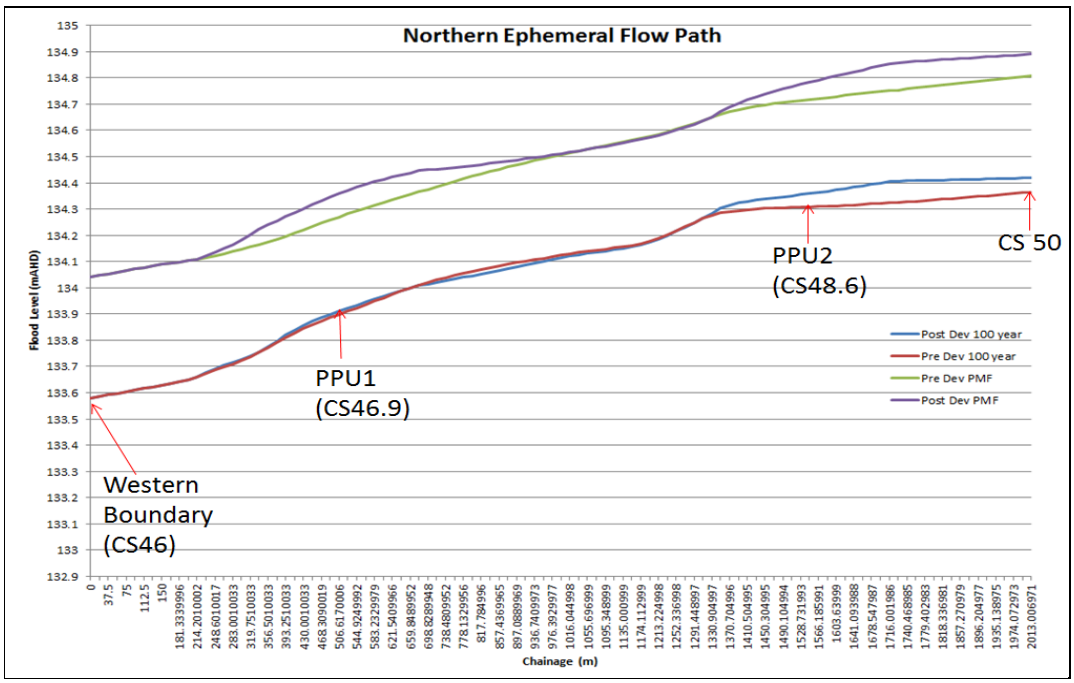
Table 2 100 year ARI Flood Afflux Impacts

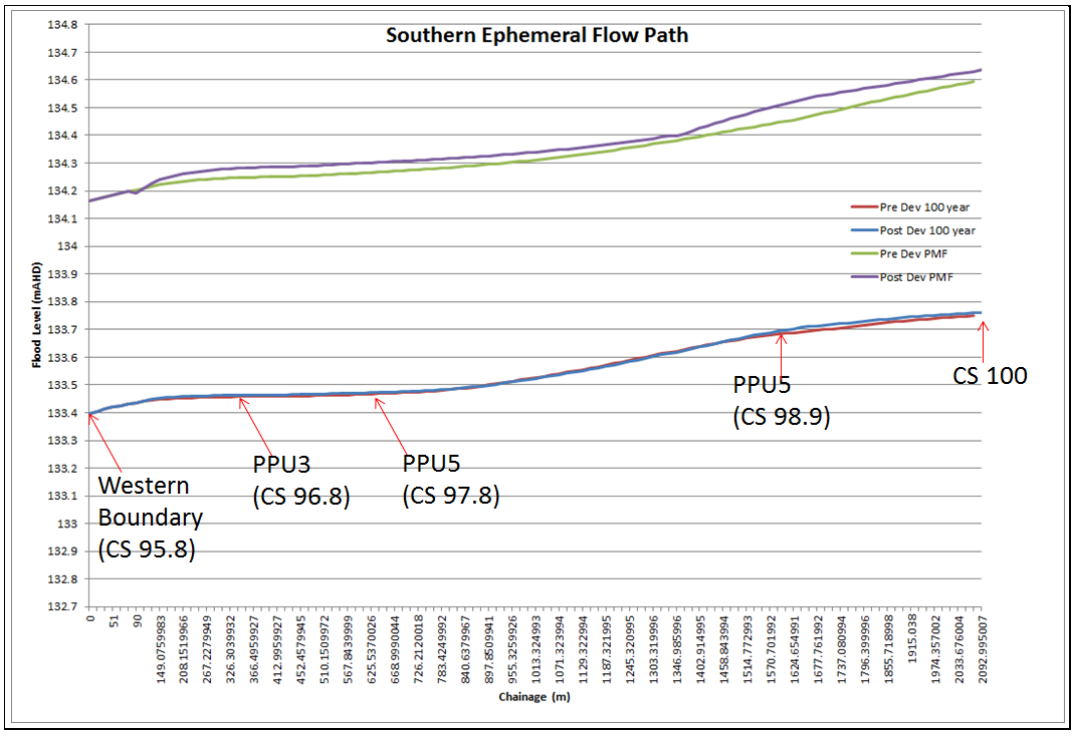
Cross Section	Relevant Model	100 year ARI Pre-Development Flood Level (mAHD)	100 year ARI Post-Development Flood Level (mAHD)	Flood Afflux (m)
50	Northern	134.37	134.42	0.05
49.5	Northern	134.33	134.41	0.08
49	Northern	134.32	134.41	0.09
48.6	Northern	134.31	134.35	0.04
48.5	Northern	134.26	134.26	0
48	Northern	134.16	134.15	-0.01
47	Northern	134.01	134.01	0
46.9	Northern	133.84	133.86	0.02
46.8	Northern	133.71	133.71	0
46.5	Northern	133.65	133.65	0
46	Northern	133.63	133.63	0
100	Southern	133.75	133.76	0.01
99	Southern	133.69	133.71	0.02
98.9	Southern	133.68	133.7	0.02
98.8	Southern	133.62	133.62	0
98.5	Southern	133.61	133.61	0
98	Southern	133.5	133.51	0.01
97.8	Southern	133.47	133.47	0
97.5	Southern	133.46	133.46	0
97	Southern	133.46	133.46	0
96.9	Southern	133.46	133.46	0
96.8	Southern	133.46	133.46	0
95.9	Southern	133.44	133.43	-0.01
95.8	Southern	133.43	133.43	0
95.7	Southern	133.40	133.40	0

Table 3 PMF Flood Afflux Impacts

Cross Section	Relevant Model	PMF Pre-Development Flood Level (mAHD)	PMF Post-Development Flood Level (mAHD)	Flood Afflux (m)
50	Northern	134.81	134.89	0.08
49.5	Northern	134.75	134.86	**0.11**
49	Northern	134.75	134.85	0.1
48.6	Northern	134.71	134.77	0.06
48.5	Northern	134.64	134.64	0
48	Northern	134.56	134.55	-0.01
47	Northern	134.37	134.45	0.08
46.9	Northern	134.22	134.3	0.08
46.8	Northern	134.14	134.16	0.02
46.5	Northern	134.1	134.1	0
46	Northern	134.09	134.09	0
100	Southern	134.59	134.64	0.05
99	Southern	134.46	134.54	0.08
98.9	Southern	134.45	134.51	0.06
98.8	Southern	134.38	134.4	0.02
98.5	Southern	134.38	134.4	0.02
98	Southern	134.3	134.33	0.03
97.8	Southern	134.27	134.3	0.03
97.5	Southern	134.25	134.29	0.04
97	Southern	134.25	134.29	0.04
96.9	Southern	134.25	134.28	0.03
96.8	Southern	134.25	134.28	0.03
95.9	Southern	134.2	134.19	-0.01
95.8	Southern	134.2	134.2	0
95.7	Southern	134.16	134.16	0

Figure 2 Flood Afflux Impacts





*Refer to **Figure 1** for Cross Section (CS) locations*

Table 4 100 year ARI Flood Velocity Impacts

Cross Section	Relevant Model	100 year ARI Pre-Development Mean Flood Velocity (mAHD)	100 year ARI Post-Development Mean Flood Velocity (mAHD)	Change in Mean Velocity (m/s)
50	Northern	0.09	0.06	-0.03
49.5	Northern	0.08	0.05	-0.03
49	Northern	0.08	0.12	0.04
48.6	Northern	0.06	0.12	0.06
48.5	Northern	0.16	0.16	0
48	Northern	0.11	0.12	0.01
47	Northern	0.12	0.09	-0.03
46.9	Northern	0.15	0.18	0.03
46.8	Northern	0.14	0.16	0.02
46.5	Northern	0.14	0.14	0
46	Northern	0.11	0.11	0
100	Southern	0.12	0.12	0
99	Southern	0.16	0.16	0
98.9	Southern	0.16	0.19	0.03
98.8	Southern	0.19	0.2	0.01
98.5	Southern	0.19	0.19	0
98	Southern	0.14	0.14	0
97.8	Southern	0.09	0.09	0
97.5	Southern	0.07	0.07	0
97	Southern	0.06	0.06	0
96.9	Southern	0.06	0.06	0
96.8	Southern	0.06	0.06	0
95.9	Southern	0.2	0.28	0.08
95.8	Southern	0.21	0.21	0
95.7	Southern	0.22	0.22	0

Table 5 PMF Flood Velocity Impacts

Cross Section	Relevant Model	PMF Pre-Development Mean Flood Velocity (mAHD)	PMF Post-Development Mean Flood Velocity (mAHD)	Change in Mean Velocity (m/s)
50	Northern	0.22	0.19	-0.03
49.5	Northern	0.24	0.20	-0.04
49	Northern	0.24	0.34	0.10
48.6	Northern	0.23	0.34	0.11
48.5	Northern	0.36	0.36	0
48	Northern	0.27	0.27	0
47	Northern	0.32	0.20	-0.12
46.9	Northern	0.34	0.43	0.09
46.8	Northern	0.32	0.44	0.12
46.5	Northern	0.3	0.30	0
46	Northern	0.29	0.29	0
100	Southern	0.3	0.28	-0.02
99	Southern	0.33	0.29	-0.04
98.9	Southern	0.29	0.36	0.07
98.8	Southern	0.3	0.4	0.1
98.5	Southern	0.3	0.29	-0.01
98	Southern	0.23	0.22	-0.01
97.8	Southern	0.19	0.2	0.01
97.5	Southern	0.17	0.18	0.01
97	Southern	0.17	0.17	0
96.9	Southern	0.17	0.17	0
96.8	Southern	0.17	0.2	0.03
95.9	Southern	0.4	0.65	0.25
95.8	Southern	0.41	0.41	0
95.7	Southern	0.41	0.41	0

Table 6 PPU 100 year ARI Flood Levels

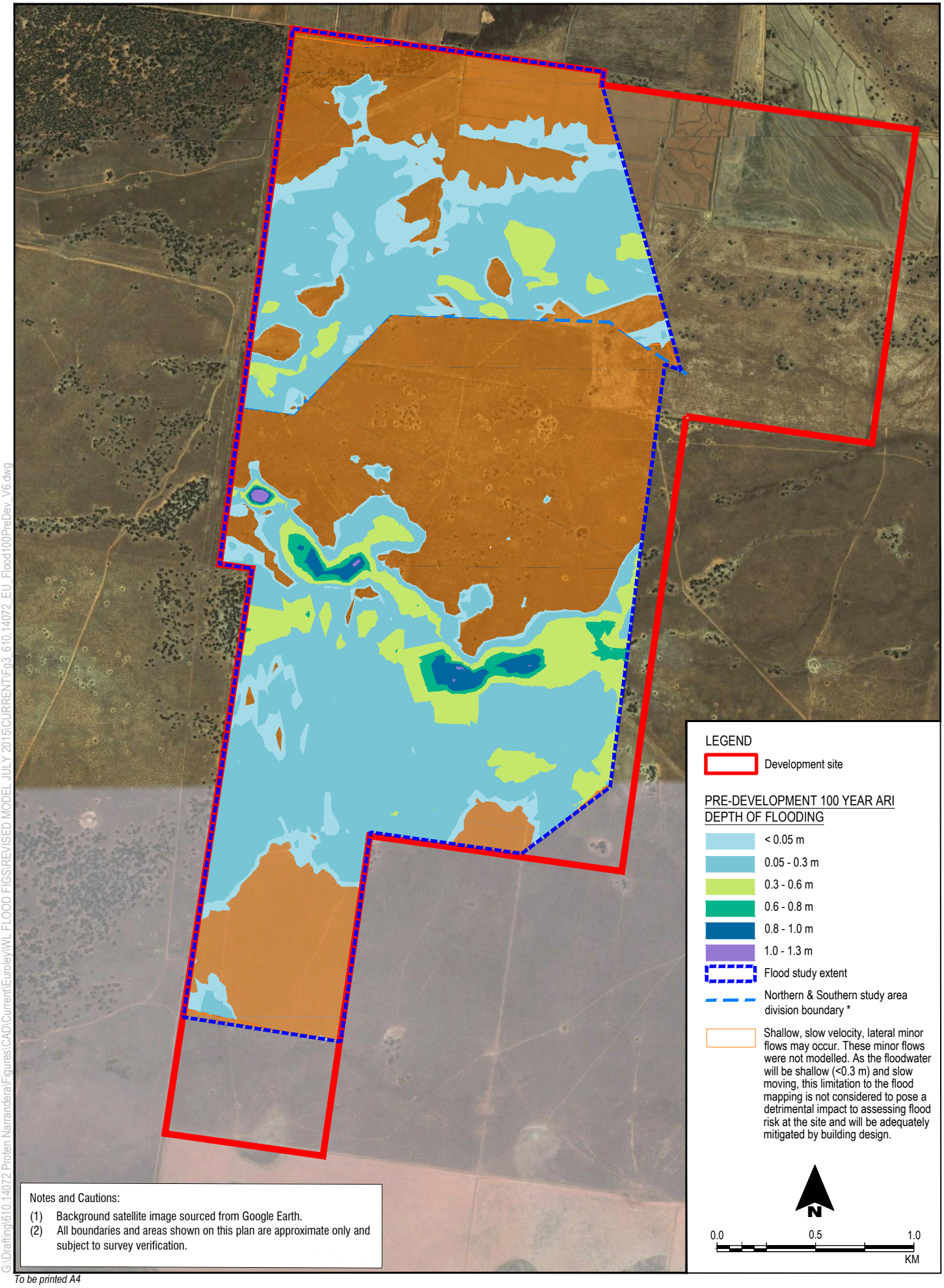
Farm	Relevant Model	100 year ARI Flood Level (mAHD)
PPU1	Northern	133.98
PPU2	Northern	134.39
PPU3	Southern	133.46
PPU4	Southern	133.69
PPU5	Southern	133.47

Comments in relation to PPU construction are provided in **Figure 5**. The raising of the PPU pad level a minimum of 300 mm above adjacent ground level, infilling works at PPU2, PPU3 and PPU4 and the 400 mm high concrete bund around the poultry sheds will adequately protect the poultry sheds from flooding during a 100 year ARI event.

Table 7 Residence 100 year ARI Flood Level and Proposed FFL

Residence	Relevant Model	Modelled 100 year ARI Flood Level (mAHD)	Finished Floor Level (mAHD)
1	Northern	134.05	134.35[1]
2	Northern	134.09	134.39[1]
3	Northern	134.11	134.41[1]
4	Northern	134.14	134.44[1]
5	Southern	133.48	133.89[2]
6	Southern	133.49	133.83[2]
7	Southern	133.66	133.96[2]
8	Southern	133.71	134.12[2]
9	Southern	133.72	134.02[1]
10	Southern	133.74	134.04[1]

[1] Finished floor level set as 300 mm above the modelled ephemeral flow path 100 year ARI flood Level
[2] Residence located outside ephemeral flow path 100 year ARI flood extent. Finished floor level set as 300 mm above adjacent ground level



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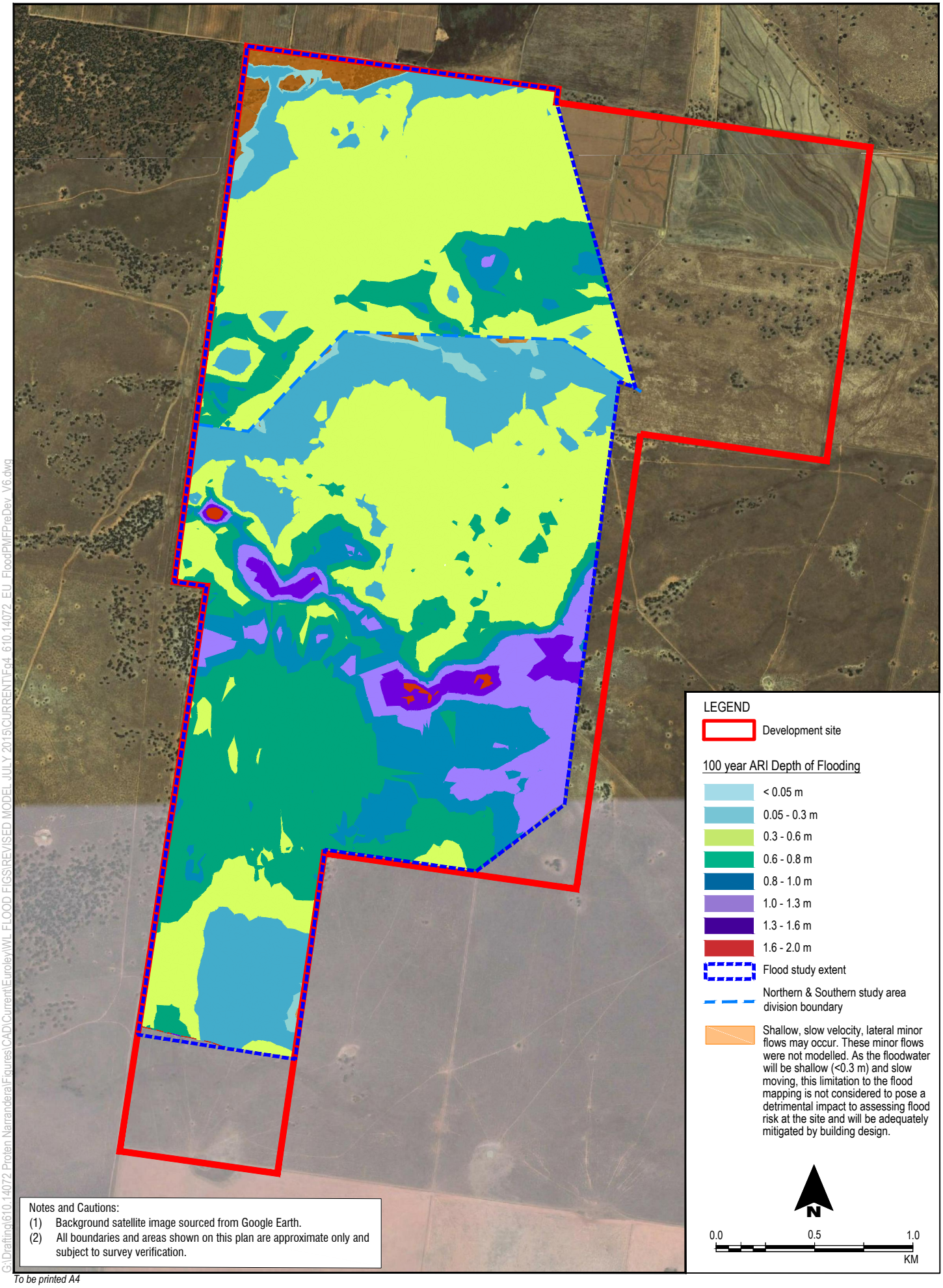
100 Year ARI Pre-Development Flood Extent

FIGURE 3



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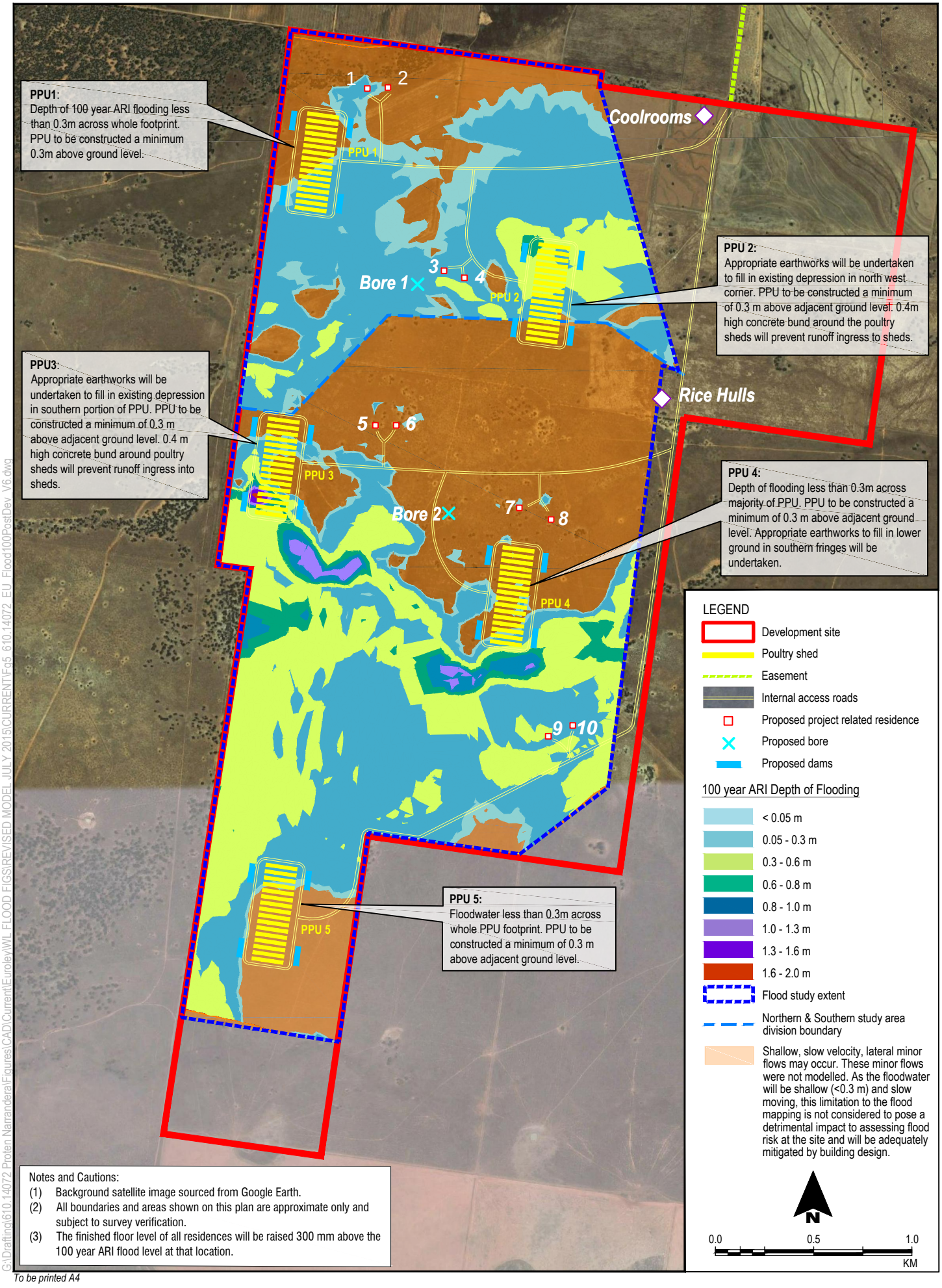
PMF Pre-Development Flood Extent

FIGURE 4



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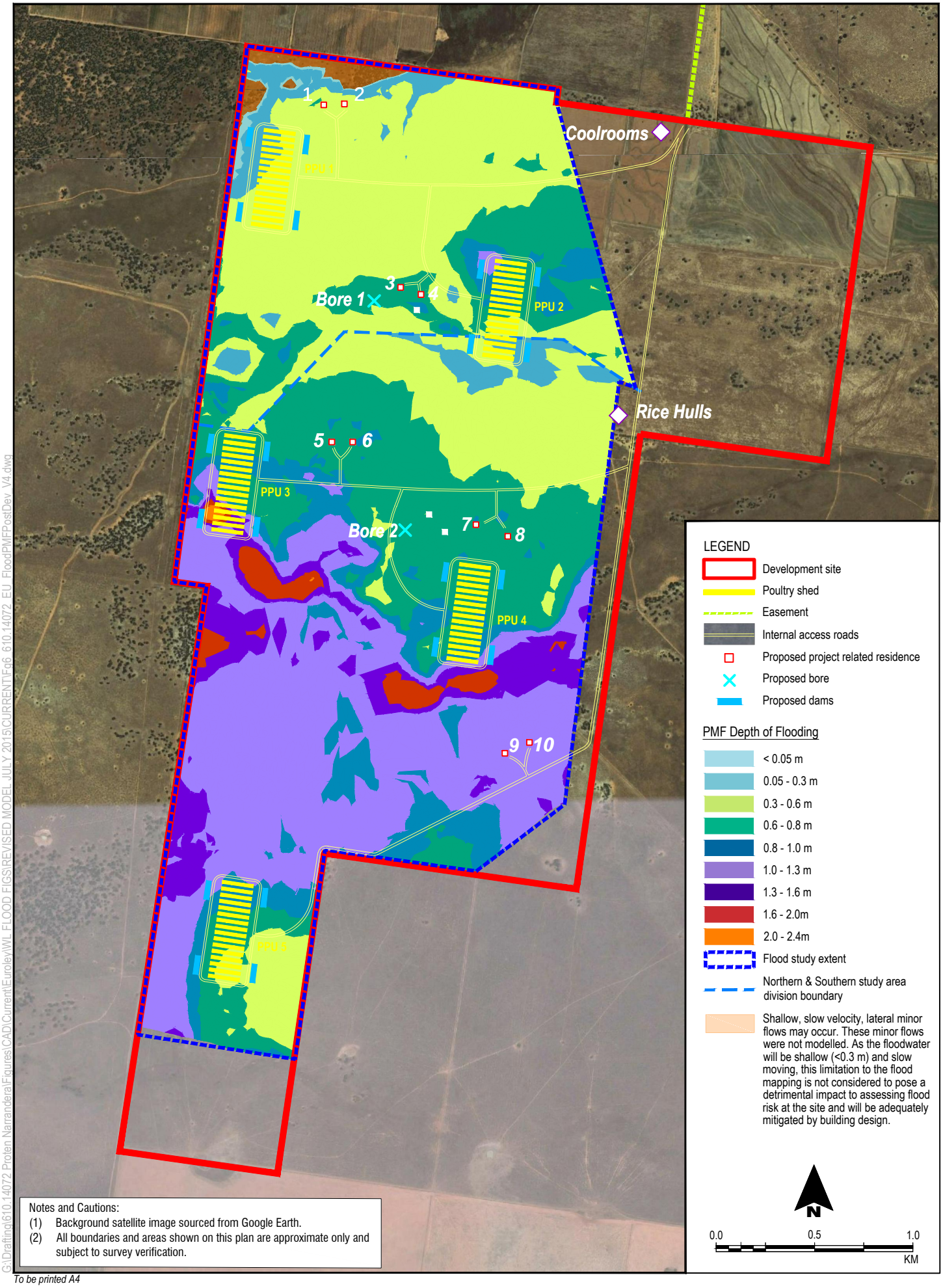
100 Year ARI Post-Development Flood Extent

FIGURE 5



Notes and Cautions:
(1) Background satellite image sourced from Google Earth.
(2) All boundaries and areas shown on this plan are approximate only and subject to survey verification.

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PMF Post-Development Flood Extent

FIGURE 6

3 CONCLUSIONS AND RECOMMENDATIONS

The pre-development flood model developed by SLR was updated to account for the proposed development.

A hydraulic impact assessment was undertaken to assess flood afflux and flood velocity impacts as a result of the proposed development.

Due to the relatively minor development footprint in the context of the overall property area and flooding extent, the proposed development will pose a minimal impact on flood behaviour within the site and within the neighbouring properties.

The modelling indicates that the maximum flood afflux will be 90 mm during a 100 year ARI event and 100 mm during the PMF event. No flood afflux impacts were shown to occur downstream of the buildings in the western extent of the Site. The impact at the eastern boundary was shown to be less than 50 mm during a 100 year ARI event and 80 mm during a PMF event. The maximum average velocity increase is predicted to be 0.08 m/s during a 100 year ARI event and 0.11 m/s during the PMF event. Flood velocities decreased at the eastern boundary and were not impacted along the western boundary.

In conclusion, the additional flooding assessment indicates that there are no existing buildings or infrastructure items on the neighbouring properties to the Site that are likely to be affected by the construction of the proposed development buildings, residences or associated infilling earthworks in terms of flooding. As the flood afflux is predicted to be relatively minor within the site and at the site boundaries and flood velocities did not increase significantly onsite or at the site boundaries, agricultural practices in neighbouring properties are unlikely to be affected by the flood impacts associated with the proposed development.

The finished floor level of all of the proposed residences within the Site will be raised 300 mm above the ephemeral flow path 100 year ARI flood level at that location. For residences that are located outside of the ephemeral flow path 100 year ARI flood extent (residences 5, 6, 7 and 8), the finished floor level will be raised 300 mm above adjacent ground level.

The PPU locations have remained unchanged as the proposed site layout includes a minimum distance of 1000 metres between PPUs to reduce the risk of disease transmission between units.This design constraint has prevented the location of the PPU2 and PPU3 from being relocated to less flood impacted areas..

Residences 4, 7, 8, 9 and 10 have been relocated and are now located within shallow flood depth zones (<300 mm deep).

It is noted that the Department of Planning and Environment (DP&E) has recommended that internal roads be constructed to the 1 in 100 year flood level for access/egress for farm employees to the Sturt Highway. This is not considered to be appropriate as:

- The site is affected by overland flooding;
- Overland flooding is likely to have also impacted the Sturt Highway;
- The worst case overland flooding relates to short duration storms, therefore it would be safer for farm employees to remain onsite during significant rainfall events until flood waters have resided;
- Floodwaters are unlikely to take more than a few hours to reside with the exception of the topographical depressions and ephemeral flow paths; and
- Significant raising of ground levels along roadways may impede floodwaters and further alter flood behaviour.

It is recommended that roadways be raised by a minimal amount (up to 300 mm) above adjacent ground level to prevent farm traffic disruption during the majority of rainfall events.

As recommended by the OEH, an Emergency and Evacuation Plan will be developed to outline a strategy for responding to local food events. It is envisaged that this will be imposed as a conditions of development consent.

4 REFERENCES

BOM, 2003, The Estimation of Probable Maximum Precipitation in Australia: Generalised Short-Duration Method, Commonwealth Bureau of Meteorology, 2003

CSIRO, Floodplain management in Australia: best practice principles and guidelines, 2000

Department of Infrastructure, Planning and Natural Resources, Floodplain Development Manual, The management of flood liable land, April 2005

Institute of Engineers, 1998, Australian Rainfall and Runoff, Volume One – A guide to flood estimation, Reprinted Edition, 1998.

SLR, 2015a, Flooding Assessment, Euroley Poultry Production Complex, SLR Consulting, 610.14072, 20 May 2015, Revision 0

SLR 2015b, Intensive Livestock Agriculture Euroley Poultry Production Complex, Environmental Impact Statement, SSD 6882, SLR Consulting, 20 May 2015

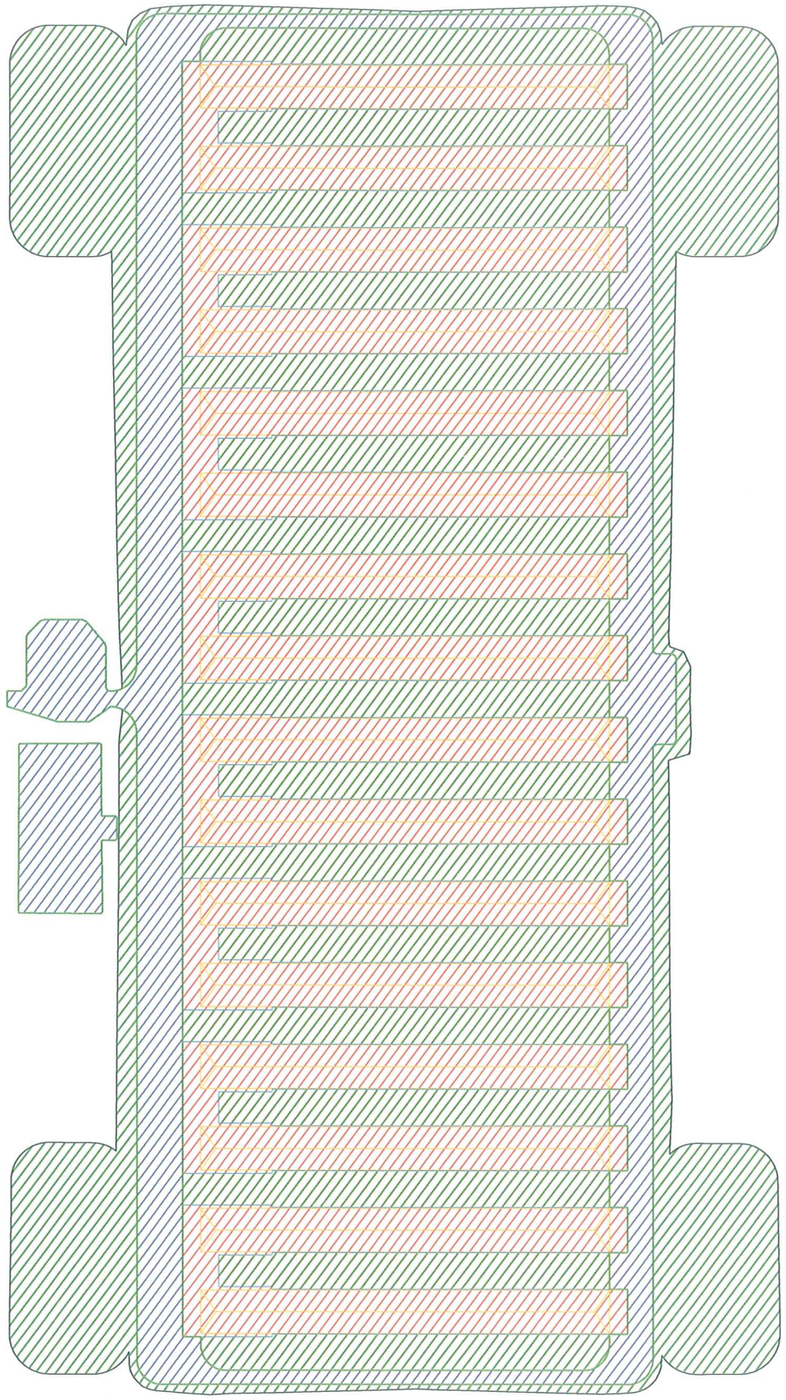
APPENDIX E

Legend

Roofs and Concrete Aprons = 51507sq.m

Unsealed roads and Platforms = 22,690sq.m

Pervious = 61,490 sq.m



Revision	Amendment or reason for issue	Issue date	Drawing completed by	Designed & dwg. checked by	Verified by X = Not verified	Issue authorised (*)
1	Issued for Information	21.11.2014	L.V.R.	L.V.R.	L.V.R.	

* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

LRCE
Lance Ryan Consulting Engineers Pty Ltd
Consulting Engineers Planners & Managers
A.B.N. 53 631 529 091
52 Johnston Street,
WAGGA WAGGA NSW 2650
P.O. Box 7
WAGGA WAGGA NSW 2650
PH: (02) 6921 1877
FAX: (02) 6921 7415
EMAIL: lanceryan@gmail.com

Project	Proten Chicken Sheds Narrandera
Drawing Title	Catchment Area Plan
Client	Proten
Scales	1:1200
Client Project No.	
Architect / Project Manager	
Project Number	14W032
Dwg. No.	C01
Sheet	01 or 01
Revision	1

A1 SHEET

APPENDIX F

26 August 2015

610.14072 Euroley drilling and testing program report Final.docx

ProTen Holdings
PO Box 1746
North Sydney NSW 2060

Dear Sir,

Euroley Poultry Production Complex - Groundwater Drilling and Testing

1 Introduction

ProTen Holdings Pty Limited (ProTen) is seeking development consent for the Euroley Poultry Production Complex around 26 km northwest of Narrandera in the Riverina region of New South Wales. The development will require approximately 460 ML/year (1.26 ML/day or 14.6 L/s averaged over a year) of groundwater during operations, which is to be sourced from two production bores proposed to be established within the development site (**Figure 1**). The bores will extract from the deep aquifer source known as the Calivil Formation.

The NSW Office of Water (NOW) submission dated 7 July 2015 raised the following:

> *3. It is recommended that proper pump testing be carried out to confirm bore yields at the proposed sites to confirm water supply security; and*
>
> *5. The assessment of potential impacts of 460 ML extraction on nearby bores is considered inadequate and it is recommended that the analytic model be re-run to assess the impact of extraction using modified aquifer parameters and a longer pumping period (i.e. 2,000 days).*

This letter report presents the results of the drilling and pump testing program of the two groundwater production bores, and presents revised groundwater impact predictions based on the project-specific pump test analysis.

2 Drilling Program

ProTen engaged Watson Drilling of Deniliquin to undertake the drilling and bore construction program, and engaged SLR Consulting (SLR) to provide hydrogeological support during the program. Bore drilling and construction was undertaken by a NSW licensed Class 4 driller, and according to the *Minimum Construction Requirements for Water Bores in Australia, Third Edition, February 2012"*.

The drilling program targeted the Calivil Formation aquifer, which lies beneath around 50 m of the Shepparton Formation at the development site. The Shepparton Formation in turn is overlain by 4 to 5 m of topsoil and weathered silty clay, which provides low permeability cover to the Shepparton Formation. The 4m of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation, and the deeper Calivil Formation.

SLR Consulting Australia Pty Ltd 2 Lincoln Street Lane Cove NSW 2066 Australia
(PO Box 176 Lane Cove NSW 1595 Australia)
T: 61 2 9428 8100 F: 61 2 9427 8200 E: sydney@slrconsulting.com **www.slrconsulting.com**
ABN 29 001 584 612

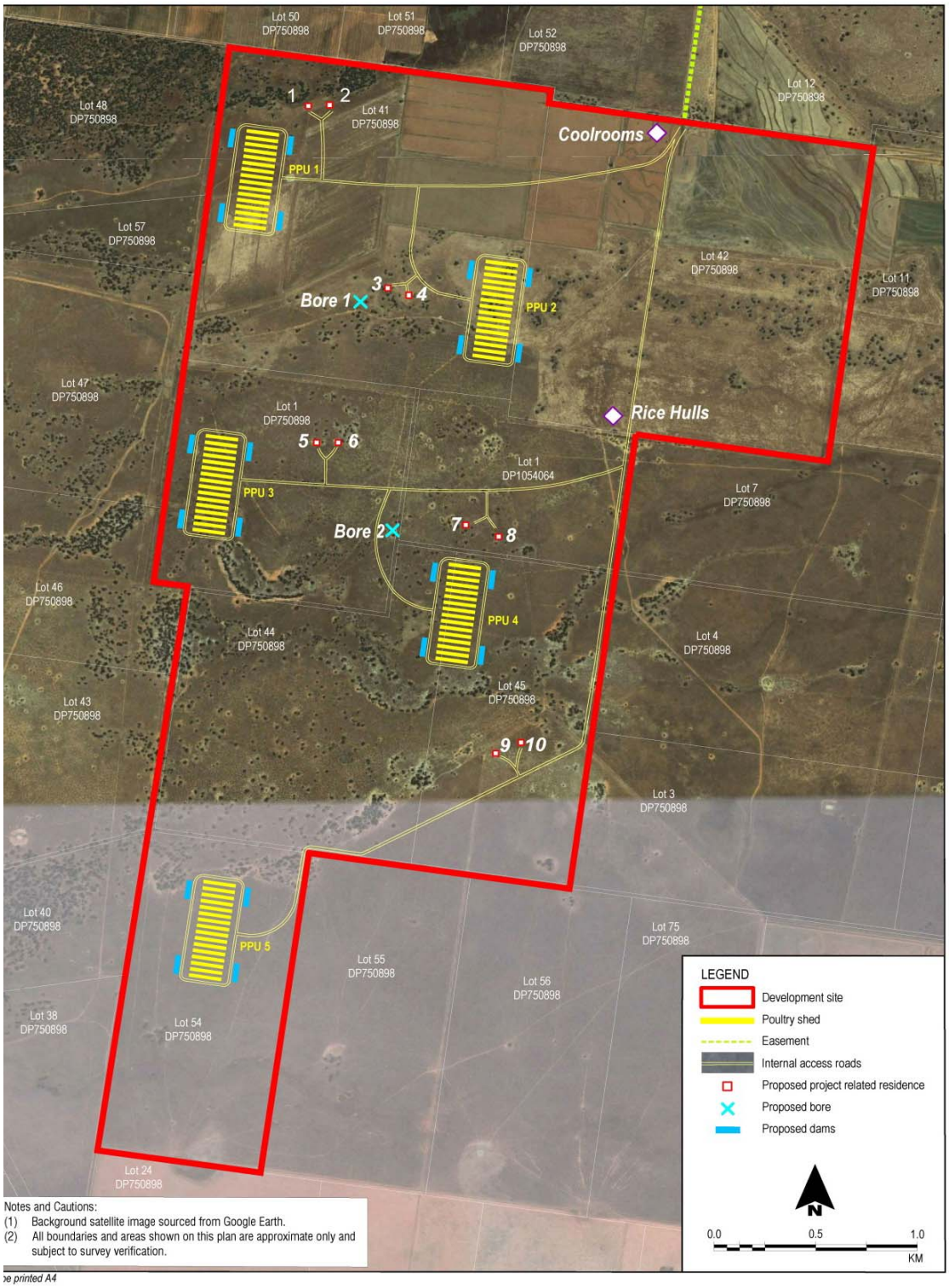


Figure 1 Development Concept Plan

Locality information for the two new production bores is provided in **Table 1**.

Table 1 Drilling locality information

Bore ID	Easting (GDA94)	Northing (GDA94)
Bore 1	430623	6157517
Bore 2	430780	6156352

In general, the drilling and bore construction process involved:

- Drilling of a pilot hole at 6 inch diameter to intersect the Calivil Formation aquifer using mud-rotary methods
- Design of screen intervals and slot size to suit the lithology encountered
- Reaming of the pilot hole to accept uPVC Cl.18 production casing and 316SS screens, both of 9 inch diameter
- Installation of production casing and screens in an in-line fashion
- Cementing the production casing in place
- Development by jetting with water and airlifting

Lithological drilling logs prepared by SLR are provided in **Appendix A**. A summary of the bore construction information is provided in **Table 2**.

Table 2 Bore drilling and construction information

Bore ID	Total Drilled Depth (mBGL)	Top of Calivil Formation (mBGL)	Base of Calivil Formation (mBGL)	Well Screens (ss wire-wound)		Standing Water Level (mBGL)
				Aperture	Setting (mBGL)	
Bore 1	78	54	not drilled	0.050” 0.060” 0.040” 0.050” 0.060” 0.070”	57-79 59-60 64-65 65-66 66-71 71-73	24.48
Bore 2	107	54	100	0.060” 0.070” 0.040” 0.050”	73-75 75-77 85-91 91-93	24.22

The target Calivil Formation was intersected at 54 m depth/below ground level (BGL) at both drilling locations (located ~1.2 km apart), lying immediately below the Shepparton Formation and noted to be 24 m thick at Bore 1 and 46 m thick at Bore 2, although its entire thickness was not drilled in Bore 1. However at Bore 2, the Renmark Group was intersected below the Calivil Formation at 100 m depth, giving a total formation thickness of 46 m. The interpreted depths of the formation intersections are consistent with depths identified in relevant literature (eg CSIRO, 1997). In the two drilling locations, the Calivil Formation consisted of medium to coarse grained clean white quartzose sands, interbedded with thin clayey horizons.

3 Testing Program

ProTen engaged Wayne Kempton Bore Pumps of Deniliquin to undertake the bore testing program (ie pump test) under the guidance of SLR. Testing was undertaken according to *AS 2368-1990 Test Pumping of Water Wells*. Testing comprised:

- A single constant rate test on Bore 1 at a rate of 45 L/s (i.e. well in excess of the long term forecast water demand and licensed extraction of the development) for 48 hours, with drawdown monitored in both Bore 1 and Bore 2 using electronic data loggers and e-tapes. The constant rate test was undertaken with the objective of obtaining reliable estimates of the aquifer hydraulic properties of transmissivity and storativity.
- A short monitored recovery test following the constant rate test, with recovery monitored in Bore 1 using an electronic data logger and an e-tape. The recovery test was undertaken with the objective of obtaining additional data on aquifer hydraulic properties.

The results of the pumping test indicate that the aquifer has sufficient capacity to support the long term licensed pumping demand of 1.26 ML/day and can support significantly higher rates of extraction. The pumped bore recorded a maximum drawdown of only 4.18 m after 2 days of pumping at 45 L/s (3.89 ML/d), with the observation bore located almost 1.2 km away recording a maximum of 0.44 m drawdown.

Analysis of the pumping test data has been undertaken by SLR using the following published solutions (Kruseman & de Ridder, 1994):

- Cooper-Jacob straight-line method (pumping data, pumping bore and observation bore)
- Theis recovery straight-line method (recovery data, pumping bore only)

As an additional means to cross check the results of the above straight-line methods analysis, fitting of the drawdown curve from the observation bore against a theoretical Theis analytical drawdown curve was also undertaken. This curve fitting method provides a means to cross-check that the results obtained from the straight-line analysis methods are valid.

The analyses are presented in **Appendix B** and a summary of the results of the pumping test analysis are provided in **Table 3**.

Table 3 Aquifer testing analysis results

Pumped Bore ID	Observation Bore	Transmissivity (m^2/d)	Storativity
Bore 1	Bore 1	3,389 (pumping, Cooper-Jacob)	n/a
		3,953 (Theis recovery)	n/a
	Bore 2	3,389 (pumping, Cooper-Jacob)	3.45×10^{-4}
		3,350 (pumping, Theis curve fitting)	3.30×10^{-4}
	Geometric mean	**3,512**	**3.4×10^{-4}**

The aquifer test analysis indicates that the transmissivity of the Calivil Formation aquifer is about 3,400 m^2/day in the development area, and storativity is around 3.4×10^{-4}. This compares to theoretical values of 1,500 m^2/day for transmissivity and 1×10^{-4} for storativity that were used in the EIS for predictive modelling purposes. The difference in these values indicates that in the development area, the Calivil Formation aquifer appears more transmissive than general literature values.

Aquifer test results also show the influence of aquifer boundaries on response to pumping, as evidenced by a change in slope on the log-linear drawdown plot from the pumped bore after around 1,000 minutes of pumping, and the departure from the theoretical Theis analytical drawdown curve for the observation bore after 2,000 minutes of pumping. Such aquifer boundaries are considered to be a result of thinning or pinching out of the screened sand units within the Calivil Formation, given the fluvial depositional environment of the sediments.

4 Analytical Modelling

The aquifer parameters obtained from the testing program as outlined in **Section 3** have been input to an analytical model using the Theis distance-drawdown equation to determine likely groundwater drawdown resulting from operation of the development. The modelling assumes the following parameters:

- Pumping rate of 1.26 ML/day, equivalent to the development's proposed extraction of approximately 460 ML/year (see **Section 1**)
- Pumping from only Bore 1 (see **Section 2**), rather than splitting the 1.26 ML/day extraction over two bores, to provide the most conservative estimate of groundwater drawdown
- Transmissivity of 3,512 m^2/day and storativity of 3.37 x 10^{-4} as per the results of the aquifer testing program (see **Section 3**)
- Pumping duration of 2,000 days, to provide an indication of the long term groundwater drawdown impacts

The results of the analytical model are presented in **Figure 2** below, and show a predicted long term drawdown of maximum 0.8 m in the immediate vicinity of the pumping bore, with the 0.5 m drawdown radius extending only around 110 m from the pumping bore. The results of the pump test indicate that the groundwater abstraction production levels will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the NSW Aquifer Interference Policy thresholds.

Project: **ProTen**

Calculate Drawdown (s) for known Discharge (Q) — THEIS Analytical Solution (Theis, 1935)

INPUTS

Pumping rate of well:	14.58	L/s
	1260	m3/day
Storage coefficient (s) of aquifer:	3.37E-04	
Transmissivity (m2/day):	3512	
Time since pumping started (days):	20000	

Distance (m)	u	W(u)	Drawdown (m)
1.2	1.79E-12	2.65E+01	0.76
2.4	7.15E-12	2.51E+01	0.72
4.9	2.86E-11	2.37E+01	0.68
9.8	1.14E-10	2.23E+01	0.64
19.5	4.58E-10	2.09E+01	0.60
39.1	1.83E-09	1.95E+01	0.56
78.1	7.32E-09	1.82E+01	0.52
156.3	2.93E-08	1.68E+01	0.48
312.5	1.17E-07	1.54E+01	0.44
625.0	4.69E-07	1.40E+01	0.40
1250.0	1.87E-06	1.26E+01	0.36
2500.0	7.50E-06	1.12E+01	0.32
5000.0	3.00E-05	9.84E+00	0.28

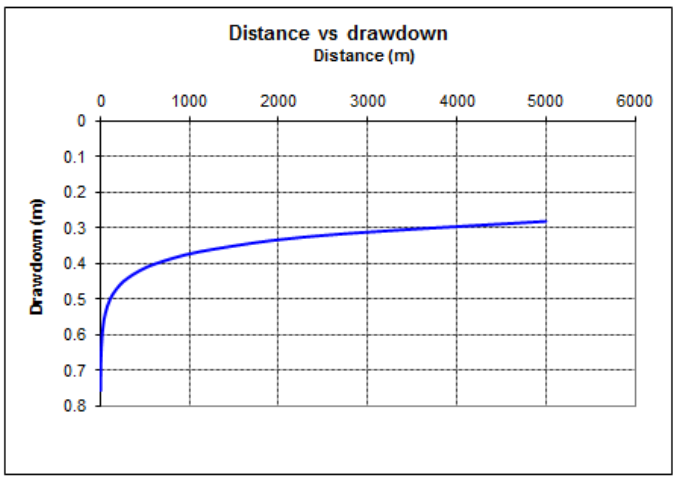


Figure 2 Analytical Model Predictions

5 Conclusions

The drilling of the wells shows the stratigraphy to include surficial topsoil and silty clay (4-5m thick), above the Shepparton Formation (generally sandy clay, and approximately 50m thick) above the Calivil Formation (generally quartzose sand). The focus of this report is to assess the hydrogeological characteristics of the deeper Calivil Formation, rather than assessing the surface hydrogeology. However, it is noted that the 4 to 5m of surficial topsoil and silty clay will provide a significant attenuation barrier to any migration of water from surface operations to both the clayey Shepparton Formation and the deeper Calivil Formation.

The results of the pumping test indicate that the Calivil Formation aquifer has sufficient capacity to support the development's water supply requirements of approximately 1.26 ML/day and can support significantly higher rates of extraction. The achieved yields indicate the proposed development has demonstrated appropriate water supply security.

The pump test analysis indicates that the groundwater abstraction production levels will not significantly affect surrounding bores on adjacent properties or impact groundwater levels in excess of the NSW Aquifer Interference Policy thresholds. This analysis has also considered longer term impacts of 2,000 days, as discussed with NOW, and has found that the site-specific pump test shows the Calivil Formation to be more transmissive than general hydrogeological literature previously suggests in this area.

Yours sincerely

Derwin Lyons
Principal – Hydrogeologist

6 References

CSIRO, 1997. Hydrogeology of the Coleambally Irrigation Area: A brief description for use with a groundwater simulation model. Technical Report 3/97, CSIRO Land and Water

Kruseman & de Ridder, 1994. Analysis and Evaluation of Pumping Test Data, Second Edition. International Institute for Land Reclamation and Improvement, the Netherlands.

Appendix A – Drilling Summary Reports

Water Bore Drilling Summary Report — Bore 1

Spudded:	07-04-2015	**Report Date:**	21-07-2015
TD Reached:	07-04-2015	**Job:**	ProTen - Euroley
Rig Release		**Job No:**	610.14072
Well Name.:	Bore 1	**Co-ordinates (GDA94):**	430623 e
Tenure:	n/a		6157517 n
Target Formation:	Calivil Formation	**Elevation:**	
Predicted TD (m GL):	90	**Logging hydrogeologist:**	Derwin Lyons
Drilling Co./Rig:	Watson Drilling	**TD Reached (m GL):**	78

Stratigraphy

Depth (m GL) From	To	Thickness	Unit
0	1	1	Topsoil
1	54	53	Shepparton Formation
54	78	24	Calivil Formation

Cuttings Description

Depth (m GL) From	To	Thickness	Decription
0.0	1.0	1.0	CLAY, brown; some fine-medium grained sand
1.0	3.0	2.0	CLAY, medium grey/brown andorange mottled, firm
3.0	4.0	1.0	SILTY CLAY, brown, some sand
4.0	7.0	3.0	CLAYEY SAND, red-brown, fine to medium grained
7.0	8.0	1.0	SILTY SAND, fine grained, orange-brown
8.0	9.0	1.0	CLAY, light grey and orange, firm
9.0	11.0	2.0	SAND, medium to coarse grained, moderately well sorted, moderately well rounded, lithic, orange-brown
11.0	12.0	1.0	SAND, medium grained, clean, well sorted, orange-brown
12.0	13.0	1.0	CLAYEY SAND, fine grained, orange
13.0	15.0	2.0	SILTY CLAY, orange and grey mottled, firmer with less silt towards base
15.0	16.0	1.0	SAND, fine to coarse grained, poorly sorted, lithic, orange
16.0	17.0	1.0	CLAYEY SAND, medium to coarse grained, orange-brown
17.0	31.0	14.0	CLAY, firm, orange-brown, some light grey clay. Occasional stiff red clay and siltier clay horizons
31.0	35.0	4.0	SILTY CLAY, orange-brown
35.0	36.0	1.0	CLAYEY SAND, medium grained, orange
36.0	37.0	1.0	GRAVELLY SAND, loose, angular lithic grains
37.0	39.0	2.0	SAND, fine to coarse grained, poorly sorted, moderately angular, light brown
39.0	41.0	2.0	GRAVELLY CLAY, dark orange-brown with up to 1cm diameter moderately rounded lithics. Gravel decreases with depth
41.0	43.0	2.0	SANDY CLAY, coarse grained sand in stiff dark orange-brown clay matrix
43.0	44.0	1.0	CLAYEY SAND, firm, orange-brown
44.0	46.0	2.0	CLAY, stiff, brown
46.0	49.0	3.0	CLAY, stiff, brown, mottled with red & grey clay
49.0	51.0	2.0	CLAY, stiff, brown
51.0	54.0	3.0	CLAY, stiff, brown, mottled with grey clay, minor sand 52-53m
54.0	57.0	3.0	SAND, medium grained, clean, well sorted, angular grains, orange. Coarsening with depth
57.0	58.0	1.0	SAND, coarse grained, clean, sub-rounded, moderate sorting, orange and white
58.0	60.0	2.0	GRAVELLY SAND, coarse grained, clean, sub-rounded, orange and white
60.0	62.0	2.0	GRAVELLY SAND, clayey, sub-angular gravels up to 5mm diameter, orange. Lithic. Gravel decreasing with depth
62.0	63.0	1.0	CLAY, gravelly, orange
63.0	64.0	1.0	SAND, fine to medium grained, clean, orange
64.0	65.0	1.0	SAND, medium to coarse grained, moderately sorted, clean, orange-white
65.0	67.0	2.0	SAND, coarse to gravelly, quartz rich, clean, sub-angular, orange
67.0	68.0	1.0	SAND and GRAVEL, poorly sorted, clean, sub-rounded gravels, white-orange
68.0	69.0	1.0	SAND, medium to coarse grained, quartz rich, moderate sorting, clean, orange-white
69.0	70.0	1.0	SAND, coarse to gravelly, clean, sub-angular, white
70.0	71.0	1.0	SAND, fine to coarse grained, poorly sorted, some sub-rounded gravels to 5mm diameter, clean, orange
71.0	72.0	1.0	SAND, medium to coarse grained, white-orange
72.0	73.0	1.0	SANDY GRAVEL, quartz rich, agular, clean, white-orange
73.0	75.0	2.0	SAND, medium to coarse grained, some fine quartz gravels, white-orange
75.0	76.0	1.0	CLAYEY SAND, medium to coarse grained, orange
76.0	78.0	2.0	CLAY, with some rounded gravels, white

Bit log

Depth (m GL)	Type
0-78	6" blade
0-73	12" blade

Mud Log

Depth (m GL)	Description
0-78	Bentonite mud (Aus-gel)

Well Construction log

Depth (m GL)	Material/grade	Diameter/size/type	Purpose
0-57	uPVC Cl 18	225 mm DN	Bore Casing
57-59	SS wedge-wire	225mm DN, 0.05" slot	Well Screen
59-60	SS wedge-wire	225mm DN, 0.06" slot	Well Screen
60-64	uPVC Cl 18	225 mm DN	Bore Casing
64-65	SS wedge-wire	225mm DN, 0.04" slot	Well Screen
65-66	SS wedge-wire	225mm DN, 0.05" slot	Well Screen
66-71	SS wedge-wire	225mm DN, 0.06" slot	Well Screen
71-73	SS wedge-wire	225mm DN, 0.07" slot	Well Screen
52	Cement basket	12"	Cement plug
73-78	Cuttings backfill (natural)		Rathole backfill
0-52	Cement	5% bentonite	Annular seal
52-73	Natural development		Filter pack

Testing

Observations

Water Strike (m GL)	Airlift yield (L/s)	Salinity	SWL (mTOC)	Other observations

Water Bore Drilling Summary Report — Bore 2

Spudded:	22-07-2015	**Report Date:**	22-07-2015
TD Reached:	29-07-2015	**Job:**	ProTen - Euroley
Rig Release		**Job No:**	610.14072
Well Name.:	Bore 2	**Co-ordinates (GDA94):**	430780 e
Tenure:	n/a		6156352 n
Target Formation:	Calivil Formation	**Elevation:**	
Predicted TD (m GL):	90	**Logging hydrogeologist:**	Derwin Lyons
Drilling Co./Rig:	Watson Drilling	**TD Reached (m GL):**	107

Stratigraphy

Depth (m GL) From	To	Thickness	Unit
0	5	5	Topsoil & weathering
5	54	49	Shepparton Formation
54	100	46	Calivil Formation
100	107	>7	Renmark Group

Cuttings Description

Depth (m GL) From	To	Thickness	Decription
0.0	1.0	1.0	SILTY CLAY, dark brown and light grey mottled
1.0	2.0	1.0	CLAY, firm, light brown to dark grey
2.0	4.0	2.0	SILTY CLAY, light brown to grey
4.0	5.0	1.0	SANDY CLAY, fine grained sand in light brown to grey mottled clay matrix
5.0	6.0	1.0	SILTY CLAY, light brown to grey
6.0	16.0	10.0	CLAY, firm to stiff, grey. Some light brown-orange fine sand and silt with depth
16.0	17.0	1.0	SILTY SAND, fine grained, light brown to orange
17.0	18.0	1.0	GRAVEL, very coarse. Up to 2cm diameter pebbly lithics, moderately well rounded, poorly sorted.
18.0	19.0	1.0	GRAVEL, fine to coarse, lithics up to 1cm diameter, Poorly sorted, well rounded.
19.0	20.0	1.0	GRAVEL, medium to coarse lithics, clean, well rounded.
20.0	21.0	1.0	CLAY, firm, orange. 50% gravel inclusions likely hole fall-in from above
21.0	23.0	2.0	CLAY, firm, orange, with 50% very stiff red clay
23.0	24.0	1.0	CLAYEY SAND, coarse grained, well sorted, orange
24.0	25.0	1.0	SILTY SAND, coarse grained, well sorted, orange
25.0	27.0	2.0	SAND, coarse, clean, orange. Some rounded fine gravel
27.0	29.0	2.0	SANDY CLAY, firm, orange-brown and grey
29.0	30.0	1.0	SILTY SAND, coarse grained, with some fine to medium gravels. Orange
30.0	33.0	3.0	GRAVEL, fine to medium grading to coarse with depth, moderately rounded lithics, poorly sorted. Orange
33.0	37.0	4.0	CLAY, firm to stiff, light grey
37.0	38.0	1.0	SANDY CLAY, orange-brown
38.0	39.0	1.0	CLAYEY SAND, medium to coarse grained, orange-brown
39.0	40.0	1.0	SILTY SAND, medium to coarse grained, lithic. Orange-brown
40.0	41.0	1.0	GRAVELLY SAND, coarse grained, clean, orange.
41.0	43.0	2.0	SILTY SAND, medium to coarse grained, becoming clayey towards base. Light brown
43.0	44.0	1.0	SANDY CLAY, coarse grained sand grains, orange-brown
44.0	47.0	3.0	CLAY, stiff, red-brown to light brown. Thin hard dark grey to black laminations up to 3mm thick
47.0	49.0	2.0	CLAY, stiff, red-brown to light brown.
49.0	52.0	3.0	CLAY, firm, light brown & grey
52.0	53.0	1.0	CLAYEY SAND, coarse grained, quartzose, well sorted, light brown-orange
53.0	54.0	1.0	SAND, very course grained, moderately well sorted, quartzose and lithic, clean, orange-grey
54.0	58.0	4.0	SAND, coarse to very course grained, moderately well sorted, quartzose and lithic, clean, light grey to white
58.0	59.0	1.0	SANDY CLAY, firm, orange-brown. Coarse well sorted quartzose sand grains.
59.0	63.0	4.0	CLAY, firm to stiff, orange to light orange
63.0	64.0	1.0	CLAY, soft, orange to light orange
64.0	65.0	1.0	CLAY, firm, orange to light orange
65.0	66.0	1.0	SILTY SAND, medium grained, dark orange
66.0	67.0	1.0	CLAYEY SILTY SAND, medium grained, dark orange
67.0	68.0	1.0	CLAYEY SILTY SAND, coarse grained, dark orange
68.0	69.0	1.0	SAND, coarse to gravelly, quartzose, poorly sorted, moderately rounded, clean, orange
69.0	70.0	1.0	GRAVELLY SAND, quartzose with minor lithics, moderately well sorted, clean, white
70.0	71.0	1.0	SAND, medium to coarse grained with minor gravels, quartzose with minor lithics, moderately well sorted, clean, white-orange
71.0	73.0	2.0	GRAVELLY SAND, coarse grained, well sorted, moderately well rounded, clean, orange
73.0	75.0	2.0	GRAVELLY SAND, coarse grained, well sorted, moderately well rounded, clean, white-orange to white
75.0	76.0	1.0	GRAVELLY SAND, very coarse grained, well sorted, moderately well rounded, clean, white
76.0	77.0	1.0	GRAVELLY SAND, very coarse grained, well sorted, moderately well rounded, clean, orange
77.0	79.0	2.0	CLAYEY GRAVEL, well sorted, well rounded, white-orange
79.0	80.0	1.0	SANDY GRAVEL, coarse grained, clean, white-orange
80.0	83.0	3.0	CLAYEY SAND, coarse grained, quartzose and lithic, orange-brown
83.0	84.0	1.0	SAND, fine to gravelly, poorly sorted, angular, quartzose, clean, white
84.0	86.0	2.0	SAND, medium grained, poorly sorted, angular, quartzose, clean, white
86.0	89.0	3.0	SAND, medium to coarse grained, poorly sorted, angular, quartzose, clean, white
89.0	90.0	1.0	SAND, medium grained, poorly sorted, angular, quartzose with some lithics, clean, orange-white
90.0	91.0	1.0	SAND, medium to coarse grained, poorly sorted, angular, quartzose, clean, white
91.0	92.0	1.0	SAND, coarse grained, poorly sorted, angular, quartzose, clean, white
92.0	93.0	1.0	SAND, coarse grained, poorly sorted, angular, quartzose with some lithics, clean, orange-white
93.0	96.0	3.0	CLAYEY SAND, coarse grained, well sorted, well rounded, orange-white
96.0	98.0	2.0	CLAYEY SAND, silty, coarse grained, well sorted, well rounded, orange-white
98.0	100.0	2.0	CLAYEY SAND, coarse grained, well sorted, well rounded, dark orange-white
100.0	101.0	1.0	CLAYEY SAND, fine to medium grained, carbonaceous with some coal flecks, quartzose, well sorted, dark grey
101.0	102.0	1.0	SILTY SAND, medium grained, quartzose, well sorted, dark grey
102.0	103.0	1.0	SAND, medium grained, well sorted, quartzose, grey
103.0	104.0	1.0	SAND, fine to coarse grained, poorly sorted, quartzose, carbonaceous with some coal flecks, dark grey
104.0	106.0	2.0	SAND, medium to coarse grained, poorly sorted, quartzose, some carbonaceous flecks, dark grey
106.0	107.0	1.0	SAND, coarse grained, quartzose, moderately sorted, grey

Bit log

Depth (m GL)	Type
0-107	6" blade
0-93	12" blade

Mud Log

Depth (m GL)	Description
0-107	Bentonite mud (Aus-gel)

Well Construction log

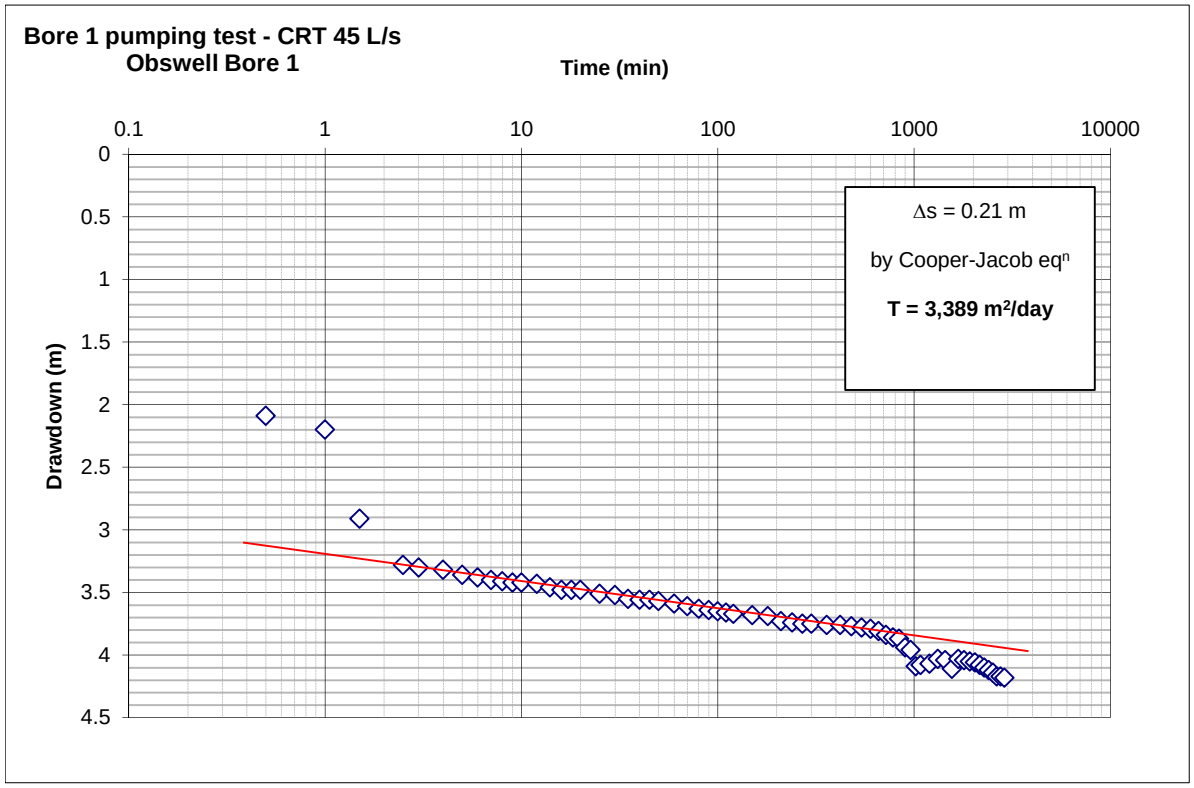
Depth (m GL)	Material/grade	Diameter/size/type	Purpose
0-73	uPVC Cl 18	225 mm DN	Bore Casing
73-75	SS wedge-wire	225mm DN, 0.06" slot	Well Screen
75-77	SS wedge-wire	225mm DN, 0.07" slot	Well Screen
77-85	uPVC Cl 18	225 mm DN	Bore Casing
85-91	SS wedge-wire	225mm DN, 0.04" slot	Well Screen
91-93	SS wedge-wire	225mm DN, 0.05" slot	Well Screen
68	Cement basket	12"	Cement plug
93-107	Cuttings backfill (natural)		Rathole backfill
0-68	Cement	5% bentonite	Annular seal
68-93	Natural development		Filter pack

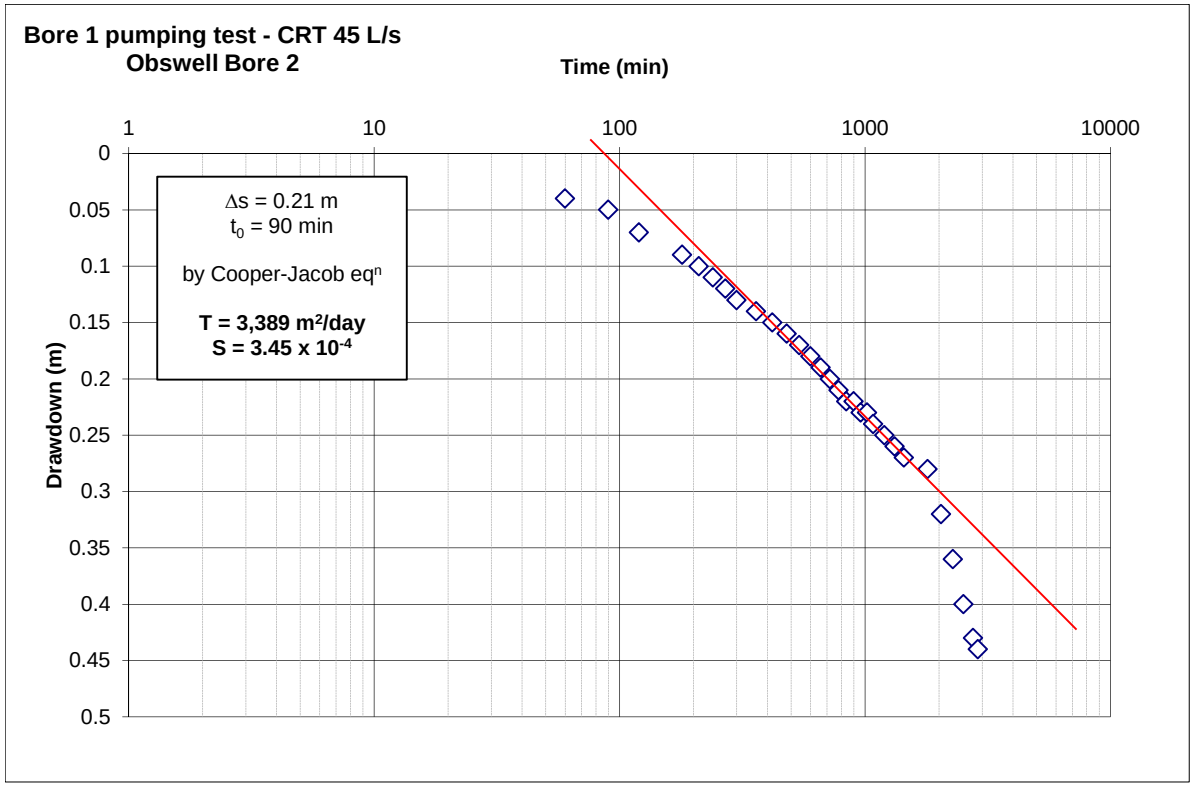
Testing

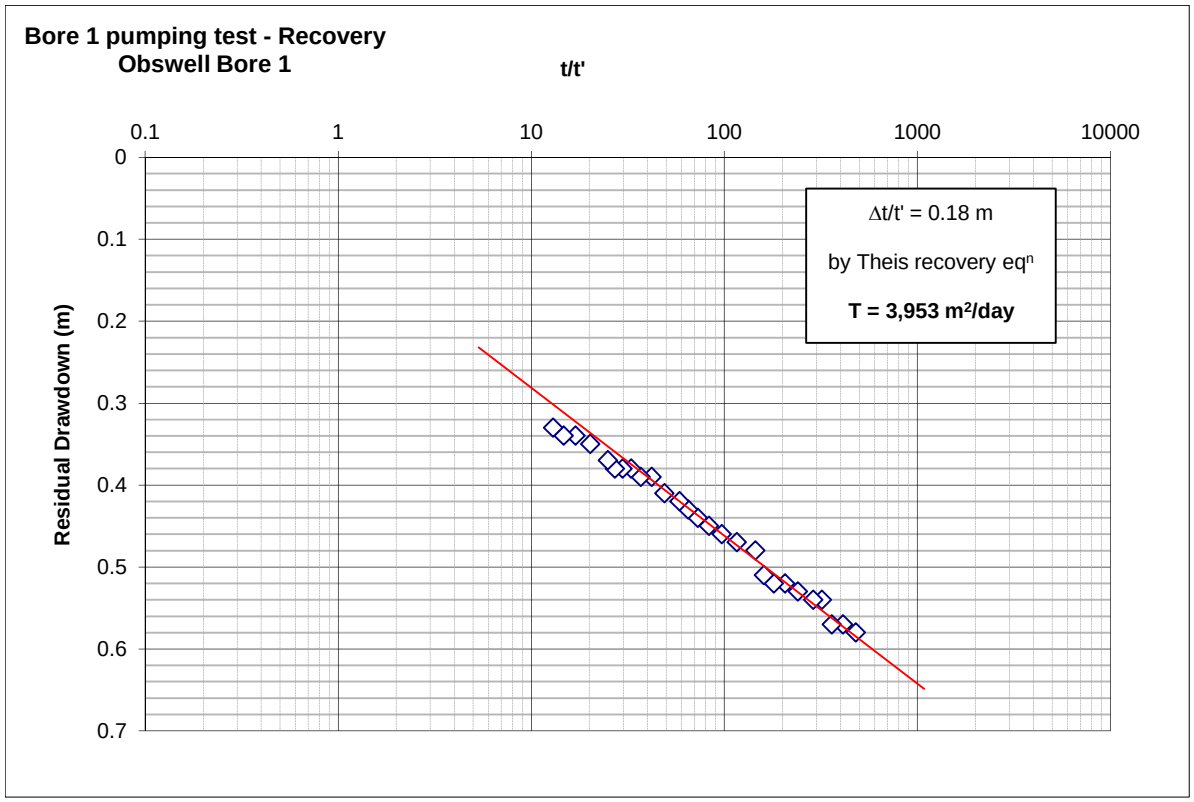
Observations

Water Strike (m GL)	Airlift yield (L/s)	Salinity	SWL (mTOC)	Other observations

Appendix B – Aquifer Test Analysis






Bore 1 pumping test - Recovery
Obswell Bore 1
t/t'
0.1
1
10
100
1000
10000
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Residual Drawdown (m)
Δt/t' = 0.18 m
by Theis recovery eqn
T = 3,953 m²/day

APPENDIX G

RoadNet Pty Ltd
ABN 89 070 034 347

Specialists in Traffic Engineering, Civil Design and Road Safety Audits

Queensland Office
8 Sixth Avenue,
PALM BEACH QLD 4221
p: 07 5525 7377
e: gold.coast@roadnet.net.au

New South Wales Office
Level 12, 1 Pacific Highway
NORTH SYDNEY NSW 2060
p: 02 9959 1080
e: sydney@roadnet.net.au
www.roadnet.net.au

Reference: 15006P/SGM

19 August 2015

SLR Consulting Australia Pty Ltd
2 Lincoln Street
LANE COVE NSW 2066

Attention: Eryn Bath, Principal – Environmental Management, Planning & Approvals

Re: EUROLEY POULTRY PRODUCTION COMPLEX (SSD 6882) – RESPONSE TO SUBMISSIONS ON TRAFFIC AND ROAD DESIGN-RELATED MATTERS

Dear Eryn,

I refer to your email dated 11 August 2015 requesting RoadNet's assistance to prepare a Response to Submissions on traffic and road design-related matters arising out of the recent public exhibition of the Euroley Poultry Production Complex development proposal (SSD 6882).

Specifically, RoadNet has been requested to provide a response to the following items:

- Traffic issues raised in Item 7 of Attachment 1 of the Department of Planning and Environment's (DP&E's) Response to Submissions letter addressed to the applicant (ProTen) and dated 24 July 2015.
- Traffic and road design issues raised in a confidential letter dated 26 June 2015 submitted to DP&E from a member of the public which was redacted by DP&E prior to its publication.

The following sections address the relevant items from each of those documents.

1. DP&E traffic-related issues

The traffic-related issues raised by DP&E in their letter dated 24 July 2015 are reproduced below as separate points in italics, with RoadNet's response to each issue provided beneath these for direct comparison.

a) Provide details of the basis and source(s) of traffic data used in the Traffic Impact Assessment (TIA)

Details of the existing (background) traffic volumes used by RoadNet in the assessment of the proposed development were documented in Section 2.4 of the TIA report prepared to accompany the development application (DA) and Environmental Impact Statement (EIS). In summary, hourly data was provided by Roads and Maritime Services (RMS) from an Infra-Red Traffic Logger (TIRTL) located just east of the proposed development on the Sturt Highway for the period 1 January 2011 to 9 June 2012. A separate manual traffic count was also conducted by RoadNet on the Sturt Highway at the location of the proposed access on Friday 25 July 2014. This data was analysed and compared to provide a suitable baseline (i.e. without development) scenario against which the impacts of the additional traffic generated by the proposed development could be assessed.

The traffic generation associated with the proposed development was calculated and provided by ProTen from first principles based on their extensive experience in the poultry industry and knowledge gained from the operation of other similar poultry production facilities. ProTen currently owns and operates eight poultry production complexes within Australia, including seven in NSW near Griffith and Tamworth and one in Western Australia near Serpentine. Cumulatively, these complexes comprise 172 poultry sheds and have an annual capacity of close to 42 million birds.

The traffic generation volumes for the Euroley Poultry Production Complex were provided by identifying all of the key activities that arise during a typical 9 week production cycle and calculating the number of traffic movements (trips) required to complete each activity based on the type of vehicle to be used (and hence its capacity) and the number of birds or amount of product (bedding material, feed, fuel, gas, shed litter material, refuse, etc) that needs to be transported during each phase of the operation. The volume of traffic generated during each production cycle is then extrapolated to annual figures for each activity based on approximately 5.7 production cycles per year. Full details of the operational traffic generation volumes used in the assessment are provided in Section 3.3 of the TIA report.

It is important to recognise that the method used to assess the traffic generation is not only comprehensive, but also necessary in the absence of any specific data being available for this type of development in the *2002 RMS Guide to Traffic Generating Developments* and its supplements. The same assessment methodology has previously been used successfully for other developments in the region, including Rothdene Poultry Production Complex, which ProTen has been operating since 2012, and Jeanella Poultry Production Complex, which ProTen has been operating since 2013.

b) *Provide additional detail on the potential impacts and potential road treatment for the intersection upgrades for the existing driveway to Lot 30 DP 7500876. Management measures for potential traffic impacts on the driveway during construction and operation are required.*

A new intersection between the Sturt Highway and the access driveway to the proposed development is proposed on the southern side of the Sturt Highway opposite the existing access driveway to Lot 30 DP 7500876 (Lot 30). In accordance with *Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections*, the new intersection requires a BAL treatment to be provided for westbound traffic turning left into the proposed development's access driveway and a BAR treatment for eastbound traffic to pass a vehicle waiting to turn right into the driveway.

The proposed intersection will be designed and constructed to Austroads standards and will need to be approved by RMS. The proposed location of the intersection in relation to the existing access to Lot 30 has already been discussed with RMS on site and agreed to in-principle. The design will include any modifications to the existing access driveway to Lot 30 that are required to accommodate the wider sealed shoulder on the northern side of the Sturt Highway associated with the BAR treatment for the access driveway to the proposed development.

The existing driveway serving Lot 30 does not currently include any turn bays or widening on the Sturt Highway approaches and takes the form of an unsealed road up to the edge of seal on the Sturt Highway. These features will not change as a result of the proposed development and the existing access will be retained at its existing location along the Sturt Highway. It will still be able to service the same types and sizes of vehicles that it currently accommodates. The only change will be that the existing access driveway will need to be upgraded, as part of the works for the proposed development, to tie into the more northerly edge of seal arising from the wider sealed shoulder. It is noted that this wider sealed shoulder will also be beneficial for traffic turning left into the existing access driveway.

The new intersection will retain the lane widths currently provided for through traffic on the Sturt Highway in each direction commensurate with its designation as both a B-Double Route and an Approved Road Train Route. The intersection will also be designed to allow vehicles up to the size of B-Doubles to turn in and out of the proposed access driveway simultaneously without impacting on the safety of other road users.

A Construction Traffic Management Plan and associated Traffic Control Plan satisfying the requirements of AS1742.3 will be developed prior to undertaking works on the Sturt Highway, which will

set out in detail the requirements to manage any impacts on existing road users during the construction of the new intersection. Short term shoulder and lane closures may be required at times. This will be undertaken in accordance with the appropriate traffic control guidelines and by approved traffic control contractors. The impact of this traffic control, in terms of delays and queuing, is expected to be minimal due to the relatively low existing traffic volumes on this section of the Sturt Highway as detailed in the TIA. Importantly, access to Lot 30 will be maintained at all times to minimise any adverse impacts to the affected landowner. For the scale of works required at the intersection it is envisaged that only a couple of weeks would be required to complete the construction activities, weather permitting. These works would be completed prior to undertaking substantial construction activities within the proposed development site, thereby ensuring that a safe intersection layout is available to accommodate the traffic movements generated during construction of the proposed development. Further, an Operational Environmental Management Plan will be developed prior to the site becoming operational which will include details of any site-specific requirements to manage and mitigate the potential environmental impacts of the proposed poultry development over the life of operation, including any traffic-related requirements.

The volume of traffic generated by the proposed development once fully operational will average 96 trips per day (including both heavy and light traffic), with an estimated 20 trips in the AM peak hour and 20 trips in the PM peak hour. This level of traffic is not expected to cause any significant impacts to other road users (including traffic entering/exiting Lot 30) in terms of road safety or operation, provided the recommendations included in the TIA are implemented and the RMS' recommended conditions of consent are implemented (see RMS submission dated 26 June 2015).

c) *Provide an estimate of traffic volumes during construction and potential construction traffic routes.*

The construction period for the project is expected to be approximately 18 months. An estimate of the traffic volumes generated during the construction period was previously provided in the EIS and is reproduced below.

Estimated Construction Traffic Volumes

	Daily (two way trips)	Weekly (two way trips)
Light Vehicles		
ProTen Staff	3 (6)	15 (30)
Tradespeople	15 (30)	75 (150)
Sub-total light vehicles	**18 (36)**	**90 (180)**
Heavy Vehicles		
Tradespeople – trucks	-	3 (6)
Construction material delivery	-	3 (6)
Equipment delivery	-	2 (4)
Roading material	12 (24)	60 (120)
Concrete materials	2 (4)	10 (20)
Other	2 (4)	10 (20)
Sub-total heavy vehicles	**16 (32)**	**88 (176)**
Total	**34 (68)**	**178 (356)**

The estimates are based on all construction activities being undertaken during standard daytime construction hours, which in accordance with the NSW Industrial Noise Policy (DECC, 2009) are:

- Monday to Friday - 7.00 am to 6.00 pm;
- Saturday - 8.00 am to 1.00 pm; and
- No construction work on Sunday and public holidays.

The estimates allow for heavy vehicle movements associated with the delivery of materials and equipment to the site as well as light vehicle movements associated with construction employee trips. It is proposed that the concrete required for construction of the concrete slab for each poultry shed will be batch-mixed on site, thereby substantially reducing the number of heavy vehicle movements that might otherwise arise.

The estimated daily construction traffic volumes are low and not expected to impact on the operation or safety of the external road network.

The majority of the construction trips are expected to have an origin/destination from/to Griffith in the west and Narrandera in the east, and will follow the Sturt Highway to the site. Volumes along this route are low as discussed in the TIA, and the highway alignment has the capacity to accommodate the anticipated construction traffic.

d) The sight line diagram at Appendix B of the TIA should be provided at A3 size for legibility.

The sight line diagram at Appendix B of the TIA is reproduced at A3 size in Attachment A to this letter, as requested.

2. Public Submission dated 26 June 2015

The issues raised in this public submission relate to the existing access driveway located on the northern side of the Sturt Highway opposite the new access driveway proposed to service the Euroley Poultry Production Complex development. The key traffic and road design-related issues raised in this submission can be broadly summarised as follows:

- Ability of the proposed intersection design to accommodate road train manoeuvres at the intersection
- Ability of the proposed intersection design to cater for the additional drainage and runoff requirements created by the larger road surface area
- Impacts of road works during construction phase on operation of nearby properties/businesses
- Proposed biosecurity measures, ensuring that weeds do not enter nearby properties via drainage runoff at the intersection
- Proposed erosion control measures
- Ability of the new intersection to manage vehicles entering from both access roads north and south of the Sturt Highway, and associated impacts on road safety for the driving public (i.e. general traffic)
- Visibility of the intersection due to its presence in a depression and occurrence of fog

The issues raised in relation to biosecurity and erosion control measures are to be addressed directly by SLR Consulting Australia Pty Ltd in their overarching Response to Submissions document (of which this letter will form an input) and are not specifically addressed here.

Each of the other issues is addressed below under the relevant headings.

e) Ability of the proposed intersection design to accommodate road train manoeuvres at the intersection

As advised in the TIA, the proposed intersection layout will retain the lane widths currently provided in each direction along the Sturt Highway for through traffic commensurate with its designation as both a B-Double Route and an Approved Road Train Route. The intersection will also be designed to allow vehicles up to the size of B-Doubles to turn in and out of the proposed access driveway simultaneously without impacting on the safety of other road users.

The design features of the existing access driveway for Lot 30 will also be retained as part of any modifications required to accommodate the new intersection layout, such that the existing driveway will continue to be able to service the same types and sizes of vehicles that it currently accommodates.

f) *Ability of the proposed intersection design to cater for the additional drainage and runoff requirements created by the larger road surface area*

The proposed intersection will be designed and constructed to Austroads standards and will need to be approved by RMS. The need to cater for additional drainage and runoff requirements will be considered as part of the design process and appropriate provisions will be incorporated in to the design as required.

One of the RMS' recommended conditions of consent is "*The intersection of the proposed access road with the Sturt Highway is to be designed, constructed and maintained to prevent water from proceeding onto, or ponding within, the carriageway of the highway…"* The intersection design will comply with this requirement.

g) *Impacts of road works during construction phase on operation of nearby properties/businesses*

This issue has been previously addressed at item b).

h) *Ability of the new intersection to manage vehicles entering from both access roads north and south of the Sturt Highway, and associated impacts on road safety for the driving public (i.e. general traffic)*

This issue has also been discussed to some extent previously at item b). It is important to recognize that the intersection between the access driveways and the Sturt Highway is not a cross-roads intersection. The two 'side-roads' are private access driveways serving independent sites, with no cross-movements between the two access roads needing to be catered for. The intersection design therefore only needs to cater for turning movements between each of the access roads and the Sturt Highway.

For traffic exiting from either of the access driveways, normal road rules will apply in the event that traffic arrives at the same time on each of the approaches (e.g. right turning traffic will give way to left turning traffic from the opposing driveway). For unopposed movements (i.e. left turns only or right turns only from each access driveway), sufficient width will be provided at the mouth of each access driveway to enable these movements to occur simultaneously when required for the applicable design vehicle(s).

For traffic entering the access driveways from the Sturt Highway, in addition to the BAL and BAR treatments proposed as part of the new access driveway, the intersection will be designed to allow for right turning movements to occur simultaneously from either approach of the Sturt Highway should the need arise. Turn path assessments will be undertaken for the proposed intersection design to ensure that the required turn paths can be accommodated satisfactorily.

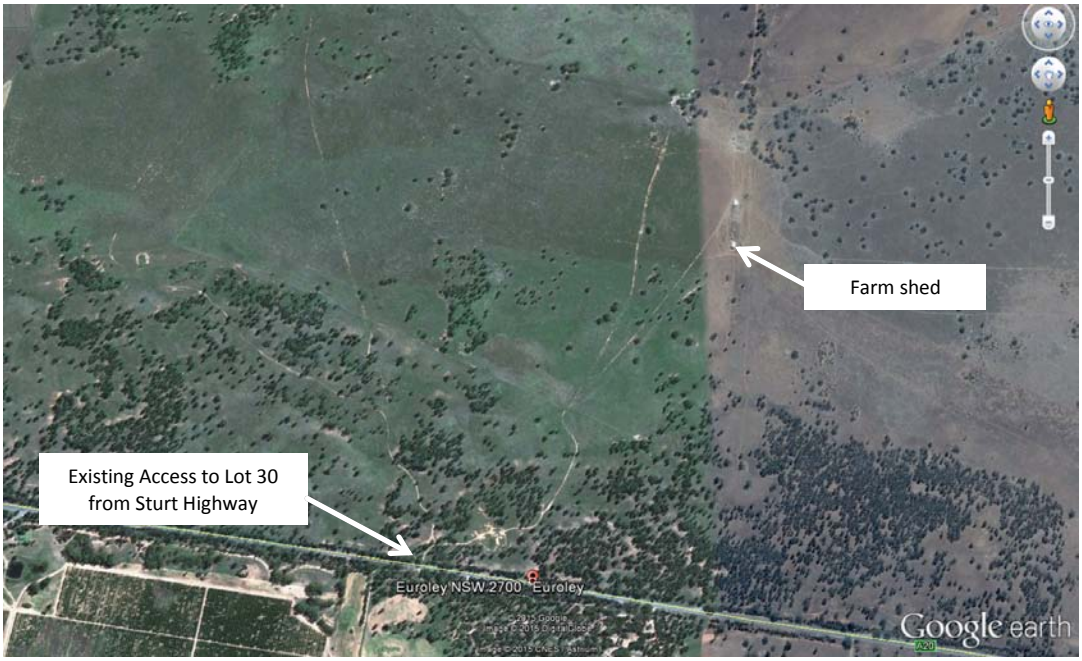
Traffic turning right from the Sturt Highway into the existing access driveway will need to give way to opposing eastbound traffic as it does now. On some occasions this opposing traffic may be using the BAR widening on the northern side of the carriageway, but the same requirement will apply. Westbound through traffic following a right-turn vehicle will be momentarily delayed on these occasions in the same way that it is now.

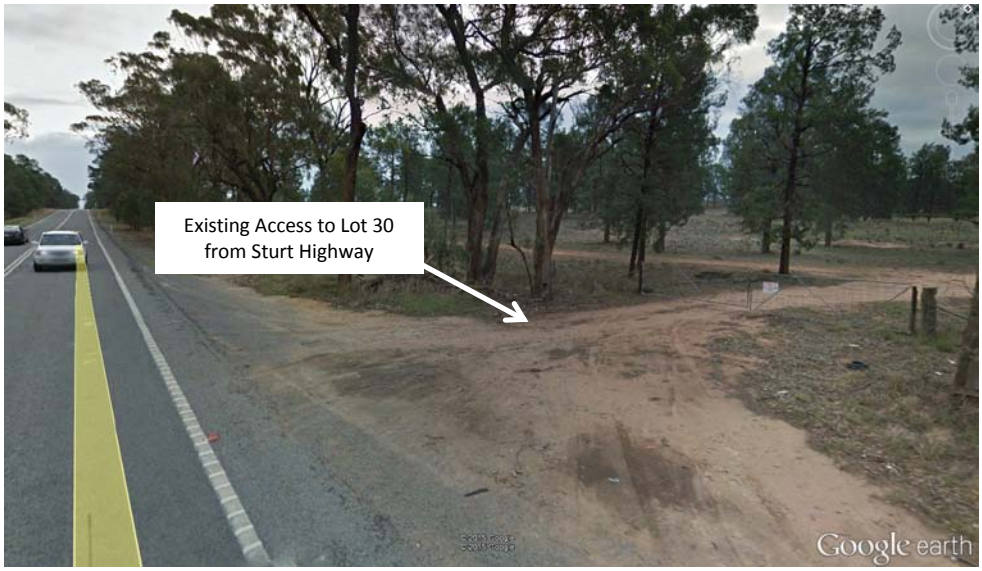
Traffic turning left from the Sturt Highway into the existing access to Lot 30 will most of the time benefit from being able to use the wider sealed shoulder, constructed as part of the BAR treatment, to decelerate out of the path of eastbound through traffic. On those occasions when the BAR treatment is being used by through traffic, the situation will be similar to what it is at present.

The proposed development once fully operational will generate, on average, 96 trips per day (including both heavy and light traffic), with an estimated 20 trips in the AM peak hour and 20 trips in the PM peak hour. This volume of traffic is not expected to have any significant impact on other traffic currently using the Sturt Highway in terms of road safety or operation. This reflects the very low traffic volumes that currently exist along the Sturt Highway (typically less than 200 veh/day) which will not present any problems to traffic wishing to find a suitable gap to enter the traffic stream from the proposed access. It also reflects the good standard of existing road geometry provided on the Sturt Highway at the

proposed access location which exceeds the visibility requirements, and the additional road geometry improvements proposed as part of the development proposal (i.e. BAR and BAL treatments) which will enable traffic to safely enter the development site from the Sturt Highway.

No traffic was observed to use the existing access driveway to Lot 30 at the time of conducting the site inspection (i.e. 25 July 2014) to prepare the TIA for the proposed development. However, the public submission states that "This track is used daily and depending on the time of year may carry multiple traffic journeys". While specific traffic data is not available, it does not appear to be a high traffic generator and hence no significant operational or safety impacts due to existing traffic on the Sturt Highway or additional traffic generated by the proposal are anticipated. There does not appear to be any dwellings that use this access, with only a farm shed evident along the internal access roads within Lot 30 from aerial imagery (Google Earth).





i) Visibility of the intersection due to its presence in a depression and occurrence of fog

The proposed access driveway to the new development has been optimally located between the vertical crest curves that exist on each of the Sturt Highway approaches in order to maximize the available sight distance. As detailed in the TIA and illustrated in the sight line diagram included at Attachment A, the minimum requirements for Stopping Sight Distance (SSD) and Safe Intersection Sight Distance (SISD) at the proposed intersection location based on a design speed of 110km/h and the maximum reaction time of 2.5s are exceeded.

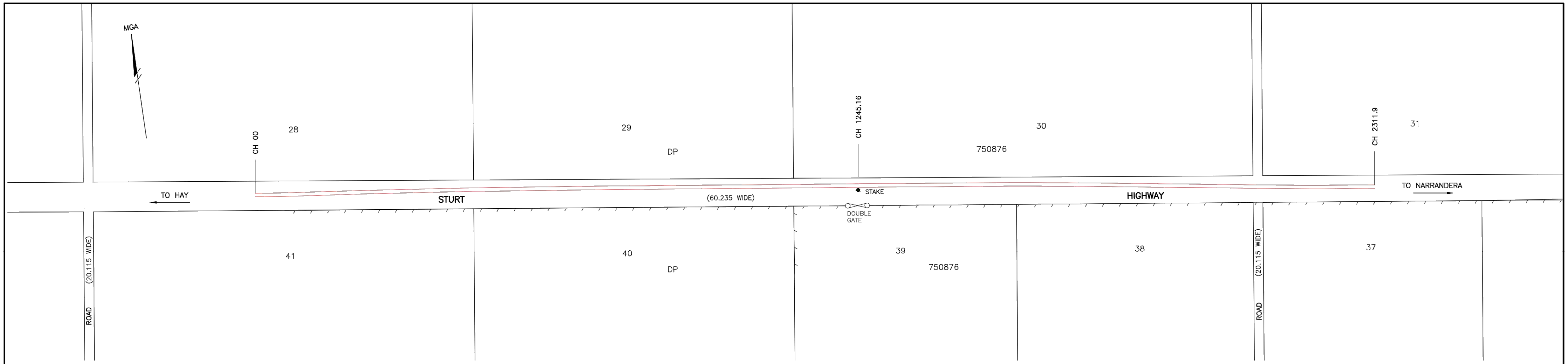
With respect to the occurrence of fog, there are no specific design requirements to be addressed, however, motorists are generally expected to modify their driving behaviour to suit the conditions and this would equally apply at the subject location.

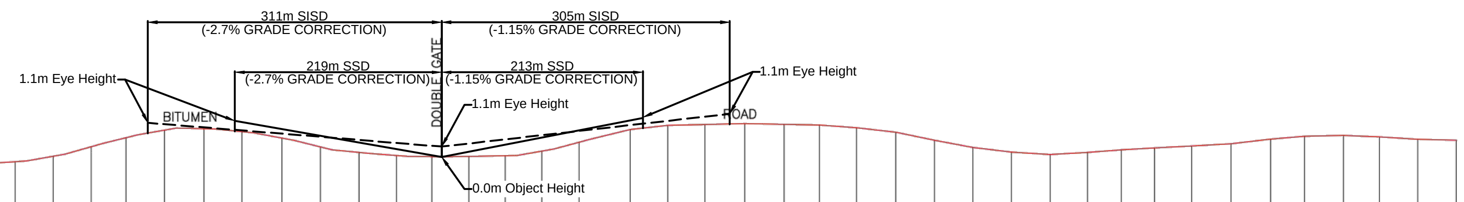
Should you require any further details please contact Steve Manton (Principal Traffic Engineer) at RoadNet on 07 5525 7377.

Yours faithfully,

Craig Frazer
RoadNet Office Manager

ATTACHMENT A – SIGHT LINE DIAGRAM





Datum R.L. 121.00

EXISTING NORTH EDGE	139.69	140.50	140.54	139.81	138.88	138.09	137.50	137.26	137.36	137.18	136.81	136.36
Chainage	0.00	44.07	85.15	127.01	167.51	207.79	248.55	289.00	329.94	370.85	408.97	448.16

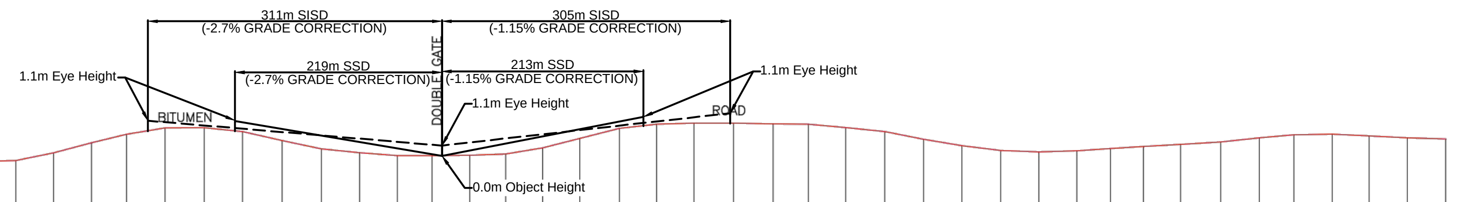
EXISTING NORTH EDGE	135.98	135.51	135.30	135.14	135.11	135.17	135.15	135.09	135.38	136.09	137.22	138.13
Chainage	488.25	523.65	562.32	599.89	638.83	682.15	722.92	758.48	798.93	839.19	879.36	916.30

EXISTING NORTH EDGE	138.84	138.73	138.32	137.55	136.54	136.15	135.84	135.81	135.86	135.94	136.63	137.68
Chainage	957.13	998.81	1039.07	1081.17	1122.10	1162.99	1202.50	1240.09	1279.27	1317.67	1356.41	1395.77

EXISTING NORTH EDGE	138.69	139.13	139.21	139.31	139.22	139.15	138.87	138.39	137.56	136.79	136.31	136.04
Chainage	1437.52	1477.20	1516.57	1558.79	1600.32	1637.79	1677.08	1718.66	1759.44	1800.11	1840.92	1881.88

EXISTING NORTH EDGE	136.26	136.54	136.74	136.94	137.18	137.67	137.98	138.07	137.91	137.65	137.55
Chainage	1921.50	1957.19	1992.27	2031.51	2073.38	2115.39	2151.33	2192.42	2230.52	2271.02	2311.90

Scale Horizontal 1:4000 Vertical 1:400



Datum R.L. 121.00

EXISTING SOUTH EDGE	139.79	140.52	140.57	139.89	139.01	138.21	137.56	137.27	137.29	137.16	136.85	136.40
Chainage	0.00	39.09	85.81	127.22	168.05	208.25	248.93	289.52	330.26	371.24	409.81	448.21

EXISTING SOUTH EDGE	135.97	135.56	135.36	135.22	135.18	135.24	135.25	135.19	135.31	136.12	137.19	138.08
Chainage	488.37	523.56	562.50	600.10	639.34	681.79	722.94	759.15	799.35	839.20	879.47	916.38

EXISTING SOUTH EDGE	138.75	138.78	138.36	137.42	136.53	136.12	135.83	135.83	135.86	135.99	136.63	137.63
Chainage	957.17	998.74	1039.27	1081.10	1122.64	1162.99	1202.93	1239.72	1279.49	1317.53	1356.51	1395.80

EXISTING SOUTH EDGE	138.71	139.14	139.26	139.25	139.18	139.15	138.78	138.36	137.55	136.87	136.37	136.21
Chainage	1437.74	1477.01	1516.63	1558.61	1600.31	1637.55	1677.27	1718.49	1759.58	1799.99	1841.20	1881.47

EXISTING SOUTH EDGE	136.33	136.56	136.79	137.01	137.27	137.71	138.03	138.09	137.91	137.70	137.58
Chainage	1921.79	1957.14	1992.20	2031.51	2073.74	2114.78	2151.30	2191.83	2230.78	2271.18	2311.95

Scale Horizontal 1:4000 Vertical 1:400

DATE	No.	ISSUE	AUTHORISED
05/02/2015	A	ISSUED TO CLIENT	GP

DRAWN: JM CHECKED: GP

COMPUTER FILES: AUTOCAD: 12414a15_longsect.dwg

COMMENTS:
DATUM IS A.H.D. ORIGIN IS SSM 4183 RL 129.84
ORIENTATION IS MGA

phl surveyors
POLKINGHORNE HARRISON LONGHURST
115 Yambil Street, Griffith NSW 2680 Ph (02) 6964 3192
13 Gibraltar Street, Bungendore NSW 2621 Ph (02) 6238 0144
www.phlsurveyors.com.au

CLIENT: PROTEN

TITLE: 'EUROLEY' STURT HIGHWAY DETAIL PLAN AND LONG SECTION OF EDGE OF BITUMEN ROAD

DATE: 03/02/2015
FILE: PN 12414
SCALE: 1:4000
A1– 523461_(1A)
SHEET 1 OF 1

APPENDIX H

Pacific Environment Limited

Consulting • Technologies • Monitoring • Toxicology

1 September 2015

Eryn Bath
Principal - Environmental Management, Planning & Approvals
SLR Consulting Australia Pty Ltd
ebath@slrconsulting.com

Dear Eryn

RE: EPA Review of Euroley Odour and Dust Assessment.

I refer to the EPA review of the air quality assessment for the Euroley Poultry Production Complex ("the subject site").

The review highlighted a number of areas, which included

1. No information regarding emergency standby diesel generators
2. The use of worst case odour emissions including
    a. The adopted K factor
    b. The batch length modelled
    c. Batch staging
3. Modelled shed particulate emission rates were not provided
4. Sources of particulate matter were excluded from the assessment
5. The representativeness of the year 2010 was not demonstrated
6. Modelled meteorological input parameters were not presented for verification
7. The modelled meteorological data was not evaluated
8. Project odour criterion should be 5 ou
9. Assessment of cumulative particulate impacts was not performed in accordance with the Approved Methods
10. No feasible mitigation measures that could be implemented should odour impacts occur once operational have been provided
11. Proponent has not assessed the odour risk of their project

These points have been considered by Pacific Environment (PE) and responses have been provided below.

Pacific Environment Operations Pty Ltd
PO Box 3306, South Brisbane Qld 4101
Level 1, 59A Melbourne St, South Brisbane Qld 4101

(ASX: PEH) ABN: 86 127 101 642
www.pacific-environment.com
Ph: +61 7 3004 6400

1. No information provided regarding emergency standby diesel generators

Point 1 relates to the emergency standby generators at the site.

It is understood that there will be two 350 KVA (Prime Power 315kW) generators at each PPU, i.e. 10 in total. At each PPU, these will be at the front of the sheds opposite the swale drain between sheds 4 & 5 and 12 &13. There will also be two 150 KVA (Prime Power 119 kW) generators at each PPU i.e. 10 in total. These will be at the back of the sheds between sheds 4 & 5 and 12 & 13.

As detailed in Table 2, based on the information provided to us by Proten, the generators will comply with the relevant POEO (Clean Air) Regulations

Table 1: Generator parameters

Pollutant	Emission rate (mg/m^3)		POEO Regulation limit (mg/m^3)
	119 kW	315 kw	
NO_x	441	401	450
Solid particles	11	5	50

Based on experience at their other eight poultry production complexes within Australia (seven in NSW around the Griffith and Tamworth areas and one in Western Australia near Serpentine), ProTen has advised that the generators are typically only required a couple of days per year. They will be tested on a regular basis as per the manufacturer's recommendations.

Considering the size of the generators, the low level of usage and the location of the generators with regard to nearby sensitive locations it is not expected that the relevant air quality criteria (including NO_x) will be exceeded at nearby sensitive locations. In order to confirm this, a dispersion modelling exercise was completed using the AUSPLUME dispersion model to predict ground-level concentrations at the sensitive receivers. A meteorological file was extracted on from the CALMET file. These data were previously summarised in the meteorological summary in the original report.

The stack parameters of each of the generator types are provided in Table 2. For the purposes of the assessment it was conservatively assumed that 100% NO_x is converted to NO_2 and that the particulate matter are PM_{10}.

Table 2: Generator parameters

Parameter	Units	Generator	
		150 kVA	350kVa
Stack height	m	1.9	2.2
Stack diameter	m	0.121	0.16
Exit velocity	m/s	35.36	56.38
Exit Temperature	°C	467.8	479.0
CO	g/s	0.02	0.03
NOx[(a)]	g/s	0.18	0.46
Particulate Matter[(b)]	g/s	0.004	0.005

Notes:

(a) Assumed that 100% NO_x = NO_2
(b) Assumed equal to PM_{10}

It was assumed that all 20 generators were operating simultaneously and continuously. As shown in Table 3, the predicted concentrations at the nearby sensitive locations are all below the relevant assessment criterion.

Table 3: Predicted concentration's at sensitive receptors due to generators

Averaging period	CO		NO_2		PM_{10}	
	1-hour	*8-hour*	*1-hour*	*Annual*	*24-hour*	*Annual*
			Assessment criteria			
ID	*30 mg/m³*	*10 mg/m³*	*246 µg/m³*	*62 µg/m³*	*50 µg/m³*	*30 µg/m³*
R1	0.006	0.001	71.5	0.74	0.107	0.011
R2	0.007	0.002	80.1	0.83	0.174	0.013
R3	0.008	0.002	102.5	0.85	0.175	0.013
R4	0.009	0.002	105.2	1.07	0.215	0.016
R5	0.009	0.002	105.5	1.16	0.227	0.017
R6	0.006	0.002	66.7	1.37	0.144	0.020
R7	0.007	0.003	89.6	1.52	0.226	0.023
R8	0.005	0.002	66.3	0.78	0.126	0.011
R9	0.006	0.001	75.1	0.86	0.097	0.012
R10	0.004	0.001	51.2	0.76	0.112	0.011
R11	0.004	0.001	49.8	0.65	0.093	0.009

The predicted concentrations of CO and PM_{10} are so low (ranging between 0.01% and 0.45% of the relevant criterion) that cumulative concentrations have not been considered.

As defined in the Approved Methods section 8.1.1, a Method 1, Level 1 approach has been taken for the NO_x emissions. It was assumed that 100% of NO_x is converted to NO_2, when in reality only a fraction will be. The closest OEH monitoring station that records NO_2 concentrations (and has publically available data for 1-hour averages) is Wollongong, located approximately 420km east of the site. Given the industrial/residential nature of the area, compared with the rural setting of the project, the NO_2 concentrations measured at Wollongong are considered to be conservative. As reported in the NSW NEPM Annual Review for 2010 (OEH, 2010), the maximum 12-hour average NO_2 concentration measured in 2010 was 106.8 µg/m³, giving a resultant maximum NO_2 concentration of 212.3 µg/m³ at R5, which is below the assessment criterion of 246 µg/m³.

Given the conservative approach taken in the assessment, it is concluded that no air quality criteria will be exceeded as a result of the operation of the generators.

2. Worst Case Emissions

Emissions

The EPA review highlighted that worst case emissions were not adopted and that batch staging was not investigated.

The emissions used for the project were based on the following assumptions

1. A K factor of 2.2 was appropriate
2. The minimum ventilation rates were based on birds placed, not birds present.
3. The change to finisher feed didn't reduce the emissions after week 5.

The method of Ormerod & Holmes (2005) was the basis for the modelling. The method is based on odour emission rate data collected at a number of meat chicken farms over time. The farms included both poorly run farms and well run farms, and based on this Ormerod & Holmes (2005) developed what is known as the "K factor" method. The method relies on the use of a "K factor" to describe the relative emission potential from the farm. The higher the K factor, the higher the emissions potential.

The method has been in use since prior to 2005 and was recently adopted as the base model for use in Queensland as detailed in DAFF (2012). It has been used in regulatory matters in New South Wales, Victoria, South Australia and Queensland.

The use of a K factor of 2 was historically based on test data collected at a number of farms in Queensland and New South Wales over time. Whilst older, poorly managed farms typically had K factors of above 2, experience showed that all new farms typically had a K factor of 2 or less. Certainly the majority of chicken farms approved in Queensland in the last 10 years were modelled using a K factor of 2, and have successfully been constructed and have operated without complaint. This is a reflection of not only improvements in the industry, but that the better managed the farm, the less risk of elevated odour emissions.

However, even though a K factor of 2 was considered appropriate, with the adoption of Queensland Guidelines Meat Chicken Farms a 10% increase in K factor was used to incorporate the potential for variation in emissions. Work was performed using randomised emission rates which showed that a 10% increase in K factor would encompass the majority of potential emission variation on farm. This did not mean that farms were expected to have a K factor of 2.2, but that the maximum K factor they were assessed against was 2.2. Moreover, the K factor of 2.2 was typically applied to new farms where no history of compliance was available. For example, most existing farms we have sampled at have had a K factor below 2.

In the year prior to the publication of the DAFF guidelines we reviewed the results of 10 samples collected at a ProTen farm near Tamworth in 2011by The Odour Unit. The first six samples (in three sheds) were collected in the week leading up to first pickup (days 27 and day 28) and the remaining samples were collected at day 41. These data are summarised in Figure 1 where the red line represents where a K factor of 2.2 would be. The average K factor for this period was k=1.5. Other data was mistakenly collected at day 55 but was discarded as sampling this late in

the batch produces unrealistic values due to the fact that the shed was nearly empty and had just been thinned.

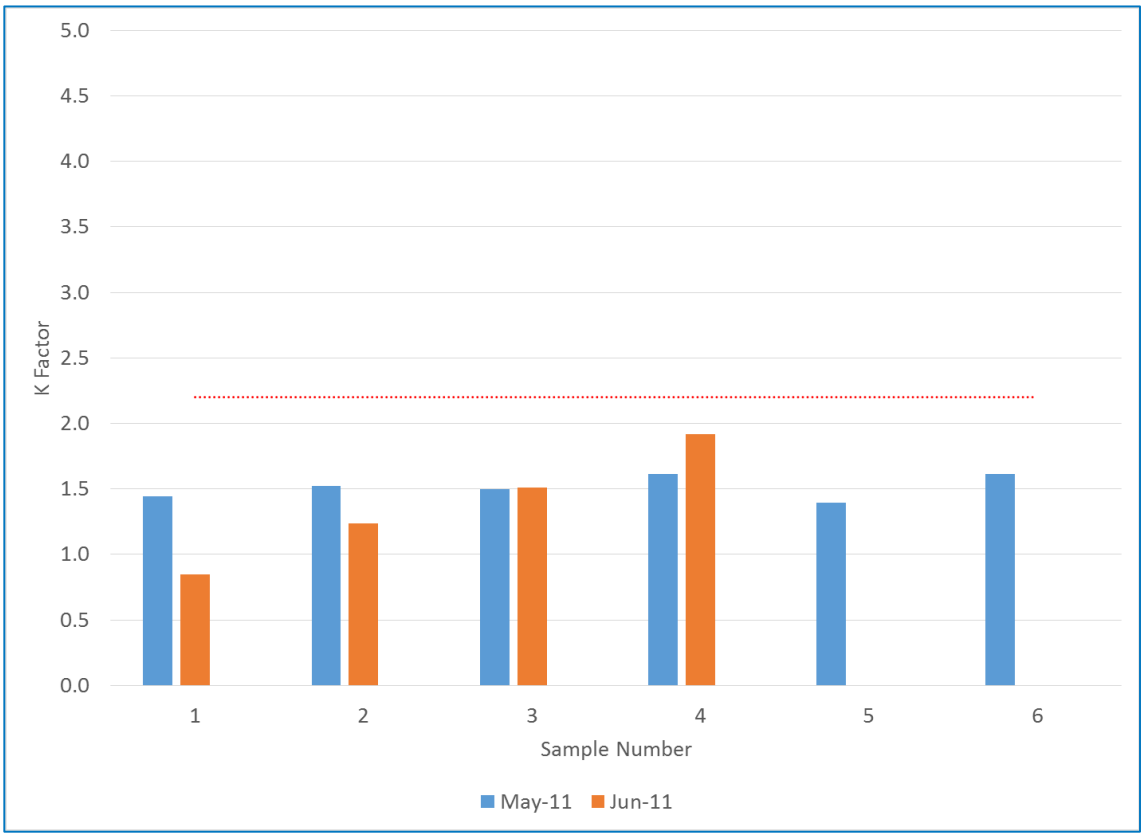


Figure 1: K factors - Proten Tamworth – May and June 2011

The data above is consistent with sample data held by PE for sites in Queensland and New South Wales collected between 2012 and the present for bird ages between 26 and 38 days, which are shown in Figure 2. The dotted red line shows a K factor of 2.2, and the blue dotted line is a trend line showing the trend in K factors over time which is downward. It is important to note that the highest K factor value shown in Figure 2 was one sample from two sets of paired samples collected at the same farm in different sheds. Given that the other three samples were much lower than the elevated sample, it is likely that the higher value is an artefact of the sampling and analysis method rather than an actual representation of the emissions at that point in time. Irrespective of this, the average K factor for this farm was below 2.

The average K factors by year are summarised below in Table 4. A K factor of 1.5 represents emissions one third lower than a K factor of 2.2.

Table 4: Average k factors over time

Year	Average K factor
2012	1.4
2013	1.3
2014	1.4
2015	1.1

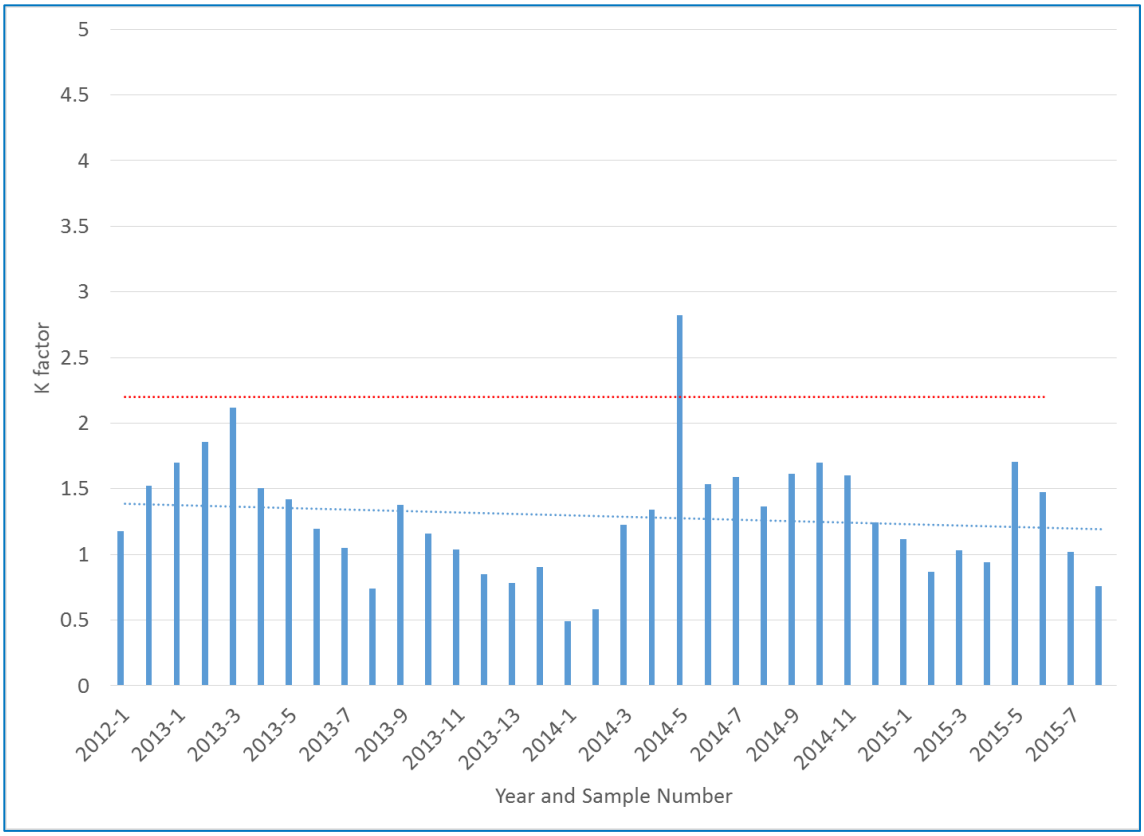


Figure 2: K factors – All meat chicken data 2012 to 2015

Overall, the emission rate data held by PE shows a downward trend in emissions, which means the K factor of 2.2 used is likely a worst case, rather than average emission rate value. It is critical to note that the industry, as a whole, has improved farm management over time, which has led to better managed litter, and lower odour emissions. It is our experience that the majority of modern farms comply with the best practice management requirements detailed in *Best Practice Management for Meat Chicken Production in New South Wales - Manual 2 – Meat Chicken Growing Management* (DPI, 2012b). As such the lower K factors are expected. And with the movement toward the RSPCA requirements, additional management measures which include rotary hoeing the litter during the batch (many farms use this irrespective of being RSPCA compliant or not) has led to even better on-site management, compared to 10 years ago when farms (with high K factors) were observed to not comply with current best practice.

As noted above, the EPA has requested a sensitivity analysis using K factors up to 3, however there is nothing in the data we hold to suggest that any modern farm will be represented by a K factor of 3. The data PE holds shows the industry on average (from paired samples) is currently around 1.5, with a long term (~10 year) maximum average of 2. To say the K factor will sit long term at 3 is unrealistic and would indicate that the farm was not being well managed in accordance with industry standards for environmental management and not operating as profitably as it should be. The emissions adopted by PE in the assessment of the project are considered conservative and further analysis of the K factor is not warranted.

Other factors which also need to be considered as part of the overall odour assessment are discussed below.

The emissions model uses a minimum ventilation rate to define the minimum emissions over a year. Minimum ventilation is the minimum amount of air required to keep the air quality in a chicken shed suitable for bird growth (i.e. minimising carbon monoxide build up overnight and during cool periods), and is also used to regulate temperature during winter as the bird mass can increase the temperature in the sheds.

It is our experience that odour impacts can occur at any point in time, but occur more frequently during calm (low wind speed) conditions. This is because dispersion during these conditions is poor, which can result in odour impacts.

The minimum ventilation rates used in the modelling are roughly a factor of two higher than the minimum ventilation rates detailed in *Poultry Housing Tips – Minimum Ventilation Rates* (University of Georgia, 2007) for both carbon dioxide. This combined with the fact that we calculated the minimum ventilation after week 5 based on birds placed, not birds present, means that for minimum ventilation conditions the emissions were overestimated, especially for emissions after first thinout, which are typically the highest in the batch.

A factor which has not been included is the use of finisher feed, which is typically introduced around day 337 of the batch. Finisher feed is a lower value feed ration given to the birds after peak density, which slows their growth down compared to the higher value feed earlier in the batch. This results in less waste and therefore lower emissions per bird towards the end of the batch. We have not accounted for finisher feed in the assessment.

Therefore, again, the emissions used are conservative.

Batch Length and Staging

Another factor raised in the EPA's review was batch length. We modelled a 52 day batch with a 10 day cleanout. EPA recommended that 56 day batch length be modelled with a 7 day cleanout. This requires clarification.

EPA correctly noted that we modelled a 52 day batch without assessing the batch staging. After our recent discussion with EPA we have modelled the farm three times, to assess the batch staging as requested by EPA. Proten have informed us that they expect a cleanout period of 8 days, the sheds the PPUs to be placed as follows:

- PPU1 – Birds placed first, on day 1
- PPU2 – Birds Placed on day 3

- PPU3 – Birds placed on day 5
- PPU4 – Birds placed on day 8
- PPU 5 – Birds placed on day 10

The above placements were modelled assuming starting on day 1, day 14 and day 28 of the year. The emission profiles are shown in Figure 3 to Figure 5.

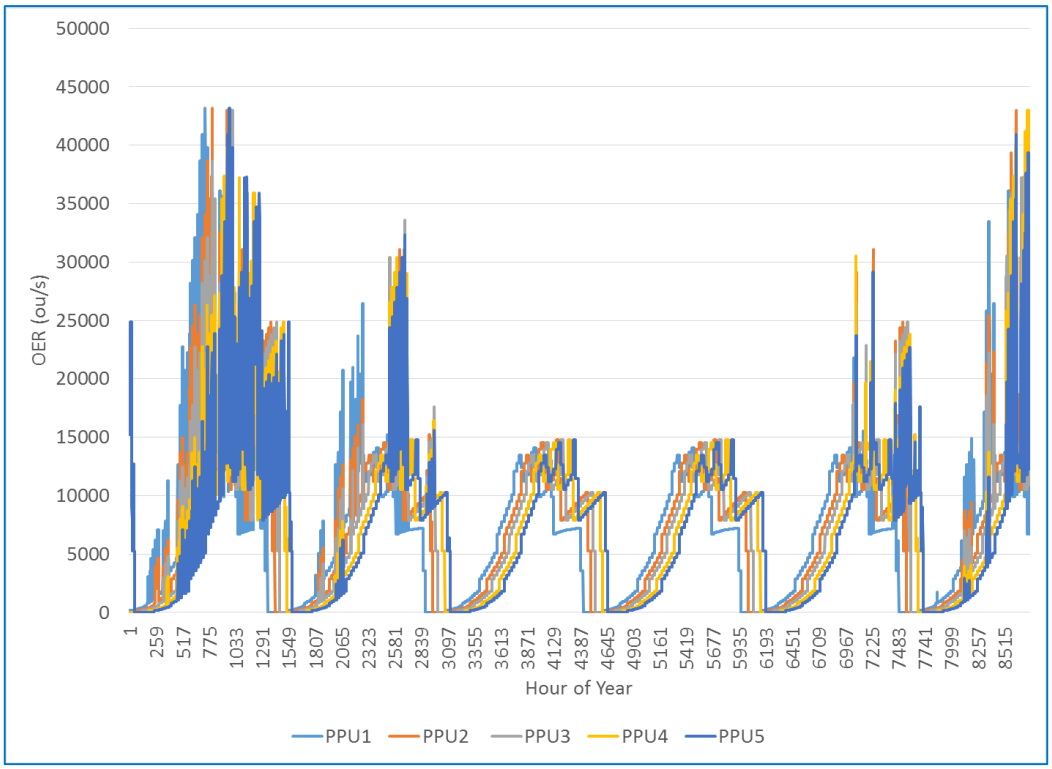


Figure 3: Emission Profile – Run 1

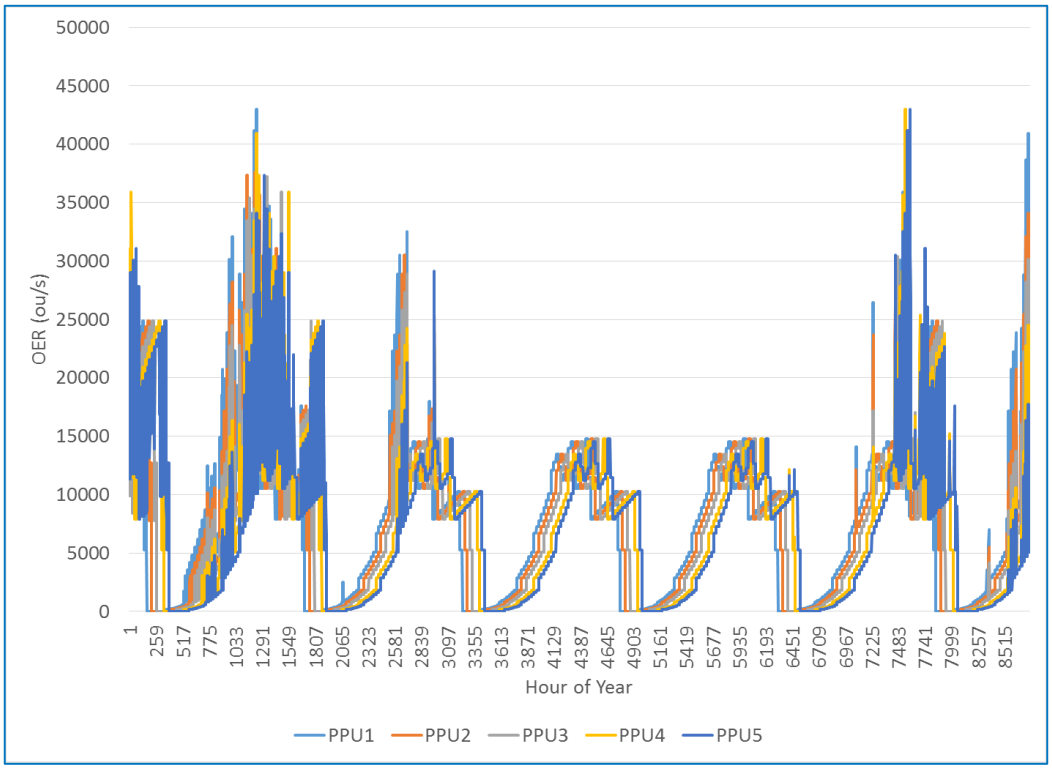


Figure 4: Emission Profile – Run 2

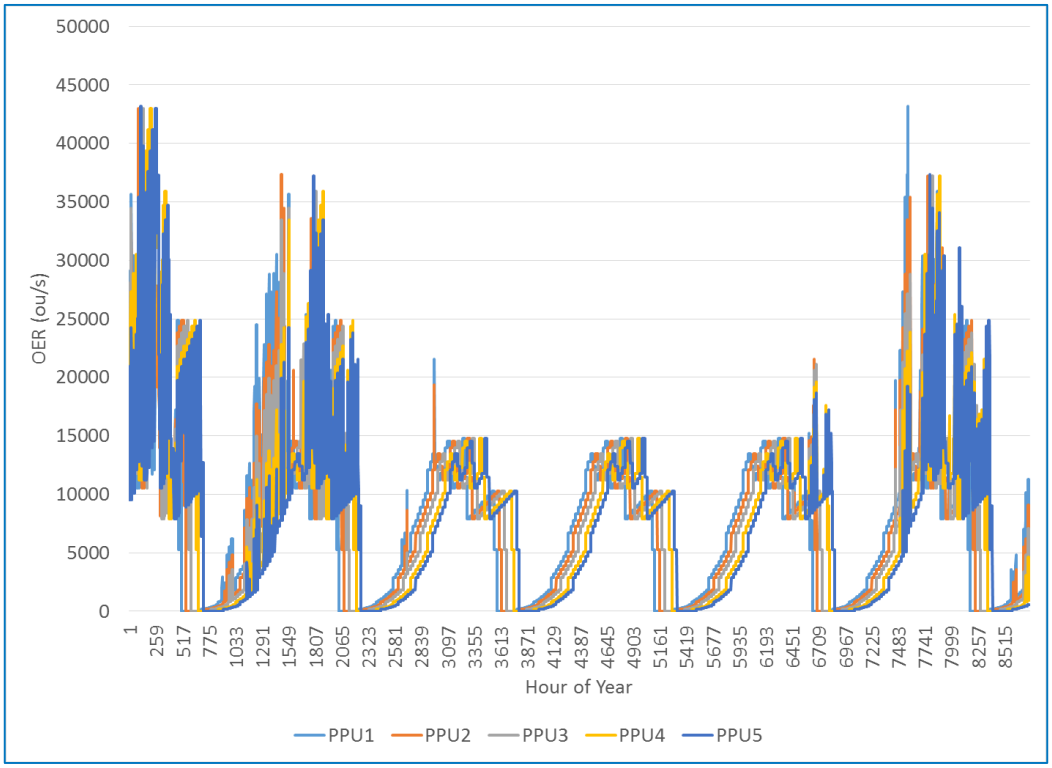


Figure 5: Emission Profile – Run 3

Rerunning the site for odour with gridded receptors for the three scenarios would take an extended period. To reduce model run time a selected number of discrete receptors were modelled. These are based on the original receptors shown in Figure 6 which shows the model results from the original modelling assessment. We selected the receptors as being both the closest to the site (Receptors 5-7) or representative of areas not covered by the aforementioned receptors (Receptors 8 and 11). Figure 7 shows the receptors modelled for this work.

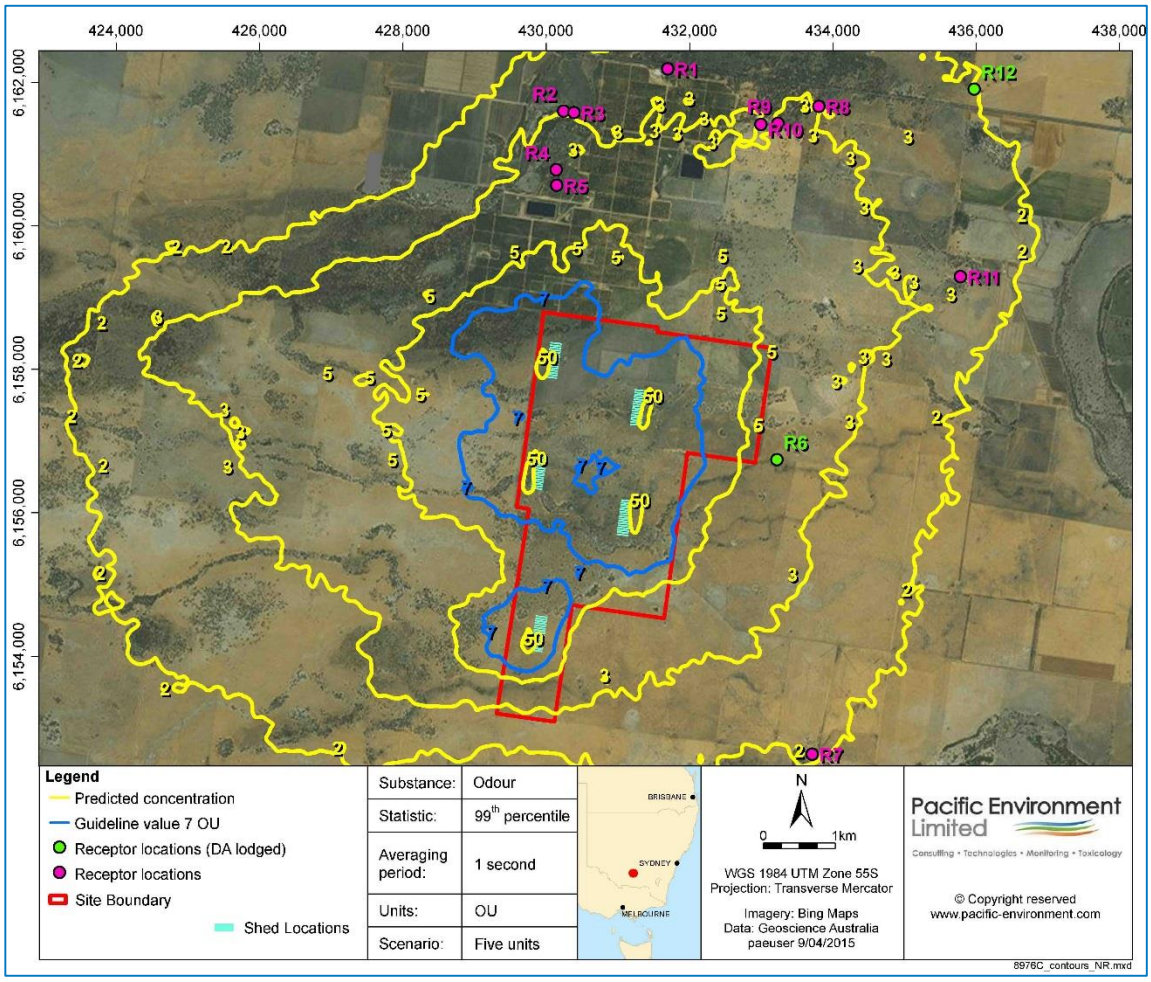


Figure 6: $C_{99\ 1\ sec}$ Contours - Original "All in" Model Results

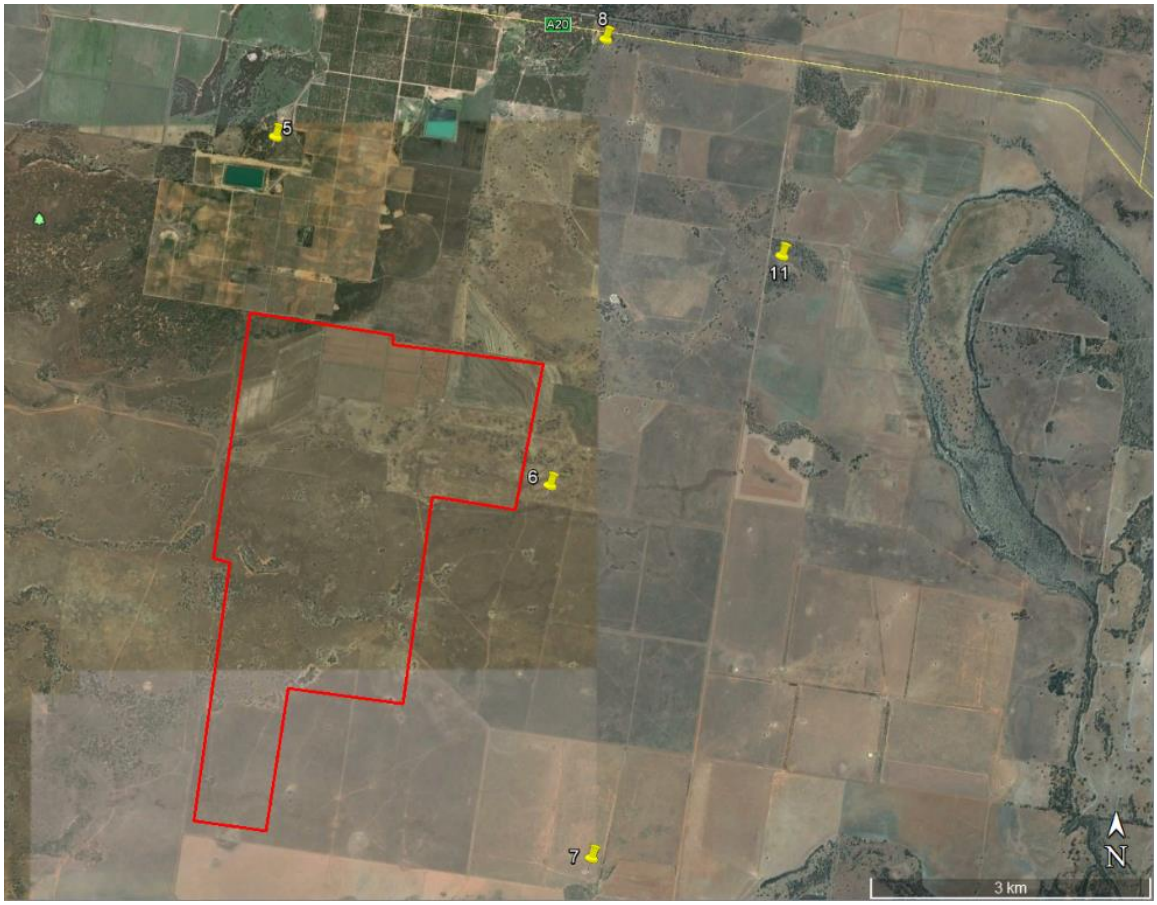


Figure 7: Modelled Receptors

The results are summarised by receptor below in Table 5 for the receptors identified above for the original modelled as well as Runs 1 to 3. As noted above, the previous modelling (Figure 6) showed that receptors 5 and 6 were most critical. The table clearly shows that when batch staging is included with a K factor of 2.2, the only receptors near to the odour criterion (but still complying) were receptors 5 and 6. We note that these receptors complied with the 5 ou criterion even with the K factor of 2.2. A lower K factor would see lower predicted odour concentrations. For example a K factor of 2 would see the maximum predicted concentrations being 4.1 ou at receptor 5 and 4.2 ou at receptor 6.

Table 5: Receptor Concentrations ($C_{99\ 1\ sec}$)

Original Receptor Number	Original Run	Run 1	Run 2	Run 3	Maximum of Run 1 to 3	Average	Compliance
5	4.7	4.5	3.6	3.9	4.5	4.0	Yes
6	4.4	4.1	3.8	4.6	4.6	4.1	Yes
7	2.1	2.4	2.3	2.3	2.4	2.3	Yes
8	3.8	2.4	2.0	3.2	3.2	2.5	Yes
11	2.8	2.2	2.2	2.8	2.8	2.4	Yes

3. Modelled PM_{10} Emission Rate

The modelled PM_{10} emissions rates on a per shed basis are shown below in Figure 8. Dust emissions from modern farms are typically low as shown in the latest measurement at existing farms. By adopting a conservative dust emission profile it has been found, provided the odour buffer is suitable (which it is in this case), that dust impacts will not occur even with the conservative emissions. Therefore we do not scale the dust emissions based on farm management.

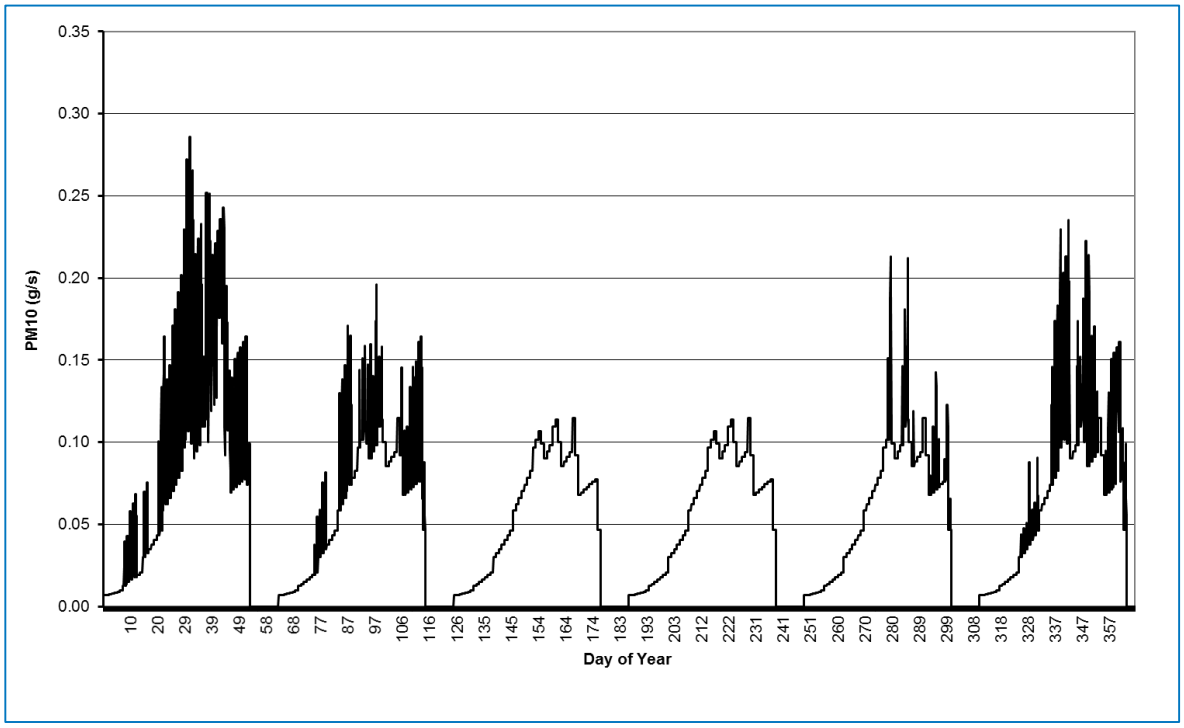


Figure 8: Modelled PM_{10} Emissions

4. Sources of particulate matter were excluded from the assessment

While we did consider the potential for wheel generated dust from the internal roads in the air quality study it was concluded that the potential for emissions will be low given the constructed nature of the roads and subsequent lower silt loading (compared to using unformed tracks). The internal roads will be 7 metres wide and will be constructed with a compacted clay base to 98 percent and 200 mm of road base (120 mm of 80 mm "Jawbone" rock and 80 mm of 40 mm "DGS" gravel on top).

We have assessed multiple poultry operations over time and have found internal roadways are not a significant source of dust emissions. This is because the roads can be constructed in a way to minimise dust and can also be managed to minimise emissions. Such management may include limiting vehicle speeds and using water trucks to reduce dust during dusty periods. The emissions from roads will be managed by the CEMP and OEMP. Moreover the distance from the roads to nearby sensitive location is suitably significant that dust impacts from the internal roads would be unlikely to occur.

Should the concern be related to the site entrance, the proposed access road will be bitumen sealed for a distance of 50 metres from the carriageway of the Sturt Highway.

Therefore modelling of dust emissions from the roads is not warranted and was not performed.

5. The representativeness of the year 2010 was not demonstrated

The year 2010 was evaluated prior to modelling by Dr Li Fitzmaurice[1] a meteorologist in our Sydney office. To evaluate the data we compared the long term averages up to 2015 (based on available data) against a number of years. By doing so we found that 2010 correlated well with the long term averages with regard to minimum and maximum temperatures, 9am wind speed and humidity. A check of the weather data for the area also confirmed that the average wind speed for 2010 of 3.4 m/s was consistent with other recent years, and that the frequency of calm winds, which are critical with regard to odour, at 12.7% was consistent with other years, albeit slightly higher (~1%) than 2007-2009. Higher occurrence of calms would lead to poorer dispersion and potentially higher odour impacts. The year also had a marginally higher percentage of winds from the south-west than other years, which would have seen the plume extending more towards the nearest receptors to the north-east.

A summary of the data for the year 2010 against long term averages is shown graphically below in Figure 9 to Figure 13. In the figures, the red line is the data for the year 2010.

[1] Dr Fitzmaurice is a Meteorologist with over 10 years' experience and holds a Bachelors, Masters and PhD all of which have focussed on Atmospheric Physics and Meteorology.

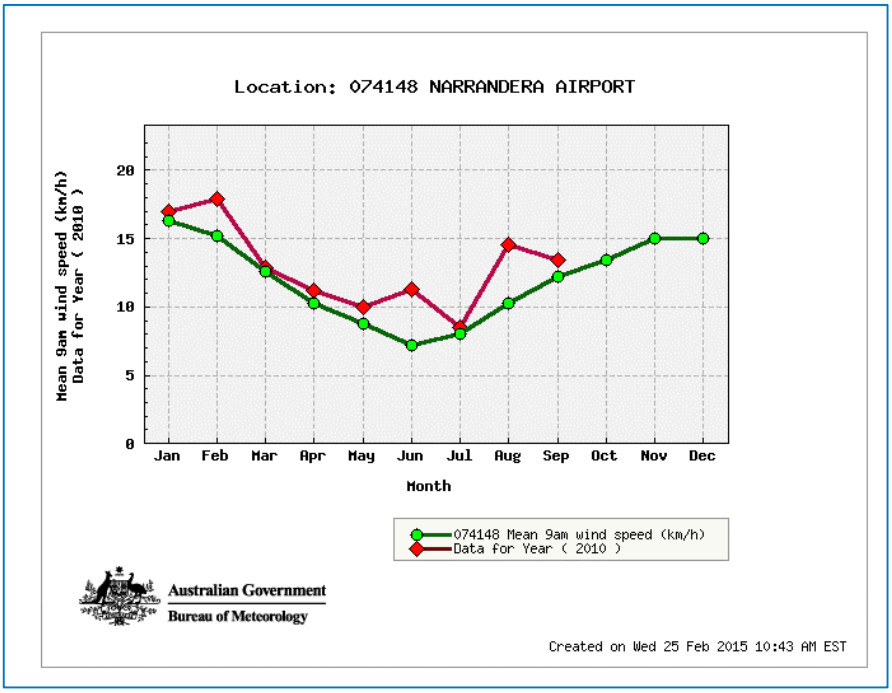


Figure 9: 2010 – 9am Wind Speed

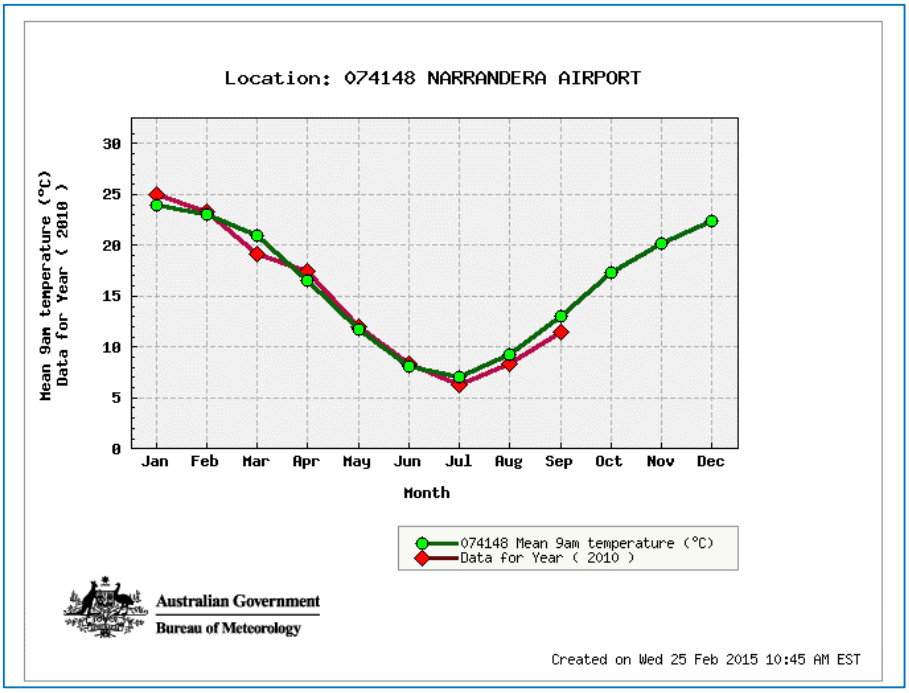


Figure 10: 2010 – 9am Temperature

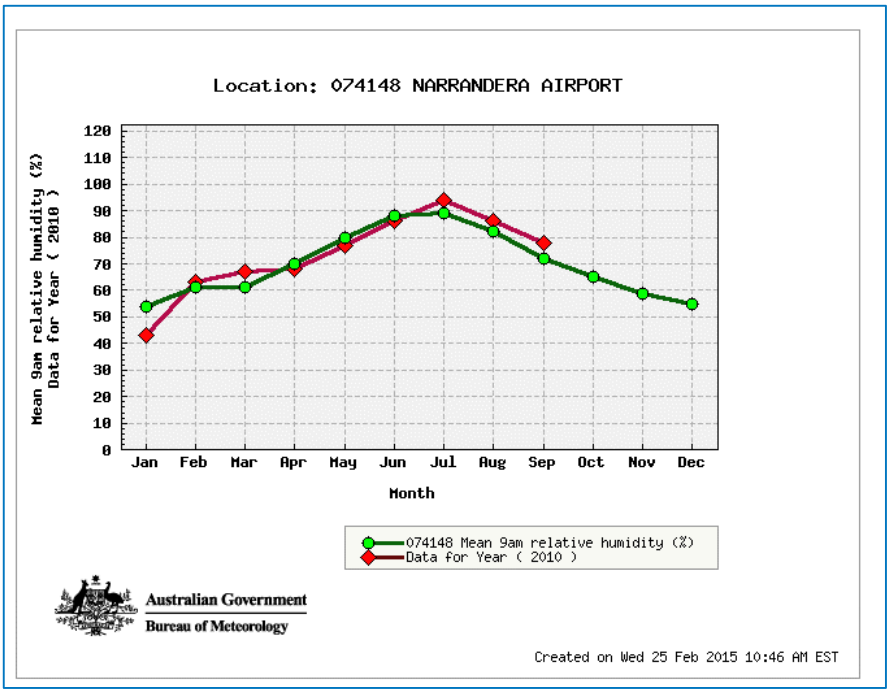


Figure 11: 2010 – 9am relative humidity

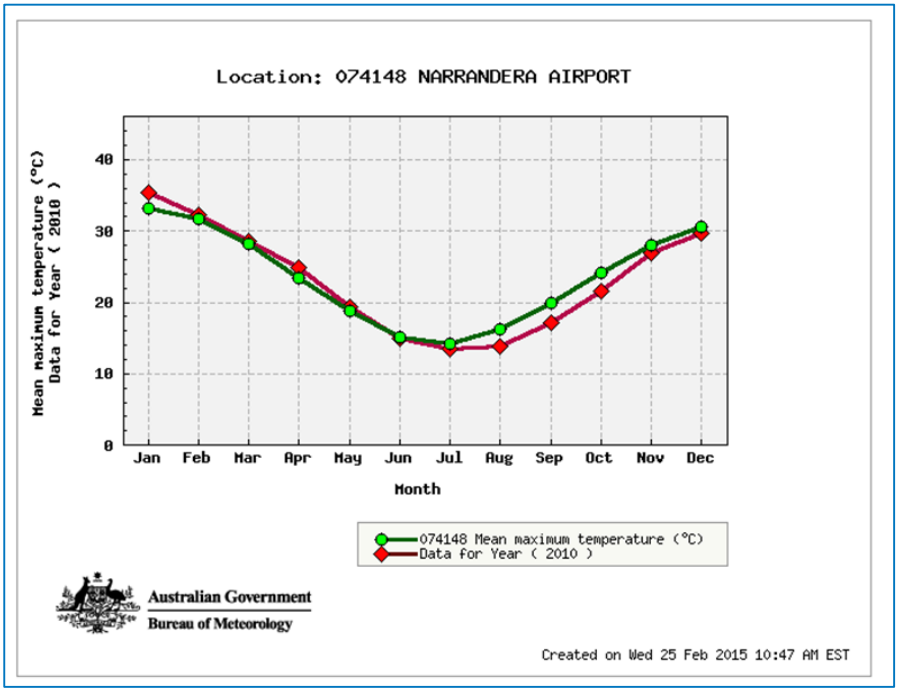


Figure 12: 2010 – Mean Maximum Temperature

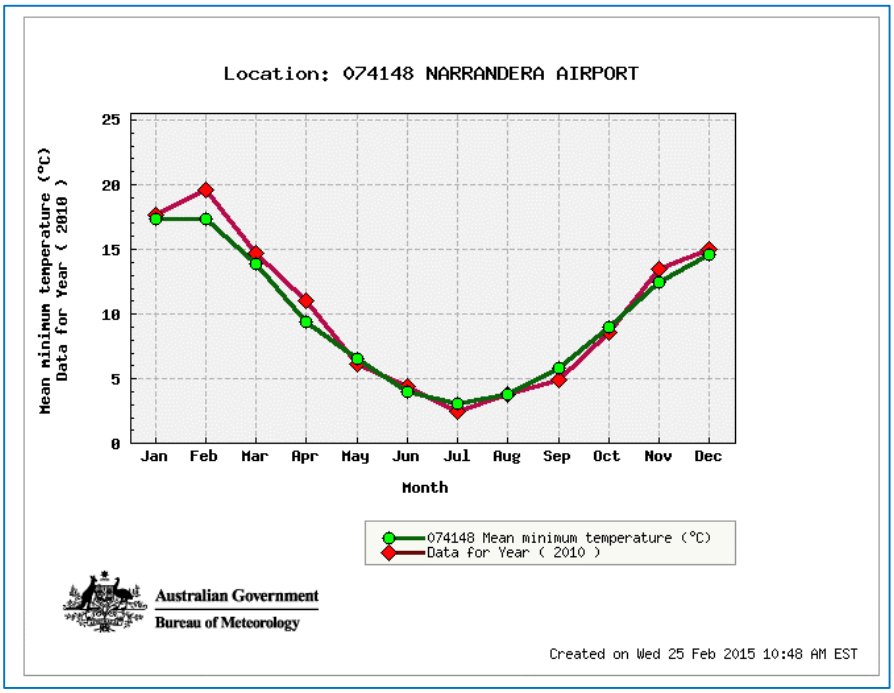


Figure 13: 2010 – Mean Minimum temperature

6. Modelled meteorological data is not evaluated

After selecting a representative year, prior to performing the modelling we examined and compared the Yanco and Narrandera observations with TAPM generated data. This was shown in the report and is also shown below in Figure 14. As shown in the figures, the data did not compare well between TAPM and observed with TAPM predicting less south-easterly and easterly winds. Noticeably TAPM predicted similar wind fields for both sites, further indicating that the area is flat. Overall the Yanco and Narrandera sites were similar with the exception of some terrain blocking at Yanco, which resulted in a high proportion of winds from the north.

After discussions with Dr Li Fitzmaurice and Mr Robin Ormerod[2] (both meteorologists), in line with good practice, Narrandera data was used to drive the model, however as some data gaps were present, these were infilled with data from Yanco. TAPM data was not used as both meteorologists considered that it was not representative of the area, particularly as it had zero calms, which are critical for odour impacts. Mr Ormerod noted at the time that his experience in the area around Narrandera led him to conclude that the lack of large terrain elements in the area led to the "observation only" approach being suitable for the project.

[2] Mr Ormerod has over 30 years experience as a meteorologist and is a Certified Consulting Meteorologist as awarded by the American Meteorological Society.

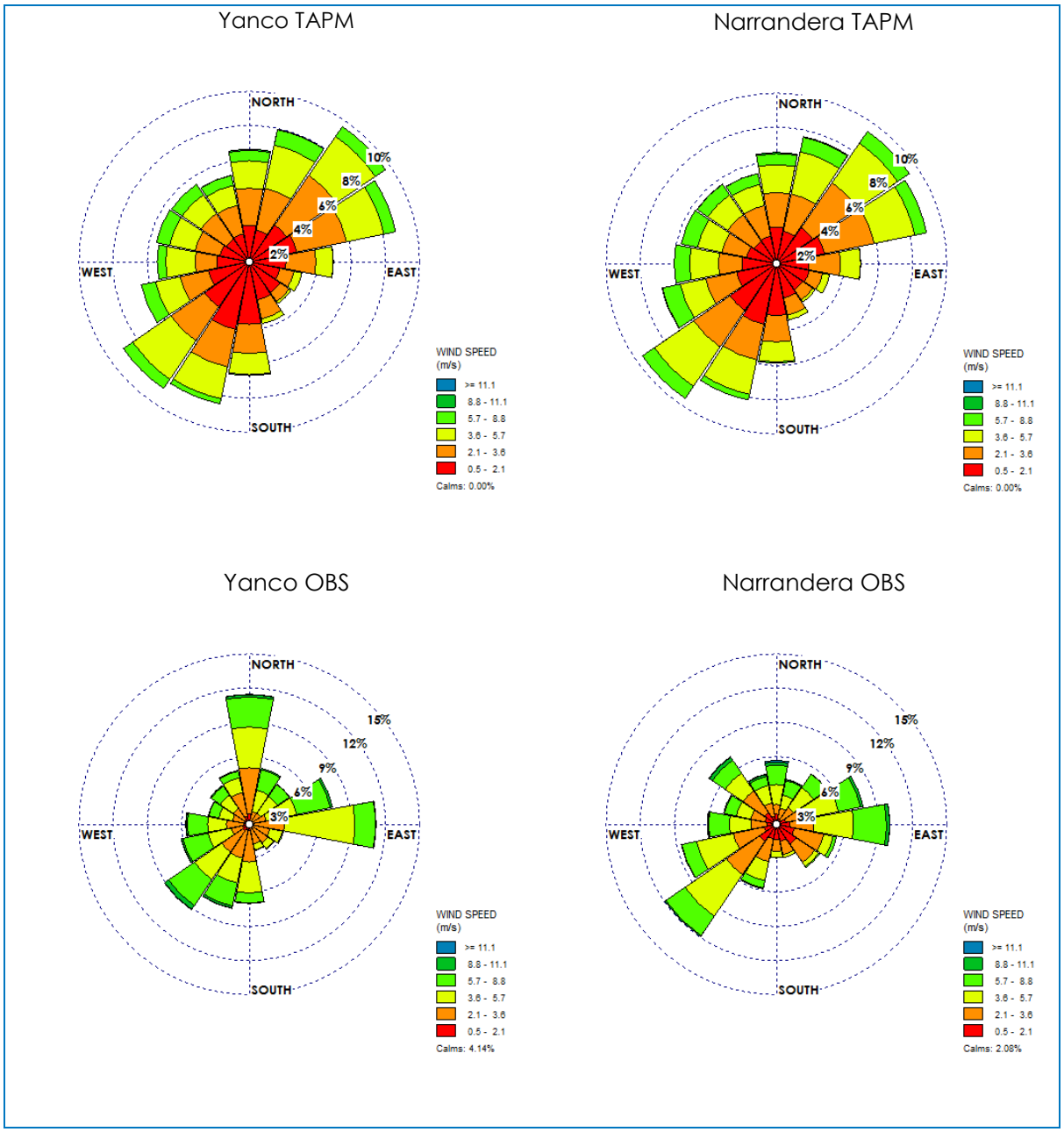


Figure 14: 2010 – Comparison of TAPM and Observed data (2010)

The seven parameters requested by EPA used for the modelling (as selected by our meteorologists) are as follows:

- RMAX1 = 0.1
- RMAX2 = 0.1
- R1 = 0.1
- R2 = 0.1
- TERRAD = 2
- IEXTRP = -4
- BIAS = -1 , -.75 , -.5 , 0 , 1 , 1 , 1 , 1 , 1

With regard to the above we note:

- IEXTRP is the extrapolation of surface wind to the upper layers. We used the default of -4 which allows extrapolation through similarity theory
- RMAX is the maximum radius of influence the surface station will exert on the final guess field. As is required, we use our professional judgement to select this value on the basis of the geography of the region. We ran CALMET with both RMAX at 0.1 as the method is observation only (see discussion below)
- R1 is the radius that yields equal weighting to the first guess and surface station winds. This is usually the same as RMAX as there is only the single meteorological station (see discussion below).
- RMAX2 and R2 for upper air. In this case the domain was small and we allowed the upper air station "observations" to influence the domain (See discussion below)
- TERRAD is a radius of influence of terrain features. As there are no significant terrain features in the area, a value of 2 kilometres was selected.

With regard to the RMAX and R values above, two scenarios were run. The scenarios are summarised below in Table 6. As there was only one observation station in the domain, and the domain is flat, CALMET produced exactly the same wind field for Run 1 and Run 2 with small and large RMAX values. The model run produced (as shown above and in our report) wind fields which were the same as the data measured at Narrandera. This is consistent with the TAPM modelling above which showed that TAPM also produced nearly identical windfields for spatially separated sites.

Table 6: Model Sensitivity Assessment Settings

Setting	Run 1	Run 2
RMAX1	0.1	6
RMAX2	0.1	6
R1	0.1	3
R2	0.1	3
TERRAD	2	2
IEXTRP	-4	-4
LVARY	False	False
BIAS	BIAS = -1 , -.75 , -.5 , 0 , 1 , 1 , 1 , 1 , 1	BIAS = -1 , -.75 , -.5 , 0 , 1 , 1 , 1 , 1 , 1

7. Modelled meteorological data is not evaluated

As noted above we performed two runs to test the sensitivity of the model. Given that the terrain is flat and driven by observation data at Narrandera the model has produced a similar windfield at the subject site as at Narrandera, which is as expected given the lack of terrain in the area which was also confirmed by the TAPM outputs.

The wind rose in the modelling report can be compared to the observed data provided above for Narrandera for the modelled year.

8. Project odour criterion

The project odour criterion was $C_{99\ 1\ sec}$ = 7 ou based on discussions between ProTen and the EPA's Griffith office. We note that the modelling showed compliance with the 5 ou criterion at receptors.

The Census data for 2011[3] for rural communities in New South Wales gave an average population per house of 2.4 people, which is consistent with EPA's 2.8 people per house value.

The population density around the subject site is variable and on a per square kilometre basis quite low (~29 people over and area of around 110 square kilometres). With regard to the subject site, there are three single receptors, one to the south-east, one to the east (proposed) and one to the east-north-east. These are discrete dwellings rather than forming part of a cluster of dwellings.

There is a cluster of dwellings to the north, over an area of approximately 8 square kilometres. Whilst we accept that the population over the area (>100 km^2) equates to an odour impact criterion of 5 ou, when the distances between the receptors are considered, a higher criterion of 6 ou is likely to be sufficient to protect against amenity impacts at the single rural residences.

On this basis, in addressing the EPA's request for a lower odour performance criterion, it is considered that a criterion of 6 ou is appropriate however as shown above, all receptors comply with 5 ou.

9. Assessment of cumulative particulate impacts not in accordance with the Approved Methods

Monte Carlo simulation has been applied in numerous significant extractive industry dust assessments in the Hunter valley and elsewhere, as an alternative to the Level 2 approach in the Approved Methods. Both the Level 1 and Level 2 assessments require continuous background ambient monitoring data. The Level 2 assessment works well when there are ambient monitoring data available for each day that coincide with the period of time of predicted impacts, and the data are representative of the site being assessed. However if there is no data for the local area it is difficult to perform an assessment which includes background dust concentrations.

The Monte Carlo method has previously been presented to and accepted by the NSW Government as an alternative to the use of site specific dust monitoring data for significant extractive industry (i.e. mining) dust assessments.

The Monte Carlo simulation is a statistical approach that combines the frequency distribution of one data set (in this case, measured 24-hour average PM_{10} concentrations representative of the site) with the frequency distribution of another data set (modelled concentrations at a given receptor). This is achieved by randomly and repeatedly sampling and combining values within the two data sets to create a third, 'cumulative' data set and associated frequency distribution.

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3 http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/1RNSW?opendocument&navpos=100

To generate greater confidence in the statistical robustness of the results, the Monte Carlo simulation was repeated 250,000 times for each of the chosen receptors.

Moreover, as noted above, it is our experience that our dust emissions method for the farms over predicts the dust emissions by a factor (depending on bird numbers etc.) anywhere between a factor of two and four. Therefore, based on the modelling to date, the maximum PM_{10} concentration which could actually occur at the most exposed receptors is in the order of 5 ug/m^3. That is, the impact from the farm, at the nearest receptors is very low. Moreover we have assumed that all farms peak at the same time, which would lead to further conservatism.

Based on the information above, and considering that the dust impacts from the farms in isolation will be low, we consider the use of the Monte Carlo method appropriate for the assessment of cumulative impacts associated with the proposed poultry development and that dust impacts from the proposed development are unlikely to occur..

10. No feasible mitigation measures that could be implemented should odour impacts occur once operational have been provided

As noted above, emissions for the poultry industry have been decreased for at least three years. This is likely a function of improved feed conversion and better overall shed management.

Therefore the use of a K factor of 2.2, when the average K factor at present is well below this represents a conservative assessment. Moreover as noted above, by complying with DPI (2012b) the risk of elevated emissions would be low due to the high standard of management required.

With the industry trend of including RSPCA type management including rotary hoeing of litter, the range of emissions is expected to reduce further. One thing that is not addressed when assessing farms purely in terms of odour units is the odour character. It is our experience that emissions from a farm with poor litter management has not only high emissions, but the odour is more offensive. Therefore the emissions from modern farms are also potentially less offensive.

As noted by the EPA, the industry literature does not support the use of windbreak walls or stacks. Whilst windbreak walls are beneficial in terms of localised impact reduction of odour and reducing dust levels, we agree that they do not achieve a high enough vertical velocity to enhance dispersion.

Whilst there are other options with regard to odour control, it is accepted that these are outweighed by issues associated with cost and management.

Research has shown that vegetative buffers can reduce the impact of odour and dust emissions from agricultural operations (Laird, 1997; Thernelius, 1997). Other more recent publications have reported that vegetation can assist in odour management from livestock buildings by increasing dilution and acting as a sink for the chemical compounds responsible for odour (Patterson & Adrizal, 2005; Tyndall & Colletti, 2000; Tyndall & Colletti, 2007) . This was reinforced by Parker *et. al* (2012) who showed that vegetation trapped odorous particulate matter on leafy vegetation. However, they were uncertain with regard to whether odour concentration reduces as a function of dispersion associated with the trees or by interacting with the trees.

Other publications such as Karmaker *et. al.* (2006) have highlighted how in other areas, such as Canada, vegetative buffers are a primary consideration for odour control on intensive livestock operations.

We are of the opinion that a combination of a suitable buffer and vegetation represents the current best practice for site management.

11. Odour Risk

EPA states that the odour risk of the project has not been assessed. It has been requested that the odour risk be evaluated beyond the modelling as the compliance with the criterion is "marginal". Moreover EPA noted that:

- the project did not use site-specific meteorology and emissions, and only used average emission rate data.
- there was a higher risk of unacceptable odour impacts if there were small changes in the assumptions
- further statistical analysis was required which could include maximum, minimum, 99.9th, 95th percentile values
- unreliable and poorly performing mitigation measures presented a higher risk
- the facility posed an additional risk if there were no feasible mitigation measures that could be implemented if the facility emitted more odour that assumed

Firstly, the odour risk of the poultry development has been assessed in our air quality impact assessment (2015). We note that an air quality impact assessment, by its very nature, is an odour risk assessment. Based on the air quality impact assessment, which is considered conservative, our experience in the field, and the additional information in this submission, we are of the opinion that the modelling has produced a representative summary of potential impacts. In summary, our conclusions are:

- Odour levels at all surrounding receptors are predicted to be at or below $C_{99\ 1sec}$ = 5 ou even with batch staging included; and
- PM_{10} concentrations at all surrounding receptors when background levels are included are predicted to be below the adopted assessment criteria.

The assessment has been undertaken in accordance with accepted methodologies and considering local land use, terrain and meteorology.

With regard to the first point, indeed the project did not use site-specific meteorology or emissions. This is because there is no such data. It is considered good practice and standard practice to use the methodology adopted for this project when site-specific data is not available. If significant terrain was present in the region reliance on prognostic model output data including that from TAPM would be appropriate, however as shown above, given that the area is flat, and that TAPM does not compare well with the observed data at Griffith, the meteorology used is likely to be consistent with that expected on the site.

The emissions estimation method was not based on test data from the site, as there are currently no sheds on site, but is based on over 10 years of experience with poultry farms including the data collected over the last few years as shown above. The data makes use of local temperatures over a full year, which is used to first predict the ventilation rate for the sheds, which is then used to

predict an odour emission rate. As noted above, the K factor of 2.2 as adopted, is conservative and is not expected to be exceeded. The data collected at the ProTen farm near Tamworth, along with the data shown in Figure 2, clearly shows that the K factor of 2.2 is likely to be about 50% higher than what is typical of similar farms elsewhere.

With regard to the second point, it is true that the assumptions can be critical, however as shown above, even with batch placement included, and the recommended K factor for new farms, which is higher than what is measured at operational farms over the last four years compliance has been shown. The assessment has been made based on a number of assumptions, which, through our experience, we have found to be appropriate and conservative for poultry odour assessments. For example, we have recently modelled two existing farms with a history of operation in Queensland with a K factor of 2.2, neither of which complied with the odour criterion. However, neither had ever had a single odour complaint. This gives weight to the notion that the assessment method is conservative and appropriate for siting new farms.

It is critical to note that farm management and profitability goes hand in hand. That is, the grower is paid less if the farm performs poorly. Therefore the better managed the farm, the lower the emissions, and the lower risk of odour impacts. We note that throughout its history in the Australian poultry industry, ProTen has proven its commitment to best management practice at its numerous poultry production operations.

The third point relates to additional statistical analysis. The NSW Approved Methods uses the 99th percentile nose response. It is unclear as to why EPA wishes further percentiles to be examined, or what to compare these against. Experience has shown that different percentiles can be used but there needs to be careful consideration of odour criteria and averaging times associated with them: the odour concentration criterion must vary with the percentile and averaging time. The use of maximum values will give a higher concentration. However, odour criteria are based on the relationship between percentiles, averaging times and concentrations – if one changes, the others also need to very in order to maintain an equivalent statistical outcome. Suitable adjustments to criteria have not been developed, and the current use of a single percentile-concentration-averaging time combination is a widely accepted approach. It is an indicator of the critical upper part of the predicted odour concentration distribution.

The fourth point relates to what would occur if odour impact occurred and mitigation measures were put in place. It notes that poorly performing measures would not mitigate against impacts. As noted above, farm management and profitability go hand-in-hand therefore we do not expect that farm management standards will reduce over time and the base emissions used are not expected to be exceeded. Changes to the industry, including the RSPCA requirements for rotary hoeing litter will only further reduce the risk of elevated odour emissions.

This follows on into the fifth point, which notes that the facility posed an additional risk if there were no feasible mitigation measures that could be implemented if the facility emitted more odour that assumed. Based on our air quality impact assessment, which is considered conservative, our experience in the field and the additional information provided in this submission, we do not expect the emissions to be higher than what was modelled.

Yours Sincerely,

Geordie Galvin
B.Eng (Env Eng) M.Eng (Env) MIEAust A.AirQual
Principal Environmental Engineer

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APPENDIX I

Charles Sturt University

ENVIRONMENTAL AND ANALYTICAL LABORATORIES

Locked Bag 588
Wagga Wagga NSW 2678

Tel: +61 2 6933 2849
Fax: +61 2 6933 2477
Email: eal@csu.edu.au
www.csu.edu.au/faculty/science/eal

Proten Ltd

PO Box 382 338 Banna Avenue

Griffith NSW 2850

Attention: Bill Hight

Thursday, August 27, 2015

NATA Accredited Laboratory Number: 9597

LABORATORY ANALYSIS REPORT

Report Number:1508-0093
Page 1 of 2
For all enquiries related to this report please quote document number: 1508-0093

Facility: **Order #**

Sample Type **Collected By** **Date Received**

Water Bill Hight 21-August-2015

EAL ID	Client ID. / Date/Time sample taken	Test	Result (units)		Method Reference	Limit of Reporting
15Aug-0420	**Euroley Nth Site (bore)** 20.08.15 1.30pm					
		Ammonia as N	**<0.2**	mg/L	APHA 4500-NH3 F	0.2
		Calcium (dissolved)	**29.7**	mg/L	APHA 3030 B/3120 B	0.03
		Chloride	**144**	mg/L	APHA 4110 B	0.5
		Conductivity	**685**	µS/cm	APHA 2510 B	1
		Magnesium (acid extractable)	**22.0**	mg/L	APHA 3030 E/3120 B	0.02
		Nitrate as N	**<0.5**	mg/L	APHA 4110 B	0.5
		Phosphorus	**0.04**	mg/L	APHA 3030 E/3120 B	0.02
		pH	**6.6**	pH units	APHA 4500-H+ B	
		Potassium (dissolved)	**1.89**	mg/L	APHA 3030 B/3120 B	0.2
		Sodium (dissolved)	**84.3**	mg/L	APHA 3030 B/3120 B	0.05
		Sulphate	**18.9**	mg/L	APHA 4110 B	3
		Total Organic Carbon	**<0.5**	mg/L	Analysis by Ecowise, Melbourne (acc no: 992)	

Note:

NATA accreditation not held for tests marked with *

ENVIRONMENTAL AND ANALYTICAL LABORATORIES

Locked Bag 588
Wagga Wagga NSW 2678

Tel: +61 2 6933 2849
Fax: +61 2 6933 2477
Email: eal@csu.edu.au
www.csu.edu.au/faculty/science/eal

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Facility: **Order #**

Sample Type **Collected By** **Date Received**

Water Bill Hight 21-August-2015

EAL ID	Client ID. Date/Time sample taken	Test	Result (units)	Method Reference	Limit of Reporting

Signed ..... David Wade, Laboratory Manager.

All samples analysed as received.
All soil results are reported on a dry basis.
The EAL takes no responsibility for the end use of results within this report.
This report shall not be reproduced except in full.
This report replaces any previously issued report

APPENDIX J

Eryn Bath

From: Miranda Kerr <Miranda.Kerr@environment.nsw.gov.au>
Sent: Monday, 24 August 2015 12:42 PM
To: Eryn Bath
Cc: Peter Ewin; daniel@proten.com.au; Thomas Piovesan (thomas.piovesan@planning.nsw.gov.au); Jeremy Pepper; John Gilding
Subject: FW: Euroley - Follow-up from site visit

Hi Eryn

We appreciated the opportunity to meet with ProTen and SLR on-site last week. There were various discussions about the biodiversity and archaeological issues that we had raised in the OEH submission, and we provide further clarification to these matters below. DP&E are the consent authority, so the following is our suggested approach for assessment and offsetting. We are happy to discuss any ensuing matters with DP&E, SLR and the proponent.

- It is now our understanding that the siting of residences and their access tracks, roads, and other project-related infrastructure will avoid disturbing or clearing individual trees and patches of open-woodland, particularly those that are not shown on figure 7 or figure 8 of the Biodiversity Assessment Report. SLR have agreed to use the 'Central Southern NSW' vegetation mapping to guide location of infrastructure to avoid biodiversity impacts.

- There is a requirement to undertake further pedestrian archaeological survey, particularly associated with road works and PPU 5. The site inspection has confirmed that survey will not be necessary prior to development approval, but will be required before clearing occurs. The results of this survey will then need to be incorporated into any required management plans.

    - Our archaeologist noted two scar trees while driving around the site. It was unclear at the time if the trees were within the development footprint or the area impacted by associated services such as power lines. The presence of scattered scar trees is evidence of occupation and justifies our requirement for pedestrian survey where linear impacts traverse suitable landforms.
    - At the time of our site visit, ground cover vegetation was relatively dense in paddocks that had not recently been cropped resulting in poor visibility of the ground surface.

<u>Biodiversity Offset Strategy</u>

The current biodiversity credit requirement to offset impacts of the proposal is 16 ecosystem credits. As described in the Biodiversity Assessment report (Section 7), there are no available like-for-like credits available to the proponent. The small credit requirement, the cost of establishing a BioBanking site for such as small area and lack of available matched ecosystem credits means that, the most appropriate option in this case would be use of the offset fund if it is available. The offset fund is under development and we expect it to be available to proponents in the near future.

The site visit confirmed that mapping used in the biodiversity assessment does not include all native vegetation present on the site. It is likely that a greater number of credits would be required if the assessment was revised based on more complete vegetation mapping across the property. There is a patch of remnant vegetation in the north-west corner of Lot 41/750898 that is likely to represent Sandhill Pine Woodland EEC. During the site visit we were not able to assess the vegetation due to access constraints, however we consider that the protection and improvement in condition of this area (approximately 18 ha) could provide a long-term contribution to regional biodiversity values.

We consider that the following actions would provide an acceptable outcome for loss of biodiversity values if Option 2 (as described in Section 7.4 of the BAR) does not result in the purchase and retirement of the 16 credits.

Suggested Biodiversity Offset Strategy Actions:

- A contribution is made to the offset fund when it is available, and credits are retired.
- In the meantime, and to provide a short-term option in the event that the offset fund is delayed or it's development ceases:
    - ProTen/SLR confirm that the patch of vegetation in north-west corner of Lot 41/750898 is Sandhill Pine Woodland EEC and undertake a BioBanking plot(s) to determine its condition and to identify appropriate management actions.
    - ProTen erect a temporary fence to exclude stock and rabbits from the patch of Sandhill Pine Woodland EEC. Any site management actions undertaken by ProTen that benefit biodiversity after fencing will be considered when the offset strategy is finalised.
    - SLR/ProTen will contact NPWS to discuss the possibility of adding the vegetated north-west corner of Lot 41/750898 into the national park reserve system. The relevant contact is:
        Mr Robin Mares
        Manager, Mid West Area
        Ph 02 6966 8104
        robin.mares@environment.nsw.gov.au

Please contact me or Peter Ewin (ph. 6022 0606) if you have any questions or comments
Kind regards
Miranda

Miranda Kerr
Regional Biodiversity Conservation Officer, South West
Regional Operations Group (South Branch)
Office of Environment and Heritage
PO Box 544 Albury NSW 2640
T: 02 6022 0607
M: 0407 752 822
W: www.environment.nsw.gov.au

From: Eryn Bath [mailto:ebath@slrconsulting.com]
Sent: Wednesday, 19 August 2015 8:07 AM
To: Ewin Peter
Cc: Kerr Miranda; Daniel Bryant; Jeremy Pepper
Subject: Euroley - Follow-up from site visit

Hi Peter,

I should firstly introduce myself…. I am now managing the Euroley development application with ProTen following Nicole Armit's departure from SLR.

Thank you for taking the time to undertake the site visit last week. I hear it was beneficial. Sorry I could not make it.

In speaking to DP&E's Thomas Piovesan (our assessment officer) yesterday, I am wondering if it would be possible to outline the outcomes and OEH's advices/requirements from the site visit in writing (letter or email) for both biodiversity and Aboriginal heritage? It will assist us in preparing our formal Response to Submissions, along with confirming the scope of additional work. It will also assist the DP&E when reading and assessing the Response to Submissions in terms of ensuring we have addressed the OEH's issues.

Please don't hesitate to contact me if you would like to discuss this further.

Thanks again Peter.

Regards
Eryn

Eryn Bath
Principal - Environmental Management, Planning & Approvals
SLR Consulting Australia Pty Ltd

Email: ebath@slrconsulting.com
Mobile: +61 427 024 739
Office: +61 2 9428 8100
Direct: +61 2 9428 8162
2 Lincoln Street, Lane Cove NSW 2066, Australia

APPENDIX K

global environmental solutions

Euroley Poultry Production Facility

Environmental Impact Statement - Response to Submissions

Biodiversity Offset Strategy

Report Number 610.14072.00400

31 August 2015

ProTen Limited

PO Box 1746

NORTH SYDNEY NSW 2060

Version: Revision 0

Euroley Poultry Production Facility

Environmental Impact Statement - Response to Submissions

Biodiversity Offset Strategy

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
10 Kings Road
New Lambton NSW 2305 Australia
(PO Box 447 New Lambton NSW 2305 Australia)
T: +61 2 4037 3200 F: +61 2 4037 3201
newcastleau@slrconsulting.com www.slrconsulting.com

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
610.14072.00400	Revision 0	31 August 2015	Jeremy Pepper	ErynBath/ Jeremy Pepper	Eryn Bath

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APPENDICES

1 INTRODUCTION

SLR Consulting Australia (SLR) prepared an Environmental Impact Statement (EIS) (2015a) to accompany an application by ProTen Holdings (ProTen) seeking development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for an intensive poultry production farm known as the Euroley Poultry Production Complex approximately 26 kilometres northwest of Narrandera in the Riverina region of New South Wales..

Following public exhibition of the EIS (SLR 2015a), the Office of Environment and Heritage (OEH) submitted comments (submission dated 26 June 2015) to the Department of Planning and Environment (DP&E) regarding the *Biodiversity Assessment Report* (BAR) prepared as part of the EIS by SLR (2015b). The OEH advised that the EIS does meet the Secretary's requirements; however they recommended that development approval be conditioned to avoid impacts to biodiversity.

Representatives of ProTen, OEH and SLR conducted a site meeting on 13 August 2015 to discuss and verify some of the issues raised by OEH in their submission on the EIS. Subsequently, OEH have submitted revised comments on the BAR (email M Kerr (OEH), dated 24 August 2015), which includes particular recommendations for the *Biodiversity Offset Strategy* (BOS). The revised comments and recommendations made by OEH are summarised as follows:

It is now our understanding that the siting of residences and their access tracks, roads, and other project-related infrastructure will avoid disturbing or clearing individual trees and patches of open-woodland, particularly those that are not shown on figure 7 or figure 8 of the Biodiversity Assessment Report. SLR have agreed to use the 'Central Southern NSW' vegetation mapping to guide location of infrastructure to avoid biodiversity impacts.

The current biodiversity credit requirement to offset impacts of the proposal is 16 ecosystem credits. As described in the Biodiversity Assessment report (Section 7), there are no available like-for-like credits available to the proponent. The small credit requirement, the cost of establishing a BioBanking site for such as small area and lack of available matched ecosystem credits means that, the most appropriate option in this case would be use of the offset fund if it is available. The offset fund is under development and we expect it to be available to proponents in the near future.

There is a patch of remnant vegetation in the north-west corner of Lot 41/750898 that is likely to represent Sandhill Pine Woodland EEC. During the site visit we were not able to assess the vegetation due to access constraints, however we consider that the protection and improvement in condition of this area (approximately 18 ha) could provide a long-term contribution to regional biodiversity values.

We consider that the following actions would provide an acceptable outcome for loss of biodiversity values if Option 2 (as described in Section 7.4 of the BAR) does not result in the purchase and retirement of the 16 credits.

Suggested Biodiversity Offset Strategy Actions:

- *A contribution is made to the offset fund when it is available, and credits are retired.*
- *In the meantime, and to provide a short-term option in the event that the offset fund is delayed or it's development ceases:*
  - *ProTen/SLR confirm that the patch of vegetation in north-west corner of Lot 41/750898 is Sandhill Pine Woodland EEC and undertake a BioBanking plot(s) to determine its condition and to identify appropriate management actions.*
  - *ProTen erect a temporary fence to exclude stock and rabbits from the patch of Sandhill Pine Woodland EEC. Any site management actions undertaken by ProTen that benefit biodiversity after fencing will be considered when the offset strategy is finalised.*

- *SLR/ProTen will contact NPWS to discuss the possibility of adding the vegetated north-west corner of Lot 41/750898 into the national park reserve system.*

Accordingly, SLR has amended the BOS (from that presented in Chapter 7 of the BAR) to address OEH comments and provide ProTen's preferred offsetting option.

2 BIODIVERSITY CREDIT REQUIREMENT

The Biobanking Credit Calculator was used to calculate the impacts of the proposed development and potential offset requirements in accordance with Section 8 of the *Framework for Biodiversity Assessment* (FBA). This section of the BOS provides a summary of the results of the credit calculations. A full copy of the credit profile for the impacts of the proposal is provided in Appendix A.

2.1 Ecosystem Credits

The ecosystem credits required to offset the proposed development are listed by vegetation zone in Table 1. A total of 16 ecosystem credits would be required to offset the clearing of native vegetation as part of the construction and operation of the proposed development. The Credit Calculator identifies matching ecosystem credits (and matching IBRA[1] subregions) that can be used to offset these impacts (see Section 2.3).

Table 1 Vegetation zones requiring offset and credits required

Code	Vegetation Zone Name	Mgt Area (ha)	Current Site Value Score	Future Site Value Score	Ecosystem Credits
MR517	Black Box Lignum Woodland_mod_good	0.00	54.67	54.67	0
MR518	Black Box Grassy Open Woodland_low	0.46	40.00	0	6
MR644	White Cypress Pine Open Woodland_mod_good	0.08	45.31	0	3
MR644	White Cypress Pine Open Woodland_ low	0.20	38.02	0	7
	Total	**0.74**			**16**

2.2 Species Credits

No species credits are required to offset the impacts of the proposed development.

2.3 Biodiversity Credit Report

Table 2 lists the credit types required to offset the proposed development and the matching credits and IBRA subregions that can be used as 'offset options'. Any such credits can only be used as substitutes (or offset options) for credit types required if they belong to an IBRA subregion that adjoins the IBRA subregion in which the development occurs (ie Murrumbidgee IBRA subregion).

Table 2 Ecosystem credits required for offset and matching credit types

Ecosystem Credit Required	No. Credits	Offset Options
MR518 Black Box Grassy Open Woodland	6	• MR517 Black Box - Lignum woodland • MR518 Black Box Grassy Open Woodland • MR 519 Black Box open woodland wetland with

[1] Interim Biogeographic Regionalisation of Australia

		chenopod understorey mainly on the outer floodplains in south-western NSW
MR 644 White Cypress Pine Open Woodland	10	• MR 644 White Cypress Pine Open Woodland • MR 645 White Cypress Pine - Drooping Sheoak grassy open woodland of the Riverine Plain • MR649 Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion • MR664 Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains • MR681 Slender Cypress Pine - Sugarwood - Western Rosewood open woodland on sandy rises mainly in the Riverina Bioregion and Murray Darling Depression Bioregion
Total Credits	**16**	

3 BIODIVERSITY OFFSET STRATEGY

This chapter provides the *Biodiversity Offset Strategy,* based on outputs of the Biobanking Credit Calculator, in accordance with Section 10 of the FBA.

3.1 Overview

The assessment completed as part of this BAR has determined that a biodiversity offset is required in accordance with the FBA and the *NSW Biodiversity Offsets Policy for Major Projects* (the 'Offsets Policy'; NSW Government and OEH 2014). The offset requirement for the project is described in Section **2**. A total of 16 ecosystem credits are required to offset the project impacts, with the type and number of required ecosystem credits, and matching credit options, listed in Table 2. No species credits are required as part of the offset.

According to the Offsets Policy, a *Biodiversity Offset Strategy* (BOS) is required to set out how the proponent intends to fulfil the project's offset requirement and is to be submitted to the DP&E with the project application.

3.2 Overview of Offset Options

According to the Offsets Policy, proponents can meet their offset obligations through one or a combination of the following offset options:

- Like-for-like credit purchase (Option 1a) – the proponent purchases the required number and type of biobanking credits from the biobanking credit 'market' (publically available through the Biobanking Credit Register);
- Like-for-like credit creation (Option 1b) - the proponent creates a biobank site on their own land, which generates the required credits to fulfil their offset requirement; the proponent retires the required number and type of credits from their own portfolio of credits;
- Variations (Option 2) – where like-for-like offsets are not available, and the proponent can demonstrate that "reasonable steps" have been taken to find a suitable offset, proponents may apply the 'variation rules', as outlined in Appendix A of the Offsets Policy;
- Rehabilitation of mine sites, which is not relevant to the current project;

- Monetary contribution (to supplementary measures or to a State Government fund) (Option 3) - For this option to be available, proponents must demonstrate that the 'reasonable steps' have been taken to secure like-for-like offsets under Option 1 and/or 'varied' offsets under Option 2. Under this option, the proponent would calculate the equivalent monetary value of their offset requirement and pay this amount into a fund. At the time of writing, the fund had not been developed. During the current 'transitional implementation period' this option is not currently available to proponents, but is likely to become available within the next two to three years and hence is considered as a potential offsetting option for this BOS.

A summary of the available offsetting options, listed in order of priority, for the proposed development at Euroley are listed in **Table 3**.

Where the proponent has demonstrated reasonable steps have been taken to find a suitable like-for-like offset, but none are available, 'supplementary measures' can be used to fulfil offset obligations. The rules for applying and calculating supplementary measures are provided in Appendix B of the Policy. An interim method for calculating the monetary contribution for supplementary measures will be applied by OEH until a "fund calculator" is developed. An administrative cost of 10% is added to the equivalent cost of a like-for-like offset. The amount calculated is deposited into a NSW Government fund, or invested in another approved conservation fund.

A proponent may use a combination of offset sites and supplementary measures to fulfil an offset requirement. All options listed in **Table 3**, as applicable to the proposed development at Euroley, have been considered, and are discussed below.

Table 3 Ecosystem credits required for offset and matching credit types

Option	Offset Option	No. Credits	Offset Options/Comments

1a	Purchase and retire matching (like-for-like) ecosystem credits	16	• Like-for-like ecosystem credits comprise:
			  ◦ Those of same plant community type (PCT) (see Table 17); or
			  ◦ A PCT from the same vegetation class that has equal or higher percentage cleared value for the CMA (see Table 17)
			• See list of matching credit types in Table 2;
			• Number and type of credits must be available on credit register, or will become available prior to construction (or during timeframe specified in the development consent)

1b	Purchase land and create required credits through a Biobanking Agreement	16	• Requires proponent to find suitable properties for sale in the IBRA subregion, purchase property (or properties) and then generate a Biobanking Agreement on the land; • Biobank site should contain matching credit types and number as in Table 2; • Proponent retires their own credits to offset project, using only Part A costs (ie management costs of biobank per credit).
2	Variation rules - Purchase and retire other credits within same vegetation formation	TBC	• Apply variation rules when matching credit types in Table 2 not available; • For MR 644 credits, find ecosystem credits for PCTs that fall within 'Semi-arid woodlands' formation, with >80% cleared value for CMA; • For MR518 credits, find ecosystem credits for PCTs within 'Grassy Woodlands' formation, with >60% cleared value for CMA.
3	Supplementary measures	N/A	• Apply FBA variation rules; • Apply when suitable credits and/or biobank site unavailable or cannot be secured within BOS and construction timeframe; • Use interim method to calculate monetary contribution for supplementary measures; • Could be combination of credit purchase and land purchase.
4	Combination		• Temporary fencing of vegetation in northwestern corner of development site (see **Figure 1**); • Purchase ecosystems credits, if available; • Monetary deposit into fund if credits not available.

3.3 Like-for-like Offsets (Option 1)

3.3.1 Purchase like-for-like credits (Option 1a)

The proponent may choose to purchase and retire the ecosystem credits listed in Table 2. However, at the time of writing, these credits are not available on the Biobanking Credit Register and no applicable expressions of interest (EOI) are currently published showing an availability of these credit types within the Riverina IBRA region. Given that no credit trades have, to date, occurred in the Riverina IBRA region, and that there are currently no published EOI for these credit types on the Biobanking site register, it is unlikely that suitable like-for-like ecosystem credits will become available on the credit market in the near future. Accordingly, purchase of like-for-like credits (Option 1a) is not available to the proponent at the time of writing this BOS.

3.3.2 Generate credits by creating a Biobanking Agreement (Option 1b)

The proponent may choose to create a Biobanking Agreement over a portion of land in order to generate the required like-for-like credits and retire these to fulfil the offset obligation. However, this option is not favoured for the following reasons:

- ProTen intends to enter in to a lease agreement with the current landowner that would allow continued use of the land within the development site surrounding the PPUs for an agricultural use such as grazing. This proposed future use of the surplus land within the development site is not compatible with management of a portion of the study area for biodiversity conservation under a Biobanking Agreement;
- As the offset requirement is relatively small, the cost of securing a biobank within the study area (and its ongoing management) would be disproportionate to its size. In this regard, we have employed the OEH *Credit Converter* tool for the 16 ecosystem credits required. The Credit Converter indicates that 2 hectares (ha) of land would be required to generate this number of credits. The creation of a biobank on a parcel of land this small would not be economical.
- Purchase of other properties is not feasible for the small offset required. Searches of real estate sources within the Griffith-Narrandera district reveal that potential suitable rural properties are much larger than the required offset area. Suitable offset sites of the size required and containing the ecosystem credits required are not currently available. Similarly, the subdivision and purchase of a portion of one of the large rural properties would be disproportionate to the offset required. Given the rural land use of the majority of the IBRA subregion, the purchase of a 2 ha property (or larger) and converting it into a biobank would not be feasible or economical.

Hence, Option 1b is not available to the proponent. The proponent has pursued reasonable steps to obtain a suitable like-for-like offset. However, like-for-like offsets (ie Options 1a and 1b) are not currently available. Accordingly, the proponent can apply the 'variation rules' in accordance with the Offset Policy.

3.4 Apply Variation Rules (Not like-for-like credits) (Option 2)

In the case where the required credits are not available, and hence a 'like-for-like' offset is not achievable, proponents can apply the variation rules for matching ecosystem credits. However, a hierarchy of options must be followed, with the proponent demonstrating that "all reasonable steps have been taken…to secure a matching ecosystem credit".

The consent authority may approve a variation of the offset rules for matching ecosystem credits, by allowing ecosystem credits created for a PCT from the same vegetation formation as the required ecosystem credit to be proposed as part of the BOS, where in the consent authority's opinion the BOS demonstrates that:

- all "reasonable steps" to secure a matching ecosystem credit have been taken by the proponent, and

- the required ecosystem credit is not for a PCT associated with a critically endangered ecological community (CEEC) listed on the *Threatened Species Conservation Act 1995* (TSC Act) or an ecological community listed on the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), and
- the PCT from the same vegetation formation has a percent cleared value of the PCT in the major catchment area equal to or greater than the percent cleared of the PCT to which the required ecosystem credit relates, or
- where the required ecosystem credit is for a PCT that is associated with a CEEC/EEC, the PCT from the same formation is also associated with a CEEC/EEC.

"Reasonable steps" to locate like-for-like offsets are listed in Appendix A (Section 2) of the Offset Policy and are summarised as follows:

- investigating land already owned by the proponent within the IBRA subregion or CMA, whether the development site or other properties;
- liaising with an OEH office and local council to obtain a list of potential sites that meet the requirements for offsetting;
- placing an EOI for the credits wanted on the Biobanking public register (ie the 'Credits Wanted Register') for at least six months, whilst regularly checking the register to see if the required credits have become available;
- considering properties for sale in the "required area" (presumably within the IBRA subregion or CMA); and
- providing evidence of why offset sites are not feasible (e.g. unwillingness of a landowner to sell).

SLR, in consultation with the proponent and with OEH, has already commenced investigation of realistic offsetting alternatives and proceeding with the 'reasonable steps' listed above to identify an acceptable offset. In this regard, we note:

- At the time of writing no suitable ecosystem credits are available or have been advertised via an EOI;
- Land already owned by the proponent, or available to be purchased by the proponent within the study area, is not currently available for a biobank site, as noted above;
- SLR has consulted with OEH (Albury office) on the availability of offset lands in the region. At the time of writing, OEH are not aware of any suitable properties that meet the requirements for this project;
- There are no suitable properties for sale in the IBRA subregion.

By applying the variation rules, the proponent may purchase and retire ecosystem credits from the same vegetation formation, as follows:

- For MR 644 credits, ecosystem credits for PCTs that fall within the 'Semi-arid woodlands' formation, and that have >80% cleared value for the CMA; and
- For MR 518 credits, ecosystem credits for PCTs within the 'Grassy Woodlands' formation, with >60% cleared value for the CMA.

At the time of writing, no ecosystem credits within the vegetation formations listed above are available on the credit register or through the EOI web page. To demonstrate reasonable steps, the proponent should advertise the credit requirement via an EOI.

3.5 Supplementary measures (Option 3)

Where a proponent can demonstrate that all reasonable steps have been taken to obtain like-for-like credits or a suitable offset site (as per the steps listed above), they can choose to use 'supplementary measures'. A formula for calculating the monetary contribution of supplementary measures is provided in Appendix B of the Offset Policy. However, the formula is based on the premise that a certain percentage of the offset has been achieved by purchasing credits. The Policy therefore notes that where the proponent is proposing to fulfil the entire offset requirement using supplementary measures, they "must negotiate the amount to be spent" with the consent authority, with the advice of OEH. In the case of the current project at Euroley, if the required ecosystem credits (whether like-for-like or other approved credits under the variation rules) or a suitable offset site do not become available during the six month period of the EOI, then the proponent will negotiate a suitable monetary amount to substitute for the offset credit requirement.

3.6 Combination of Variation Rules and Supplementary measures (Option 4)

A fourth offsetting option is proposed in response to the suggested approach by OEH (as described in Section **1**), which is a combination of supplementary measures, variation rules and credit purchases, as follows:

- Temporary fencing of the area mapped in OEH (2011) as White Cypress Pine Open Woodland (equivalent to Sandhill Pine Woodland EEC) within the northwestern corner of the development site (see **Figure 1**); plus:
- Purchase and retirement of the 16 credits (or equivalent as permitted as the Variation Rules) should they become available over a five year period; or
- If the ecosystem credits do not become available, make a monetary contribution equivalent to the cost of the credits. The amount calculated is deposited into a NSW Government fund, or invested in another approved conservation fund.

4 CONCLUSION AND ACTIONS

4.1 Preferred Option

ProTen's preferred approach to biodiversity offset for the proposed development is Option 4, which described in Section **3.6**, with the following additional notes:

- Temporary fencing (to exclude sheep and other relevant stock animals) of northwestern corner of development site prior to construction commencing (**Figure 1**). A brief description of the proposed area is provided below in Section **4.2**
- Submit an EOI for the required ecosystem credits on the 'Credit Wanted' register (on the Biobanking web site) following approval of the BOS; and
- Monitor availability of required ecosystem credits on Credit Register, and purchase and retire credits if available, for a period of 5 years from the date of development consent.

If no suitable credits are available after the end of the 5 year advertisement period, undertake the following actions:

- Survey the vegetation in the northwestern corner (including establishment of one Biobanking plot), as necessary, to confirm that the vegetation is Sandhill Pine Woodland EEC;
- Identify appropriate management actions (in consultation with OEH) for the northwestern vegetation patch, mainly stock exclusion and weed control; and
- Implement one of the two following options:

- Consult with National Parks and Wildlife Service (NPWS) on whether the land could be dedicated to the national park estate (ie potentially added to the South West Woodland Nature Reserve); or
- Make a monetary contribution equivalent to the cost of the credits. The total amount calculated would be the total credit value (as agreed with OEH) less any moneys expended by the proponent in implementing temporary offsetting measures. The agreed value will be deposited into a NSW Government fund.

4.2 Temporary Offset Area

A plan view of the proposed 'Temporary Offset Area', within the context of the development site, is shown in **Figure 1.** A more detailed view of the area, with current aerial imagery, is shown in **Figure 2.** Regional scale vegetation mapping (OEH 2011) applicable to the area is shown in **Figure 3**.

The OEH (2011) regional vegetation mapping for the Temporary Offset Area indicates the potential presence of three mapping units, as listed in **Table 4**.

Table 4 Mapped areas of plant community types with the Temporary Offset Area

Plant community type (PCT)	Mapped Area (ha)	EEC (Y/N)
Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina and Murray Darling Depression Bioregion)	0.31	N
Native Grassland Complex	9.69	N
White Cypress Pine open woodland of sand plains, prior streams and dunes, mainly of the semi-arid (warm) climate zone	6.98	Y
Unmapped land	0.7	N
Total Area	**17.68**	

The White Cypress Pine open woodland community is noted as comprising an example of *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions*, which is listed as an endangered ecological community (EEC) under Schedule 1 of the TSC Act.

Based on OEH (2011) regional scale vegetation mapping, the Temporary Offset Area contains approximately 7 ha of White Cypress Pine open woodland (ie Sandhill Pine Woodland EEC), as well as around 10 ha of Native Grassland Complex and 0.3 ha of Black Box grassy open woodland.

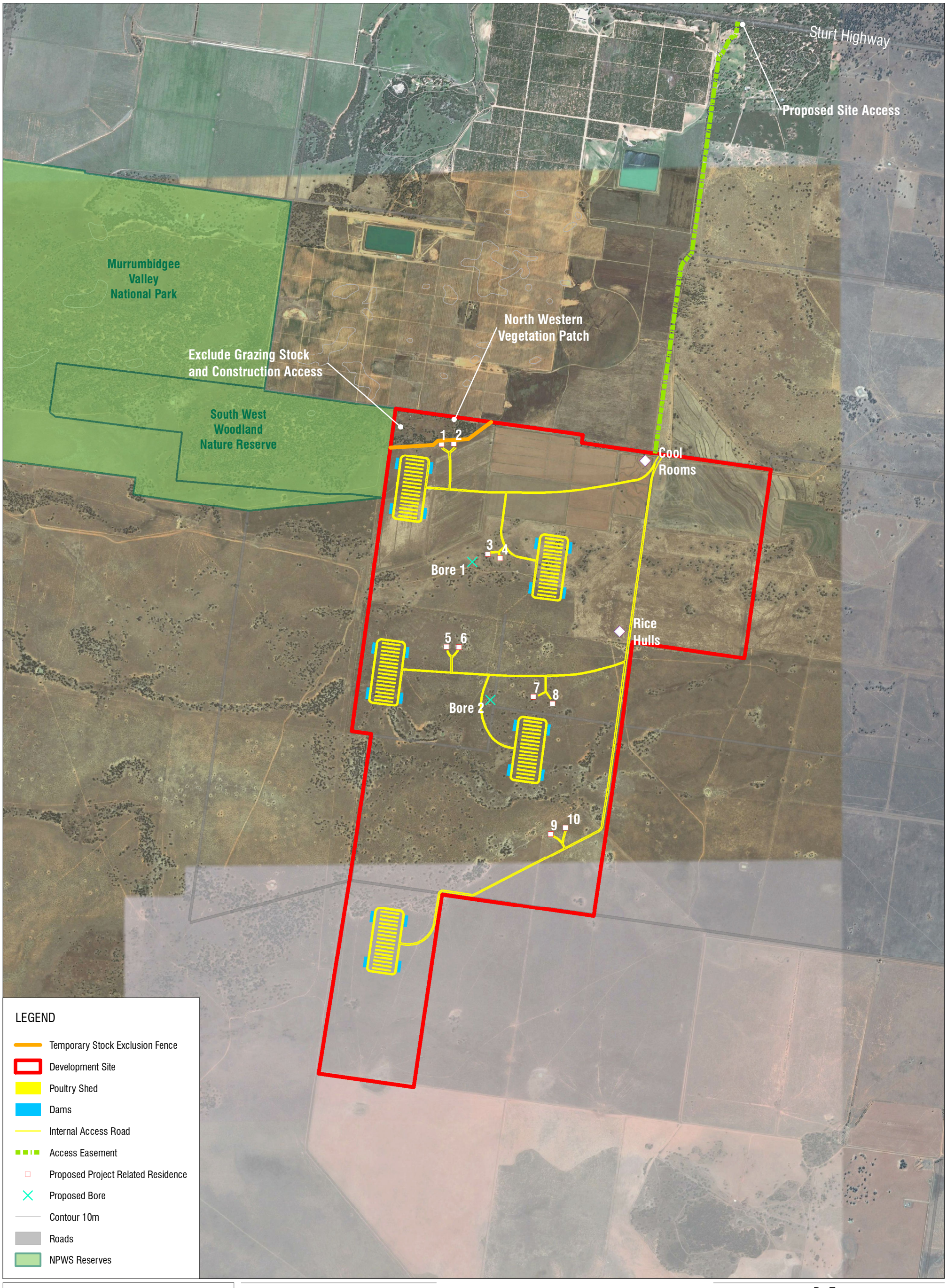
This area is currently subject to sheep grazing, which is likely to be having a debilitating effect on any native vegetation present, through soil compaction, suppression of native seed germination, suppression of native seedling growth (through herbivory), and the spread of exotic grasses and herbaceous weeds. Hence the removal of grazing stock from this area, as proposed, will no doubt realise a substantial improvement in the condition of the native vegetation during the proposed temporary stock exclusion period.

4.3 Offset Strategy Actions

Actions proposed to fulfil the offset requirement for the project will involve:

- Uploading an EOI for the required ecosystem credits on the 'Credit Wanted' register of the Biobanking Credit Register;

- Monitor the availability of matching ecosystem credits during the advertisement period (as required by OEH), including regularly checking the credit register for ecosystem credits that match the required type and number of credits (**Table 2**), including 'variation credits' from the same vegetation formations (as listed in **Table 3**);
- Consult regularly with the OEH Biobanking Team and the Albury office of OEH on the availability of suitable credits during the advertisement period;
- During, or at the end of, the advertisement period, either:
    - Purchase like-for-like credits or if not available purchase 'variation credits'; or if both credit types not available, then:
    - Survey the vegetation in the northwestern corner (including establishment of one Biobanking plot), as necessary, to confirm that the vegetation is Sandhill Pine Woodland EEC; and
    - Identify appropriate management actions (in consultation with OEH) for the northwestern vegetation patch, mainly stock exclusion and weed control; and
    - Apply supplementary measures and calculate suitable monetary fund deposit; or
    - Consult with National Parks and Wildlife Service (NPWS) on whether the land could be dedicated to the national park estate (ie potentially added to the South West Woodland Nature Reserve).



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10 KINGS ROAD
NEW LAMBTON
NEW SOUTH WALES 2305
AUSTRALIA
T: 61 2 4037 3200
F: 61 2 4037 3201
www.slrconsulting.com

Project No.:	610.14072.00400
Date:	01/09/2015
Drawn by:	KC
Scale:	1:30,000
Sheet Size:	A3
Projection:	GDA 1994 MGA Zone 55

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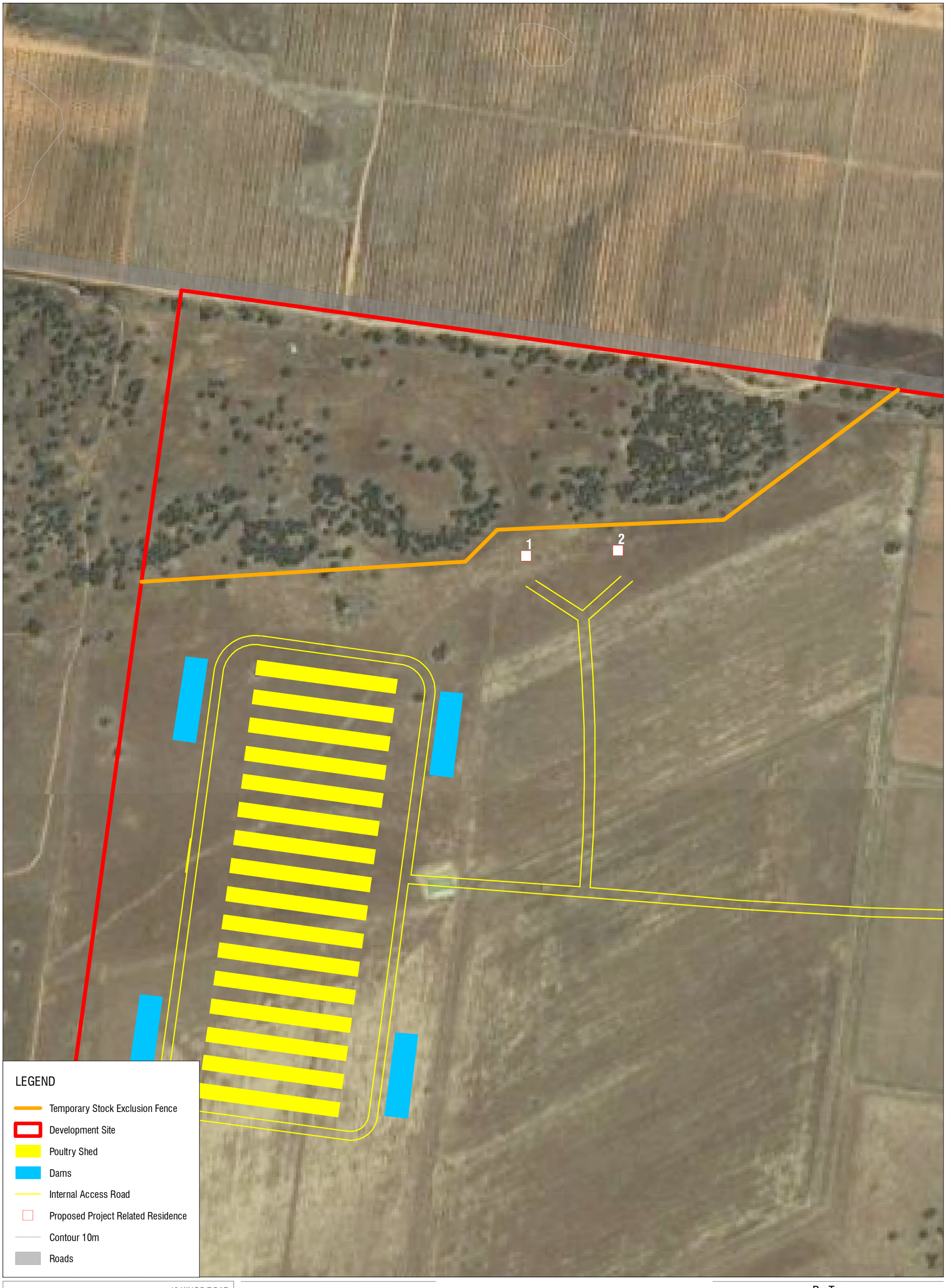
ProTen

Euroley Poultry Facility Biodiversity Offset Strategy

Temporary Offset Measures

FIGURE 1



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NEW LAMBTON
NEW SOUTH WALES 2305
AUSTRALIA
T: 61 2 4037 3200
F: 61 2 4037 3201
www.slrconsulting.com

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Sheet Size:	A3
Projection:	GDA 1994 MGA Zone 55

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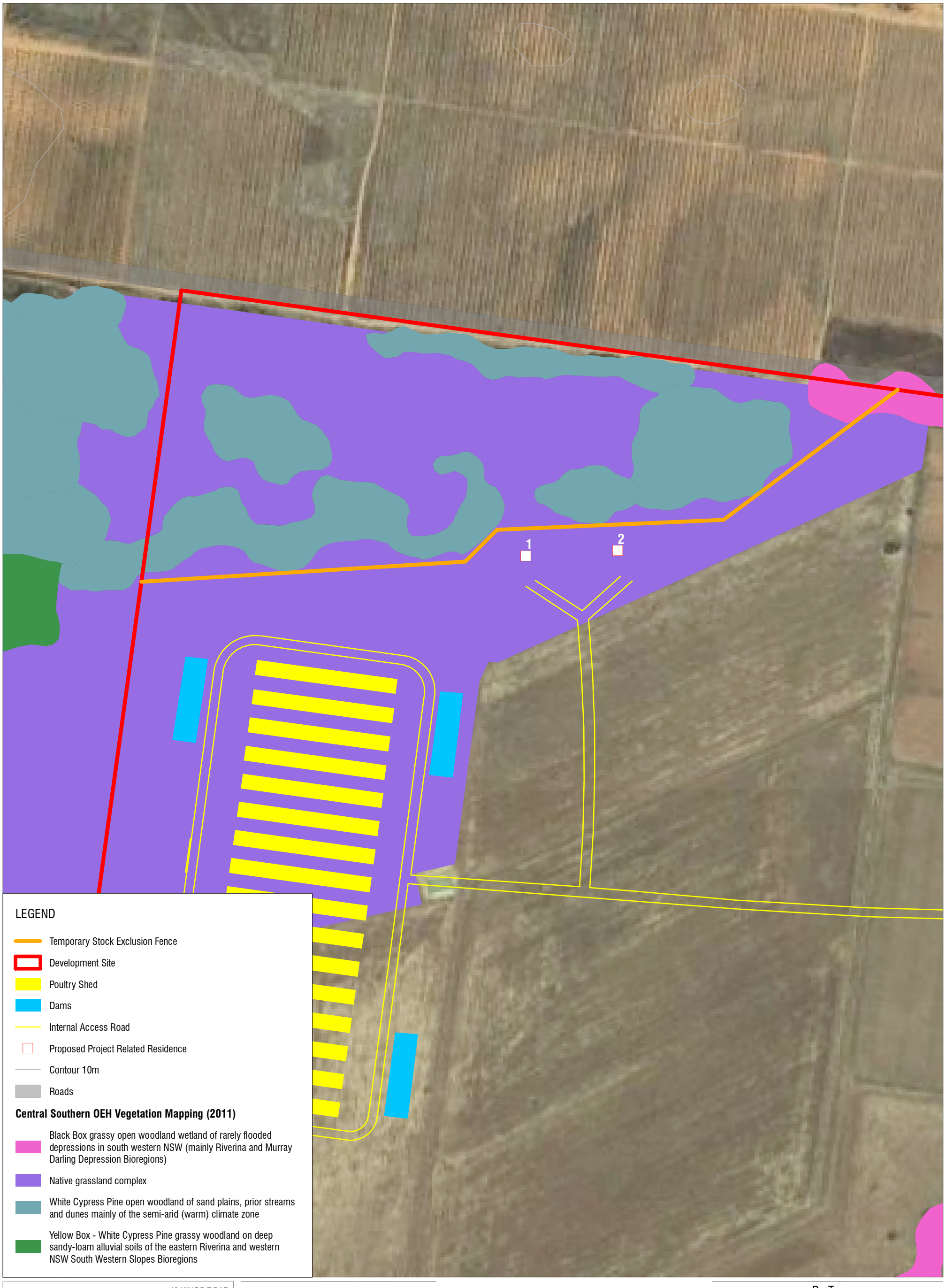
ProTen

Euroley Poultry Facility Biodiversity Offset Strategy

Temporary Offset Area Aerial Photo

FIGURE 2



LEGEND

- Temporary Stock Exclusion Fence
- Development Site
- Poultry Shed
- Dams
- Internal Access Road
- Proposed Project Related Residence
- Contour 10m
- Roads

Central Southern OEH Vegetation Mapping (2011)

- Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina and Murray Darling Depression Bioregions)
- Native grassland complex
- White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
- Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina and western NSW South Western Slopes Bioregions

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AUSTRALIA
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F: 61 2 4037 3201
www.slrconsulting.com

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Scale:	1:4,000
Sheet Size:	A3
Projection:	GDA 1994 MGA Zone 55

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ProTen

Euroley Poultry Facility Biodiversity Offset Strategy

Temporary Offset Area Regional Vegetation Map

FIGURE 3

APPENDIX A

CREDIT PROFILE FOR DEVELOPMENT IMPACTS

Biodiversity credit report

This report identifies the number and type of biodiversity credits required for a major project.

Date of report: 10/04/2015 Time: 11:19:29PM Calculator version: v4.0

Major Project details

Proposal ID:	0107/2015/1667MP
Proposal name:	Euroley Poultry Farm EIS
Proposal address:	Sturt Highway Euroley NSW 2700
Proponent name:	PROTEN Ltd
Proponent address:	2/66 Berry Street North Sydney NSW 2060
Proponent phone:	02 9458 1700
Assessor name:	Jeremy Pepper
Assessor address:	Level 3 10 Kings Road New Lambton NSW 2305
Assessor phone:	02 4037 3200
Assessor accreditation:	0107

Summary of ecosystem credits required

Plant Community type	Area (ha)	Credits created
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	0.00	0.00
Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	0.46	5.98
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	0.29	9.58
Total	0.75	16

Credit profiles

1. Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR517)

Number of ecosystem credits created	0
IBRA sub-region	MR - Murrumbidgee

Offset options - Plant Community types	Offset options - IBRA sub-regions
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR517) Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR519)	MR - Murrumbidgee and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

2. Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR518)

Number of ecosystem credits created	6
IBRA sub-region	MR - Murrumbidgee

Offset options - Plant Community types	Offset options - IBRA sub-regions
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR517) Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR518) Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion), (MR519)	MR - Murrumbidgee and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

3. White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone, (MR644)

Number of ecosystem credits created	7
IBRA sub-region	MR - Murrumbidgee

Offset options - Plant Community types	Offset options - IBRA sub-regions
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone, (MR644) White Cypress Pine - Drooping Sheoak grassy open woodland of the Riverine Plain, (MR645) Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion, (MR649) Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains, (MR664) Slender Cypress Pine - Sugarwood - Western Rosewood open woodland on sandy rises mainly in the Riverina Bioregion and Murray Darling Depression Bioregion, (MR681)	MR - Murrumbidgee and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

4. White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone, (MR644)

Number of ecosystem credits created	3
IBRA sub-region	MR - Murrumbidgee

Offset options - Plant Community types	Offset options - IBRA sub-regions
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone, (MR644) White Cypress Pine - Drooping Sheoak grassy open woodland of the Riverine Plain, (MR645) Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion, (MR649) Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains, (MR664) Slender Cypress Pine - Sugarwood - Western Rosewood open woodland on sandy rises mainly in the Riverina Bioregion and Murray Darling Depression Bioregion, (MR681)	MR - Murrumbidgee and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

Summary of species credits required

BioBanking Credit Calculator

Ecosystem credits

Proposal ID :	0107/2015/1667MP
Proposal name :	Euroley Poultry Farm EIS
Assessor name :	Jeremy Pepper
Assessor accreditation number :	0107
Tool version :	v4.0
Report created :	10/04/2015 22:58

Assessment circle name	Landscape score	Vegetation zone name	Vegetation type name	Condition	Red flag status	Management zone name	Management zone area	Current site value	Future site value	Loss in site value	Credit required for bio diversity	Credit required for TS	TS with highest credit requirement	Average species loss	Species TG Value	Final credit requirement for management zone
Big Circle	12.00	MR517_Moderate/Good_Medium	Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate/Good_Medium	Yes	MR517A	0.00	54.67	54.67	0.00	0	0	Little Pied Bat	0.00	2.10	0
Big Circle	12.00	MR518_Low	Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low	Yes	MR518_Cl	0.46	40.00	0.00	40.00	0	0		0.00	0.00	6
Big Circle	12.00	MR644_Moderate/Good	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Moderate/Good	Yes	MR644_Cl_modgood	0.08	45.31	0.00	45.31	3	2	Inland Forest Bat	27.78	2.20	3
Big Circle	12.00	MR644_Low	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Low	Yes	MR644_Cl_low	0.21	38.02	0.00	38.02	7	0		0.00	0.00	7

BioBanking Credit Calculator

Species credits

Proposal ID :

Proposal name :

Assessor name :

Assessor accreditation number :

Tool version : v4.0

Report created : 10/04/2015 22:58

Scientific name	Common name	Species TG value	Identified population?	Can Id. popn. be offset?	Area / number of loss	Negligible loss	Red flag status	Number of credits
			No					