

# NARRANDERA POULTRY PRODUCTION FARM

**Annual Review 2017-2018**

**Prepared for:**

ProTen Limited  
PO Box 1746  
North Sydney NSW 2060

SLR Ref: 630.12493  
Version No: Final  
June 2018



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## BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with ProTen Limited (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

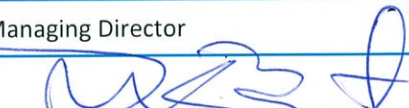
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## DOCUMENT CONTROL

Reference	Version	Date	Prepared	Checked	Authorised
630.12493	Draft	18 June 2018	Samantha Hayes	Nathan Archer	Nathan Archer
630.12493	Final	19 June 2018	Samantha Hayes	Nathan Archer	Daniel Bryant

**Table 1 Annual Review Title Block**

Name of Operation	Narrandera Poultry Production Complex
Name of operator	ProTen Limited
Development consent / project approval #	SSD 6882
Name of holder of development consent / project approval	ProTen Limited
Water licence #	WAL 11788
Name of holder of water licence	ProTen Holdings Pty Ltd
Annual Review start date	22 April 2017
Annual Review end date	21 April 2018
<p>I, Daniel Bryant, certify that this audit report is a true and accurate record of the compliance status of the Narrandera Poultry Production Complex for the period between 22 April 2017 and 21 April 2018 and that I am authorised to make this statement on behalf of ProTen Limited.</p> <p><i>Note.</i></p> <p>a) <i>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p>b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Name of authorised reporting officer	Daniel Bryant
Title of authorised reporting officer	Managing Director
Signature of authorised reporting officer	
Date	19-6-18

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Appendix C	WAL 11788
Appendix D	Surface Water Long Term Data
Appendix E	Groundwater Long Term Data
Appendix F	Geotechnical Investigation – Existing Sediment Ponds (Aitken Rowe 2018)

## 1 Statement of Compliance

A summary of compliance at ProTen’s Narrandera Poultry Production Farm (ProTen Narrandera, the Development) during the reporting period is provided in **Table 2**.

**Table 2 Statement of Compliance**

Were all conditions of the relevant approval(s) complied with?	Yes/No
Development Consent - SSD 6882	No
Environment Protection Licence - EPL 20748	Yes
Water Access Licence - WAL 11788	Yes

A summary of the non-compliances during the reporting period have been summarised in **Table 3**. There were five non-compliances during the reporting period which are discussed further in **Section 9** and **Section 10.3**. The non-compliance categories are described in **Table 4**.

**Table 3 Non-Compliances**

Relevant Approval	Condition #	Condition Description Summary	Compliance Status	Comment	Where addressed
SSD 6882	Schedule 3, Condition B24(a)	Fire Safety Study	Non-Compliant Medium	ProTen Did Not Prepare A Fire Safety Study (FSS) That Met The Requirements Of The NSW Fire Brigades Prior To The Commencement Of Construction.	Sections 9 and 10.3
SSD 6882	Schedule 3, Condition B35	Flooding - Minimum floor levels	Non-Compliant Low	ProTen were not able to demonstrate that the floor levels for the Farm Managers residences were built 500 mm above ground level.	Sections 9 and 10.3
SSD 6882	Schedule 4, Condition C14(b)	Access to Information	Non-Compliant Administrative	ProTen did not consistently maintain up-to-date copies of documents, strategies, plans and programs, monitoring results, as required by this Consent on their website.	Sections 9 and 10.3
SSD 6882	Statement of Commitments	Noise	Non-Compliant Low	ProTen maintain a one-way road around each PPU which is communicated to drivers through the induction and driver code of conduct and was observed to be implemented during the site inspection, however there is no traffic direction signage erected at any of the PPUs.	Sections 9 and 10.3
SSD 6882	Statement of Commitments	Traffic	Non-Compliant Low		Sections 9 and 10.3



Relevant Approval	Condition #	Condition Description Summary	Compliance Status	Comment	Where addressed
SSD 6882	Statement of Commitments	Flooding	Non-Compliant Low	ProTen were not able to demonstrate that the floor levels for the Farm Managers residences were built 500 mm above ground level.	Sections 9 and 10.3

**Table 4 Compliance Status Categories**

Risk Level	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium	Non-Compliant	Non-compliance with potential for serious environmental consequences, but is unlikely to occur; or potential for moderate environmental consequences, but is likely to occur.
Low	Non-Compliant	Non-compliance with potential for moderate environmental consequences, but is unlikely to occur; or potential for low environmental consequences, but is likely to occur.
Administrative non-compliance	Non-Compliant	Non-compliance which does not result in any risk of environmental harm.

## 2 Introduction

### 2.1 Overview

ProTen Narrandera was granted Development Consent SSD 6882 on 9 November 2015 by the Planning Assessment Commission of NSW (PAC) for the construction and operation of a Poultry Production Farm located approximately 26 kilometres (km) west of Narrandera in south-western NSW (**Figure 1**). ProTen Narrandera is situated on approximately 1,160 hectares (ha) of rural land positioned off the Sturt Highway within the Narrandera local government area (LGA).

ProTen Narrandera commenced construction on 14 December 2015, with construction being completed on 22 October 2017. ProTen Narrandera comprises five poultry production units (PPU), where broiler birds are grown for human consumption (see **Figure 2**). Each PPU comprises 16 tunnel-ventilated fully-enclosed climate-controlled poultry sheds, with associated support infrastructure and staff amenities (see **Figure 3**).

This Annual Review details the environmental performance of ProTen Narrandera for the twelve month reporting period from 22 April 2017 to 21 April 2018. This reporting period has been approved by the DPE to align with the Environment Protection Licence (EPL) Annual Return period. The Annual Review has been prepared generally in accordance with the NSW Government *Annual Review Guideline* (2015), and to satisfy Schedule 4, Condition C8 of Development Consent SSD 6882.

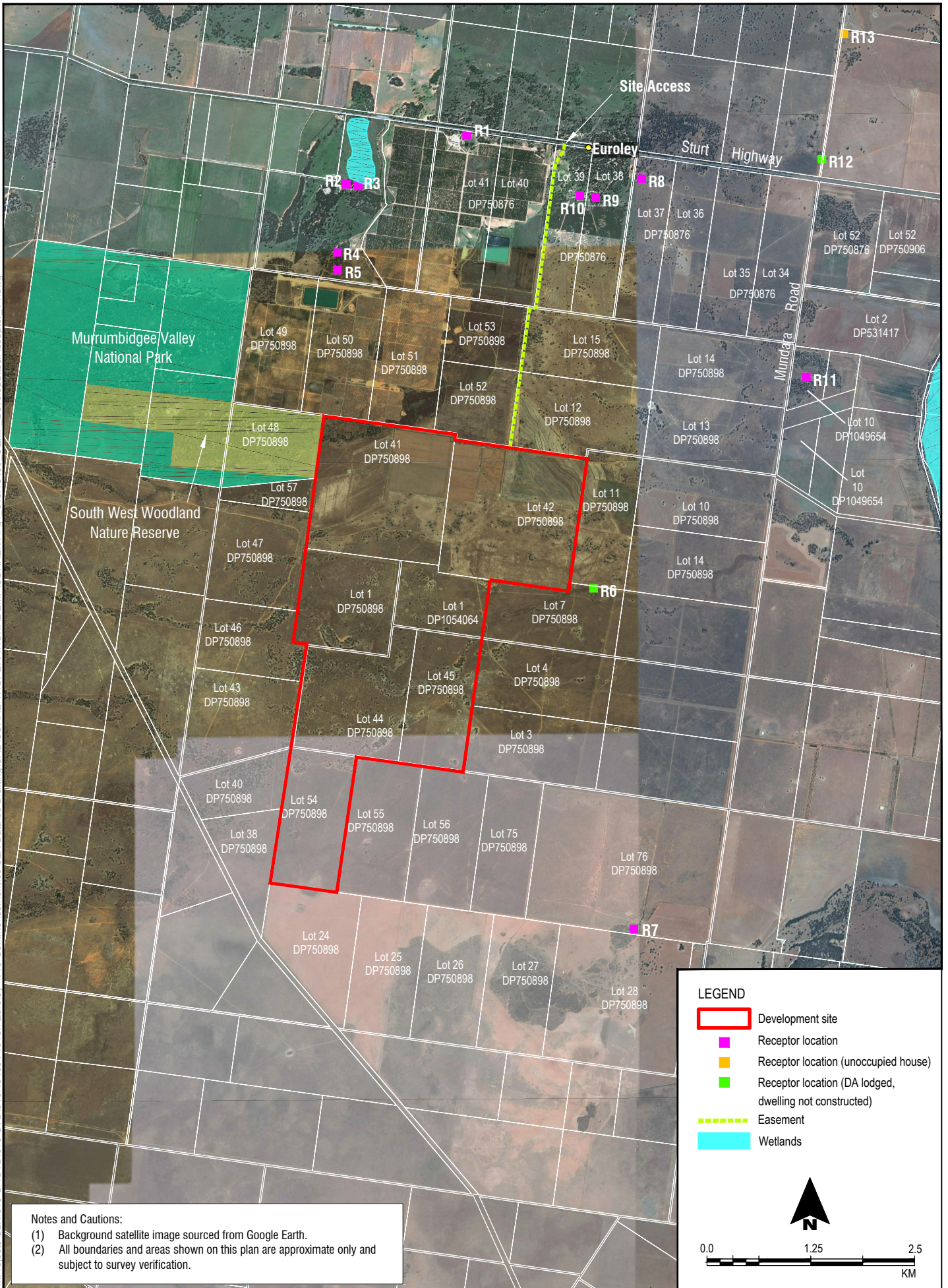
### 2.2 Company Contact Details

The company contacts for this report are listed in **Table 5**.

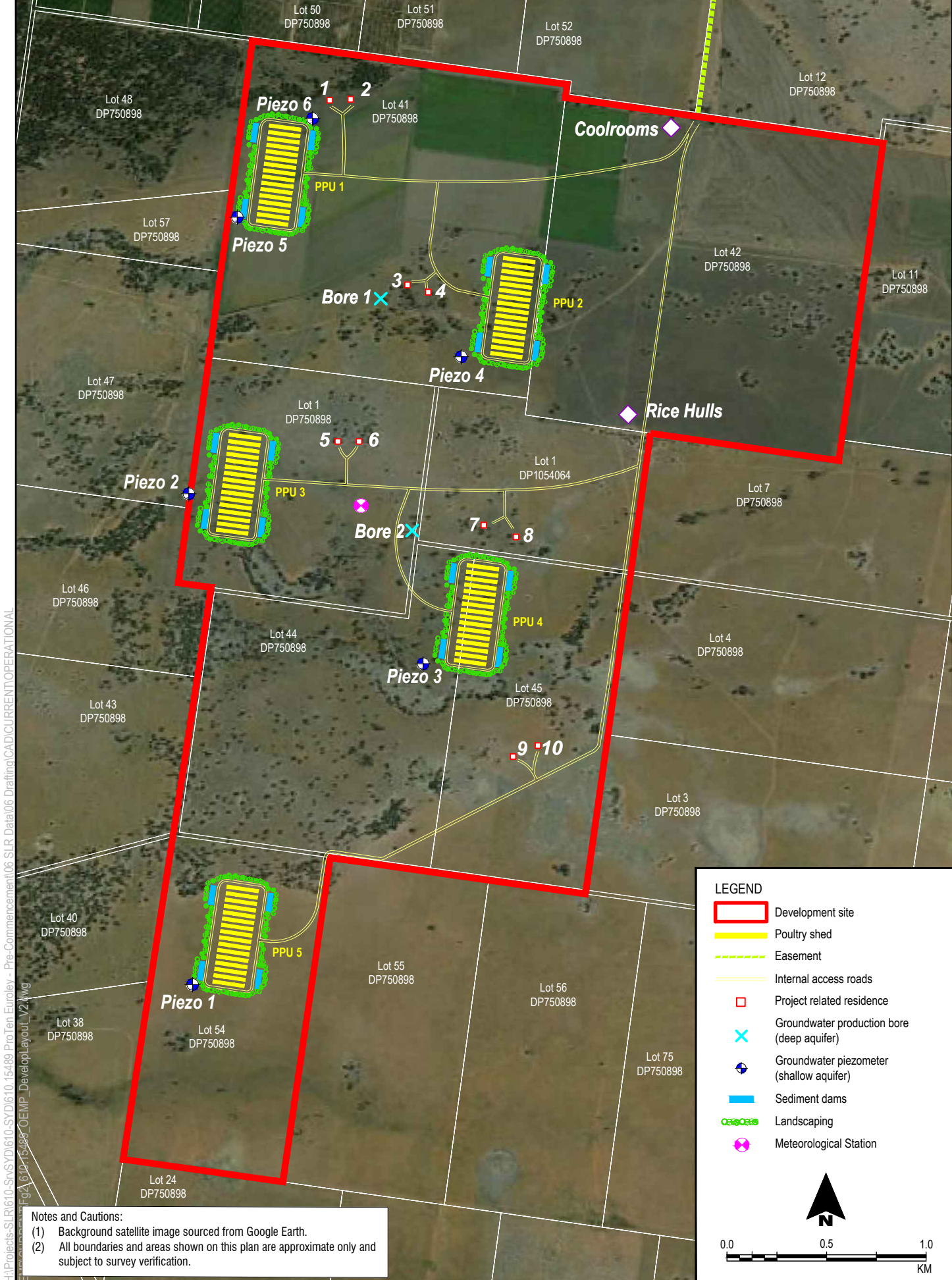
**Table 5 Company Contact Details**

ProTen Narrandera	
Daniel Bryant <i>Managing Director</i> Ph: (02) 9458 1701 Mob: 0438 498 292 Email: Daniel@proten.com.au	David Kruger <i>Regional Operations Manager - Narrandera</i> Ph: (02) 6962 1770 Mob: 0439 400 127 Email: davidk@proten.com.au

H:\Projects-SLR\610-SvSYD\610-SYD\610\_15489\_ProTen Euroley - Pre-Commencement\06\_SLR\_Data\06\_Draft\06\_CAD\CURRENT\OPERATIONAL\_EMP\CURRENT\Fig1\_610\_15489\_OEMP\_DeveloperSite&Receptor\_V1.dwg



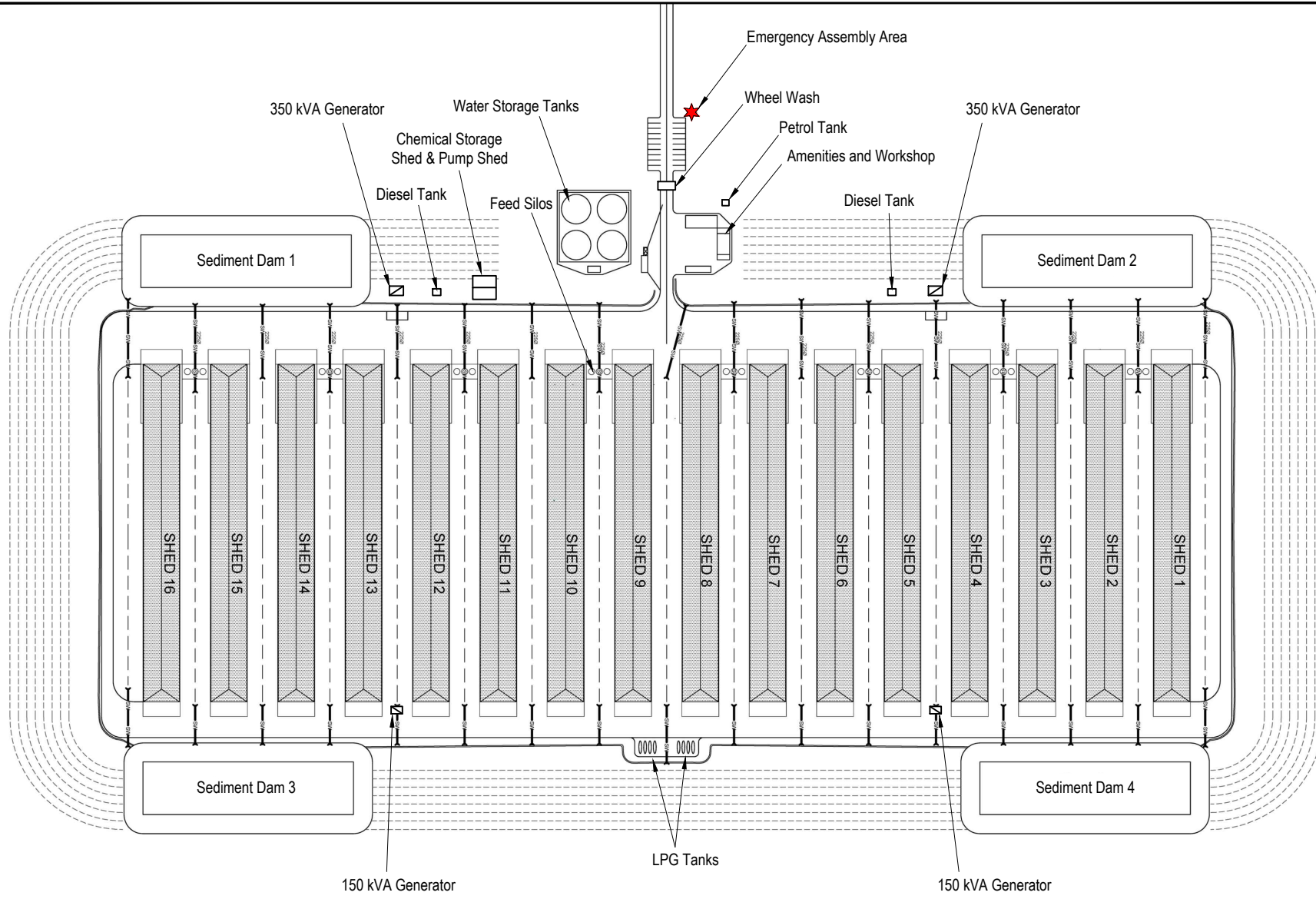
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Development Layout  
**FIGURE 2**

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Note:  
Symbols depicting generators, fuel tanks, wheel wash  
and chemical storage shed, are conceptual only.

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

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## 2.3 Report Scope

SLR Consulting (SLR) have been engaged by ProTen to prepare this Annual Review as required under Schedule 4, Condition C8 of SSD 6882 (see **Appendix A**). This condition imposes the requirements listed in **Table 6**:

**Table 6 Compliance with Schedule 4, Condition C8 of SSD 6882**

Condition Number	Condition	Section Addressed
C8	Each year, the Applicant shall review the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This document
C8(a)	Describe the Development that was carried out in the previous calendar year, and the Development that is proposed to be carried out over the next year;	Sections 4 and 11
C8(b)	Include a comprehensive review of the monitoring results and complaints records of the Development over the previous calendar year, which includes a comparison of these results against the: <ul style="list-style-type: none"> <li>i. the relevant statutory requirements, limits or performance measures/criteria;</li> <li>ii. requirements of any plan or program required under this consent;</li> <li>iii. the monitoring results of previous years; and</li> <li>iv. the relevant predictions in the EIS;</li> </ul>	Sections 6, 7 and 10
C8(c)	Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	Section 10
C8(d)	Identify any trends in the monitoring data over the life of the Development;	Section 7, Appendix D, Appendix E and
C8(e)	Identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Sections 6 and 7
C8(f)	Describe what measures will be implemented over the next year to improve the environmental performance of the Development.	Section 11

This Annual Review covers the reporting period from 22 April 2017 to 21 April 2018, which correlates with the end of the reporting period for EPL 20748, and addresses all aspects listed under Condition C8 of SSD 6882.

The Annual Review is based on operational and environmental monitoring data information supplied by ProTen, various consultations with ProTen personnel and site inspections undertaken by SLR throughout the 12 month reporting period.

## 3 Approvals

### 3.1 Overview

**Table 7** provides a summary of the current statutory instruments applicable to the continuing operation of ProTen Narrandera. Further details are outlined in the following sub-sections.

**Table 7 Current Consents, Licences and Approvals**

Instrument	Issue Date	Regulatory Authority
Development Consent - SSD 6882	9 November 2015	Department of Planning and Environment (DPE)
Environment Protection Licence - EPL 20748	22 April 2016	Environment Protection Authority (EPA)
Water Access Licence - WAL 11788	8 April 2015	Department of Primary Industries - Office of Water (DPI - Water)

### 3.2 Development Consent

ProTen Narrandera was granted Development Consent SSD 6882 on 9 November 2015 by the PAC. SSD 6882 approves the construction and operation of five PPUs, each comprising of 16 poultry sheds where broiler birds are grown for human consumption.

**Table 8** summarises the key elements of the Development as approved by SSD 6882.

**Table 8 Summary of Development**

Development Characteristic	Proposed Development
Purpose	Birds grown for human consumption
Number of PPUs	Five
Number of poultry sheds per PPU	16, each measuring 160 metres long by 17 metres wide
Total number of poultry sheds	80
Type of poultry sheds	Tunnel-ventilated, fully-enclosed, climate-controlled
Maximum shed population	49,000 birds
Maximum PPU population	784,000 birds
Maximum Development population	3.92 million birds
Maximum bird density within sheds	40 kilograms per square metre (kg/m <sup>2</sup> )
Hours of operation	24 hours a day, 7 days a week
Production cycle length	Approximately 9 weeks, comprising a maximum bird occupation of 8 weeks and a cleaning phase of 1 week
Number of production cycles per year	On average, approximately 5.7

A copy of SSD 6882 is attached as **Appendix A**.

### 3.3 Environment Protection Licence

ProTen Narrandera is a premises-based activity under Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act) as the complex holds more than 250,000 birds at any one time. As a result, ProTen Narrandera was required to obtain an EPL.

EPL 20748 was issued by the EPA on 22 April 2016 and is attached as **Appendix B**.

#### 3.3.1 EPL Annual Return

The 2017-2018 Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the EPL (including the recording of complaints), was submitted on 15 June 2018 for the reporting period of 22 April 2017 to 21 April 2018. The 2018 EPL Annual Return reported the following:

- No complaints during the reporting period; and
- No non-compliances or reportable incident during the reporting period.

### 3.4 Water Access Licence

WAL 11788 was granted by DPI - Water on 8 April 2015 permitting the abstraction of 488 megalitres (ML) per year from the two groundwater production bores installed at the site (see **Figure 2**). These bores access the Deep Aquifer (Calivil Formation) in accordance with the WAL conditions and are capable of a maximum pump rate of 7 ML per day.

A copy of WAL 11788 is contained in **Appendix C**.

### 3.5 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) (SLR, 2016a) was prepared to satisfy Schedule 4, Condition C1 of SSD 6882. The objective of the CEMP is to ensure the application of best practice environmental management during the construction phase of the Development and that environmental risks are properly managed.

The CEMP included the following management plans:

- Construction Traffic Management Plan;
- Construction Soil and Water Management Plan; and
- Landscape Management Plan.



### 3.6 Operational Environmental Management Plan

In accordance with Schedule 4, Condition C4 of SSD 6882, an Operational Environmental Management Plan (OEMP) was prepared and approved by the DPE in May 2017. The OEMP includes:

- Driver Code of Conduct;
- Air Quality Management Plan;
- Landscaping Management Plan
- Water Management Plan;
- Waste Management Plan;
- Emergency Plan;
- Biodiversity Management Plan;
- Aboriginal Cultural Heritage Management Plan;
- Emergency Disposal Biosecurity Plan;
- Flood Emergency and Evacuation Plan; and
- Complaints and Incidents Management Strategy.

The OEMP establishes the framework for managing and mitigating the potential environmental impacts of ProTen Narrandera over the life of the operation. It includes performance objectives, performance indicators, management commitments/strategies, monitoring and reporting requirements and contingencies for potential environmental impacts.

## 4 Operations

### 4.1 Overview

ProTen Narrandera comprises five PPUs, where birds are grown for human consumption. Each PPU comprises 16 tunnel-ventilated fully-enclosed climate-controlled poultry sheds, with associated support infrastructure and staff amenities. Each poultry shed has the capacity to house a maximum of 49,000 broiler birds, equating to a PPU population of up to 784,000 broilers and a total maximum site population of up to 3.92 million broilers.

ProTen Narrandera typically operates on a nine week production cycle, with a maximum bird occupation of eight weeks and a down-time of close to one week for cleaning and sanitisation in preparation for the next batch of birds. In summary, the cycle comprises the following major steps:

1. **Delivery of Bedding Material** - clean and fresh bedding material, such as soft wood shavings, is delivered to the site from a storage facility near Hanwood and spread over the floor of the poultry sheds.
2. **Delivery of Chicks** - day-old chicks are delivered to the site from one of Baiada's local hatchery facilities and placed onto the floor of the poultry sheds.
3. **Chick Nurturing** - chicks are nurtured and grown within the sheds, with their period of service depending on the live-weight of the birds. The desired processing age is primarily determined by customer weight specifications, but is normally achieved from five and eight weeks of age.
4. **Removal of Birds** - as the birds reach their desired slaughter weight, they are removed from the sheds and transported to Baiada's processing complex near Hanwood. Shed thinning (partial depopulation) occurs at various times during the production cycle depending on the live-weight of the birds.
5. **Removal of Poultry Litter** - when all the birds have been removed, after approximately eight weeks, the spent bedding material (poultry litter) is removed from the sheds and transported off-site for disposal or re-use.
6. **Cleanout** - the poultry sheds are cleaned and sanitised to reduce the risk of pathogens and disease in preparation for the next batch of chicks. Additional activities including cleaning feed pans, water lines, feed silos, fan blades and other equipment.

### 4.2 Operating Hours

The Development operates 24 hours a day, seven days a week with the majority of activities being carried out between 7:00 am and 7:00 pm. For reasons of livestock welfare, as the birds reached their desired processing (slaughter) weight they are removed from the sheds and transported from ProTen Narrandera between 8:00 pm and 2:00 pm, when it is cooler and the birds are more settled.

There is typically one daily shift for farm workers commencing at 7:00 am and finishing at 4:00 pm.

## 4.3 Construction

Construction of ProTen Narrandera commenced on 14 December 2015 and has been undertaken on a staged basis. Construction was completed during the reporting period on the 22 October 2017 and included the construction of Farms 75 and 76 which were the final farms to be completed on site. Construction included the following activities:

- Site preparation and establishment works, including erosion and sediment control;
- Earthworks;
- Foundation and slab construction;
- Construction of the poultry sheds and ancillary infrastructure at PPUs;
- Construction of the remaining dwellings to house farm managers and farm assistant managers;
- Installation and/or upgrade of the required servicing infrastructure (water, electricity and LPG); and
- Construction of the surface water management systems.

Additional construction undertaken during the reporting period included the completion of site fencing and the sealing of the main access road to the PPUs.

## 4.4 Production

Schedule 2, Condition A6 of SSD 6882 permits a maximum population of 3.92 million broilers (or 784,000 per PPU) at ProTen Narrandera at any one time. **Table 9** lists the bird placement and production schedules at ProTen Narrandera over the reporting period.

**Table 9 Production Numbers**

Farm Number	Batch Number	Start Date	End Date	Birds In	Birds Out
79	1704	28-03-2017	23-05-2017	739,785	713,999
78	1704	30-03-2017	25-05-2017	742,650	711,872
77	1704	04-04-2017	29-05-2017	749,241	724,025
76	1704	18-04-2017	01-06-2017	372,643	358,930
79	1705	01-06-2017	26-07-2017	746,514	728,125
78	1705	05-06-2017	31-07-2017	738,672	718,208
77	1705	08-06-2017	02-08-2017	734,466	716,558
76	1705	13-06-2017	03-08-2017	366,316	357,988
75	1705	26-06-2017	11-08-2017	368,171	350,456
79	1801	08-08-2017	03-10-2017	739,294	714,684
78	1801	10-08-2017	06-10-2017	745,308	718,318
77	1801	15-08-2017	09-08-2017	734,659	713,152
76	1801	07-08-2017	04-08-2017	744,424	726,423
75	1801	22-08-2017	28-10-2017	182,100	177,444

Farm Number	Batch Number	Start Date	End Date	Birds In	Birds Out
79	1802	12-10-2017	06-12-2017	730,155	702,108
78	1802	17-10-2017	08-12-2017	725,672	702,946
77	1802	19-10-2017	11-12-2017	724,127	697,137
76	1802	23-10-2017	13-12-2017	738,847	700,820
75	1802	24-10-2017	08-12-2017	735,081	711,451
79	1803	21-12-2017	07-02-2018	727,487	701,143
78	1803	22-12-2017	08-02-2018	726,855	697,586
77	1803	27-12-2017	14-02-2018	711,201	678,853
76	1803	27-12-2017	15-02-2018	715,385	687,594
75	1803	02-01-2018	19-02-2018	722,105	688,993
79	1804	22-02-2018	12-04-2018	747,823	718,282
78	1804	23-02-2018	16-04-2018	749,460	719,080
77	1804	27-02-2018	17-04-2018	755,450	728,928
76	1804	01-03-2018	20-04-2018	768,751	748,670
75	1804	05-03-2018	24-04-2018	764,055	727,908
<b>Total</b>				<b>19,746,697</b>	<b>19,041,681</b>

Broiler production numbers have increased significantly during the reporting period following the completion of construction of Farms 75 and 76. The total number of birds placed during the reporting period was 19,746,697 which is an increase from the 7,375,347 birds placed during the previous reporting period.

As show in **Table 9**, there were no exceedances of the 784,000 broilers per PPU and therefore no exceedances of 3.92 million broiler site population.

## 5 Actions Required from Previous Annual Review

Following the submission of the previous Annual Review, ProTen received a letter from the DPE on the 8 August 2017, stating the Annual Review was found to generally satisfy the requirements of Condition 4, Schedule 8 of SSD 6882.

The DPE requested the following to be included in the 2017-2018 Annual Review:

**Table 10 Actions Required from Previous Annual Review**

DPE Comment	Where addressed in Report
Graphical representation of data, trends and comparisons with previous years.	Section 6.5.3, Appendix D and Appendix E
A comparison of results with the predictions made in the Environmental Assessment.	Sections 7.2.3 and 7.3.3

## 6 Environmental Performance

This section provides an overview of the environmental management and performance of ProTen Narrandera during the reporting period.

### 6.1 General Site Maintenance

#### 6.1.1 Construction

The CEMP was prepared prior to the commencement of construction to:

- Satisfy the requirements of Conditions C1 and C2 of SSD 6882;
- Ensure the application of best practice environmental management;
- Ensure that the commitments made in the EIS (SLR, 2015a) and RTS (SLR, 2015b) are fully implemented and/or complied with during construction; and
- Ensure that the environmental risks associated with the construction of ProTen Narrandera are properly managed.

As required by Schedule 4, Condition C15 of SSD 6882, an experienced Environmental Representative was appointed by ProTen Narrandera and approved by the Secretary to offer advice in relation to environmental performance and monitor the implementation of the CEMP.

In accordance with the CEMP, the Environmental Representative has undertaken regular environmental inspections during the construction of ProTen Narrandera to monitor the implementation of mitigation and management measures, and ensure compliance with the Development Consent and CEMP. Inspection reports were prepared and provided to ProTen summarising any complaints, incidents and non-compliances, as well as identifying any general issues to be addressed.

Environmental site inspections were undertaken by the Environmental Representative during the reporting period on 31 May 2017, 3 August 2017, 25 September 2017 and 15 November 2017, with the final construction inspection carried out on 5 April 2018. A representative from the DPE was also present during the final inspection to assess the status of the Development and was generally satisfied with construction.

Overall, the Environmental Representative concludes that environmental controls detailed in the CEMP were generally implemented during the reporting period and the risk of adverse environmental impact from the construction of ProTen Narrandera was low.

### 6.1.2 Operation

Regular and effective site maintenance is essential to minimise the impacts of odour, dust, noise, pests and health as a result of site operation and management.

ProTen Narrandera operates in accordance with the approved OEMP to minimise the potential for adverse environmental impacts, extend the life of farm equipment, reduce operating costs and maximise operational efficiency.

Emphasis is placed on keeping the insides of the poultry sheds and surrounding environs as clean as possible, with maintenance activities including:

- Regular inspection and maintenance of ventilation systems, bird drinkers and bird feeders to avoid blockages, spillages and leaks;
- Regular examination and management of bird health within the poultry sheds;
- Stocking densities are in accordance with the *National Animal Welfare Standards for the Chicken Meat Industry* (Barnett et al, 2008);
- Daily inspection and removal of dead birds from within the sheds;
- 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;
- Regular site slashing and mowing;
- Maintenance of the landscape plantings;
- Implementation of pest control measures, which primarily comprises a preventative baiting system;
- Regular inspection and maintenance of water supply pumps and pipelines to identify and fix any blockages or leaks; and
- Maintenance of the internal access roads to minimise tyre wear and dust emissions.

## 6.2 Meteorological Monitoring

In accordance with Condition M4 of EPL 20748, an automatic weather station capable of providing real-time monitoring data is operational at the ProTen Narrandera. The station monitors the following parameters:

- Temperature (measured at 10 metres and 2 metres above ground level);
- Wind speed;
- Wind direction; and
- Rainfall.

**Table 11** summarises the meteorological data collected at ProTen Narrandera during the reporting period.

**Table 11 On-Site Meteorological Station Data**

Meteorological Information	22-30 Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	1-21 Apr 2018
Maximum Temperature at 2m (°C)	26.8	23.9	19.6	21.5	21.8	38.8	30.7	36.7	39.5	43.6	41.3	36.7	37.4
Minimum Temperature at 2m (°C)	0.6	-1.1	-5.4	-6.8	-6.4	-5.0	-0.8	1.3	7.0	10.7	9.4	5.2	5.2
Average Temperature at 2m (°C)	14.5	11.2	7.0	8.3	8.7	13.3	17.4	21.6	24.1	27.0	24.9	22.2	20.9
Maximum Temperature at 10m (°C)	25.9	23.2	19.6	21.7	21.7	37.6	30.2	35.8	38.8	42.9	40.6	35.7	36.7
Minimum Temperature at 10m (°C)	4.3	2.5	-2.4	-3.3	-2.0	-0.9	4.5	5.2	10.7	11.1	12.1	8.8	8.8
Average Temperature at 10m (°C)	15.1	12.2	8.4	9.4	9.6	14.0	18.0	21.8	24.4	27.4	25.2	22.6	21.6
Total Rainfall (mm)	16.8	40.8	1.8	24.8	29.4	0.2	33.8	25.2	101.2	20.4	4.4	4.6	2.0
Average Wind Direction (degrees)	188.0	170.9	185.0	191.1	200.8	208.3	168.4	127.7	187.6	163.8	158.2	160.2	182.2
Average Wind Speed (m/s)	2.8	2.3	1.6	2.8	3.3	4.1	3.5	4.0	3.5	3.7	3.7	3.6	3.2



## 6.3 Air Quality Management

### 6.3.1 Construction

During construction, the main impact to air quality is dust generation as a result of wheel generated dust from the internal roads. However the impact of such emissions is low given the constructed nature of the roads and subsequent lower silt loading (compared to using unformed tracks). All feasible measures to minimise dust generation were undertaken in accordance with the CEMP, including:

- Vehicles on site are confined to designated roadways;
- Disturbance is limited to the smallest practicable area possible to allow for any essential construction activity;
- Disturbed areas are promptly rehabilitated and revegetated to a stable landform to minimise dust emissions;
- If necessary, dust is minimised by “wetting” down surfaces being worked and/or carrying traffic during dry periods;
- Plant and equipment is regularly maintained to ensure optimal operating condition;
- Vehicles do not exceed a general speed limit of 60 km per hour along the access road from the Sturt Highway and ProTen Narrandera, with a reduced speed limit of 15 km per hour to be adopted in the vicinity of all work sites;
- Vehicles entering or leaving the site have their loads covered; and
- Vehicles leaving the ProTen Narrandera are cleaned of dirt, sand and other materials to avoid tracking these materials on to the public road network.

### 6.3.2 Operation

Air quality is a sensitive issue associated with intensive poultry developments. Given the nature of such operations, it is inevitable that there may be intermittent releases of fugitive odours and particulate matter during the poultry production cycle.

An *Air Quality Management Plan* (AQMP) (PEL, 2016) has been prepared for ProTen Narrandera in accordance with Condition B3 of Development Consent SSD 6882. The following sources are identified as the primary potential sources of odour emissions:

- Shed operations during the bird growing phase;
- Shed operations during shed cleanout;
- Dead birds; and
- Spilt litter during cleanout.

The AQMP also addresses dust emissions. The following are identified as the primary potential sources of operational dust emissions from ProTen Narrandera:

- Wheel generated dust from unsealed roadways;
- Dust emissions from sheds;
- Materials handling and transfer (i.e. litter placement and removal); and

- Windblown dust from open areas.

**Table 12** lists the criteria for particulate matter adopted in the EIS (SLR, 2015a).

**Table 12 Particulate Matter Criteria**

Pollutant	Agency	Criterion	Averaging Time
PM <sub>10</sub>	EPA	50 µg/m <sup>3</sup>	24-Hour Maximum
		30 µg/m <sup>3</sup>	Annual Mean

Mitigation measures and management strategies employed during the reporting period at ProTen Narrandera to reduce and manage adverse odour and dust emissions include:

- The conditions inside the poultry sheds are continuously monitored (automatic and alarmed) to ensure optimum conditions for bird welfare and bedding material/litter are maintained;
- Regular monitoring and maintenance of the tunnel ventilation systems and bird drinkers (nipple drinkers and drink cups) within the poultry sheds to avoid spillage, leaks and uneven distribution;
- Regular monitoring and maintenance of bird health within each of the poultry sheds;
- Stocking densities are in accordance with the *National Animal Welfare Standards for the Chicken Meat Industry* (Barnett et al, 2008);
- Daily monitoring of the bedding material within the sheds to identify, remove and replace any caked material beneath drinking lines and/or areas with excessive moisture content;
- Dead birds removed from the sheds on a daily basis and stored in the on-site chiller for removal from site;
- Poultry litter promptly removed from the sheds and transported off site at the end of each production cycle during the clean-out phase. Wherever possible the handling of this material is avoided during adverse climatic conditions, such as times of cold air drainage during early morning or towards night and strong winds. The shed ventilation systems are not used during the removal of bedding material;
- Spent litter is not spread on site;
- A 60 km per hour speed limit is imposed on the main access road and with a reduced speed limit of 15 km per hour is adopted around the PPUs;
- The main internal access road has been sealed;
- Internal roads are maintained to minimise dust generation; and
- All trucks have their loads covered prior to exiting the site.

### 6.3.3 Environmental Performance

Some dust emissions were noted during the September and April inspections from the internal access roads during heavy vehicle movements and dry weather. It was recommended by the Environmental Representative that the water cart be utilised frequently to wet down the access roads and minimise dust emissions during the dry periods. The main internal access road was sealed in December 2018, reducing dust emissions from vehicle movements.

There were no complaints in relation to dust emissions during the reporting period.

There is no requirement to undertake air quality monitoring under SSD 6882 or EPL 20748. ProTen Narrandera will continue to implement the mitigation and management measures outlined in the AQMP.

## 6.4 Noise Management

### 6.4.1 Construction

In accordance with Condition B27 of Schedule 3 of SSD 6882, all construction works were undertaken during the following hours:

- a) 7:00am to 6:00pm Mondays to Fridays, inclusive;
- b) 8:00am to 1:00pm Saturdays; and
- c) At no time on Sundays or public holidays.

ProTen Narrandera has been constructed with the aim of achieving the construction noise management levels detailed in the *Interim Construction Noise Guideline* (ICNG) (Department of Environment and Climate Change, 2009). All feasible and reasonable noise mitigation measures have been implemented.

The noise mitigation measures implemented during construction include:

- Plant and equipment operators were instructed to operate in a manner that minimises noise generation;
- All construction was completed between 7:00am and 6:00pm Monday to Friday and between 8:00am and 1:00pm on Saturday;
- Plant and equipment was regularly maintained to ensure optimal operating condition; and
- A circular one-way internal road system was established to minimise the use of reversing alarms and heavy vehicle manoeuvring.

### 6.4.2 Operation

Schedule 3, Condition B32 of SSD 6882 and Condition L3.1 of EPL 20748 outline the operational noise limits for ProTen Narrandera as presented in **Table 13**.

**Table 13 Operational Noise Limits**

Location	Day	Evening	Night	
	L <sub>Aeq</sub> (15min)	L <sub>Aeq</sub> (15min)	L <sub>Aeq</sub> (15min)	L <sub>A1</sub> (1min)
All privately owned residential premises	35	35	35	45

*Note: Noise generated by the Development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the INP. Appendix 9 of the INP sets out the meteorological conditions under which this criterion applies.*

Operational noise mitigation measures and management strategies employed during the reporting period included:

- Plant and equipment operators were instructed to operate the items in a manner that minimises noise generation;
- Emergency standby diesel generators are only used when power from the electricity grid is lost;
- Plant and equipment are regularly inspected and maintained to ensure optimal operation condition;
- A circular one-way internal roadway was been established to minimise the use the reversing alarms and heavy vehicle manoeuvring;
- Audible alarms were maintained at a level not audible beyond the site boundary;

- Internal roads are maintained to reduce traffic noise levels (among other objectives); and
- The majority of operational activities occurred between 7.00am and 7.00pm.

### 6.4.3 Environmental Performance

No complaints were received with regard to noise during the reporting period. During the site inspections, no noise related issues were identified.

There is no requirement to undertake noise monitoring under the SSD 6882 or EPL 20748. ProTen Narrandera will continue to implement the noise mitigation and management measures outlined in the OEMP.

## 6.5 Waste Management

### 6.5.1 Construction

Waste generated by the construction of ProTen Narrandera is managed in accordance with the CEMP. The predominant waste streams generated through construction are concrete, timber, packaging (i.e. plastics, cardboard and polystyrene) and general putrescible waste.

The following mitigation measures are implemented during the construction of ProTen Narrandera:

- Waste streams are managed in accordance with the reuse/recycling/disposal methods described in the CEMP;
- All waste materials are directed to a facility or premises lawfully permitted to accept the materials;
- Only wastes that cannot be cost effectively reused or recycled are sent to for disposal;
- Co-mingled recycling bins are provided at the Site Office and near work sites for container recycling to ensure these items do not end up at landfill;
- Skip bins are checked on a daily basis. If they are reaching capacity, removal and replacement is organised for the next 24 hours;
- Site disturbance is minimised to reduce unnecessary excavation;
- Portable, self-contained toilets and washroom facilities are regularly serviced and emptied by a licensed contractor for offsite disposal at a licensed facility; and
- Equipment/plant/machinery/vehicles are washed down within an appropriately bunded wash down bay.

### 6.5.2 Operation

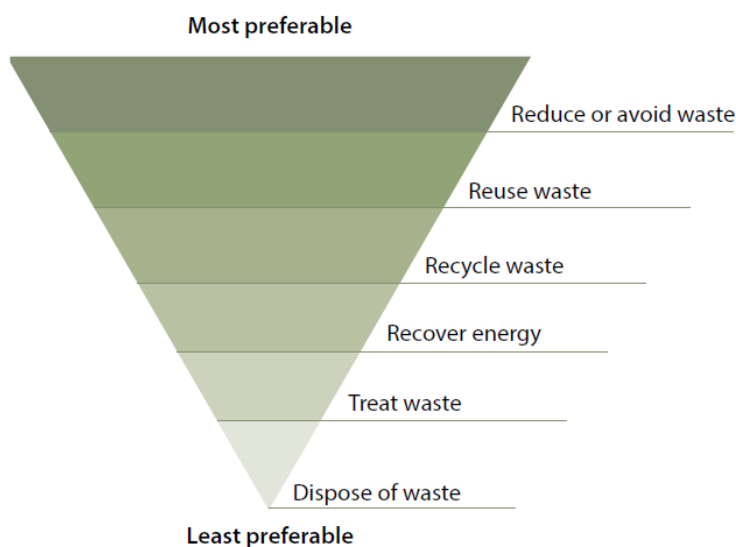
A *Waste Management Plan* (SLR, 2016b) has been prepared in accordance with Schedule 3, Condition B21 of SSD 6882. Where possible, waste is managed to meet the principles of the waste management hierarchy shown in **Figure 4** by promoting waste as a resource through the following in order of preference:

- Waste avoidance through prevention or reduction of waste generation, which is best achieved through better design and purchasing choices;
- Waste reuse, without substantially changing the form of waste;
- Waste recycling through the treatment of waste that is no longer usable in its current form to produce new products;

- Energy recovery through thermal treatment of residual waste materials and from green waste processing; and
- Waste disposal, in a manner that causes the least harm to the natural environment.

The waste hierarchy shown on **Figure 4** ranks the waste management options in order of their environmental impacts, as established under the *Waste Avoidance and Resource Recovery Act 2001*.

**Figure 4 Waste Hierarchy**



Operations at ProTen Narrandera generate the following primary waste streams:

- **General daily waste** – day-to-day general waste, including waste from the on-site managers housing, is placed in enclosed skip bins and removed from the site by a licenced contractor on a regular basis for disposal at a local landfill facility;
- **Chemical containers** – the only chemicals used on site are for sanitisation and disinfection purposes, along with pest and weed control. Chemicals are purchased from a local supply company and/or delivered to the site by Baiada Poultry (Baiada). Empty chemical containers are returned to the local supply company and/or Baiada for reuse, recycling or appropriate disposal. Alternatively a licensed contractor will be engaged to provide a chemical container pickup service for recycling, reuse or appropriate disposal. Any non-returnable chemical containers will be collected and managed via the drumMUSTER program;
- **Poultry litter** – at the end of each production cycle, each poultry shed has around 225 m<sup>3</sup> of poultry litter, comprising around 135 m<sup>3</sup> of bedding material (soft wood shavings, rice hulls or chopped straw) and 90 m<sup>3</sup> of poultry manure which has accumulated over the eight weeks of bird occupation. Cumulative, this amounts to approximately 102,600 m<sup>3</sup> per year (based on 80 poultry sheds and 5.7 production cycles per year); and
- **Dead birds** – dead birds are collected from the poultry sheds on a daily basis and stored in on-site chillers. Dead birds are not allowed to be stockpiled within the site for biosecurity reasons.

The management and mitigation measures listed below are implemented to minimise waste generation and ensure waste is effectively managed and disposed of offsite:

- No stockpiling or disposal of waste materials occurs within the bounds of ProTen Narrandera;
- Waste streams are managed in accordance with the reuse/recycling/disposal methods described in the *Waste Management Plan* and the OEMP;
- Waste materials removed from site are directed to a facility or premises lawfully permitted to accept the materials;
- Waste generated outside of ProTen Narrandera is not received at site for any purpose;
- Only wastes that cannot be cost effectively reused or recycled are sent for disposal;
- All loaded vehicles leaving the site have their loads covered;
- Poultry litter is not be stockpiled, stored or utilised within the site in any way;
- Dead birds are not disposed to land by burial or any other method at the premises (unless otherwise permitted by a relevant authority during an emergency animal disease event); and
- General waste skips are checked on a weekly basis. If the skips are reaching capacity, removal and replacement will be organised for the next 24 hours.

### 6.5.3 Environmental Performance

Waste volumes generated at the site are presented in **Table 14**.

**Table 14 Waste Volumes**

Date	Quantity (m <sup>3</sup> )
22 - 30 April 2017	-
May 2017	25.5
June 2017	30.0
July 2017	25.5
August 2017	25.5
September 2017	27.0
October 2017	27.0
November 2017	27.0
December 2017	30.0
January 2018	30.0
February 2018	25.5
March 2018	27.0
1 - 21 April 2018	-
<b>Total</b>	<b>300</b>

Waste is collected on an as needs basis by MIA Quik Waste. Mixed waste is collected from ProTen Narrandera and sorted for recycling by MIA Quik Waste at a licenced facility.

During site inspections SLR observed that the site was generally clean and tidy with rubbish placed in appropriate bins.

No complaints were received in relation to waste generation or waste management during the reporting period.

## 6.6 Biodiversity Management

### 6.6.1 Construction

While the majority of the ProTen Narrandera development site has been historically cleared and used for agricultural production purposes, there are patches of native vegetation present. There have been minor impacts to native vegetation within the ProTen Narrandera site, including a small area of Sandhill Pine endangered ecologically community (EEC) which has been cleared 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 site.

Prior to construction commencing, a Temporary Offset Area which included temporary fencing was installed to delineate and protect the area mapped by the Office of Environment and Heritage (OEH) (2011) as White Cypress Pine Open Woodland (equivalent to Sandhill Pine Woodland EEC) within the north western corner of the site (see **Figure 5**). A minimum 100 metre buffer is 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 (see **Figure 5**).

A *Biodiversity Offset Strategy* (SLR, 2015c) has been prepared to satisfy Condition B10 of SSD 6882. The strategy includes appropriate biodiversity credit and offsetting provisions to compensate for vegetation and habitat loss.

### 6.6.2 Operation

A *Biodiversity Management Plan* (BMP) (SLR, 2016c) has been prepared in accordance with Condition B12 of SSD 6882. As detail in the BMP, the key operational activities which may impact native flora and fauna at ProTen Narrandera include:

- Vehicle movements may result in vehicle strike of native birds and ground fauna (mainly reptiles and mammals);
- Introduction or spread of weeds and/or plant pathogens, primarily via vehicle movements;
- Dust generation may adversely affect plant growth;
- Excessive noise may inhibit or modify behaviour of certain native animals or cause dispersal from the noise source; and
- Lighting may adversely affect nocturnal fauna through eye-shine and exposure to predators.

The environmental controls listed below are implemented to minimise the potential for impacts to biodiversity:

- If any native fauna are by chance injured during operations, WIRES will be contacted to arrange proper care for the animal. WIRES will also be contacted to remove any bats discovered within the poultry sheds;
- The Fauna Management Protocol detailed in the OEMP will be followed (as required) for the identification and management of any rescued fauna;

- A 60 km per hour speed limit is imposed on the main access road and with a reduced speed limit of 15 km per hour is adopted around the PPU's;
- Efforts are made to ensure the poultry sheds and other site buildings are fully enclosed and maintained in an attempt to exclude bats from roosting within the sheds/buildings;
- Appropriate pest/vermin control measures are implemented to prevent and control pest/vermin populations and outbreaks; and
- Regular inspections of the Temporary Offset Area fencing are undertaken and repairs carried out as necessary.

### 6.6.3 Environmental Performance

An inspection of the Temporary Offset Area was conducted on 31 May 2017. The following features were noted during the inspection:

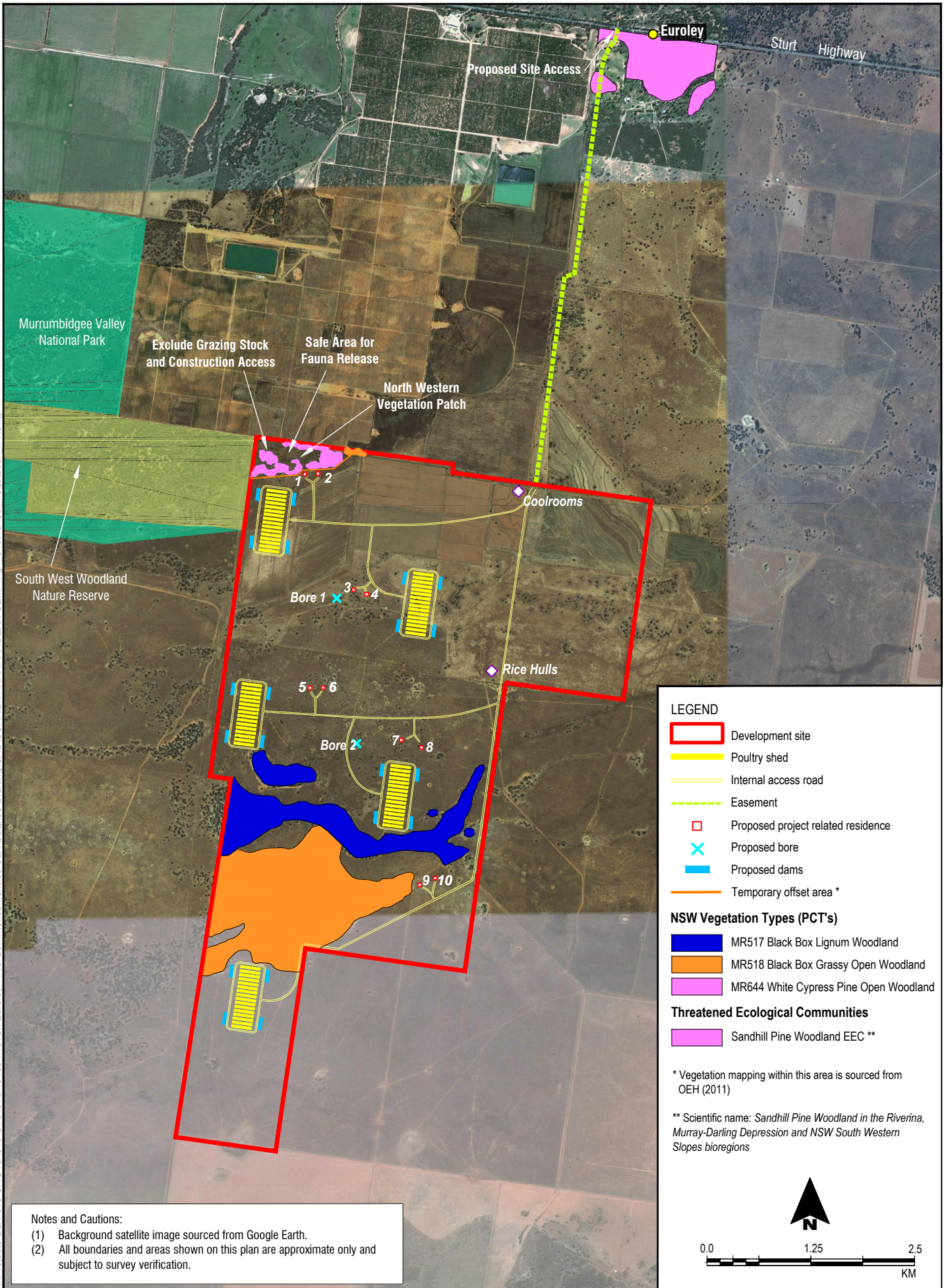
- Fencing around the area remains in good condition;
- No evidence of any stock access;
- Evidence of European Rabbit burrows and kangaroos;
- Healthy condition of the woodland community (**Photo 1**);
- A mix of native and exotic grass in the ground layer; and
- Low numbers of larger woody weeds, such as African Box-thorn.

**Photo 1** Temporary Offset Area





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**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.

**LEGEND**

- Development site
- Poultry shed
- Internal access road
- Easement
- Proposed project related residence
- ✕ Proposed bore
- Proposed dams
- Temporary offset area \*

**NSW Vegetation Types (PCT's)**


- MR517 Black Box Lignum Woodland
- MR518 Black Box Grassy Open Woodland
- MR644 White Cypress Pine Open Woodland

**Threatened Ecological Communities**

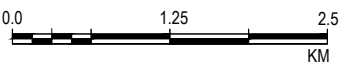
- Sandhill Pine Woodland EEC \*\*

\* Vegetation mapping within this area is sourced from OEH (2011)

\*\* Scientific name: *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions*



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0.0      1.25      2.5  
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In accordance with Conditions B10 and B11 of SSD 6882, ProTen Narrandera were required to implement a *Biodiversity Offset Strategy* (SLR, 2015c) which requires advertising for Expressions of Interest (EOI) on the OEH's 'Credit Wanted' register for 12 months.

SLR published an EOI (ID 41) in the Credits Wanted Register for the required ecosystem credits on the 15 October 2015. A second EOI (ID 42) for the alternative offset options credits (matching credit types) was also listed on the 15 October 2015. None of the credits required in the Credit Profile became available during the 12 month EOI period. Furthermore, purchase of private land within the subregion in order to create an offset site for the development was not a feasible option. Hence, given that the 12 month EOI period lapsed some time ago, the OEH determined ProTen had completed "reasonable steps" to seek like-for-like ecosystem credits in accordance with Appendix A of the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and has fulfilled Condition B10 of the consent.

SLR conducted a search of the Credit Register in August 2017 for "variation credits" in accordance with the Offsets Policy, however no such credits are currently available within the Murrumbidgee Interim Biogeographic Regionalisation for Australia (IBRA) region. In fact, the search revealed that no ecosystem credits of any type are listed for sale within the Murrumbidgee region.

Following consultation with the OEH, it was confirmed that payment into a NSW Trust Fund was possible to meet the offset requirements of the Development, however the mechanism to make the deposit into the fund was not yet established. Therefore, the OEH granted an extension on the timeframe as set out in Condition B11, which required all actions in the *Biodiversity Offset Strategy* to be completed within three months of the conclusion of the advertisement period.

Following consultation with the DPE, an extension of six months was granted on the 29 November 2017 to allow time for the payment to be calculated and paid to the Trust Fund. Details of payment will be included in the 2019 Annual Review.

## 6.7 Biosecurity, Hazard and Risk Management

### 6.7.1 Construction

As part of the CEMP prepared for ProTen Narrandera, the following environmental management and mitigation measures were implemented to prevent impacts associated with the use and storage of dangerous goods on site:

- Dangerous goods are stored and handled in accordance with:
  - Relevant Australian Standards; and
  - *Environmental Protection Manual for Authorised Officers: Bunding and Spill Management* (EPA, 1997);
- Fuels and oils are stored in bunded areas in accordance with relevant Australian Standards and/or the *Storing and Handling Liquids: Environmental Protection – Participants Handbook*;
- Safety Data Sheets (SDS) are kept in the office and/or safety system;
- The actions specified on the respective SDS are implemented in the event of a minor chemical or fuel spill;
- Spill kits are maintained at key locations according to the construction schedule; and
- In the event of a major spill, the Environmental Incident Management System detailed in the CEMP is followed.

## 6.7.2 Operation

An *Emergency Disposal and Biosecurity Protocol* (SLR, 2016d) has been prepared in accordance with Condition B9 of SSD 6882 and in consideration of various relevant guideline documents. All employees and contractors are provided with appropriate biosecurity training through site inductions and regular toolbox talks. Monitoring and recording of flock health is undertaken on a daily basis by both ProTen Narrandera and Baiada Poultry.

An *Emergency Plan* (SLR, 2016e) has also been prepared for ProTen Narrandera in accordance with Condition B25 of SSD 6882. The Emergency Plan contains an inventory of hazardous substances, chemicals and fuels, storage locations and volumes, including:

- Liquid petroleum gas (LPG), petrol and diesel for power and equipment requirements;
- Sanitation products used in the poultry sheds during the cleaning phase at the end of each batch;
- Sanitation products for the wheel wash facilities and foot baths;
- Disinfectant for the water supply;
- Pest and vermin control products (when necessary); and
- Weed control products (when necessary).

The following management strategies are implemented at ProTen Narrandera to minimise the potential for environmental incidents relating to the storage, handling and transport of potentially hazardous goods:

- LPG storage at each PPU is maintained in accordance with the relevant requirements of *AS/NZS 1596:2014 The Storage and Handling of LP Gas*. This includes minimum separation distances of 10 m from a public place and 17 m from a protected place;
- LPG is delivered in specific-purpose rigid trucks at a frequency of less than once per week;
- All buildings are maintained to meet the relevant requirements of the Building Code of Australia;
- Fire extinguishers, fire blankets and hose reels are maintained at designated locations compliant with relevant Australian Standards;
- All diesel and petrol tanks are stored in bunded areas with a minimum bund volume of 110% of the volume of the largest single stored volume within the bund;
- Annual maintenance and testing is undertaken for high voltage electricity infrastructure;
- Employees and contractors are instructed in the proper use and handling of all chemicals used on site, as well as incident management procedures;
- Spill kits are provided and maintained at strategic locations around ProTen Narrandera; and
- Copies of the SDS for each chemical and fuel used on site is kept within the chemical storage facility and in the PPU office.

## 6.7.3 Environmental Performance

The Environmental Representative observed all fuels and hazardous materials to be appropriately stored and there was no evidence of spillages.

No biosecurity issues occurred during the reporting period.

## 6.8 Aboriginal Heritage Management

During the EIS process, field surveys identified six Aboriginal heritage sites within the ProTen Narrandera site, comprising five scarred trees and one hearth. While some sites are located within close proximity to development infrastructure, they are not located within the disturbance footprint and have been avoided during construction.

An *Aboriginal Cultural Heritage Management Plan* (ACHMP) (OzArk, 2016) has been prepared in accordance with Condition B55 of SSD 6882. In the event that a previously unrecorded or unanticipated Aboriginal object(s) is encountered during construction and/or operation, the *Unexpected Finds Protocol* detailed in the ACHMP, CEMP and OEMP will be followed.

The following management and mitigation measures are implemented to avoid any impact to all Aboriginal heritage sites:

- The six identified Aboriginal sites are permanently fenced with a 10 m buffer. The fencing is clearly visible and signed with “Do Not Enter”;
- Additional mitigation measures (including sediment controls) are implemented in the vicinity of EPPC-ST5;
- ProTen Narrandera employees and contractors are made aware of the six identified Aboriginal heritage sites during site inductions and training; and
- Should any Aboriginal objects be uncovered during construction and/or operation, the *Unexpected Finds Protocol* (see ACHMP) will be followed.

### 6.8.1 Environmental Performance

During site inspections, the Environmental Representative observed the fencing around the Aboriginal heritage sites to have remained in good condition. An issue with damaged sediment fencing around Aboriginal heritage site EPPC-ST5 is discussed in **Section 7.2.1**.

No unexpected finds were identified during the reporting period.

## 7 Water Management

ProTen Narrandera uses and produces the following water classes. **Table 15** lists the classes of water at the site, describes their source, the target design objectives/performance criteria and the way each class is to be managed.

**Table 15 Water Management Classifications**

Water Resource Classification	Description and Source of Water	Target Design Objective	Treatment
Dirty Water	Sediment laden runoff produced from exposed soils and disturbed surfaces. Generally characterised by a high turbidity and sediment load, and associated with temporary construction activities and unsealed access roads.	Based on Blue Book criteria (depends on the size and duration of the disturbance).	Dirty water runoff is contained within sediment basins or passed through sediment control devices to detain sediment and reduce turbidity before discharge to the natural environment.
Wash Down Water	Water produced from the cleaning and wash down of the PPU's. Characterised by elevated nutrient levels.	An engineered surface water management system at each PPU has been designed with the total storage on site equivalent to 170 percent of the storage capacity required to contain runoff from a 100 year annual recurrent interval (ARI), 72 hour flood event.	Wash down water is directed to grassed swale drains between the poultry sheds designed to allow infiltration of the water into the topsoil for effective nutrient uptake by the grass. During heavy rainfall events, excess water from the swales is conveyed via pipes under the PPU ring road and to a table drain installed around the PPU perimeter. The table drain conveys the water to one of four small sediment dams located at the corners of each PPU.
Clean Water	Surface water runoff produced from undisturbed clean water catchments such as forested areas or open pastures. Characterised by low turbidity and low nutrient content.	Clean water diversions designed, installed and maintained to convey a 100 year ARI rainfall event.	Diverted around disturbance areas and released to the natural environment.
Groundwater	Groundwater contained within the aquifers.	N/A	Groundwater is extracted to meet operational water requirements.
Sewage	Sewage produced from staff amenities and residences.	Designed, installed and managed in accordance with relevant council guidelines.	Treated and disposed of via on-site aerated wastewater management systems.

## 7.1 Water Take

ProTen Narrandera operates under WAL 11788 which permits the abstraction of 488 megalitres per year (ML/year) from the two groundwater production bores installed at the site (refer **Figure 2**). These bores access the Deep Aquifer (Calivil Formation) in the Lower Murrumbidgee Groundwater Sources water sharing plans, and are capable of a maximum pump rate of 7 ML/day. A copy of WAL 11788 is contained in **Appendix C**.

Water usage at ProTen Narrandera is measured and recorded in iLeader software. Water usage during the reporting period was approximately 286 ML. This is higher than the 185.5 ML extracted during the previous reporting period due to commencement of operations at Farms 75 and 76. This 286 ML extracted during the reporting period is significantly below the 460 ML/year predicted in the EIS.

The current water consumption by ProTen Narrandera is approximately 59% of the authorised abstraction limit.

## 7.2 Surface Water

ProTen Narrandera is located within the catchment of the Murrumbidgee River, which covers 84,000 km<sup>2</sup> of southern NSW. The river flows to the north of the site and is located approximately 9 km away at its nearest point. The nearest watercourse of significance is Yanco Creek, a regulated stream of the Murrumbidgee River system, flowing approximately 8 km to the east of the site at its closest point.

The site (and surrounding land) is very flat and slopes gently to the west. Two minor topographical depressions that 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 and vegetation present. There are also some constructed irrigation channels within the northern extent of the site.

### 7.2.1 Construction

A *Construction Soil and Water Management Plan* (CSWMP) has been prepared for ProTen Narrandera and provides a general framework for the overall management of soil and water resources during the construction phase. The CSWMP comprises:

- Standard erosion and sediment control (ESC) design drawings (as adapted from the Blue Book<sup>1</sup>); and
- Site-specific erosion and sediment control plans (ESCPs) prepared as part of the Development's civil design (Lance Ryan Consulting Engineers), which illustrate the nature and location of intended erosion and sediment control structures, relevant design specifications and sequencing.

The following general principles apply for the management of surface water, erosion and sedimentation at ProTen Narrandera during construction:

- All clean surface water from upslope is diverted around areas of disturbance;
- Temporary erosion and sediment control structures, such as hay bales and silt fencing, are used to prevent soil loss and sediment-laden runoff;
- Disturbed areas are promptly rehabilitated and revegetated to a stable landform;
- A regular maintenance program is implemented to ensure the continued integrity of the temporary erosion and sediment control structures;

<sup>1</sup> \* Managing Urban Stormwater – Soils and Construction Vol. 1 (Landcom, 2004), which is commonly known as the Blue Book.

- Topsoil is appropriately managed for future rehabilitation activity;
- Sediment basins are drawn down in the required management period (typically 5 days). The water is preferentially utilised for construction activities or disposed in an environmentally responsible manner; and
- Undertake progressive rehabilitation to stabilise disturbance areas as soon as practical to reduce the extent of exposed soils.

### Environmental Performance

During the May 2017 environmental inspection, it was noted that the drainage structures and water management system at the site was observed to be working effectively with no evidence of excessive surface runoff, erosion or sedimentation in the vicinity of the work sites noted.

Inspections of the erosion and sediment control devices indicated that the sediment fence adjacent to Aboriginal heritage site EPPC-ST5 had been severely damaged since the previous site inspection. The August 2017 inspection noted that the sediment fence was in good condition following repairs.

#### 7.2.2 Operation

ProTen Narrandera is a largely dry operation, with no effluent generated as a result of the poultry-rearing process itself. The main operational water sources generated by ProTen Narrandera are:

- Wash down water from within the poultry sheds at the end of each nine week production cycle (approximately 5 to 6 times per year);
- Rainfall runoff from the shed roofs; and
- Rainfall runoff from the ground surfaces around the poultry sheds and additional improvements.

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

A *Water Management Plan* (WMP) (SLR, 2017b) has been prepared for ProTen Narrandera in accordance with Condition B45 of SSD 6882. The WMP details the best practice management and mitigation measures implemented at the site to manage surface water, including:

- Surface water management systems are visually inspected on a monthly basis, as well as prior to any predicted significant rainfall event and following significant rainfall events;
- Grassed swale drains between the poultry sheds are 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; and
- Dry-cleaning practices at the end of each production cycle are maximised to minimise the volume of wash water, along with the amount of poultry litter (and associated sediments and nutrients) washed out of the sheds.

## Monitoring Results

The WMP and EPL 20748 detail the surface water monitoring requirements for ProTen Narrandera. During the reporting period, ProTen Narrandera engaged Aitken Rowe to undertake surface water monitoring. Four surface water monitoring events were undertaken with the following parameters sampled:

- pH (field);
- Electrical conductivity (EC) (field and laboratory);
- Total suspended solids (TSS);
- Nitrate/Nitrite as N;
- Total Kjeldahl Nitrogen;
- Nitrogen; and
- Phosphorus.

The periodic and reactive surface water quality monitoring regime for ProTen Narrandera is listed in **Table 16**.

**Table 16 Surface Water Quality Monitoring Schedule**

Monitoring Site	Parameters	Frequency
<b>Initial Characterisation Sampling</b>		
Drainage depressions within the Site (natural surface water quality characterisation)	<ul style="list-style-type: none"> <li>• Water quality</li> </ul>	Quarterly grab samples when rainfall provides for ponded water over a period of 12 months
<b>Periodic Sampling</b>		
One sediment dam at each PPU	<ul style="list-style-type: none"> <li>• Water quality</li> <li>• Water level</li> <li>• Photos</li> </ul>	Quarterly grab sample when water is available
<b>Reactive Sampling</b>		
Overflow from sediment dam	<ul style="list-style-type: none"> <li>• Water quality</li> <li>• Photos</li> </ul>	Grab sample during overflow
Any surface water impacted by a spill, discharge or other incident	Targeted analytes selected based on the nature of the incident	Immediately and/or as instructed by consulted government agencies

**Table 17** summarises the surface water monitoring results for the reporting period along with the interim ANZECC and OEH Water Quality Trigger Levels. Long term surface water quality trends are shown in **Appendix D**.



**Table 17 Surface Water Monitoring Results**

Site	Date Sampled	General			Nutrients			
		pH (pH Units)	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite as N (mg/L)	Total Phosphorus (mg/L)
<u>ANZECC Criteria Limits</u>		6.5 - 8.0	125 - 2,200	-	-	500	40	50
<u>OEH Water Quality Objectives</u>		6.5 - 8.5	125 - 2,200	-	-	500	-	50
PPU1	17 June 2017	7.7	272	744	2	-	<0.5	0.2
PPU2		7.5	67 <sup>2</sup>	732	2	-	<0.5	0.3
PPU3		7.4	266	288	3	-	<0.5	0.4
PPU4		7.5	246	13	2	-	<0.5	0.3
PPU5		7.4	187	88	2	-	<0.5	0.6
PPU1	28 September 2017	7.8	360	116	<2	<2	0.6	<0.01
PPU2		7.3	361	345	15	16	1.4	2.7
PPU3		7.6	327	10	3	7	3.6	0.5
PPU4		8.2 <sup>1,2</sup>	303	9	2	8	5.9	0.2
PPU1	11 January 2018	7.5	268	1000	2	4	1.8	0.1
PPU2		7.2	213	510	9	9	0.2	0.6
PPU3		9.2 <sup>1,2</sup>	374	221	3	3	0.1	0.1
PPU4		9.1 <sup>1,2</sup>	258	218	5	5	0.1	0.3
PPU5		8.2 <sup>1</sup>	222	115	2	6	4.5	0.4

Site	Date Sampled	General			Nutrients			
		pH (pH Units)	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite as N (mg/L)	Total Phosphorus (mg/L)
<u>ANZECC Criteria Limits</u>		6.5 - 8.0	125 - 2,200	-	-	500	40	50
<u>OEH Water Quality Objectives</u>		6.5 - 8.5	125 - 2,200	-	-	500	-	50
PPU1	5 March 2018	9.7 <sup>1,2</sup>	493	29	2	2	<0.5	0.3
PPU2		8.7 <sup>1,2</sup>	388	1280	10	14	3.8	2.1
PPU3		8.5 <sup>1</sup>	729	1660	14	14	<0.5	2.2
PPU4		8.1 <sup>1</sup>	514	454	10	10	<0.5	1.2
PPU5		8.2 <sup>1</sup>	301	87	<2	2	2.5	0.7
<b>MIN</b>		<b>7.2</b>	<b>67</b>	<b>9</b>	<b>&lt;2</b>	<b>&lt;2</b>	<b>0.1</b>	<b>&lt;0.01</b>
<b>MAX</b>		<b>9.7</b>	<b>729</b>	<b>1660</b>	<b>15</b>	<b>16</b>	<b>5.9</b>	<b>2.7</b>
<b>AVERAGE</b>		<b>8.0</b>	<b>324</b>	<b>417</b>	<b>5</b>	<b>7</b>	<b>1.4</b>	<b>0.7</b>

Note: 1 - exceeds the upper ANZECC Criteria Limits

2 - exceeds the OEH Water Quality Objectives criteria limit

pH of the surface water samples collected during the reporting period were measured in the range between 7.2 and 9.7. The average for the reporting period is 8.0 which is slightly higher than the average of 7.5 recorded during the previous reporting period. A number of surface water samples within the sediment dams exceeded the ANZECC and OEH trigger levels for pH. There was no discharge or overflow of the sediment dams during the reporting period and therefore no potential to negatively impact the environment. The electrical conductivity of surface water samples collected during the reporting period were between 67  $\mu\text{S}/\text{cm}$  and 729  $\mu\text{S}/\text{cm}$ . The average for the reporting period was 324  $\mu\text{S}/\text{cm}$  which is slightly higher than the 275  $\mu\text{S}/\text{cm}$  during the previous reporting period.

The concentration of total suspended solids (TSS) in the surface water sampled was in the range between 9 mg/L and 1,660 mg/L over the reporting period, with an average value of 417 mg/L.

All concentrations of nutrients analysed were significantly lower than the WMP trigger values. Nutrient concentrations were relatively uniform across the sampling locations during all sampling events.

Results of surface water monitoring suggest that surface water quality does not currently have the potential to negatively impact the environment.

### 7.2.3 Comparison Against Predictions

The Environmental Impact Statement (EIS) prepared by SLR (2015a) predicted the typical nutrient concentration for the wash down water based on previous analysis of the wash down water at another of ProTen's farms. SLR (2015a) calculated the typical nutrient concentration of wash down water to be as follows:

- Total Suspended Solids: 2,500 mg/L;
- Total Nitrogen: 65 mg/L; and
- Total Phosphorus: 45 mg/L.

The wash down water then enters the vegetated swales drains around the sheds which provides an effective means of nutrient removal prior to entering the sediment dams which are sampled on a quarterly basis (see **Table 17**). The typical annual pollutant load removal efficiencies for vegetated swales according to Engineers Australia (2006) Australian Runoff Quality is as follows:

- Total Suspended Solids (TSS) = 60-80%;
- Total Nitrogen (TN) = 25-40%; and
- Total Phosphorus (TP) = 30-50%.

**Table 18** compares the predicted concentration removal rates against the concentrations removal rates during the reporting period for TSS, TN and TP.

**Table 18 Comparison Against Predictions**

Pollutant	Predicted Washdown Concentrations	Predicted Removal Rate	2017-18 Average Concentration Results at Sediment Dam	Actual Removal Rate
Total Suspended Solids (TSS)	2,500 mg/L	60-80%	405 mg/L	84%
Total Nitrogen (TN)	65 mg/L	25-40%	7 mg/L	89%
Total Phosphorus (TP)	45 mg/L	30-50%	0.6 mg/L	99%

The results shown in **Table 18** shows that the removal rates for TSS, TN and TP all exceeded the predicted removal rates during the reporting period.

### 7.3 Groundwater

Water is extracted from two groundwater production bores - Bore 1 and Bore 2 (see **Figure 6**), located in the deep Calivil Formation. The Calivil Formation comprises Pliocene (Tertiary) aged river valley deposits of interbedded clay, silt, sand and gravel. WAL 11788 permits the extraction of up to 488ML/year. As discussed in **Section 7.1**, ProTen Narrandera used approximately 286 ML during the reporting period. Water extracted from the bores is treated as per the *National Water Biosecurity Manual – Poultry Production* (Department of Agriculture, Fisheries and Forestry [DAFF] 2009).

There are also 12 piezometers intersecting the shallower Shepparton Formation located around the site, which include six shallow and six deep piezometers. The Shepparton Formation is a recent (Holocene) unconsolidated to consolidated unit comprising a heterogeneous distribution of clays, silts sands and gravels. The ten piezometers located near the PPU's are to monitor any impact on the shallow Shepparton Formation as a result of the engineered surface water drainage systems managing rainfall runoff within the bounds of the respective PPU and wash down water. The remaining two piezometers are located near residences 1 and 2 and monitor any impact on the shallow Shepparton Formation as a result of domestic effluent (sewage) irrigation.

#### 7.3.1 Construction

During the construction phase of ProTen Narrandera, the potential for impacts to groundwater was considered minimal. Despite this, the following mitigation measures were implemented to reduce the potential for groundwater impacts:

- Works are planned and coordinated in order to limit the disturbance area through staging of works;
- All runoff from disturbed areas is treated for removal of sediment prior to leaving the site;
- If runoff from disturbance areas is contaminated with other pollutants, the water is collected to prevent it from leaving the site. This water is appropriately managed i.e. treated by a water management contractor;
- Runoff from access roads and stabilised entry/exit points reports to an appropriate sediment control device for treatment;
- Truck washdowns and cement truck washouts are conducted in approved areas only; and
- Washdown areas for equipment are located in bunded areas.

### 7.3.2 Operation

Groundwater is managed in accordance with the WMP which forms part of the OEMP. The management strategies implemented on site during the reporting period include:

- Best management practices for chemical use and storage described in the OEMP are implemented; and
- On-going groundwater monitoring activities are undertaken in accordance with the WMP.

#### Monitoring Results

##### Groundwater Level

A groundwater monitoring program is undertaken in accordance with the WMP.

##### Shepparton Formation

Groundwater levels from the piezometers installed within the shallow aquifer (Shepparton Formation) are presented in **Table 19**. Long term groundwater level trends are shown in **Appendix E**.

**Table 19 Piezometer Water Levels**

Piezometer ID	Standing Water Level (mTOC <sup>1</sup> )				
	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Average
Piezo 1 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 1 deep	24.1	25.0	25.9	27.9	25.7
Piezo 2 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 2 deep	24.8	24.6	25.5	26.1	25.3
Piezo 3 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 3 deep	24.7	24.7	25.5	26.2	25.3
Piezo 4 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 4 deep	25.5	25.4	25.4	25.7	25.5
Piezo 5 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 5 deep	25.0	24.6	25.4	25.8	25.2
Piezo 6 shallow	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>	n/a <sup>2</sup>
Piezo 6 deep	25.0	24.6	25.4	25.8	25.2

1 - metres below the top of the casing (mTOC)

2 - piezometer dry

As shown in **Table 19**, groundwater level monitoring of the six piezometers installed in the shallow Shepparton Formation has been undertaken on four occasions. On all four occasions the shallow piezometers were recorded as dry. The six deep piezometers were measured on quarterly basis and recorded groundwater levels between 24.1 m and 27.9 m TOC.

Groundwater levels remained within the interim trigger level of a 2 m maximum water level change at all locations with the exception of Piezo 1. Piezo 1 deep recorded a water level difference of 3.8 m between the maximum and minimum levels over the year. Analysis of the long term groundwater levels (**Appendix E**) indicate that the groundwater levels fluctuate seasonally. Maximum depth to groundwater has been measured annually at Piezo 1 in summer to autumn (February - March) following periods of low rainfall during the summer months.

### **Calivil Formation**

Groundwater level monitoring in the production bores is intended to target the deep aquifer (Calivil Formation). During the reporting period it has not been possible to monitor groundwater levels in the production bores due to pump infrastructure. Groundwater levels in the production bores were last monitored in 2015 as presented in **Table 20**.

**Table 20 Production Bore Water Levels (August 2015)**

Bore ID	Standing Water Level (mBGL)
Bore 1	24.5
Bore 2	24.2

### **Groundwater Quality**

Groundwater quality was monitored at the six deep piezometers and two production bores during the reporting period. The monitoring results are detailed in **Table 21** and **Table 22**, respectively. Long term groundwater quality trends are shown in **Appendix E**.

**Table 21 Shallow Aquifer Piezometer Groundwater Monitoring Results (Shepparton Formation)**

Piezo ID	Date	General Parameters			Major Ions								Nutrients			Misc
		pH	Electrical Conductivity	Total Dissolved Solids	Sodium	Calcium	Potassium	Magnesium	Chloride	Sulphate	Carbonate as CaCO <sub>3</sub>	Bicarbonate as CaCO <sub>3</sub>	Ammonia as N	Nitrate as N	Phosphorus	Total organic carbon
		-	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>ANZECC Guidelines</b>		6.5 - 8.5	-	1,200	180	-	-	-	250	250	200	200	0.5	50	-	-
<b>Piezo 1 Deep</b>	Jun 2017	7.0	181	152	25	5.3	0.8	2.7	12	3	<2	76	<0.1	<0.5	0.01	0.6
	Sep 2017	7.2	186	133	25	4.7	1.6	4.0	12	<3	<2	76	1.1*	<0.5	<0.01	0.7
	Jan 2018	7.5	196	79	27	4.2	1.4	4.0	18	8	<2	75	<0.1	<0.5	<0.01	0.5
	Mar 2018	9.1*	191	140	31	5.2	1.6	2.9	12	9	<2	-	<0.1	<1	0.09	1.0
	<b>Avg</b>	<b>7.2</b>	<b>189</b>	<b>126</b>	<b>27</b>	<b>4.9</b>	<b>1.4</b>	<b>3.4</b>	<b>14</b>	<b>6</b>	<b>&lt;2</b>	<b>76</b>	<b>0.4</b>	<b>&lt;0.6</b>	<b>0.03</b>	<b>0.7</b>
<b>Piezo 2 Deep</b>	Jun 2017	7.0	266	190	37	8.0	1.6	4.3	16	4	<2	110	<0.1	<0.5	0.05	1.4
	Sep 2017	7.1	269	200	35	7.0	1.7	5.6	21	5	<2	104	0.3	<0.5	<0.01	0.8
	Jan 2018	7.3	196	79	27	6.9	1.4	4.0	18	7	<2	75	<0.1	<0.5	<0.01	0.5
	Mar 2018	8.5	281	204	46	7.7	2.4	4.8	19	11	<2	-	<0.1	<1	0.04	0.8
	<b>Avg</b>	<b>7.5</b>	<b>253</b>	<b>168</b>	<b>27</b>	<b>7.4</b>	<b>1.8</b>	<b>4.7</b>	<b>19</b>	<b>7</b>	<b>&lt;2</b>	<b>96</b>	<b>0.2</b>	<b>&lt;0.6</b>	<b>0.03</b>	<b>0.5</b>
<b>Piezo 3 Deep</b>	Jun 2017	7.4	192	165	22	7.9	1.8	4.7	13	3	<2	76	<0.1	<0.5	0.09	0.8
	Sep 2017	7.2	182	157	19	7.0	1.6	5.4	13	<3	<2	70	1.3*	<0.5	<0.01	0.6
	Jan 2018	7.2	182	117	18	6.6	1.8	5.2	13	6	<2	66	<0.1	<0.5	<0.01	0.7
	Mar 2018	8.3	182	122	22	6.7	1.8	4.0	14	8	<2	-	<0.1	<1	0.06	1.8
	<b>Avg</b>	<b>7.5</b>	<b>185</b>	<b>140</b>	<b>20</b>	<b>7.1</b>	<b>1.8</b>	<b>4.8</b>	<b>13</b>	<b>5</b>	<b>&lt;2</b>	<b>71</b>	<b>0.4</b>	<b>&lt;0.6</b>	<b>0.04</b>	<b>1.0</b>
<b>Piezo 4 Deep</b>	Jun 2017	7.0	618	405	88	21.0	3.4	12.1	53	8	<2	242*	<0.1	<0.5	1.13	1.6
	Sep 2017	6.9	600	341	79	17.1	3.9	14.6	60	10	<2	212*	<0.1	<0.5	0.94	1.0
	Jan 2018	7.0	554	355	72	14.9	3.1	11.7	59	9	<2	183	<0.1	<0.5	0.17	1.0
	Mar 2018	7.9	538	307	81	23.1	3.9	14.1	58	28	<2	-	<0.1	<1	0.69	0.6

Piezo	Date	General Parameters			Major Ions								Nutrients			Misc
	<b>Avg</b>	<b>7.2</b>	<b>578</b>	<b>352</b>	<b>80</b>	<b>19.0</b>	<b>3.6</b>	<b>13.1</b>	<b>58</b>	<b>14</b>	<b>&lt;2</b>	<b>183</b>	<b>&lt;0.1</b>	<b>&lt;0.6</b>	<b>0.73</b>	<b>1.1</b>
<b>Piezo 5 Deep</b>	Jun 2017	6.9	236	184	26	10.5	1.2	5.6	12	3	<2	105	<0.1	<0.5	0.03	1.0
	Sep 2017	6.6	239	190	25	9.3	1.7	7.5	13	3	<2	103	<0.1	<0.5	<0.01	0.6
	Jan 2018	7.0	241	191	24	9.2	1.8	7.0	13	6	<2	100	<0.1	<0.5	<0.01	0.7
	Mar 2018	7.8	234	79	30	9.8	2.0	6.0	13	18	<2	-	<0.1	<1	0.03	<0.5
	<b>Avg</b>	<b>7.1</b>	<b>238</b>	<b>161</b>	<b>26</b>	<b>9.7</b>	<b>1.7</b>	<b>6.5</b>	<b>13</b>	<b>8</b>	<b>&lt;2</b>	<b>103</b>	<b>&lt;0.1</b>	<b>&lt;0.6</b>	<b>0.02</b>	<b>0.7</b>
<b>Piezo 6 Deep</b>	Jun 2017	6.8	326	206	36	12.0	1.4	7.2	32	4	<2	112	<0.1	<0.5	<0.01	<0.5
	Sep 2017	6.7	391	253	44	13.4	3.2	11.2	44	8	<2	122	1.0*	<0.5	<0.01	1.1
	Jan 2018	6.8	360	269	37	12.6	2.4	9.8	41	7	<2	109	<0.1	<0.5	<0.01	0.6
	Mar 2018	7.5	347	213	43	12.9	2.5	8.1	38	15	<2	-	<0.1	<1	0.02	<0.5
	<b>Avg</b>	<b>7.0</b>	<b>356</b>	<b>235</b>	<b>40</b>	<b>12.7</b>	<b>2.4</b>	<b>9.1</b>	<b>39</b>	<b>9</b>	<b>&lt;2</b>	<b>109</b>	<b>0.3</b>	<b>&lt;0.6</b>	<b>0.01</b>	<b>0.7</b>

\*Exceedance of ANZECC criteria



**Table 22 Deep Aquifer Production Bore Groundwater Monitoring Results (Calivil Formation)**

Bore ID	Date	General Parameters			Major Ions								Nutrients			Misc
		pH	Electrical Conductivity	Total Dissolved Solids	Sodium	Calcium	Potassium	Magnesium	Chloride	Sulphate	Carbonate as CaCO <sub>3</sub>	Bicarbonate as CaCO <sub>3</sub>	Ammonia as N	Nitrate as N	Phosphorus	Total organic carbon
		-	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<u>ANZECC Guidelines</u>		6.5 - 8.5	-	1,200	180	-	-	-	250	250	200	200	0.5	50	-	-
<b>Bore 1</b>	Jun 2017	6.8	149	120	12.6	7.2	0.7	4.7	8.8	2	<2	63	<0.1	<0.5	<0.01	<0.5
	Sep 2017	PB1 not sampled due to maintenance at the time of sampling														
	Jan 2018	7.0	152	129	11.4	6.1	1.2	5.5	8.6	2	<2	61	<0.1	<0.5	<0.01	<0.5
	<b>Avg</b>	<b>6.9</b>	<b>151</b>	<b>125</b>	<b>12.0</b>	<b>6.7</b>	<b>1.0</b>	<b>5.1</b>	<b>8.7</b>	<b>2</b>	<b>&lt;2</b>	<b>62</b>	<b>&lt;0.1</b>	<b>&lt;0.5</b>	<b>&lt;0.01</b>	<b>&lt;0.5</b>
<b>Bore 2</b>	Jun 2017	7.0	139	107	11.3	6.3	0.6	4.2	9.3	2	<2	56	<0.1	<0.5	<0.01	<0.5
	Sep 2017	6.7	139	128	11.0	5.9	1.1	5.4	9.2	<3	<2	55	0.3	<0.5	<0.01	<0.5
	Jan 2018	7.0	140	114	9.9	5.9	1.1	5.0	8.7	2	<2	53	<0.1	<0.5	<0.01	<0.5
	<b>Avg</b>	<b>6.9</b>	<b>140</b>	<b>116</b>	<b>10.7</b>	<b>6.0</b>	<b>0.9</b>	<b>4.9</b>	<b>9.1</b>	<b>2</b>	<b>&lt;2</b>	<b>55</b>	<b>0.2</b>	<b>&lt;0.5</b>	<b>&lt;0.01</b>	<b>&lt;0.5</b>

## Shepparton Formation

pH of the groundwater from the six piezometers installed in the shallow Shepparton Formation aquifer was in the range 6.6 to 9.1 over the reporting period, with an average value of 7.3. During March 2018, the pH was recorded as 9.1, therefore exceeding the ANZECC upper criteria of 8.5. Review of the water quality graph (**Appendix E**) shows that pH increased for all bores between January 2018 and March 2018. This also coincides with a rise in groundwater levels at all bores. The most pronounced decrease in groundwater levels of 3.8 m was recorded for Piezo 1 since June 2017, and Piezo 1 also recorded the greatest rise in pH.

Ammonia and nitrate concentrations at this location generally remained below the laboratory LoR over this period. However, an elevated reading of ammonia (1.1 mg/L) was recorded in September 2017 and phosphorous concentrations increased slightly to 0.09 mg/L.

EC of groundwater from the six piezometers installed in the shallow Shepparton Formation aquifer was in the range 181 to 618  $\mu\text{S}/\text{cm}$  over the reporting period, with an average value of 300  $\mu\text{S}/\text{cm}$ .

The concentration of total dissolved solids (TDS) from the six piezometers installed in the shallow Shepparton Formation aquifer was in the range 79 to 405 mg/L over the reporting period, with an average value of 197 mg/L.

Laboratory analysis included three nutrient compounds including ammonia, nitrate and phosphorous. During September 2017, there were exceedances of the ANZECC criteria for ammonia at Piezos 1, 3 and 6. Nitrate concentrations were generally at or below the laboratory limit of reporting (LoR). Concentrations of total phosphorous measured were in the range <0.01 to 1.13 mg/L with an average value of 0.1 mg/L.

None of the parameters assessed in samples from the site piezometers were measured at concentrations considered to represent a risk to the environment.

## Calivil Formation

pH of the groundwater from the two production bores installed in the deep Calivil Formation aquifer was in the range 6.7 to 7.0 over the reporting period, with an average value of 6.9.

EC of groundwater from the two production bores installed in the deep Calivil Formation aquifer was in the range 139 to 152  $\mu\text{S}/\text{cm}$  over the reporting period, with an average value of 144  $\mu\text{S}/\text{cm}$ .

The concentration of total dissolved solids (TDS) in groundwater from the two production bores installed in the deep Calivil Formation aquifer was in the range between 107 and 129 mg/L over the reporting period, with an average value of 120 mg/L.

Both ammonia and nitrate concentrations in samples from the site production bores were at or below laboratory LoR, with the exception of Bore 2 where ammonia concentration of 0.3 mg/L was measured. All total phosphorus concentrations were below laboratory LoR.

The results of laboratory analysis show no exceedances of ANZECC quality standards was measured in the groundwater samples collected from the production bores and are considered to be representative of wider aquifer conditions.

None of the parameters assessed were measured at concentrations considered to represent a risk to the environment. Furthermore, laboratory results indicate that groundwater has not been impacted by site activities.

### 7.3.3 Comparison Against the Predictions

SLR (2015a) analysed the potential impact of a pumping rate of 460 ML/year on adjacent bores and aquifer and predicted no impacts. The extraction also satisfied the Aquifer Interference Policy (NOW 2012) minimal impact considerations for a Highly Productive Water Source, with the associated drawdown predicted to not exceed two metres.

As shown in **Table 19**, all deep piezometers with the exception of Piezo 1 did not exceed the two metre variation. As discussed in **Section 7.3.2**, it is likely that this fluctuation is seasonal with maximum depth to groundwater being measured following prolonged dry summer periods.

## 8 Visual Amenity and Rehabilitation

### 8.1 Construction

In accordance with Schedule 3, Condition B46, all external lighting is mounted, screened, and directed to not impact on the surrounding environment, properties and roadways. All lighting is compliant with *Australian Standard AS4282 1997 - Control of the Obtrusive Effects of Outdoor Lighting*.

### 8.2 Operation

A *Landscape Management Plan* (LMP) (SLR, 2015d) has been prepared in accordance with Condition B47 of SSD 6882 and details the suitable location for tree and shrub species to be strategically planted around the perimeter of each PPU. They are planted in accordance with *Planning Guidelines Separating Agricultural and Residential Land Uses* (Queensland Department of Natural Resources, 1997), these being:

- A biological buffer of a minimum total width of around 40 metres;
- Consistent, yet random, plantings of a variety of tree and shrub species of differing growth habits, at spacings of around 4 to 7 m;
- Species with long, thin and rough foliage are to be used to facilitate the capture of spray droplets and dust particles;
- A permeable barrier which 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);
- The use of species that are hardy and fast growing; and
- Foliage from base to crown (i.e. lower and upper storey vegetation) is used to ensure that the buffer is effective in slowing and filtering air movement at all levels.

### 8.3 Environmental Performance

During the reporting period, ProTen Narrandera completed all tree plantings at PPU 1, PPU 2 and PPU 3 in accordance with the LMP. On-going monitoring and maintenance activities will be maintained to ensure continual health and growth of the plantings.

The remaining trees will be planted at PPU 4 and PPU 5 during the next reporting period.

## 9 Independent Environmental Audit

In accordance with Schedule 4, Condition C12 of SSD 668, an Independent Environmental Audit (IEA) is required within two years of the date of the consent, and every three years thereafter.

The first Independent Environment Audit was undertaken by GHD in November 2017 and submitted to the DPE in February 2018. The next IEA is to be undertaken in November 2020.

The results of the IEA show that ProTen Narrandera demonstrated a high level of compliance with the Development Consent SSD 6882, EPL 20748 and the Statement of Commitments, as shown in **Table 23**.

**Table 23 Summary of Compliance**

Compliance	Details	Compliance Status
Compliant	Full compliance with the requirements of the condition	148
Non-Compliant	Does not meet the main requirements of the condition	5
Administrative non-compliance	Technical non-compliance with a regulatory approval that does not impact on performance and is considered minor in nature	2
Not verified	Compliance could not be determined at the time of audit due to lack of data, information or inaccessibility at the time of audit	11
Not triggered	Condition was not applicable at the time of audit	22
<b>Total number of all conditions assessed</b>		<b>188</b>

GHD detailed four corrective actions and nine recommendations in the IEA. These are shown below in **Table 24** and **Table 25**, along with the responses from ProTen. The current status regarding the completion of the actions is also provided.

**Table 24 Response to Corrective Actions**

Consent Condition / Commitment		Non-Compliance Risk Rating	Corrective Action	Response	Status and timing of actions
Development Consent, Schedule 3, Condition B24(a)	A Fire Safety Study for the Development, covering relevant aspects detailed in the Department's publication Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Guidelines and the NSW Government's Best Practice Guidelines for Contaminated Water Retention and Treatment Systems. The Study shall include a strict maintenance schedule for essential services and other safety measures. The Study shall meet the requirements of the NSW Fire Brigades	ProTen Did Not Prepare A Fire Safety Study (FSS) That Met The Requirements Of The NSW Fire Brigades Prior To The Commencement Of Construction. Risk rating - medium	Finalise FSS to the satisfaction of F&R NSW and submit it to the DPE.	This matter is on-going and ProTen is working with a specialised fire engineering consultancy and FRNSW. ProTen engaged Lote Consulting in Oct 2017 and there have been on-going consultations with FRNSW, including a face-to-face meeting in Dec 2017 attended by FRNSW, Lote, ProTen and SLR. During this meeting FRNSW requested design fire scenario analysis, which is currently underway. We will provide further advice to the DPE on this matter as key milestones are reached.	This matter is ongoing. ProTen has engaged a specialised fire engineering consultancy, Olsson Fire & Risk (not Lote), and will continue to liaise with FRNSW in addressing the matter. FRNSW has requested some significant additional work, including fire scenario modelling. On this basis, it will take some time to finalise the matter. ProTen is hopeful that it will be finalised by October 2018.
Development Consent, Schedule 3, Condition B35	Minimum floor levels for habitable buildings should be based on protection from the 1 in 100 year flood event plus 500 mm freeboard.	ProTen were not able to demonstrate that the floor levels for the Farm Managers residences were built 500 mm above ground level. Risk rating – low	Confirm that the minimum floor levels for habitable buildings is based on protection from the 1 in 100 year flood event plus 500 mm freeboard.	Construction certificates and occupation certificates have been issued for these buildings, which indicates they have been designed and constructed in compliance.	As per response no action proposed.

Consent Condition / Commitment		Non-Compliance Risk Rating	Corrective Action	Response	Status and timing of actions
Development Consent, Schedule 4, Condition C14(b)	<p>Within 6 months of the date of this consent, the Applicant shall:</p> <p>(a) make copies of the following publicly available on its website:....</p> <p>(b) keep this information up to date, to the satisfaction of the Secretary.</p>	<p>ProTen have not consistently maintained up-to-date copies of documents, strategies, plans and programs, monitoring results, as required by this Consent on their website.</p> <p>Risk rating – low</p>	<p>Ensure that delays between availability of updated documents / plans / results and upload onto the website is limited.</p>	<p>ProTen will make a greater effort to ensure all documents, plans, results etc. are kept up-to-date on the website.</p>	<p><b>Complete.</b> As per the DPE request, the IEA and Response to Recommendation have also already been uploaded to the website.</p>
Statement of Commitments, Noise	<p>A unidirectional traffic movement system, via a one-way circulation road around each PPU site, will be established with appropriate signage to minimise the use of reversing alarms.</p>	<p>ProTen maintain a one-way road around each PPU which is communicated to drivers through the induction and driver code of conduct and was observed to be implemented during the site inspection, however there is no traffic direction signage erected at any of the PPUs.</p> <p>Risk rating - low</p>	<p>Install traffic direction signage at all of the PPUs.</p>	<p>ProTen will install signage at each PPU advising of the single directional travel.</p>	<p><b>Complete.</b> Appropriate signage was installed at the site in April 2018.</p>

**Table 25 Response to Recommendations**

Consent Condition / Commitment		Non-Compliance	Recommendation	Response	Status and timing of actions
Environmental performance	N/A	N/A	Investigate whether the change from scalar to vector averaging can be achieved by reprogramming the data logger.	GHD advises that the weather station installed on site meets the relevant requirements of AS/NZS 3580.14 - 2014 and the installed sensing and monitoring actually exceeds that required in the EPL. On this basis, no change to the station is considered necessary.	As per response no action proposed.
Environmental performance	N/A	N/A	Identify additional options for maintaining capacity in sediment basins when full/nearing full e.g. use for irrigation of vegetation buffers or dust suppression using water cart.	ProTen will investigate potential options to ensure adequate capacity is maintained in the sediment basins (if/when necessary). Any option implemented would be within the bounds/constraints of the development consent and EPL.	ProTen will investigate requirements for the pumping of water from the sediment basins either for irrigation of landscape plantings onsite, or for the flood irrigation of adjacent paddocks. Investigations will be completed by October 2018.



Consent Condition / Commitment		Non-Compliance	Recommendation	Response	Status and timing of actions
Environmental performance	N/A	N/A	Maintain the engineered surface water management system including earthworks to repair erosion, groundcover in table drains to stabilise and manage levels in sediment basins to ensure capacity to capture future inflows.	In addition to the above action, ProTen will ensure on-going maintenance works are undertaken as per the approved OEMP and WMP to ensure that the surface water management system is effectively operating and has available capacity.	ProTen intend to undertake the grass seeding of the drains and sediment basin embankments to reduce erosion. Advice has been received from an agronomist in this regard that seeding should not be undertaken until Spring 2018 due to the risk of die off over winter. The seeding will be undertaken prior to the end of October 2018.

Consent Condition / Commitment		Non-Compliance	Recommendation	Response	Status and timing of actions
Development Consent, Schedule 3, Condition A16	A section 88B restriction as to user shall be created so that the owner of the Development site shall be responsible for the construction and maintenance of the access road and any associated services such as drainage, within the easement for the life of the Development. The restriction as to user shall detail the required standard for maintenance including 50 m seal extending from the Sturt Highway intersection and all weather gravel construction for the remainder in accordance with Austroads Guidelines	Administrative non-compliance – ProTen created the easement through a Transfer Granting process rather than a s88B restriction. SLR advised that this process meets the intent of the Condition however it was unclear from the documentation provided (Refer to Condition A15) and a review of the Conveyancing Act 1919 where the required standard for maintenance including 50 m seal extending from the Sturt Highway intersection and all weather gravel construction for the remainder in accordance with the Austroads Guidelines is addressed. The construction of the access way to these requirements was sighted during the audit, and work was underway to upgrade the all weather gravel section at the time of audit.	Confirm with DPE that the creation of the easement through a transfer granting process meets the intent of the condition.	Based on verbal advice from ProTen’s solicitor, SLR holds that the intent of this condition has been fulfilled. The easement was created by a Transfer Granting Easement for several reasons but essentially an 88B, which is a more difficult and costly process, was not necessary. The terms of the easement are set out in the Transfer and a Deposited Plan (DP) prepared to show the easement location. It has been approved / registered.  Schedule 8B of the Conveyancing Act sets out the rights and obligations implied in certain easements, specifically refer to Clause 4 in this instance.  The access road has been constructed to the required standard, including 50m of seal from Sturt Highway intersection, and the full length of the internal access roads to the PPU’s have now been sealed (this exceeds the conditioned requirements and commitments).	As per response no action proposed.

Consent Condition / Commitment		Non-Compliance	Recommendation	Response	Status and timing of actions
Development Consent, Schedule 3, Condition B17	All waste materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	N/A	Remove construction waste from the Development site.	ProTen will ensure that all construction waste is removed from the site now that construction is complete.	<b>Complete.</b> Construction waste has been removed from the site.
Development Consent, Schedule 3, Condition 34	The design of the rice hull storage structures must incorporate flood proofing to ensure that broiler feed remains dry in the event of a 1 in 100 year flood event.	N/A	Confirm that the rice hull storage shed has been constructed above the 1:100 year ARI flood level.	A construction certificate was issued for this shed, which indicates it was designed and constructed in compliance.	As per response no action proposed.

Consent Condition / Commitment		Non-Compliance	Recommendation	Response	Status and timing of actions
Development Consent, Schedule 3, Condition 39	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 a minimum permeability of $1 \times 10^{-9}$ m/s and a clay liner thickness of no less than 600 mm, or an equivalent alternative.	N/A	Verify that the permeability of the basins are in accordance with the requirements of Condition B39.	While there was not any geotech work undertaken during the construction of the basins, permeability can be verified using the numerous piezometers installed on site in the shallow aquifer. Monitoring data to date shows no impact in the shallow aquifer, in fact no water has been detected in the shallow piezos at all. Furthermore, there has not been any drop in water levels in the basins above what would be expected from normal evaporation. These observations indicate that the basins are not leaking.	<p><b>Complete.</b> ProTen engaged Aitken Rowe to undertake permeability and CBR testing of the sediment dams to provide verification in this regard.</p> <p>Findings of the geotechnical review showed that the sites are suitable for construction of sediment ponds provided some treatment of the material with strict compaction control at the floor and sides of the dam was undertaken during the dam construction. The ProTen construction supervisor has confirmed Optimum Moisture Content (OMC) conditioning and compaction was undertaken during the construction process.</p> <p>The geotechnical investigation is attached as <b>Appendix F.</b></p>

## 10 Complaints, Incidents and Non-Compliances

### 10.1 Complaints

A *Complaints Management Strategy* has been prepared as part of the OEMP. The *Complaints Management Strategy* aims to ensure that all complaints relating to the poultry operation are promptly and effectively addressed.

ProTen Narrandera's telephone number is clearly displayed on the site's entrance and a 24-hour hotline number (1800 776 994) is available for anyone wishing to make an enquiry or lodge a complaint.

There were no complaints received at ProTen Narrandera during the reporting period.

### 10.2 Incidents

Development Consent SSD 6882 defines an "incident" as:

*"A set of circumstances that:*

- *Causes or threatens to cause material harm to the environment; and/or*
- *Breaches or exceeds the limits or performance measures/criteria in this consent".*

All environmental incidents are managed in accordance with the *Environmental Incidents Management System* as detailed in the CEMP and the OEMP.

No environmental incidents occurred during the reporting period.

### 10.3 Non-Compliances

As detailed in **Section 9**, there were five non-compliances and two administrative non-compliances identified during the IEA.

The response and proposed actions to address these non-compliances are detailed in **Table 24** and **Table 25**.

## 11 Activities to be Completed During Next Reporting Period

The following activities are proposed to be undertaken during the next reporting period:

- Landscaping at PPU 4 and PPU 5 in accordance with the *Landscape Management Plan*;
- Complete all the proposed actions detailed in **Table 24** and **Table 25**; and
- Continued surface water and groundwater monitoring in accordance with the WMP.

## 12 References

- Australian Poultry CRC (2008) *National Animal Welfare Standards for the Chicken Meat Industry*
- Aitken Rowe (2018) *Geotechnical Investigation – Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW*
- Department of Environment and Climate Change (2009) *Interim Construction Noise Guideline*.
- Landcom NSW (2004) *Managing Urban Stormwater: Soils & Construction – Volume 1, 4<sup>th</sup> Edition*.
- NSW Government (2015) *Annual Review Guideline*
- Office of Environment and Heritage (2014) *NSW Biodiversity Offsets Policy for Major Projects*
- OzArk Environment and Heritage (2016) *Narrandera Poultry Production Complex (SSD 6882), Aboriginal Cultural Heritage Management Plan*
- Pacific Environment Limited (2016) *Narrandera Poultry Production Complex (SSD 6882), Air Quality Management Plan*
- SLR Consulting Australia (2015a) *Euroley Poultry Production Complex SSD 6882, Environmental Impact Statement*
- SLR Consulting Australia (2015b) *Euroley Poultry Production Complex SSD 6882, Response to Submission*
- SLR Consulting Australia (2015c) *Euroley Poultry Production Facility, Biodiversity Offset Strategy*
- SLR Consulting Australia (2015d) *Narrandera Poultry Production Complex (SSD 6882), Landscape Management Plan*
- SLR Consulting Australia (2016a) *Narrandera Poultry Production Complex (SSD 6882), Construction Environmental Management Plan*
- SLR Consulting Australia (2016b) *Narrandera Poultry Production Complex (SSD 6882), Waste Management Plan*
- SLR Consulting Australia (2016c) *Narrandera Poultry Production Complex (SSD 6882), Biodiversity Management Plan*
- SLR Consulting Australia (2016d) *Narrandera Poultry Production Complex (SSD 6882), Emergency Disposal and Biosecurity Plan*
- SLR Consulting Australia (2016e) *Narrandera Poultry Production Complex (SSD 6882), Emergency Plan*
- SLR Consulting Australia (2017a) *Narrandera Poultry Production Complex (SSD 6882), Operational Environmental Management Plan*
- SLR Consulting Australia (2017b) *Narrandera Poultry Production Complex (SSD 6882), Water Management Plan*

# APPENDIX A

## Development Consent SSD 6882



# Development Consent

## Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning under delegation executed on 14 September 2011, the Planning Assessment Commission of NSW (the Commission) approves the Development Application referred to in Schedule 1, subject to the conditions in Schedules 2 to 4.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the Development.

**Garry West**  
Member of the Commission

**Andrew Stoeckel**  
Member of the Commission

Sydney

9 November 2015

File: 15/01330

### SCHEDULE 1

<b>Application No.:</b>	SSD 6882
<b>Applicant:</b>	ProTen Limited
<b>Consent Authority:</b>	Minister for Planning
<b>Land:</b>	Part lot 39 DP 750876, part lots 12 and 15 DP 750898, Lots 1, 41, 42, 44, 45 and 54 in Deposited Plan 750898, and Lot 1 in Deposited Plan 1054064, Euroley, Narrandera Local Government Area
<b>Development:</b>	Construction and operation of the Euroley Poultry Production Complex, including: <ul style="list-style-type: none"><li>• five Poultry Production Units (PPU), consisting of 16 tunnel ventilated, fully enclosed, climate controlled poultry sheds (a total of 80 sheds);</li><li>• a maximum operational capacity of 3.92 million broilers at any one time;</li><li>• bulk earthworks;</li><li>• internal access roads and construction pads;</li><li>• 10 residential dwellings for farm manager accommodation;</li><li>• on-site water detention dams;</li><li>• four new groundwater bores, located in pairs;</li><li>• stormwater management infrastructure;</li><li>• intersection upgrade works along the Sturt Highway;</li><li>• eight (8) above ground LPG storage tanks per PPU, with a capacity of 7,500 litres each (300,000 litres and 40 tanks in total);</li></ul>

- feed, bedding, chemical and dead broiler storage; and
- supporting infrastructure, services and utilities.

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## DEFINITIONS

Act, the	<i>Environmental Planning and Assessment Act, 1979</i>
Applicant, the	ProTen Limited, or anyone else entitled to act on this consent
BCA	<i>Building Code of Australia</i>
Broiler	A breed of chicken bred and raised specifically for chicken meat production
CEMP	Construction Environmental Management Plan
Certifying Authority	Means a person who is authorised by or under section 109D of the <i>Environmental Planning and Assessment Act 1979</i> to issue certificates
Construction	The demolition of buildings or works, the carrying out of works, including bulk earthworks, and erection of buildings and other infrastructure covered by this consent
Council	Narrandera Shire Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Environment and its successors
Development	The Development to which this consent applies, the scope of which is described in Schedules 1, being for the construction and operation of an intensive livestock agriculture facility
DPI	NSW Department of Primary Industries
EEC	Endangered Ecological Communities
EIS	Environmental Impact Statement titled, “ <i>Euroley Poultry Production Complex – SSD 6882</i> ”, prepared by SLR Consulting Australia Pty Ltd, dated 20 May 2015
EPA	Environment Protection Authority
EPL	Environment Protection Licence under the <i>Protection of the Environment Operations Act 1997</i>
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
Heavy vehicle	Any vehicle with a gross vehicle mass of 5 tonnes or more
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement such as a shared associations in pastoral landscapes as well as associations linked with the mission period
Heritage Item	An item as defined under the <i>Heritage Act 1977</i> , and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the <i>National Parks and Wildlife Act 1974</i>
ICNG	NSW Interim Construction Noise Guideline, DECC 2009
Incident	A set of circumstances that: <ul style="list-style-type: none"> <li>• causes or threatens to cause material harm to the environment; and/or</li> <li>• breaches or exceeds the limits or performance measures/criteria in this consent</li> </ul>
INP	NSW Industrial Noise Policy, EPA 2000
Management and Mitigation Measures	The Management and Mitigation Measures at Appendix 1 of this consent
Minister	Minister for Planning
Mitigation	Activities associated with reducing the impacts of the Development prior to or during those impacts occurring
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays

NOW	NSW Office of Water
OEH	Office of Environment and Heritage
OEMP	Operational Environmental Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PPU	Poultry Production Unit, a group of poultry sheds, feed and water storage, workshop, staff amenities, stormwater and wastewater infrastructure
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Regulation, the	<i>Environmental Planning and Assessment Regulation 2000</i>
RMS	Roads and Maritime Services
RTS	Response to Submissions titled, " <i>Euroley Poultry Production Complex (SSD 6882), Response to Submissions</i> ", prepared by SLR Consulting Australia Pty Ltd, dated 1 September 2015
Secretary	Secretary of the Department of Planning and Environment, or nominee
Site	Land referred to in Schedule 1

## SCHEDULE 2

### PART A: ADMINISTRATIVE CONDITIONS

#### OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

- A1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the Development.

#### TERMS OF CONSENT

- A2. The Applicant shall carry out the Development in accordance with:
- (a) State Significant Development Application SSD 6882;
  - (b) Environmental Impact Statement, titled "*Euroley Poultry Production Complex – SSD 6882*" volumes one to three, prepared by SLR Consulting Australia Pty Ltd, dated 20 May 2015;
  - (c) Response to Submissions report, titled "*Euroley Poultry Production Complex (SSD 6882), Response to Submissions*" prepared by SLR Consulting Australia Pty Ltd dated 1 September 2015;
  - (d) the Management and Mitigation Measures located at Appendix 1; and
  - (e) the plans and drawings located at Appendix 2.
- A3. If there is any inconsistency between the plans and documentation referred to in Condition A2 above, the most recent document shall prevail to the extent of the inconsistency. However, conditions of this consent prevail to the extent of any inconsistency.
- A4. The Applicant shall comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:
- (a) any reports, plans or correspondence that are submitted in accordance with this consent; and
  - (b) the implementation of any actions or measures contained within these documents.

#### LIMITS OF CONSENT

- A5. This consent lapses five years after the date from which it operates, unless the Development has physically commenced on the land to which the consent applies before the date on which the consent would otherwise lapse under Section 95 of the Act.

#### Farm Operations

- A6. The Applicant shall ensure that:
- (a) the Development does not exceed a maximum population of 3.92 million broilers at any one time;
  - (b) the stocking densities of the Development comply at all times with the standards detailed in *National Animal Welfare Standards for the Chicken Meat Industry* (Barnett et al, 2008), as amended;
  - (c) the Development is not populated with 3.92 million broilers in one day at the commencement of each production cycle;
  - (d) the commencement of broiler population for each PPU is separated by a minimum of 36 hours; and
  - (e) the time period for the population of the entire farm (all five PPU's) shall be a minimum of 10 days.

#### Farm manager accommodation

- A7. The ten residential dwellings for farm manager's accommodation as described in the EIS are only to be occupied by persons employed by the Applicant, their spouse and dependants for the operational life of the Development to manage poultry operations on-site and shall not be occupied or let for any other purpose.

## **STATUTORY REQUIREMENTS**

- A8. The Applicant shall ensure that all licences, permits and approvals are obtained and kept up to date as required throughout the life of the Development. No condition of this consent removes the obligation the Applicant to obtain, renew or comply with such licences, permits or approvals.

## **STRUCTURAL ADEQUACY**

- A9. The Applicant shall ensure that all new buildings and structures on the site are constructed in accordance with the relevant requirements of the *Building Code of Australia* (BCA).

### *Notes:*

- *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

## **RESIDENTIAL WORKS**

- A10. The Applicant shall ensure that any residential works work must be carried out:

- (a) in accordance with the requirements of the BCA; and
- (b) in accordance with Part 6, Division 8A of the Regulation.

## **STAGED SUBMISSION OF PLANS AND PROGRAMS**

- A11. With the approval of the Secretary, the Applicant may:

- (a) submit any strategy, plan or program required by this consent on a progressive basis; and/or
- (b) combine any strategy, plan or program required by this consent.

## **DISPUTE RESOLUTION**

- A12. In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the Development, either party may refer the matter to the Secretary for resolution. The Secretary's determination of any such dispute shall be final and binding on the parties.

## **SECTION 94A CONTRIBUTIONS**

- A13. In accordance with Division 6 of Part 4 of the EP&A Act, the Applicant shall pay Narrandera Shire Council Section 94A contributions to the sum 0.5% of construction cost in the form of cash of bank cheque made out to Narrandera Shire Council. Evidence of payment to Council shall be submitted to the Certifying Authority prior to the issue of a Construction Certificate.

*Note: The contributions shall be adjusted in accordance with the requirements of the current Narrandera Shire Council s94A Contributions Plan, February 2014, as amended.*

## **UTILITIES AND SERVICES**

- A14. Utilities, services and other infrastructure potentially affected by the construction and operation of the Development shall be identified prior to construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the Development shall be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The cost of any such arrangements shall be borne by the Applicant.

## **EASEMENTS**

- A15. An easement for access to the Development site shall be created through the privately owned land described as lots 12 and 15 in Deposited Plan 750898 and Lot 39 in Deposited Plan 750876 between the Development site and the intersection with the Sturt Highway.
- A16. A section 88B restriction as to user shall be created so that the owner of the Development site shall be responsible for the construction and maintenance of the access road and any associated services such as drainage, within the easement for the life of the Development. The restriction as to user shall detail the required standard for maintenance including 50 m seal

extending from the Sturt Highway intersection and all weather gravel construction for the remainder in accordance with Austroads Guidelines.

- A17. Narrandera Shire Council shall be prescribed within the s88B instrument as an authority whose consent is required to release, vary or modify the burden/benefits.

#### **BOUNDARY ADJUSTMENT**

- A18. The Applicant is required to undertake boundary adjustments to ensure that each Poultry Production Unit and the associated ancillary manager's accommodation are wholly contained within its own allotment. Evidence of lodgement with the Lands Title Office to be submitted to the Certifying Authority prior to the issue of any Occupation Certificate for the development.



## SCHEDULE 3

### PART B: ENVIRONMENTAL PERFORMANCE

#### AIR QUALITY AND ODOUR

##### Air Quality Discharges

- B1. The Applicant shall install and operate equipment in line with best practice to ensure that the Development complies with all load limits, air quality criteria and air quality monitoring requirements as specified in the EPL for the site.

##### Odour

- B2. The Applicant shall ensure the Development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).

##### Air Quality Management Plan

- B3. Prior to the commencement of operation, the Applicant shall prepare an **Air Quality Monitoring Program** (AQMP) for the Development, to the satisfaction of the Secretary. The AQMP shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6 and any other requirements of the EPL for the site. The AQMP shall:
- (a) be prepared in consultation with the EPA;
  - (b) detail and rank all emissions from all sources of the Development, including particulate emissions;
  - (c) describe a program that is capable of evaluating the performance of the operation and determining compliance with key performance indicators;
  - (d) identify the control measures that will be implemented for each emission source; and
  - (e) nominate the following for each of the proposed controls:
    - (i) key performance indicator;
    - (ii) monitoring method;
    - (iii) location, frequency and duration of monitoring;
    - (iv) record keeping;
    - (v) complaints register;
    - (vi) response procedures; and
    - (vii) compliance monitoring.

##### Odour Validation Audit

- B4. When directed by the EPA, the Applicant must submit an Odour Validation Report (OVR) to the EPA. The OVR must:
- (a) be carried out by a suitably qualified independent expert experienced in the characterisation and treatment of odours from chicken broiler farms from the Development;
  - (b) include a summary of any odour complaints received and actions taken to reduce odour emissions where complaints are verified;
  - (c) where possible include a field odour survey that characterises the frequency, intensity, duration, offensiveness, location and extent of off-site odours;
  - (d) benchmark the design and management practices at the premises against industry best practice for minimising odour emissions, including investigation of newly developed and emerging control technology;
  - (e) within six (6) weeks after being directed by the EPA, present a report to the EPA that determines compliance with S129 of the POEO Act and recommend if additional odour mitigation measures are required;
  - (f) consider odour generation associated with stocking densities and rates and PPU population practices outlined in Condition A6;

- (g) where additional odour measures are recommended or odour issues are identified as being from stocking densities, rates or PPU population practices, appropriate mitigation measures or management practices must be nominated to ensure that odour is minimised as far as practicable; and
- (h) any odour mitigation measures nominated must include a timetable for implementation.

### **Meteorological Monitoring**

- B5. During the operational life of the Development, the Applicant shall ensure that there is a suitable meteorological station on the site that complies with the requirements in the latest version of the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline. The meteorological station must be maintained so as to be capable of continuously monitoring the following parameters: air temperature, wind direction, wind speed, rainfall and relative humidity and any other requirements specified in the EPL.

### **Dust Management**

- B6. The Applicant shall carry out all reasonable and feasible measures to minimise dust generated by the Development.
- B7. During construction and operation of the Development, the Applicant shall ensure that:
- (a) all vehicles on-site do not exceed a speed limit of 60 kilometres per hour;
  - (b) all loaded vehicles entering or leaving the site have their loads covered;
  - (c) all loaded vehicles leaving the site are cleaned of dirt, sand and other materials before they leave the site, to avoid tracking these materials on public roads; and
  - (d) all heavy vehicles do not use engine brakes.

### **ANIMAL WELFARE AND BEST PRACTICE**

- B8. The Applicant shall ensure that the Development complies with the relevant requirements for the welfare of the broilers, particularly health, housing, watering, feeding, handling and transport, including, but not limited to those contained within the:
- (a) National Animal Welfare Standards for the Chicken Meat Industry (Barnett et al. 2008)
  - (b) NSW DPI *Best Practice Management for Meat Chicken Production in NSW – Manual 2* (2012);
  - (c) National Farm Biosecurity Manual for Chicken Growers (ACMF, 2000);
  - (d) Model Code of Practice for the Welfare of Animals – Domestic Poultry, 4<sup>th</sup> Edition (PISC, 2002);
  - (e) Model Code of Practice for the Welfare of Animals, Land Transport of Poultry (PISC, 2006); and
  - (f) Management and Mitigation Measures located at Appendix 1.

### **Disease Management**

- B9. Prior to the commencement of operation, the Applicant shall prepare an **Emergency Disposal and Bio-security Protocol**, detailing the disposal procedures for a mass mortality event, to the satisfaction of the Secretary. The protocol shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6. The protocol shall:
- (a) be prepared in consultation with Council, DPI and other relevant government agencies;
  - (b) be consistent with the relevant AUSTVETPLAN manuals and supporting documents;
  - (c) describe the notification procedures;
  - (d) detail all transport routes to be used in a mass mortality event;
  - (e) detail any requirements to stage the mass disposal of dead broilers;
  - (f) detail the burial location(s) for the disposal of dead broilers, including plans and drawings;
  - (g) detail the measures to maintain quarantine control; and

- (h) detail the mass mortality disposal procedures and options, consistent with section 6.12.2 of the EIS and section 2.1.10 of the RTS.

## **BIODIVERSITY**

### **Biodiversity Offset Strategy**

- B10. The Applicant shall implement the strategy for offsetting impacts as described in the *Biodiversity Offset Strategy* at Appendix K of the RTS prepared by SLR (dated 31 August 2015) and developed in accordance with the *Framework for Biodiversity Assessment* (OEH 2014) and the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014). The advertisement period for the Expression of Interest on the Office of Environment and Heritage's 'Credit Wanted' register will be 12 months.
- B11. Within three months of the conclusion of the advertisement period, or as otherwise agreed to by the Secretary, the Applicant shall demonstrate to the satisfaction of the Secretary that the offset strategy actions set out in Section 4.3 of the *Biodiversity Offset Strategy* at Appendix K of the RTS prepared by SLR (dated 31 August 2015) have been completed.

### **Biodiversity Management Plan**

- B12. Prior to the commencement of operation, the Applicant shall prepare a **Biodiversity Management Plan** (BMP) for the Development to the satisfaction of the Secretary. The Biodiversity Management Plan shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6 and the *Biodiversity Offset Strategy* prepared by SLR, dated 31 August 2015 (Appendix K of the RTS) and in consultation with the OEH.

## **TRAFFIC AND TRANSPORT**

### **Site Access, Internal Roads and Parking**

- B13. The Applicant shall ensure that:
- (a) internal roads, driveways and parking (including grades, turn paths, sight distance requirements, aisle widths, aisle lengths and parking bay dimensions) associated with the Development are constructed and maintained in accordance with the latest versions of AS 2890.1 and AS 2890.2;
  - (b) the sweep path of the longest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, is in accordance with AUSTROADS;
  - (c) the Development does not result in any vehicles queuing on the public road network;
  - (d) heavy vehicles and bins associated with the Development do not park or stand on local roads or footpaths in the vicinity of the site;
  - (e) all vehicles are wholly contained on site before being required to stop;
  - (f) all loading and unloading of materials is carried out on site;
  - (g) the proposed turning areas in the car park are kept clear of any obstacles, including parked cars, at all times.
  - (h) all trucks entering or leaving the site with loads have their loads covered;
  - (i) trucks associated with the Development do not track dirt onto the public road network; and
  - (j) vehicles larger than B-Double class do not enter the site.

### **Road Works**

- B14. Prior to the commencement of construction of any poultry shed, residential dwelling or structure on-site, the Applicant shall construct an intersection between the Sturt Highway and the proposed site access identified in the EIS to a Basic Right Turn (BAR) and Basic Left Turn (BAL) intersection treatment, in consultation with, and to the satisfaction of the RMS.
- B15. Any works associated with the proposed Development shall be at no cost to RMS.

## Traffic Management Plan

- B16. Prior to the commencement of construction, the Applicant shall prepare a **Traffic Management Plan** (TMP) for the Development in consultation with Council and the RMS, to the satisfaction of the Secretary. The plan shall form part of the CEMP required under Condition C1. The TMP shall:
- (a) detail the measures that would be implemented to ensure road safety, network efficiency and access during construction;
  - (b) contain a drivers code of conduct to:
    - (i) minimise the impacts of construction on the local and regional road network; and
    - (ii) minimise conflicts with other road users.
  - (c) detail heavy vehicle routes, access and parking arrangements; and
  - (d) if necessary, detail procedures for notifying any nearby residents of any potential disruptions to routes.

## WASTE MANAGEMENT

- B17. All waste materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.
- B18. Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.
- B19. The Applicant shall not stockpile, store or utilise spent bedding material in any way within the Development site.
- B20. Broiler mortalities shall not be disposed to land by burial or any other method at the premises, for the life of the Development, unless otherwise permitted by a relevant authority during a bio-security emergency at the site (refer to Condition B9 for further requirements for broiler disposal).

## Waste Management Plan

- B21. Prior to the commencement of operation, the Applicant shall prepare a **Waste Management Plan** for the Development to the satisfaction of the Secretary. The Waste Management Plan shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6. The WMP shall:
- (a) detail the type and quantity of waste to be generated during construction and operation of the Development;
  - (b) describe the handling, storage and disposal of all waste streams generated on site, consistent with the *Protection of the Environment Operations Act 1997*, *Protection of the Environment Operations (Waste) Regulation 2014* and the *Waste Classification Guideline* (Department of Environment, Climate Change and Water, 2009);
  - (c) detail the materials to be reused or recycled, either on or off site; and
  - (d) include the Management and Mitigation Measures included in Appendix 1.

## HAZARD AND RISK

### Dangerous goods

- B22. Dangerous goods, as defined by the *Australian Dangerous Goods Code*, shall be stored and handled strictly in accordance with:
- (a) all relevant Australian Standards;
  - (b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and

- (c) the *Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin* (Environment Protection Authority, 1997).

In the event of an inconsistency between the requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.

- B23. The Applicant shall ensure that the storage and transport of LPG for the Development complies with AS/NZS 1596:2014 - The Storage and Handling of LP Gas.

#### **Pre-construction**

- B24. Prior to the commencement of construction of the Development, other than site preparation works, or as otherwise agreed by the Secretary, the following studies shall be prepared:

- (a) a **Fire Safety Study** for the Development, covering relevant aspects detailed in the Department's publication *Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Guidelines* and the New South Wales Government's *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems*. The Study shall include a strict maintenance schedule for essential services and other safety measures. The Study shall meet the requirements of the NSW Fire Brigades; and
- (b) a **Final Hazard Analysis** prepared in accordance with the Department's *Hazardous Industry Advisory Paper No.6 – Guidelines for Hazard Analysis*.

#### **Pre-commissioning**

- B25. Prior to the commencement of commissioning of the Development, the Applicant shall prepare a comprehensive **Emergency Plan** and detailed emergency procedures for the Development. The Plan shall be prepared in accordance with the Department's publication *Hazardous Industry Planning Advisory Paper No. 1 - Industry Emergency Planning Guidelines*.

#### **Pre-Startup**

- B26. The Applicant shall submit to the Secretary a report detailing compliance with Condition B24 and Condition B25 one month prior to the commencement of operation of the development.

### **NOISE**

#### **Construction Noise**

- B27. Construction activities associated with the Development shall be undertaken during the following construction hours:

- (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; and  
(b) 8:00am to 1:00pm Saturdays; and  
(c) at no time on Sundays or public holidays.

- B28. Construction works outside of the standard construction hours identified in Condition B27 may be undertaken in the following circumstances:

- (a) construction works that generate noise that is:  
(i) no more than 5 dB(A) above rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009); and  
(ii) no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009) at other sensitive receivers; or
- (b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
- (c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm;

- (d) works approved through an EPL, or by the Secretary; and
- (e) works as approved through the out-of-hours work protocol outlined in the CEMP.

B29. Except as expressly permitted by the EPL, activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken:

- (a) between the hours of 8:00 am to 5:00 pm Monday to Friday;
- (b) between the hours of 8:00 am to 1:00 pm Saturday; and
- (c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.

For the purposes of this condition 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.

B30. The Development shall be constructed with the aim of achieving the construction noise management levels detailed in the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009). All feasible and reasonable noise mitigation measures shall be implemented and any activities that could exceed the construction noise management levels shall be identified and managed in accordance with the CEMP.

*Note: The Interim Construction Noise Guideline identifies 'particularly annoying' activities that require the addition of 5dB(A) to the predicted level before comparing to the construction NML.*

B31. Where Feasible and Reasonable, operation noise mitigation measures shall be implemented at the start of Construction (or at other times during Construction) to minimise Construction noise impacts.

#### Operational Noise Limits

B32. The Applicant shall ensure that noise from the operation does not exceed the limits in Table 1 below

**Table 1 – Noise Limits dB(A)**

Location	Day	Evening	Night	
	L <sub>Aeq</sub> (15 minute)	L <sub>Aeq</sub> (15 minute)	L <sub>Aeq</sub> (15 minute)	L <sub>A1</sub> (1 minute)
All privately owned residential premises	35	35	35	45

*Note: Noise generated by the Development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the INP. Appendix 9 of the INP sets out the meteorological conditions under which this criterion applies.*

#### Noise Modifying Factors

B33. If noise from an activity is substantially tonal, intermittent or impulsive in nature or contains major components within the low frequency range (as described in Chapter 4 of the *NSW Industrial Noise Policy* (Environment Protection Authority, 2000)), 5 dB(A) shall be added to the measured noise level when comparing the measured noise with the limits specified in Table 4.1 of the INP.

*Note: Low frequency noise is currently under review by the Environment Protection Authority and the Department of Planning and Environment.*

## SOIL, WATER QUALITY AND HYDROLOGY

### Flooding

- B34. The design of the rice hull storage structures must incorporate flood proofing to ensure that broiler feed remains dry in the event of a 1 in 100 year flood event.
- B35. Minimum floor levels for habitable buildings should be based on protection from the 1 in 100 year flood event plus 500 mm freeboard.
- B36. Prior to the commencement of operation, the Applicant shall prepare an **Emergency and Evacuation Plan** to the satisfaction of the Secretary. The Emergency and Evacuation Plan shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6. The Emergency and Evacuation Plan shall:
- (a) be prepared in consultation with Narrandera Shire Council and the NSW State Emergency Service;
  - (b) describe all reasonable flood recovery measures;
  - (c) detail assembly and evacuation points;
  - (d) detail transportation routes and procedures in a flood event;
  - (e) incorporate the Flood Management Plan at Section 6.5.6 of the EIS;
  - (f) detail the procedures for managing flood risks during construction and operation of the development, including procedures for the protection of infrastructure, staff and broilers; and
  - (g) detail the management measures for the supply of feed in a flood event.

### Construction Soil and Water Management

- B37. Soil and water management measures consistent with *Managing Urban Stormwater - Soils and Construction Vol. 1* (Landcom, 2004) (the Blue Book) shall be employed during the construction of the Development to minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters.

### Surface Water Discharge Limits

- B38. The Applicant shall ensure that all licensed surface water discharges from the site comply with the discharge limits (volume and quality) set for the Development in any EPL or relevant provisions of the POEO Act.

### Stormwater

- B39. 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 a minimum permeability of  $1 \times 10^{-9}$  metres per second and a clay liner thickness of no less than 600mm, or an equivalent alternative.

### Groundwater

- B40. The groundwater bores for the Development shall be constructed in accordance with the *Minimum Construction Requirements for Water Bores in Australia, Third Edition, February 2012*, (National Uniform Drillers Licensing Committee, 2012).
- B41. Groundwater extracted from the bores shall be treated in accordance with the standards contained within the *National Water Biosecurity Manual – Poultry Production* (DAFF, 2009).
- B42. Groundwater extraction for the purposes of the Development shall be limited to the provisions of any water access licence(s) issued by the DPI.

## **Bunding**

B43. The Applicant shall store all chemicals, fuels and oils used on-site in appropriately banded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's *Storing and Handling Liquids: Environmental Protection – Participants Handbook*.

## **Domestic Effluent**

B44. The Applicant shall obtain the relevant license/approval from Council under section 68 of the *Local Government Act 1996* prior to the commencement of construction for all domestic effluent disposal and management systems on-site.

## **Water Management Plan**

B45. Prior to the commencement of operation, the Applicant shall prepare a **Water Management Plan** to the satisfaction of the Secretary. The Water Management Plan shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6. The WMP shall:

- (a) be prepared in consultation with the DPI;
- (b) detail water use, metering, disposal and management on-site;
- (c) detail the number and location of piezometers on-site;
- (d) detail the water licence requirements for the Development;
- (e) detail the management of wastewater streams on-site;
- (f) contain a Surface Water Management Plan, including:
  - (i) a program to monitor:
    - surface water flows and quality;
    - surface water storage and use; and
    - sediment basin operation;
  - (ii) sediment and erosion control plans;
  - (iii) surface water impact assessment criteria, including trigger levels for investigating any potentially adverse surface water impacts;
  - (iv) a protocol for the investigation and mitigation of identified exceedances of the surface water impact assessment criteria; and
- (g) contain a Groundwater Management Plan, including:
  - (i) baseline data on groundwater levels and quality;
  - (ii) a program to monitor groundwater levels and quality;
  - (iii) groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts; and
  - (iv) a protocol for the investigation and mitigation of identified exceedances of the groundwater impact assessment criteria.
- h) contain a Contingency plan for the operation of the facility during extreme weather events such as heat wave or drought. Examples of contingency options may include (but are not limited to) securing sufficient additional water access licences to service the facility during inclement conditions, or adjusting the scale of the operation to meet the available water supply.

## **LANDSCAPE**

### **External Lighting**

B46. All external lighting associated with the Development shall be mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadways. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – *Control of the Obtrusive Effects of Outdoor Lighting*.

### **Landscape Management Plan**

B47. Prior to the commencement of operation, the Applicant shall prepare a **Landscape Management Plan** (LMP) to manage the revegetation and landscaping works on-site, to the



satisfaction of the Secretary. The LMP shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6. The LMP shall:

- (a) detail the species to be planted on-site to achieve a vegetation buffer of 40 metres around each PPU;
- (b) describe the monitoring and maintenance measures to manage revegetation and landscaping works; and
- (c) be consistent with the Management and Mitigation Measures at Appendix 1.

## **GREENHOUSE GAS**

B48. The Applicant shall implement all reasonable and feasible measures to minimise energy use on site and greenhouse gas emissions produced on-site.

## **HERITAGE**

### **Protection of Aboriginal Heritage Items**

B49. Prior to the commencement of construction of any poultry shed, residential dwelling or structure on-site, the Applicant shall undertake a pre-clearance pedestrian archaeological survey for linear alignments. Representatives from relevant Registered Aboriginal Parties are to be included in this assessment.

B50. Prior to the commencement of construction of any poultry shed, residential dwelling or structure on-site, the Applicant shall undertake a pre-clearance archaeological survey for the internal road alignment and impact area associated with the revised location of PPU5. Representatives from relevant Registered Aboriginal Parties should be included in this assessment.

B51. Any subsequent alterations to the Development footprint that are outside the study areas of the Aboriginal Heritage Impact assessment (prepared by OzArk, dated April 2015 at Appendix J of the EIS) 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* (OEH, 2010) as amended.

B52. The three known Aboriginal sites (EPPC-ST1, EPPC-ST2 and EPPC-H1) shall be fenced during construction and operation of the Development to exclude vehicles, pedestrians and animals from the sites.

### **Unexpected Finds Protocol**

B53. If any archaeological relics are uncovered during the course of construction of the Development, then all works shall stop immediately in that area and the OEH Heritage Branch contacted. Depending on the possible significance of the relics, an archaeological assessment and an excavation permit under the *NSW Heritage Act 1977* may be required before further work can continue in that area.

B54. If any Aboriginal objects are uncovered during work, excavation or disturbance of the work area, work must stop immediately and the Regional Operations Group of the OEH is to be contacted. If Aboriginal objects/places are known to be directly or indirectly adversely affected, the Applicant will need to apply for, and be issued, an Aboriginal Heritage Impact Permit (AHIP) by OEH to comply with the *National Parks and Wildlife Act 1974*.

### **Aboriginal Cultural Heritage Management Plan**

B55. Prior to the commencement of operation, the Applicant shall prepare an **Aboriginal Cultural Heritage Management Plan** to the satisfaction of the Secretary. The plan shall form part of the OEMP in Condition C4 and be prepared in accordance with Condition C6 and shall:

- (a) describe the management actions, including fencing, for the three known Aboriginal sites (EPPC-ST1, EPPC-ST2 and EPPC-H1) during construction and operation; and

- (b) incorporate any additional sites found during pre-clearance surveys.

## SCHEDULE 4

### ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

#### CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- C1. The Applicant shall prepare a **Construction Environmental Management Plan** to the satisfaction of the Secretary. The Plan must:
- (a) be approved by the Secretary prior to the commencement of construction;
  - (b) identify the statutory approvals that apply to the Development;
  - (c) outline all environmental management practices and procedures to be followed during construction works associated with the Development;
  - (d) describe all activities to be undertaken on the site during construction of the Development, including a clear indication of construction stages;
  - (e) detail how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts;
  - (f) describe the roles and responsibilities for all relevant employees involved in construction works associated with the Development; and
  - (g) include the management plans under Condition C2 of this consent.
- C2. As part of the Construction Environmental Management Plan for the Development, required under condition C1 of this consent, the Applicant shall include the following:
- (a) Dust Management (see Condition B6 and B7);
  - (b) Traffic Management (see Condition B16);
  - (c) Construction Soil and Water Management (see Condition B37); and
  - (d) Community Consultation and Complaints Handling.
- C3. The Applicant shall carry out the construction of the Development in accordance with the CEMP approved by the Secretary (and as revised and approved by the Secretary from time to time), unless otherwise agreed by the Secretary.

#### OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

- C4. The Applicant shall prepare an **Operational Environmental Management Plan (OEMP)** for the Development to the satisfaction of the Secretary. The OEMP must:
- (a) be submitted to the Secretary for approval prior to the commencement of operation;
  - (b) be consistent with the NSW DPIs *Best Practice Management for Meat Chicken Production in New South Wales – Manual 2 (Meat Chicken Growing Management)*;
  - (c) be prepared by a suitably qualified and experienced expert;
  - (d) provide the strategic framework for environmental management of the Development;
  - (e) identify the statutory approvals that apply to the Development;
  - (f) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the Development;
  - (g) describe the procedures that would be implemented to:
    - (i) keep the local community and relevant agencies informed about the operation and environmental performance of the Development;
    - (ii) receive, handle, respond to, and record complaints;
    - (iii) resolve any disputes that may arise;
    - (iv) respond to any non-compliance;
    - (v) respond to emergencies; and
  - (h) include the following environmental management plans:
    - (i) Air quality (see Condition B3, B4 and B5);
    - (ii) Emergency Disposal and Bio-security Protocol (see Condition B9);
    - (iii) Biodiversity (see Condition B10 to Condition B12 inclusive);
    - (iv) Waste (see Condition B21);
    - (v) Emergency and evacuation (see Condition B36);
    - (vi) Water (see Condition B45);

- (vii) Landscaping (see Condition B47); and
- (viii) Aboriginal Cultural Heritage (see Condition B55).

C5. The Applicant shall operate the Development in accordance with the OEMP approved by the Secretary (and as revised and approved by the Secretary from time to time), unless otherwise agreed by the Secretary.

#### **MANAGEMENT PLAN REQUIREMENTS**

C6. The Applicant shall ensure that the environmental management plans required under Condition C4 of this consent are prepared by a suitably qualified person or persons in accordance with best practice and include:

- (a) detailed baseline data;
- (b) a description of:
  - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
  - (ii) any relevant limits or performance measures/criteria; and
  - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;
- (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
- (d) a program to monitor and report on the:
  - (i) impacts and environmental performance of the Development;
  - (ii) effectiveness of any management measures (see (c) above);
- (e) a contingency plan to manage any unpredicted impacts and their consequences;
- (f) a program to investigate and implement ways to improve the environmental performance of the Development over time;
- (g) a protocol for managing and reporting any:
  - (i) incidents;
  - (ii) complaints;
  - (iii) non-compliances with statutory requirements; and
  - (iv) exceedances of the impact assessment criteria and/or performance criteria; and
- (h) a protocol for periodic review of the plan.

#### **Revision of Strategies, Plans and Programs**

C7. Within 3 months of the submission of an:

- (a) annual review under Condition C8;
- (b) incident report under Condition C10; or
- (c) audit under Condition C12.

The Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

*Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the Development.*

#### **ANNUAL REVIEW**

C8. Each year, the Applicant shall review the environmental performance of the Development to the satisfaction of the Secretary. This review must:

- (a) describe the Development that was carried out in the previous calendar year, and the Development that is proposed to be carried out over the next year;

- (b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous calendar year, which includes a comparison of these results against the:
  - (i) the relevant statutory requirements, limits or performance measures/criteria;
  - (ii) requirements of any plan or program required under this consent;
  - (iii) the monitoring results of previous years; and
  - (iv) the relevant predictions in the EIS;
- (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- (d) identify any trends in the monitoring data over the life of the Development;
- (e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and
- (f) describe what measures will be implemented over the next year to improve the environmental performance of the Development.

## REPORTING

### Incident Reporting

- C9. Within 24 hours of the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant shall notify the Secretary and any other relevant agencies of the incident.
- C10. Within seven (7) days of the detection of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detail report on the incident.

### Regular Reporting

- C11. The Applicant shall provide regular reporting on the environmental performance of the Development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

## AUDITING

### Independent Environmental Audit

- C12. Within 2 years of the date of this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the Development. This audit must:
- (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
  - (b) include consultation with the relevant agencies;
  - (c) assess the environmental performance of the Development and assess whether it is complying with the requirements in this consent, and any other relevant approvals, relevant EPL(s) (including any assessment, plan or program required under these approvals);
  - (d) review the adequacy of any approved strategy, plan or program required under the abovementioned consents; and
  - (e) recommend measures or actions to improve the environmental performance of the Development, and/or any strategy, plan or program required under these consents.

*Note: This audit team must be led by a suitably qualified auditor, and include relevant experts in any other fields specified by the Secretary.*

- C13. Within 3 months of commissioning this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

## ACCESS TO INFORMATION

- C14. Within 6 months of the date of this consent, the Applicant shall:

- (a) make copies of the following publicly available on its website:
  - (i) the documents referred to in Condition A2;
  - (ii) all current statutory approvals for the Development;
  - (iii) all approved strategies, plans and programs required under the conditions of this consent;
  - (iv) a comprehensive summary of the monitoring results of the Development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
  - (v) a complaints register consistent with that provided in Appendix C of the EIS, updated on a monthly basis;
  - (vi) the annual reviews of the Development;
  - (vii) any independent environmental audit of the Development, and the Applicant's response to the recommendations in any audit;
  - (viii) any other matter required by the Secretary; and
- (b) keep this information up to date,

to the satisfaction of the Secretary.

## **ENVIRONMENTAL REPRESENTATIVE**

- C15. Prior to the commencement of construction of the Development, or as otherwise agreed by the Secretary, the Applicant shall nominate for the approval of the Secretary a suitably qualified and experienced Environment Representative(s) that is independent of the design and construction personnel. The Applicant shall employ the Environment Representative(s) for the duration of construction through the life of the Development, or as otherwise agreed by the Secretary. The Environment Representative(s) shall:
- (a) be the principal point of advice in relation to the environmental performance of the Development;
  - (b) monitor the implementation of environmental management plans and monitoring programs required under this consent and advise the Applicant upon the achievement of these plans/ programs;
  - (c) have responsibility for considering and advising the Applicant on matters specified in the conditions of this consent, and other licences and approvals related to the environmental performance and impacts of the Development;
  - (d) be given the authority to approve / reject minor amendments to the OEMP. What constitutes a "minor" amendment shall be clearly explained in the Construction Environment Management Plan required under condition C1;
  - (e) be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur; and
  - (f) be consulted in responding to the community concerning the environmental performance of the Development where the resolution of points of conflict between the Applicant and the community is required.

## APPENDIX 1: MANAGEMENT AND MITIGATION MEASURES (Source: EIS)

Aspect/Commitment	EIS Section
<b>General</b>	
<ul style="list-style-type: none"> <li>• ProTen will carry out the Development at Euroley generally in accordance with the Development application and this EIS report.</li> <li>• The Development site will not accommodate more than 3.92 million birds at any one time.</li> <li>• Construction will be undertaken within the hours of:               <ol style="list-style-type: none"> <li>a. Monday to Friday, 7.00 am to 6.00 pm;</li> <li>b. Saturday, 8.00 am to 1.00 pm; and</li> <li>c. No construction work on Sunday and public holidays</li> </ol> </li> <li>• The poultry Development will operate 24 hours a day, seven days a week, with the majority of activities carried out between 7.00 am and 7.00 pm.</li> <li>• The Complaints and Incident Management Strategy contained within <b>Appendix C</b> of the EIS will be implemented to ensure that all complaints and incidents relating to the poultry operation, if they occur, are promptly and effectively addressed.</li> </ul>	Section 3
<b>Air Quality and Odour</b>	
<p><u>During Construction</u></p> <ul style="list-style-type: none"> <li>• No disturbance will occur outside of the nominated disturbance footprint, and disturbed areas will be promptly rehabilitated and revegetated to a stable landform to minimise dust emissions.</li> <li>• Dust will be minimised by 'wetting' down surfaces being worked or carrying traffic in dry periods.</li> </ul> <p><u>During Operation</u></p> <ul style="list-style-type: none"> <li>• A meteorological station will be installed within the Development site to collect on- going and up-to-date weather data.</li> <li>• The poultry sheds and feed silos will be fully enclosed to reduce the level of moisture and to minimise emissions of dust/particulate matter.</li> <li>• The insides of the poultry sheds and the surrounds will be maintained at all times to ensure a clean and sanitary environment, including regular monitoring and maintenance of the tunnel ventilation systems and bird drinkers to avoid spillage, leaks and uneven distribution.</li> <li>• Stocking densities and bird health within each of the poultry sheds will be regularly checked and, if necessary, appropriate corrective measures will be implemented.</li> <li>• Daily monitoring and maintenance of the bedding material will be undertaken to identify, remove and replace any caked material beneath drinking lines and/or areas with excessive moisture content.</li> <li>• Internal access roads will be appropriately maintained to minimise dust and noise emissions.</li> </ul>	Section 6.2.5
<b>Noise</b>	
<ul style="list-style-type: none"> <li>• A 60 km/hr speed limit will be adopted on the site access road between the Development site and the Sturt Highway.</li> <li>• Plant and equipment will be maintained in good repair and operators will be appropriately instructed on how to minimise noise generation at all times.</li> <li>• Noise generating equipment purchased by the operator will comply with relevant occupational health and safety requirements.</li> <li>• Emergency standby diesel generators will only be used when power from the electricity grid is lost and they will be appropriately sited and housed to minimise noise emissions.</li> <li>• A unidirectional traffic movement system, via a one-way circulation road around each PPU site, will be established with appropriate signage to minimise the use of reversing alarms.</li> </ul>	Section 6.3.5

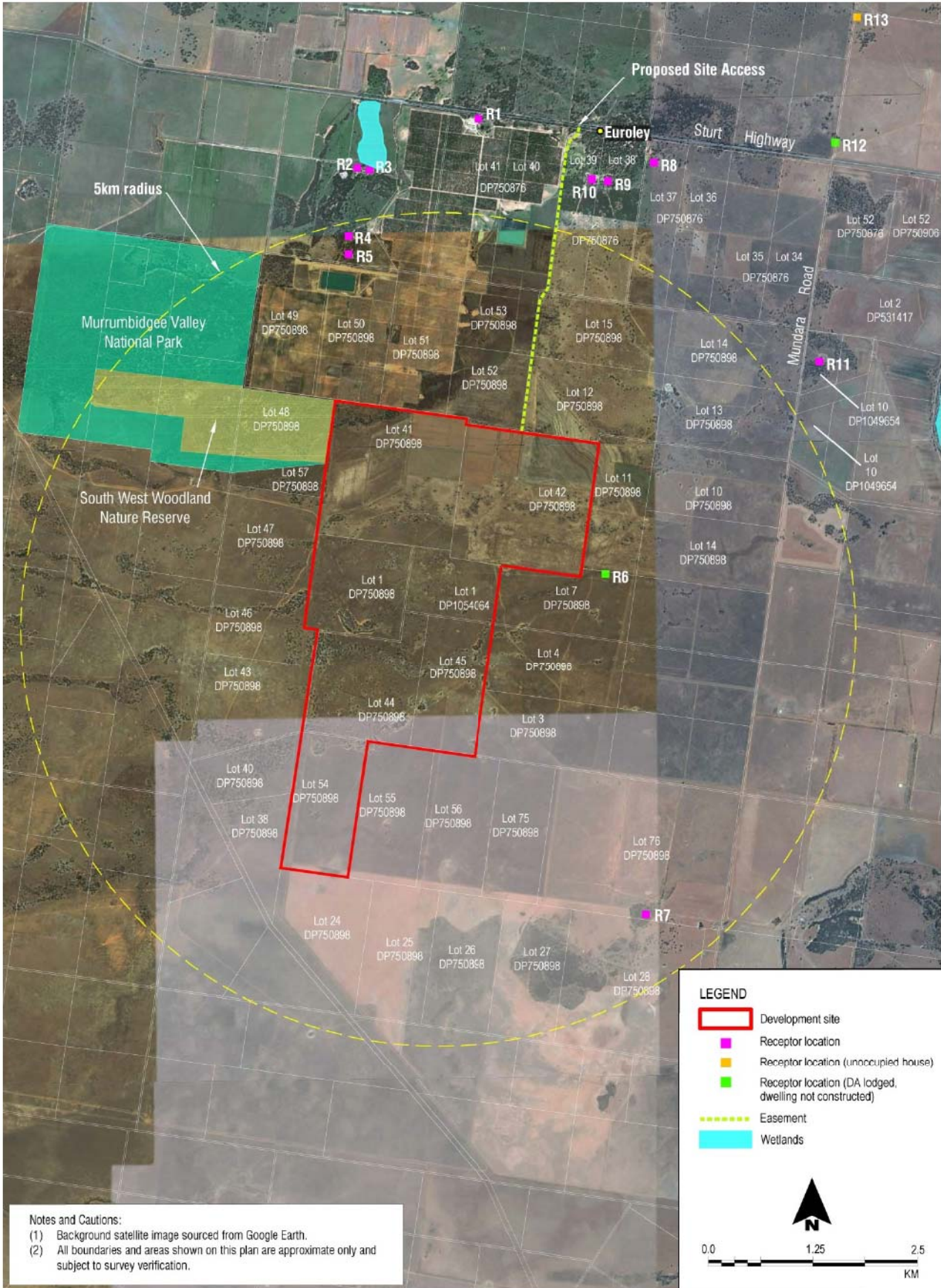
<b>Traffic and Transport</b>	
<ul style="list-style-type: none"> <li>• An intersection between the Sturt Highway and the Development site access road will be constructed at the location shown on <b>Figure 1.2</b> (in the EIS), with a basic right turn treatment (BAR) and basic left turn treatment (BAL) intersection in accordance with <i>Austrroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections</i>.</li> <li>• The site access road from the Sturt Highway to the Development site will be constructed to a minimum width of 6.5 metres, with a pavement and road surface suitable for B-doubles.</li> <li>• The access road will be bitumen sealed for a minimum length of 50 metres from the Sturt Highway intersection.</li> <li>• Advance signposting on the approach to the Sturt Highway intersection will be erected in both directions warning of trucks turning. In addition, an intersection direction sign opposite the access will be erected to further help identify the access point.</li> <li>• The farm access will meet the minimum requirements of AS 2890.2, to accommodate the turning movements of the largest vehicles generated by the poultry Development.</li> <li>• The internal PPU access roads will be constructed as one-way circulation roads (ring roads) around the perimeter of each PPU to enable traffic to enter, exit and manoeuvre in a forward direction. The roads will be constructed as all-weather rural- type roads able to carry the anticipated heavy vehicle movements.</li> <li>• Suitable signage will be erected indicating internal traffic direction and speed limits to ensure the orderly and safe use of the site, as well as to minimise the potential for traffic conflict and noise.</li> <li>• All internal roads will be maintained clear of obstruction and used exclusively for the purposes of transport, loading-unloading and parking.</li> </ul>	Section 6.4.4
<b>Surface Water and Flooding</b>	
<ul style="list-style-type: none"> <li>• Temporary erosion and sediment control structures, such as hay bales and silt fencing, will be used during construction and regularly maintained to prevent soil loss and sediment-laden runoff.</li> <li>• All clean extraneous surface water from upslope will be diverted around areas of disturbance.</li> <li>• The stormwater management system described in <b>Section 3.12</b> (of the EIS) will be constructed and appropriately maintained.</li> <li>• Staff members will be instructed in the proper use and handling of all chemicals used on-site. If appropriate, this will include completion of training such as SMARTtrain or ChemCert (or similar).</li> <li>• All chemical use will be undertaken in full compliance with the relevant statutory requirements, including the <i>Pesticides Act 1999</i>.</li> <li>• Wastewater generated by the on-site staff amenities and accommodation will be appropriately treated and disposed of via on-site wastewater management systems installed and operated in accordance with the requirements of Council and relevant standards/guidelines.</li> </ul>	Section 6.5.4
<b>Flooding</b>	
<ul style="list-style-type: none"> <li>• Habitable finished floor levels within farm managers' accommodation will be set at a minimum of 500 mm above adjacent ground level to reduce the likelihood of floodwater ingress to buildings.</li> <li>• Finished floor levels of the poultry sheds will be set at a minimum of 300 mm above adjacent ground level to reduce the likelihood of floodwater ingress to buildings.</li> <li>• The flood management plan described in <b>Section 6.5.6</b> (of the EIS) will be implemented where necessary.</li> </ul>	Section 6.5.5 and 6.5.6
<b>Groundwater</b>	
<ul style="list-style-type: none"> <li>• Groundwater wells will be designed by a suitably qualified engineer or hydrogeologist, and the design and construction will be undertaken in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (National Uniform Drillers Licensing Committee, 2012). The</li> </ul>	Section 6.6.3

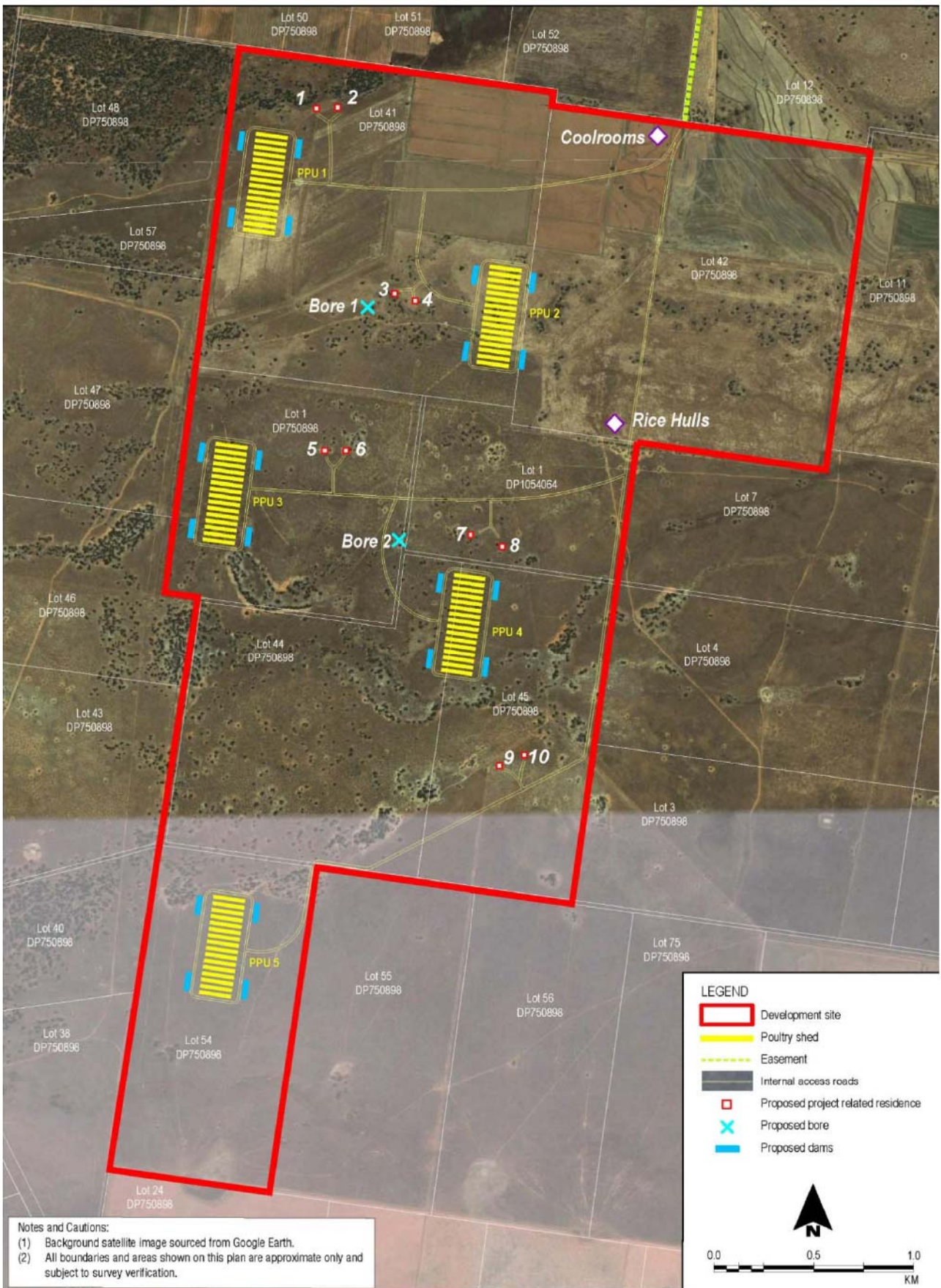


<p>installation of the wells should include normal Development practice, including a commissioning test on the well.</p> <ul style="list-style-type: none"> <li>• Monitoring of wells will comply with the existing WAL conditions.</li> <li>• There will be no on-site disposal of bird carcasses or associated waste in the event of a mass-mortality, unless directed to do so by the DPI.</li> </ul>	
<b>Biodiversity</b>	
<ul style="list-style-type: none"> <li>• No disturbance will occur outside of the nominated disturbance footprint.</li> <li>• Erosion and sediment control measures will be installed and maintained to prevent the erosion and sedimentation impact on any areas downstream supporting remnant vegetation.</li> <li>• Weed management practices will be implemented to minimise the spread of exotic species into natural areas within the site.</li> <li>• A biodiversity offset strategy for the Project will be finalised in accordance with the actions detailed in <b>Section 6.7.5</b> (of the EIS), in consultation with OEH and within 12 months of gaining Project Approval.</li> <li>• Landscape plantings will be established in accordance with the Landscaping Strategy contained in <b>Section 3.13</b> of the EIS, which will increase the total area under vegetation within the locality, create habitat and increase the local biodiversity.</li> </ul>	Section 6.7.5
<b>Aboriginal Heritage</b>	
<ul style="list-style-type: none"> <li>• No disturbance will occur outside of the nominated disturbance footprint.</li> <li>• The three aboriginal sites identified on site will be fenced during construction activities. The hearth will remain fenced during operation of the poultry production complex.</li> <li>• Should any Aboriginal artefact be uncovered all works will cease in that locale and the OEH will be notified. Works will only recommence when an appropriate and approved management strategy has been agreed to by all of the relevant stakeholders.</li> </ul>	Section 6.8.4
<b>Visual Amenity</b>	
<ul style="list-style-type: none"> <li>• The luminaires on each poultry shed will be aimed downwards and only switched on during loading-unloading and servicing activities outside of daylight hours and during heavy fog.</li> <li>• The landscaping strategy described in <b>Section 3.13</b> (of the EIS) will be implemented and maintained in order to improve the visual and environmental amenity of the poultry Development.</li> </ul>	Section 6.10.3
<b>Biosecurity and Poultry Disease</b>	
<ul style="list-style-type: none"> <li>• ProTen will meet all standards of care and management for animal health and welfare detailed in the <i>National Animal Welfare Standards for the Chicken Meat Industry</i> (Barnett et al, 2008).</li> <li>• ProTen will implement a suite of biosecurity measures in accordance with the <i>National Farm Biosecurity Manual for Chicken Growers</i> (Australian Chicken Meat Federation 2010). A copy of this manual will be kept at the Development site and staff will be provided with training in the relevant parts of the Manual.</li> <li>• In the unlikely event of a major disease outbreak, the EPA and DPI will be contacted as soon as the breakout is suspected. Immediate measures will be implemented to isolate the infected PPU site(s), effect strict quarantine procedures to prevent the spread of the disease, and notify all relevant stakeholders. Where permitted, urgent ring vaccination of flocks within the controlled area will be organised.</li> <li>• Upon confirmation that it is an exotic disease outbreak and immediate slaughter of farm stock is necessary, slaughter will be managed by the DPI in co-ordination with the EPA and technical service units of the poultry industry. The birds will be slaughtered within the poultry sheds.</li> <li>• If ProTen's preferred option of disposal of infected birds at Baiada's protein recovery plant cannot be realised for various reasons such as quarantine requirements, disposal of diseased poultry via in-shed composting, or offsite burial at Jeanella will be undertaken in consultation with the DPI and EPA.</li> </ul>	Section 6.12

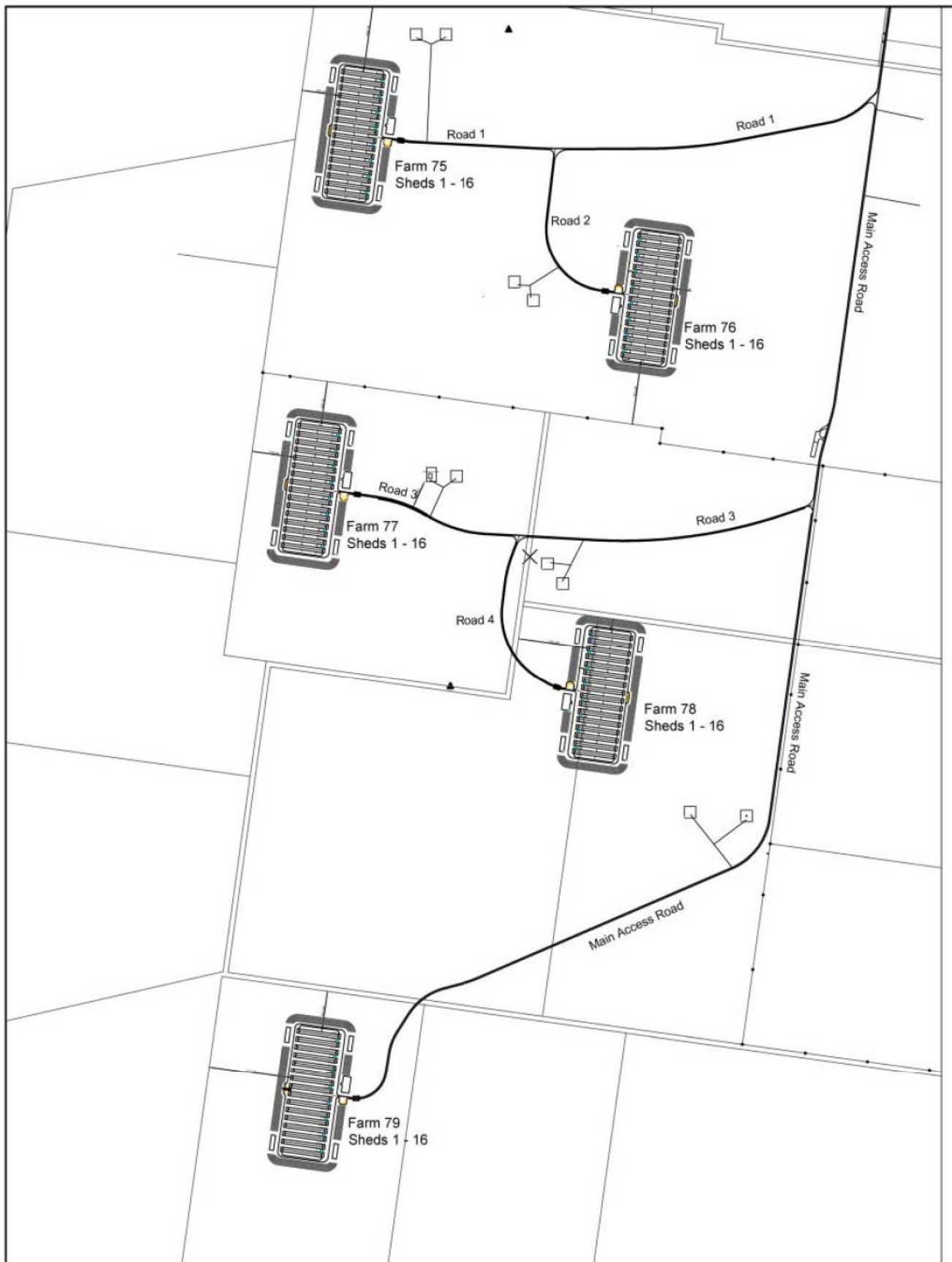
<b>Waste Management</b>	
<ul style="list-style-type: none"> <li>• No on-site stockpiling or disposal of waste materials will occur.</li> <li>• Day to day general waste will be placed into enclosed skips and removed from each PPU site by a licensed contractor on a regular basis.</li> <li>• Chemical Containers - a chemical supply company will be engaged to provide a chemical delivery and pickup service direct to the Development site. At each delivery of new chemical supplies, empty chemical containers will be retrieved by the chemical company for recycling or appropriate disposal.</li> <li>• Poultry litter will be promptly removed from the sheds and transported off-site in covered trucks by an approved contractor at the end of each production cycle during the clean-out phase.</li> <li>• Dead birds will be collected from the poultry sheds on a daily basis and stored in on-site chillers for daily removal to Baiada's rendering plant near Hanwood on Kidman Way.</li> </ul>	Section 3.10
<b>Greenhouse Gas and Energy Efficiency</b>	
<ul style="list-style-type: none"> <li>• Low lux internal shed lighting will be installed within the poultry sheds.</li> <li>• External shed lighting will only be used when necessary during times of low light and/or heavy fog.</li> <li>• The integrity of the poultry sheds will be regularly checked in order to identify and rectify any air leaks, which place additional load on ventilation fans.</li> <li>• Ventilation fans and heaters will be regularly maintained and serviced to ensure optimal performance and efficiency.</li> <li>• Automatic control systems will continuously monitor internal shed lighting, temperature, humidity and static pressure, and adjust the ventilation to suit conditions resulting in less energy to regulate the internal shed conditions.</li> </ul>	Section 6.11

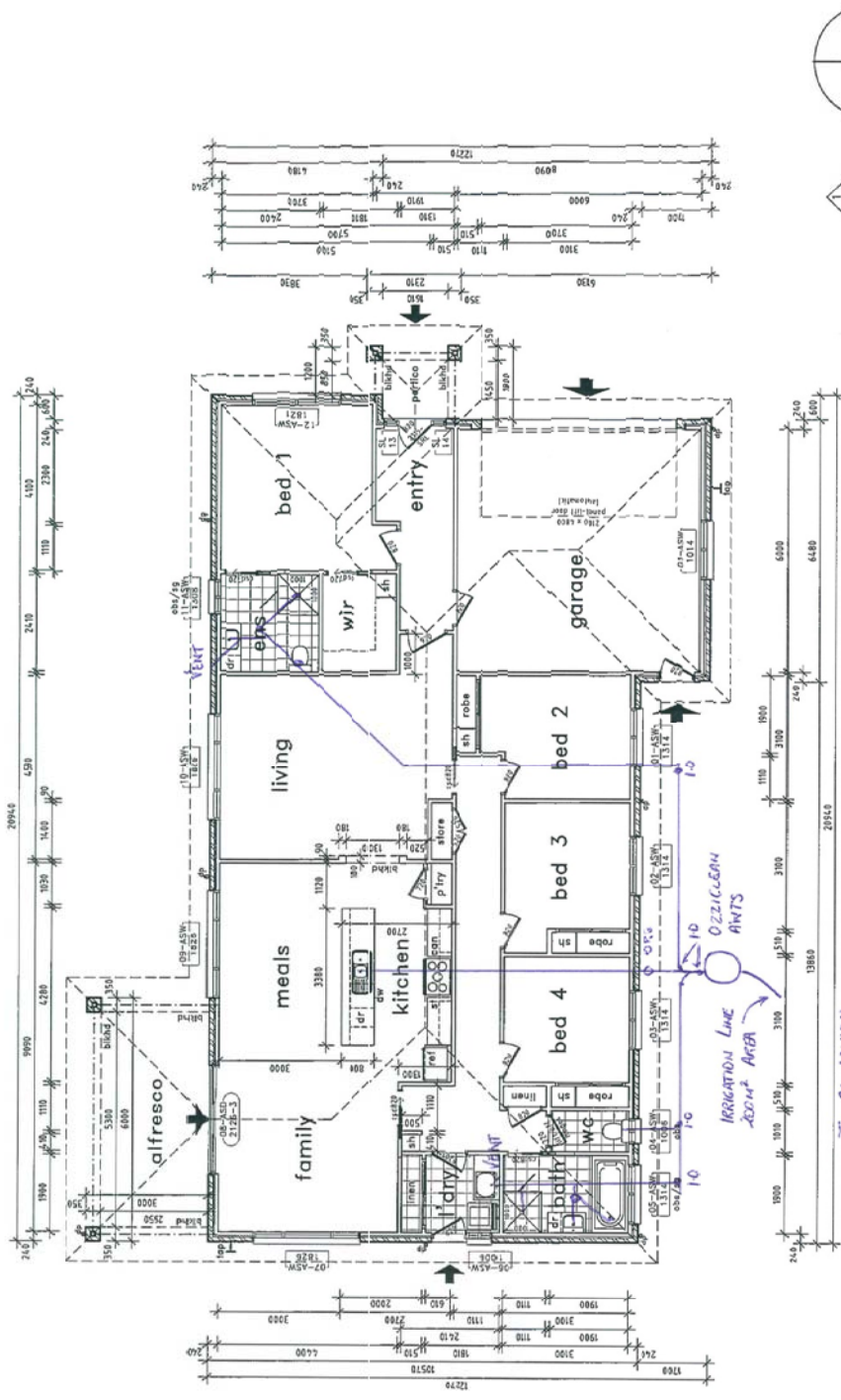
## APPENDIX 2: SITE PLANS





**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.





**Working Drawing**

Proposed dwellings for  
 Proten Holdings Pty Ltd  
 Lot 42 Sturt Highway  
 Euroley, NSW 2700  
 DP pending

**ground floor plan  
 (dwelling 1 & 2)**  
 floor area: 189.0m<sup>2</sup>  
 garage area: 39.4m<sup>2</sup>  
 porficio area: 4.0m<sup>2</sup>  
 alfresco area: 16.0m<sup>2</sup>

Scale: 1:100  
 Drawing Start: 20.10.14  
 Signed off: P2260  
 Project Number: 2 of 10  
 Drawing Number: 16.07.15  
 Plot date: 16.07.15

revision 1: P03\_303

**DAVIS SANDERS HOMES**  
 Davis Sanders Homes Pty Limited,  
 ABN 85-09-370-822  
 Licence No's NSW 41757C & Victoria DB-U25441  
 21 Banna Circuit, Albury NSW 2640  
 PO Box 7285, Albury East NSW 2640  
 Telephone 02 6037 4777 Fax 02 6037 4778  
 www.davisandershomes.com.au

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# APPENDIX B

## Environmental Protection Licence 20748



Our reference: EF16/1645; DOC16/59520-09

The Chief Executive Officer  
ProTen Holdings Pty Ltd  
PO Box 1746  
NORTH SYDNEY NSW 2060

Dear Mr Bryant

**Re Environment Protection Licence – Narrandera Poultry Production Complex**

Thank you for your application received on 4 February 2016 by the Environment Protection Authority (EPA) for an environment protection licence for your poultry production complex on the Sturt Highway at Euroley.

We have carefully considered your application and have determined to issue a Scheduled Development Work and Scheduled Activity – Premises Based licence for the facility to accommodate a maximum of 3.92 million birds.

Environment Protection Licence No 20748 has been assigned to the facility and is enclosed. The licence has been prepared consistent with your development consent and various management plans.

**Annual Return Requirement**

The licence anniversary date is 22 April 2016. Each year from 2017 an Annual Return will be generated on the anniversary date by the EPA and sent to the licence holder for the purpose of reporting compliance with the licence conditions. Where monitoring is required by your licence, you must enter a summary of the results in the Annual Return.

**Pollution Incident Response Management Plan**

Prior to becoming operational, a Pollution Incident Response Management Plan (PIRMP) must be prepared in accordance with Part 5.7A of the *Protection of the Environment Operations Act 1997* (POEO Act). For more information about the PIRMP requirements please refer to the EPA's website at <http://www.epa.nsw.gov.au/legislation/20120227egpreppirmp.htm>.

**Publishing of Pollution Monitoring Data**

All licensees who undertake pollution monitoring data as part of a condition of their Environment Protection Licence must publish that monitoring data in accordance with Section 66 (6) of the POEO Act. If you operate a website you must publish that monitoring data on the website. If you do not



maintain a website then you must make the pollution monitoring data available when requested. For more information about the EPA's requirements for publishing pollution monitoring data please refer to the EPA's website at <http://www.epa.nsw.gov.au/licensing/pubmonitdata.htm>.

If you have any further enquiries about this matter please contact me by telephoning 02 6969 0700.

Yours sincerely



22.04.2016

**JASON PRICE**  
**Acting Head, Griffith Unit**  
**Environment Protection Authority**

# Environment Protection Licence



Licence - 20748

<b>Licence Details</b>	
Number:	20748
Anniversary Date:	22-April

<b>Licensee</b>
PROTEN HOLDINGS PTY LIMITED
PO BOX 1746
NORTH SYDNEY NSW 2060

<b>Premises</b>
NARRANDERA POULTRY PRODUCTION COMPLEX
STURT HIGHWAY
UROLY NSW 2700

<b>Scheduled Activity</b>
Livestock intensive activities

<b>Fee Based Activity</b>	<b>Scale</b>
Bird accommodation	> 1000 T accommodation capacity

<b>Region</b>
South West
Suites 7-8, Level 1 Griffith City Plaza, 130-140 Banna Avenue
GRIFFITH NSW 2680
Phone: (02) 6969 0700
Fax: (02) 6969 0710
PO Box 397 GRIFFITH
NSW 2680

# Environment Protection Licence



Licence - 20748

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# Environment Protection Licence

Licence - 20748



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# Environment Protection Licence

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Licence - 20748



## Information about this licence

### Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

### Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

### Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

### Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

### Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

### Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

## Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

## Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

## This licence is issued to:

PROTEN HOLDINGS PTY LIMITED
PO BOX 1746
NORTH SYDNEY NSW 2060

subject to the conditions which follow.

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## 1 Administrative Conditions

### A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Livestock intensive activities	Bird accommodation	> 1000 T accommodation capacity

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
NARRANDERA POULTRY PRODUCTION COMPLEX
STURT HIGHWAY
UROLY
NSW 2700
LOT 1 DP 750898, LOT 41 DP 750898, LOT 42 DP 750898, LOT 44 DP 750898, LOT 45 DP 750898, LOT 54 DP 750898

### A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Waste storage

### A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- the licence information form provided by the licensee to the EPA to assist the EPA in connection with

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the issuing of this licence.

## 2 Discharges to Air and Water and Applications to Land

### P1 Location of monitoring/discharge points and areas

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

#### *Water and land*

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
2	Surface water quality monitoring		Sediment dam No 1 at PPU 1 identified in Figures 1 & 2 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
3	Surface water quality monitoring		Sediment dam No 3 at PPU 2 identified in Figures 1 & 2 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
4	Surface water quality monitoring		Sediment dam No 1 at PPU 3 identified in Figures 1 & 2 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
5	Surface water quality monitoring		Sediment dam No 3 at PPU 4 identified in Figures 1 & 2 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520



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6	Surface water quality monitoring	Sediment dam No 1 at PPU 5 identified in Figures 1 & 2 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
7	Groundwater quality monitoring	Piezometer labelled 'Piezo 1' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
8	Groundwater quality monitoring	Piezometer labelled 'Piezo 2' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
9	Groundwater quality monitoring	Piezometer labelled 'Piezo 3' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
10	Groundwater quality monitoring	Piezometer labelled 'Piezo 4' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
11	Groundwater quality monitoring	Piezometer labelled 'Piezo 5' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520
12	Groundwater quality monitoring	Piezometer labelled 'Piezo 6' identified in Figure 1 of the document titled "Narrandera Poultry Production Complex - Water Management Plan" dated March 2016, kept on EPA file EF16/1645 at DOC16/59520

P1.3 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

### Noise

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EPA identification no.	Type of monitoring point	Location description
1	Meteorological Station	Meteorological Station is identified in Figure 2 of the Operational Environmental Management Plan dated 19 April 2016 prepared for the Narrandera Poultry Production Complex

## 3 Limit Conditions

### L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

### L2 Waste

L2.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L2.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

### L3 Noise limits

L3.1 Noise from the premises must not exceed an Leq (15 minute) noise emission criterion of 35dB(A), except as expressly provided by this licence.

L3.2 Noise from the premises is to be measured at the nearest sensitive receptor not associated with the premises to determine compliance with this condition.

L3.3 The noise emission limits identified in this licence apply under all meteorological conditions except:  
 a) during rain and wind speeds (at 10m height) greater than 3m/s; and  
 b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

### L4 Other limit conditions

L4.1 The total number of birds accommodated at the premises, at any one time, must not exceed 3,920,000.

L4.2 All waste water treatment, storage and terminal ponds must have a minimum pond base and wall

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permeability of  $1 \times 10^{-9}$  metres per second or be artificially lined with an impermeable high density polyethylene liner.

- L4.3 All waste water collection ponds must be designed, constructed and maintained to accommodate the stormwater runoff volume generated in a 1 in 20 year, 24 hour rainfall event using a volumetric runoff coefficient of 0.8.

## 4 Operating Conditions

### O1 Activities must be carried out in a competent manner

- O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

### O2 Maintenance of plant and equipment

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
  - b) must be operated in a proper and efficient manner.

### O3 Dust

- O3.1 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.
- O3.2 Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

### O4 Processes and management

- O4.1 There must be a minimum of 36 hours between the commencement of broiler accommodation in each Poultry Production Unit.

### O5 Waste management

- O5.1 The premises must:
- a) Have sufficient on site chillers to store all general bird mortalities (~1% of birds on site at any time);
  - b) Remove all mortalities found in the sheds immediately to the chillers; and
  - c) Ensure that when chillers are in use they are kept at  $\leq 4$  degrees Celsius.

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O5.2 Any bird mortalities generated at the premises are not permitted to be buried on site. Bird mortalities must be disposed or processed at a facility that can lawfully receive the waste

Note: This condition does not apply if the applicant is directed by the NSW Department of Primary Industries to bury the birds on site.

O5.3 All waste water and contaminated stormwater must be captured in a waste water collection system and be prevented from leaving the premises.

Note: This condition does not apply in rainfall events which create greater volumes of stormwater than an event with an average recurrence interval of a local 1 in 20 year, 24 hour rain event.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:  
 a) in a legible form, or in a form that can readily be reduced to a legible form;  
 b) kept for at least 4 years after the monitoring or event to which they relate took place; and  
 c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:  
 a) the date(s) on which the sample was taken;  
 b) the time(s) at which the sample was collected;  
 c) the point at which the sample was taken; and  
 d) the name of the person who collected the sample.

### M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Water and/ or Land Monitoring Requirements

POINT 2,3,4,5,6

Pollutant	Units of measure	Frequency	Sampling Method
Electrical conductivity	microsiemens per centimetre	Yearly	Grab sample

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Nitrogen (total)	milligrams per litre	Yearly	Grab sample
pH	pH	Yearly	In situ
Phosphorus (total)	milligrams per litre	Yearly	Grab sample
Total suspended solids	milligrams per litre	Yearly	Grab sample

## POINT 7,8,9,10,11,12

Pollutant	Units of measure	Frequency	Sampling Method
Ammonia	milligrams per litre	Yearly	Representative sample
Calcium	milligrams per litre	Yearly	Representative sample
Chloride	milligrams per litre	Yearly	Representative sample
Electrical conductivity	microsiemens per centimetre	Yearly	Representative sample
Magnesium	milligrams per litre	Yearly	Representative sample
Nitrate	milligrams per litre	Yearly	Representative sample
pH	pH	Yearly	Representative sample
Phosphorus	milligrams per litre	Yearly	Representative sample
Potassium	milligrams per litre	Yearly	Representative sample
Sodium	milligrams per litre	Yearly	Representative sample
Sulfate	milligrams per litre	Yearly	Representative sample
Total dissolved solids	milligrams per litre	Yearly	Representative sample

### M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

### M4 Weather monitoring

M4.1 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the Columns 2, 3, 4 and 5 respectively.

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## POINT 1

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Wind Speed at 10 metres	AM-2 & AM-4	metres per second	15 minutes	Continuous
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	15 minutes	Continuous
Temperature at 10 metres	AM-4	degrees Celsius	15 minutes	Continuous
Temperature at 2 metres	AM-4	degrees Celsius	15 minutes	Continuous
Rainfall	AM-4	millimetres per hour	15 minutes	Continuous

### M5 Recording of pollution complaints

- M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M5.2 The record must include details of the following:
- the date and time of the complaint;
  - the method by which the complaint was made;
  - any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
  - the nature of the complaint;
  - the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
  - if no action was taken by the licensee, the reasons why no action was taken.
- M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.
- M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

### M6 Telephone complaints line

- M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M6.3 The preceding two conditions do not apply until 3 months after the date of the issue of this licence.

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## 6 Reporting Conditions

### R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
1. a Statement of Compliance,
  2. a Monitoring and Complaints Summary,
  3. a Statement of Compliance - Licence Conditions,
  4. a Statement of Compliance - Load based Fee,
  5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
  6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data,
  7. a Statement of Compliance - Environmental Management Systems and Practices; and
  8. a Statement of Compliance - Environmental Improvement Works.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

- R1.3 Where this licence is transferred from the licensee to a new licensee:
- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
  - b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
  - b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

- R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

- R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

- R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
- a) the licence holder; or
  - b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

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## **R2 Notification of environmental harm**

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

## **R3 Written report**

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:

- a) the cause, time and duration of the event;
- b) the type, volume and concentration of every pollutant discharged as a result of the event;
- c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

## **7 General Conditions**

### **G1 Copy of licence kept at the premises or plant**



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- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

## 8 Special Conditions

### E1 Odour validation audit

- E1.1 When directed by the EPA, the licensee must submit an Odour Validation Report (OVR) to the EPA. The OVR must:
  - Be completed by a suitably qualified independent expert experienced in the characterisation and treatment of odours from chicken broiler farms;
  - Include a summary of any odour complaints received and actions taken to reduce odour emissions where complaints are verified;
  - Where possible include a field odour survey that characterises the frequency, intensity, duration, offensiveness, location and extent of off-site odours;
  - Benchmark the design and management practices at the premises against industry best practice for minimising odour emissions, including investigation of newly developed and emerging control technology;
  - Within six (6) weeks after being directed by the EPA, present a report to the EPA that determines compliance with Section 129 of the *Protection of the Environment Operations Act 1997* and recommend if additional mitigation measures are required;
  - Consider odour generation associated with stocking densities, rates and PPU population practices outlined in condition A6 of the development consent;
  - Where additional odour control measures are recommended, or odour issues are identified as being from stocking density, rates or PPU population practices, appropriate mitigation measures or management practices must be nominated to ensure that odour is minimised as far as practicable; and
  - Any odour mitigation measures nominated must include a timetable for implementation.

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## Dictionary

### General Dictionary

<b>3DGM [in relation to a concentration limit]</b>	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
<b>Act</b>	Means the Protection of the Environment Operations Act 1997
<b>activity</b>	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
<b>actual load</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>AM</b>	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>AMG</b>	Australian Map Grid
<b>anniversary date</b>	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>annual return</b>	Is defined in R1.1
<b>Approved Methods Publication</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>assessable pollutants</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>BOD</b>	Means biochemical oxygen demand
<b>CEM</b>	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>COD</b>	Means chemical oxygen demand
<b>composite sample</b>	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
<b>cond.</b>	Means conductivity
<b>environment</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>environment protection legislation</b>	Has the same meaning as in the Protection of the Environment Administration Act 1991
<b>EPA</b>	Means Environment Protection Authority of New South Wales.
<b>fee-based activity classification</b>	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
<b>general solid waste (non-putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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<b>flow weighted composite sample</b>	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
<b>general solid waste (putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>grab sample</b>	Means a single sample taken at a point at a single time
<b>hazardous waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>licensee</b>	Means the licence holder described at the front of this licence
<b>load calculation protocol</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>local authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>material harm</b>	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
<b>MBAS</b>	Means methylene blue active substances
<b>Minister</b>	Means the Minister administering the Protection of the Environment Operations Act 1997
<b>mobile plant</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>motor vehicle</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>O&amp;G</b>	Means oil and grease
<b>percentile [in relation to a concentration limit of a sample]</b>	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
<b>plant</b>	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
<b>pollution of waters [or water pollution]</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>premises</b>	Means the premises described in condition A2.1
<b>public authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>regional office</b>	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
<b>reporting period</b>	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>restricted solid waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>scheduled activity</b>	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
<b>special waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>TM</b>	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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<b>TSP</b>	Means total suspended particles
<b>TSS</b>	Means total suspended solids
<b>Type 1 substance</b>	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
<b>Type 2 substance</b>	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
<b>utilisation area</b>	Means any area shown as a utilisation area on a map submitted with the application for this licence
<b>waste</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>waste type</b>	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Jason Price

Environment Protection Authority

(By Delegation)

Date of this edition: 22-April-2016

## End Notes

# APPENDIX C

**WAL 11788**



# Statement of Conditions

*as at Wednesday, 8 April 2015*  
Issued under Water Management Act 2000

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**WAL number** 11788

**Reference number** 40AL403630

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### Contact for service of documents

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**Name** PROTEN HOLDINGS PTY LTD

**Address** PO Box 1746  
NORTH SYDNEY NSW 2060

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### All holders

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**Name(s)** PROTEN HOLDINGS PTY LTD

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### Licence details

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**Water source** LOWER MURRUMBIDGEE DEEP GROUNDWATER SOURCE

**Water sharing plan** LOWER MURRUMBIDGEE GROUNDWATER SOURCES

**Management zone**

**Category** AQUIFER

**Share component** 488 units

**Tenure type** Continuing

## Conditions

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The water access licence with DWE Reference No 40AL403630 is subject to the following conditions:

### Plan conditions

#### Water sharing plan

#### *Lower Murrumbidgee Groundwater Sources*

#### Take of water

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- MW0812-00001** This licence entitles its holder to the specified shares in the available water from the specified water source as described in this licence.
- MW0697-00001** Where the licence holder is a member of a registered group formed under the plan, the licence holder must not cause or allow the combined restricted extraction calculated to apply to the group in any one year, to be exceeded.
- MW0814-00001** The licence holder must only take water under this licence using the water supply work nominated by this licence, unless otherwise allowed by the Act or the plan.
- MW0815-00001** 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.
- MW0822-00001** The licence holder must not take water under this licence if the resulting debit from the water allocation account for this licence will exceed the volume of water in the account.
- MW0820-00001** The licence holder must comply with all restrictions and reductions of extraction rates declared or ordered by the Minister to apply in a local impact area.
- MW0818-00001** The licence holder must comply with all applicable available water determination(s).
- MW0821-00001** The licence holder must comply with the water allocation account management rules established by the plan.
- MW0824-00001** The licence holder must not take water through a water supply work located in areas where the extraction is likely to cause an adverse local impact on water levels, water quality, aquifer integrity or on groundwater dependent ecosystems.
- MW0819-00001** The licence holder must not take more water than is allowed pursuant to an applicable AWD unless the taking is pursuant to a lawful transfer or assignment under Chapter 3 Part 2 of the Act.

#### Use of water

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**MW0686-00001**

The licence holder must not take water for any purpose other than domestic consumption and stock watering purposes or other than in exercising native title rights, through a water supply work nominated on this licence, if the water supply work is within 1,000 m of any high priority groundwater dependent ecosystem listed in Schedule 4 of the plan, or within 1,000 m of any creek or river, unless the water supply work :

- (A) only draws water from an aquifer at depths approved by the Minister, and complies with all specifications of the Minister under clause 38 of the plan, or
- (B) was authorised by licence under the Water Act 1912.

**Water management works**

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**MW0813-00001**

The water supply work nominated by this licence is the water supply work authorised by a works approval nominated by this licence.

**Monitoring and recording**

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**MW0636-00001**

The licence holder must produce the logbook to the Minister for inspection, when requested.

**Additional conditions**

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**MW0698-00001**

The licence holder must comply with the access licence dealing principles as gazetted under section 71Z of the Act and all other access licence dealing rules established by the plan.

**MW0823-00001**

The licence holder must pay any charge imposed by the Minister under section 114 of the Act or regulations, for the cost of activities or works under the plan.

**Other conditions**

*No other conditions applicable*



**Glossary**

**available water determination** - An Available water determination (AWD) is a water allocation which specifies the amount of water that can be taken during the water year. AWDs are made for each access licence category in each water source. AWDs are defined under the Water Management Act 2000, s. 59.

**cease to take** - Cease to take conditions means any condition on this approval, or on the access licence under which water is proposed to be taken, that prohibits the taking of water in a particular circumstance.

**domestic consumption** - Domestic consumption is the use of water for normal household purposes in domestic premises situated on the land.

**high priority groundwater dependent ecosystem** - High priority groundwater dependent ecosystems have their species composition and natural ecological processes wholly or partially determined by groundwater and are considered high priority for protection or restoration.

**logbook** - A logbook is a document, electronic or hard copy, that records specific required information.

**share component** - The share component is the specified shares in the available water within a particular water management area.

**stock watering** - Stock watering is the use of water for stock animals being raised on the land. It does not include the use of water for the raising of stock animals on an intensive commercial basis (kept in feedlots or buildings for all, or a substantial part, of the period during which the stock animals are being raised).

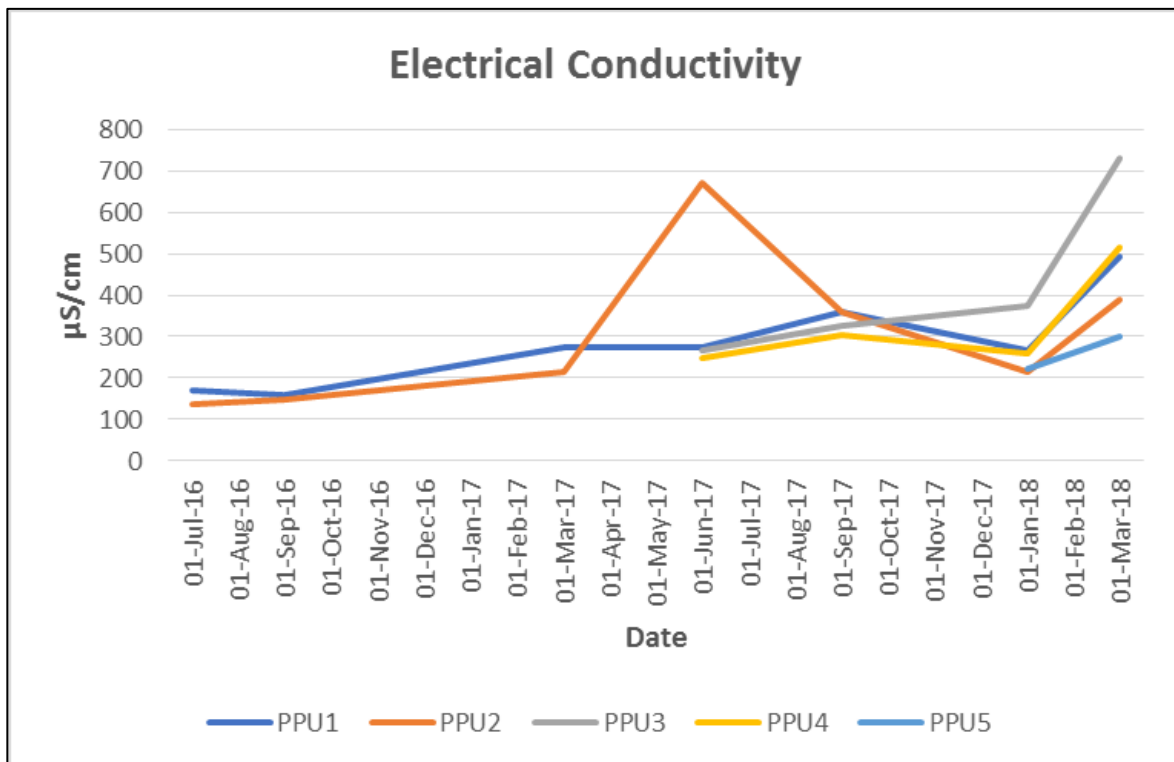
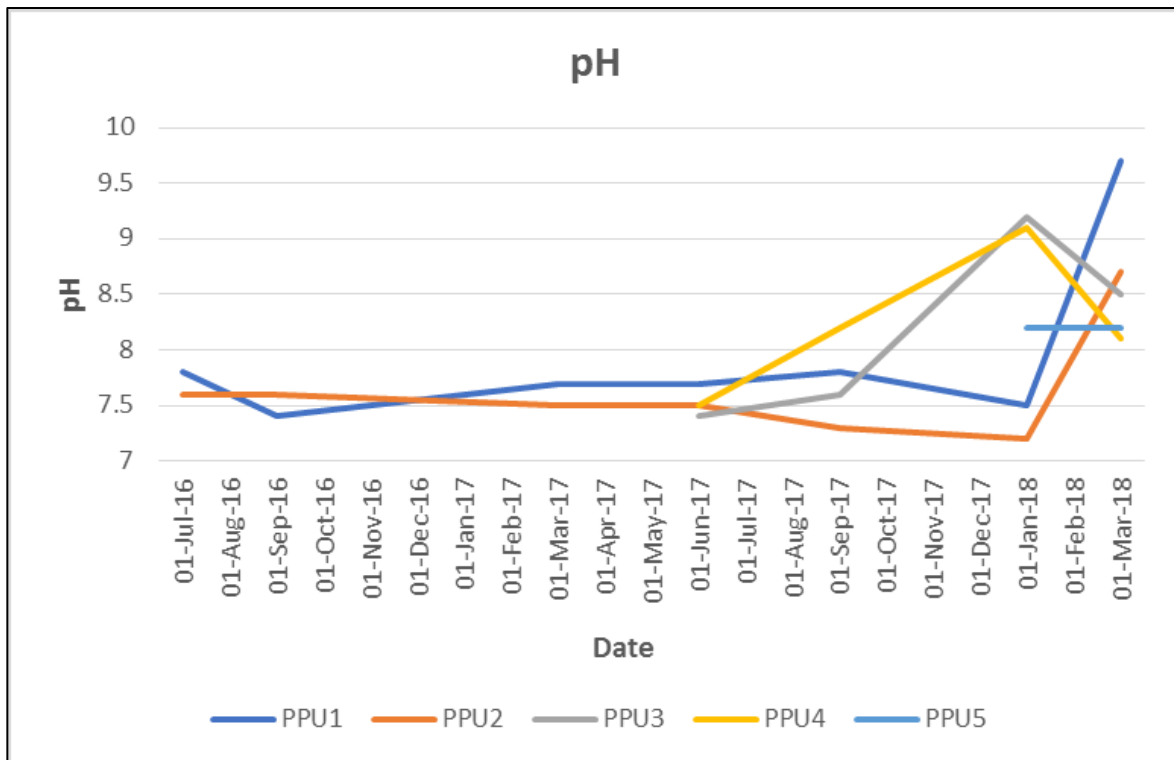
**General Notes**

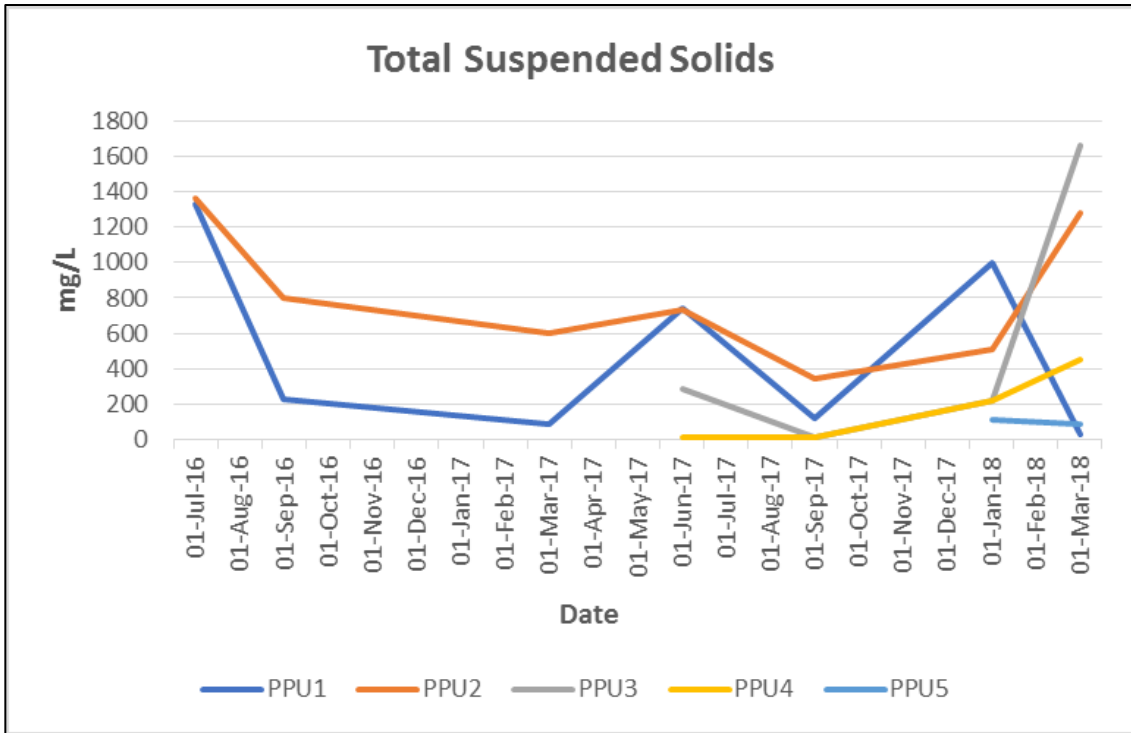
All conditions on a water access licence require compliance. An appeal to the Land and Environment Court against a decision to impose certain conditions on an approval can be made within 28 days after the date the decision is made. Conditions identified with the first letter "D" are those that can be appealed during the appeal period.

Certain dealings and other matters relating to this water access licence or a holding in this water access licence must be registered in the Access Register in accordance with section 71A of the *Water Management Act 2000*. For information about the Access Register, contact Land and Property Information (<http://www.lpi.nsw.gov.au>).

# APPENDIX D

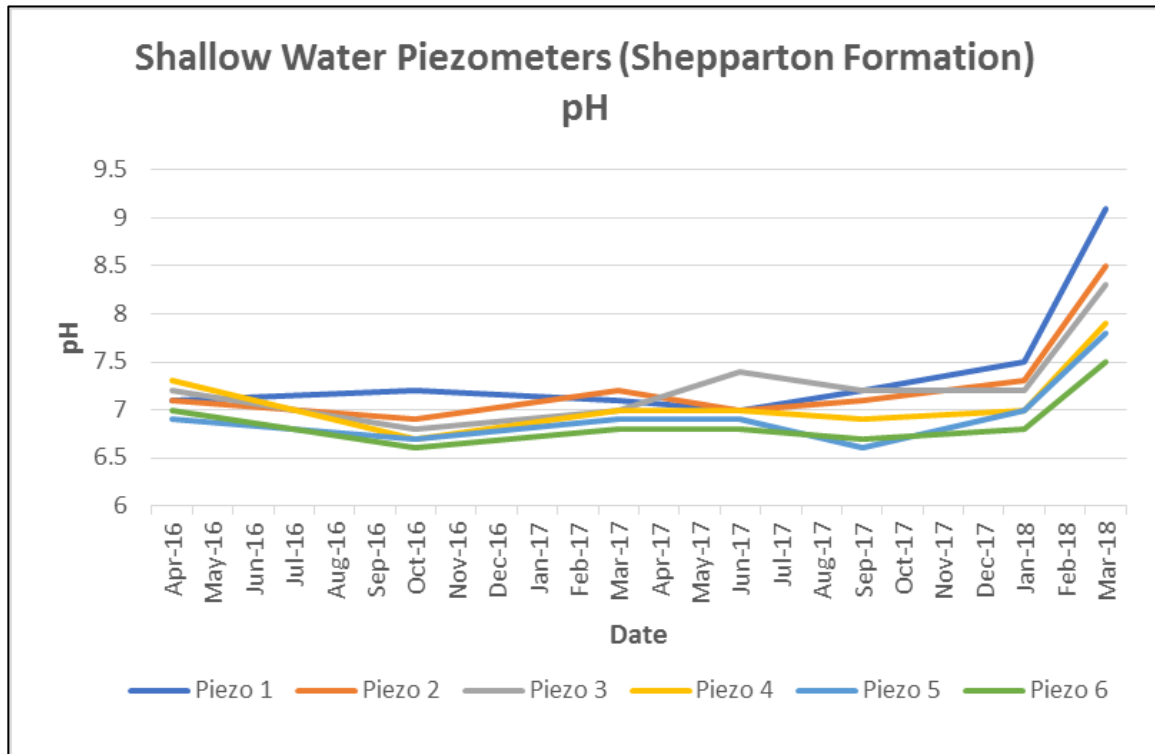
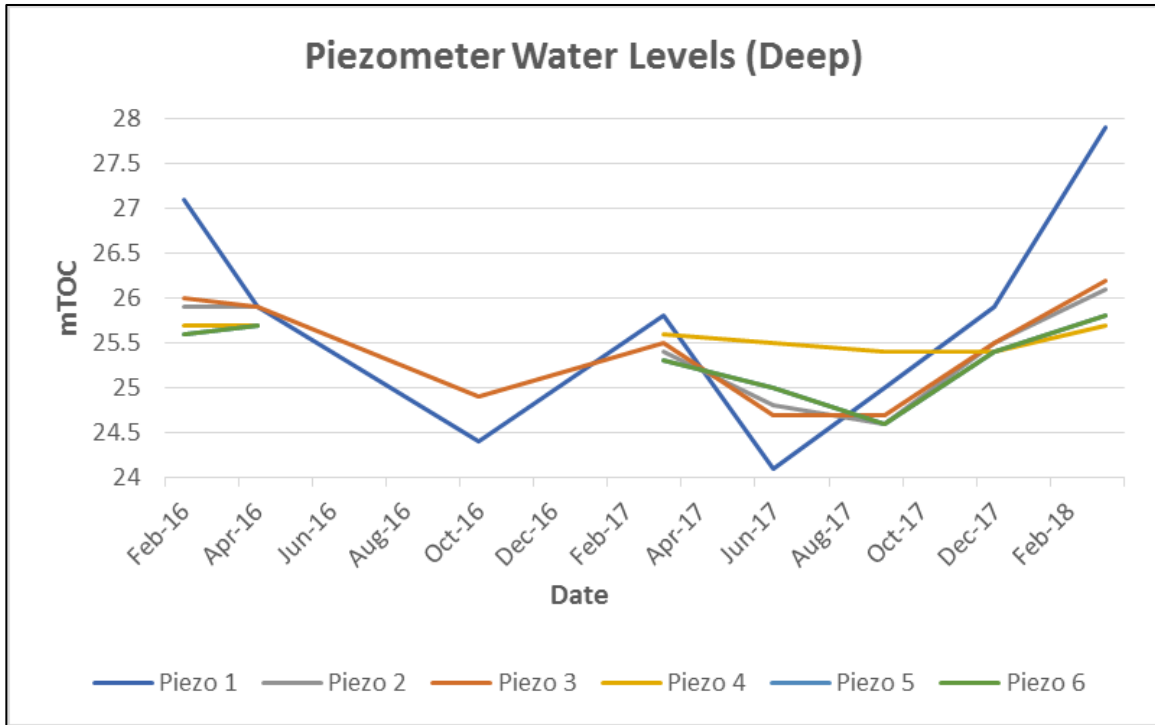
## Surface Water Long Term Data

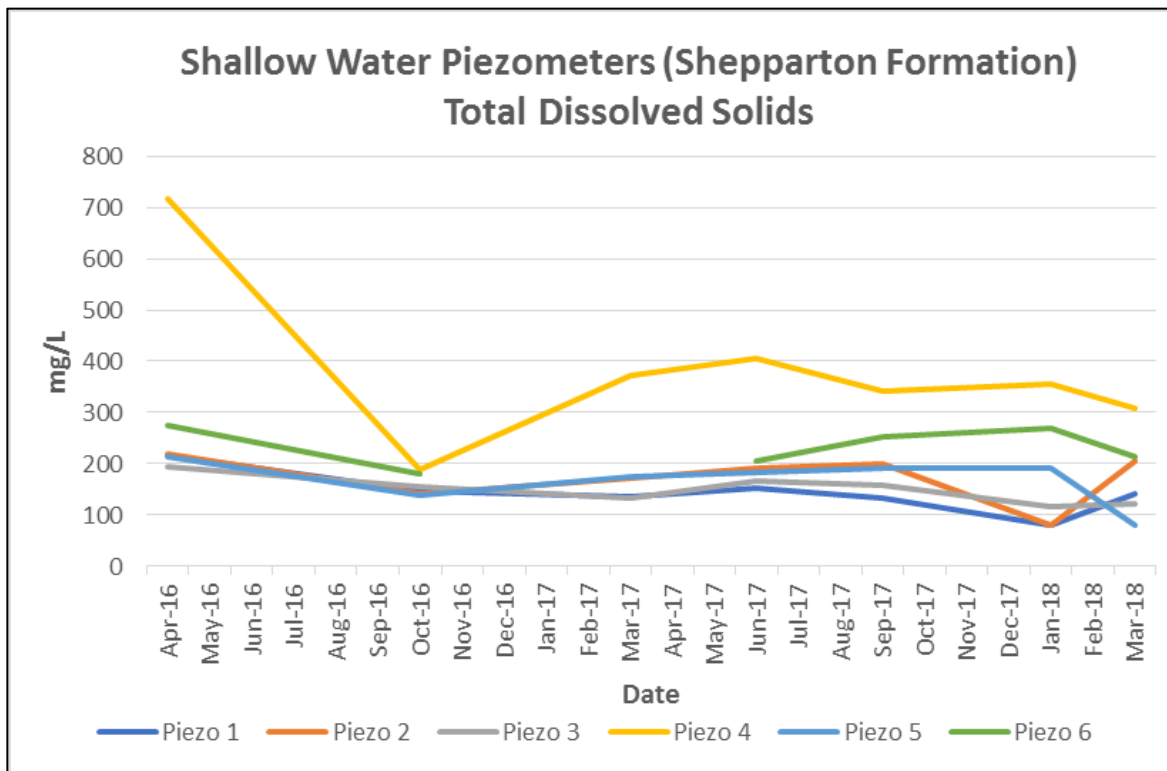
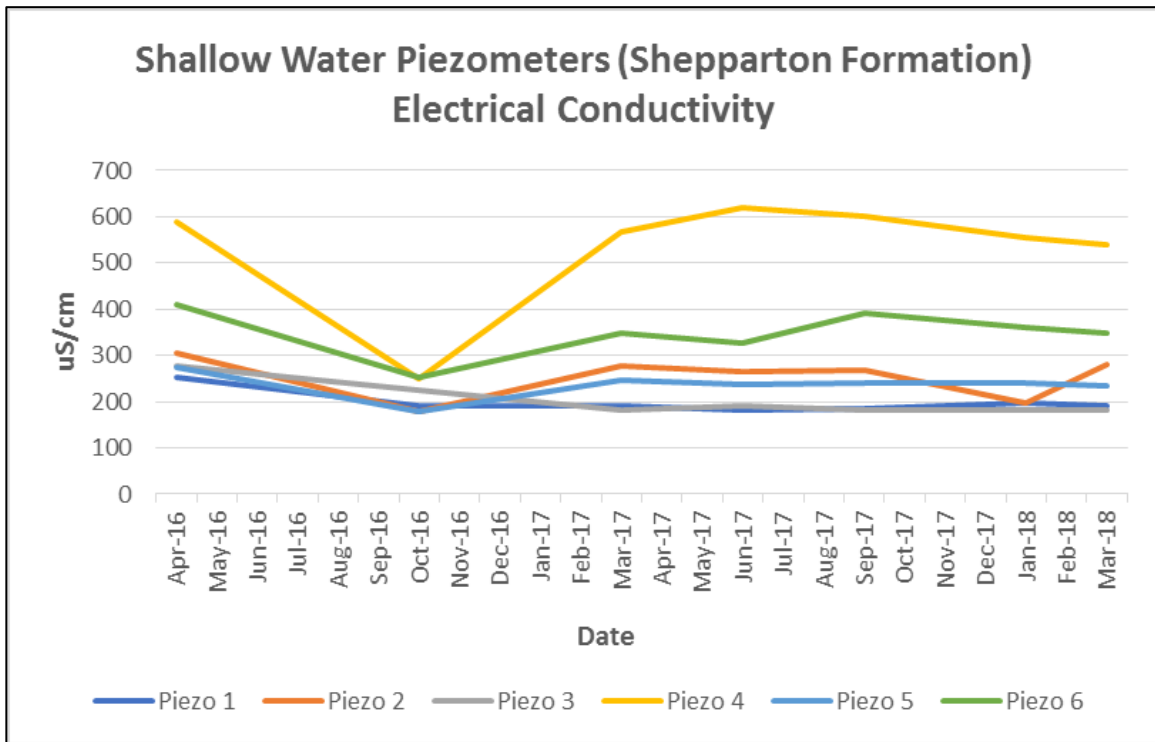


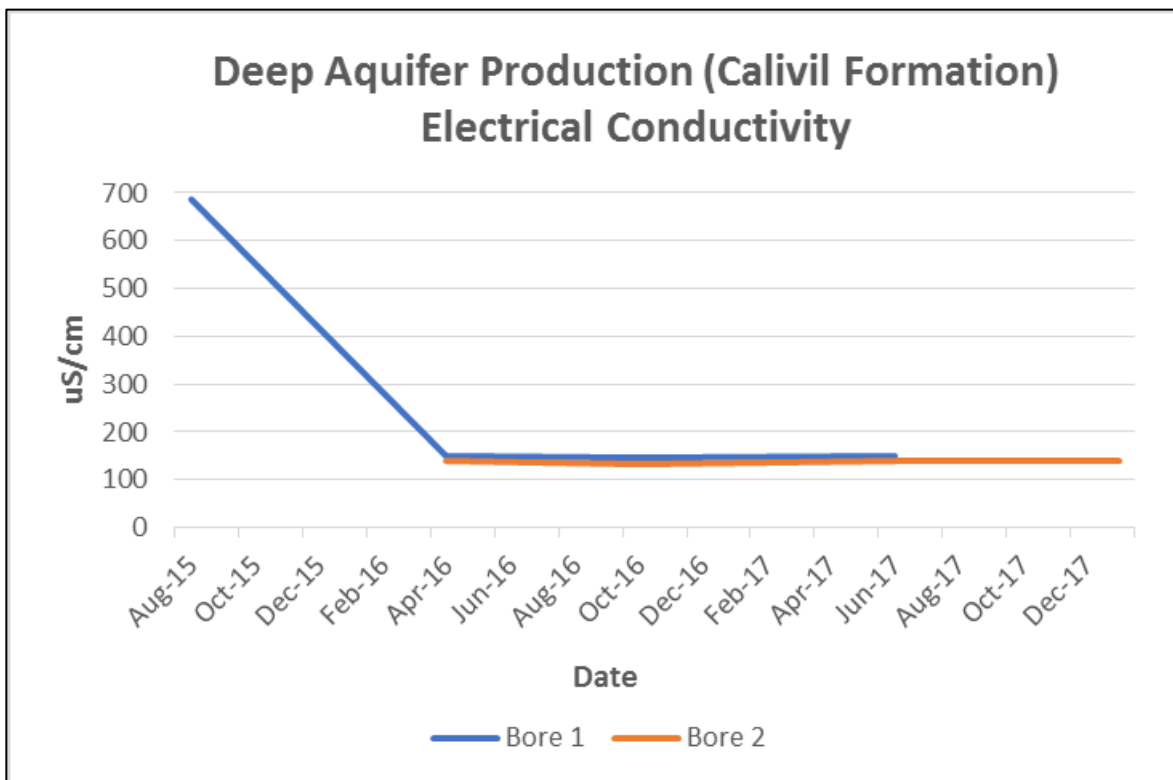
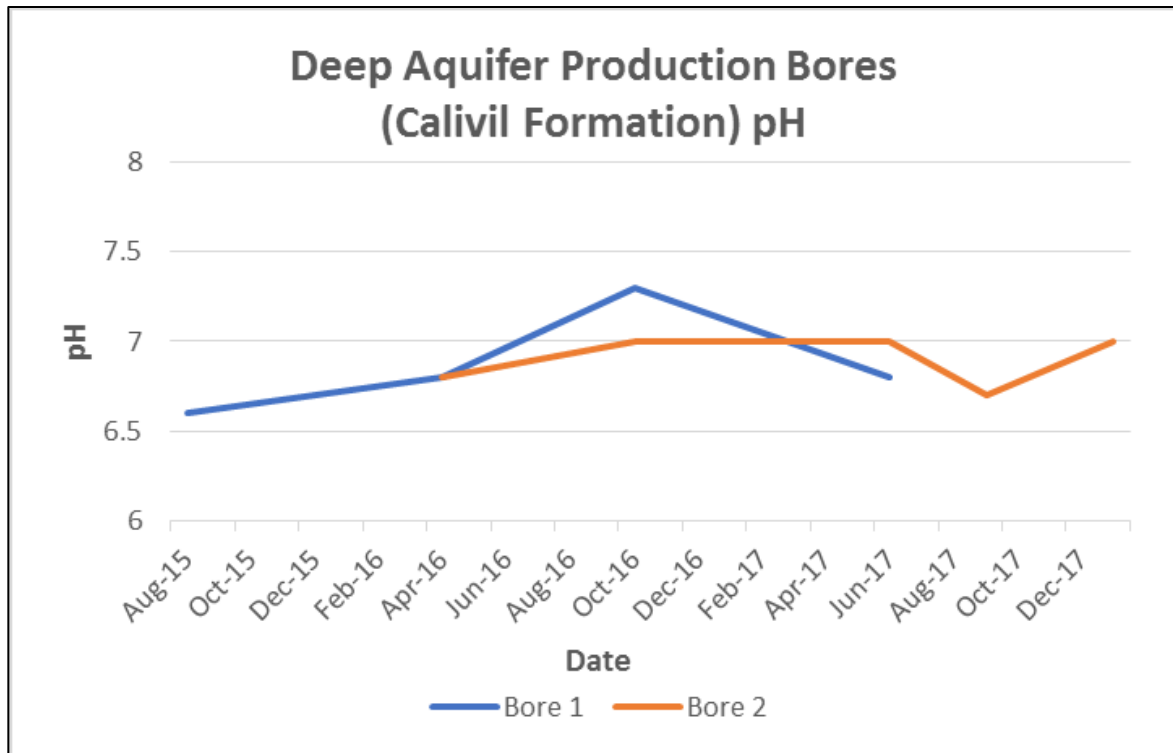


# APPENDIX E

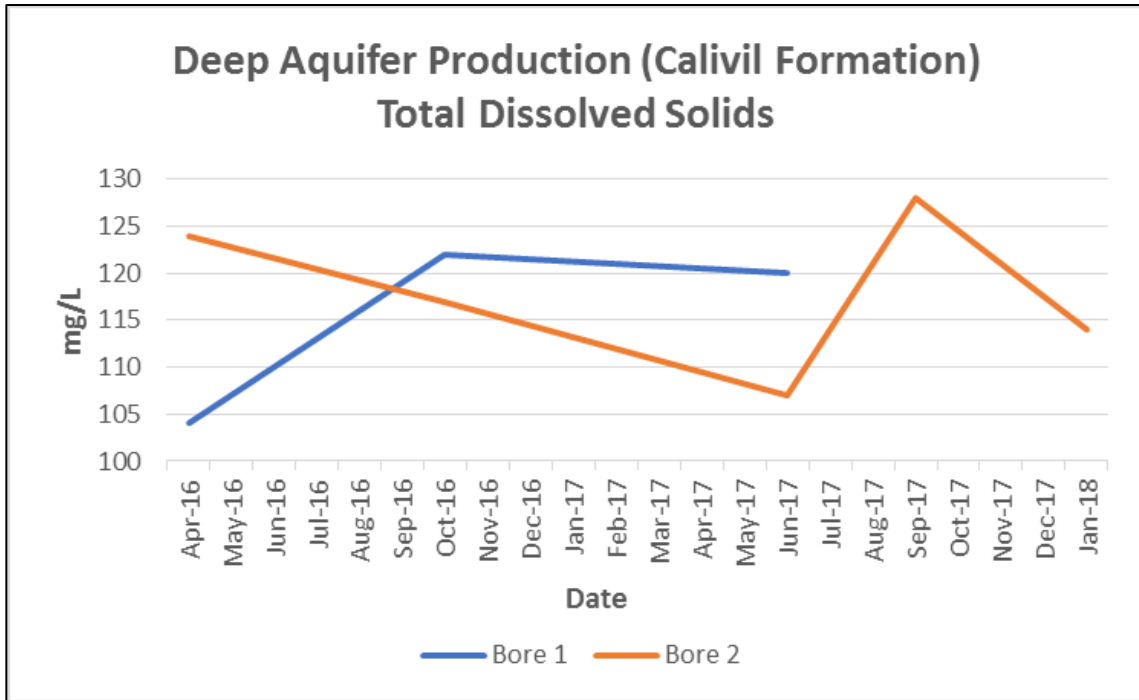
## Groundwater Long Term Data











# APPENDIX F

## Geotechnical Investigation – Existing Sediment Ponds (Aitken Rowe 2018)

28 May 2018

Reg. No.: GS18-61

Proten Limited  
PO Box 1746  
North Sydney, NSW 2060

**Attention: Mr. Ken Rowson – Construction Manager**

Dear Sir,

**GEOTECHNICAL INVESTIGATION – EXISTING SEDIMENT PONDS,  
EXISTING POULTRY FARMS 75 TO 79, STURT HIGHWAY, EUROLEY, NSW**

Further to your request in response to our quotation, Q18-119a dated 11 April 2018, we carried out the geotechnical field investigation adjacent to the existing sediment ponds at the above subject site on 18 April 2018.

The purpose of the investigation was to assess the material type and condition of the existing sediment ponds by augering, testing and sampling adjacent to the ponds and based upon the information obtained, make comments and recommendations accordingly. It is noted that the existing sediment ponds across the site have been constructed as 'in ground' with no embankments with the base of the ponds reportedly measuring approximately 2m to 4m in depth from the existing ground level. It is also noted that some of the ponds contained water at the time of the investigation making the base of the ponds inaccessible to undertake drilling.

It should also be noted that a geotechnical investigation was undertaken in April 2015 with boreholes drilled at the proposed borrow areas which were to form the sediment ponds (refer to Aitken Rowe Testing Laboratories report No. GS15-35, dated 12 May 2015).

This report specifically addresses the material properties adjacent to the sediment ponds based on the investigation findings at the locations of BH1 to BH10 only (refer to attached borehole location plan).

## **1.0 SITE DESCRIPTION**

The sites for the existing sediment ponds are located at the existing poultry Farms 75 to 79, Sturt Highway, Euroley, NSW, approximately 29km west of Narrandera, NSW. The sites for the existing sediment ponds are located adjacent to the existing poultry sheds south of the Sturt Highway with sixteen (16) existing sheds located at each farm site with existing sediment ponds at the four corners of the sixteen (16) sheds at each farm site as shown in the attached plan.

The farm sites are generally flat with the existing sediment ponds noted to be constructed 'in ground' with the surrounding ground noted to be cleared of vegetation at the time of the investigation. The inside batters of the existing sediment ponds are noted to be approximately 1V (Vertical): 3H (Horizontal) and excavated to the depths ranging from approximately 2.0m to 4.0m however some of the sediment ponds contained water at the time of the investigation and these dams depths have been visually estimated.

## **2.0 INVESTIGATION PROCEDURE**

### **2.1 Fieldwork**

The fieldwork was carried out on 18 April 2018 by the Senior Geotechnician of Aitken Rowe Testing Laboratories Pty Ltd from Griffith, NSW, who nominated the sampling and prepared engineering logs of the boreholes. The borehole logs with explanatory note are herewith attached.

The fieldwork for the investigation consisted of the logging and sampling of ten (10) boreholes (BH1 to BH10) adjacent to the existing sediment ponds (as selected by the client). The boreholes were augured with our trailer-mounted drilling rig to the depths of 5.5m at the locations as shown in the attached plan. Small and bulk samples were recovered at various depths from the boreholes for relevant laboratory testing.

### **2.2 Laboratory Testing**

The laboratory testing, including particle size distribution, Atterberg Limit, permeability and dispersion tests (Emerson Class) were performed on the selected samples recovered at various depths within the boreholes at our NATA accredited testing laboratory in Griffith, NSW. The samples for permeability testing were compacted at 95% Standard Maximum Dry Density (SMDD) and at nearest 100% Standard Optimum Moisture Content (SOMC). The laboratory test reports are herewith attached.

## **3.0 SUBSURFACE CONDITIONS**

### **3.1 Farm 79**

BH1 & BH2 cover the existing south-east and north-west sediment ponds, respectively, adjacent to the poultry sheds at Farm 79. The boreholes where drilled revealed that the sites are underlain by natural high plasticity clays, extending to the borehole termination depth at 5.5m in BH1 & BH2.

The moisture condition of the underlying natural material was generally greater than plastic limit throughout the borehole investigation depth in BH1 and less than plastic limit in the upper profile and greater than plastic limit in the lower profile throughout BH2 at the time of the investigation. No groundwater or seepage was encountered during the drilling in all boreholes drilled, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

### **3.2 Farm 78**

BH3 & BH4 cover the existing south-west and north-east sediment ponds, respectively, adjacent to the poultry sheds at Farm 78. The boreholes where drilled revealed that the sites are underlain by natural high and medium to high plasticity clays to 4.1m in BH3 and 4.5m (borehole termination depth) in BH4 which in turn is underlain fine to coarse grained clayey sand, extending to the borehole termination depth at 5.5m in BH1. The moisture condition of the underlying natural material was generally less than plastic limit throughout the borehole investigation depth in BH3 and less than plastic limit in the upper profile and greater than plastic limit in the lower profile throughout BH4 at the time of the investigation. No groundwater or seepage was encountered during the drilling in all boreholes drilled, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

### **3.3 Farm 77**

BH5 & BH6 cover the existing south-east and north-west sediment ponds, respectively, adjacent to the poultry sheds at Farm 77. The boreholes where drilled revealed that the sites are underlain by natural low plasticity sandy clay to 0.3m (in BH5 only), high and medium to high plasticity clays to 4.9m in BH5 and 2.9m in BH6 which is then underlain by low plasticity silty clay in BH5 and low plasticity sandy silty clay in BH6, extending to the borehole termination depth at 5.8m in BH5 and 5.5m in BH6. The moisture condition of the underlying natural material was generally varied throughout the borehole investigation depth in BH5 & BH6 at the time of the investigation. No groundwater or seepage was encountered during the drilling in all boreholes drilled, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

### **3.4 Farm 76**

BH7 & BH8 cover the existing south-west and north-east sediment ponds, respectively, adjacent to the poultry sheds at Farm 76. The boreholes where drilled revealed that the sites are underlain by natural low plasticity sandy silty clay (in BH7 only) to 0.15m in BH7 and high and medium to high plasticity clays to 5.5m (borehole termination depth) in BH7 and 2.2m in BH8 which in turn is underlain low plasticity silty clay to 4.1m and then high plasticity clay, extending to the borehole termination depth at 4.5m in BH8. The moisture condition of the underlying natural material was generally varied throughout the borehole investigation depth in BH7 and less than plastic limit throughout BH8 at the time of the investigation. No groundwater or seepage was encountered

during the drilling in all boreholes drilled, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

### **3.5 Farm 75**

BH9 & BH10 cover the existing south-east and north-west sediment ponds, respectively, adjacent to the poultry sheds at Farm 75. The boreholes where drilled revealed that the sites are underlain by topsoil (in BH9 only) to 0.1m in BH9 and fill material (in BH10 only) comprising medium to high plasticity clay to 0.3m in BH10 overlying natural high plasticity clays to 3.3m in BH9 and 3.6m in BH10 which is underlain low plasticity silty sandy clay, extending to the borehole termination depth at 4.5m in BH9 & 5.0m in BH10. The moisture condition of the underlying natural material was generally less than plastic limit throughout the borehole investigation depth in BH9 and less than plastic limit in the upper profile, greater than plastic limit in the middle profile and less than plastic limit in the lower profile throughout BH10 at the time of the investigation. No groundwater or seepage was encountered during the drilling in all boreholes drilled, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

## **4.0 DISCUSSIONS AND COMMENTS**

### **4.1 Soil Properties & Condition**

The laboratory tests carried out on the underlying natural clay material recovered from BH1, BH4, BH5, BH6, BH8 & BH9 indicated that the material generally contains 0 to 2% gravel, 11 to 40% sand and 59 to 90% silt and clay content with Plasticity Index (PI) ranging from 12 to 43%. The material is generally classified as “CH – CLAY, high plasticity, trace sand”, “CI – CLAY, medium plasticity, trace sand”, “CL – Silty CLAY, low plasticity, with fine to medium sand” and “CL – Sandy Silty CLAY, low plasticity, fine to medium sand” in accordance with “AS1726 - 2017 Geotechnical Investigations”.

The permeability test carried out on the samples from BH1, BH4, BH5, BH6, BH8 and BH9 indicates the permeability of  $8 \times 10^{-11}$ m/sec to  $2 \times 10^{-10}$ m/sec on high plasticity clay,  $4 \times 10^{-10}$ m/sec on medium plasticity clay,  $2 \text{ \& } 3 \times 10^{-9}$ m/sec on low plasticity silty clay and  $1 \times 10^{-9}$ m/sec on low plasticity sandy silty clay, which was compacted at 95% of SMDD at nearest 100% of SOMC. The dispersion (Emerson Class) tests carried out on the same sample showed “Emerson Class 1 & 2” and therefore considered “potentially moderately to highly dispersive”.

The laboratory tests carried out on the underlying natural sand based material recovered from BH3 indicated that the material generally contains 63% sand and 37% silt and clay content with Plasticity Index (PI) of 17%. The material is generally classified as “SC – Clayey SAND, fine to coarse grained, fines of low plasticity” in accordance with “AS1726 -2017 Geotechnical Investigations”. The permeability test carried out on the fine to coarse grained clayey sand indicates the permeability of  $9 \times 10^{-09}$ m/sec, which was compacted at 95% of SMDD at nearest 100% of SOMC.

The dispersion (Emerson Class) tests carried out on the same sample showed “Emerson Class 1” and therefore considered “potentially highly dispersive”.

The drilling resistance during the course of the drilling of the boreholes showed the natural material to be generally stiff to very stiff and very stiff consistency and dense strength throughout the investigated profiles across the site.

#### 4.2 Discussion & Comment

It should be noted that the construction of the existing sediment ponds was not witnessed by Aitken Rowe Testing Laboratories and, the test reports for any earthworks, if any, have not been provided to us at the time of this investigation. Citing the assessment of the underlying materials for its properties and conditions where investigated, the clay material at the excavated depths at the floor and sides of the ponds would have needed to be re-worked and compacted as required, particularly if low plasticity silty clay, sandy silty clay or sand based material was encountered to meet the design requirements of  $1 \times 10^{-09}$  m/sec for a minimum clay liner thickness of 600mm.

Based on the subsurface type and condition encountered in the boreholes drilled (BH1 to BH10), floor depths of the existing ponds being approximately 4.0m at BH1 & BH2, 3.5m at BH3, 2.0m at BH4 & BH8, 4.0m at BH5, 3.0m at BH6, BH7 & BH10 and 2.5m at BH9 and assuming a similar soil profile across the existing pond sites, then the sites (at the locations drilled) are considered suitable for construction of a sediment ponds **provided some treatment of the material with strict compaction control at the floor and sides of the dam was undertaken during the dam construction.**

It should be noted that sand based material was encountered at the depths of 4.1m to 5.5m (borehole termination depth) in BH3 below existing ground level. Therefore the placement of a clay liner, plastic liner or treatment of this material is likely to have been required at the nominated excavation depth if the sand based material was encountered at the sides or floor of the existing sediment pond during construction or within the clay liner requirement zones.

It should also be noted low plasticity silty clay was encountered at the depth of 2.2m to 4.1m in BH8 below existing ground with the floor of the sediment pond measured at approximately 2.0m below existing ground. Therefore the placement of a clay liner, plastic liner or treatment of this material is likely to have been required at the nominated excavation depth if the low plasticity silty clay material was encountered at the sides or floor of the existing sediment pond during construction or within the clay liner requirement zones.

#### 5.0 GENERAL COMMENT

Occasionally, the subsurface soil conditions between the completed boreholes may be found different (or may be interpreted to be different) from those expected. This can also occur with groundwater conditions, especially after climatic changes. If such differences appear to exist, we recommend that you immediately contact us.

Yours Faithfully,



**Tin Maung**

**Senior Geotechnical Engineer**

Attachments:

- Addendum
- Plan showing borehole locations
- Borehole logs with explanatory note
- Laboratory test reports



## ADDENDUM

### **LIMITS OF INVESTIGATION**

The recommendations made in this report are based on the assumption that the test results are representative of the overall subsurface conditions. However, it should be noted that even under optimum circumstances, actual conditions in some parts of the building site may differ from those said to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal all that is hidden by earth, rock and time.

The client should also be aware that our recommendations refer only to our test site locations and the ground level at the time of testing.

The recommendations in this report are based on the following: -

- a) The information gained from our investigation.
- b) The present "state of the art" in testing and design.
- c) The building type and site treatment conveyed to us by the client.
- d) Historical Information

Should the client or their agent have omitted to supply us with the correct relevant information, or make significant changes to the building type and/or building envelope, our report may not take responsibility for any consequences and we reserve the right to make an additional charge if more testing is necessary.

Notwithstanding the recommendations made in this report, we also recommend that whenever footings are close to any excavations or easements, that consideration should be given to deepening the footings.

Unless otherwise stated in our commission, any dimensions or slope direction and magnitude should not be used for any building costing calculations and/or positioning. Any sketch supplied should be considered as only an approximate pictorial evidence of our work.



**AITKEN ROWE TESTING  
LABORATORIES PTY LTD**  
Registration Number: **GS18-61**

**Client:** PROTEN LIMITED – NORTH SYDNEY, NSW  
**Project:** GEOTECHNICAL INVESTIGATION – EXISTING  
SEDIMENT PONDS, EXISTING POULTRY FARM  
75 TO 79, STURT HIGHWAY, EUROLEY, NSW  
BOREHOLE LOCATION PLAN

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 1		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit						Date: 18/04/2018 GPS N: 6154080 E: 0429970		
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CH	CLAY; high plasticity, trace sand, red brown		MC>PL	F				Dam depth approx 4m - half full of water
CH	CLAY; high plasticity, trace sand, yellow brown	0.5		St.-VSt.				1-2% <OMC
CH	CLAY; high plasticity, trace sand, mottled grey orange	1.5						
		2.0						
		2.5						
		3.0						
		3.5			D	1A		FMC = 25.0% OMC = 24.3%
		4.0						3% <OMC
CH	CLAY; high plasticity, trace sand, mottled grey yellow orange	4.5		VSt.				
		5.0						
		5.5						
	End of Borehole (BH1) @ 5.5m							
		6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 2		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit				Date: 18/04/2018 GPS N: 6154553 E: 0429820				
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CL	Sandy CLAY; low plasticity, fine to medium sand, brown		MC<PL	St.				Dam approx 3-4m deep - water level @ 1.5m BF  1% <OMC  OMC  1% <OMC  =1A  2% <OMC  1% <OMC
CH	CLAY; high plasticity, trace sand, red brown	0.5		VSt.				
			MC>PL					
CH	CLAY; high plasticity, trace sand, yellow brown	1.0						
CH	CLAY; high plasticity, trace sand, grey	1.5		St.-VSt.				
		2.0			D	2A		
		2.5						
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	3.0		VSt.				
		3.5						
CH	CLAY; high plasticity, trace sand, mottled grey yellow orange	4.0						
		4.5						
		5.0						
		5.5						
	End of Borehole (BH2) @ 5.5m							
		6.0						

Registration No.: GS18-61  
 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79,  
 Sturt Highway, Euroley, NSW  
 Client: Proten Limited - North Sydney, NSW

Logged By: M.S

Scale: As shown

Dry on completion

**AITKEN ROWE TESTING LABORATORIES PTY LTD**Borehole No.: **3**Sheet No.: **1 of 1**Ground Level: Existing  
Method: Auger Drilling with TC BitDate: 18/04/2018  
GPS  
N: 6155710  
E: 0430883

USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample		Lab. Test L.S. %	Remarks & Field Records	
					Type	No.			
CH	CLAY; high plasticity, trace sand, yellow brown	0.5	MC<PL	St.-VSt.				Dam approx 3-4m deep - water level @ 1.5m BF	
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	1.0		VSt.					
CH	CLAY; high plasticity, trace sand, yellow brown	1.5							
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	2.0			D	3A			
									2.5
CI-CH	CLAY; medium to high plasticity, with fine to medium sand, yellow brown	3.5			D	3B			
									4.0
SC	Clayey SAND; fine to coarse grained, fines of low plasticity, yellow orange brown	4.5	D	D	D	3C			
									5.0
									5.5
	End of Borehole (BH3) @ 5.5m	6.0							

Logged By: M.S

Registration No.: GS18-61  
Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79,  
Sturt Highway, Euroley, NSW  
Client: Proten Limited - North Sydney, NSW

Scale: As shown

Dry on completion

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 4		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit						Date: 18/04/2018		
						GPS N: 6156072 E: 0431317		
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CH	CLAY; high plasticity, trace sand, brown		MC<PL	St.-VSt.				Dam approx 2m deep - Dam dry
CH	CLAY; high plasticity, trace sand, yellow brown	0.5		VSt.				
		1.0						
CI	CLAY; medium plasticity, trace sand, mottled grey orange brown	1.5	MC>PL					
		2.0						3-4% <OMC
		2.5						1% <OMC
		3.0			D	4A		FMC = 17.2% OMC = 18.5%
		3.5						
CI-CH	CLAY; medium to high plasticity, with fine to medium sand, yellow brown	4.0		St.-VSt.				2% <OMC
		4.5						
	End of Borehole (BH4) @ 4.5m	5.0						
		5.5						
		6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 5		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit				Date: 18/04/2018 GPS N: 6156510 E: 0429992				
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CL	Sandy CLAY; low plasticity, fine to medium sand, yellow brown		MC<PL	St.				Dam approx 4m deep - water level @ 3.0m BFL          3-4% <OMC          FMC = 6.3% OMC = 14.7%
CH	CLAY; high plasticity, trace sand, yellow brown	0.5		VSt.				
		1.0						
CH	CLAY; high plasticity, trace sand, yellow orange brown	1.5						
		2.0						
CI-CH	CLAY; medium to high plasticity, with fine to medium sand, yellow brown	2.5			D	5A		
		3.0						
CH	CLAY; high plasticity, trace sand, grey yellow brown	3.5	MC>PL					
		4.0						
		4.5						
CL	Silty CLAY; low plasticity, with fine to medium sand, yellow.brown yellow brown	5.0	MC<PL	St.-VSt.				
		5.5			D	5B		
		6.0						
End of Borehole (BH5) @ 5.8m								
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW								Logged By: M.S Scale: As shown Dry on completion

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 6		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit						Date: 18/04/2018 GPS N: 6156982 E: 0429821		
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CH	CLAY; high plasticity, trace sand, brown		MC<PL	VSt.				Dam approx 3m deep - water level @ 2.0m BFL    4% <OMC
CH	CLAY; high plasticity, trace sand, yellow brown	0.5						
CH	CLAY; high plasticity, trace sand, mottled grey yellow orange	1.0	MC>PL					
		1.5						
		2.0						
CH	CLAY; high plasticity, trace sand, grey brown	2.5	MC<PL		D	6A		
CL	Sandy Silty CLAY; low plasticity, fine to medium sand, yellow orange brown	3.0		St.-VSt.				FMC = 9.7% OMC = 12.4%
		3.5						
		4.0			D	6B		
		4.5						
		5.0						
	End of Borehole (BH6) @ 5.5m	5.5						
		6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	



AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 7		
						Sheet No.: 1 of 1		
Ground Level: Existing			Date: 18/04/2018			GPS		
Method: Auger Drilling with TC Bit			N: 6157302			E: 0431072		
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CL	Sandy Silty CLAY; low plasticity, fine to medium sand, yellow brown	0.5	MC<PL	St. VSt.	D	7A	L.S. %	Dam approx 3m deep - water level @ 2-2.5m BF  1% <OMC        3% <OMC
CH	CLAY; high plasticity, trace sand, brown		MC<PL					
CH	CLAY; high plasticity, trace sand, yellow brown	1.0						
		1.5						
CI-CH	CLAY; medium to high plasticity, with fine to coarse sand, mottled yellow orange grey	2.0						
CH	CLAY; high plasticity, trace sand, mottled yellow orange grey	2.5						
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	3.0	MC<PL					
		3.5						
		4.0						
CI-CH	CLAY; medium to high plasticity, with fine to coarse sand, trace gravel, yellow orange brown	4.5						
		5.0						
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	5.5	MC>PL					
		6.0						
	End of Borehole (BH7) @ 5.5m							

Registration No.: GS18-61  
 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79,  
 Sturt Highway, Euroley, NSW  
 Client: Proten Limited - North Sydney, NSW

Logged By: M.S

Scale: As shown



Dry on completion

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 8		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit				Date: 18/04/2018 GPS N: 6157696 E: 0431380				
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CH	CLAY; high plasticity, trace sand, yellow brown	0.5 1.0	MC<PL	VSt.				Dam approx 2m deep - Dam dry
CI-CH	CLAY; medium to high plasticity, with fine to coarse sand, yellow orange brown	1.5 2.0			D	8A		
CL	Silty CLAY; low plasticity, with fine to medium sand, yellow brown	2.5 3.0 3.5 4.0			D	8B		FMC = 10.3% OMC = 14.0%
CH	CLAY; high plasticity, trace sand, grey brown	4.5						
	End of Borehole (BH8) @ 4.5m	5.0 5.5 6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	

AITKEN ROWE TESTING LABORATORIES PTY LTD					Borehole No.: 9			
					Sheet No.: 1 of 1			
Ground Level: Existing Method: Auger Drilling with TC Bit					Date: 18/04/2018 GPS N: 6157910 E: 0430197			
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CI-CH	TOPSOIL: CLAY; medium to high plasticity, trace sand, grey brown		MC<PL	St.				Dam approx 2.5m deep - Dam dry
CH	CLAY; high plasticity, trace sand, grey brown	0.5		VSt.				
CH	CLAY; high plasticity, trace sand, yellow brown	1.0						FMC = 16.5% OMC = 20.9%
CH	CLAY; high plasticity, trace sand, yellow brown	1.5						
CH	CLAY; high plasticity, trace sand, mottled grey yellow orange	2.0	MC≥PL					
CH	CLAY; high plasticity, trace sand, mottled grey yellow orange	2.5			D	9A		
CH	CLAY; high plasticity, trace sand, yellow brown	3.0						FMC = 10.6%
CL	Sandy Silty CLAY; low plasticity, fine to medium sand, yellow brown	3.5	MC<PL					
CL	Sandy Silty CLAY; low plasticity, fine to medium sand, yellow brown	4.0			D	9B		
	End of Borehole (BH9) @ 4.5m	4.5						
		5.0						
		5.5						
		6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	

AITKEN ROWE TESTING LABORATORIES PTY LTD						Borehole No.: 10		
						Sheet No.: 1 of 1		
Ground Level: Existing Method: Auger Drilling with TC Bit						Date: 18/04/2018 GPS N: 6158376 E: 0429962		
USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CI-CH	FILL: CLAY; medium to high plasticity, with fine to medium sand, brown		MC<PL	St.				Dam approx 3.0m deep - Dam dry
CH	CLAY; high plasticity, trace sand, brown	0.5		VSt.				FILL: Appears poorly compacted 'Uncontrolled'
CH	CLAY; high plasticity, trace sand, yellow brown	1.0						NATURAL
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	1.5						
CH	CLAY; high plasticity, trace sand, mottled grey orange brown	2.0	MC<PL					4-5% <OMC
		2.5			D	10A		
		3.0						
		3.5						
CL	Sandy Silty CLAY; low plasticity, fine to medium sand, mottled grey orange brown	4.0	MC<PL					
		4.5						
		5.0						
	End of Borehole (BH10) @ 5.0m	5.5						
		6.0						
Registration No.: GS18-61 Project/Location: Geotechnical Investigation - Existing Sediment Ponds, Existing Poultry Farms 75 to 79, Sturt Highway, Euroley, NSW Client: Proten Limited - North Sydney, NSW							Logged By: M.S	
							Scale: As shown	
							Dry on completion	


**AITKEN ROWE TESTING LABORATORIES PTY LTD**
**LOG SYMBOLS**

LOG COLUMN	SYMBOLS	DEFINITION		
Groundwater Record		Standing water level. Time delay following completion of drilling may be shown.		
		Groundwater seepage into borehole or excavation noted during drilling or excavation.		
Samples	<b>D</b>	Small disturbed bag sample taken between the depths indicated by lines.		
	<b>B</b>	Bulk disturbed sample taken between the depths indicated by lines.		
	<b>U</b>	Undisturbed 50mm diameter tube sample taken between the depths indicated by lines		
Field Tests	<b>N=17 4, 7, 10</b>	Standard Penetration Test (S.P.T.) performed between depths indicated by lines. Individual figures show blows per 150mm penetration driven by SPT hammer.		
	<b>N<sub>c</sub></b>	<b>5</b>	Dynamic Cone Penetration Test performed between depths indicated by lines.	
		<b>7</b>	Individual figures show blows per 100mm penetration for 60 degree solid cone driven by 9 Kg hammer.	
		<b>3</b>		
Moisture Condition (Cohesive Soils) (Cohesionless Soils)	<b>MC&gt;PL</b>	Moisture content estimated to be greater than plastic limit.		
	<b>MC=PL</b>	Moisture content estimated to be approx. equal to plastic limit.		
	<b>MC&lt;PL</b>	Moisture content estimated to be less than plastic limit.		
	<b>D</b>	DRY – runs freely through fingers.		
	<b>M</b>	MOIST – does not run freely but no free water visible on soil surface.		
	<b>W</b>	WET – free water visible on soil surface.		
Consistency (Cohesive Soils)	<b>VS</b>	VERY SOFT – unconfined compressive strength less than 25kPa.		
	<b>S</b>	SOFT – unconfined compressive strength 25-50 kPa.		
	<b>F</b>	FIRM – unconfined compressive strength 50-100kPa.		
	<b>St.</b>	STIFF – unconfined compressive strength 100-200kPa.		
	<b>VSt.</b>	VERY STIFF – unconfined compressive strength 200 – 400kPa.		
	<b>H</b>	HARD – unconfined compressive strength greater than 400kPa.		
Relative Density (Cohesionless Soils)		<b>Description</b>	<b>Density Index Range % S.P.T.</b>	<b>'N' Value Range Blows/300mm</b>
	<b>VL</b>	VERY LOOSE	<15	0-4
	<b>L</b>	LOOSE	15-35	4-10
	<b>MD</b>	MEDIUM DENSE	35-65	10-30
	<b>D</b>	DENSE	65-85	30-50
	<b>VD</b>	VERY DENSE	>85	> 50
Hand Penetrometer Readings	<b>300 250 280</b>	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise.		
Laboratory Test	<b>L.S. %</b>	Linear Shrinkage (As per RTA Method T113)		
	<b>M.C. %</b>	Field Moisture Content (As per Australian Standard AS1289.2.1.1 or RTA Method T120)		
	<b>I<sub>ss</sub></b>	Shrink-Swell Index (As per Australian Standard AS1289.7.1.1)		
Remarks	<b>'V' bit</b>	Hardened steel 'V' shaped bit.		
	<b>'TC' bit</b>	Tungsten Carbide wing bit.		
	<b>T<sup>60</sup></b>	Penetration of auger string in mm under static load of rig rear axle without rotation of augers.		



## AITKEN ROWE TESTING LABORATORIES PTY LTD

### LOG SYMBOLS - ROCK FORMATION

#### DEGREE OF WEATHERING

TERM	SYMBOL	DEFINITION
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties. i.e.it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemicals or physical decomposition are evident. Porosity and strength may be increased or decrease compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substances is no longer recognisable.
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is recognisable.
Fresh	Fr	Rock substance unaffected by weathering.

#### ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index(Is 50) and refers to the strength of the rock substances in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics & AS 1726 - 1993 (Reference).

TERM	Is (50) Mpa	FIELD GUIDE	SYMBOL
Extremely Low:	0.03	Easily remoulded by hand to a material with soil properties.	XW
Very Low:	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.	VW
Low:	0.3	A piece of core 150mm long x 50mm dia. can be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	W
Medium:	1	A piece of core 150mm long x 50mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	MS
High:	3	A piece of core 150mm long x 50mm dia. cannot be broken by unaided hands, can be slightly scratched or scored with knife.	S
Very High:	10	A piece of core 150mm long x 50mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	VS
Extremely High:		A piece of core 150mm long x 50mm dia. is difficult to break with hand held hammer. Rings when struck with hammer.	ES

#### DEGREES OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks.

TERM	DESCRIPTION
Fragmented	The core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter.
Highly Fractured:	Core lengths are generally less than 20mm -- 40mm with occasional fragments.
Fractured:	Core lengths are mainly 30mm -- 100mm with occasional shorter and longer sections.
Slightly Fractured:	Core lengths are generally 300mm -- 1000mm with occasional longer sections and occasional sections of 10mm -- 300mm.
Unbroken:	The core does not contain any fractures.



# AITKEN ROWE Testing Laboratories Pty Ltd

Laboratory Address: 60 Benerembah Street, Griffith NSW 2680

\*

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OF: 2

SUBMITTED BY : ARTL

DATE SAMPLED: 18/04/2018

DATE SUBMITTED: 18/04/2018

SAMPLING METHOD: AS1289.1.2.1

SAMPLING CLAUSE: 6.5.3

ORDER No.: \*

## TEST REPORT: GEOTECHNICAL INVESTIGATION - SOIL ANALYSIS

CLIENT : PROTEN LIMITED - NORTH SYDNEY, NSW

JOB DESCRIPTION : GEOTECHNICAL INVESTIGATION

EXISTING SEDIMENT PONDS, EXISTING POULTRY FARMS 75 TO 79, STURT HIGHWAY, EUROLEY, NSW

MATERIAL SOURCE : IN-SITU BOREHOLES

PROPOSED USE : DESIGN

MATERIAL TYPE : REFER TO BOREHOLE LOGS

REGISTRATION No : R28 **GS18-61**

SAMPLE NUMBER :		1A	3C	4A	5B	6B	8B	
SAMPLING LOCATION :		BH1	BH3	BH4	BH5	BH6	BH8	
DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) :		2400-4000	4300-5300	1800-3500	4900-5800	3000-4300	2200-3400	
TESTS	TEST ELEMENT	*	*	*	*	*	*	
T106	PASS 75.0mm SIEVE %	*	*	*	*	*	*	
	PASS 53.0mm SIEVE %	*	*	*	*	*	*	
	PASS 37.5mm SIEVE %	*	*	*	*	*	*	
	PASS 26.5mm SIEVE %	*	*	*	*	*	*	
	PASS 19.0mm SIEVE %	*	*	*	*	*	*	
	PASS 13.2mm SIEVE %	*	*	*	*	*	*	
	PASS 9.50mm SIEVE %	*	*	*	*	*	*	
	PASS 6.70mm SIEVE %	*	*	*	*	*	*	
	PASS 4.75mm SIEVE %	*	*	*	*	*	*	
	PASS 2.36mm SIEVE %	100	100	100	100	100	100	
T107	WHOLE SAMPLE							
	PASS 425 µm SIEVE %	97	59	98	99	97	98	
	PASS 75 µm SIEVE %	87	37	90	73	60	73	
	LESS THAN 13.5 µm %	71	23	68	43	37	43	
T107	-2.36mm	PASS 425 µm SIEVE %	97	59	98	99	97	98
		PASS 75 µm SIEVE %	87	37	90	73	60	73
		LESS THAN 13.5 µm %	71	23	68	43	37	43
	OBSERVATIONS	*	*	*	*	*	*	
RATIOS	A-	PASS 425 µm %	97	59	98	99	97	98
	B-	PASS 75/425 µm %	90	63	92	74	62	75
	C-	BELOW 13.5/75 µm %	82	61	76	59	62	58
AS1289.3.1.2	LIQUID LIMIT %	60	27	46	34	29	31	
AS1289.3.2.1	PLASTIC LIMIT %	17	10	15	15	13	14	
AS1289.3.3.1	PLASTICITY INDEX	43	17	31	19	16	17	
	PREPARATION METHOD	AS1289.1.1-5.3	AS1289.1.1-5.3	AS1289.1.1-5.3	AS1289.1.1-5.3	AS1289.1.1-5.3	AS1289.1.1-5.3	
T111	STANDARD MAX. DRY DENSITY (1L MLD, A.1ii) t/m <sup>3</sup>	1.59	1.97	1.67	1.75	1.81	1.78	
	OPTIMUM MOISTURE CONTENT %	24.3	9.7	18.5	14.7	12.4	14.0	
T113	LINEAR SHRINKAGE %	*	*	*	*	*	*	
AS1289.2.1.1	FIELD MOISTURE CONTENT %	25.0	4.6	17.2	6.3	9.7	10.3	
AS1289.3.8.1 (AIR DRIED)	EMERSON CLASS	1	1	2	2	2	2	
	TYPE OF WATER	DISTILLED	DISTILLED	DISTILLED	DISTILLED	DISTILLED	DISTILLED	
AS1289.6.7.2 FALLING HEAD	COEFFICIENT OF PERMEABILITY m/sec.	8x10 <sup>-11</sup>	9x10 <sup>-9</sup>	4x10 <sup>-10</sup>	3x10 <sup>-9</sup>	1x10 <sup>-9</sup>	2x10 <sup>-9</sup>	
	LABORATORY MOISTURE RATIO %	100	100	100	101	100	101	
	LABORATORY DENSITY RATIO %	95	95	95	95	95	95	
	% OVERSIZE DISCARDED (+19.0mm)	0.0	0.0	0.0	0.0	0.0	0.0	
	SURCHARGE MASS APPLIED (1L MOULD, 3kPa)	2.65	2.65	2.65	2.65	2.65	2.65	



Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

ACCREDITATION NUMBER 4679

AS1289.6.7.2 not covered by ARTL Griffith Accreditation.

T111 tested by ARTL Albury Laboratory. Results transferred from AS18-40.

\*

All samples are oven dried and dry sieved during prep. unless otherwise stated

APPROVED SIGNATORY : .....

Jarrod Gornall

DATE: 22/05/2018



# AITKEN ROWE Testing Laboratories Pty Ltd

Laboratory Address: 60 Benerambah Street, Griffith NSW 2680

\*

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ORDER No.: \*

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CLIENT : PROTEN LIMITED - NORTH SYDNEY, NSW

JOB DESCRIPTION : GEOTECHNICAL INVESTIGATION

EXISTING SEDIMENT PONDS, EXISTING POULTRY FARMS 75 TO 79,  
STURT HIGHWAY, EUROLEY, NSW

MATERIAL SOURCE : IN-SITU BOREHOLES

PROPOSED USE : DESIGN

MATERIAL TYPE : REFER TO BOREHOLE LOGS

REGISTRATION No : R28 **GS18-61**

SAMPLE NUMBER :		9A	9B	*	*	*	*	
SAMPLING LOCATION :		BH9	BH9	*	*	*	*	
DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) :		2300-2900	3500-4000	*	*	*	*	
TESTS	TEST ELEMENT			*	*	*	*	
T106	PASS 75.0mm SIEVE %	*	*	*	*	*	*	
	PASS 53.0mm SIEVE %	*	*	*	*	*	*	
	PASS 37.5mm SIEVE %	*	*	*	*	*	*	
	PASS 26.5mm SIEVE %	*	*	*	*	*	*	
	PASS 19.0mm SIEVE %	*	*	*	*	*	*	
	PASS 13.2mm SIEVE %	*	*	*	*	*	*	
	PASS 9.50mm SIEVE %	*	*	*	*	*	*	
	PASS 6.70mm SIEVE %	*	*	*	*	*	*	
	PASS 4.75mm SIEVE %	100	100	*	*	*	*	
PASS 2.36mm SIEVE %	99	98	*	*	*	*		
T107	WHOLE SAMPLE							
	PASS 425 µm SIEVE %	97	93	*	*	*	*	
	PASS 75 µm SIEVE %	88	59	*	*	*	*	
	LESS THAN 13.5 µm %	72	33	*	*	*	*	
T107	-2.36mm	PASS 425 µm SIEVE %	97	95	*	*	*	*
		PASS 75 µm SIEVE %	89	60	*	*	*	*
		LESS THAN 13.5 µm %	72	34	*	*	*	*
		OBSERVATIONS	*	*	*	*	*	*
RATIOS	A-	PASS 425 µm %	97	95	*	*	*	*
	B-	PASS 75/425 µm %	91	63	*	*	*	*
	C-	BELOW 13.5/75 µm %	82	57	*	*	*	*
AS1289.3.1.2	LIQUID LIMIT %	57	26	*	*	*	*	
AS1289.3.2.1	PLASTIC LIMIT %	16	14	*	*	*	*	
AS1289.3.3.1	PLASTICITY INDEX	41	12	*	*	*	*	
	PREPARATION METHOD	AS1289.1.1-5.3	AS1289.1.1-5.3	*	*	*	*	
T111	STANDARD MAX. DRY DENSITY (1L MLD, A.1ii) t/m <sup>3</sup>	1.65	*	*	*	*	*	
	OPTIMUM MOISTURE CONTENT %	20.9	*	*	*	*	*	
T113	LINEAR SHRINKAGE %	*	*	*	*	*	*	
AS1289.2.1.1	FIELD MOISTURE CONTENT %	16.5	10.6	*	*	*	*	
AS1289.3.8.1 (AIR DRIED)	EMERSON CLASS	1	2	*	*	*	*	
	TYPE OF WATER	DISTILLED	DISTILLED	*	*	*	*	
AS1289.6.7.2	COEFFICIENT OF PERMEABILITY m/sec.	2x10 <sup>-10</sup>	*	*	*	*	*	
FALLING HEAD	LABORATORY MOISTURE RATIO %	101	*	*	*	*	*	
	LABORATORY DENSITY RATIO %	95	*	*	*	*	*	
	% OVERSIZE DISCARDED (+19.0mm)	0.0	*	*	*	*	*	
	SURCHARGE MASS APPLIED (1L MOULD, 3kPa)	2.65	*	*	*	*	*	



Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

ACCREDITED FOR  
TECHNICAL  
COMPETENCE

ACCREDITATION NUMBER 4679

AS1289.6.7.2 not covered by ARTL Griffith Accreditation.

T111 tested by ARTL Albury Laboratory. Results transferred from AS18-40.

\*

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APPROVED SIGNATORY : .....

Jarrod Gornall

DATE: 22/05/2018



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### TAMWORTH

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### PERTH

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