GULLEN RANGE
WIND FARM

NGRWF_P_002_1

Pollution Incident Response Management Plan

January 2016

Revision Details

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Document Approvals

The signatures of the people below indicate an understanding in the purpose and content of this document by those signing it. By signing this document you agree to this as the formal Communication Management Plan for the Project.

Role	Name	Signature	Date
Author:	Derek Powell		29/01/2016
Approved:	Weiwei Shi		29/01/2016

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1 PROJECT BACKGROUND

The Gullen Range Wind Farm (GRWF) received planning approval on 04 August 2010, from the NSW Land and Environment Court. An Environment Protection Licence (EPL), number 20365 was issued in 2014 for the project. The EPL has been updated since that date by the EPA.

Gullen Range Wind Farm (GRWF) is owned by New Gullen Range Wind Farm Pty Ltd (NGRWF). NGRWF contracts the operation and maintenance of the wind farm to Goldwind Australia Pty Ltd (GWA). NGRWF has prepared this Pollution Incident Response Plan (PIRMP) in conjunction with GWA.

Construction of the Wind Farm involved the erection of 73 wind turbines and associated infrastructure including a 33kV/330kV substation and connection to TransGrid's existing 330kV Sydney West to Yass transmission line. The site commenced full operation in December 2014.

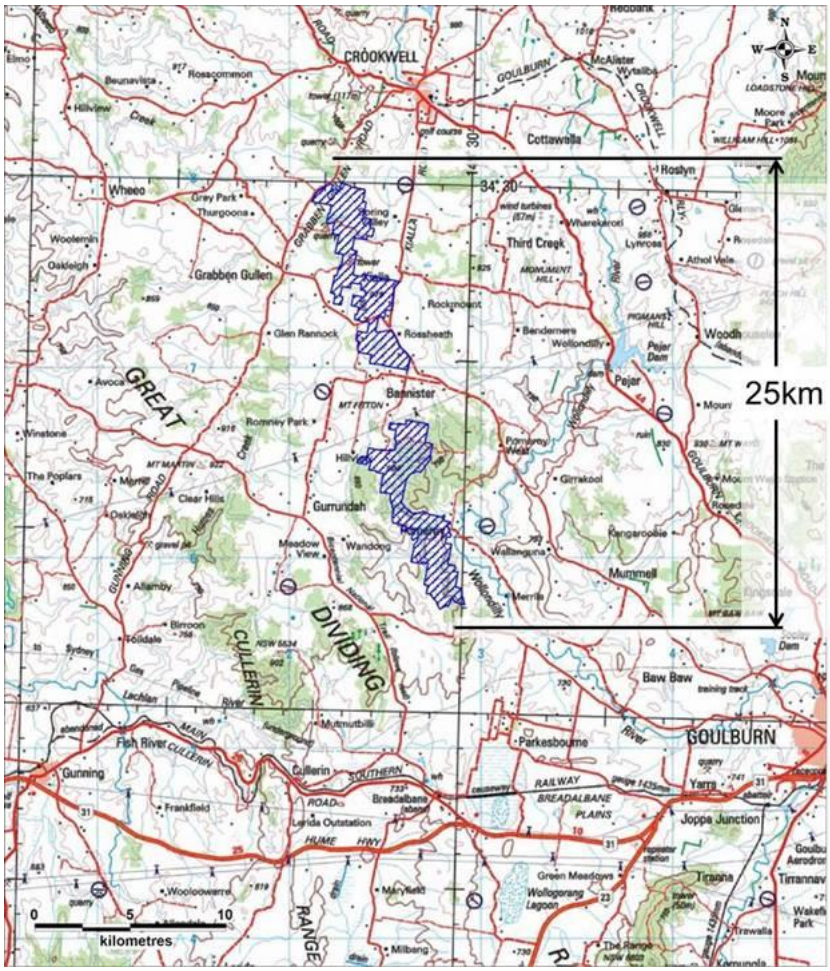


Figure 1 (Source GRWF EA, March 2014 Fig 1.1) Project locality sketch

1.1 Purpose of this Document

This PIRMP has been prepared by NGRWF to address requirements of Part 5.7A of the Protection of the Environment Operations (POEO) Act and POEO Regulations 2009 (General). The Plan must include the information detailed in the POEO Act (section 153C) and be in the form required by the POEO (G) Regulation (Clause 98B) and with additional matters described in Clause 98C of the Regulation.

This document provides the basis of the PIRMP. Key aspects will be integrated in the Site Operations Management Plan (OMP) and Emergency Response Plan (ERP) that are referenced by Site Staff and contractors.

2 COMPONENTS OF THE PIRMP

2.1 Overview

Holders of Environment Protection Licences (EPL) are required to prepare, keep, test and maintain a Pollution Incident Response Management Plan (PIRMP). New Gullen Range Wind Farm Pty Ltd (NGRWF) holds EPL 20365 that relates to the Gullen Range Wind Farm

The POEO Act, Section 153C specifies information to be included in the PIRMP as follows:

(a) the procedures to be followed by the holder of the relevant environment protection licence, or the occupier of the relevant premises, in notifying a pollution incident to:

(i) the owners or occupiers of premises in the vicinity of the premises to which the environment protection licence or the direction under section 153B relates, and

(ii) the local authority for the area in which the premises to which the environment protection licence or the direction under section 153B relates are located and any area affected, or potentially affected, by the pollution, and

(iii) any persons or authorities required to be notified by Part 5.7,

(b) a detailed description of the action to be taken, immediately after a pollution incident, by the holder of the relevant environment protection licence, or the occupier of the relevant premises, to reduce or control any pollution,

(c) the procedures to be followed for co-ordinating, with the authorities or persons that have been notified, any action taken in combating the pollution caused by the incident and, in particular, the persons through whom all communications are to be made,

(d) any other matter required by the regulations.

Section 98C of the POEO Regulation also prescribes additional matters to be addressed by the PIRMP.

This PIRMP addresses the following matters in respect of Gullen Range Wind Farm (GRWF).

- Description, location and likelihood of hazards
- Goldwind Australia Risk Management procedure
- Inventory of pollutants
- Pre-emptive actions to be taken
- Safety equipment (Pollution control equipment)
- Contact details
- Communicating with neighbours and the local community
- Minimising harm to persons on the premises
- Maps relevant to Pollution Incident Response
- Actions to be taken immediately after an incident
- Staff training

2.1.1 Site facilities

The wind farm facility includes 73 wind turbines, a 33kV/330kV substation and Operations and Maintenance Office and compound, access tracks and 33kV electrical collection circuits. There are 56 Goldwind GW100-2.5MW turbines (Figure 2.1) and 17 GW82-1.5MW turbines (Figure 2.2). Turbine locations are shown in Figures 2.3 to 2.5. The PIRMP does not address TransGrid's 330kV switchyard, which is not covered by EPL 20365. The switchyard is operated by TransGrid.

Figure 2.1 – Turbine GW100-2.5MW

The GW100-2.5MW turbines is the larger of the two types of turbine installed, with a 100 metre (diameter) rotor, larger nacelle and coolers and kiosk transformer at the base of each tower.

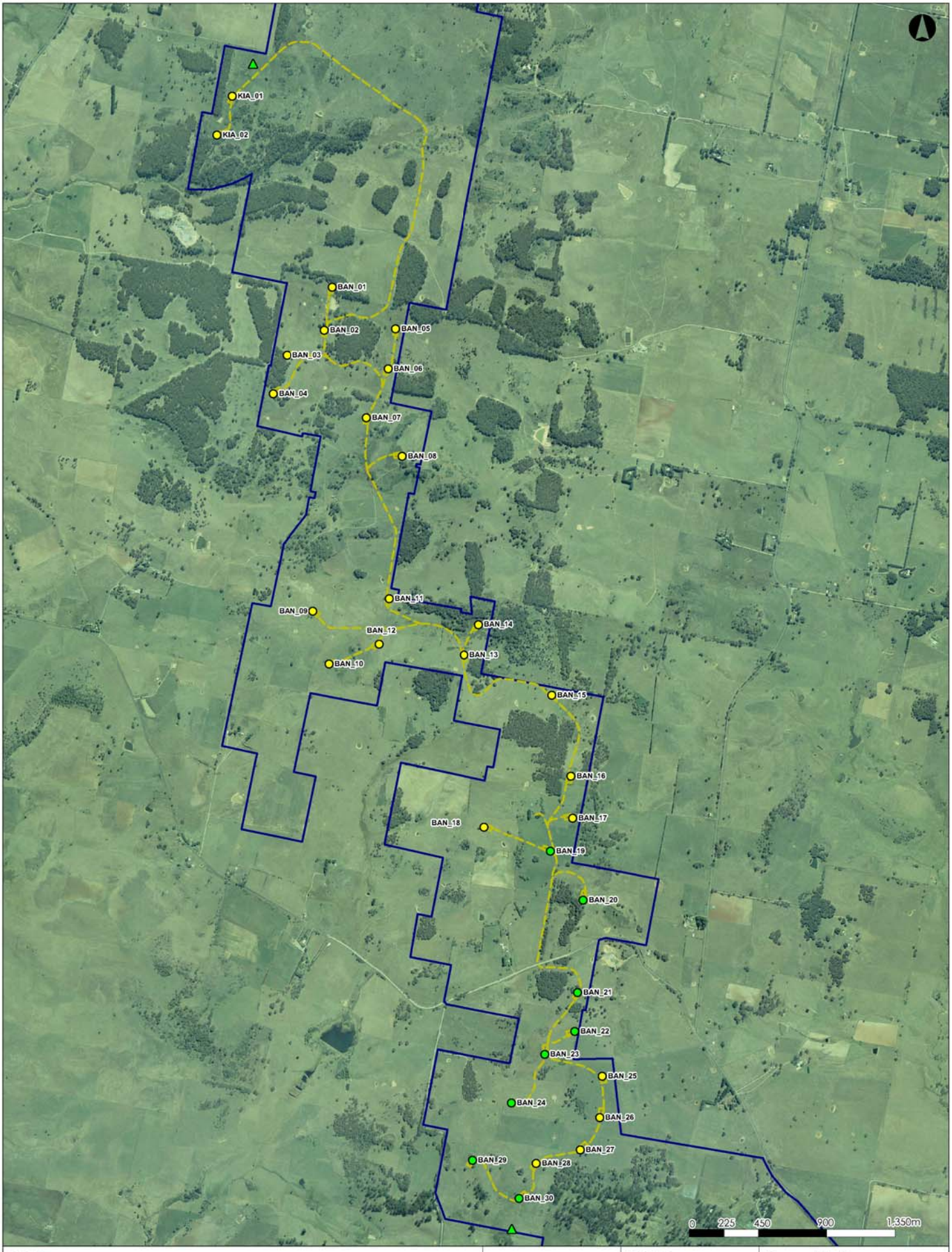
Photo shows Kiosk transformer and two banks of coolers at base of Tower for POM 12.

The kiosk transformer holds 2,390 litres of insulating oil. This transformer is internally bunded.

Each cooler has 160 litres of coolant, total coolant is 320 litres for each turbine.

The GW82-1.5MW turbine is the smaller turbine with an 82 metre rotor, smaller nacelle, a kiosk transformer adjacent the base of the tower but does not require coolers. (Figure 2.2).

	Figure 2.2 - Turbine GW82-1.5MW The GW82 has a smaller rotor (82m diameter) and smaller nacelle. The nacelles of the two models are distinctly different. Coolers are not used for the GW82. The kiosk transformer holds 2,390 litres of insulating oil. This transformer is internally bunded. A temporary wind monitoring mast is seen close to the turbine location.



LEGEND

Final Turbine Location
- GW100
- GW82
- Roads (Catcon Jan '14)
- Crane hardstands and laydown area
- Permanent met mast

Project boundary

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EPURON

PROJECT

GULLEN RANGE WIND FARM

TITLE

Bannister Final Wind Turbines

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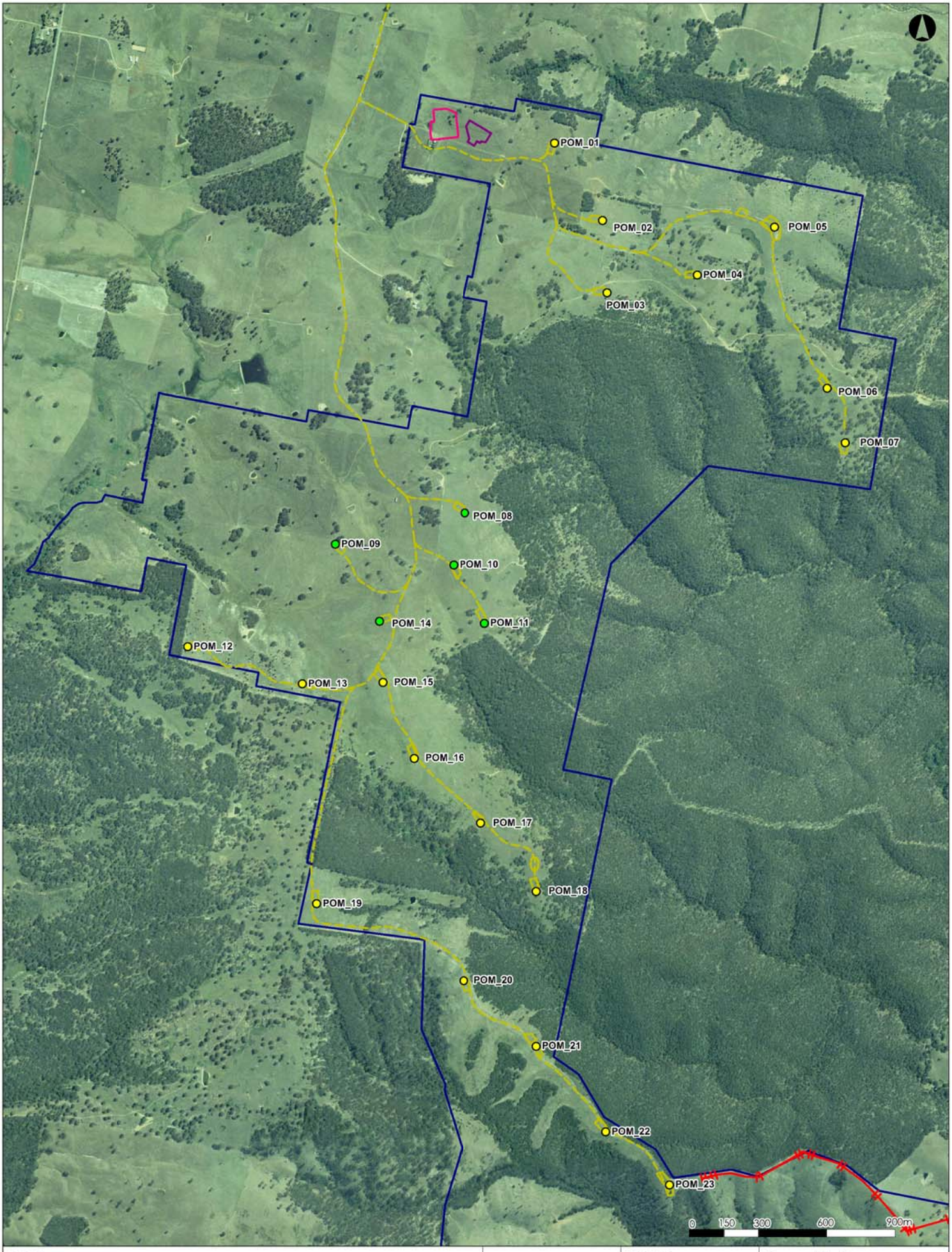

LEGEND

Final Turbine Location
- GW100
- GW82

Project boundary

Roads (Catcon Jan '14)

Crane hardstands and laydown area

Substation

Switching station

Proposed overhead 33 kV powerline (CPP Aug '14)

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EPURON

PROJECT

GULLEN RANGE WIND FARM

TITLE

Pomeroy Final Wind Turbines

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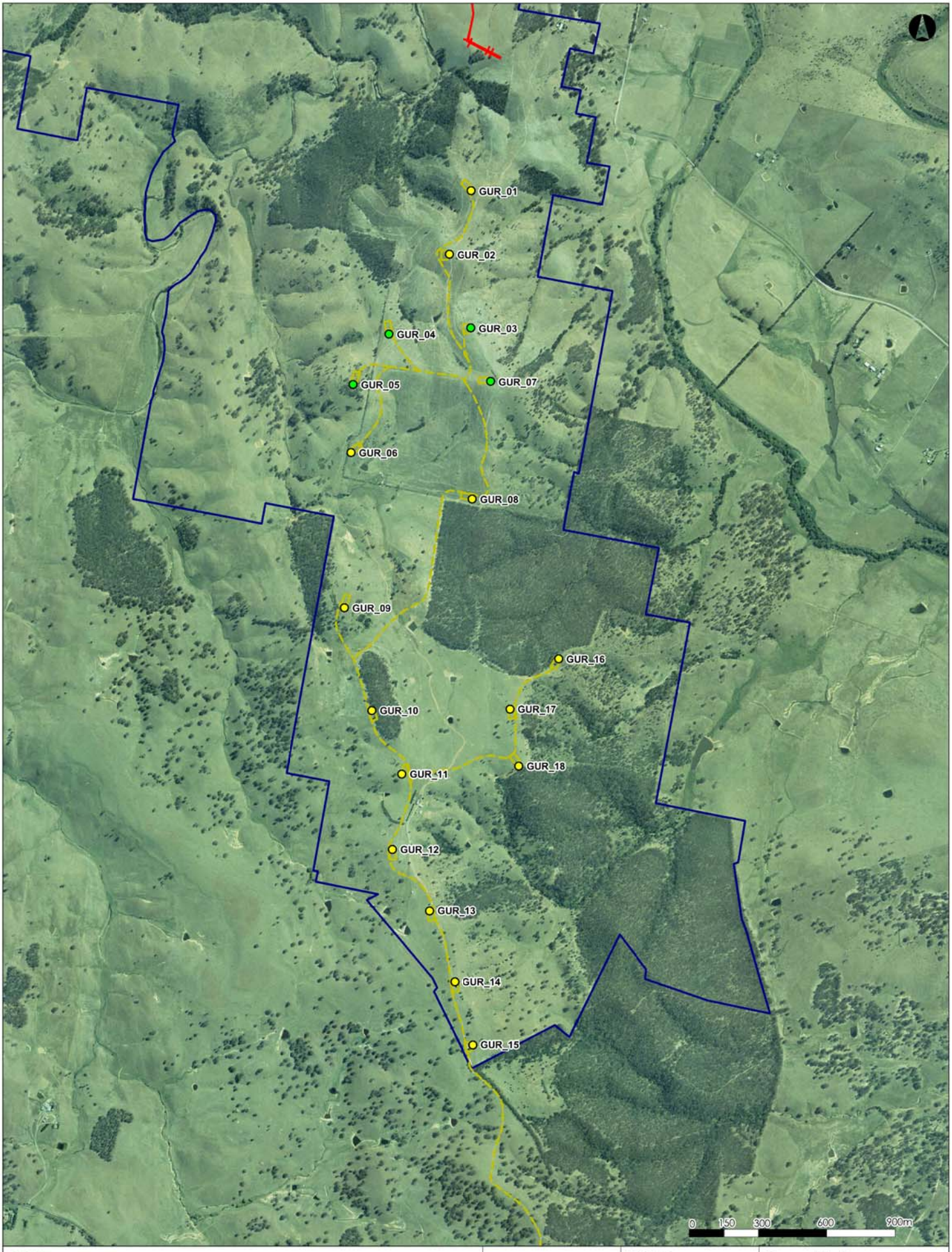

LEGEND

Final Turbine Location
- GW100
- GW82
- Roads (Catcon Jan '14)
- Crane hardstands and laydown area
- Proposed overhead 33 kV powerline (CPP Aug '14)
- Project boundary

GOLDWIND

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EPURON

PROJECT
GULLEN RANGE WIND FARM

TITLE
Gurrundah Final Wind Turbines

Document Number		
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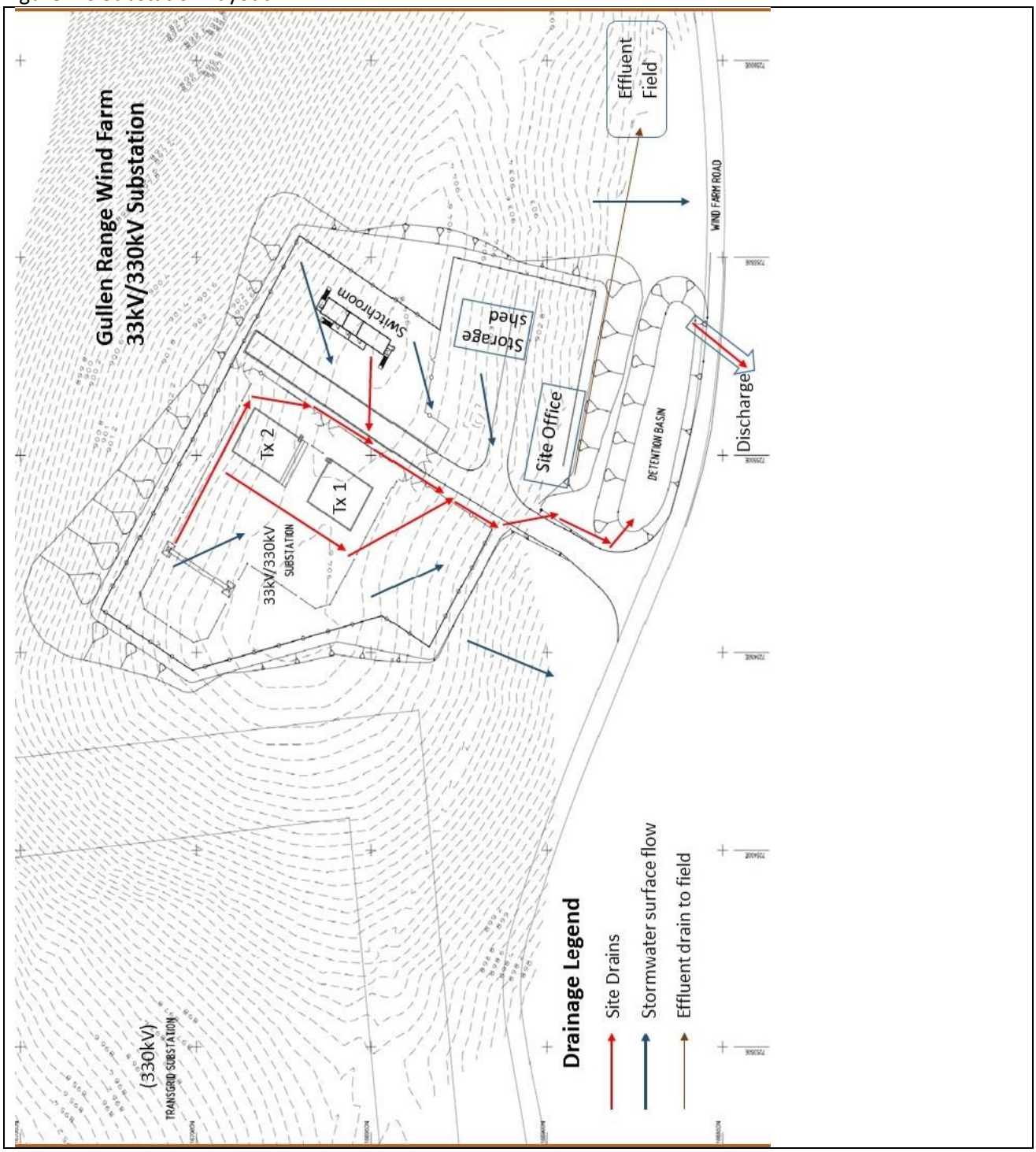
Figure 2.6 Substation Layout



The substation is located at the northern end of the Pomeroy group close to the TransGrid grid connection facilities (Figure 2.4). The TransGrid 330kV Switchyard is not addressed by this PIRMP as it has been designed and constructed and is now operated by TransGrid. The substation layout (Figure 2.6) contains two 33kV/330kV transformers as shown in the photo in Figure 2.7. Each transformer, coolers and conservator fittings contain about 46,000 litres of insulating oil. The transformers are located within concrete bunds and oil water separators are also located in the bunds adjacent a drainage pit.

Figure 2.7 – Photo of GRWF 33kV/330kV Substation with two large transformers located in bunds

2.2 Description and likelihood of hazards

The potential hazards associated with the operations stage of the Gullen Range Wind Farm are identified below in terms of the type of hazard and the location where the hazards may occur.

The POEO Act refers to actual or potential material harm to the environment. Section 147 describes the meaning of material harm to the environment.

(1) For the purposes of this Part:

(a) harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

2.2.1 Types of hazards

Hazards may be associated with impacts on air quality, water quality, ecosystems or neighbours. The general categories considered by the EPA risk assessment tool include, Air, Water and Noise. The hazards relevant to these aspects for GRWF are listed below.

Air

- Dust from access tracks or, any unstabilised surfaces or stockpiles (Higher risk in dry windy conditions)
- Speed limits for the site are 40kmph but in some locations are reduced to 20kmph to reduce dust.
- Vehicle emissions – Low levels for operational stage (low number of vehicles, intermittent operation)

Water

- Spillage or leaks of oil from plant, equipment, storage containers/areas or vehicles (possible)
- Spills of coolant at turbine sites or during handling/transport of coolant – biodegradable coolant
- Spills of oils or minor amounts of chemicals at substation/O&M compound or oil/lubricants at turbine sites, or in transport between locations – Controls included in design and procedures to mitigate risk.
- Erosion and transfer of sediment across project area, significantly reduced level of risk following site restoration. Greater risk with high intensity rainfall.
- Herbicides or other chemicals involved in weed control

Noise

- Noise impacts for neighbours from turbine aerodynamic noise – monitoring and compliance testing to assess whether impact exceeds noise criteria. Any exceedance must be managed.
- Noise impacts for neighbours from turbine mechanical noise – preventative inspections and maintenance aims to ensure efficient operation of turbines
- Noise from earthworks activities associated with site restoration – progressively less as construction and rehabilitation work completed
- Noise from maintenance works, cranes, etc. Occasional and controls applied as relevant
- Traffic noise entering or leaving the site. Low levels during operational stage

2.2.2 Locations associated with respective hazards

The hazards identified above may be present at the locations indicated below.

Substation, Control building and O&M Building and compound (Pomeroy area – Figure 2.4)

- Loss of insulating oil in large 33kV/330kV transformers (spillage to soil and waters). Each transformer has approximately 46,000 litres of oil. The transformers are in purpose designed concrete bunds.
- Sewage plant (effluent release to waters from broken pipes and effluent field)
- Chemicals – Coolant stocks approximately 4,000 litres in 1,000 Litre containers in Operations and Maintenance (O&M) Compound. Coolant is fully biodegradable.
- Chemicals – Oils and waste oils in bunded chemical store (small volume and containment provided)
- Surface runoff and sediment transfer for unstabilised soil area particularly on steeper slopes. Reduced risk as disturbed ground is progressively stabilised. Sediment contained at source.
- Waste removal from the O&M compound by licensed waste contractor

Wind Turbines (At locations shown in Figures 2.3 to 2.5)

- GW100-2.5 utilise coolers that are located adjacent the base of the tower (320L in two coolers)
- Turbine coolant is fully biodegradable.
- When filling the system, a 1000L or similar container is used. There is potential for leakage or spillage from this container during transport or decanting process. Procedural controls are used to mitigate this risk.
- GW82-1.5 No coolers, but the turbines require servicing, generally low oil volume as no gearbox.
- Kiosk transformers at turbines contain 2,390 litres of insulating oil. Leak or failure could release oil to the environment, however this is of very low likelihood as transformers are internally bunded. If oil in the transformer is required to be replaced, there is the risk of oil spillage during this operation. This is not a routine operation and when required, procedural controls will be used to mitigate this risk.
- Servicing of turbines – Low volume of oils, procedures for maintenance and spill recovery.
- Removal and recycling of packaging materials has been completed.

Access tracks and hardstands (At locations shown in Figures 2.3 to 2.5)

- Erosion of tracks, drains and/or batters with potential to transfer sediment to pasture and creeks.
- Dust from any unstabilised stockpiles. Stockpiles removed as site restoration works completed.

Weed infested areas

- Use of herbicide to control weed infestations across the project area. Application by experienced contractors minimises the risk. Herbicide could be spilt or leaked during use or transport, or the incorrect type or concentration of herbicide could be used.

Sensitive areas

- Native vegetation and Endangered Ecological Communities (EECs) (Shown on Site Constraints Maps)
- Fauna habitat (Associated with vegetation communities)
- Stocked areas or areas used for cropping (as used by host landowners)
- Water courses – within Wollondilly River catchment (Sydney Outer Catchment Area)
- Water courses – within Lachlan catchment
- Proximity to residences and potential for noise impact – compliance checking assesses impact.

2.2.3 Certification ISO 14001 - Goldwind Australia Pty Ltd

GWA, as the appointed Operations and Maintenance contractor, has been certified as having implemented and is maintaining an Environmental Management System (EMS) that fulfils the requirements of ISO 14001: 2004. The certification was obtained on 23 May 2014 and is valid until 22 May 2017. A copy is attached in Appendix A1.

2.2.4 Goldwind Australia HSE Risk Management Procedure

GWA, as the appointed Operations and Maintenance contractor, has established a HSE Risk Management Procedure (GWA-HSE-PRC-0017) that sets out the methodology to assess and evaluate risks that may arise during GWA activities. The risk management process aims to address the process outlined in AS/NZS ISO 31000:2009 as outlined in Figure 2.8 below.

The application of mitigation measures aims to reduce the risks to an acceptable level. A Risk Matrix is shown in Figure 2.9 which can be applied to analysis of risks for the purpose of developing mitigation strategies for unacceptable risks. The operating site maintains a risk register for identified risks and new activities are reviewed in accordance with the template in Table 2.10.

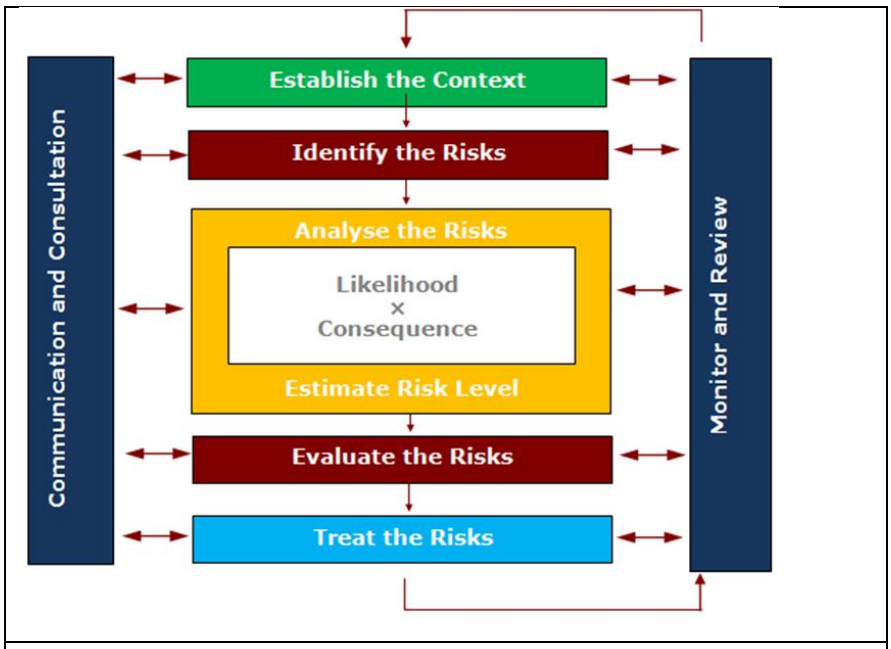


Figure 2.8 – Risk Management Process (AS/NZS ISO 31000:2009)

Figure 2.9 HSE Risk Matrix (from GWA Risk Management Procedure)

		Consequence →				
	Environment	Negigable Incident.	Minor pollution/damage no long term affects.	Moderate Pollution or Damage Possible	Major/Serious Pollution or Damage Possible	Death of plants/wildlife/environmental items
	People	Injuries or ailments not requiring medical treatment.	Minor injury or First Aid Treatment Case.	Serious injury causing hospitalisation or multiple medical treatment cases.	Life threatening injury or multiple serious injuries causing hospitalisation.	Death or multiple life threatening injuries.
		Insignificant (I)	Minor (MIN)	Moderate (MOD)	Major (MAJ)	Catastrophic (CAT)
Likelihood ↑						
Is expected to occur in most circumstances	Very Likely (VL)	M	H	H	E	E
Will probably occur	Likely (L)	M	M	H	H	E
Might occur at some time in the future	Possible (P)	L	M	M	H	H
Could occur but doubtful	Unlikely (UL)	L	L	M	M	H
May occur but only in exceptional circumstances	Very Unlikely (VU)	L	L	L	M	M

Work only to proceed under the following guidelines.	
Risk Tolerability	
EXTREME Unacceptable	**Do not start activity.** Detailed research and planning required for Department Manager approval.
HIGH Undesirable	**Do not start activity – Notify Department Manager of supervision in place.** Manager/Supervisor must confirm that existing procedures and control measures are up to date and actionable by all workers.
MODERATE Tolerable	**Managed locally.** Manager/Supervisor must confirm that existing procedures and control measures are suitable up to date and actionable by all workers.
LOW Acceptable	**Use Caution –Proceed direct with activity using procedures and control measures.**

Step 1: Identify hazards related to work steps.

Step 2: Calculate the Risk score based on the likelihood and consequence.

Step 3: Add mitigation Strategies (control measures) and recalculate Risk Score Tolerability.

Figure 2.10 Risk Management Template – Examples of Pollution Incident Risks (Relevant items to be integrated in Site HSE Risk Register)						
Work step or facility	**Hazards**	**Risk**	**Risk Score**	**Mitigation Strategies (Control Measures)**	**Residual Risk Score/Tolerability**	**Person Responsible** (for implementing control measures)
Substation, O&M Compound and Site Office						
Large transformers	**Loss of large oil volume**	**Failure of containment**	Medium Risk	**Design includes location within substantive concrete bund and oil/water separator on discharge**	Low Risk	All
Large transformer servicing	**Careless service procedures**	**Spill of oil**	Medium risk	**Procedures to be appropriate for task and consider all potential risks**	Low risk	All
Oil Water Separators	**Ineffective operation**	**Oil discharge to soil and waters**	Low Risk	**Regular inspection and maintenance, clean. Ensure response procedures in place in the case that oil water separator fails.**	Low Risk	All
Hazardous substance storage	**Storage of waste oil and chemicals**	**Spillage to soil and waters**	Low Risk	**Storage of relatively small amounts of hazardous substances, oil and chemicals. Liquids stored in self bunded container.**	Low risk	All
Turbine coolant storage	**Damage to storage container**	**Spillage of coolant**	Low risk	**Storage where low risk of damage to containers, including due to UV and weather related degradation. Ensure procedure in place for containment in the event of spillage, both at point of storage or during transport.**	Low risk	All
Sewage effluent system	**Leakage to waters**	**Failure of pipework**	Low Risk	**Checks on operation of system.**	Low Risk	All
Small plant equipment	**Refuelling, servicing, wastes**	**Spillage of fuel or oil**	Low risk	**Fuel and oil handling procedures, spill response equipment**	Low risk	All
Waste	**Inappropriate disposal**	**Pollution, Fines, penalties**	Medium risk	**Clearly defined waste handling processes, separation of wastes, Use of waste licensed contractor**	Low risk	All
Herbicide	**Inappropriate use or storage**	**Spills, penalties**	Medium risk	**Storage and handling procedures. Ensure competent contractors used for this work.**	Low risk	All
Turbine operations and maintenance						
Kiosk transformers	**Oil in transformer**	**Loss of oil from transformer**	Medium risk	**Controls to prevent malfunction, inspection to check for leaks, inbuilt containment, spill response procedures**	Low risk	All
Turbine Coolant system (320L per turbine)	**Loss of chemical from coolers**	**Leakage or spill of coolant**	Medium Risk	**Use of Biodegradable coolant, inspections and maintenance as necessary. Procedure for top-up of coolant to avoid spills**	Low Risk	All

Figure 2.10 Risk Management Template – Examples of Pollution Incident Risks (Relevant items to be integrated in Site HSE Risk Register)

Work step or facility	Hazards	Risk	Risk Score	Mitigation Strategies (Control Measures)	Residual Risk Score/Tolerability	Person Responsible (for implementing control measures)
Turbine oil systems and servicing	Spill of oil	Leakage or spill of oil to soil/waters	Low risk	Low volumes of oil, Inspections to detect leakage, spill oil recovery, maintenance of plant. Ensure procedures in place for transfer of fluids during servicing. Procedure to be in place in case of spillage.	Low risk	All
Turbine operation is noisy	Aerodynamic noise	Disturbs neighbours, non-compliant	Low risk	Design for compliance, Compliance monitoring required, turbines can be operated in reduced noise mode if required, investigation of any complaints	Low risk	All
Turbine operation is noisy	Mechanical noise	Disturbs neighbours	Low risk	Non-routine incident potentially due to malfunction. Quick response needed to avoid damage to equipment and limit disturbance to neighbours. Regular inspections to monitor for any problems	Low risk	All
Disturbed ground, earthworks, cable routes, tracks, drains, batters						
Erosion of disturbed ground	Soil erosion and sediment transfer	Intense rain event	Medium Risk	Effective erosion and sediment control. Stabilised all disturbed areas.	Low Risk	All
Vehicle movements	Air borne dust	Roads poorly maintained	Medium Risk	Maintain road surfaces to limit dust generation when vehicles use road. Use water carts to wet road during extreme traffic and extreme dry periods.	Low Risk	All
Access track maintenance	Erosion of tracks and adjacent land	Sediment transfer	Medium risk	Higher risk on steeper slopes and erodible soils. Ensure drains are lined to reduce flow velocity and prevent scouring of drain. Stabilise batters.	Low risk	All
Earth stockpiles	Exposure to wind and water	Sediment transfer	Medium risk	Stabilise surface of stockpiles, place away from water courses and in sheltered areas to limit impact by wind or water	Low risk	All
Herbicide use on disturbed area	Inappropriate use/application	Spills, penalties	Low risk	Handling procedures, Contractor applying herbicides to be appropriately trained and certified.	Low risk	All

2.3 Pre-emptive actions to be taken

General

- Risk assessment has been undertaken to identify all potential hazards. Review annually and, if necessary, update to address current circumstances
- Development of controls/management measures to address identified risks. Review annually and update if required
- Maintenance of controls and inspections to ensure effectiveness of controls. Site inspections and audits to review controls and adequacy.

Air

- Maintain compacted surface on site roads,
- Stabilise all disturbed areas to prevent dust events
- Apply dust control measures, if required
- Vehicle emissions – All vehicles to be properly maintained.
- Enforce lower speed limits in dust sensitive areas during worst-case dust conditions.

Water

- Regular equipment inspections and maintenance to detect and correct any leaks early
- Control systems to limit stresses on equipment that could lead to failure
- Procedures for safely handling oil, fuel and chemicals on site
- Appropriate storage and containment for all hazardous liquids
- Ensure sufficient spill control equipment of the right type for relevant substances
- Training in containment and recovery procedures
- Monitoring of all systems over time to ensure effectiveness.

Noise

- Noise assessment for relevant noise sources and sensitive receptors
- Layout design to achieve compliance
- Noise compliance assessments for operating wind farm
- Reporting of noise compliance results and any mitigation
- Complaint investigation and responses
- Operational controls to ensure noise compliance
- Consideration of noise during maintenance activities

Environmental Management

- Ensure all hazards have been identified and are included in Site Risk Register
- Ensure all hazards are appropriately addressed by suitable control measures (risks acceptable)
- Ensure that the management system provides regular inspections of the effectiveness of controls
- Maintain hazardous substances register on site and MSDS for all listed items
- Controls are to be outlined in the OMP and ERP which will together address the hazards described in this PIRMP. The PIRMP to be reviewed annually and updated if required. Updates to OMP/ERP to reflect PIRMP.
- The PIRMP provides a planning document and management provisions will be incorporated in relevant site management documents, the OMP and ERP.

2.4 Inventory of pollutants

Potential pollutants are listed Table 2.1 together with the locations are shown where they may be used. More details on these pollutants are included in the site MSDS register.

Table 2.1 – Potential pollutants and locations where they may be used.

Substance	Location within project area and typical quantity			
	Substation	**O&M Compound**	**Turbine sites**	**Contractor mobile around site**
Oil - insulating	2 by 46,000L	400L	2,390L in each of 73 Kiosk Transformer	Oil cleaning
Oil - hydraulic	Nil	Minor	Minor	Service team
Oil - Lubricating	Nil	Minor	Minor	Service team
Oil – Waste	Separators	Chem Store	Low, occasional	Service team
Oily and greasy rags	Nil	Chem Store	Low, occasional	Service team
Coolant, biodegradable	Nil	4,000 L external	320L (GW100 only)	Service team
Fuel (Diesel)	Nil	Low	Nil	Vehicles
Cleaning agents	Low	Chem Store, office and buildings	Low	Low
Solvents	Low	Low	Low	Low
Paints	Nil	Low	Low	Low
Herbicides	Nil	Chem store	Nil	Contractor
Sewage effluent	Nil	Effluent field	Nil	Nil

2.5 Equipment to reduce risk of pollution

- Equipment controls for transformers and turbines, (Shut down, alarms, etc)
- Bunds and Oil Water Separators for each 330kV transformer (Inspection and Maintenance)
- Kiosk transformers have oil volume of 2,390 litres and internal bunds to contain leaks or spills
- Spill containment equipment (Bunds, Sediment fences). Stored at the Operations and Maintenance Building.
- Spill collection equipment and oil-absorbent materials. Spill kits are stored on all on-site vehicles.
- Flow control devices to limit erosion potential
- Relevant PPE is carried by all on-site staff as a condition of entry to the site.

The turbines and transformers have protection controls incorporated that limit the risk of damage to the equipment or failure of the site systems.

The two large 33kV/330kV transformers at the substation are located within concrete bunds that are purpose designed and comply with AS 1940. Each bund has a drainage point where any oil that leaks or spills within the bund will drain to. The discharge from the pit of each of the two bunds is via an oil water separator (Figure 2.11).

Figure 2.11 – Oil/Water separator in bund of Transformer 2.

There are two AJM EnvironSEP P1 Package Oil Separators (one in each of the two bunds) that have been specifically designed for use in transformer bunds in substations. They have been certified (Ovivo) as being designed to remove free transformer oils from flows of early water up to 1,000 litres/hour to

achieve a concentration of <10ppm in the discharging stream and providing 'no visible oil sheen' so as to satisfy typical Australian EPA requirements. The Transformers, the bunds, drainage and oil separators are subject to routine inspections, maintenance and cleaning that ensure that these pollution control devices are effective. The layout of the two bunds is shown in Figure 2.12.

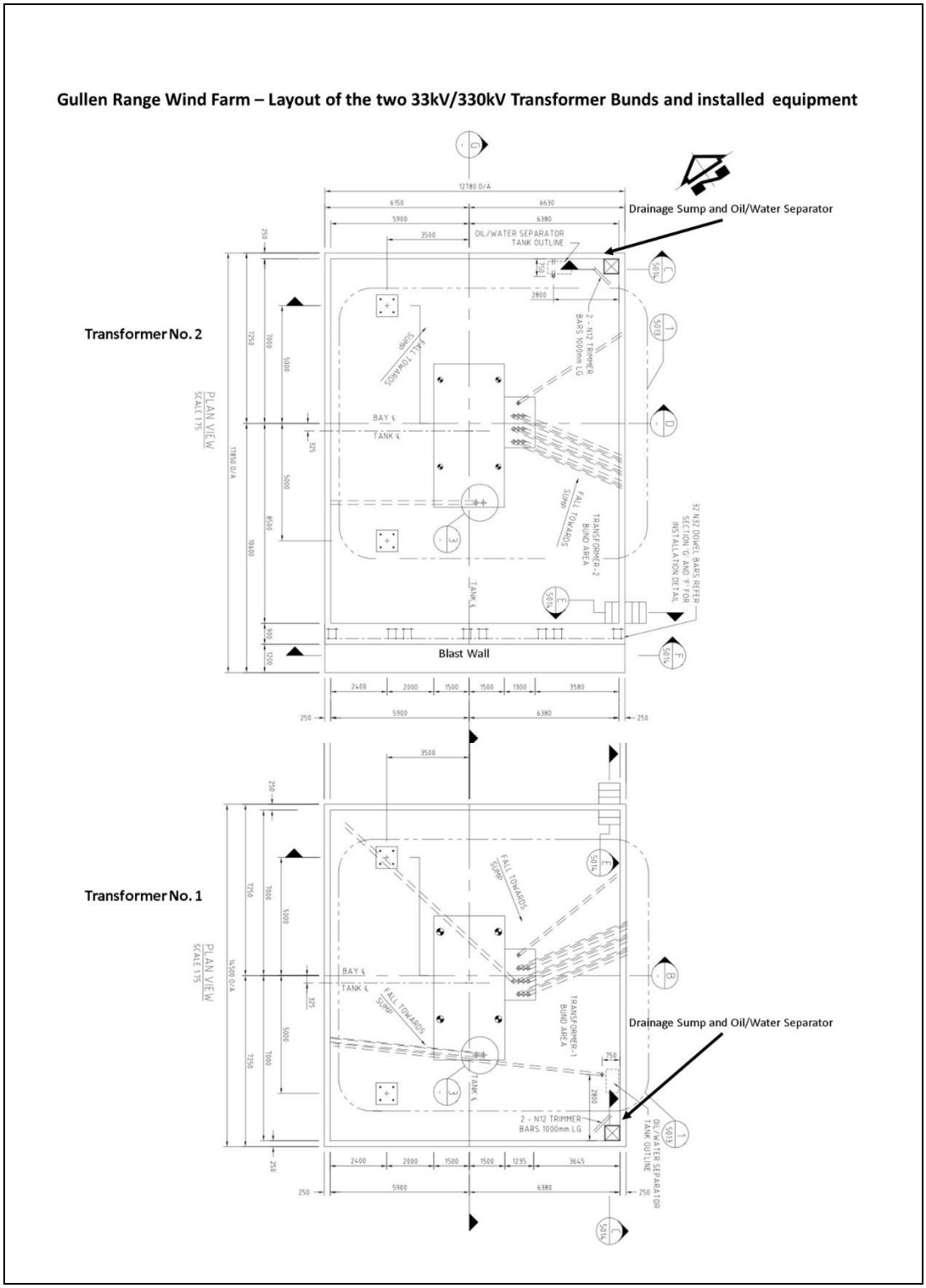


Figure 2.12 Layout of bunds for the 33kV/330kV transformers

Erosion and Sediment flow controls have also been employed during construction in areas of earthworks. As the site is rehabilitated and surfaces are stabilized there is less need for erosion controls but devices are installed across the site including, lined drains, flow controls, energy dissipaters and a detention pond (Figure 2.6) adjacent the O&M building. Routine inspections include observations to assess any erosion risks or sediment transfer on the site. Maintenance is applied as required.

The site has a spill control procedure and spill recovery equipment is available at locations where spills could occur. This aspect is addressed by the site induction process. The Spill Response Procedure Outline is provided in Figure 2.13.

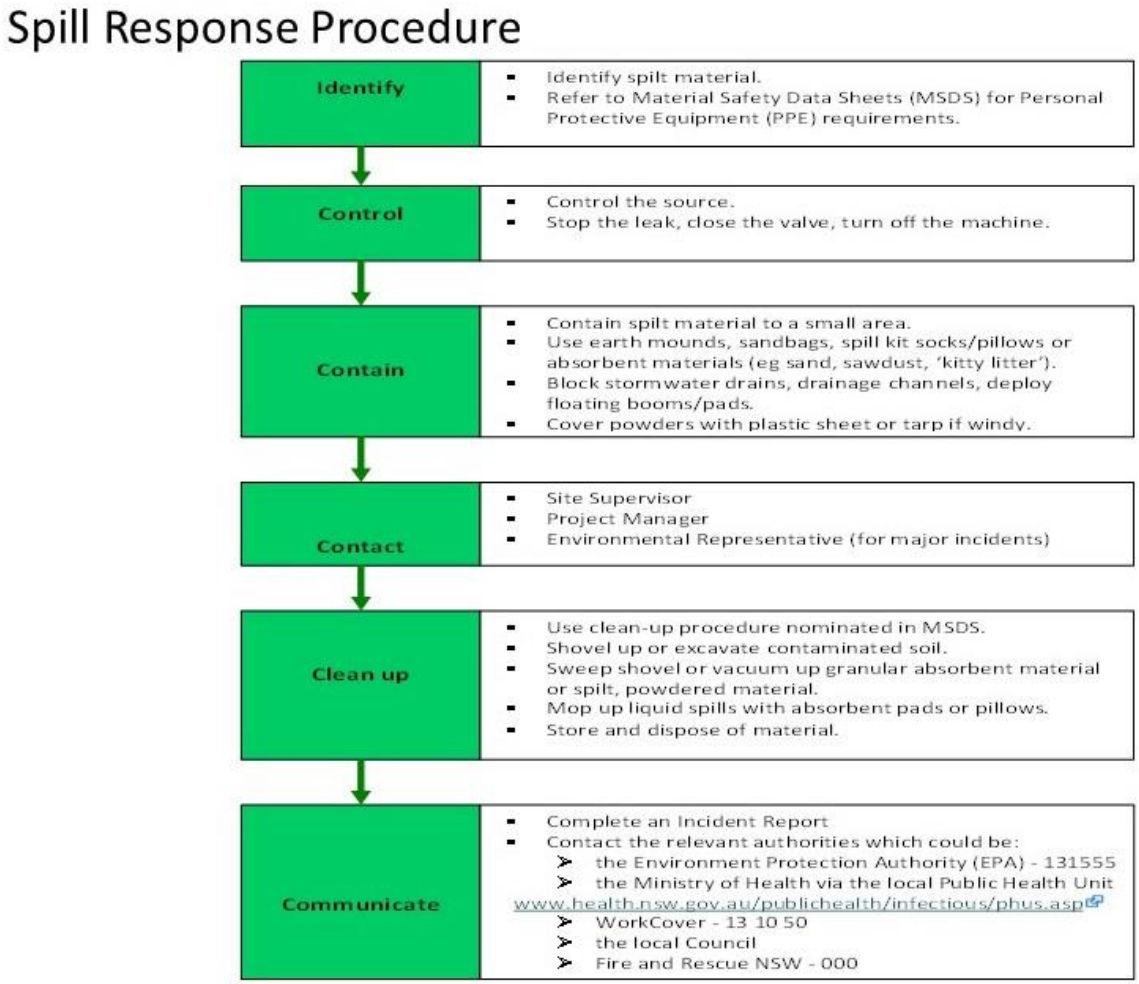


Figure 2.13 – Outline of Gullen Range Wind Farm Spill Response procedure

2.6 Contact details

A full set of contact details are defined in the GRWF Emergency Response Plan. Copy of key contacts relevant to Pollution Incident Response are provided in Table 2.2 below. The GRWF Emergency Response Plan is the relevant site reference for all contacts relating to Health Safety and Environment.

Table 2.2 – Pollution Incident Emergency - Key Contact Details

The wind farm website can be accessed at www.gullenrangewindfarm.com and an enquiry email can be sent to info@gullenrangewindfarm.com.

Person	Position	Phone	Mobile
General			
Wind Farm Enquiry Line (not to be used for an emergency)	N/A	1800 509711	
GWA Office Service Team			
GWA Service Manager	Rob Brady	(03) 9912 7810	0488 181 111
Project Services Manager	Adrian Hewerdine	(02) 9912 7813	0476 829 555
Service Administrator	Edwina Harrison	(03) 9912 7820	0427 912 014
Site Service Team			
Site Supervisor	Julian King		0417 561 526
NGRWF			
Asset Manager	Derek Powell	02 9247 1943	0429 347 524
Agency contact details			
EPA	Environment, Pollution	13 15 15	
Upper Lachlan Council	Local Government	02 4830 1000	
Goulburn Mulwaree Council	Local Government	02 4823 4444	
Local Land Services (LLS) Southeastern Region	Former Hawkesbury Nepean Catchment Management Authority	TBA	
NSW Department of Planning and Environment		1300 305 695	
NSW Ministry of Health		02 9391 9000	
Sydney Catchment Authority (WaterNSW emergency reporting)	Drinking Water Quality	1800 061 069	
LLS Southeastern Region	Former Lachlan Catchment Management Authority	TBA	
State Emergency Service - Crookwell	Emergency assistance	132 500	
RFS Crookwell	Bushfire	02 4832 0268	

NSW Fire Brigade Crookwell/Goulburn	Bushfire	000	
Ambulance	Accident and emergency	000	
Police	Security, emergency	000	
Crookwell Medical Centre	Accident	02 4843 2500	
Crookwell Hospital	Accident	02 4843 1300	
Poisons Information	Health	13 11 26	
Roads and Maritime Services	Response	132 213 AH – 132 701	
NSW WorkCover	Occupational Health and Safety	13 10 50	
Host Landowners	Property rights, landuse conflict	(Various)	

2.7 Communicating with neighbours and the local community

NGRWF keeps a record of nearby residents and business owners. In the event of a pollution incident, NGRWF's maintenance contractor would assess the immediate impact to nearby properties and contact them by phone. For instance, in the event of a water pollution incident, immediate action may be advising nearby farmers where to graze their stock. NGRWF would conduct wider communication with the community where deemed necessary, through phone calls, house visits, newsletters, newspaper advertisements and updates to the wind farm website.

Outside of pollution events, NGRWF has an ongoing program of communications with property owners for the wind farm site and the neighbours to the project. A Community Engagement Manager has been appointed by NGRWF and there are active programs of consultation with the community in respect of the Community Fund, Clean Energy Program and Off-site landscaping plan to reduce visual impact of the wind farm.NGRWF maintains a 1800 number, email address and a website to facilitate communication with the community.

A program of Operational Noise Compliance monitoring has been undertaken throughout 2015. An Operational Noise Compliance report has been produced and approved by the EPA. The report and its results have been approved by the EPA.

Noise complaints can be reported using the wind farm enquiry line. All complaints are investigated, including checking nearby turbines for any faults that could be causing noisy operation. A complaints register is published monthly on the windfarm website.

2.8 Minimising harm to persons on the premises

NGRWF site management system integrates various elements to minimize harm to persons on the premises in the event of a pollution incident. These include, but are not limited to the following.

- Inductions
- Training and Toolbox meetings where hazards are regularly discussed

- Personal Protective equipment (PPE)
- Defined procedures including incident and near miss reporting
- Emergency response plan including an evacuation plan
- Nominated safety wardens
- Designated muster points

2.9 Maps

Management of pollution incident response is assisted by comprehensive information on hazards, control equipment and sensitive areas. Applicable maps are indicated below. Others are available at the site office for utilization by site staff responding to any incident.

- Map of turbine locations (Figures 2.3 to 2.5)
- Layout of substation site (Figure 2.6)
- Noise contours and residences (Marshall Day reports)
- Location of hazards are shown on various plans showing turbine sites and substation layout (Figures 2.3 to 2.6)
- Location of hazardous liquids (Table 2.1)
- Sewage plant location (Figure 2.6)
- Catchment boundary map (Appendix A3)

2.10 Actions to be taken immediately after an incident

The measures to address pollution incident response will be incorporated in the Site Emergency Response Plan (ERP) that addresses, health, safety and environmental matters. This provides a more practical basis for site management using a single document for emergency response. Key actions include the following:

- Limit the extent of the incident – contain or eliminate the source of the incident
- Alert site management of the incident
- Management to determine whether external resources needed
- Plan for clean-up or corrective action
- Investigate reasons for incident
- As necessary, amend procedures or facilities to avoid recurrence
- Provide incident report and submit for management review
- Obtain close-out for the incident

Section 148 of the POEO Act also sets out requirements for notifications where a pollution incident causes or threatens material harm to the environment. A person carrying on the activity must, immediately after the person becomes aware of the incident, notify each relevant authority of the incident and all relevant information about it. The responsibility for notification extends to employees and occupants of the land depending on the circumstances and awareness of the incident.

Relevant authority *means any of the following:*

(a) the appropriate regulatory authority, (for GRWF, this is the EPA)

(b) if the EPA is not the appropriate regulatory authority—the EPA,

(c) if the EPA is the appropriate regulatory authority—the local authority for the area in which the pollution incident occurs, (for GRWF this is Upper Lachlan Shire Council)

(d) the Ministry of Health,

(e) the WorkCover Authority,

(f) Fire and Rescue NSW.

In addition, for any pollution incident affecting the Wollondilly catchment, that is part of the Hawkesbury Nepean Catchment (now within Southeast management area, the Sydney Catchment Authority shall be notified.

Where the incident is on leased land, the landowner is to be notified.

2.11 Staff training

NGRWF will prepare suitable training material and provide this to relevant site staff and, as appropriate, visitors. The training will include gaining feedback from trainees to ensure understanding of the material covered by the various training aspects. It will include:

- Details of the PIRMP to be delivered at Site inductions including:
  - Details of hazards and controls
  - Locations of sensitive areas
- Ensuring staff are trained in incident response procedures, as detailed in the ERP and OMP.
- Maintain a record of incidents
- Have post incident review with staff to review performance and any need for improvements
- Include refresher information on the PIRMP during toolbox talks

Emergency Response Drills will be scheduled on an annual basis

Gullen Range Wind Farm
Pollution Incident Response Management Plan

Appendices

Appendix A1 - ISO 14001:2004 Certification – Goldwind Australia

Appendix A2 – Upper Lachlan Shire Council – Approval to operate an on-site sewage facility

Appendix A3 - Catchment Boundary – Wollondilly and Lachlan catchments

Appendix A4 – Upper Lachlan Shire Local Environment Plan – Land Zoning

Appendix A5 – Oil/Water Separator (Substation) AJM EnviroSEP P1 Package Specification

Appendix A6 - MSDS - Coolant

Appendix A7 – Rainfall Intensity Chart

CERTIFICATE

This is to certify that

Goldwind Australia Pty Ltd

SUITE 2, LEVEL 23, 201 ELIZABETH STREET, SYDNEY, NSW 2000, AUSTRALIA

has implemented and maintains an **Environmental Management System**.

Scope:
Acquiring, Developing and Operating renewable energy facilities. Commercialising, Project Managing, Engineering, Procuring, Constructing, Commissioning, Servicing and Maintaining wind turbines, renewable energy facilities and associated assets.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 14001 : 2004 + Cor 1 : 2009

Certificate registration no.	50000026
Valid from	2014-05-23
Valid until	2017-05-22
Date of certification	2014-05-23

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-16074-01-00

DQS GmbH

G. Blechschmidt

Götz Blechschmidt
Managing Director

Accredited Body: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main
Administrative Office: DQS Certification AUSNZ PTY LTD,
Building 2, Level 2, 630 Mitcham Road, Mitcham, Victoria 3132, Australia

Member of IQNet

Upper Lachlan Shire Council

All correspondence addressed to the General Manager, PO Box 42, Gunning NSW 2581

Crookwell Office: 44 Spring Street, Crookwell NSW 2583
p: 02 4830 1000 | f: 02 4832 2066 | e: council@upperlachlan.nsw.gov.au | www.upperlachlan.local-e.nsw.gov.au

Gunning Office: 123 Yass Street, Gunning NSW 2581
p: 02 4845 4100 | f: 02 4845 1426 | e: council@upperlachlan.nsw.gov.au

Taralga Office: Taralga Community Service Centre, Orchard Street, Taralga NSW 2580
p: 02 4840 2099 | f: 4840 2296 | e: taralgacsc@ceinternet.com.au

ABN 81 011 241 552

Approval to Operate a On-site Sewage Management Facility

Issued under the Local Government Act, 1993 – Section 68 Part C Item 6

To: Catcon Civil & Allied Technical Construction Pty Ltd
598-600 South Road
ANGLE PARK SA 5010

Approval granted to Goulburn Land Pty Ltd owner/occupier of the property (subject to the attached conditions of the approval.)

Registration Number: **25**/2014

Subject Land: Lot: 2 DP: 1168750 – 280 Storriers Lane BANNISTER

DURATION OF APPROVAL

Commencement: 07/072014 **Expiry:** 07/07/2018 **Risk Category:** Med
Inspected by: Mr Brian Smithers **Next Inspection Due:** 07/06/2018

DESCRIPTION OF ON-SITE SEWAGE MANAGEMENT SYSTEM APPROVED

Type of System:
3000 L Septic Tank with a 45m²absorption bed

CONDITIONS OF APPROVAL (see below and over)

This Approval is only valid subject to the following Conditions:

1. The attached General Conditions being met.
2. All fees for annual renewal & inspections being paid.

This approval relates to the on-site sewage management system only and is not an approval for the erection, use or habitation of any associated structures for which a separate approval is required from Council.

This approval is renewed on the same terms upon payment of the annual renewal fee. A modification of this approval may be issued following an inspection by Council.

7 July 2014

Brian Smithers
Building Surveyor

Dated

GENERAL CONDITIONS FOR ON-SITE DISPOSAL, REED BEDS, AMENDED SOIL MOUNDS AND SAND FILTERS

The conditions set out in this approval apply to all owner/operators of on-site sewage management systems in the Upper Lachlan Shire Council Local Government Area. These may be varied after inspection by Council Officers to include site specific conditions for the improved operation and maintenance of individual systems.

CONDITIONS:

1. Owners must submit an application to Council before carrying out work on their on-site wastewater management system and associated pipework that alters the design and operational characteristics of the system from that which was originally approved. Licensed tradesmen must carry out all such work.
2. Tanks should be maintained and inspected to ensure excessive sludge levels do not decrease the efficiency of septic treatment and disposal. Council recommends that tanks with an average family loading be desludged every five years.
3. Effluent and sludge removal must be carried out by a Council approved effluent removal contractor and disposed at an Upper Lachlan Shire Council sewage disposal point.
4. Council must be notified of any failure of on-site sewage management systems that may result in pollution occurring or pose a risk to the public and environment.
5. A new application for approval to operate an on-site sewage management system must be submitted to Council by new owners of the property within two months of transfer of title.
6. Users of on-site sewage management systems must ensure the efficient treatment and disposal of waste by not placing in the system any substances that the system is not designed to handle or that may decrease the efficiency of the treatment or disposal process.
7. The disposal area must comply with Council requirements. Effluent must not be disposed above the ground surface.
8. The owner/occupier shall maintain any land disposal area in regard to adequate cover, elimination of weeds, maintenance of plants and shrubs.
9. Owners of on-site sewage management systems must install and maintain all equipment considered necessary by Council officers for the safe and efficient, storage, treatment, disposal, removal and transfer of wastewater and effluent.
10. All stormwater and seepage must be prevented from entering the septic tanks and be diverted where at higher levels away from on-site disposal areas.
11. Tanks and disposal fields should comply with recommended buffer zones from boundaries, waterways, dwellings, pathways, pools, dams, driveways and paths and groundwater bores.
12. A system of sewage management must be operated in a manner that achieves the following performance standards:
    a. The prevention of the spread of disease by micro-organism;
    b. The prevention of the spread of foul odours;
    c. The prevention of contaminated water;
    d. The prevention of the degradation of soil and vegetation;
    e. The discouragement of insects and vermin;
    f. Ensuring that persons do not come into contact wit untreated sewage or effluent (whether treated or not) in their ordinary activities on the premises concerned;
    g. The minimisation of any adverse impacts on the amenity of the premises and surrounding lands;
    h. If appropriate, provision for the re-use of resources (including nutrients, organic matter and water)
13. The sewage system must be maintained in a sanitary condition and must be operated in accordance wit the relevant requirements of the Regulation.
14. A system of sewage management must be operated:
    a. In accordance with the relevant operating specifications and procedures; and
    b. So as to allow the removal of any treated sewage (and any by-product of any sewage) in a safe and sanitary manner.
15. The system must not discharge into any watercourse or onto any land other than its related effluent application area.
16. The system must be installed and operated in accordance with any conditions of accreditation issued by the Department of Health.

17. The person operating the system of sewage management must provide details of the way in which it is operated and evidence of compliance with the relevant requirements of the Regulation and of the conditions of approval whenever Council reasonably requires a person to do so.

18. Council may carry out inspection at a frequency accorded to the assessed risk of the system, to determine compliance with the approval and fees may be charged for these inspections. These fees are specified in Councils Management Plan for the period in which the inspection is carried out.

RIGHT OF REVIEW AND APPEAL

The applicant may request the council to review the determination. Such request must be made within twenty-eight (28) days of the above date of determination. The Council will review the determination and give notice to you as soon as practicable thereafter (see Local Government Act 1993, s.100)

If you are dissatisfied with Council's determination of this application, either initially or upon review, you may appeal to the Land and Environment Court, but if you do so the appeal must be made within twelve (12) months (see Local Government Act 1993, s.176)

Your attention is also directed to the provisions of s. 197 of the Local Government Act, which provides that the Council may determine to extend or renew this approval if satisfied there is good cause for doing so. See the detailed provisions of that section.

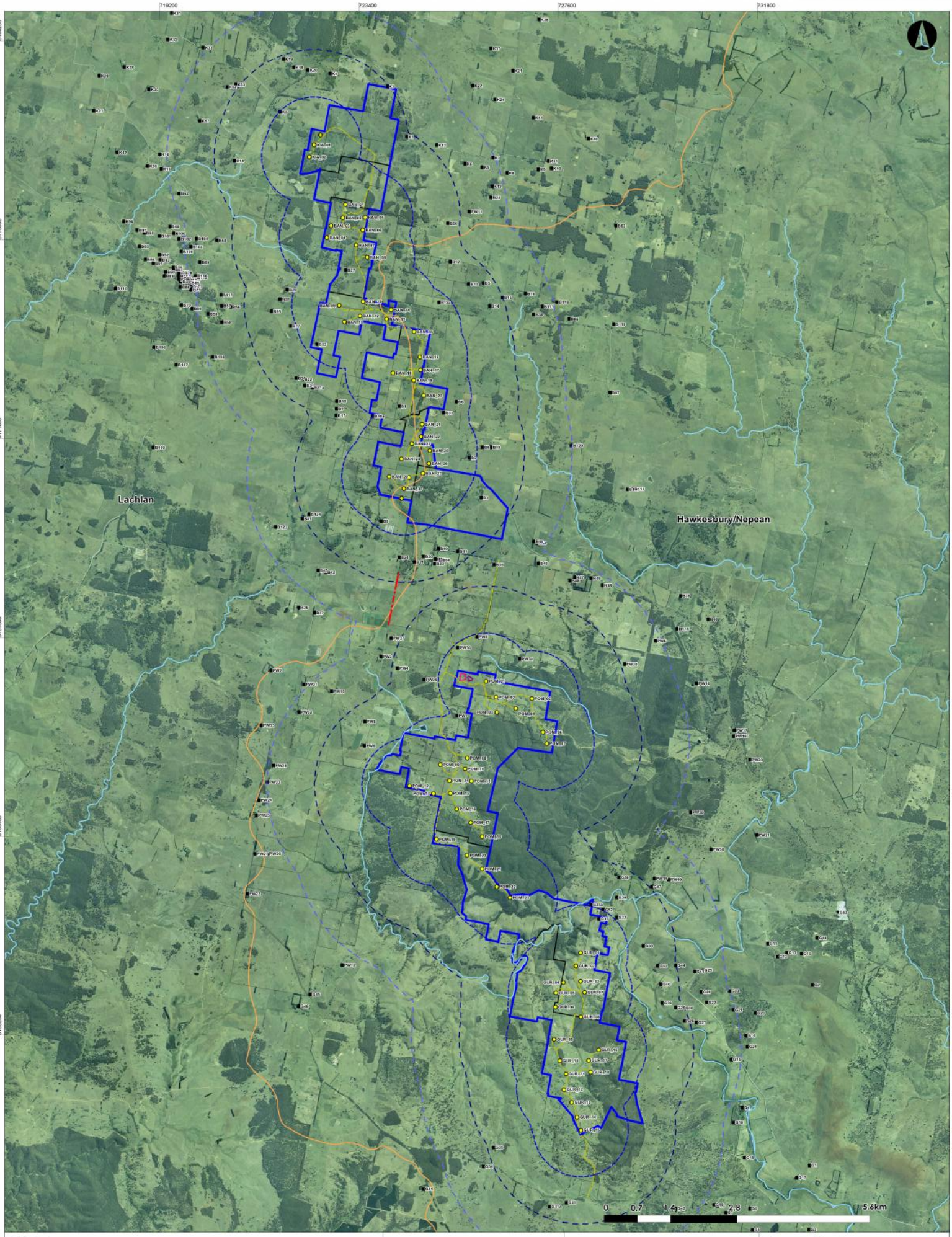
EXPLANATION OF TERMS

RISK CATEGORY (HIGH, MEDIUM, LOW)

The risk category reflects the risk of the system in relation to the site where it is installed. The risk category may be increased due to proximity to water, size of the allotment, soil type, groundwater, slope, water supply and use.

EXPIRY (1-5YEARS)

The expiry date indicates the frequency of Council's inspections. The expiry is based on the risk category, system type and operational condition of the system. The frequency of inspections may be reduced on your next assessment by ensuring the system is operating efficiently and is well maintained.



LEGEND

- Houses
- Drainage
- Roads (Catcon Jan '14)
- Turbine Layout
  - Final
- 1km to closest turbine
- 2km to closest turbine
- 3km to closest turbine
- Cadastre (NSW LPI Dec '12)
- Permanent met mast
- Project boundary
- Medium voltage links
- Switching station
- Substation
- Catchment Management Authority (NSW DECCW)

Note: Grid markings in MGA94 zone 56
Aerial Photography 2006

GULLEN RANGE WIND FARM PTY LTD

PREPARED BY

EPURON

PROJECT

GULLEN RANGE WIND FARM

TITLE

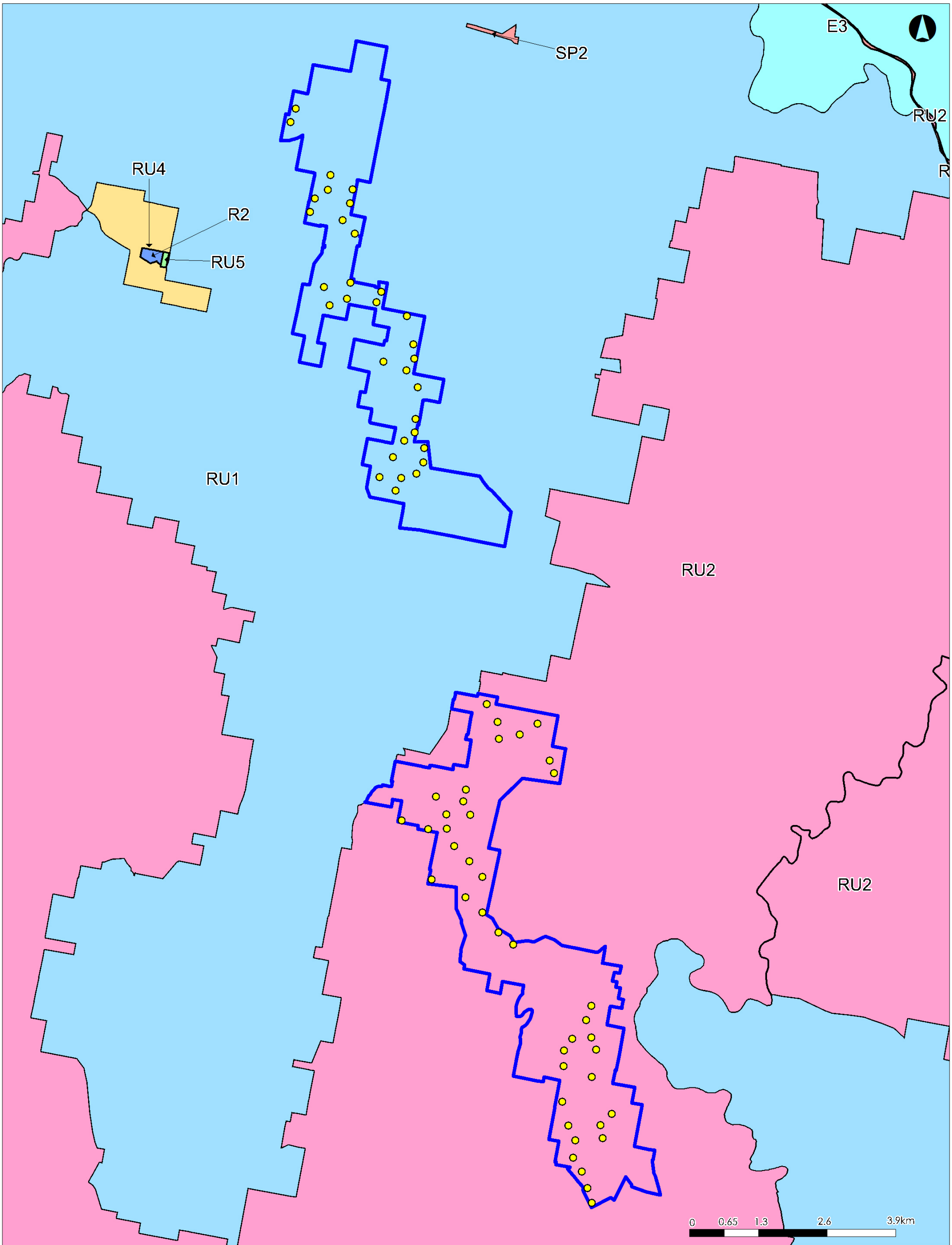
Associated landowners, final & DA turbine layout with aerial

Document Number

GR-PM-DWG_0091

Revision	Layout ID	
D	6a	
SCALE	DATE	DRAWN
1:35,000 at A1	03/12/14	VR

Figure 4-1 Upper Lachlan LGA. Land Zoning



LEGEND

Project boundary

Final design turbine location

Land use zone

(NSW Crown Copyright - Planning and Infrastructure)

- E3 - Environmental management
- R2 - Low Density Residential
- RU1 - Primary production
- RU2 - Rural landscape
- RU4 - Rural small holdings
- RU5 - Village
- SP2 - Infrastructure

GULLEN RANGE WIND FARM PTY LTD	PROJECT: GULLEN RANGE WIND FARM	Document Number: GR-PM-DWG_0105	
		Revision: A	Layout ID: 6a
PREPARED BY: EPURON	TITLE: Land use zoning	SCALE: 1:65,000 at A3	DATE: 20/03/14 / DRAWN: TL

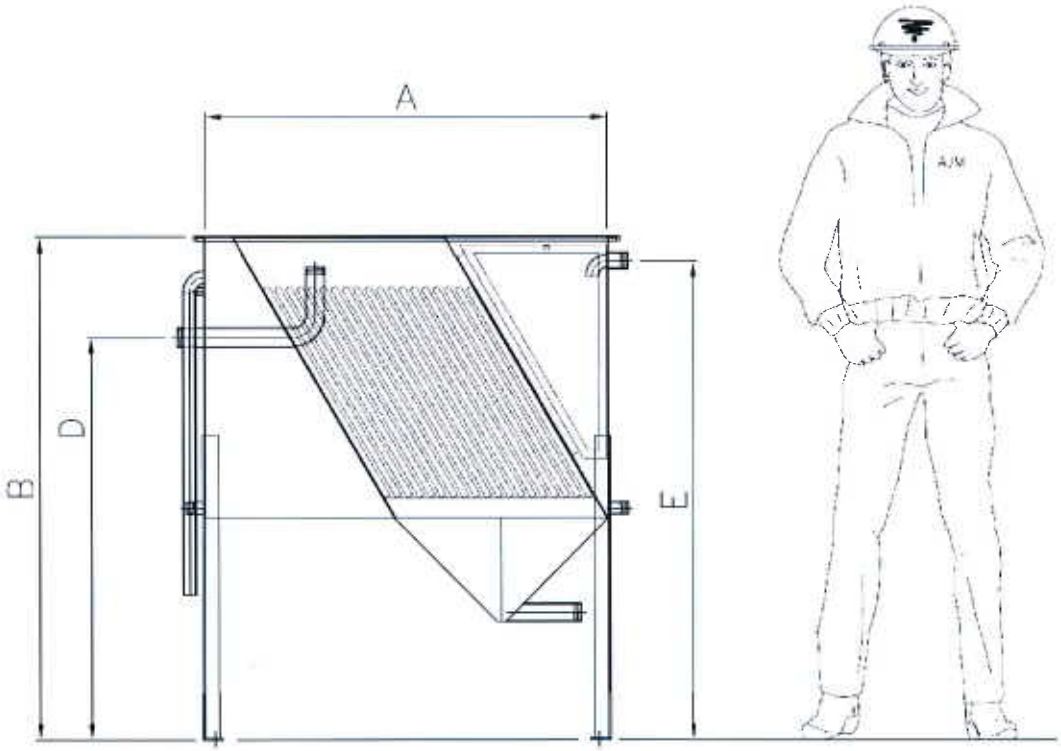
AJM EnviroSEP™ P1 Package Specification

All AJM EnviroSEP™ systems are designed and manufactured in Australia.

The AJM EnviroSEP™ range has been designed to remove free oil from water and is ideal for Sewer, Storm water or Process applications. If in doubt, please contact OVIVO for assistance for sizing and other requirements.

Package Nominal Capacity 1000L/hr

Dimensions (mm)				
A	B	Width	D	E
1000	1250	530	1000	1190



AJM EnviroSEP™P1 Components

The AJM EnviroSEP™P1 is supplied as a complete unit incorporating the following components. These components are pre-assembled and the unit water and operationally tested prior to dispatch including all interconnecting plumbing and wiring.

The AJM EnviroSEP™P1 incorporates, as standard, the following features:

- All stainless steel construction (excluding plate pack)
- Tube Pack is fully accessible for cleaning without removal from the unit
- Integrated Oil Tank

- Removable inlet strainer basket
- Sludge chamber and drain
- Hinged Lids

AJM EnviroSEP™P1 Standard Specification

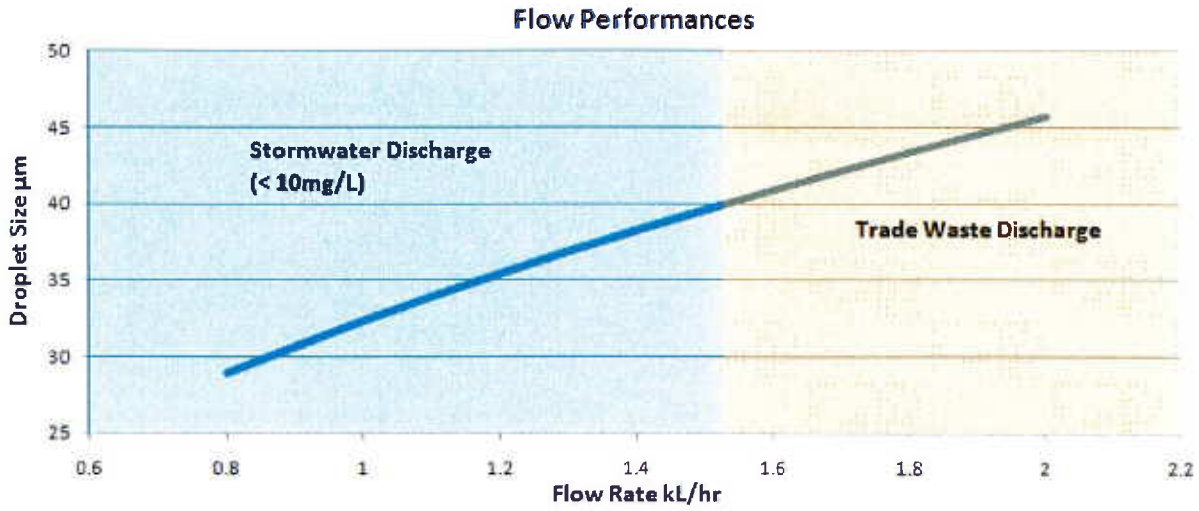
Fabricated Components	Standard Specification	Option	Volume
Main Tank	304 Stainless Steel 2B Finish	316 Stainless Steel	NA
Oil Storage Tank	304 Stainless Steel	316 Stainless Steel	180L
Inlet Strainer Basket	304 Stainless Steel, 10mm Perf	316 Stainless Steel	60L
Tube Pack	PVC	316 Stainless Steel	NA

Tube Pack

The EnviroSEP™P1 has one (1) Tube Pack consisting of 820 tubes which gives the unit a projected area of 4.4 m^2.

Typical Performance

The EnviroSEP™P1 is designed to meet most international storm water discharge requirements at the stated nominal capacity based on an influent temperature of 25°C and an oil density of 0.89kg/m^3. Under these nominal conditions, all droplets greater than 40 microns will be removed resulting in <10mg/L free oil being discharged from the unit.



The performance will vary depending on wastewater influent conditions such as the specific gravity of oil and the temperature. These factors should be taken into consideration when selecting the most appropriate unit.

AJM EnviroSEP™ P1 Package Specification

Package Specification

Component Included	Standard Specification
Integrated Oil Tank High Level Float Switch	FineTek FCH Series – PP Mini Horizontal Float Switches
Delivery Pump	ASM DT25, 1000L/hr nominal
Pump Stand	304 Stainless Steel
Pump Start / Stop Float Switch	Mac 3 Ball Float, Neoprene
High Level Float Switch	Mac 3 Ball Float, Neoprene
Control Panel	Epoxy Coated Mild Steel
Operation and Maintenance Manual	AJM Standard

Options

- Upgrade of the AJM EnviroSEP™P1 to 316 Stainless Steel (Excluding Tube Pack)
- Upgrade of control panel to Stainless Steel
- Additional pumps for multiple sources
- Seismic design

Ovivo Australia Pty Limited
23-27 Waratah Street
Kirrawee, NSW 2232
Australia

Telephone: +61 2 9542 2366
Facsimile: +61 2 9542 2433
Web: www.ovivoaust.com.au
Support: www.ovivowateris.com.au

OVIVO
Bringing water to life

Ovivo Certification

AJM EnviroSEP P1 Packages have been specifically designed for use in Transformer Bunds in Substations. They have been designed to remove free transformer oils from flows of oily water up to 1000L/hr to achieve a concentration of <10ppm in the discharging stream and providing 'no visible oil sheen' so as to satisfy typical Australian EPA requirements.

This Certification is limited by the requirements of, and is provided on the understanding that the units will be installed, operated and maintained in strict accordance with, the Operation and Maintenance Manual to which this Certification is attached. Any non-compliance with any part of this Operation and Maintenance Manual shall make this certification void.

Shannon Ballard
General Manager

OVIVO
Bringing water to life

TOTAL COOLANT MANAGEMENT Solutions AUSTRALIA

TOTAL COOLANT MANAGEMENT SOLUTIONS (AUSTRALIA)
ABN 66 121 587 531
A Sustainable Investments Company

30 Century Road, Malaga, Perth, Western Australia 6090
PO Box 1752, Malaga, Perth, Western Australia 6944

t 1300 235 309
t (61 8) 9249 4698 INTERNATIONAL
f (61 8) 9249 6203 SALES
f (61 8) 9248 7294 ADMIN
e sales@totalcoolants.com
www.totalcoolants.com

Safety Data Sheet

READ AND UNDERSTAND THE SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT

PRODUCT CODE AND NAME:	**GOLDWIND CONVERTER COOLANT**
DATE ISSUED:	**AUGUST 2013**
COMPANY:	**TOTAL COOLANT MANAGEMENT SOLUTIONS (AUSTRALIA) PTY LTD**

1. PRODUCT AND COMPANY NAME

PRODUCT CODE AND NAME:
GOLDWIND CONVERTER COOLANT
Part Number: 500307

Recommended Use:Turbine Converter Coolant

COMPANY INFORMATION:
Total Coolant Management Solutions (Australia) PTY LTD
30 Century Road,
Malaga, Western Australia 6090
Australia
Tel: 1300 235 309 (Australia Wide)
+61 8 9249 4698 (International)
Fax: +61 8 9249 6203
After Hours Emergency Telephone Number: +61 412 504 144

2. HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE:
Not classified as hazardous according to criteria of NOHSC.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

No.	Chemical Name	CAS Number	Wt %
01	Water	7732-18-5	HIGH
02	Propylene glycol	57-55-6	HIGH
03	Components determined to be non-hazardous	Proprietary	LOW

PROPORTION (%weight per weight)
V HIGH > 60, HIGH 30 - 60, MED 10-29, LOW 1-9, V LOW < 1

4. FIRST AID MEASURES

Inhalation:

None considered necessary as negligible hazard.

Skin:

Wash exposed areas thoroughly with soap and water, and remove contaminated clothing. If irritation occurs seek medical advice.

Eyes:

Irrigate with copious quantities of water for at least 15 minutes whilst holding eyelids open. Get medical attention if eye irritation persists.

Ingestion:

No treatment necessary unless large quantities are swallowed. Seek medical attention. For advice contact a *Poisons Information Centre (Phone Australia 131126; New Zealand 0800 764 766*) or a doctor (at once).

Sensitisation Properties:

Unknown.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:

Use agent suitable for surrounding fire.
Use water spray to keep fire-exposed containers cool.

Special Fire Fighting Procedures:

None

Special Protective Equipment:

Not evaluated.

Hazards from combustion products:

This product is not readily combustible under normal conditions, however it will break down under fire conditions and the organic component may burn. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes thermal or oxidative degradation..

6. ACCIDENTAL RELEASE MEASURES

Land Spills:

Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and inhalation of vapours. Wash area down with detergent and excess water. Contain spilled liquid with sand or soil if possible. Use absorbent soil or sand, inert material, vermiculite.

7. HANDLING AND STORAGE

Handling:

Keep containers closed when not in use. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use.

Storage:

Keep all containers tightly closed when not in use. Store containers in a cool place out of direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Standards:
No value assigned for this specific material by the National Occupational Health and Safety Commission (NOHSC – Safe Work Australia). However, over-exposure to any chemical may result in enhancement of pre-existing adverse medical conditions and/or allergic reactions.

Exposure Limit:
Not established.

Engineering Controls:
Not established.

Personal Protective Equipment:
Respiratory Protection: None required.
Eye Protection: Chemical type goggles or a face shield are recommended to prevent eye contact, if splash with liquid is possible.

Skin/Body Protection: Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
Green Liquid

Odour:
No discernible odour

pH:
9.3

Ignition Temperature, degrees C:
Not Applicable

Flash Point, degrees C:
Not Applicable

Flammable Limits % (Lower-Upper):
Not Applicable

Boiling Point/boiling range, degrees C:
Not determined

Melting Point/melting range, degrees C:
Not Applicable

Freezing Point, degrees C:
-18

Pour Point, degrees C:
Not Determined

Relative Density at degrees C:
1.034 at 15.0°C

Vapour Pressure, kPa:
Not determined

Viscosity:
Not determined

Percent VOC:
Nil.

Vapour Density (Air = 1):
Not determined

Solubility in Water:
Complete

10. STABILITY AND REACTIVITY

Stability:
Stable.
Incompatibility (Materials to Avoid):
None
Products Evolved When Subjected to Heat or Combustion:
Not Applicable
Products Evolved When Subjected to Heat or Combustion:
This material is not readily combustible under normal conditions, however it will break down under fire conditions and the organic component may burn. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes thermal or oxidative degradation.
Hazardous Polymerisations:
Will not occur.

11. TOXICOLOGICAL INFORMATION

No information available on this product.

Medium Lethal Dose (LD_{50} LC_{50}) (Species):

Oral:	Believed to be >2g/kg (rat)
Inhalation:	Not determined.
Dermal:	Not determined

Irritation Index, Estimation of Irritation (Species):

Skin:	Not determined
Eyes:	Not determined
Sensitisation:	Not determined

12. ECOLOGICAL INFORMATION

Complete ecological testing on this product has not been conducted.

Persistence and Degradability:
The potential to bioaccumulate has not been determined, however the product is classified as readily biodegradable.
Bioaccumulation:
Not determined.
Aquatic Toxicity and Other Data Relating to Ecotoxicity:
No data available.
Mobility:
Not determined.

13. DISPOSAL CONSIDERATIONS

Refer to State Land Waste Management Authority and EPA.

14. TRANSPORT INFORMATION

Shipping Name:	None Allocated
UN Number:	None Allocated
Hazchem Code:	None Allocated
Dangerous Goods Class:	None Allocated
Subsidiary Risk:	None Allocated
Packaging Group:	None Allocated
Poisons Schedule Number:	Not Scheduled

15. REGULATORY INFORMATION

Not regulated for the purpose of storage and handling, in accordance with the requirements of AS1940.
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code for transport by Road and Rail.
Not classed as a Scheduled Poison according to the Standard for the Uniform Scheduling of Drugs and Poisons.

16. OTHER INFORMATION

Contact Point: Total Coolant Management Solutions (Australia) Pty Ltd Ph: + 61 8 9249 4698

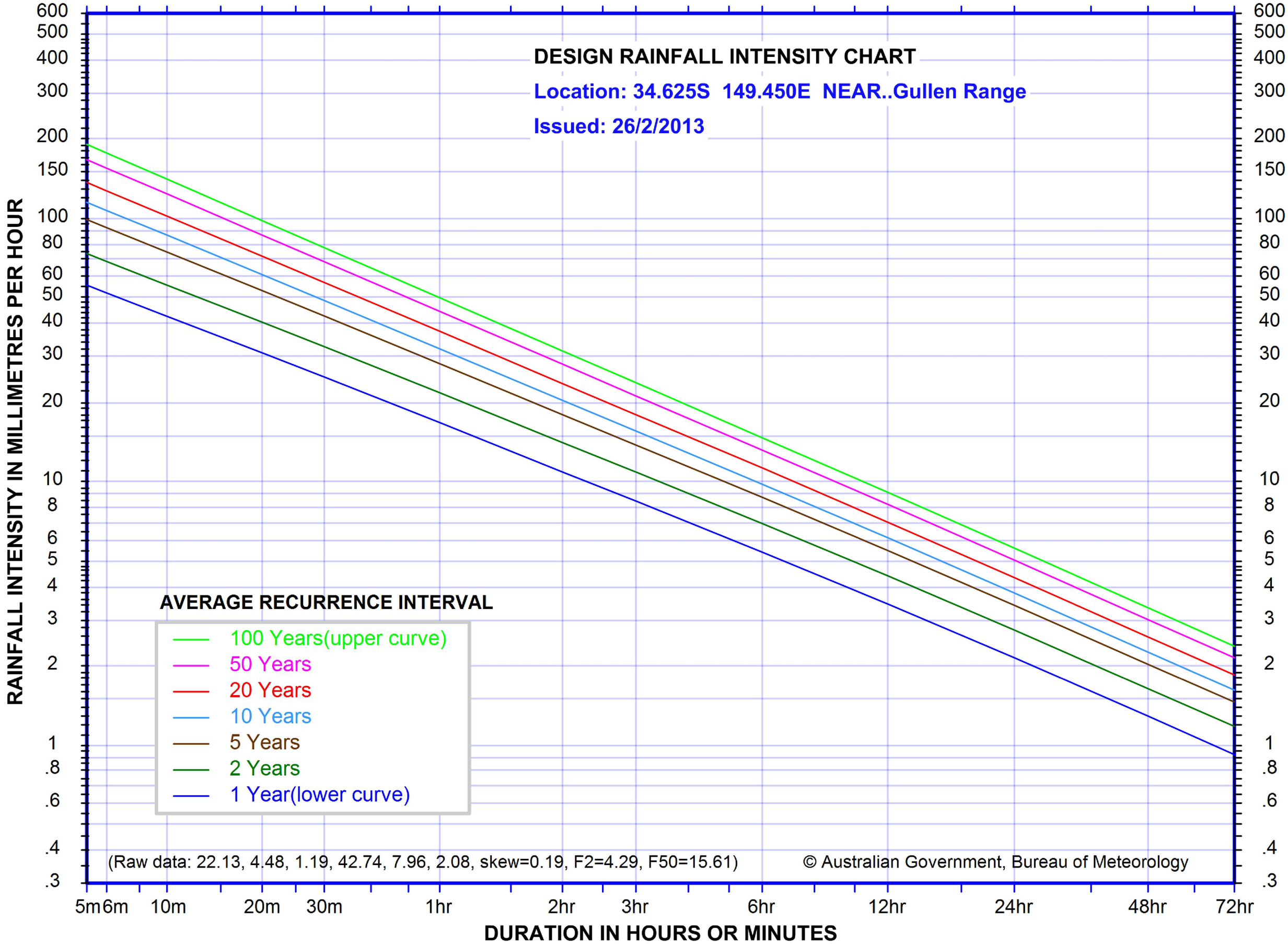
This MSDS summarises at the date of issue our best knowledge of the health and safety hazard information of the product and in particular how to safely handle and use the product in the workplace. However, the Company makes no warranty or representation, express or implied, as to the accuracy of completeness of such information. Since Total Coolant Management Solutions (Australia) Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this MSDS in the context of how the user intends to handle and use the product in the workplace.

The provision of this Material Safety Data Sheet is not intended, of itself, to obviate the need for all users to satisfy themselves that the product described is suitable for their individual purposes and that the safety precautions and environmental advice are adequate for their individual purposes and situation. Further, it is the user's obligation to use this product safely and to comply with all applicable laws and regulations concerning the use of the product.

The Company accepts no responsibility for any injury, loss or damage, consequent upon any failure to follow the safety and other recommendations contained in this Material Safety Data Sheet, nor from any hazards inherent in the nature of the material, nor from any abnormal use of the material.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request.


DESIGN RAINFALL INTENSITY CHART
Location: 34.625S 149.450E NEAR..Gullen Range
Issued: 26/2/2013
RAINFALL INTENSITY IN MILLIMETRES PER HOUR
600
500
400
300
200
150
100
80
60
50
40
30
20
10
8
6
5
4
3
2
1
.8
.6
.4
.3
AVERAGE RECURRENCE INTERVAL
100 Years(upper curve)
50 Years
20 Years
10 Years
5 Years
2 Years
1 Year(lower curve)
(Raw data: 22.13, 4.48, 1.19, 42.74, 7.96, 2.08, skew=0.19, F2=4.29, F50=15.61)
© Australian Government, Bureau of Meteorology
5m
6m
10m
20m
30m
1hr
2hr
3hr
6hr
12hr
24hr
48hr
72hr
DURATION IN HOURS OR MINUTES