PERCEPTION PLANNING

STATEMENT OF ENVIRONMENTAL EFFECTS

CAMPING GROUND AND ASSOCIATED AMENITIES AND CARPARKING (LOCAL GOVERNMENT ACT 1993 (s68))

GRESFORD SHOWGROUND,
29 PARK STREET, EAST GRESFORD,
NSW, 2311

(Lot 1, DP 11562, Lot 17 DP 39791 & Lot 7002, DP 96464)

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Prepared for (client)	Gresford Park Land Managers

Document Versions and Control

Statement of Environmental Effects, Gresford Showground

Version	Date	PP ref	Author	Reviewed by
1	18/11/2021	SEE – Gresford Showground	AR	KW
2	19/11/2021	SEE – Gresford Showground	KW	AR / Client

EXECUTIVE SUMMARY

Perception Planning Pty Ltd has been engaged by Gresford Showground and Gresford Park Land Managers (the client) to prepare a Statement of Environmental Effects (SoEE) for a campground, associated amenities and car parking (the development) at Gresford Showground located at 29 Park Street East Gresford, 2311, legally identified as Lot 1 DP 11562, Lot 17 DP 39791 and Lot 7002 DP 96464 (the site).

The site is located within the Dungog Local Government Area (LGA) and is zoned RE1-Public Recreation under the Dungog Local Environmental Plan 2014 (the LEP). This application is seeking ongoing approval to expand the existing camping areas to 4,600m^2 (additional 400m^2) of powered camping area and 14,000m^2 (additional 4,400m^2) of unpowered camping area. Total area of resultant camping area will measure 18,600m² (with the general areas shown on the Gresford Showground Camping Ground Plan in **Figure 2**).

The maximum number of available camping sites within the camping ground is estimated to be 208 camping sites. The average number of visitors per campsite is assumed to be 2.5, based on the fact that most campers will be couples with horse floats; therefore, the campground is assumed to have a maximum capacity of 520 (208 x 2.5) visitors. The assumed breakdown being 394 visitors accommodated on unpowered sites and 126 visitors accommodated on powered sites.

In addition to the above, the proposal includes the construction of upgraded services and facilities at the site including:

1. An additional amenities block located within the northern portion of the site;
2. Accessible toilet and shower facility located within the southeast portion of the site;
3. Visitor carpark near the existing camp area within the southern portion of the site;
4. Caravan dump point.

Gresford Recreation Reserve and Showground is not required to register a formal plan of management with the Minister, however, Gresford Park Land Managers recognise the benefits and importance of developing a comprehensive management strategy and business plan. A Management Plan has been prepared to define the value, use, management practices and intent for the broad public purpose for which Gresford Recreation Reserve and Showground has been reserved along with short and long term goals and improvements identified through community consultation processes.

Under the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* (LG Regulation) (c71), the council must not grant approval to operate a camping ground unless it is in accordance with the relevant requirements of Subdivisions 1–8 of Division 3. This Application clearly addresses the clauses under Subdivisions 1-8 Division 3 of the LG Regulation within a summary table provided within this SoEE and an accompanying site plan. It is considered the development will contribute to ongoing investment in East Gresford as the camping ground will encourage

visitors from out of the Local Government Area (LGA) and as such will result in positive economic benefits to the local area and LGA as a whole.

TERMS & ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
EP&A Act	Environmental Planning & Assessment Act 1979
BPL	Bushfire Prone Land
DA	Development Application
FPL	Flood Planning Level
FFL	Finished Floor Level
SoEE	Statement of Environmental Effects
EPI	Environmental Planning Instrument
ASS	Acid Sulphate Soils
SISD	Safe Intersection Sight Distance

LIST OF FIGURES

PLANS AND SUPPORTING DOCUMENTATION

This SEE is supported by the following plans and documentation:

Attachment	Document	Prepared by
1	EP&A Regulation Compliance Table (*Note: contained within this SoEE)*	Perception Planning
2	DBYD Search Results	Perception Planning
3	Deposited Plan	N/A
4	AHIMs Search Results	Perception Planning
5	Architectural Plans	Sorensen Design & Planning
6	Hunter Water Corporation Stamped Plan	Hunter Water Corporation
7	On-site Wastewater Management Report	Whitehead & Associates Environmental Consultants
8	Survey	Graeme Ferguson

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Statement of Environmental Effects (SoEE) is to assist Council in their determination and to assist the community in understanding this development.

This SoEE has been prepared in accordance with best practice principles applicable aspects of the Development Assessment Framework and the Department of Planning and Infrastructure's (now the Department of Planning and Environment) guide to the *Environmental Planning and Assessment Act (*EP&A Act) 1979 (s4.15).

The objectives of this SoEE are as follows:

- To provide a description of the site, existing development and the surrounding locality;
- To provide a description of the proposal and the key issues;
- To provide a discussion of the relevant Environmental Planning Instruments (EPI)s; and
- To provide an assessment of the potential environmental impacts, having regard to the matters for consideration pursuant to the EP&A Act (s4.15) and other State, Regional and Local environmental planning policies and guidelines.

1.2 BACKGROUND

The site is located within the Dungog Local Government Area (LGA) and is zoned RE1-Public Recreation under the Dungog Local Environmental Plan 2014 (the LEP).

The Gresford Recreation Reserve and Showground was proclaimed on the 18th November 1927. Since that time, the incumbent Minister of Lands has appointed up to seven Trustees, from the local district to manage and maintain the facility. The Showground operates independently of the Local Council and remains self-sufficient.

The current board consists of 7 Managers that were appointed by the Minister in January 2021. The Managers are assisted by volunteer workers to maintain both the camping area and the Showground area.

Income from the camping enterprise is utilised to subsidise maintenance and improvement costs of the Showground area to minimise the financial impact on local community organisations wishing to use the grounds.

Under the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* (LG Regulation) (c71), the Council must not grant approval to operate a camping ground unless it is in accordance with the relevant requirements of Subdivision 1 – 8 and Division 3. This Application clearly addresses the clauses under Subdivisions 1 – 8 Division 3 of the LG Regulation within the summary table provided within this SoEE and an accompanying site layout plan.

1.3 SITE PARTICULARS

The particulars of the site are as follows:

Property Address	Gresford Showground, East Gresford, NSW, 2311 (the site) – 29 Park Street, East Gresford
Lot and DP	Lot 1, DP 11562, Lot 17 DP 39791 Lot 7002, DP 96464
Current Use	Showground and Camping
Zoning	RE1 – Public Recreation
Size	11 hectares
Site Constraints	Heritage item – Local – East Gresford Village
Owner	The land is owned by Minister for Lands and The State of NSW. The current board consists of 7 Managers that were appointed by the minister of lands in January 2021. An application for Landowners consent has been submitted to Crown Lands.
DP and 88B Instrument	Nothing on the DP or 88B instrument prohibits the proposed development.

The site particulars are detailed in the table above and shown within **Figure 1** below. The site is located within the township of East Gresford, within the Dungog Local Government Area (LGA), approximately 180 metres southeast of East Gresford township, New South Wales.

The site is bound by private rural properties to the north and south, Allyn River to the east and shared by several commercial enterprises and Park Street to the west. Traffic entry and pedestrian access to the Showground is from Park Street, shown in **Photo 1**.

Comprising of three separate parcels, the site operates for public recreation purposes, providing land and amenities to support the current and future needs of the local community. Existing development includes four amenities buildings, lawn bowling greens, a skate park, animal and rodeo arena with the remainder of the site comprising general public space and parklands, shown in **Figure 2**. The form of the existing amenities block is shown in **Photo 2**.

A Dial Before You Dig (DBYD) request was completed with the results provided at **ATTACHMENT 2**. The site is connected to electricity and telecommunications. Potable water for the site is sourced from roof (tank) water supply, with no reticulated sewer service available for connection.

Figure 1 - Locality Map (Source: Perception Planning, 2021)

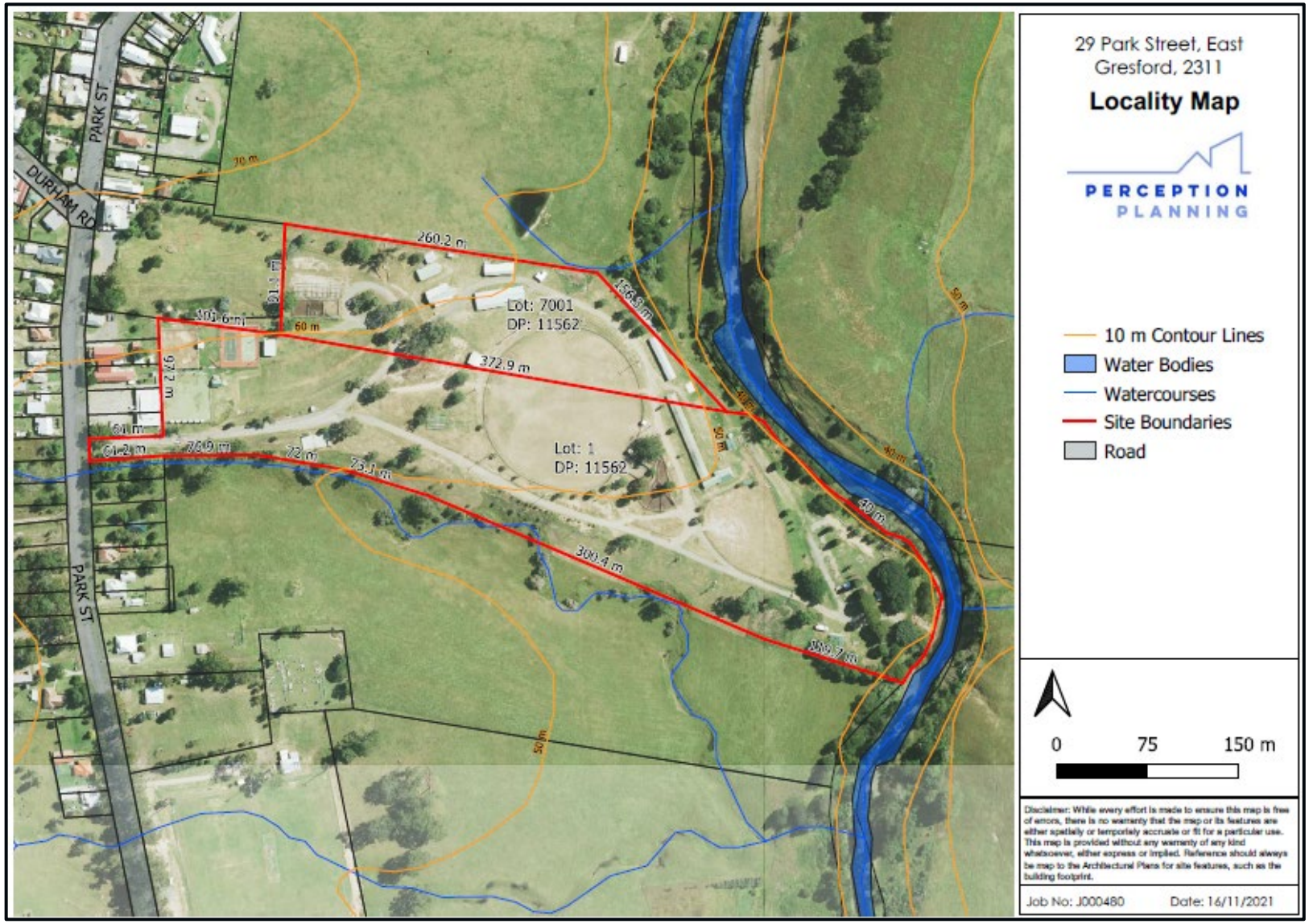
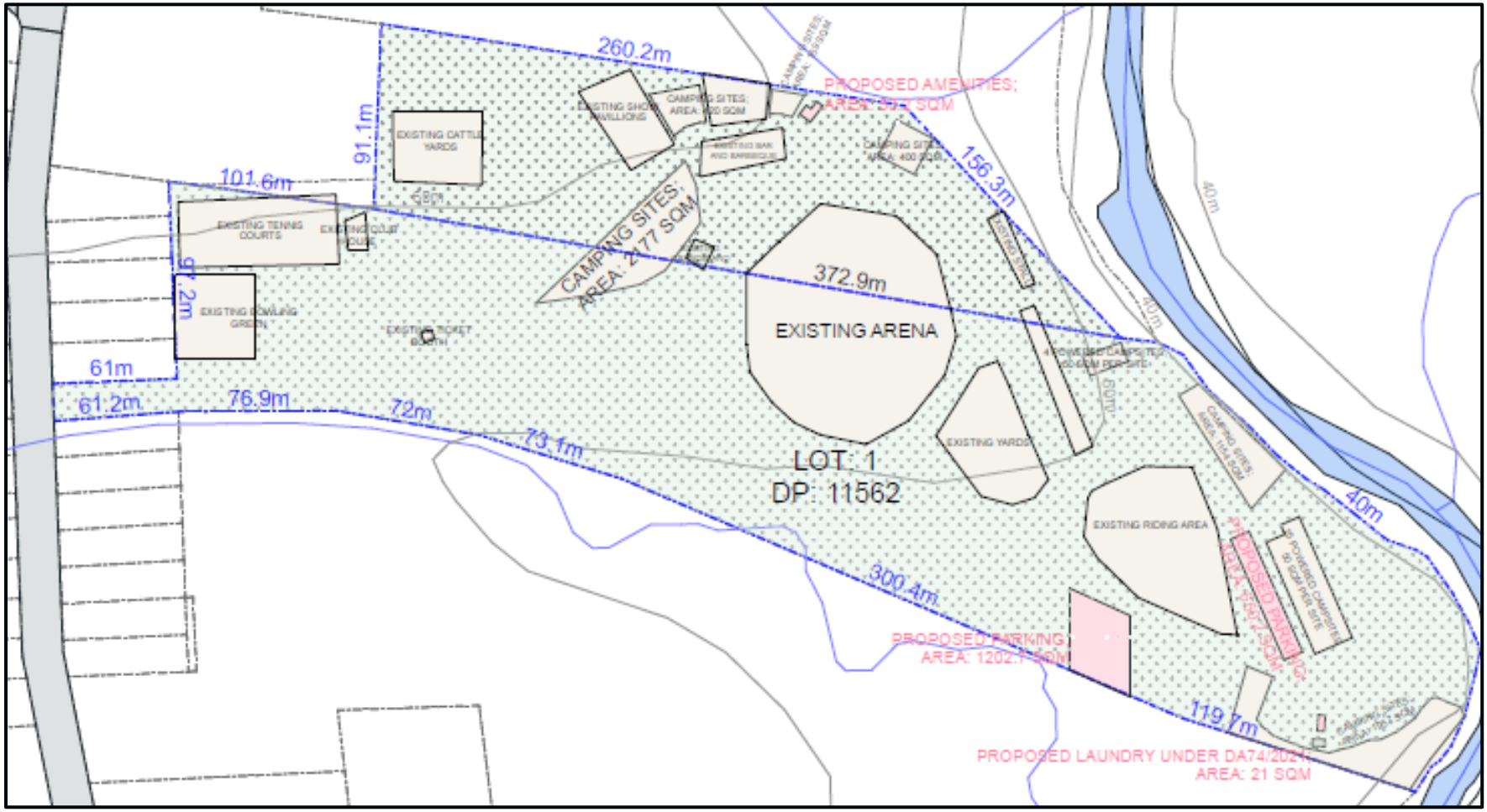


Photo 1 - Photo of access to Eastern camping ground

Photo 2 - Photo of Existing Amenities Block at Gresford Showground

Figure 2 - Camping Ground Plan (Source: Sorensen Design & Planning, 2021)



2.0 THE DEVELOPMENT

2.1 OBJECTIVES OF THE DEVELOPMENT

Proposal

The objective of the proposed development is to obtain development consent for a camping ground (the development) at Gresford Showground. The proposed development will contribute to ongoing investment in East Gresford.

The site is located within the Dungog Local Government Area (LGA) and is zoned RE1- Public Recreation under the Dungog Local Environmental Plan 2014 (the LEP). This Application is seeking ongoing approval to expand camping areas to 4,600m^2 (additional 400m^2) of powered camping area and 14,000m^2 (additional 4,400m^2) of unpowered camping area. Total area of available camping measuring 18,600m² (with the general areas shown on the Gresford Showground Camping Ground Plan in **Figure 2**).

In addition to the above, the proposal includes the construction of upgraded services and facilities at the Site including:

1. An additional amenity block adjoining existing 'Pavilion' amenities block 2 within the northern portion of the site;
    a. Facilities in (Block 2) include, 8 toilets, 3m of urinal and 3 handbasins.
    b. Available facilities will be expanded to include an additional 7 toilets (including a disabled toilet) and 5 handbasins.
2. Disabled shower & toilet facility located within the south-east portion of the site including;
    a. 2 showers;
    b. 4 basins;
    c. 9 toilets;
    d. 1 urinal.
3. Hardstand vehicle parking areas adjacent to the southern side boundary;
4. Caravan dump point adjacent to existing amenities block 4.

Figure 4 and **Figure 5** show the proposed layout for the amenity blocks. Detailed architectural plans are contained in **Appendix 5**.

Operationally, the camping ground will be available all year round, except for during show events. Stays will be coordinated outside of these events, with a maximum stay of 90 days.

The site is connected to water and hydrants were connected by the Land Managers. All future sites will be within the required distance from hydrants.

Figure 3 - Existing and proposed developments and available effluent management areas (Source: Whiteheads, 2021)

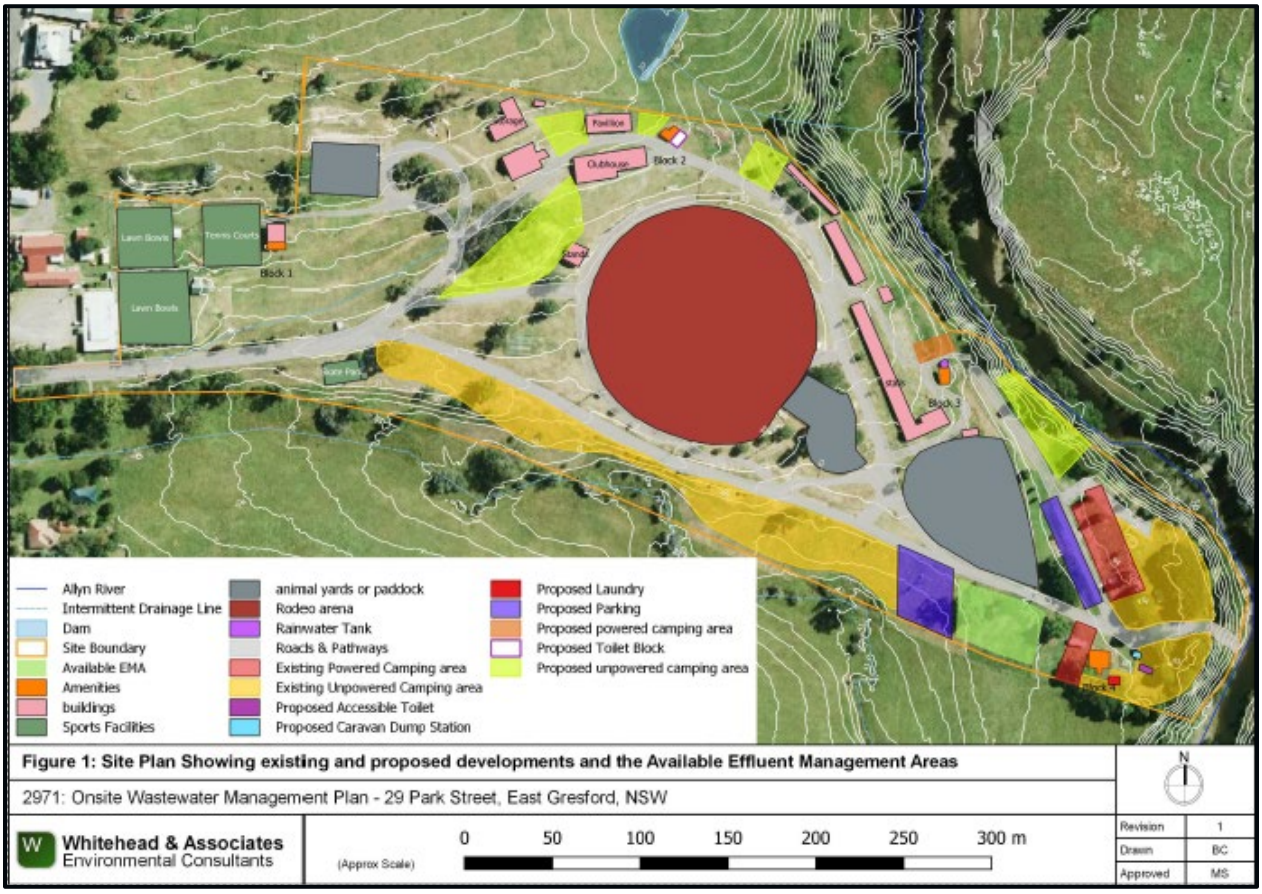


Figure 4 – Proposed amenities adjoining existing block 2 within the northern portion of the site (Source: Sorensen Design and Planning, 2021)

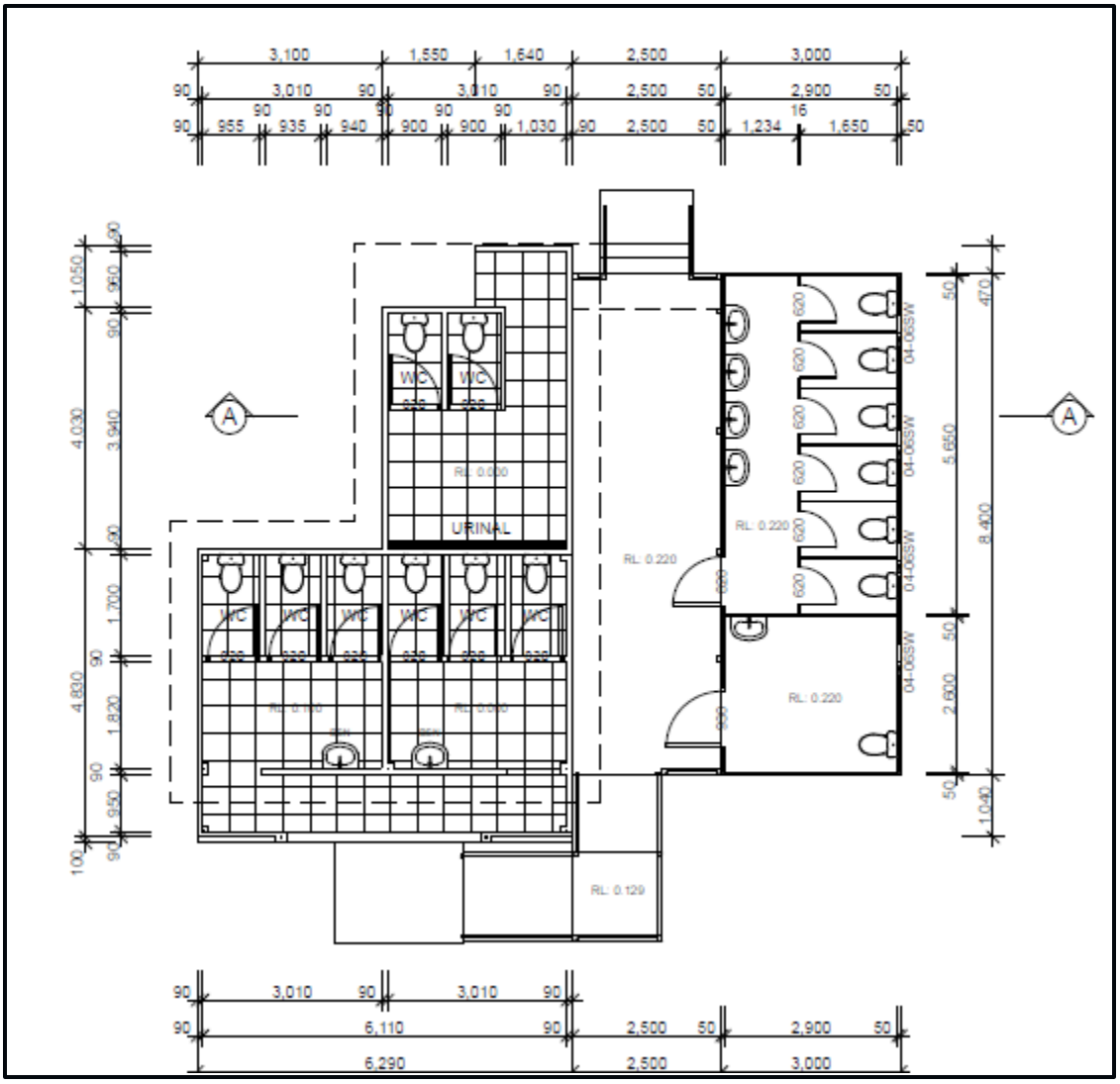
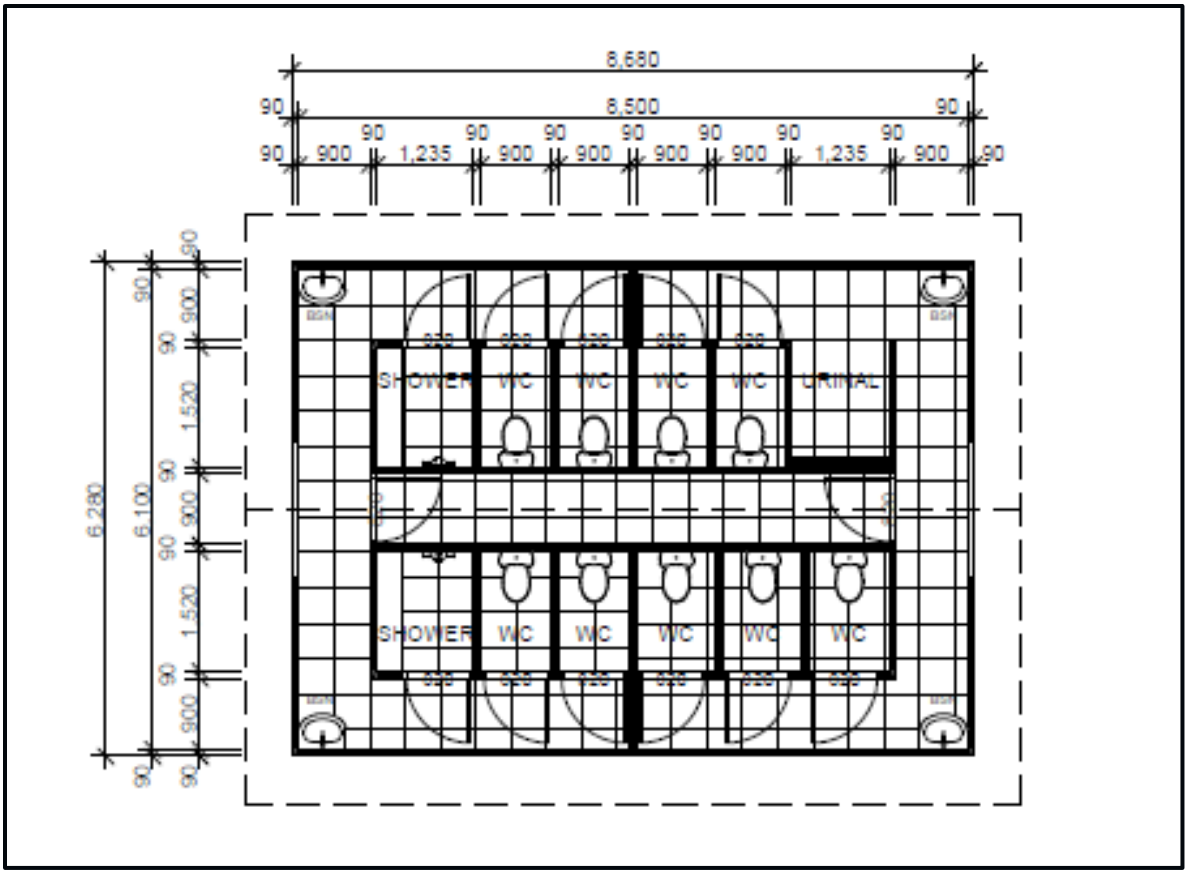


Figure 5 - Proposed accessible toilet located within the south-east portion of the site (Source: Sorensen Design & Planning, 2021)



Plan of Management

Gresford Recreation Reserve and Showground is not required to register a formal plan of management with the Minister, however, Gresford Park Land Managers recognise the benefits and importance of developing a comprehensive management strategy and business plan.

A Management Plan has been prepared and endorsed by Crown Lands which lists this development as targeted.

The current board consists of seven Managers that were appointed by the minister in 2021. The Managers are assisted by volunteer workers to maintain both the camping area and the Showground area.

The proposed camping ground is consistent with the Management Plan.

2.2 DEVELOPMENT OPTIONS

A review of alternative uses of the site identified the following options:

1. **Do nothing and allow camping ground to continue to operate.**

The subject site does not have the required development approval or Section 68 approval to operate as a camping ground. Accordingly, the site would be in breach of the EP&A Act and subject to compliance issues. Not enabling the proposal would result in the ground not being able to facilitate camping opportunities in East Gresford, as such there would be less attraction for tourists to visit the township.

2. **Lodge a Development Application for a Camping Ground**

It has been identified that the site does not have a development approval to operate as a camping ground. In turn, the lodgement of a Development Application to seek this approval from the consent authority (i.e. Dungog Council) is the only option to facilitate a good outcome on the site. It is further noted Dungog Council have received part payment of the licencing of the Eastern Camp Ground.

3.0 PLANNING CONTROLS

3.1 ACTS AND REGULATIONS

The following Acts are considered relevant to the proposed development:

3.1.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) is the principal planning and development legislation in NSW and is applicable to the proposed development. Section 4.15 of the EP&A Act specifies the matters which a consent authority must consider when determining a DA. The relevant matters for consideration under Section 4.15 are addressed in further detail in separate sections of this SEE below.

- ***Section 4.46 – What is integrated development?***

Integrated development is development (not being State significant development or complying development) that, in order for it to be carried out, requires development consent and one or more of the approvals listed within **Table 1** below. The proposed development is not identified as integrated development.

- ***Section 7.11 – Development Contributions***

Development contributions will be calculated in accordance with the Dungog Council Contributions Plan 2019.

3.1.2 HUNTER WATER ACT 1991

The subject site is not located within a Drinking Water Catchment. To this effect, a referral to HW is not required under Section 51 of the HW Act.

Stamped plans are provided within **ATTACHMENT 6** in accordance with Section 49 of the HW Act.

3.1.3 BIODIVERSITY CONSERVATION ACT 2016

The purpose of the Biodiversity Conservation Act 2016 (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The site within the development area is not mapped on the NSW Biodiversity Values Map and does not occur within an Area of Outstanding Biodiversity Value (ABOV).

The subject site does not contain area identified on the Biodiversity Values Map as land with high biodiversity value and sensitive to impacts from development and clearing. The proposal requires no removal of vegetation within an area mapped as biodiversity value.

Accordingly, no further assessment of the proposal with regard to the Biodiversity Conservation Act is required.

3.1.4 WATER MANAGEMENT ACT 2000

The subject site is not located within a Drinking Water Catchment. No physical works will take place on any body of water located on the site nor will the development have a lasting impact on any watercourses or waterbodies on site.

Although works are proposed within 40m of a mapped watercourse, activity does not cause any change in the course of the river nor likely to significantly affect the natural environment. As, such it is not deemed necessary to refer the application to the Natural Resource Access Regulator as integrated development.

Table 1 - Integrated development triggers

Integrated development	Proposed Development	
Fisheries Management Act 1994	▪ s 144 ▪ s 201 ▪ s 205 ▪ s 219	N/A
Heritage Act 1977	▪ s 58	N/A – The site is identified as located within a Heritage Conservation Area known as East Gresford Village. Despite this, no referral to Heritage NSW is required given no works to heritage items are proposed. An AHIMS search conducted on 4 February 2021 did not identify any Aboriginal sites or places located in or near the site with a 50m buffer Provided in **ATTACHMENT 4**. Given the objects are located within the forested area and the location of the proposed development is currently cleared and historically used for recreational purposes it is believed no impact should occur. Should any Aboriginal objects be uncovered during the development process, all works will cease immediately, and the relevant authority will be notified.
Coal Mine Subsidence Compensation Act 2017	▪ s 22	N/A – The site is not located within a Mine Subsidence Area.
Mining Act 1992	▪ s 63, 64	N/A
National Parks & Wildlife Act 1974 (as amended)	▪ s 90	N/A – Development is not integrated development in respect of an Aboriginal heritage impact permit required under Part 6 of the National Parks and Wildlife Act 1974 as no works are proposed as part of the application.

Protection of the Environment Operations Act 1997	▪ ss 43(a), 47, 55 ▪ ss 43(b), 48, 55 ▪ ss 43(d), 55, 122	N/A
Roads Act 1993	▪ s 138	N/A
Rural Fires Act 1997	▪ s 100B	N/A – the proposed development is not defined as integrated development and requires consent from the RFS given the site is not identified to be bushfire prone.
Water Management Act 2000	▪ ss 89, 90, 91	N/A – Although works are proposed within 40m of a mapped watercourse, activity does not cause any change in the course of the river nor likely to significantly affect the natural environment. As, such it is not deemed necessary to refer the application to NRAR.

3.1.5 LOCAL GOVERNMENT (MANUFACTURED HOME ESTATES, CARAVAN PARKSM CAMPING GROUNDS AND MOVEABLE DWELLINGS) REGULATION

Under the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 (LG Regulation) (c71), the council must not grant approval to operate a camping ground unless it is in accordance with the relevant requirements of Subdivisions 1–8 of Division 3. As a result, these requirements and an appropriate response are provided in **Table 2** .

Table 2: *Assessment against Division 3, subdivisions 1-8 of the LG Regulation*

Subdivision 1 – Land and site requirements			
No	**Requirement**	**Response**	
83	(1) A caravan park must not have an area of less than one hectare or, if a lesser area is prescribed by a relevant environmental planning instrument, that lesser area. (2) There is no minimum size for a camping ground.		The camping ground as indicated by the site boundary is a total of 11,000sqm or 11ha.
84	(1) A minimum of 10% of the total land area of a caravan park or camping ground must be reserved for recreation or other communal activities. (2) The council may allow a lower percentage, not less than 6% of the total land area of the caravan park or camping ground, to be reserved for recreation or other communal activities. (3) Before allowing a lower percentage, the council must consider— (a) the type and range of amenities to be provided, and (b) other matters the council considers relevant. (4)		The camping ground contains a minimum of 10% or 2,300sqm of land reserved for recreation or other communal activities. The bank along the Allyn River and several barbeque facilities throughout the part make up this minimum of 10% or 2,300sqm.
85	(1) A long-term site must have an area of at least 80 square metres. (2) A short-term site must have an area of at least 65 square metres. (3) A camp site must have an area of at least: (a) 40 square metres, in the case of a camp site for which a separate parking space is provided within 30 metres of the camp site, or (b) 50 square metres, in any other case.		All sites within the campground are short-term and have a minimum area of 65sqm. All camping sites have a minimum area of 50sqm.

86	(1) A dwelling site or camp site must be numbered or identified and its site boundaries clearly delineated. (2) The site identification must be conspicuous.		All sites will be numbered or identified with site boundaries clearly delineated.
Subdivision 2 - Setbacks			
No	**Requirement**	**Response**	
87	(1) A dwelling site must have vehicular access to an access road.		Each camping site has vehicular access to an internal access road.
88	(1) A community building must not be located within 10 metres of the boundary of a caravan park, camping ground, dwelling site or camp site. (2) The council may allow the following distances if satisfied the community building has been or will be properly screened, fenced, enclosed or otherwise treated— (a) 3 metres or more from the boundary of a caravan park or camping ground, and (b) 5 metres or more from the boundary of a dwelling site or camp site. (1)		No community buildings are proposed to be located closer than 10m to the boundary of a camp site.
89	(1) A dwelling site or camp site must not be located closer than – (a) 10 metres to a public road or (2) (b) 3 metres to any other boundary of the caravan park or camping ground The council may allow a lesser distance if satisfied the dwelling site or camp site has been or will be properly screened, fenced, enclosed or otherwise treated.		No camping site is closer than 10 metres to a public road or 3 metres to any other boundary. The camping ground is located over 300m from Park Street.
90	(1) Nothing in this Regulation prevents land within a buffer zone arising from the setbacks required by this Division from being used: (a) For community amenities, access roads, car parking spaces, footpaths or landscaping, or (b) For any similar purpose allowed by the approval for the caravan park or camping ground.		Noted.
91	(1) A moveable dwelling must not be installed closer to any other moveable dwelling than:		No moveable dwellings are located at the campground.

	(a) 3 metres, if it is situated on a long-term site, or (b) 2.5 metres, if it is situated on short-term site or camp site. (2) This clause does not prohibit the installation of semi-detached relocatable homes on adjoining dwelling sites so long as they are separated by construction conforming to the fire safety and sound insulation provisions relation to class 1 buildings contained in Section 3.7.1 and 3.8.6 of Volume Two of the Building Code of Australia		
Subdivision 3 - Roads			
No	**Requirement**	**Response**	
92	(1) A road that forms an entrance to or exit from a caravan park or camping ground must be at least 7 metres wide. (2) In the case of a divided road, the width of the sealed portion of the road on either side of the median strip must be at least 5 metres. (3) The council may specify in an approval the way in which an entrance or exit road must meet the sealed portion of other access roads.		All access roads that are identified on the site layout map are a minimum of 7 metres wide. The road that forms an entrance to or exit from the camping ground is a minimum of 7m wide at 14m.
93	(1) A caravan park must have a forecourt, measuring at least 4 metres by 20 metres, to accommodate incoming vehicles.		The existing entrance road is 14m wide, which is 7m wider than what is required. This width of road provides enough space to accommodate incoming vehicles.
94	(1) The width of an access road must be: (a) At least 6 metres for a two-way access road, and (b) At least 4 metres for a one-way access road. (2) The direction of travel for a one-way access road must be indicated by means of conspicuous signs.		All access roads are two-way and are a minimum of 6 metres wide.
95	(1) The speed limit applicable to an access road: (a) Must not exceed 15 kilometers per hour, and (b) Must be indicated by means of conspicuous signs.		The speed limit is 10 kilometers per hour throughout the camping ground. There is a sign erected at the front of the park entrance which reflects this.

96	(1) A caravan park or camping ground must contain at least one resident parking space for each dwelling site or camp site. (2) The parking space for a dwelling site or camp site may be on-site (that is, forming part of the site) or off-site (that is, not forming part of the site). (3) An off-site space must be marked (for example, by means of line marking, marker pegs or similar means) to identify the dwelling site or camp site to which it relates. (4) An off-site parking space for a dwelling site or camp site must be situated in the location specified in the approval for the caravan park or camping ground. (5) Each off-site parking space is to have, at minimum, dimensions of: (a) 5.4 metres by 2.5 metres, in the case of angle parking, and (b) 6.1 metres by 2.5 metres, in any other case.		Each site contains enough space for one car space. An off-site parking area is proposed within the southern portion of the site for overflow parking purposes only. Each off-site parking space will meet the minimum dimensions.
97	(1) A caravan park or camping ground must contain no fewer visitor parking spaces than the following: (a) One visitor parking space for each 10 (and any remaining fraction of 10) long-term sites in the caravan park or camping ground, (b) One visitor parking space for each 20 (and any remaining fraction of 20) short-term sites in the caravan park or camping ground, (c) One visitor parking space for each 40 (and any remaining fraction of 40) camp sites in the caravan park or camping ground (2) The minimum number of visitor parking spaces to be provided is 4. (3) Each parking space is to have, at minimum, dimensions of: (a) 5.4 metres by 2.5 metres, in the case of angle parking, and (b) 6.1 metres by 2.5 metres, in any other case. (4) Visitor parking spaces must be clearly identified as such.		The camping ground has provided 4 visitor parking spaces within the parking area, which is generally considered to be the common meeting area.
98	(1) A caravan park or camping ground must contain at least one visitor		One parking space has been reserved for people with disabilities within the propose parking area,

	parking space for people with disabilities. (2) A caravan park or camping ground that contains more than 100 sites must contain at least one visitor parking space for people with disabilities for each 100 sites or fraction of 100 sites. (3) Such parking is to be provided in accordance with *AS/NZS 2890.1:2004 Parking facilities – Off street parking*. (4) Visitor parking spaces for people with disabilities must be clearly identified as such. (5) Visitor parking spaces provided under this clause may be counted for the purposes of clause 97.		which is generally considered to be the common meeting area.
99	(1) All access roads, including all passing and parking bays, must have an all-weather sealed or other surface finish specified in the approval for the caravan park or camping ground, and must be adapted to the topography to allow for adequate drainage and to eliminate excessive grades.		All roads are appropriately finished to reflect their usage, being gravel.
100	(2) All access roads must be adequately lit between sunset and sunrise.		The access road will be provided with solar lighting.
Subdivision 4 – Utility Services			
No	**Requirement**	**Response**	
101	(1) A caravan park or camping ground: (a) Must be connected to a mains water supply, or (b) Must be provided with an alternative water supply service as specified in the approval for the caravan park or camping ground. (2) A dwelling site must be connected to the water supply service for the caravan park or camping ground (3) A camping ground must have water supply connections for the camp sites at the rate of one connection for every 4 camp sites. Connections must be located so that no camp site is more than 30 metres from a connection		The camping ground is connected to mains water. Each camp site in the Eastern area currently has a water connection. A connection will need to be provided to each new short-term camping site.

	(4) The water supply connections must include a standpipe and hose tap. (5) The water supply service must comply with: (a) The Plumbing and Drainage Act 2011 and any regulations under that Act, and (b) The requirements for any relevant statutory body. (6) The water supplied for human consumption or domestic purposes must comply with the *Australian Drinking Water Guidelines* published in 2004 by the National Health and Medical Research Council.		
102	(1) A caravan park or camping ground: (a) Must be connected to a main sewer, or (b) Must be provide with an alternative sewage disposal system as specified in the approval for the caravan park or camping ground. (2) A long-term site must be provided with a connection to the sewage disposal system for the caravan park or camping ground. (3) A caravan park or camping ground that includes any short-term sites or camp sites must be provided with at least one common soil waste dump point for the disposal of closet waste from caravan holding tanks and the like. The common soil waste dump point must be located so as to permit adequate access by caravans and campervans. (4) A short-term site must be provided with a disposal point, as specified in the approval, for the disposal of sullage (that is, domestic waste from baths, basins, showers, laundries and kitchens, including floor waste from those sources) from any moveable dwelling installed on the site. More than one short-term site may be provided with the same disposal point. (5) The sewage disposal system must comply with: (a) The Plumbing and Drainage Act 2011 and any regulations under that Act, and (b) The requirements for any relevant statutory body		The camping ground has an on-site sewerage management system. The OSSM system will be upgraded and reconfigured to consolidate the treatment of wastewater. An On-site Wastewater Management Plan has been prepared and contained as **ATTACHMENT 7**.

103	(1) A caravan park or camping ground must be provided with a stormwater drainage system. (2) All dwelling sites and camp sites must be adequately drained.		There are no hard surfaces, other than the amenities buildings. This hard surface has appropriate guttering, which drains water away from the short-term camping sites.
104	(1) A dwelling site must be supplied with electricity from a reticulated electricity service. (2) In the case of a long-term site, the electricity must be supplied by means of an electrical circuit connected to a separate electricity meter. (3) Any such electrical circuit must be installed in accordance with the requirements of: (a) The Electricity Code of Practice, in the case of a long-term site, and (b) AS/NZS 3001:2001, Electrical installations – Relocatable premises (including caravans and tents) and their site installations, as in force on 1 September 2005, in the case of a short-term site. (4) If a dwelling site is provided with electricity otherwise than by way of direct connection to the local electricity supply authority's electricity main, the maximum amount that may be charged for the supply of electricity during a particular period is the mount that the standard retail electricity supplier for the relevant district would have charged under a standard form customer supply contract for that supply during that period.		The camping ground is connected to electricity with the eastern area currently connected. A connection will need to be provided to each new short-term site.
105	(1) A common trench may be used for the installation of services in accordance with guidelines set out in AMCORD.		A common trench is to be used for the installation of services in accordance with the guidelines set out in AMCORD.
Subdivision 5 – Shower and toilet facilities			
No	**Requirement**	**Response**	
106	(1) In calculating the facilities to be provided in accordance with this Subdivision: (a) 2 camp sites are taken to be the equivalent of one dwelling site, and (b) Dwelling sites reserved for use by self-contained moveable		Noted.

	dwellings, and dwelling sites provided with ensuite facilities, are to be disregarded.		
107	(1) A caravan park or camping ground with fewer than 200 dwelling sites must be provided with facilities in the Table to this clause according to the number of dwelling sites in the Caravan Park or camping ground. (2) A caravan park or camping ground with 200 dwelling sites or more must be provided with those facilities as specified in the approval for the Caravan Park or camping ground. (3) In considering the facilities to be provided in accordance with subclause (2), the council must have regard to the rate of increment of quantities set out in the Table to this clause. (4) For the purposes of this clause: (a) A requirement for a shower may be met by the provision of a bathtub, and (b) a urinal may be fulfilled by providing— (i) a urinal intended to be used by 1 person, or (ii) a 600 millimetre length of a urinal facility.		Facilities in the 'Pavilion' amenities block (Block 2) include, 8 toilets, 3m of urinal and 3 handbasins. Available facilities will be expanded as part of this current proposal to include an additional 7 toilets (including a disabled toilet) and 5 handbasins. Facilities in the 'Pony Club' amenities block (Block 3) includes 6 toilets and 2 handbasins. No changes to this amenities building are proposed under this application. Facilities in the 'Camping' amenities block (Block 4) include 6 toilets, 4 showers and 3 handbasins. No changes to this amenities building are proposed under this application. Block 1 consists of a single toilet within the tennis court clubhouse. No changes to this amenities building are proposed under this application. New Disabled shower and toilet facility located within the south-east portion of the site will consist of 2 showers, 4 basins, 9 toilets and 1 urinal.
108	(1) A caravan park or camping ground must be provided with shower, toilet and associated facilities, designed in accordance with AS 1428.1-2001, Design for access and mobility Part 1: General requirements for access – New building work, as in force on 1 September 2005. (2) A caravan or camping ground with fewer than 100 dwelling sites must be provided with: (a) 2 disabled bathrooms for each sex, or (b) 2 unisex disabled bathrooms, or (c) 1 disabled bathroom for each sex and 1 unisex disabled bathroom. (3) A disabled bathroom may be counted towards the required		The camping ground contains an Existing Amenities Building in addition to the proposed amenities that contain separate facilities for each sex that is in accordance with AS1428.1-2001, Design for access – New building work, as in force on 1 September 2005. The Proposed Amenities Building will contain separate facilities for each sex that is in accordance with AS1428.1-2001, Design for access – New building work, as in force on 1 September 2005.

	facilities for the caravan park or camping ground. (4)		
109	(1) All showers and hand basins required by this Subdivision must be supplied with hot and cold running water. (2) A mirror must be provided: (a) For each hand basin provided, or (b) If 2 or more hand basins are provided together, for each pair of hand basins. (3) Means for sanitary napkin disposal must be provided in each communal facility that contains water closets for female use and, in a facility containing 10 or more water closets, must be provided at the rate of one for each 10 (remaining fraction of 10) water closets.		All showers and hand basins are supplied with hot and cold water. A mirror is provided for each hand basin and bins for sanitary napkin disposal are provided in the existing and proposed amenities building.
110	(1) Except as otherwise provide by the approval for the caravan park or camping ground, the shower and toilet facilities provided for a caravan park or camping ground must be housed in a shower block or toilet block: (a) That is constructed of brick or concrete masonry block, and (b) That has non-slip floor of tile or other impervious material adequately drained to outlets, and (c) That has smooth, hard, durable and water-resistant interior finishes, and (d) That has shower recesses with tile or other impervious finishes to a height of at least 1.8 metres, and (e) That has tile or other impervious skirtings' around water closet cubicle walls, and (f) That has tile or other impervious finish around wash basins, and (g) That has adequate lighting (both inside and outside) and adequate ventilation at all times, and (h) That has all its walls, ceilings and floors, fixtures, fittings and appliances maintained in a clean and sanitary condition at all times.		The proposed amenities will not be of brick or concrete masonry block. But rather a lightweight construction. This has been previously discussed with Council. The existing and proposed amenities buildings for the camping ground is consistent with all other specifications under this section.

	(2) Subject to clause 108 (2) and (3), if male and female shower or toilet facilities are located in the same building, that building must be divided for spate use by each sex. (3) Water closets must be provided on individual cubicles having a minimum floor area of 1.1 square metres and a minimum width of 0.8 metre.		
111	(1) A long-term site must not be situated more than 75 metres (measured in a straight line) from a shower block or toilet block. (2) A short-term site or camp site must not be situated more than 100 metres (measured in a straight line) from a shower block or toilet block. (3) This clause does not apply in respect of dwelling sites reserved for use by self-contained moveable dwellings and dwelling sites provided with ensuite facilities.		All sites are short-term dwelling sites or camping sites and are within 100 metres of the existing and proposed amenities Building. No long-term sites are identified.
Subdivision 6 – Laundry Facilities			
No	**Requirement**	**Response**	
112	(1) In calculating the facilities to be provided in accordance with this Subdivision, 2 camp sites are taken to be the equivalent of one short-term site.		Noted.
113	(1) A caravan park or camping ground must be provided with at least— (a) 1 washing machine for every 25 long-term sites, and (b) 1 additional washing machine for a remaining part, if any, of 25 long-term sites exceeding 12, and (c) 1 washing machine for every 30 short-term sites, and (d) 1 additional washing machine for a remaining part, if any, of 30 short-term sites exceeding 15. (2) At least 2 washing machines must be provided in a caravan park or camping ground.		The camping ground does not have an existing washing machine. The minimum number that are to be required is two washing machines. These facilities will be provided within the new laundry block (DA74/2021) situated behind the existing Amenities Building within the Eastern camp area.
114	(1) A caravan park or camping ground must be provided with— (a) at least 1 laundry tub for every 50 long-term sites, and (b) at least 1 additional laundry tub for a remaining part, if any, of 50 long-term sites, and		The camping ground does not have an existing laundry tub. The minimum number to be provided is one laundry tub. These facilities will be provided as a freestanding block behind the existing amenities block.

	(c) at least 1 laundry tub for every 60 short-term sites, and (d) at least 1 additional laundry tub for a remaining part, if any, of 60 short-term sites. (2) At least 1 laundry tub must be provided in a caravan park or camping ground. (3)		
115	(1) A caravan park or camping ground must be provided with: (a) At least one mechanical clothes dryer or each 60 (and any remaining fraction of 60 greater than 30) long-term sites, and (b) At least one mechanical clothes dryer for each 80 (and any remaining fraction of 80 greater than 40) short-term sites. (2) The minimum number of mechanical clothes dryers to be provided is one.		The camping ground does not have an existing mechanical clothes dryer. The minimum number to be provided is one mechanical clothes dryer. These facilities will be provided within the Proposed Amenities Building once the DA determination is issued.
116	(1) A caravan park or camping ground must be provided with clothes line space at the rate of 2 metres of line for each dwelling site. (2) The minimum length of clothes line space to be provided is 50 metres.		The camping ground does not provide clothes line space. The minimum to be provided is 50m of clothes line space. These facilities will be provided adjoining the Proposed Amenities Building.
117	(1) Washing machines and laundry tubs required by this Subdivision must be supplied with both hot and cold water.		Washing machines and laundry tubs are to be provided with hot and cold water. These facilities will be provided within the Proposed Amenities Building.
118	(1) A caravan park or camping ground must be provided with ironing boards, electric irons and power points available for connection to electric irons at the rate of one for every 60 (or remaining fraction of 60) short-term sites.		The camping ground is to be provided with ironing boards, electric irons and power points within the amenity block. These facilities will be provided within the Proposed Amenities Building.
119	(1) Except as otherwise provided in an approval, the laundry facilities in a caravan park or camping ground must be housed in a laundry block— (a) constructed of brick or concrete masonry block, and (b) with a non-slip floor of tile or other impervious material adequately drained to outlets, and (c) with smooth, hard, durable and water-resistant interior finishes, and		The proposed laundry building (DA742021) sited within the Southern camp area will not be of brick or concrete masonry block. But rather a lightweight construction. This has been previously discussed with Council.

	(d) with adequate lighting, both inside and outside, and adequate ventilation at all times, and (e) with walls, ceilings and floors, fixtures, fittings and appliances maintained in a clean and sanitary condition, and (f) maintained in a serviceable and safe condition. (a)		The Proposed Amenities Building will be consistent with the other listed requirements.
Subdivision 7 - Management			
No	**Requirement**	**Response**	
120	(1) No more than 12 persons may be allowed to stay overnight at a dwelling site or camp site at any one time.		No more than 12 persons can stay overnight at a camp site.
121	(1) A register of occupiers must be kept for a caravan park or camping ground. (2) At least 1 person who occupies a dwelling site or camp site must be registered. (3) The register must include the following particulars for the registration of a person— (a) the person's full name and address, (b) the person's dates of arrival and departure, (c) the site identification of the site occupied by the person, (d) if the person occupies a caravan or campervan—the registration number, if any, of the moveable dwelling, (e) for a relocatable home—details of the compliance plate. (4) The register must be available for inspection by any authorised person without cost during normal working hours.		A register of occupiers is required for a camping ground under Clause 132(2)(g).
122	(1) (1) The holder of an approval must enter an agreement with a person if— (a) the person intends to occupy a dwelling site or camp site, or (b) the person intends to occupy a long-term site for a holiday. (2) The holder of the approval must give the person written notice of the conditions of occupation before entering the agreement.		Noted.

	(3) The notice must include the following information— (a) the site identification of the dwelling site or camp site allocated to the person, (b) the date, if any, on which it is agreed the person's occupation of the dwelling site or camp site will cease, (c) for an agreement relating to occupation of a short-term site or camp site— the maximum number of days the person may stay in a moveable dwelling on the site in a 12 month period, (d) the rules of the caravan park or camping ground, (e) a telephone number for contacting the holder of the approval, or their agent, in the event of an emergency, (f) whether or not pets may be kept in the caravan park or camping ground and, if so, on what conditions, (g) the nature and location of the amenities available for use by the person as an occupier of the dwelling site or camp site and the charges, if any, for use of the amenities, (h) the location of each fire extinguisher, fire hose reel and fire hydrant that is installed within the park or ground, (i) if the council has given written notice to the holder of the approval that land in the caravan park or camping ground is flood liable land or bush fire prone land—the location of the flood liable land or bush fire prone land, (j) other matters affecting the person's occupation of the dwelling site or camp site or use of the caravan park or camping ground and its amenities.		
123	(1) A caravan park or camping ground must not be used: (a) For any commercial purpose other than a caravan park or camping ground or an associated purpose, or		The camping ground is not used for any other commercial purpose or the manufacture, construction or reconstruction of moveable dwellings.

	(b) For the manufacture, construction or reconstruction of moveable dwellings. (2) A moveable dwelling installed in a caravan park or camping ground may be renovated, maintained or repaired.		
124	(1) The council must be given a copy of the current community map: (a) As soon as practicable after any amendment is made to the map, and (b) At such other times as the council may reasonably require.		A copy of the community map will be provided when amendments are made.
125	(1) The holder of an approval to operate a caravan park or camping ground must ensure that copies of the following documents are readily available for inspection without cost in a location in the caravan park or camping ground specified in the approval for the caravan park or camping ground: (a) The approval for the caravan park or camping ground, (b) The current community map, (c) This regulation. (2) A copy of the current community map must also be displayed in a prominent position in the caravan park or camping ground.		These documents are available for inspection.
Subdivision 8 - General			
No	**Requirement**	**Response**	
126	(1) Arrangements specified in the approval for the caravan park or camping ground must be instituted and maintained for the removal of garbage and for the maintenance of garbage receptacles in a clean and sanitary condition.		Arrangements are in place. Waste is placed in the waste storage area, which is collected once a week by Dungog Council.
127	(1) No part of a dwelling site, camp site or community building within a caravan park or camping ground may be situated more than 90 metres from a fire hydrant. (2) Any fire hydrant located within a caravan park or camping ground must: (a) Be double-headed pillar type fire hydrant, and (b) Be maintained to the standard specified in the approval for the		Fire hose reels are currently installed at the Eastern camp area and will be installed at the new camp area after the DA determination is issued. Fire hose reels have been installed in accordance with the Standard of Performance that is required under this Regulation.

	caravan park or camping ground.		The site is connected to water and hydrants will be connected to the site by Park Managers. All future sites will be within the required distance from hydrants. Any campfires are to be within a metal cage. The site is not identified as bushfire prone land and it is 750m or a 1-minute drive to the south of the Dungog NSW Fire and Rescue.
128	(1) Fire hose reels must be installed so that each dwelling site or camp site in the caravan park or camping ground can be reached by a fire hose. (2) The fire hose reels must be constructed in accordance with AS/NZS 1221:1997, Fire hose reels and installed in accordance with AS 2441-1988, Installation of fire hose reels, as in force on 1 September 2005. (3) The holder of the approval for the caravan park or camping ground must cause the council to be given a certificate (a fire hose certificate) in relation to the fire hose reels once every calendar year. If a fire hose reel is newly installed, the certificate must be provide within 7 days of the completion of its installation. (4) A fire hose reel certificate is to state, in relation to each fire hose reel installed in the caravan park or camping ground: (a) That the fire hose reel has been inspected and tested by a person (chosen by the holder of the approval) who is properly qualified to carry out such an inspection and test, and (b) That, as at the date on which the fire hose reel was inspected and tested, the fire hose reel found to have been capable of performing to a standard not less than that required by this Regulation.		
129	(1) A caravan park must be provided with an area for use for washing vehicles.		A washing bay next to the waste disposal area will be used for the washing of vehicles.
130	(1) A building must not be erected in a caravan park or camping ground unless the approval allows the erection of the building. (2) An approval may allow— (a) the erection of a community building on land in the caravan park or camping ground that is not a dwelling site or camp site, and		Noted.

	(b) the erection of an ensuite facility on a dwelling site or camp site. (3)		

From the above, the development is compliant with the relevant provisions for a camping ground and most of the provisions for a camping ground. Other relevant parts of the planning framework will now be discussed.

3.2 STATE ENVIRONMENTAL PLANNING POLICIES (SEPP)

All State Environmental Planning Policies (SEPPs) have been considered. The following SEPPs are considered relevant to the proposed development and discussed in further detail below.

- *State Environmental Planning Policy No 55 – Remediation of Land*
- *State Environmental Planning Policy (Koala Habitat Protection) 2021*
- *State Environmental Planning Policy (Infrastructure) 2007*

3.2.1 SEPP No. 55 – REMEDIATION OF LAND

The aim of this SEPP is to ensure that the consent authority does not grant consent to development, unless they have considered whether the land is contaminated. The DA is not seeking a change of use but is rather seeking development approval for an existing use. We have been provided with no evidence to suggest that the land is contaminated.

3.2.2 SEPP – KOALA HABITAT PROTECTION 2021

SEPP (Koala Habitat Protection) 2021 aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas. The Koala SEPP 2021 reinstates the policy framework of SEPP Koala Habitat Protection 2019 to 83 Local Government Areas (LGA) in NSW. Dungog Council is a local government area to which to policy applies.

This clause applies to land that has an area of at least 1 hectare and does not have an approved koala plan of management applying to the land. Whilst the area of the site is greater than 1 hectare, there is no vegetation removal associated with the proposed development. It is considered that there will be no impact on koala habitat and the local koala population. It is believed that there is no basis to deny this development pursuant to the Koala SEPP.

3.2.3 SEPP – INFRASTRUCTURE 2007

The purpose of the Infrastructure SEPP is to facility the effective delivery of infrastructure across the state and identifying matters to be considered in the assessment of developments adjacent to particular types of development.

The proposed development is not in the vicinity of a pipeline corridor and therefore does not trigger referral to any pipeline operator pursuant to Clause 66C. The proposed development is greater than 5m from any overhead powerline, thus referral to the electricity supply authority is not triggered under Clause 45.

The proposed development does not include any works in or adjacent to a classified road. The development is not classified as traffic generating development in accordance with Schedule 3. Thus, the provisions of Section 104 are not applicable to the development. Further assessment against the Infrastructure SEPP is not required.

3.3 LOCAL ENVIRONMENTAL PLAN (LEP)

The following parts of the LEP apply to the development:

- **Part 2 - Land Use Table – Permissibility and Objectives**

The site is zoned RE1 – Public Recreation, whereby a 'camping ground' is a permissible land use with consent from the relevant authority. The Land Use Table of the LEP identifies the following objectives for this zone. An appropriate response for the proposed development is provided against each.

Zone RE1 – Public Recreation		
No	**Objective**	**Response**
1	To enable land to be used for public open space or recreational purposes.	The development for a camping ground seeks to compliment the dominant use, being the showground. It provides activity and maintenance on the site when the site is not being utilised for showground activities.
2	To provide a range of recreational settings and activities and compatible land uses.	The development for a camping ground is compatible with the showground when the showground is being utilised because it provides accommodation. It is also compatible when showground activities are not taking place because it ensures funds for the active upkeep of the site.
3	To protect and enhance the natural environment for recreational purposes.	The development for a camping ground will not require the removal of vegetation and the existing services means that waste is appropriately dealt with.

- **Clause 5.10 – Heritage Conservation**

The objectives of this clause include to conserve Dungog's environmental heritage, the significance of heritage items, of heritage conservation areas, associated fabric, settings and views. The clause also intends to conserve archaeological sites, Aboriginal places of cultural significance and Aboriginal objects.

A search of the Aboriginal Heritage Information Services (AHIMS) database (04 February 2021) did not identify any Aboriginal sites or places of significance are located on or near the site (within 50m) as shown in **ATTACHMENT 4.** The site is identified within Schedule 5 of the LEP as a being located within a Heritage Conservation Area known as East Gresford Village.

East Gresford is a village settlement which is bounded by the Allyn and Paterson Rivers. Gresford was named after the town on the Allyn River in North Wales, Great Britain and was first inhabited between 1812 and 1820 by itinerant cedar cutters.

The proposed development does not incorporate works anticipated to impact on the heritage significance of the existing buildings located on-site. The additional use will incur “stay” fees which will be used to maintain the heritage significance of the site. To this extent, no impact to the heritage significance of the site will occur and nothing prevents Council from issuing consent for the development.

- **Clause 5.21 – Flood Planning**

The land occupied by the campground is identified as land affected by flooding. It is considered that the proposed development will not alter the existing flood behaviors and it is assumed that all the existing buildings are approved and built to purpose and are compatible with the flood hazard of the land. Accordingly, risk to life as a result of flood can be suitably managed on site, until support of emergency services can arrive.

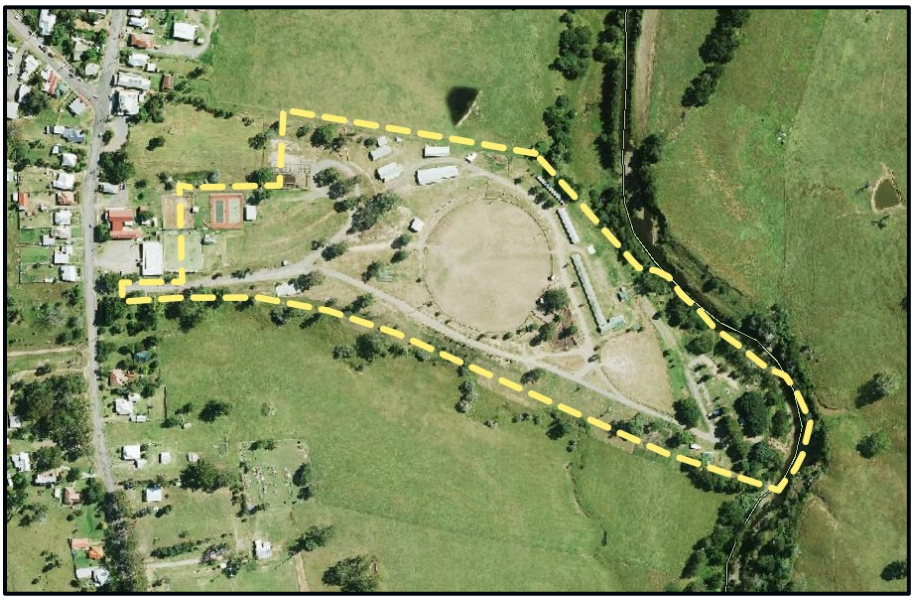
The proposal will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses. To this extent, it is believed that there is no reason to refuse the application on the premise of flood planning.

- **6.6 – Riparian land and watercourses**

As identified on the Riparian Land and Watercourses Map in the Dungog LEP, the land is affected by a “watercourse that runs to the east of the property – Allyn River. Although works are proposed within 40m of a mapped watercourse, activity does not cause any change in the course of the river nor likely to significantly affect the natural environment.

Consequently, due to the nature of the campground we have reasonable cause to suspect that the development will not have any adverse impact on the water quality, any aquatic and riparian species and ecosystems of that watercourse or the stability and future rehabilitation of the watercourse. The development has been designed and sited to avoid any significant environmental impact and is unlikely to impact the water quality or flows of the creek.

Figure 6 - Watercourse known as Allyn River (Source: Eplanning Spatial Viewer, 2021)



3.4 DEVELOPMENT CONTROL PLAN (DCP)

Part A

This Part relates to development application requirements. The proposed development application will be submitted to Council consistent with those requirements and preliminary pre-lodgment information received from Dungog Officers.

Part B

This Part relates to exempt and complying development. The proposed development does not meet the development standards for complying development under Clause 3.A2 (2) SEPP (Exempt and Complying Development Codes) 2008.

Part C

This Part of the DCP does not provide any general requirements for a campground. The design and layout of the camping ground is regulated by the LEP and the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021. In accordance with the regulations and the Planning Circular PS06-001, the proposed development is to be defined as a designated camp site and its site design to respond to this Regulation has been previously discussed.

Part D

This Part relates to Local Area Plans prepared for specific localities. The proposed development is not located in any of these localities, nor does it trigger the need to prepare a Local Area Plan. The proposed development is consistent with the relevant provisions of the Dungog DCP.

4.0 SITE CHARACTERISTICS AND KEY DEVELOPMENT ISSUES

4.1 LIKELY IMPACTS OF THE DEVELOPMENT

The likely impacts of the development are a matter of consideration for the consent authority under Section 4.15(1) of the Environmental Planning and Assessment Act 1979. These likely impacts are discussed under the following relevant headings.

4.2 CONTEXT AND SETTING

The development has been demonstrated to be consistent with the LG Regulations. It is in keeping with the activities and layout of the existing Gresford Showground.

4.3 VISUAL IMPACT

The proposed development does not result in any adverse impacts to the built environment from a visual perspective, due to the isolation and screening of the site from public view. The proposed development contributes to improving the overall aesthetics, use and physical layout of the site. The camping sites are significantly setback from the existing residential dwellings orientated to Park Street.

4.4 ACCESS, TRANSPORT AND TRAFFIC

The development is considered to have low impact on the road network. Park Street is used as a collector road for vehicles passing through East Gresford and the camping ground will experience significantly lower vehicle movements than what would be experienced during a significant event for the Showground.

Traffic volumes generated by the proposed campground are likely to vary by season, with many visitors at peak tourist times such as at Easter and Christmas, and fewer guests during colder winter months. In a normal week, there might be a few peak hours when accommodation sites tend to ‘turn over’ between visiting guests, for example, a Friday afternoon and a Sunday morning.

The maximum number of available camping sites within the camping ground is estimated as 208. (The average number of visitors per campsite is assumed as 2.5, based on the fact that most campers will be couples with horse floats; therefore, the campground is assumed to have a maximum capacity of 520 (208 x 2.5) visitors. The assumed breakdown being 394 visitors accommodated on unpowered sites and 126 visitors accommodated on powered sites.The maximum number of people or cars that attend the campground is much less significant than total number of people or cars that attend the site for shows or functions. Further, surrounding

local streets do not experience high traffic volumes which would otherwise create conflict. To this extent, the existing access arrangement and carparking available on-site is suitable for the proposed development and associated use.

4.5 PUBLIC DOMAIN

The proposed impact will contribute to the public domain by providing an accommodation option within East Gresford. This accommodation option will bring visitors into the town centre, and this will contribute to activity along the main streets of East Gresford.

No additional lighting is proposed within the Showground other than the solar lighting to the access road. Acoustics will continue to be monitored consistent with the rules and regulations of the Showground during events or functions. To this extent, no further impact on adjoining neighbours will occur as a result of the proposed development.

4.6 SERVICES

The land achieves direct access to a public road and adequate arrangements can be made for access to essential services, as detailed within the relevant sections of this report.

The Dial Before You Dig Search Results are provided at **ATTACHMENT 2**.

4.7 HERITAGE

The site is identified as located within a Heritage Conservation Area Known as East Gresford Village. Given the nature of the proposed development, works are not expected to adversely impact the heritage significance of the area. Further assessment of the heritage significance of the site is provided under Clause 5.10 of the LEP above.

4.8 ECOLOGICAL

The development does not require any works that would result in the need for vegetation removal. Further, the existing grassland on-site is disturbed with Showground activities continuing this disturbance. To this effect, no ecological assessment accompanies this DA.

4.9 LANDSCAPING

No landscaping plan has been provided with the DA.

4.10 BUSFHIRE

The site is not identified bushfire prone land; therefore, an assessment has not been provided.

4.11 ARCHAEOLOGY

No archaeological matters have been identified.

4.12 WATER, WASTE AND ENERGY EFFICIENCY

Potable water for the site is sourced from roof (tank) water supply, with no reticulated sewer service available for connection.

An On-site Wastewater Management has been prepared and contained as **ATTACHMENT 7**.

The OSSM system will be upgraded and reconfigured to consolidate the treatment of wastewater servicing Block 2, 3 & 4. Once the proposed campgrounds have been fully developed, and assuming all (existing & proposed) campgrounds are occupied, the anticipated utilisation of facilities is as follows:

- Block 2 will service ~32% of campers;
- Block 3 will service ~8% of campers; and
- Block 4 will service ~60% of campers.

The proposed changes will include:

- decommissioning of redundant tanks at Blocks 2 and 3;
- installation of new 10,000L interceptor (septic) tanks at Blocks 2 and 3;
- installation of a new 10,000L pump well at Block 2;
- replacement of existing pump-sets installed in pump wells at Blocks 2, 3 and 4 to include dual macerator pump assemblies;
- installation of 2 (two) new 25,000L septic tanks to receive all effluent generated from the 3 amenities blocks; and
- -installation of 3 (three) new flow balance tanks (totaling 75,000L) to temporarily store treated effluent prior to land application.
- Installation of a (minimum) 1,200m² of raised absorption beds is recommended and must be located within the available EMA specified to comply with adopted setbacks from surface waters, property boundaries and other improvements (NSW DLG, 1998);
- Special controls will be installed to evenly distribute effluent over the entire bed LAA with LPED dosed periodically from the effluent balance tanks via an external pump (with timed controls);
- A good quality (loam) topsoil must be imported and installed 1m high across the whole LAA to achieve a minimum separation of 600mm between the base of the bed and limiting soil horizons;

- A suitable gypsum application rate of approximately 0.5kg/m² should be applied at the base of the land application systems during installation;
- Vegetation must be established over the LAA immediately after installation; and
- Vehicles and grazing animals must be prevented from entering the designated LAA.

A caravan dump point is proposed near the Block 4 Septic tanks. This will store caravan and RV collected wastewater to be removed via vacuum truck at a later date.

4.13 NOISE AND VIBRATION

The development is not considered to have any significant impacts in terms of noise and/or vibration. All camping activity is to be in accordance with the plan of management.

4.14 SAFETY, SECURITY AND PUBLIC INTEREST

The development will increase passive surveillance and active management of this land. It would otherwise be vacant when the showground is not being utilised.

4.15 TOPOGRAPHY AND STORMWATER MANAGEMENT

The development incorporates an appropriately managed and maintained stormwater management system that will minimise the impacts of stormwater on the land.

Given the land capacity and rural nature of the site there is suitable area for management of overland flows created by additional hardstand carparking areas. In addition, the proposed new amenities buildings will be connected to rainwater tanks for water for stormwater collection.

4.16 FLOODING

The land occupied by the Showground is marginally identified as flood prone. It is considered that the proposed development will not alter the existing flood behaviors and it is assumed that all the existing buildings are approved and built to purpose and are compatible with the flood hazard of the land. Accordingly, risk to life as a result of flood can be suitably managed on site, until support of emergency services can arrive.

4.17 ACID SULPHATE SOILS

This site is not identified as containing Acid Sulfate Soils.

4.18 MINE SUBSIDENCE

The site is not located in an identified Mine Subsidence District.

4.19 CUMULATIVE IMPACTS

The development will contribute to tourist accommodation within East Gresford.

4.20 CONSULTATION

The DA will be reported to Council given that the matter has already been considered by Council.

4.21 SOCIAL AND ECONOMIC IMPACT ON THE LOCALITY

Social impact is best defined by (Armour 1992) that describes changes that occur in:

- People's way of life (how they live, work, play and interact with one another on a day to day basis),
- Their culture (shared beliefs, customs and values), and
- Their community (its cohesion, stability, character, services and facilities).

The proposed development will provide positive economic impacts to East Gresford the Town Centre through increased visitation to the area and localised spending. There are no anticipated adverse economic impacts as a result of the proposed development, rather it is considered the proposal will contribute positively to the social elements of the locality through an increase in tourists. The proposed development is not out of character with the existing urban or rural context, will not involve an increased risk to public safety and will not threaten the existing sense of community, identity or cohesiveness, rather will contribute to the increase of these aspects in the locality.

4.22 SUITABILITY OF THE SITE AND PUBLIC INTEREST

The site has access to all relevant services and the proposed development makes good use of the available land. The application design includes all elements required under the relevant planning instruments and policies and there are no anticipated negative impacts on the locality as a result of the development. The proposed camping ground is in keeping with the zone objectives and does not interfere with the use of the subject land or adjoining sites.

To this extent, the site is suitable for development.

5.0 CONCLUSION

This SoEE has demonstrated that the proposed development is within the public interest, both socially, economically and environmentally. Any relevant matters have been addressed through this SEE. The key reasons why the proposed development is appropriate are as follows;

- The proposed development is permissible with consent and is consistent with the Management Plan applicable to the site;
- No adverse impact on the existing character or amenity of the area will result;
- Additional tourism or visitation to the area will increase localised spending thus incurring a positive economic impact within the East Gresford locality;

- The camping ground proposed makes good use of the available land and will not result in any conflicts with the existing land use or heritage significance of the site. Rather, the additional use will incur stay fees which will be used to maintain the heritage significance of the site.

It is considered that the proposal will have no significant impacts on the surrounding properties to that it is likely to adversely affect their enjoyment or amenity. We look forward to Council's determination of this matter. If we can provide any further information or clarity, please don't hesitate to contact us.

ATTACHMENT 1 – EP&A REGULATION 2000 (Schedule 1)

A development application under Schedule 1 (2) – Forms of the Environmental Planning and Assessment Regulation 2000 is to be accompanied by the following information.

No	Requirement	Response
Information to be included in development application		
1(a)	Name and address of the Applicant	This is provided on the Council DA Form and within the SoEE.
1(b)	A description of the development to be carried out	
1(c)	The address, and formal particulars of title, of the land on which the development is to be carried out	
1(d)	An indication as to whether the land is, or is part of, critical habitat	Nothing (i.e. vegetation) on the site suggests that it is critical habitat.
1(e)	An indication as to whether the development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, unless the development is to be taken to be development that is not likely to have such an effect because it is a biodiversity compliant development.	
1(ea)	For biodiversity compliant development, an indication of the reason why the development is biodiversity compliant development.	
1(f)	A list of authorities from which concurrence must be obtained before the development may be lawfully carried out or from which concurrence would have been required, but for section 4.13 (2A) or 4.41	This is provided on the Council DA Form and within the SoEE. These documents identify that the development is defined as 'integrated development'.
1(f1)	In the case of an application that is accompanies by a biodiversity development assessment report, the reasonable steps taken to obtain the like-for-like biodiversity credits required to be retired under the report to offset the residual impacts on biodiversity values if different biodiversity credits are proposed to be used as offsets in accordance with the variation rules under the Biodiversity Conservation Act 2016.	Nothing (i.e. vegetation) on the site suggests that an Ecological Assessment should be prepared for this DA.

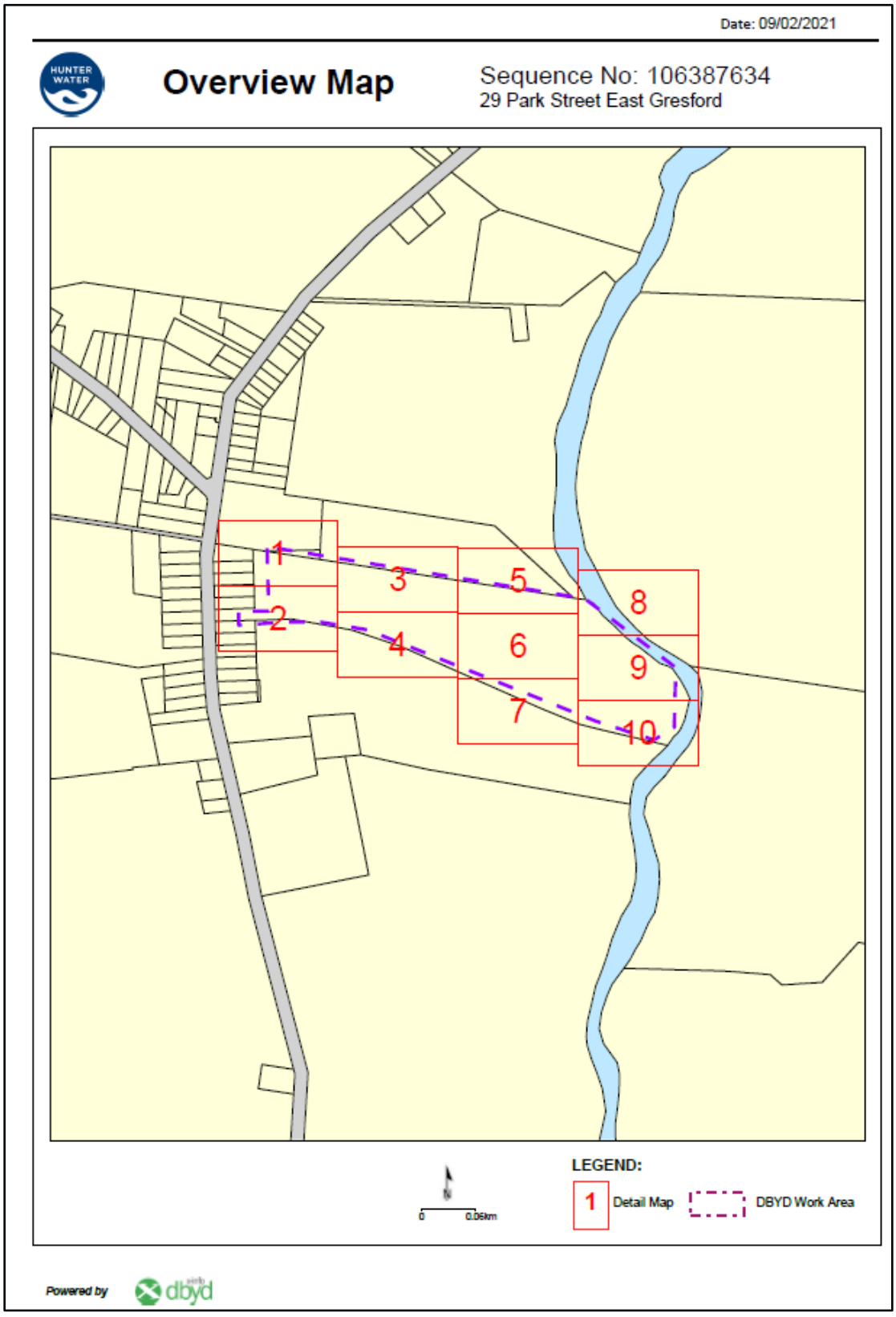
1(f2)	If the land is subject to a private land conservation agreement under the Biodiversity Conservation Act 2016, a description of the king of agreement and the area to which it applies.	
1(g)	A list of any approvals of the kind referred to in section 4.46(1) of the Act that must be obtained before the development may be lawfully carried out.	The development is not identified to be defined as Integrated development.
1(g1)	In the case of State significant development, a list of any authorisations that must be provided under section 4.4 of the Act in relation to the development.	The development is not identified as State significant.
1(h)	The estimated cost of the development.	The estimated cost of the development is identified on the Council DA Form and within the Fee Quote provided.
1(h1)	In the case of State Significant development, the capital investment value of the development.	The development is not defined as State significant.
1(i)	Evidence that the owner of the land on which the development is to be carried out consents to the application, but only if the application is made by a person other than the owner and the owner's consent is required by this Regulation.	The owners' consent is provided on the Council DA Form.
1(j)	A list of the documents accompanying the application.	A list of documents accompanying this application is provided within this Statement of Environmental Effects.
Documents to accompany development application		
2 (a)	A site plan of the land	A Site Plan of the development is provided.
2(b)	A sketch of the development	Plans of the proposed development is provided.
2(c)	A statement of environmental effects (in the case of development other than designated development or State significant development)	This table is an attachment to the SoEE.
2(d)	In the case of development that involves the erection of a building, an A4 plan of the building that indicates its height and external configuration, as erected, in relation to its site (as referred to in clause 56 of this Regulation)	Plans of the proposed development is provided.

2(e)	An environmental impact statement (in the case of designated development or State significant development)	The development is not defined as designated or state significant.
2(f)	A species impact statement (in the case of land that is, or is part of, critical habitat or development that is likely to significantly affect threatened species, populations or ecological communities, or their habitats, but not if the development application is for State significant development	Nothing (i.e. vegetation) on the site suggests that an Ecological Assessment should be prepared for this DA.
2(g)	If the development involves any subdivision work, preliminary engineering drawings of the work to be carried out	The development does not involve any subdivision works.
2(h)	If an environmental planning instrument requires arrangements for any matter to have been made before development consent may be granted (such as arrangements for the provision of utility services), documentary evidence that such arrangements have been made.	This SoEE discusses 'essential services' and the approach taken.
2(i)	If the development involves a change of use of a building (other than a dwelling-house or a building or structure that is ancillary to a dwelling-house and other than a temporary structure): (i) a list of the Category 1 fire safety provisions that currently apply to the existing building, and (ii) a list of the Category 1 fire safety provisions that are to apply to the building following its change of use	This proposed development is not for a 'change in use'.
2(j)	If the development involves building work to alter, expand or rebuild an existing building, a scaled plan of the existing building	The proposed development does not involve building work to alter, expand or rebuild an existing building.
2(k)	If the land is within a wilderness area and is the subject of a wilderness protection agreement or conservation agreement within the meaning of the Wilderness Act 1987, a copy of the consent of the Minister for the Environment to the carrying out of the development	The proposed development is not located within a wilderness area.
2(k1)	In the case of development comprising mining for coal (within the meaning of section 380AA of the Mining Act 1992)—	The development does not compromise mining for coal.

	documentary evidence that the applicant holds an authority under the Mining Act 1992 in respect of coal and the land concerned or has the written consent of the holder of such an authority to make the development application.	
2(l)	In the case of development to which clause 2A applies, such other documents as any BASIX certificate for the development requires to accompany the application.	The development does not include a 'BASIX affected building' and therefore does not require a BASIX Certificate.
2(m)	In the case of BASIX optional development—if the development application is accompanied by a BASIX certificate or BASIX certificates (despite there being no obligation under clause 2A for it to be so accompanied), such other documents as any BASIX certificate for the development requires to accompany the application	A BASIX Certificate is not required.
2(n)	If the development involves the erection of a temporary structure, the following documents: (i) documentation that specifies the live and dead loads the temporary structure is designed to meet, (ii) a list of any proposed fire safety measures to be provided in connection with the use of the temporary structure, (iii) in the case of a temporary structure proposed to be used as an entertainment venue—a statement as to how the performance requirements of Part B1 and NSW Part H102 of Volume One of the Building Code of Australia are to be complied with (if an alternative solution, to meet the performance requirements, is to be used), (iv) documentation describing any accredited building product or system sought to be relied on for the purposes of section 4.15 (4) of the Act, (v) copies of any compliance certificates to be relied on	The development does not involve the erection of a temporary structure.
2(o)	In the case of a development involving the use of a building as an entertainment	This development will not involve a building as an entertainment

	venue or a function centre, pub, registered club or restaurant—a statement that specifies the maximum number of persons proposed to occupy, at any one time, that part of the building to which the use applies	venue or a function centre, pub, registered club or restaurant.

ATTACHMENT 2 – IDENTIFICATION OF ESSENTIAL SERVICES



Hunter Water Corporation
DBYD Asset Legend

Electrical Assets
- High Voltage
- Low Voltage
- Electrical Pole
- Distribution Transformer
- Air Break Switch
- Circuit Breaker
- High Voltage
- Low Voltage

Water Assets
- Contol Valve
- Hydrant Control Valve
- Reflux Valve
- Stop/Scour Valve
- Tee & Stop Valve
- Hydrant
- Cluster Box
- End Cap
- Flushing Tap
- Manhole
- Scour
- Water Meter
- Water Network Structure
- Other Main
- Trunk Main
- Reticulation Main
- Water Encased Mains
- Water Prelaid Service

- HWC Rain Gauge
- HWC Stream Flow Gauge
- Radio Base
- Weather Station
- Piezometer
- Bore Site

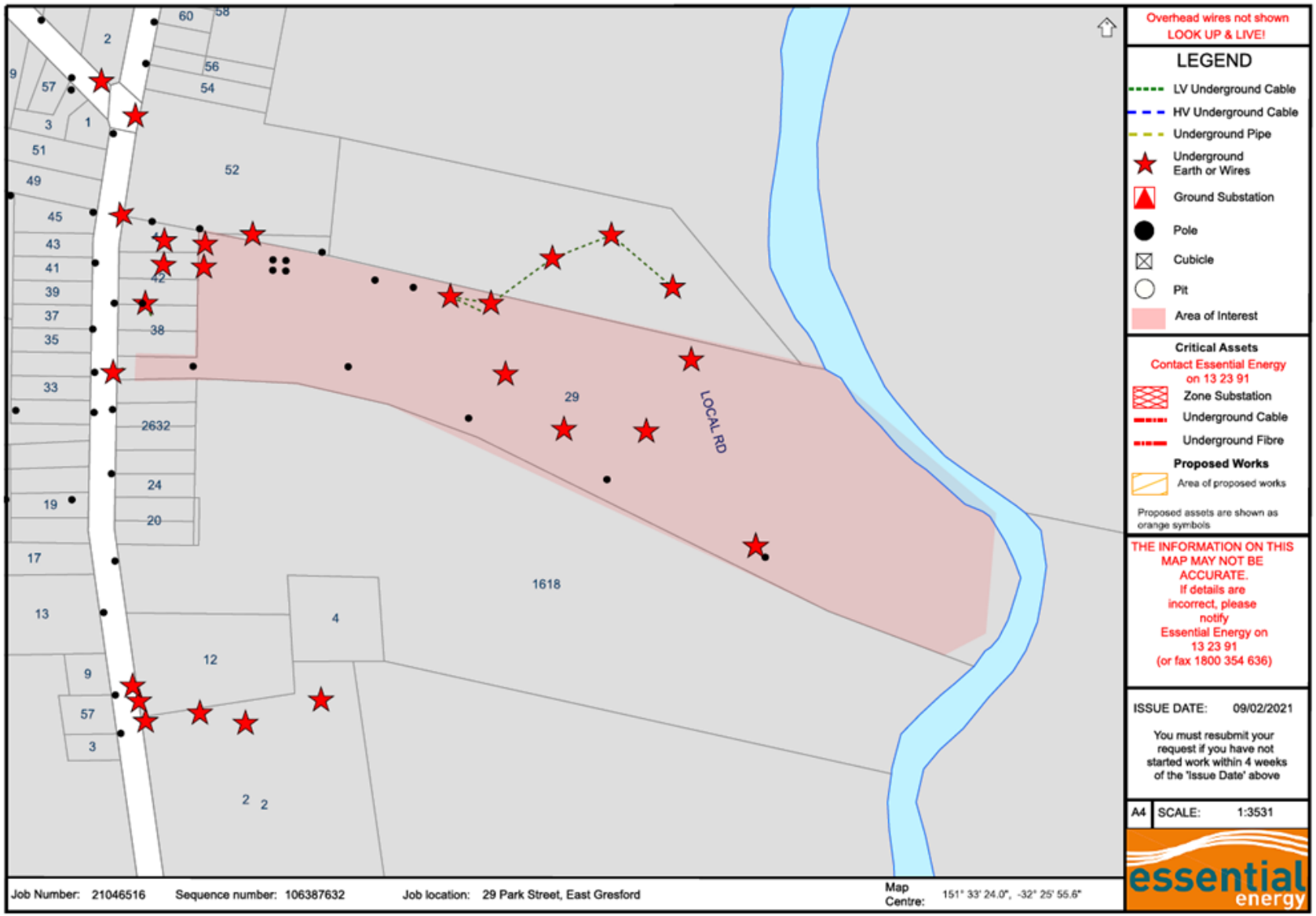
RecycledWater Assets
- Air Valve
- Reflux Valve Open
- Stop Valve Open
- RecycledWater Hydrant
- Cluster Box
- End Cap
- Flushing Tap
- Manhole
- Scour
- RecycledWater Meter
- RecycledWater Network Structure
- Other Main
- Reticulation Main
- Reticulation Main Encased/Conduit
- Trunk Main
- Trunk Main Encased/Conduit
- RecycledWater Encased Mains
- RecycledWater Prelaid Service

Sewer Assets
- Air Valve
- Stop/Butterfly/Ball Valve
- Gate Valve
- Manhole
- Cap
- Dead End
- Flushing Tank
- H&V Bend
- Junction Connection
- Outfall
- Overflow
- Sewer/Valve Pit
- Tangent Point
- Sewer Meter
- Sewer Vent
- Sewer Network Structure
- Other Main
- Gravity Main
- Pressure/Vacuum Main
- Effluent Main
- Outfall
- Overflow Main
- Rising Main
- Sewer Encased Mains

- StormWater Assets
- StormWater Network Structure
- StormWater Mains
- Mains Abandon

- Area of Interest

Land Details
- Easement Non HWC
- Fence Line
- Non-HWC Easement
- HWC Easement
- Parcel
- Road
- Water Parcels
- Hazardous Material
- Map Sheet Index


60
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2632
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1618
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9
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3
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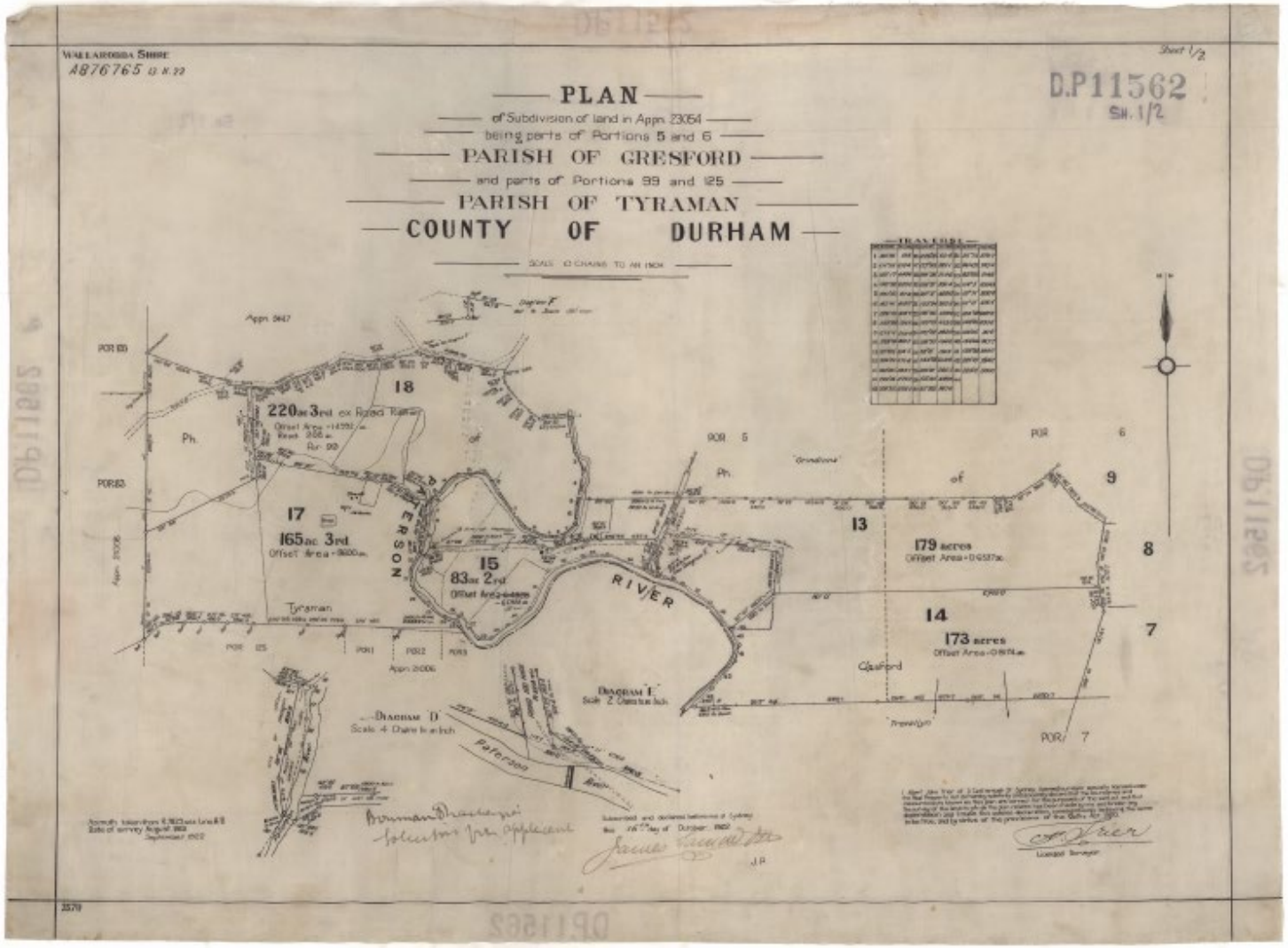
2
29
LOCAL RD
Overhead wires not shown
LOOK UP & LIVE!
LEGEND
LV Underground Cable
HV Underground Cable
Underground Pipe
Underground Earth or Wires
Ground Substation
Pole
Cubicle
Pit
Area of Interest
Critical Assets
Contact Essential Energy on 13 23 91
Zone Substation
Underground Cable
Underground Fibre
Proposed Works
Area of proposed works
Proposed assets are shown as orange symbols
THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)
ISSUE DATE: 09/02/2021
You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above
A4
SCALE: 1:3531
essential energy
Job Number: 21046516
Sequence number: 106387632
Job location: 29 Park Street, East Gresford
Map Centre: 151° 33' 24.0", -32° 25' 55.6"

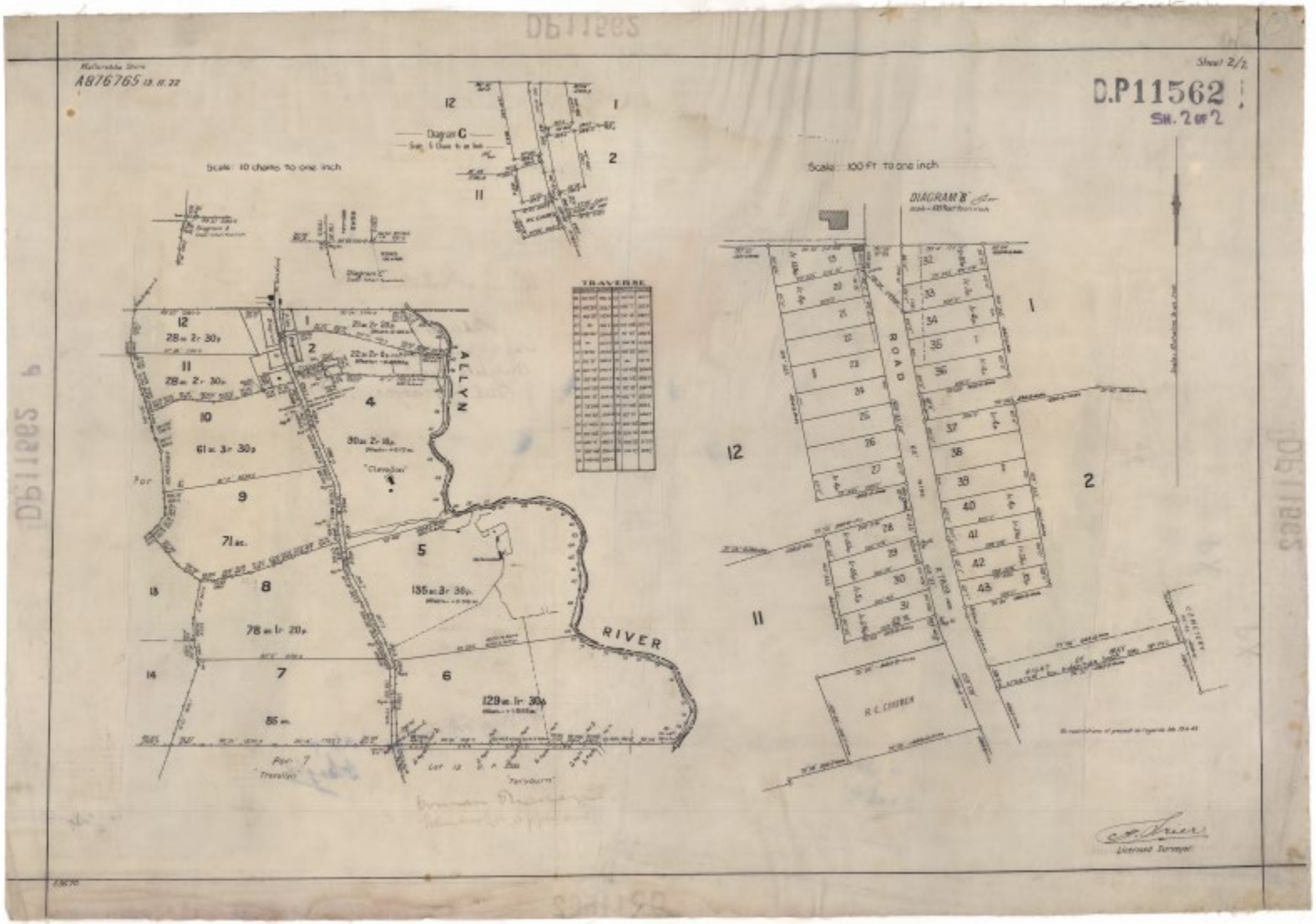
ATTACHMENT 3 – DEPOSITED PLAN



Sheet 2/2

D.P11562

Sht. 2 of 2



PLAN OF CROWN LAND SHOWING FORMER ARTIFICIAL ID

Shire/City DUNGOG

Town/Locality EAST GRESFORD

Parish GRESFORD

County DURHAM

Not to Scale

DP 96464

Registered 9.2.1999

Title System CROWN LAND

Purpose DEPARTMENTAL

Reference Map GRESFORD SH. 1

DCDB Partition

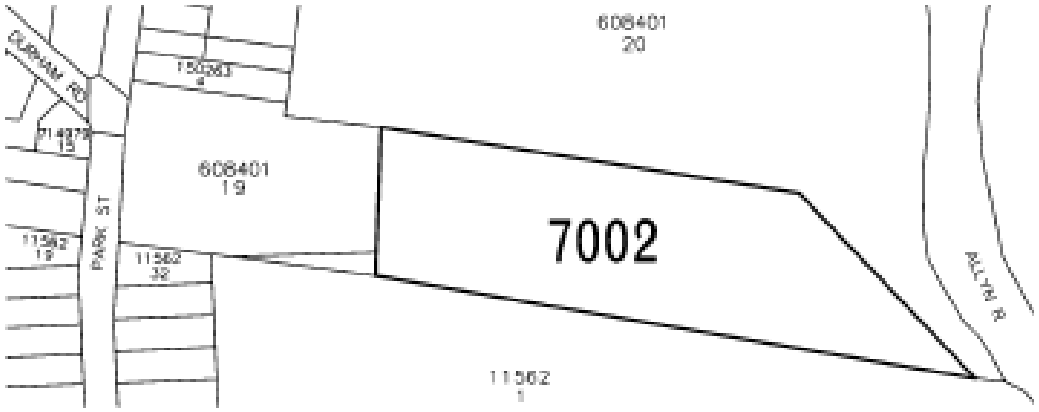
Last Plan

DIAGRAM FOR IDENTIFICATION PURPOSES ONLY - NOT TO BE USED FOR FOLIO CREATION

THIS IS NOT A SUBDIVISION OF THE CROWN ESTATE STATUS MAY NEED TO BE VERIFIED

NOT INVESTIGATED IN LAND TITLES OFFICE AS TO LOCATION OF BOUNDARIES

N



ATTACHMENT 4 – AHIMS SEARCH RESULTS

Office of Environment & Heritage
NSW GOVERNMENT

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Gresford
Client Service ID : 565716

Ashlee Rutherford
260 Maitland Road
Mayfield 2304
Attention: Ashlee Rutherford

Email: ashlee@perceptionplanning.com.au

Date: 04 February 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP11562 with a Buffer of 50 meters, conducted by Ashlee Rutherford on 04 February 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

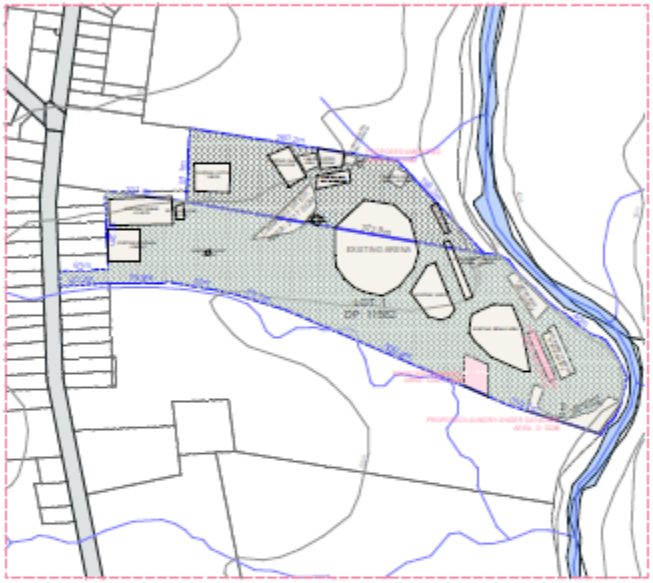
Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

ATTACHMENT 5 – ARCHITECTURAL PLANS



N

LOCATION PLAN
1:5000

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA NATIONAL DESIGN AWARDS 2019

Design Matters National

ISSUE	DETAILS

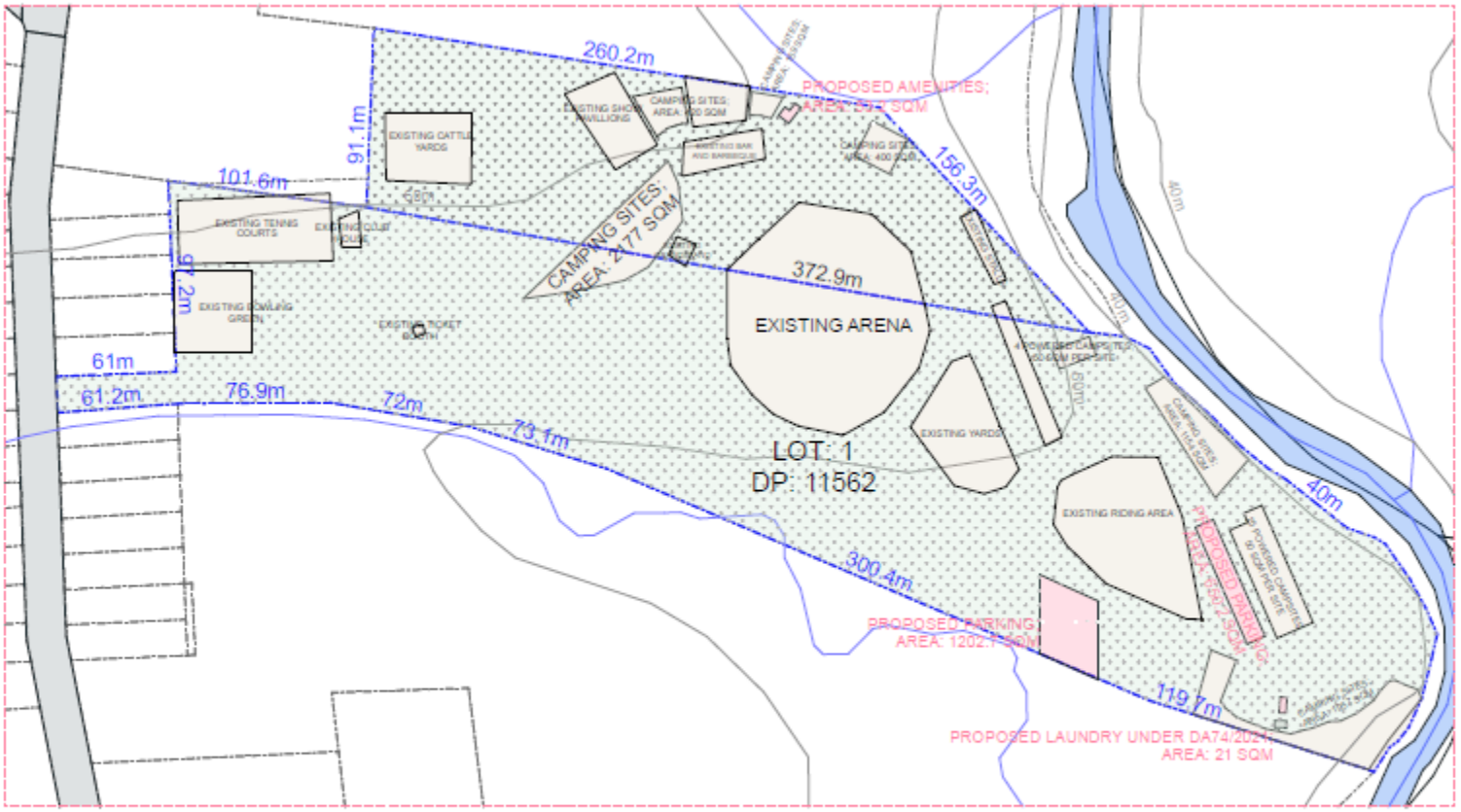
SORENSEN DESIGN & PLANNING

PROJECT: PROPOSED AMENITIES
29 PARK STREET, EAST GRESFORD 2311

CLIENT: SHOWGROUND

TITLE: COVER PAGE

FILE: PENDING DATE: 03/09/2021 SHEET: 1 OF 8



SITE PLAN

1:2000

HIA BDAA BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA NATIONAL DESIGN AWARDS 2019 WINNER Design Matters National

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Nelson Bay NSW 2315

NEWCASTLE OFFICE
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SINGLETON OFFICE
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CONTACT DETAILS
General Enquiries:
reception@sorensendesign.com.au

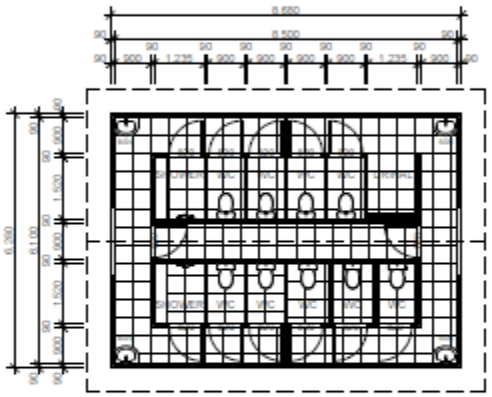
www.sorensendesign.com.au

PROJECT: PROPOSED AMENITIES
29 PARK STREET, EAST GRESFORD 2311

CLIENT: SHOWGROUND

TITLE: SITE PLAN

FILE: PENDING DATE: 03/09/2021 SHEET 2 OF 8

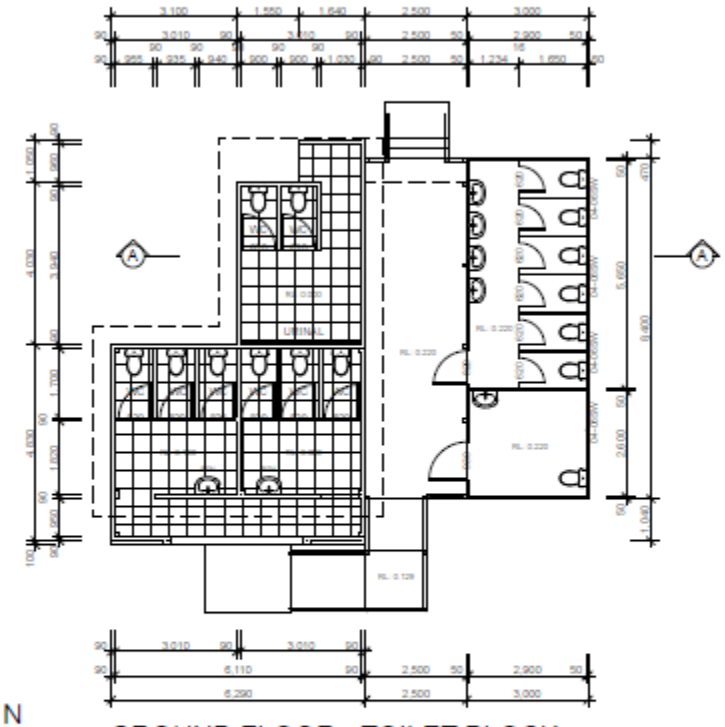


N

GROUND FLOOR - AMENITIES

1:100

EXISTING WALL
PROPOSED WALL
DEMOLISHED WALL



N

GROUND FLOOR - TOILET BLOCK

1:100

EXISTING WALL
PROPOSED WALL
DEMOLISHED WALL

HIA
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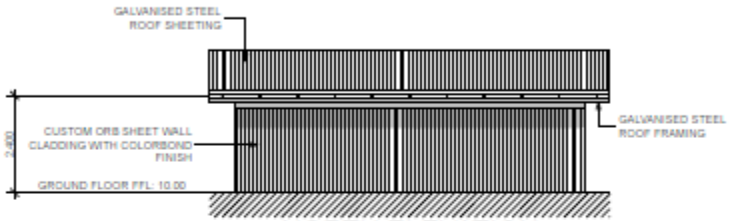
PROJECT: PROPOSED AMENITIES
29 PARK STREET, EAST GRESFORD 2311

CLIENT: SHOWGROUND

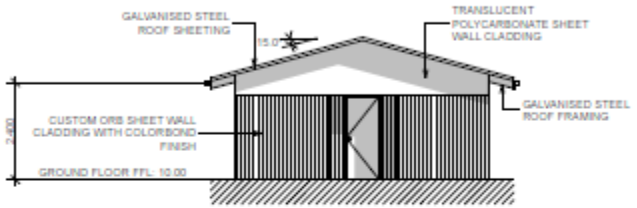
TITLE: GROUND FLOOR - AMENITIES & TOILET BLOCK

FILE: PENDING DATE: 03/09/2021 SHEET: 3 OF 8



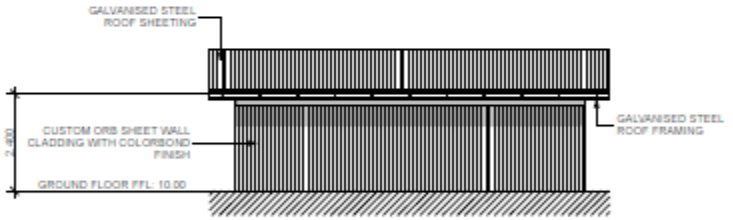
NORTH ELEVATION

1:100



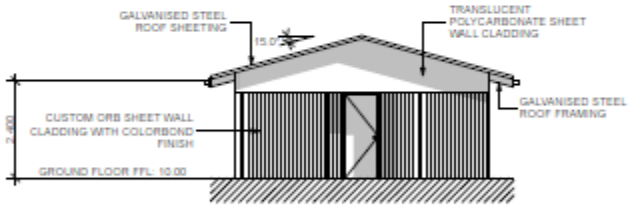
EAST ELEVATION

1:100



SOUTH ELEVATION

1:100



WEST ELEVATION

1:100

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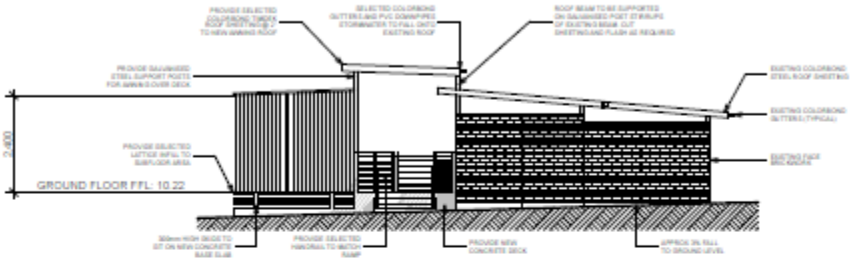
www.sorensendesign.com.au

PROJECT: **PROPOSED AMENITIES**
29 PARK STREET, EAST GRESFORD 2311

CLIENT: **SHOWGROUND**

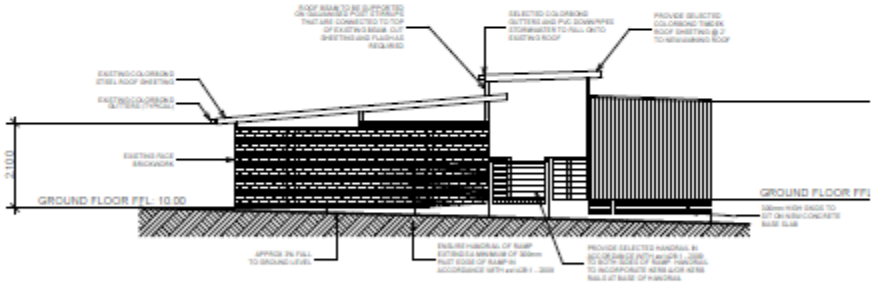
TITLE: **ELEVATIONS - AMENITIES**

FILE: **PENDING** DATE: **03/09/2021** SHEET: **4** OF **8**



NORTH ELEVATION

1:100



SOUTH ELEVATION

1:100

HIA

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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General Enquiries:
reception@sorensendesign.com.au

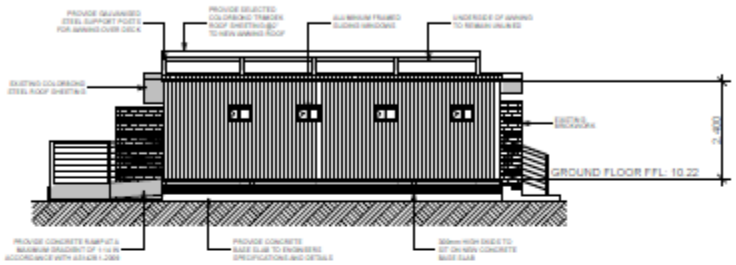
www.sorensendesign.com.au

PROJECT: PROPOSED AMENITIES
29 PARK STREET, EAST GRESFORD 2311

CLIENT: SHOWGROUND

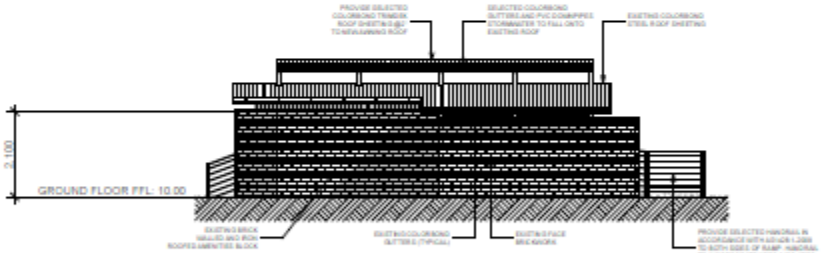
TITLE: ELEVATIONS - TOILET BLOCK NS

FILE: PENDING DATE: 03/09/2021 SHEET 5 OF 8



EAST ELEVATION

1:100



WEST ELEVATION

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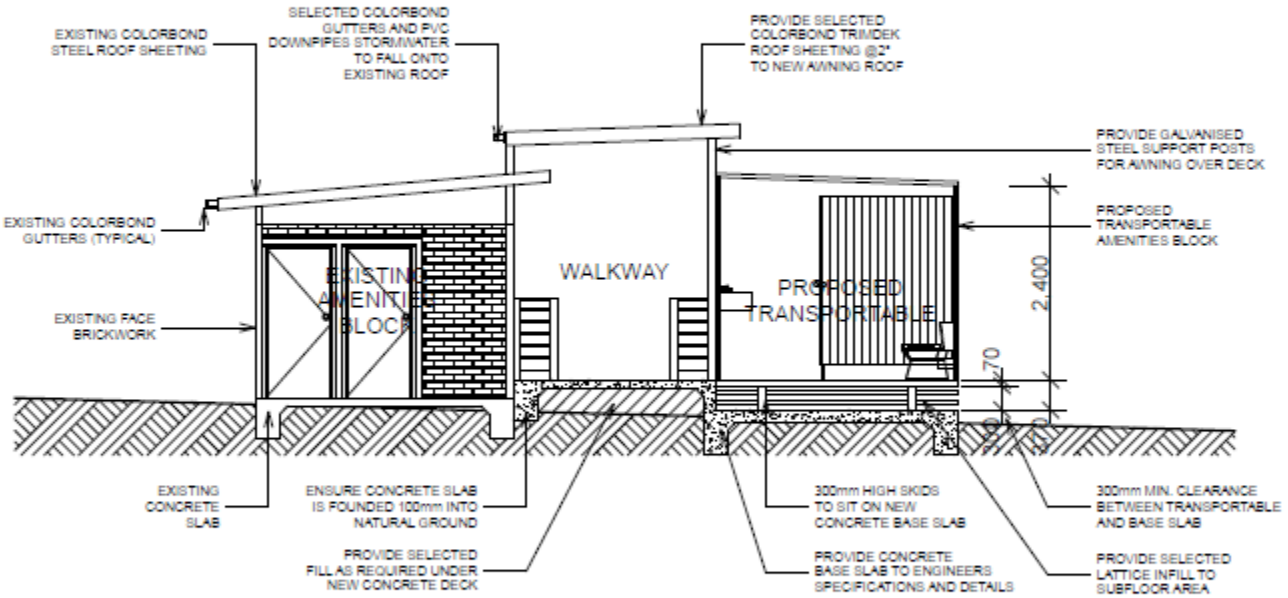
PROJECT:	PROPOSED AMENITIES 29 PARK STREET, EAST GRESFORD 2311
CLIENT:	SHOWGROUND
TITLE:	ELEVATIONS - TOILET BLOCK EW
FILE: PENDING	DATE: 03/09/2021 SHEET: 6 OF 8



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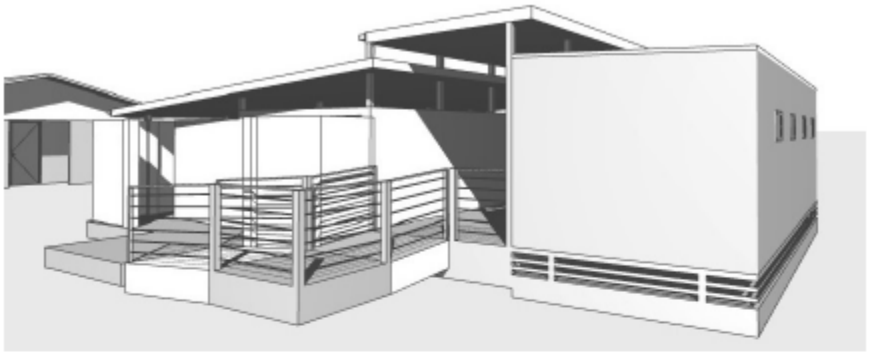
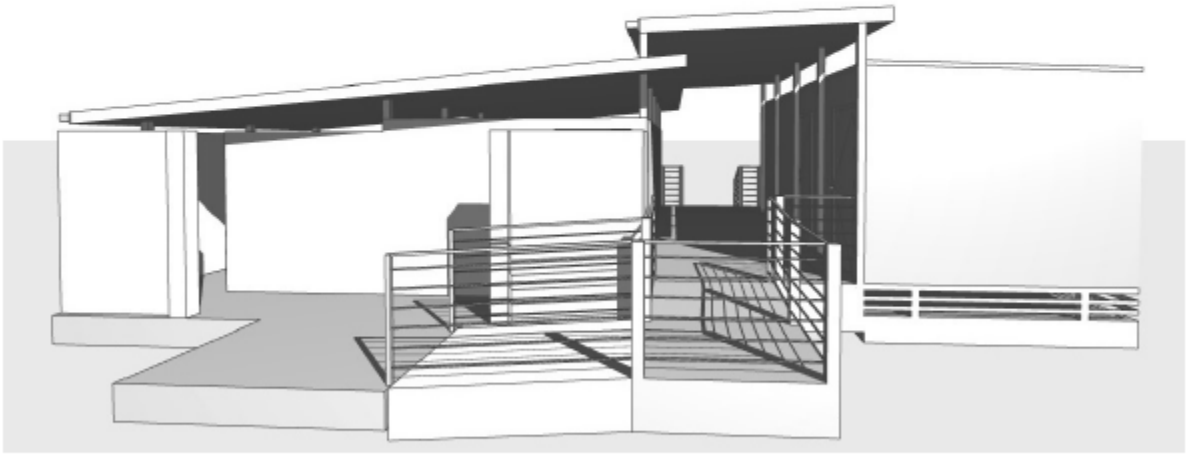
PROJECT:	PROPOSED AMENITIES 29 PARK STREET, EAST GRESFORD 2311
CLIENT:	SHOWGROUND
TITLE:	SECTION - TOILET BLOCK
FILE: PENDING	DATE: 03/09/2021 SHEET: 7 OF 8





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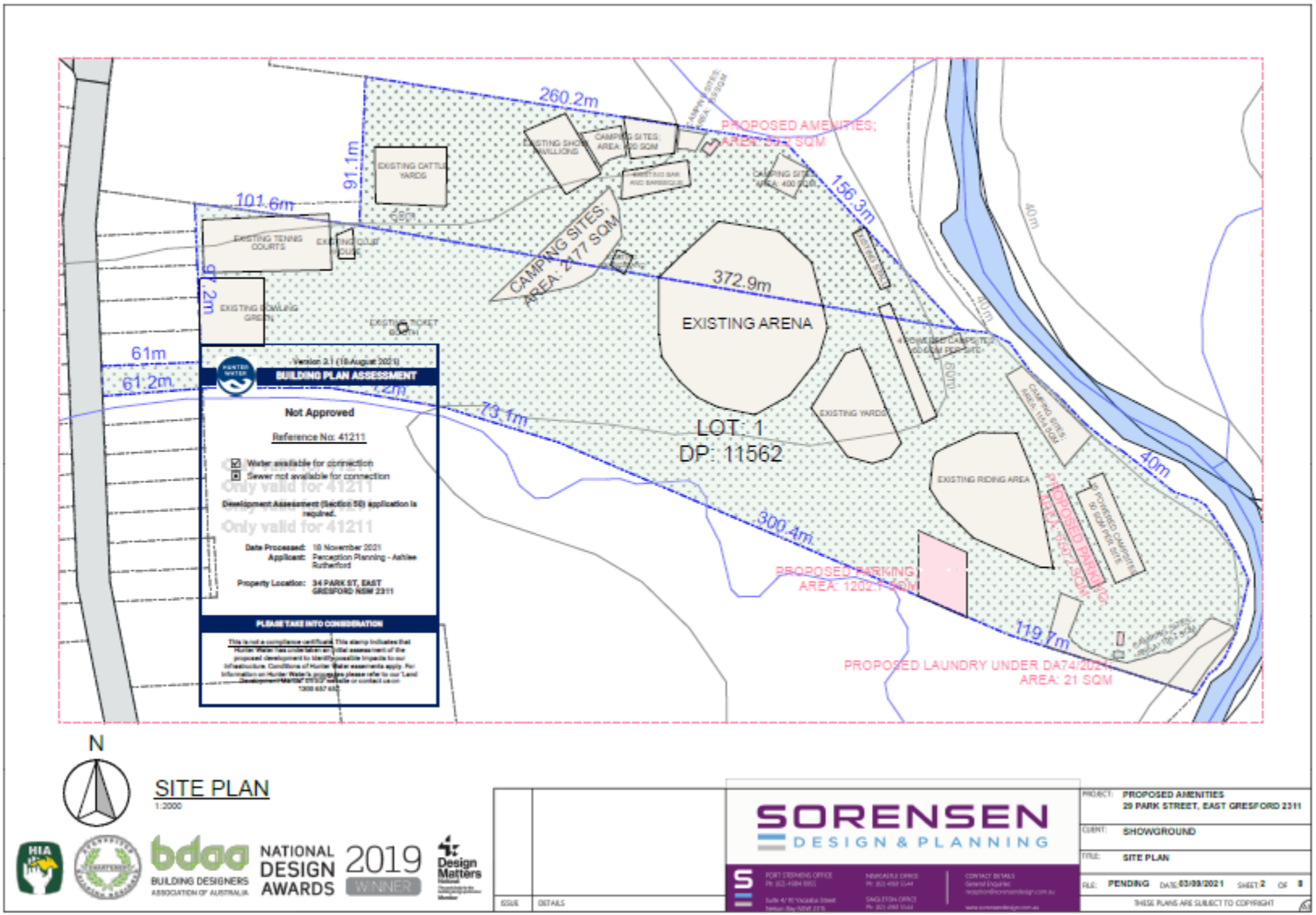
PROJECT:	PROPOSED AMENITIES 29 PARK STREET, EAST GRESFORD 2311
CLIENT:	SHOWGROUND
TITLE:	3D RENDERS
FILE: PENDING	DATE: 03/09/2021 SHEET: 8 OF 8

ATTACHMENT 6 – HUNTER WATER COORPORATION STAMPED PLANS



ATTACHMENT 7 – ON-SITE WASTEWATER MANAGEMENT REPORT

Whitehead & Associates
Environmental Consultants

Ashlee Rutherford
Perception Planning P/L
Re: Gresford Showground

Ref: 2971_WMR_Final

3rd November 2021

On-Site Wastewater Management Report (WMR) for proposed Site improvements at Gresford Showground, East Gresford, NSW

Whitehead & Associates Environmental Consultants Pty Ltd ("W&A") were engaged by Perception Planning P/L (the "Client") to prepare an On-Site Wastewater Management Report (WMR) for proposed site improvements at Gresford Showground; 29 Park Street, East Gresford, NSW (the "Site"). The Site, identified as Lot 7002 DP 96464 & Lot 1 DP11562, is approximately 11.35ha in area and is zoned RE1 (Public Recreation) under the Dungog Local Environmental Plan (LEP, 2014).

The Site is bound by private rural properties to the north & south, Allyn River to the east and Park Street to the west. Existing Site improvements include 15 buildings used for various purposes, including four (4) separate amenity blocks. Other improvements include two (2) lawn bowling greens, two (2) tennis courts, a skate park, animal yards and a rodeo arena. The remainder of the Site comprises general public space & parkland. A dam is located approximately 20m north of the Site on an adjacent property.

Comprising of two separate parcels, the Site operates as a regional agricultural show facility. The Site is owned by the NSW Government (Crown Land) and leased to the Gresford Park management trust (the "Trust") for public recreation purposes, including a range of community and (not-for-profit) commercial events. Potable water for the Site is sourced from roof (tank) water supply, with no reticulated sewer service available. The Site is identified as marginally flood-prone, per Council mapping, but no other major restrictions are noted.

W&A understand Perception Planning P/L is assisting the Trust to prepare a Development Application (DA) to Dungog Shire Council ("Council" or "DSC") for the construction of upgraded services and facilities at the Site including: an additional amenity block near the pavilion; a visitor carpark near the existing camp area; a disabled shower & toilet facility; formalisation of powered & unpowered campsites, and a caravan dump point. This report will also consider the future development of a proposed laundry, to be submitted under a separate DA. W&A understand the Trust has obtained external funding for wastewater servicing upgrades at the Site to facilitate these developments.

Council has adopted a comprehensive Development Assessment Framework (DAF) for on-site sewage management (OSSM), which sets out required standards for investigation, acceptable solutions and minimum standards for sewage management in unsewered areas of the Local Government Area (LGA). The DSC DAF (2015) identifies each allotment within the LGA as having Low, Medium, High or Very High hazard for on-site wastewater management. The Site is considered a 'High' hazard for non-domestic (commercial) OSSM.

The following table presents the minimum standards required by the DSC DAF (2015) for a 'high' hazard non-domestic development WMR.

DAF Minimum Standards for WMR (High Hazard – Non-Domestic)		
Report Element	**Minimum Standard**	**Completed**
Introduction and Background	• Name, contact details and qualifications of author(s). • Site location and owner. • Allotment size (m^2 or ha). • Proposed / existing water supply. • Description of proposed facility (including equivalent persons). • Availability of sewer.	✓ ✓ ✓ ✓ ✓ ✓
Site and Soil Assessment	• Broad overview of locality and landscape characteristics. • Details of the date and time of assessment in addition to statements confirming the methods used to complete the assessment. • Site assessment that considers all parameters listed in Table 6-1 of the DAF in accordance with AS/NZS 1547:2012. • Detailed review of available published soils information for the site. • Soil assessment that considers all parameters listed in Table 6-1 of the DAF in accordance with AS/NZS 1547:2012. • Where multiple soil facets are present the site plan should show the approximate boundary between facets. • Detailed explanation of the implications of observed site and soil features for system design and performance. • Assessment of the existing condition of the receiving environment and sensitivity to on-site system impacts.	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
System Selection	• Summarise potential treatment and land application systems considered including advantages and limitations. • Preliminary design calculations for a minimum of 2-4 options. • Brief statement justifying selection of treatment and land application system.	✓ ✓ ✓
Design	• Detailed wastewater characterisation (quality and quantity) including temporal variation using existing data for the subject site or similar facilities. • Establishment of clear, site-specific design criteria based on typical or published performance. • Process design in accordance with Tchobanoglous and Burton (2003) or Crites and Tchobanoglous (1997) detailing the rationale, assumed performance and capacity to manage design flows and loads. Process performance should be supported by published data or information that demonstrates the suitability of the process to the site and development. • Daily water, nutrient and pathogen modelling to size any land application areas (see DSC Technical Manual). • Hydraulic design of collection, treatment and land application components to demonstrate viability of the process. • Design drawings (CAD or similar) and specifications for all system components.	✓ ✓ ✓ ✓ ✓
Site Plan	• Survey plan. • Proposed allotment boundaries, dimensions and area; • Location of existing buildings, swimming pools, paths, groundwater bores, dams and waterways; • Location of exclusion zones (e.g. setback distances and unsuitable site and soil conditions); • Location of all system components and any reserve areas to	✓

	clearly demonstrate viability; • Half metre elevation contours; and • Location of existing and proposed drainage pipework (centreline).	
Cumulative Impacts (Where required)	• Summary of approach taken and confirmation of compliance with the Minimum Standards documented in 3.2.4. • Methodology documenting the basis and source of input data including reference to site specific data, published information or the Technical Manual to justify use. • Results demonstrating compliance with local water quality objectives and adequate management of health risk as defined and demonstrated in Table 2-15 and Section 10 of the Technical Manual. • Brief discussion of long-term risks to health and environment and recommended management measures to address impacts.	As per discussion with Council
Appendices	• Soil bore logs for all test pits. • Raw laboratory results for soil analysis. • All design calculations and assumptions including screenshots of cumulative impact spreadsheets/models.	✓ ✓ ✓

1 Author Statement

This WMR was prepared by Ben Colautti who is an Environmental Consultant with W&A, holding a Bachelor of Civil (Environmental) Engineering from the University of Technology Sydney. He has completed the On-site Wastewater Management professional short-course with the Centre for Environmental Training (CET) and has prepared WMR's for residential and commercial sites across the Central Coast and Hunter regions.

2 Introduction

This WMR has been undertaken in reference to the assessment and design principles of:

- *AS/NZS 1547:2012* On-site Domestic Wastewater Management (Standards Australia/Standards New Zealand, 2012);
- Environment & Health Protection Guidelines: On-site Sewage Management for Single Households (Department of Local Government (DLG), 1998);
- Dungog Shire Council (2015) On-site Sewage Development Assessment Framework (DAF). Revision 3, dated 4 June 2015; and
- Dungog Shire Council (2015) On-site Sewage Management Technical Manual. Revision 2, dated 4 June 2015.

The following table presents information on the property investigated.

Feature	Description
Site Address	29 Park Street, East Gresford, NSW
Lot / DP	Lot 7002 DP 96464 & Lot 1 DP11562
Local Government Area	Dungog Shire Council
Land Zoning	RE1 (Public Recreation)
Lot Size (ha)	11.35
Climate Zone category	Southern

Sewer Connection Available	No
Potable Water Supply	Roof (tank) water supply

3 Site Description

Gresford Showground is a public recreation and parkland facility. Its predominant purpose is to provide the local residents of East Gresford, Gresford and the region with a place for community congregation, community events and general public recreation. A skate park, tennis courts, amenity blocks and camping grounds are available daily to the public. Other facilities on-site are specifically used for events and functions, these include storage buildings, pavilions, canteen and BBQ areas, club house, rodeo arena, grandstands and animal yards.

The community events are organised and/or permitted by the Gresford Park Trust, who source funding through donations, fundraising events and grants to organise events and functions for, and on behalf of, the community. Regular events held at the Site include motocross, equestrian, rodeos, mud runs and the local agricultural show.

There are four (4) amenity blocks on Site that service wastewater needs for visitors. Identified as Blocks 1, 2, 3 & 4, they are located as shown on Figure 1, Appendix A. Block 1 consists a single toilet within the tennis court clubhouse; Block 2 (known as the 'pavilion toilets') generally service event attendees, with some non-event visitor usage from campers and skaters; Block 3 (known as the 'pony club toilets') service event attendees, and Block 4 (known as the 'camping toilets') primarily service campground visitors (both event and non-event).

4 Site Usage

This section will outline W&A's determination of predicted visitor rates at the Site.

Aside from camping during the Easter and Christmas holiday breaks and periodic events throughout the year, the Site is assumed to have predominantly low usage.

Operational matters and assumptions were taken into consideration in the development of 'design' wastewater generation estimates for the Site. Where noted, the information is based on discussions with Site management (Gresford Park Trust). With uncertainties and limitations in data W&A have made some assumptions regarding visitor rates at the Site, W&A accepts that there will be some discrepancies in estimations and refers back to the client for confirmation.

4.1 Non-Event Attendance

Outside of formal 'event' periods, Site usage is typically comprised of the following use categories:

- Campers (short-term holiday or recreational);
- Skate Park users;
- Tennis court users and;
- Comfort stop (toilet break) or recreational users (dog walkers etc).

The Site experiences seasonal variation in attendance. A 'High' season period occurs from mid-December to mid-February (and the Easter break); 'Shoulder' season ranges from mid-February to March & October to mid- December, and the 'Low' season occurs outside of these times (April to September).

The following considerations and assumptions are made in regards to non-event usage, based on W&A analysis and anecdotal experience:

- Camp ground usage during non-event periods is seasonally dependant, with intra-week variability also noted:
  - For an average weekend day (Sat-Sun) during the Shoulder season ~**30%** of available camping sites are occupied, with the equivalent of **≈150** campers on-site. An average weekday (Mon-Fri) will see an occupancy of ~**12%**, with the equivalent of **≈60** campers on-site.
  - For an average weekend day during the Low season ~**25%** of the camping grounds are occupied, with the equivalent of **≈130** campers on-site. An average weekday will see an occupancy of ~**2%**, with the equivalent of **≈10** campers on-site.
  - For an average weekend day during the High season attendance increase to ~**96%** of the available camping sites, the equivalent of **≈500** people on-site. An average weekday will see an occupancy of ~**67%**, with the equivalent of **≈350** campers on-site.

Gresford Park Trust indicated that the Site experiences 300-500 visitors per day during Christmas break. With a typical breakdown of ~33% (167) of visitors utilising powered Sites and ~67% (333) of visitors utilising unpowered campsites.

- Skate Park users will be serviced by 'Block 2' facilities. Attendance is estimated as **10** (ten) visits per weekday and **30** for an average (shoulder) weekend day. With an assumed peak visitor rate of ≈50 people.
- There may be up to **15** weekday and **30** weekend day comfort stop and recreational users at the Site during an average (shoulder) period, these people will be entering the Site specifically to use the toilets or entering recreationally (e.g. walk the dog or exercising etc) and may make use of the facilities.

Seasonality is also expected to influence the number of Skate Park, comfort stop and recreational users. To allow for this variability, the visitation rates during a shoulder season (defined above) are increased by 30% to estimate high season attendance and reduced by 30% to estimate low season attendance.

- People using the tennis court will be serviced by 'Block 1' facilities. Tennis court usage is generally low with an approximate attendance of 8 (eight) weekday and 20 (twenty) weekend day visits. With an assumed peak visitor rate of **≈100** people for a busy day (i.e. tournament).

4.2 Event Attendance

Two (2) large annual events; the 'agricultural show' and the 'rodeo', as well as an array of smaller events and functions also occur at the Site. The Trust has indicated that both the Agricultural show and Rodeo attract approximately 5,000 people per event. Other small events, such as the Pony Club, Mud Run, Motocross and other (non-specific) community functions generally attract between 1,000-3,000 visitors per event. The majority of these events are 'annual' or part of a long-term calendar program for the Site.

The following considerations and assumptions are made in regards to events:

- If the event duration is ≥2 days, it is assumed that **80%** of event attendees will utilise available camping for at least 1 of the nights.

- If the event duration is <2 days, it is assumed that **20%** of event attendees will camp on Site.
- For event attendees who are day visitors (i.e. non-camping), it is assumed that ~**75%** will use the upgraded facilities at Block 2, with the remainder (**25%**) using Block 3 amenities.
- All events at the Site occur on a weekend, with 3-day events also including a Friday or Monday.
- Staffing is assumed for each event based on W&A estimations.

The Gresford Showground event schedule for 2021 (see Appendix E), along with attendance information provided by the Trust and the assumptions outlined, is used to inform Site usage during 'event' periods. These estimates are summarised in the following table.

Event	How long (days)	Patronage	Staff	Event Campers (Total)	Event patrons (Day Visit)
Pony Club (PRPC) (1 d)	1	300	5	60	240
Pony Club (PRPC) (2 d)	2	300	6	240	60
Dressage	1	500	6	100	400
RFS	1	500	6	100	400
Dungog Motorcycle	2	500	10	400	100
American Moto	2	1000	18	520	480
Mud Run	2	1000	18	520	480
Show (day 1)	2	2000	40	200	1800
Show (day 2)	2	5000	40	500	4500
Penning	2	500	8	400	100
Rodeo (day 1)	3	3000	40	200	2800
Rodeo (day 2)	3	5000	40	520	4480
Rodeo (day 3)	3	2000	40	50	1950
E' Zone	2	1000	10	520	480
PRPC Zone	2	300	6	240	60

4.3 Camping

Based on the (draft) Site Plan provided, camping facilities are to be predominantly located in the south-east portion of the Site. Proposed camping grounds and parking areas will occupy a large portion of undeveloped area in this location and will be responsible for a sufficient portion of sewage generated at the Site.

The following considerations and assumptions are made in regards to camping at the Site:

- Currently, ≈4,200m^2 of powered and ≈9,600m^2 of unpowered campsite area is available.
- The proposal will expand camping areas to 4,600m^2 (additional 400m^2) of powered camping area and ≈14,000m^2 (additional 4,400m^2) of unpowered camping area. Total area of available camping = **18,600m²** (Perception Planning 'Draft Site Plan, Job No: J000480').
- A standard campsite is ~50sqm; however, due to informally organised camp grounds, pathways between Sites, surface rock, topography, vehicles/horse floats within the campsite and parked cars using campgrounds as parking. The footprint for each

campsite is taken as 90m². Therefore, the maximum number of available camping sites within the camping ground is estimated as 208 (18,600/90).

- The average number of visitors per campsite is assumed as 2.5, based on the fact that most campers will be couples with horse floats; therefore, the camp ground is assumed to have a maximum capacity of **520** (208 x 2.5) visitors. The assumed breakdown being **394** (unpowered) and **126** (powered).
- Caravans, RV users, people with fold out tents and horse floats are all included in the definition of "campers".
- Once proposed campgrounds have been fully developed, and assuming all (existing & proposed) campgrounds are occupied, the anticipated utilisation of facilities is as follows:
  - Block 2 will service ~32% of campers;
  - Block 3 will service ~8% of campers; and
  - Block 4 will service ~60% of campers.

5 Wastewater Generation

This section outlines the methods used to predict wastewater generation from existing and proposed uses at the Site, as well as how this wastewater is distributed between amenities.

5.1 Wastewater Quantity

5.1.1 Flow Allowances

Flow allowances for each development component were obtained from National and NSW guidelines, as referenced in the following table. Where necessary, estimates are provided based on W&A experience or anecdotal advice.

Development	Flow Allowance (L/Person/day)	Source
Powered Campsites	**75**	*Septic Guidelines 2001 "laundry, showers and WC" (reduced from 86 to 75L from Water meter data, section 5.1.4)*
Unpowered Campsites	**27**	*Septic Guidelines 2001 "WC"*
Event Attendees, Sport Facility & Recreational users	**10**	*Table H4, AS/NZ 1547:2012 "meetings, roof tank supply"*
Non-resident Staff	**30**	*Table H4, AS/NZ 1547:2012 "non-resident staff"*

Wastewater generation is calculated by multiplying the visitor rate (refer Section 4) for both non-event and event periods and the associated flow allowance for each contribution (refer table above)).

5.1.2 Non-Event Generation

From these values, seasonal non-event wastewater generation tables were developed for the Site. The tables approximate inter-week and seasonal variability at each wastewater generation point. For ease of analysis, generation for Block 1 is reported separately, while generation from Blocks 2, 3 & 4 is combined. Copies of each generation table produced are provided in Appendix B and summarised below.

		Low		Shoulder		High	
		WW Gen (L/day)	working	WW Gen (L/day)	working	WW Gen (L/day)	working
Skate Park (L/day)	Weekday	70	(10 x 7)	100	(10 x 10)	130	(10 x 13)
	Weekend Day	210	(10 x 21)	300	(10 x 30)	390	(10 x 39)
Recreational Users/Comfort Stop (L/day)	Weekday	105	(10 x 10.5)	150	(10 x 15)	195	(10 x 19.5)
	Weekend Day	210	(10 x 21)	300	(10 x 30)	390	(10 x 39)
Campers (L/day)	Weekday	3,900	(75 x 52)	4,680	(75 x 62.4)	15,402	(75 x 124)
	Weekend Day	9,462	(75 x 124)	10,164	(75 x 124)	19,452	(75 x 124)

5.1.3 Event Generation

Wastewater generation during individual 'events' is a function of both visitor and camping contributions, along with associated staff and (minor) non-event visitor contributions. For each event, as outlined in the Gresford Showground schedule, W&A made the following wastewater generation estimates:

Event	WW Gen (Camping - Powered)	WW Gen (Camping - Unpowered)	WW Gen (Camping - Total)	WW Gen (Day visitors)	WW Gen (Staff)	**WW Gen (TOTAL)**
Pony Club (PRPC) (1 d)	4,500	0	4,500	2,400	150	7,050
Pony Club (PRPC) (2 d)	9,300	3,132	12,432	600	180	13,220
Dressage	7,500	0	7,500	4,000	180	11,680
RFS	7,500	0	7,500	4,000	180	11,680
Dungog Motorcycle	9,300	7,452	16,752	1,000	300	18,060
American Moto	9,300	10,692	19,992	4,800	540	25,340
Mud Run	9,300	10,692	19,992	4,800	540	25,340
Show (day 1)	9,300	2,052	11,352	18,000	1,200	30,560
Show (day 2)	9,300	10,692	19,992	44,800	1,200	66,000
Penning	9,300	7,452	16,752	1,000	240	18,000
Rodeo (day 1)	9,300	2,052	11,352	28,000	1,200	40,560
Rodeo (day 2)	9,300	10,692	19,992	44,800	1,200	66,000
Rodeo (day 3)	3,750	0	3,750	19,500	1,200	24,450
E' Zone	9,300	10,692	19,992	4,800	300	25,100
PRPC Zone	9,300	3,132	12,432	600	180	13,220

5.1.4 Data Calibration

Available water usage data was used to 'quality check' W&A estimates for wastewater generation during both event and non-event periods. Water meter data was provided by the Trust based on two (2) registered meters; 'Arena' and 'Camp'.

A total of 5 useable months of data were obtained (mid-March 2021 to mid-August 2021) and were used to compare with W&A estimates for the corresponding periods (refer adjacent table).

Using this information, W&A found that generation was typically over-estimated during mid-level 'events' (i.e. Mud Run and Motocross) and flow allowances for camping contributions were adjusted accordingly.

Overall, good agreement was achieved between the observed water usage data and the W&A estimates during event periods.

Dates of readings (year-2021)	Time between readings (days)	Total Flow for time period (kL)	Average daily flow (L) within that period
18-Mar	7	116	16,580
29-Mar	11	128	11,640
8-Apr	10	121	12,100
19-Apr	11	191	17,370
27-Apr	8	85	10,630
10-May	13	58	4,470
13-May	3	11	3,670
16-May	3	30	10,000
25-May	9	73	8,120
28-May	3	30	10,000
31-May	3	54	18,000
8-Jun	8	77	9,630
21-Jun	13	117	9,000
30-Jun	9	40	4,450
13-Jul	13	66	5,080
19-Jul	6	17	2,840
26-Jul	7	60	8,580
3-Aug	8	44	5,500
10-Aug	7	47	6,720

5.2 Generation Distribution

Due to the dispersed nature of wastewater generation at the Site, particularly during 'event' periods when visitors are moving about, it was also necessary to analyse how wastewater generation would be distributed.

As previously described, with the exception of tennis court usage, all wastewater generated during both event and non-event periods would be portioned between Block 2, 3 and 4. To approximate the distribution of the total daily flow between each generation point, W&A used the following assumptions:

- Skate Park, recreational and comfort stop users will exclusively use the Block 2 amenities.
- Event attendees who are day visitors (non-campers), as well as event affiliated staff, are expected to predominantly (~75%) use the upgraded Block 2 amenities, with some overflow (25%) also using Block 3.
- Campers are expected to exclusively use the Block 4 amenities; however, Block's 2 and 3 are also expected to accommodate some overflow during periods of high campground utilisation.

  The following table summarises the assumed proportion of camper usage between each amenity block depending on the range of total campers on Site.

	Block		
Campers on-site	**2**	**3**	**4**
0 - 125	0%	6%	94%
125 - 318	0%	3%	98%
318 - 353	0%	13%	87%
353 - 520	32%	8%	60%

5.3 Summary

As shown, wastewater generation at the Site is highly variable, with long periods of low attendance punctuated by regular periods of short-duration moderate generation and occasional large events.

Based on estimates, annualised 'average' wastewater generation at the Site is expected to be ~**8,660L/day**, ranging from ~950L/day during the low-season and increasing to a maximum (peak) of up to ~**66,600L/day** during the Agricultural Show or Rodeo events. A graph summarising expected annual wastewater generation is provided in Appendix B.

The distribution of 'average' and 'peak' daily wastewater generation at each amenities Block (not including tennis court users), is summarised below.

	Block 2	**Block 3**	**Block 4**	**Total**
Average (L)	840	620	6,950	**8,656**
Peak (L)	35,100	12,700	18,800	**66,592**

5.4 Wastewater Quality

The contaminants in wastewater have the potential to create undesirable public health concerns and pollute waterways unless managed appropriately. As a result, domestic wastewater must be treated to remove the majority of pollutants and enable attenuation of the remaining pollutants through soil processes and plant uptake.

The majority of 'sanitary' wastewater generated at the Site is expected to be of 'typical' domestic nature, with combined wastewater streams; blackwater (toilet) and greywater (kitchen, laundry and shower) wastes. As such, untreated sanitary wastewater is expected to have characteristics similar to that described in the table below; which incorporates information taken from the NSW DLG (1998).

Parameter	Loading	Greywater %	Blackwater %
Daily Flow	8,660 L	65	35
Biochemical Oxygen Demand	200-300mg/L	35	65
Suspended Solids	200-300mg/L	40	60
Total Nitrogen	20-100mg/L	20-40	60-80
Total Phosphorus	10-25mg/L	50-70	30-50
Faecal Coliforms	10^3 – 10^{10}cfu/100ml	Medium – High	High

5.5 Food Trucks

During events (especially the Rodeo and Agricultural show), a clubhouse with BBQ area and canteen will serve event attendees with cooked and uncooked food. Additionally, contract food service providers (food trucks) will be available on Site serving cooked food to attendees. Waste oil, grease and fat from Food Trucks must NOT be introduced to the OSSM system/s at the Site.

Management of these wastes remains the responsibility of the contractor provider and must be acknowledged in the license/approval conditions to attend each event. It is our understanding that most operators already adopt this approach and collect their waste oil and grease for off-site disposal.

5.6 Dump Point

A caravan dump point is proposed near the Block 4 Septic tanks. This will store caravan and RV collected wastewater to be removed via vacuum truck at a later date.

W&A have estimated the required size of the Dump Point tank based on the expected pump-out frequency; the average caravan/RV sullage tank size and the 'typical' frequency with which users will utilise the service.

The 'Dump point' pump out frequency is assumed to occur once (1x) per year, in coordination with other tanks prior to the event season. The average sullage tank size in the range of caravan/RV vehicles examined is ~80L. The frequency of (Caravan/RV) users making use of the Dump point facility has been estimated as ~240 separate uses per year.

This totals to a proposed dump volume of 19,200L (240 x 80L) per year. Based on this analysis W&A propose 20,000L of tank storage in the form of two 10,000L tanks to service as a Dump Point station.

6 Site and Soil Assessment

A Site investigation was undertaken by Connor Morton & Ben Colautti of W&A on the 28th July 2021. The following tables present the results of our site and soil investigation for the property.

A description of the Site physical constraints and the degree of limitation they pose to on-site sewage management (OSSM) is provided in the Table below. Reference is made to the rating scale in NSW DLG (1998) and, where appropriate, the DSC DAF (2015).

SITE ASSESSMENT			
Parameter	**Data / Observation**	**Reference**	**Classification / Outcome**
Climate	The Site experiences a temperate climate typical of south-eastern Australia. Median annual rainfall for the Site is 882.2mm. Monthly rainfall ranges from 31mm in August to 86.8mm in March. Mean annual pan evaporation for the Site is 1568.5mm. Potential evaporation exceeds rainfall for all months of a typical year at the Site.	BOM Stations: 61024 (Rainfall) and 061288 (Evaporation)	Minor limitation
Hydraulic balance (daily) attached:	Yes	per DSC DAF (2015) procedure	
Nutrient balance (annual) attached:	Yes		
Land application area (LAA) sizing attached:	Yes		
Wet weather storage requirement:	No	N/A	
Flooding		W&A analysis from previous job along the Allyn River (Ref: Job No. 1471)	Minor limitation
Land application area above 1:20 ARI flood level:	Yes		
Land application area above 1:100 ARI flood level:	Likely		
Electrical components above 1:100 ARI flood level:	Yes		
Exposure	The Site is predominantly cleared of vegetation. Good exposure to sun and prevailing wind.	Minor limitation	
Slope	Ranges from 1% to 8% within the 'available' effluent management areas (EMA).	Minor to Moderate limitation	
Landform	Undulating hills generally <10% slope,	Minor limitation	
Run-on and Seepage	No run-on or up-slope seepage observed in the vicinity of the available EMA at the time of Site inspection (Figure 1, Appendix A).	Minor limitation	
Erosion Potential	None observed in available EMA.	Moderate limitation	
Site Drainage	Moderately well drained. No signs of surface saturation; however, some mottling was	Minor to Moderate limitation	

SITE ASSESSMENT			
Parameter	**Data / Observation**	**Reference**	**Classification / Outcome**
	observed in subsoil horizons within the proposed LAA, indicating imperfect drainage at times during the climate cycle.		
Fill	None observed or apparent.	Minor limitation	
Groundwater	No shallow groundwater encountered during soil survey to ~850mm in proposed LAA (BH1). NSW Office of Water groundwater bore registry indicates no bores are located within 250m of the Site. The NSW DLG (1998) recommended 250m buffer distance to domestic groundwater bores can therefore be achieved within the available EMA.	Minor limitation	

Buffers Applicable		
Permanent rivers and creeks (100m):	Yes	Achievable (shown on Site Plan).
Intermittent creeks and drainages (40m):	Yes	Achievable (shown on Site Plan).
Domestic groundwater wells and bores (250m):	N/A	
Other sensitive receptors:	N/A	
Lot boundaries (3m if EMA downslope-6m if EMA upslope):	Yes	Achievable (shown on Site Plan).
Buildings, driveways and swimming pools (3m if EMA downslope-6m if EMA upslope):	Yes	Achievable (shown on Site Plan).
Limiting horizon (groundwater, bedrock etc.) (0.6m):	Yes	Achievable with preferred LAA type (SSI).

Surface Rock / Outcrop	Surface rock (300-350mm deep) and rock outcrops were observed throughout the western portion of the Site. These areas have been excluded from 'useable land' calculations.	Major limitation
Available EMA	A total of 2,170m^2 of usable EMA has been identified. However, to conform with the Masterplan objectives for the proposal, the Client has expressed preference for the proposed LAA to be isolated to a ~1,600m^2 area in the SE of the Site, adjacent to the Camping amenities.	Moderate to Major limitation

Concluding Remarks

Surface rock is a major constraint to OSSM at the Site. Identified limitations can be successfully avoided and/or mitigated by OSSM design.

SITE ASSESSMENT			
Parameter	**Data / Observation**	**Reference**	**Classification / Outcome**
Available EMA is identified in the eastern portion of the Site, subject to on-site flow balancing and OSSM design.			

SOIL ASSESSMENT (physical)			
Parameter	**Data / Observation**	**Reference**	**Classification / Outcome**
Soil Depth	>300mm. Refusal in all test pits at 850 (BH1), 300 (BH2) & 350mm (BH3) due to river cobble, stiff bedrock & weathered bedrock respectively.	Moderate limitation	
Soil Profile	**BH1** A_1: 0 - 350mm, weakly structured light clay (Cat 5) B_1: 350 - 850mm, massive medium clay (Cat 6) **BH2** A: 0 - 300mm, massive sandy clay (Cat 5) **BH3** A: 0 - 350mm, weakly structured sandy clay loam (Cat 4) *Soil borelogs presented in Appendix C*	Major limitation Mitigation available through design.	
Depth to Water Table	No shallow (episodic) water table encountered in any BH.	Minor limitation	
Coarse Fragments (%)	0-50% (<200mm), cobblestone in EMA.	Moderate limitation	
Soil Permeability	< 0.06m/day (inferred)	Based on massive medium clay (Cat 6) subsoil	Major limitation
Modified Emerson Aggregate Class (EAT)	Topsoil: 3(2)-2(1) (slight to moderate dispersion) Subsoil: 5 (stable)	Moderate limitation Mitigation recommended (see Section 10.1).	
Soil Landscape	The Site is located within the **Gresford** (gd) and **Paterson River** (pa) Soil Landscapes. The 'gd' soil landscape is located on rolling low hills to hills on Carboniferous sediments. Slopes are typically <25%, with relief 40-160m and elevation 80-200m. Groundcover consists of cleared tall open forest and rock outcrops occur occasionally on crests. Soils are typically moderately deep and moderately well-drained Natric Brown Kurosols, with shallow, moderately	Dungog 1:100,000 Sheet (Henderson, 2000)	

	well-drained bleached Leptic Tenosols on upper slopes and crests. The 'pa' soil landscape located on the narrow to moderately broad floodplains on Quaternary alluvium in the Gresford Hills and Williams Range regions along the Paterson and Allyn Rivers. Deep, rapidly drained Stratic Rudosols (sandy Alluvial Soils) on levees and recent alluvial deposits along channel banks. Deep, well-drained Brown Dermosols (Brown Earths) on alluvial plains.	

Concluding Remarks

Site soils are predominantly characterised by the 'Gresford' soil landscape; sandy clay loam to sandy clay topsoils (Cat 4/5) to ~100-350mm depth, underlain by weather (sandstone) parent material. The soil Landscape transitions to 'Paterson River' along the Allyn River; these soils involve weakly structured light clay topsoil underlain by massive medium clay subsoil (~300-700mm depth). Soil structure is typically weak to massive. The Available EMA sits on the boundary between the two soil landscapes but is reflective of 'Paterson River'.

Based on identified soil characteristics a (maximum) design irrigation rate (DIR) of 2mm/day is recommended for irrigation systems and a (maximum) design loading rate (BLR) of 5mm/day is recommended for subsoil absorption systems, with reference to Tables M1 and L1 AS/NZS 1547:2012 for the limiting Cat 6 subsoil.

Soil conditions are generally moderate in the available EMA; instability, coarse fragments (cobblestone) and permeability limitations present.

Potential negative consequences associated with coarse fragments, soil dispersion (EAT) and instability can be mitigated through appropriate LAA placement and soil improvement measures (see Section 10.1). Identified soil permeability limitations will be mitigated through conservative LAA sizing and design.

SOIL ASSESSMENT (chemical)				
Parameter	**Data / Observation**		**Reference**	**Classification / Outcome**
pH	Topsoil: 6.73-6.85 Subsoil: 6.78	Neutral	Minor limitation	
EC (EC_e)	Topsoil: 0.6-0.784 Subsoil: 0.329	Non-saline	Minor limitation	
ESP (%)	1.7	Non-sodic	Based on soil laboratory results for samples taken from a nearby site on the same soil landscape (1471_East Gresford_2015)	Minor limitation
CEC (me/100g)	9.1	Very Low Fertility		Major limitation
P-sorption (mg/kg)	111	Low		Major limitation

Concluding Remarks

Very Low fertility and low p-sorption capacity of the soils pose major limitations to OSSM within the available EMA. Practices to mitigate these limitations are outlined in section 10.1.

7 Existing OSSM Arrangements

This section describes the existing OSSM systems as well as performance of treatment units and LAA's on-site.

At present, three (3) separate (stand-alone) OSSM systems are operating at the Site, each receiving wastewater generated from one or more amenity blocks. OSSM 1 services the tennis court toilet (Block 1), OSSM 2 services the Pavilion amenities (Block 2) and OSSM 3 services both the Pony Club and Camping amenities (Blocks 3 and 4, respectively). The arrangement of current OSSM systems at the Site is provided as Figure 2, Appendix A.

7.1 OSSM 1

Wastewater from Block 1 is treated in a ≈2,000L concrete septic tank (Ø1.4m), followed by a ≈1,500L collection well, before being displaced to a ≈150m^2 (10m x 15m) absorption bed located south-east of the tennis courts. W&A estimate the peak hydraulic load to this OSSM system is ~1,000L/day (≈100 visitors during tournament).

The existing septic tank is considered to be appropriately sized for the maximum hydraulic load expected, providing in excess of 2 days hydraulic residence time (HRT) for effective primary treatment. Both the septic tank and collection well were in good condition and the subsoil LAA displayed no signs of seepage or pooling.

W&A consider OSSM 1 suitable for continued use at the Site, providing that the treatment tanks and LAA are suitably defended from damage or disturbance. W&A recommend the existing LAA is fenced off from access to prevent accidental damage from parking.

7.2 OSSM 2

Facilities in the 'Pavilion' amenities block (Block 2) include 8 toilets, ~3m of urinal and 3 handbasins. Available facilities will be expanded as part of the current project to include an additional 7 toilets (including a disabled toilet) and 5 handbasins. Wastewater generated from Block 2 is currently treated in a ≈2,100L (Ø1.65m) concrete septic tank, followed by a ≈2,100L (Ø1.65m) collection well. Treated effluent is then displaced into a ~155m^2 (12m x 13m) absorption bed located approximately 20m east of the block.

Both existing tanks are old, displaying signs of concrete cancer and are considered to be significantly undersized for the expected hydraulic loads. The existing LAA is heavily overgrown with vegetation and shows significant signs of overloading with seepage and pooling along the northern boundary. Investigation of historical aerial photography suggests occasional effluent seepage away from the LAA into a drainage channel on an adjacent property and towards the Allyn River. The LAA is located within the 40m buffer zone from the drainage channel and 6m buffer from the property boundary recommended by the NSW guideline (DLG, 1998).

W&A consider OSSM 2 no longer serviceable and unable to meet the future needs of the Site. The LAA is not compliant with current regulatory guidelines or Council policy (DSC DAF, 2015) and should therefore be replaced.

7.3 OSSM 3

Facilities in the 'Pony Club' amenities block (Block 3) include 6 toilets and 2 handbasins. No changes to this amenities building are proposed under the current project. Wastewater generated from Block 3 is currently treated in a ≈2,700L (Ø1.65m) concrete septic tank,

followed by a ≈2,700L (Ø1.65m) pump well. A submersible (Mono) pump transfers primary effluent from the pump well to a combined LAA south of Block 3, via 32mm PVC pipe.

Facilities in the 'Camping' amenities block (Block 4) include 6 toilets, 4 showers and 3 handbasins. No changes to this amenities building are proposed under the current project. Wastewater generated from Block 4 is currently treated in a ≈7,500L (Ø2.25m) concrete septic tank, followed by a ≈2,700L (Ø1.55m) septic tank and ≈2,700L (Ø1.55m) pump well. A submersible (Mono) pump transfers primary effluent from the pump well to a combined LAA south of Block 3, via 32mm PVC pipe.

The existing (combined) LAA for OSSM 3 is approximately 500m^2 in area (22m x 23m) and comprises a subsoil absorption bed. The LAA is located ~40m west Block 4 and forms part of the preferred location for effluent application at the Site. The existing LAA is heavily overgrown with vegetation and shows significant signs of overloading with pooling in the north-east. Settling and soil loss are apparent, with gravel distribution aggregate being close to or exposed at the surface in areas. The LAA is located outside of the 100m buffer zone from the Allyn River as recommended by the NSW guideline (DLG, 1998).

7.4 Summary

While several of the concrete (septic/collection well) tanks are in working order, analysis suggests they are significantly undersized for the expected hydraulic loads and should be replaced. Similarly, the existing LAA appears under-sized and overloaded. Replacement and upgrade are recommended.

8 Proposed OSSM System

This section describes proposed changes to OSSM at the Site.

Given that existing LAAs for OSSM 2 and OSSM 3 are performing poorly and a number of the existing concrete tanks are no longer serviceable or significantly undersized, it is recommended that the system is re-designed to incorporate an appropriate level of treatment, followed by sufficient storage to prevent hydraulic overloading of the effluent LAA during periods of heavy use.

Where possible, the proposed upgrades will utilise or re-purpose existing infrastructure.

8.1 Design Overview

The primary objective of the proposed OSSM upgrade is to simplify servicing arrangements by providing adequate pre-treatment and transfer of effluent to a centralised treatment system capable of reliably producing 'primary' effluent quality suitable for long-term effluent land application at sustainable loading rates. The proposed OSSM system aims to: (i) minimise the impact to Site users; (ii) simplify maintenance and management, and (iii) comply with Council's current regulatory requirements regarding environmental and public health protection. To achieve these objectives, the recommended upgrade design will be as follows:

(i) Block 1 will continue to be serviced by the existing stand-alone OSSM system (OSSM 1) to manage generated wastewater from the tennis court users;

(ii) OSSM 2 and OSSM 3 will be modified and consolidated to one (1) central OSSM system servicing Blocks 2, 3 & 4; and

(iii) generated wastewater from Blocks 2, 3, and 4 will be stored in balance tanks (as required), with controlled application to a new consolidated LAA.

8.2 Proposed OSSM Upgrades

Proposed upgrades to OSSM at the Site will include the following wastewater servicing infrastructure (refer to Figure 3, Appendix A):

8.2.1 Pre-treatment

To prevent issues with debris (rags, floatable materials etc.) causing problems with the sewerage reticulation and transfer system, ('interceptor') septic tanks will be used at Blocks 2, 3 & 4 (see Figure 3, Appendix A for reference). As appropriate, the existing arrangements may be retained; however, the following additions are recommended:

- All existing tanks at Block 2 will be removed and replaced with one (1) 10,000L septic tank and one (1) 10,000L collection (pump) well; and
- The existing septic tank at Block 3 will be removed and replaced with one (1) 10,000L septic tank. The existing 2,700L collection (pump) well will be retained.

8.2.2 Collection and Transfer

Pre-treated wastewater generated from each amenities block will be collected in an adjacent collection (pump) well for pressure transfer to a central treatment facility (STP).

8.2.2.1 Pumps

Each collection (pump) well will be fitted with dual (duty/standby) macerating pumps with the capability to pump fine solids to the STP.

The proposed arrangement will minimise the risk of blockages and the redundancy configuration shall be automated to ensure load switching in the event of failure of each individual pump set.

The pumps will be demand (float switch) controlled, with high-level override to utilise both pumps in the event of 'peak' flow conditions. This will ensure that during high flow periods the collection (pump) wells will not exceed capacity or contingency if one pump fails.

8.2.2.2 Sewerage

The majority of the sewerage network (pipework) is proposed for replacement under the proposed OSSM upgrade for the Site. New infrastructure will include:

- Suitably-sized pressure rising mains to transfer pre-treated effluent from the collection (pump) wells at Blocks 2, 3 and 4 to the inlet of the STP;
- Replacement or realignment of the drain from Block 2 to the new 10,000L septic tank at Blocks 2 and 3; and
- Installation of a new service line to distribute effluent to the (upgraded) effluent LAA

8.2.3 STP Design

As detailed (Section 5.3), 'average' wastewater generation at the Site is expected to be ~**8,660L/day**, ranging from ~950L/day during the low-season and increasing to a maximum 'peak' of up to **66,600L/day** during the Agricultural Show or Rodeo events. Based on traditional sewer design procedure, instantaneous flow values may be ~6,000L/hour for short periods.

Primary treatment is aimed at the removal of dissolved and suspended organic material by a combination of physical and biological methods, including settling of solids and anaerobic microbial digestion. For effective primary treatment, it is generally accepted that the hydraulic retention time (HRT) within a treatment system should be greater than 24 hours, although this

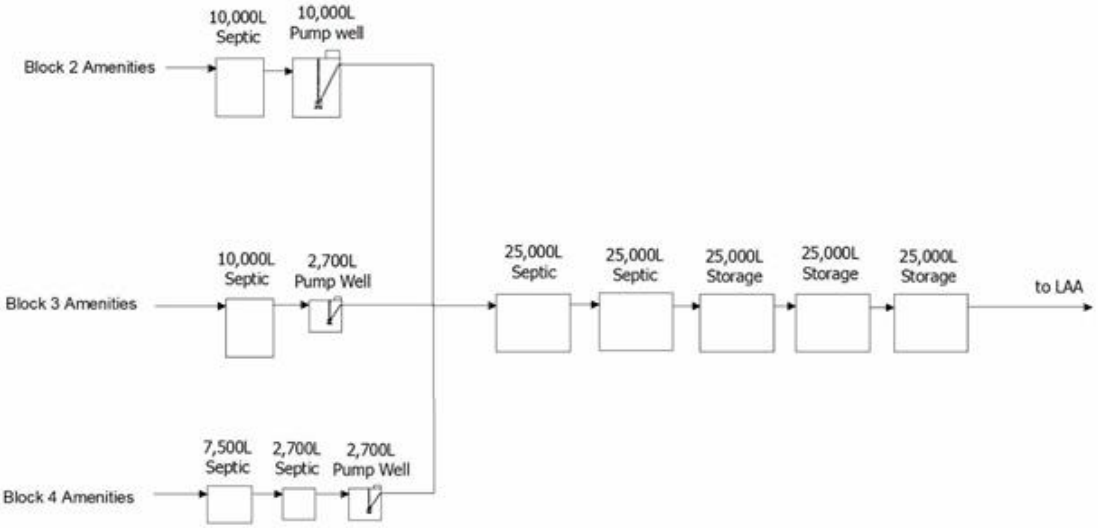
may be reduced for short periods without significant long-term impact on treatment performance.

The recommended STP design comprises the installation of additional 'primary' septic tanks in a centralised location to service (combined) wastewater generation from Blocks 2, 3 and 4.

W&A recommend that the size of the STP is based on achieving a (minimum) 'primary' treatment effluent standard to minimise the risk of long-term impact to the new LAA. Therefore, to achieve this outcome, a minimum of two (2) 25,000L septic tanks are proposed. The tanks shall be installed in-series, effectively creating a (2x) baffled 50kL primary treatment STP. The preferred location for the installation is east of the animal yards.

The exact positioning of the new tanks will depend on the local gradient and level controls and can be determined in consultation with a licensed plumber and Council prior to obtaining consent for the installation. See Figure 3, Appendix A for proposed tank locations.

The below schematic shows the proposed OSSM network design:



8.3 Treated Effluent Quality

With proposed upgrades, the existing STP is expected to reliably produce effluent of (minimum) primary standard, suitable for further treatment and dispersal within the preferred effluent land application system (absorption beds).

Parameter	Expected Effluent Quality
Biochemical Oxygen Demand	~150mg/L
Suspended Solids	~50mg/L
Faecal Coliforms	>10,000cfu/100mL
Total Phosphorus	≤15mg/L
Total Nitrogen	≤60mg/L

The listed phosphorus and nitrogen concentration values are upper limits (only) and have been adopted for nutrient balance modelling.

8.4 System Operation and Management

Successful performance of wastewater treatment systems relies on periodic monitoring and maintenance, which will be the responsibility of the Owner. The treatment systems should be serviced by a suitably qualified technician at the prescribed intervals.

8.4.1 Pump-out

W&A propose a 'strategic' pump-out should occur once a year just prior to the Rodeo. This is proposed as 2 (two) 20,000L[1] tanker pump-outs. One of which will empty or significantly reduce the volume within the interceptor (septic) tanks immediately outside of amenities Block 2, 3 & 4. The other 20,000L tanker will empty the caravan dump point tanks.

The 'interceptor tanks' outside each amenities block will experience wastewater flows throughout the year which will periodically exceed the recommended 24-hour hydraulic residence time (HRT) this is especially predicted to occur at Block 4. The sludge build up will be high in these tanks and will require more desludging than normal. By desludging before the Rodeo once a year, it is both removing solid build up within the tanks (which increases the tanks effective volume) and creates air space to be replaced with wastewater during an event day.

Adopting a 'strategic' pump-out approach will also remove large debris (rags, cloth etc.) from the waste stream and assist in preventing blockages of the respective pump stations for each Block.

8.5 Contingency Plan

W&A have designed the OSSM system to be able to manage a peak Holiday day as well as a peak 'Event' (i.e. 3-day Rodeo) with one pump-out over the year (prior to the Rodeo).

However, it should be noted that the anticipated wastewater loads are based on expected visitor numbers as outlined in Section 4. In particular, the assumed (maximum) attendance value of 5,000 visitors for large events (Rodeo and Agricultural) is critically important. If these values are likely to be exceeded, W&A recommend the development of a Contingency Plan for managing excess wastewater generation on these days.

W&A recommend the Trust seek a 'guarantee of service' contract with a local pump-out/vacuum truck contractor. This will ensure that sewage can be removed conveniently from the OSSM system during the Rodeo or any other future multiple day event.

9 Proposed Effluent Management

This section describes the Sites capability for effluent management and provides design details, including sizing of the required LAA. As detailed above, Primary treatment has been considered for the Site.

[1] *A 20,000L pump out is roughly equivalent to the daily wastewater produced from 1,000 event day visitors.*

9.1 Onsite Effluent Management Options

W&A have considered the suitability of various land application systems in relation to the identified Site and soil limitations. In determining the suitability of the various options, W&A have assessed the Site constraints and the relative environmental and public health risks associated with each.

The table below provides a summary analysis of the range of effluent land application options considered, and presents recommendation for the preferred approach to be used in conjunction with primary treatment systems on-site.

Land Application Option	Suitable	Reasoning
Absorption Trenches/Beds	Yes (With detailed design and mitigation)	Site soils within the EMA are not conducive with absorption systems. However, a suitably textured imported fill raised at a suitable height above the limiting clay layer will allow for Absorption Bed Construction within the EMA. Along with an appropriately conservative Design Loading Rate (DLR) and effluent storage allowance.
ETA Beds	Possible	While allowable, would have relatively higher construction costs and lower effluent load rate.
Mounds	Possible	Considered suitable, but discounted due to their substantial cost.
Surface Irrigation	No	Not enough EMA
Subsurface Irrigation	No	Not enough EMA

Due to limited available EMA at the Site and observed Cat 6 subsoils, a raised pressure-dosed absorption bed is the preferred effluent land application option for the Site. A description of the preferred effluent management method and (nominal) sizing are presented below.

9.2 Buffers

Buffer distances from LAAs are recommended to minimise risk to public health, maintain public amenity and protect sensitive environments. Buffer or setback distances are recommended to provide a form of mitigation against unidentified hazards and reduce potential pathways of human and environmental exposure.

The following environmental buffers are required, based on Table 6-8 of the DSC DAF (2015):

- 250m from domestic groundwater bores;
- 100m from permanent watercourses;
- 40m from intermittent watercourses and dams;
- 6m if area up-gradient and 3m if area down-gradient of driveways, swimming pools and buildings;
- 12m if area up-gradient and 6m if area down-gradient of property boundary; and
- 0.6m vertical separation from hardpan or bedrock.

All recommended buffer distances are achievable on-site, besides that to intermittent watercourses (drainage lines), as shown on the Site Plan (Appendix A, Figure 1).

9.3 Land Application Area (LAA) Sizing

Daily soil-water and nutrient balance modelling were undertaken to determine the sustainable application rate for Site soils and to estimate the necessary size of the upgraded LAA to manage the 'design' hydraulic and nutrient loads from the Site

9.4 Daily Modelling Overview

The Land Application Mass balance (LAM) is a Microsoft Excel based daily water, nutrient and pathogen mass balance model developed by BMT WBM for predicting the performance of OSSM systems under varying environmental conditions. The algorithms in the model have been derived from the Decentralised Sewer Model (DSM) and tailored to suit a single site application. It can assess long-term environmental and human health performance of wastewater systems.

The LAM requires a range of bio-physical parameters as inputs to determine whether a LAA option would be sustainable at the Site. The model predicts OSSM performance by simulating the movement of pollutants within the effluent load as it travels from the point source (on-site or community-scale systems) as surface or subsurface flows. The LAM does not predict the minimum area required to achieve zero surface runoff or deep drainage, instead, like the nominated area approach of the monthly water balance, the model predicts the surface and subsurface discharges based on a set of nominated conditions such as receptor sensitivity, soil, slope, climate, wastewater input and available area.

A summary of the model processes, inputs and results is provided below.

9.4.1 Model Inputs

The simulations were run for a data period of 60 years (1961-2021) and represent a conservative estimate of long-term performance based on available information and a set of assumptions as detailed.

Simulations were carried out for the preferred land application, as follows:

- Run 001 modelled flow into the LAA

Daily climate data used in the model was sourced from 'SILO Data Drill' information available through the QLD Department of Environment and Science. The adopted SILO data set uses the (FAO56) Penman-Monteith methodology to estimate reference evapotranspiration (ET_0), which is a function of both evaporation and transpiration factors, based on a specific reference crop planted in the LAA (assumes turf).

Rather than simplistic loading rates, as utilised in monthly modelling, the LAM inputs include a more detailed estimation of the soils ability to receive, store and transmit water by approximating parameters such as effective saturation, field capacity, and the infiltration exponent. Soil input data is based on Hazelton and Murphy (2007) soil data guide and soil investigations undertaken within the EMA for the Site. The proposed fill and the underlying limiting natural topsoil was used to define soil input data (moderately structured loam & light clay respectively).

Phosphorus sorption (P-sorption) data was obtained via 5-point isotherm analytical results taken from a composite soil sample collected nearby (by W&A) and analysed by an independent NATA accredited laboratory (Lanfax Laboratories Pty Ltd). For reference, a copy of the laboratory report is attached in Appendix C.

The input data sheets used in the modelling are presented in Appendix D.

9.4.2 Pollutant Attenuation Factors

Natural attenuation of excess effluent nutrient loads from a LAA will occur within the underlying soil and groundwater, providing reductions in contaminant concentrations to mitigate off-site export.

Pollutant attenuation rates for hydraulic, nitrogen and phosphorus loads are adopted from Table 10.7 in the DSC DAF Technical Manual (2015). These attenuation rates have been established through modelling undertaken in several case studies for the inland/rolling hills and coastal/estuarine regions of the LGA and depending on whether DSC prescribed setbacks are achievable.

Based on the location and soil characteristics of the property, the 'inland / rolling hills' catchment scenario has been adopted, with attenuation rates of 40% for hydraulics, 90% for nitrogen, 98% for phosphorus and 99% for pathogens considered appropriate based on achieving 50% of standard setbacks.

All proposed LAAs are outside the 40m buffer to intermittent watercourses and dams, compliant with Note 2 of Table 10.7 in the DSC DAF Technical Manual (2015).

9.4.3 Results and Compliance

Hydraulic and nutrient generation is divided into surplus loads discharged to the ground surface as 'surface surcharge' or draining below the root zone with subsequent (eventual) groundwater migration to surface water bodies or aquifers as 'deep drainage'. The following sections outline the results of the modelling and their compliance with the required acceptance criteria.

The model was run to confirm that the proposed OSSM system can sustainably assimilate the projected wastewater loads.

Copies of all LAM inputs and output results are presented in Appendix D.

9.4.3.1 Hydraulic Loads

Modelling of the movement of water, from both applied effluent (based from the "LAA volume" column of the flow balancing spreadsheet in Appendix B) and rainfall, through the soil is a key component of the LAM. The table below presents the mean annual overflow, surface surcharge and deep drainage predicted for the 60-year modelling period.

Parameter	**Run001**
Run Description	60 year modelled flow
Total LAA (m^2)	1,200m^2
Surface Surcharge Frequency (days/year)	5.7
Surface Surcharge as % total WWF	2.9
Deep Drainage (mm/day)	6.11

The modelling results show that surface surcharge is not expected to occur for an average WWF day. With approximately 209 days of the year being below average and many other

days being slightly higher the LAA will rarely see runoff (surcharge) frequency. During the proposed high WWF period during the rodeo, agricultural show and Christmas & Easter breaks the LAA can feasibly be dosed at **16,000L** a day (with use of balance tanks). Low effluent dose rates prior to the events will allow for sufficient drying out of the beds and the underlying soil, this will reduce the chance of surcharge.

The modelling shows that the LAA will be in danger of surcharging the most during successive high dose days over the Christmas break with slightly less chance during either the 2-day Local Show or the 3-day Rodeo. The rest of the year (~350 days) shows little to no surcharge chance. Thus, the DSC DAF (2015) requirement of 95% containment via deep drainage and evapotranspiration is achieved.

9.4.3.2 Nutrient and Pathogen Results

The following table summarises the predicted mean annual nutrient and pathogen loads generated by the LAA design and potentially released beyond the LAA footprint.

Parameter	TP (kg/yr)	TN (kg/yr)	Total Virus (MPN/L)
Deep Drainage Output	42.4	5.2	4.5
Surface Surcharge Output	1.0	0.2	N/A

LAM modelling shows that nutrient export through surface surcharge is not expected or unlikely to occur through the OSSM system. Deep drainage is the principal pathway for nutrient export for the design model run.

9.5 Effluent Flow Balancing

As shown in the graph in Appendix B the Site experiences high variability in wastewater load generation, it is common to introduce 'flow balancing' to ensure a more constant daily load of effluent to the Land Application Area, and to manage diurnal (daily) and seasonal fluctuations. This involves the installation of effluent storage tanks to hold excess effluent during busy periods and eliminate surge flows that can cause overloading of the LAA. It also allows for optimisation of LAA by incrementally dosing the LAA of 'peak' flows upon entering lower generation periods.

To determine the required size of effluent storage necessary to adequately balance the expected hydraulic loads from the Site, an 18-month flow balancing analysis was prepared (copy attached at Appendix B). The analysis is used iteratively to determine an optimal balance between effluent storage volume and LAA loading capacity, taking into consideration the variable generation volumes estimated throughout the operating year and EMA available on-site.

Based on EMA analysis in Section 6 W&A determined that 1,600m^2 of available EMA was present at the Site. A daily water balance was carried out and determined that a safe maximum loading rate onto the available EMA would equate to ~16,000L /day.

One pump-out will occur before the Rodeo (see Section 8.4.1).

Based on abovementioned information; a maximum LAA loading rate of 16,000L, a 20,000L pump-out prior to the Rodeo and predicted wastewater generation over an 18-month period (see section 5), the analysis determined that 71,436L of storage is needed at the Site to ensure that the LAA will not be overloaded.

This is rounded to **75,000L** of actual storage within flow balancing tanks. This ensures that a LAA dose rate of **16,000L/day** can be managed for high-flow periods throughout the year. Effluent storage levels within the balance tanks throughout an 18-month period are shown within the 'cumulative wastewater storage' column as well as graphically in Appendix B.

Effluent storage ensures that the LAA is not overloaded. An overloaded LAA will cause pooling or seepage which will cause damage to the soil structure resulting in the transfer of wastewater contaminants to environmentally sensitive features like the Allyn River.

9.5.1 Balance tanks

W&A propose that 75,000L of effluent storage during large events on-site will be accomplished via 3 (three) 25,000L concrete tanks (see Figure 3, Appendix A). These tanks are proposed to sit on a level pad and will be connected in a way that ensures a storage set-up which reflects the sporadic flow at the Site. An irrigation plan provided in the final approval documentation will specify how this optimization can occur.

9.6 Absorption Bed Construction

The proposed beds must be installed above the existing ground surface to achieve adequate separation from the most limiting soil horizon. The preferred arrangement comprises the construction of 6 pressure-dosed beds having dimensions of 4.0m (width), 0.3m (depth) and lengths ranging from 54-47.5m. With each bed laterally spaced at 1.5m, this arrangement equates to 1,194m^2 of LAA (1,200m^2 rounded) of bed "basal" area within the EMA. These will be constructed within a raised platform of good quality moderately to strongly-structured loam (certified to receive effluent) 1 metre high (to achieve a minimum separation of 600mm between the base of the bed and limiting soil horizon) with a 3:1 batter extending down from all sides.

The beds should be constructed in accordance with Appendix L in AS/NZS1547:2012 and the construction diagram presented as Figure 4 in Appendix A of this WMR.

The beds must be installed by a professional experienced in wastewater to ensure that effluent is distributed evenly across the entire area serviced. The finished ground surface of the beds should be slightly mounded to allow for settling to occur. The installer should also be careful to ensure that the minimum buffer distances from the LAA to property boundaries and the road are met.

9.6.1 Fill

W&A have determined that the best approach is to import clean, good-quality (Cat 3) loam fill to re-construct the raised-bed LAA. This will support a DLR (Design Loading rate) of 15 L/m^2/day (AS/NZ 1547:2012) and allow for sustainable land application of effluent during 'peak' generation periods (reducing storage requirements).

The raised bed with a 3:1 batter will need to be 1m high to adequately provide ~600mm of free draining soil from the base of the bed to the natural surface. The volume of fill required is estimated as follows:

- Main area: 1,600m^2 x 1m = 1,600m^3
- Batter: 162m [perimeter] x 1m x 3m x 0.5 = 243m^3
- Bed volume will be 0.3m x ~1,200m^2 = 360m^3
- Total: 1,600 + 243 - 360 = 1,483m^3

Therefore, the total fill required for bed construction will be 1,500m^3 (rounded)

9.6.2 Effluent dosing

A suitable effluent dosing method is via Low Pressure Effluent Dosing (LPED) lines in conjunction with a suitably sized (timer activated) external pump and automatic sequencing valves. This dosing method will provide effective distribution over the basal area of the beds while avoiding potential spot loading associated with perforated gravity distribution lines. Pressure distribution can be achieved by either drilled 25-32mm PVC pipe sleeved with 100mm slotted PVC pipe or 90mm agricultural drainage pipe. Manual flush valves (in valve box) must be fitted to the terminal end of the pressurised distribution manifold in the beds to ensure fouling of the pressure distribution laterals does not occur.

The effluent storage tanks should also be fitted with a high-water level alarm incorporating an audible (buzzer) and visual (strobe light or similar) alarm components alerting Management of an operational problem.

The land application system should be installed by a licenced plumber experienced in wastewater, ensuring that effluent is distributed evenly across the entire area serviced. The absorption beds should be constructed in accordance Figure 4 in Appendix A.

9.7 LAA Positioning

The preferred location of the LAA is identified east of the block 4 amenities. This area will be specified as a Section 88b. instrument as a prescribed effluent disposal area.

9.8 Reserve LAA

Council may require nomination of a reserve LAA in the event of future problems with the preferred land application system installed. The provision of a reserve LAA is NOT achievable within the available EMA (Figure 1, Appendix A).

10 Mitigation Measures

10.1 Soil Improvement

Given that Site soils are identified as moderately dispersive and have low phosphorus sorption capacity they may impact vegetative growth and soil stability within the LAA. These properties can combine to reduce the soils' capacity to sustainably manage wastewater.

Prolonged application of sodium rich wastewater can exacerbate the situation. Application of calcium mineral is a recognised way of reducing the effects of soil instability. It does this by supplying calcium to the affected soil and thereby elevating calcium concentrations with respect to sodium. Added calcium will improve the soil CEC and Ca/Mg ratio, improving fertility, while reducing the potential for soil structural degradation.

Calcium in the form of gypsum is recommended to be applied on the LAA. Gypsum is only slowly soluble in water, so simply broadcasting at the surface can be of limited benefit as it can take a long time for the calcium to penetrate the soil and reach the deeper soil layers. It is therefore recommended to incorporate the amendment into the soil during construction of the land application system. This will be done by scattering the gypsum at the top surface of the natural soil before the loam fill is placed. A suitable gypsum application rate of approximately 0.5kg/m^2 should be applied.

10.2 Vegetation Establishment

Vegetation that is suited to the application of effluent, preferably with high water and nutrient requirements (such as turf) should be established over the LAAs immediately following

construction. A complete vegetation cover is important to reduce the erosion hazard and optimise water and nutrient uptake. It is recommended to establish and maintain a vegetated buffer around the LAAs. It should be planted with moisture-tolerant vegetation and remain well maintained to maximise moisture uptake. Plants must be selected that will not be so large as to shade the LAAs once fully grown. It is important that the LAAs receive maximum exposure to sun and wind to maximise evapotranspiration.

To maximise assimilation of effluent-borne nutrients within the LAAs, vegetation clippings should be removed from the LAAs and mulched elsewhere on-site for use on other landscaped areas that are not used for wastewater application. Mulching clippings back onto the area from which they were cut is not recommended. An alternative is to dispose clippings in the general waste bin, or green waste bin collection service, if provided.

10.3 Water Saving Measures

To minimise wastewater generation, it is recommended that all domestic water use fixtures in each new dwelling be installed in accordance with BASIX requirements, including installation of ‘standard water reduction fittings.

Standard water reduction fixtures for internal and external water use include:

- Taps – WELS 4-star (or better) rated;
- Toilets – 4.5/3.0 litre dual flush pan and cistern;
- Showers – WELS 3-star (or better) rated; and
- Dishwashers (if used) – AAA rated using as little as 18 litres per wash.

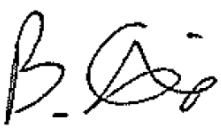
Implementation of these measures is expected to reduce water use, and thereby wastewater generation, by as much as 10-15%.

11 Conclusions and Recommendations

This completes our assessment of the Site's capability for sustainable OSSM in relation to the W&A audit of the existing system as well as proposed developments at Gresford Showground - 29 Park Street, East Gresford, NSW and presents suitable options for OSSM servicing at the Site. Specifically, W&A recommend the following:

- Wastewater generated at the Site will be treated to a primary standard.
- The OSSM system will be upgraded and reconfigured to consolidate the treatment of wastewater servicing Block 2, 3 & 4. The proposed changes will include:
  - decommissioning of redundant tanks at Blocks 2 and 3;
  - installation of new 10,000L interceptor (septic) tanks at Blocks 2 and 3;
  - installation of a new 10,000L pump well at Block 2;
  - replacement of existing pump-sets installed in pump wells at Blocks 2, 3 and 4 to include dual macerator pump assemblies;
  - installation of 2 (two) new 25,000L septic tanks to receive all effluent generated from the 3 amenities blocks; and
  - installation of 3 (three) new flow balance tanks (totalling 75,000L) to temporarily store treated effluent prior to land application.
- Installation of a (minimum) **1,200m²** of **raised absorption beds** is recommended and must be located within the available EMA specified to comply with adopted setbacks from surface waters, property boundaries and other improvements (NSW DLG, 1998);
- Special controls will be installed to evenly distribute effluent over the entire bed LAA with LPED dosed periodically from the effluent balance tanks via an external pump (with timed controls);
- A good quality (loam) topsoil must be imported and installed 1m high across the whole LAA to achieve a minimum separation of 600mm between the base of the bed and limiting soil horizons;
- A suitable gypsum application rate of approximately 0.5kg/m² should be applied at the base of the land application systems during installation;
- Vegetation must be established over the LAA immediately after installation; and
- Vehicles and grazing animals must be prevented from entering the designated LAA.

Yours Sincerely,



Ben Colautti
Environmental Consultant
Whitehead & Associates Environmental Consultants Pty Ltd

Appendix A

Figures

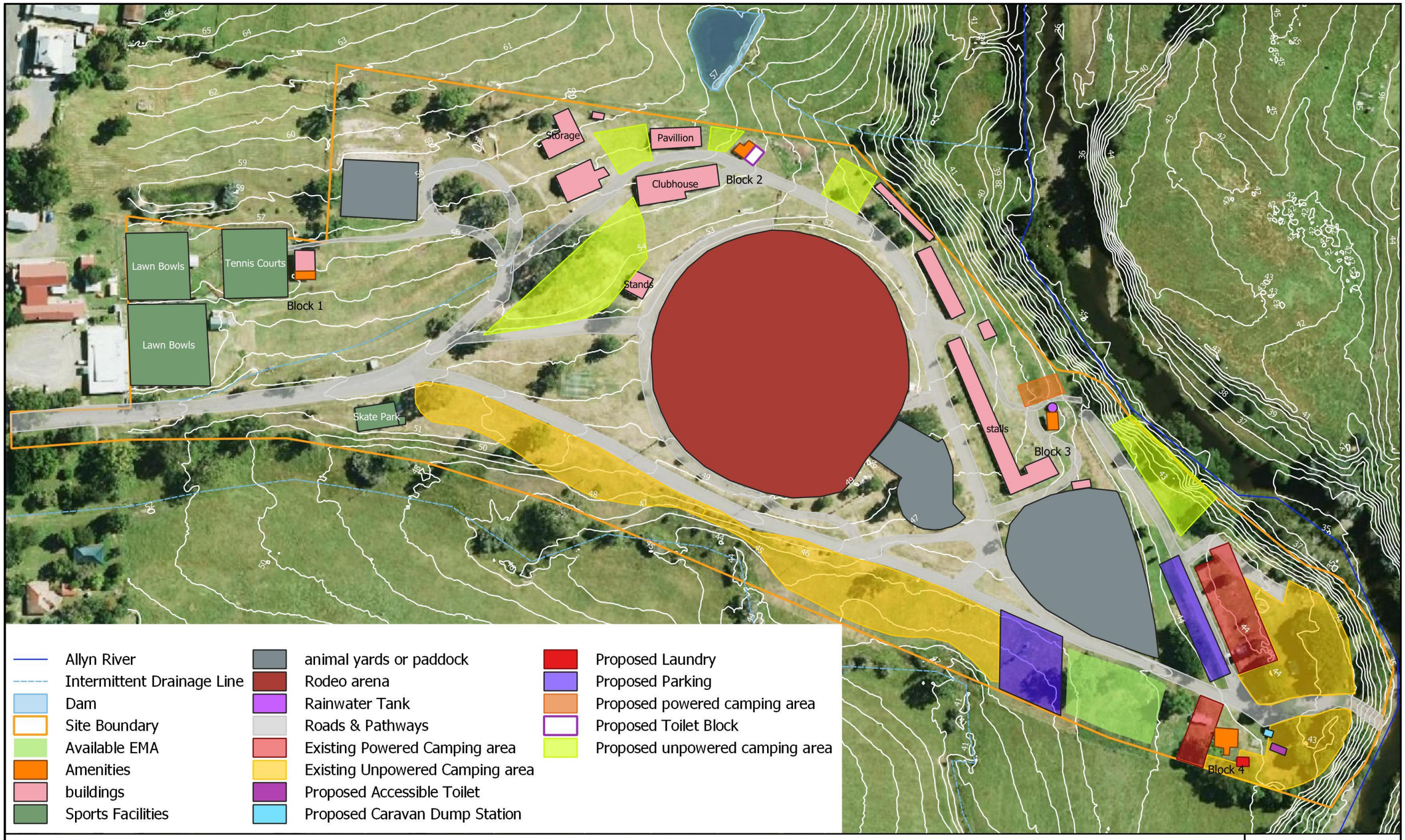


Figure 1: Site Plan Showing existing and proposed developments and the Available Effluent Management Areas

2971: Onsite Wastewater Management Plan - 29 Park Street, East Gresford, NSW

Whitehead & Associates
Environmental Consultants

(Approx Scale) 0 50 100 150 200 250 300 m

N

Revision	1
Drawn	BC
Approved	MS

Figure 2: Site Plan Showing Existing OSSM

2971: Onsite Wastewater Management Plan - 29 Park Street, East Gresford, NSW

N

Whitehead & Associates
Environmental Consultants

(Approx Scale) 0 50 100 150 200 m

Revision	1
Drawn	BC
Approved	MS

Figure 3: Site Plan Showing Proposed OSSM & EMA

2971: Onsite Wastewater Management Plan - 29 Park Street, East Gresford, NSW

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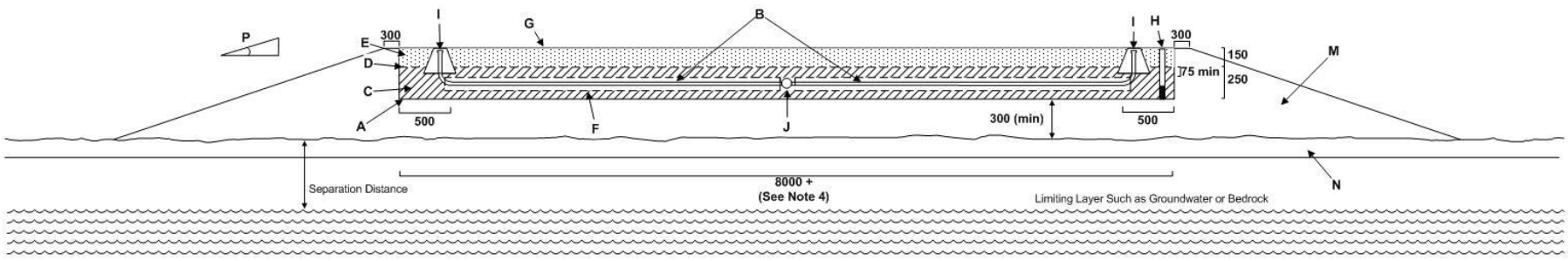
Whitehead & Associates
Environmental Consultants

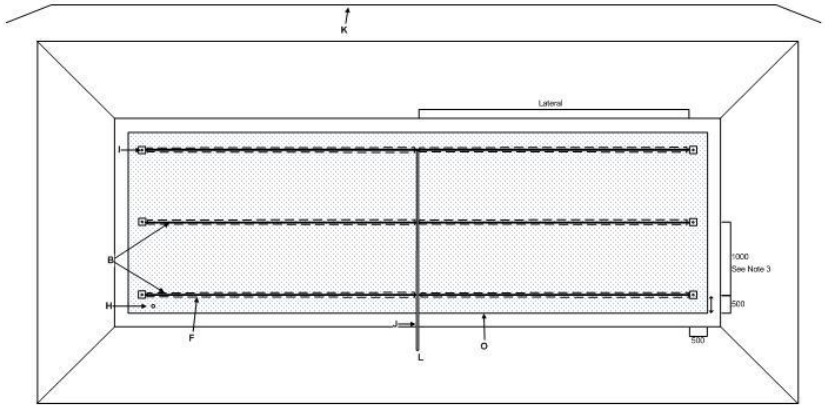
(Approx Scale) 0 50 100 150 200 m

Revision	2
Drawn	BC
Approved	MS

Cross Section View



Plan View



Raised Pressure Dosed Absorption Bed Construction

Note 1 *The layout and dimensions used in this drawing are for general guidance only. The location, configuration and layout of individual beds will need to be determined on a site-specific basis. The purpose of this drawing is to illustrate a typical configuration and specify minimum system components.*

Note 4 *Consideration should be given to ensuring all beds have a level base when determining an appropriate width. The distribution manifold must also be level. Beds longer than 30m will require specialist hydraulic design.*

A The base of the trench must be level to ensure even distribution of effluent. Base levels should be checked with a dumpy / laser level.

B Pressurised dosing laterals consisting of 25mm PVC pipe with 3mm holes drilled (deburred) at 400mm centres facing upwards. The total number and length of laterals will be determined by the required bed size (m^2) and the lateral spacings shown in this drawing. It is essential that effluent is distributed evenly across the distribution bed. A residual head (or squirt height) of 1.5m should be achieved across the distribution laterals. The squirt height across the laterals must be tested prior to covering with agricultural / slotted pipe, with no more than 15% variation in height observed. Consideration must also be given to static head and friction loss when sizing pumps. A full hydraulic design must be carried out.

C 20-40mm distribution aggregate.

D Geotextile filter cloth.

E Clean local or imported topsoil (sandy loam to loam).

F 90mm slotted PVC or agricultural pipe over manifold laterals.

G Grass must be established across the construction area as soon as possible. The bed surface should be slightly mounded.

H Inspection port on downhill side of bed. Made from 50mm PVC pipe with perforations in the aggregate level of the bed.

I Individual flush points for each lateral. May be a screw cap fitting on a 90 degree elbow level with the bed surface or a pressure controlled flush valve (such as those used for subsurface irrigation systems) inside an irrigation control box. Manual flushing should be carried out at least every twelve months.

J PVC or polyethylene dosing manifold. Larger systems may require different pipe sizes and orifice reducers at lateral connection points.

K Upslope stormwater diversion drain. Subsoil drainage may be necessary on particular sites.

L Pump dosed effluent from treatment system (minimum secondary treatment).

M The base of the absorption bed is to be raised to a height of 500mm above the natural ground surface (total bed height 900mm). Compaction should be minimised when installing the bed. The fill must be a sandy loam to loam with minimal clay content.

N Prepare the site by clearing all shrubs, trees and boulders. Scarify the natural soils across the entire basal area to a minimum depth of 200mm taking care not to compact the basal area in the process. This should extend to at least 1 m beyond the perimeter.

O The bed dimensions shown are an example only. The basal area of the land application area must be determined based on the load and soil characteristics of the Site. A minimum bed length to width ratio of 3:1 must be adopted when developing individual designs and beds must be installed parallel to the Site contours. The location and orientation of the area should be based on a site by a suitably qualified person. The system may comprise a single bed or preferably multiple smaller beds.

P Batter slope 1(vertical):3 (horizontal) maximum.

FIGURE 4	**Whitehead & Associates** Environmental Consultants	Project: Drawn: Approved: Scale:

Appendix B

Wastewater Generation &

Flow Balancing

OSSM 1 - Block 1

	Source	Typical Wastewater Flow Design Allowance (L/p/day)[1]	Unit	Number	Design Wastewater Flow (L/day)
Tennis Courts	Weekday	10	players	8	80
	Weekend day	10	players	20	200
	Peak day	10	players	100	1,000

Block 2, 3 & 4 (shoulder season)

	Source	Typical Wastewater Flow Design Allowance (L/p/day)[1]	Unit	Number	Design Wastewater Flow (L/day)
Skate Park	Weekday	10	Skaters	10	100
	Weekend day	10	Skaters	30	300
Pit Stop/ recreational	Weekday	10	visitor	15	150
	Weekend day	10	visitor	30	300
Camping	Powered Campers (weekday)	75	Camper	62	4,680
	Powered Campers (Weekend day)	75	Camper	124	9,300
	Unpowered Campers (weekday)	27	Camper	0	0
	Unpowered Campers (Weekend day)	27	Camper	32	864
				Design Weekday (L/d)	**4,930**
				Design Weekend day (L/d)	**10,764**

Block 2, 3 & 4 (low season)

	Source	Typical Wastewater Flow Design Allowance (L/p/day)[1]	Unit	Number	Design Wastewater Flow (L/day)
Skate Park	Weekday	10	Skaters	7	70
	Weekend day	10	Skaters	21	210
Pit Stop	Weekday	10	visitor	11	105
	Weekend day	10	visitor	21	210
Camping	Powered Campers (weekday)	75	Camper	10	780
	Powered Campers (Weekend day)	75	Camper	124	9,300
	Unpowered Campers (weekday)	27	Camper	0	0
	Unpowered Campers (Weekend day)	27	Camper	6	162
				Design Weekday (L/d)	**955**
				Design Weekend day (L/d)	**9,882**

Block 2, 3 & 4 (high season)

	Source	Typical Wastewater Flow Design Allowance (L/p/day)[1]	Unit	Number	Design Wastewater Flow (L/day)
Skate Park	Weekday	10	Skaters	13	130
	Weekend day	10	Skaters	39	390
Pit Stop	Weekday	10	visitor	20	195
	Weekend day	10	visitor	39	390
Camping	Powered Campers (weekday)	75	Camper	124	9,300
	Powered Campers (Weekend day)	75	Camper	124	9,300
	Unpowered Campers (weekday)	27	Camper	226	6,102
	Unpowered Campers (Weekend day)	27	Camper	376	10,152
				Design Weekday (L/d)	**15,727**
				Design Weekend day (L/d)	**20,232**

WASTEWATER GENERATION

→ If there is effluent in the balance tank the load rate is 16000L If not, the load rate is the WW generation value for that day

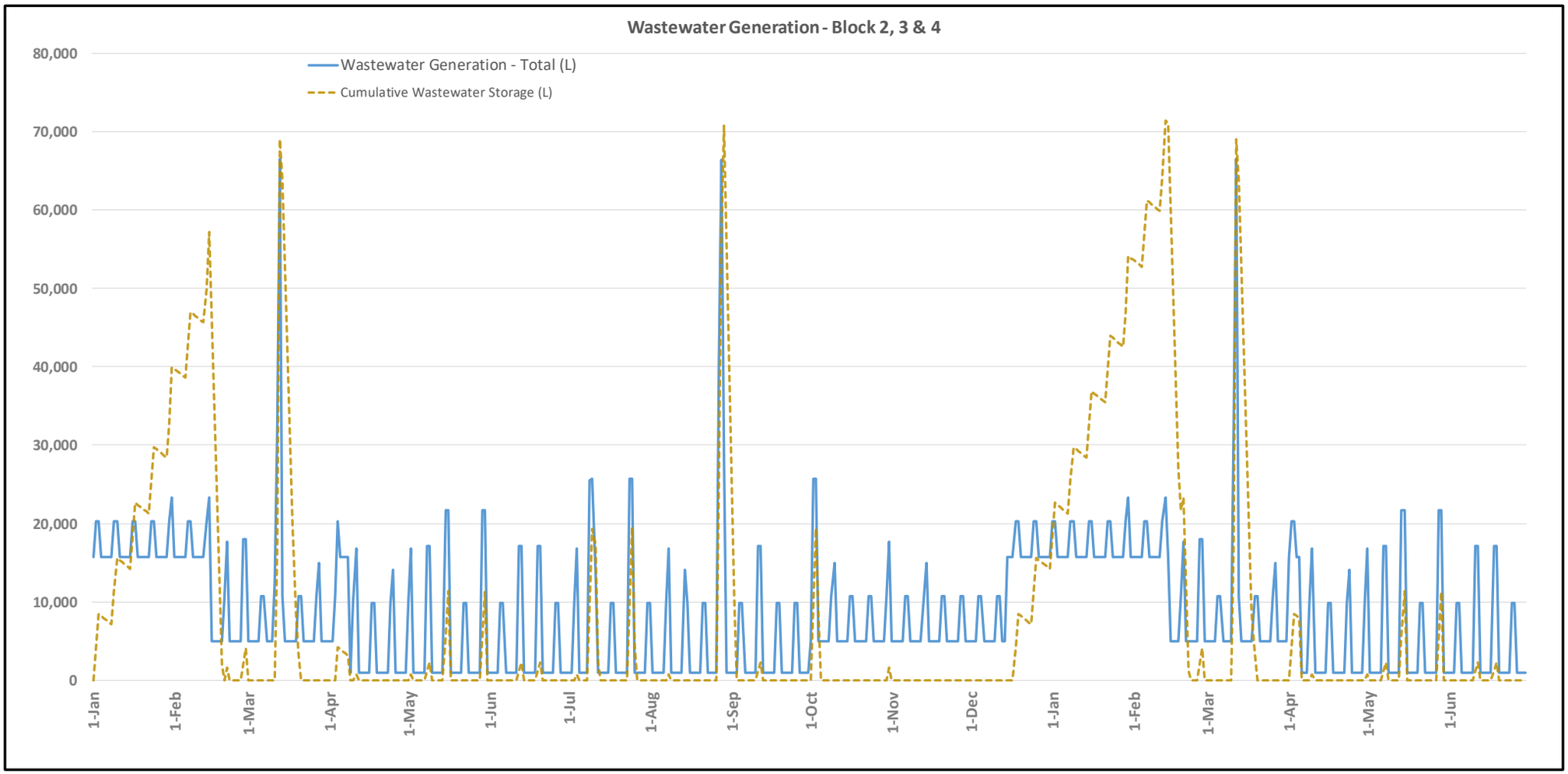
Total Pumpouts (1 year): 1

	Average	Peak
High flow period	17,100	23,330
Shoulder period	7,910	66,600
Low flow period	5,410	66,420

Date	Day	Season	Event	Event Attendee		Non-event Camper	Total Campers on-site	Block 2	Block 3	Block 4	Wastewater Generation - Total (L)	LAA volume (L)	Stored Wastewater (L)	Stored Wastewater from Previous Day (L)	Cumulative Wastewater Storage (L)	Cumulative Storage Managed by Pumpout (L)	Pump out	Peak Day	Maximum Storage Requirement	Average daily generation (L)	
				Day Attendee	Camping Attendee							16,000					20,000	66,592	71,436	8,656	
1-Jan	friday	high		0	0	350	350	325	924	14478	15727	15,727	0	0	0	0					
2-Jan	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	0	4,232	4,232					
3-Jan	sunday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	4,232	8,464	8,464					
4-Jan	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	8,464	8,191	8,191					
5-Jan	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	8,191	7,918	7,918					
6-Jan	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	7,918	7,645	7,645					
7-Jan	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	7,645	7,372	7,372					
8-Jan	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	7,372	7,099	7,099					
9-Jan	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	7,099	11,331	11,331					
10-Jan	sunday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	11,331	15,563	15,563					
11-Jan	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	15,563	15,290	15,290					
12-Jan	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	15,290	15,017	15,017					
13-Jan	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	15,017	14,744	14,744					
14-Jan	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	14,744	14,471	14,471					
15-Jan	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	14,471	14,198	14,198					
16-Jan	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	14,198	18,430	18,430					
17-Jan	sunday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	18,430	22,662	22,662					
18-Jan	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	22,662	22,389	22,389					
19-Jan	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	22,389	22,116	22,116					
20-Jan	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	22,116	21,843	21,843					
21-Jan	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	21,843	21,570	21,570					
22-Jan	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	21,570	21,297	21,297					
23-Jan	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	21,297	25,529	25,529					
24-Jan	sunday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	25,529	29,761	29,761					
25-Jan	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	29,761	29,488	29,488					
26-Jan	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	29,488	29,215	29,215					
27-Jan	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	29,215	28,942	28,942					
28-Jan	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	28,942	28,669	28,669					
29-Jan	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	28,669	28,396	28,396					
30-Jan	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	28,396	32,628	32,628					
31-Jan	sunday	high	Pony Club (PRPC) (1 d)	240	60	500	520	2693	1837	18792	23322	16,000	7,322	32,628	39,950	39,950					**January**
1-Feb	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	39,950	39,677	39,677					
2-Feb	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	39,677	39,404	39,404					
3-Feb	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	39,404	39,131	39,131					
4-Feb	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	39,131	38,858	38,858					
5-Feb	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	38,858	38,585	38,585					
6-Feb	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	38,585	42,817	42,817					
7-Feb	sunday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	42,817	47,049	47,049					
8-Feb	monday	high		0	0	350	350	325	924	14478	15727	16,000	-273	47,049	46,776	46,776					
9-Feb	tuesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	46,776	46,503	46,503					
10-Feb	wednesday	high		0	0	350	350	325	924	14478	15727	16,000	-273	46,503	46,230	46,230					
11-Feb	thursday	high		0	0	350	350	325	924	14478	15727	16,000	-273	46,230	45,957	45,957					
12-Feb	friday	high		0	0	350	350	325	924	14478	15727	16,000	-273	45,957	45,684	45,684					
13-Feb	saturday	high		0	0	500	500	780	1167	18285	20232	16,000	4,232	45,684	49,916	49,916					
14-Feb	sunday	high	Pony Club (PRPC) (1 d)	240	60	500	520	2693	1837	18792	23322	16,000	7,322	49,916	57,238	57,238					
15-Feb	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	57,238	46,168	46,168					
16-Feb	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	46,168	35,098	35,098					
17-Feb	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	35,098	24,028	24,028					
18-Feb	thursday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	24,028	12,958	12,958					
19-Feb	friday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	12,958	1,888	1,888					
20-Feb	saturday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	1,888	0	0					
21-Feb	sunday	Shoulder	Dressage	400	100	156	256	3735	1817	12092	17644	16,000	1,644	0	1,644	1,644					
22-Feb	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	1,644	0	0					
23-Feb	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
24-Feb	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
25-Feb	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
26-Feb	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
27-Feb	saturday	Shoulder	PRPC Zone	60	240	156	396	1185	1194	15645	18024	16,000	2,024	0	2,024	2,024					
28-Feb	sunday	Shoulder	PRPC Zone	60	240	156	396	1185	1194	15645	18024	16,000	2,024	2,024	4,048	4,048					**February**
1-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	4,048	0	0					
2-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
3-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
4-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
5-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
6-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0					
7-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0					
8-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
9-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
10-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
11-Mar	thursday	Shoulder		50	150	62	212	625	826	10986	12437	12,437	0	0	0	0					
12-Mar	friday	Shoulder	Show (day 1)	1800	200	62	262	14650	5582	12255	32487	15,000	17,487	0	17,487	17,487					
13-Mar	saturday	Shoulder	Show (day 2)	4480	520	156	520	35100	12700	18792	66592	15,000	51,592	17,487	69,079	69,079					
14-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	69,079	63,843	63,843					
15-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	63,843	52,773	52,773					
16-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	52,773	41,703	41,703					
17-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	41,703	30,633	30,633					
18-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	30,633	19,563	19,563					
19-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	19,563	8,493	8,493					
20-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	8,493	3,257	3,257					
21-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	3,257	0	0					
22-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
23-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
24-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
25-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
26-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
27-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0					
28-Mar	sunday	Shoulder	Pony Club (PRPC) (1 d)	240	60	156	216	2513	1345	11077	14934	14,934	0	0	0	0					
29-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
30-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
31-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					**March**
1-Apr	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
2-Apr	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0					
3-Apr	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0					
4-Apr	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	0	4,232	4,232					
5-Apr	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	4,232	3,959	3,959					
6-Apr	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	3,959	3,686	3,686					
7-Apr	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	3,686	3,413	3,413					
8-Apr	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	3,413	3,140	3,140					
9-Apr	friday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	3,140	0	0					
10-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
11-Apr	sunday	Low	RFS	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762					
12-Apr	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0					
13-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
14-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
15-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
16-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
17-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
18-Apr	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
19-Apr	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
20-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
21-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
22-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
23-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
24-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
25-Apr	sunday	Low	Pony Club (PRPC) (1 d)	240	60	130	190	2333	1302	10417	14052	14,052	0	0	0	0					
26-Apr	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
27-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
28-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
29-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
30-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					**April**
1-May	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
2-May	sunday	Low	Dressage	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762					
3-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0					
4-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
5-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
6-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
7-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
8-May	saturday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142					
9-May	sunday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284					
10-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0					
11-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
12-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
13-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
14-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
15-May	saturday	Low	Dungog Motorcycle	100	400	130	520	1395	1525	18792	21712	16,000	5,712	0	5,712	5,712					
16-May	sunday	Low	Dungog Motorcycle	100	400	130	520	1395	1525	18792	21712	16,000	5,712	5,712	11,424	11,424					
17-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	11,424	0	0					
18-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
19-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
20-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
21-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
22-May	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
23-May	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
24-May	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
25-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
26-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
27-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
28-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
29-May	saturday	Low	Penning	100	400	130	520	1350	1510	18792	21652	16,000	5,652	0	5,652	5,652					
30-May	sunday	Low	Penning	100	400	130	520	1350	1510	18792	21652	16,000	5,652	5,652	11,304	11,304					
31-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	11,304	0	0					**May**
1-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
2-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
3-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
4-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
5-Jun	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
6-Jun	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
7-Jun	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
8-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
9-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
10-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
11-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
12-Jun	saturday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142					
13-Jun	sunday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284					
14-Jun	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0					
15-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
16-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
17-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
18-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
19-Jun	saturday	Low	PRPC Zone	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142					
20-Jun	sunday	Low	PRPC Zone	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284					
21-Jun	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0					
22-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
23-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
24-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
25-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
26-Jun	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
27-Jun	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0					
28-Jun	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
29-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					
30-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0					**June**

1-Jul	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
2-Jul	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
3-Jul	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
4-Jul	sunday	Low	Dressage	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762	
5-Jul	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0	
6-Jul	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
7-Jul	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
8-Jul	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
9-Jul	friday	Low	American Moto	480	520	10	520	4180	2535	18792	25507	16,000	9,507	0	9,507	9,507	
10-Jul	saturday	Low	American Moto	480	520	130	520	4425	2535	18792	25752	16,000	9,752	9,507	19,259	19,259	
11-Jul	sunday	Low	Pony Club (PRPC) (1 d)	240	60	130	190	2333	1302	10417	14052	16,000	-1,948	19,259	17,311	17,311	
12-Jul	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	17,311	2,266	2,266	
13-Jul	tuesday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,266	0	0	
14-Jul	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
15-Jul	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
16-Jul	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
17-Jul	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
18-Jul	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
19-Jul	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
20-Jul	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
21-Jul	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
22-Jul	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
23-Jul	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
24-Jul	saturday	Low	Mud Run	480	520	130	520	4425	2535	18792	25752	16,000	9,752	0	9,752	9,752	
25-Jul	sunday	Low	Mud Run	480	520	130	520	4425	2535	18792	25752	16,000	9,752	9,752	19,504	19,504	
26-Jul	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	19,504	4,459	4,459	
27-Jul	tuesday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	4,459	0	0	
28-Jul	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
29-Jul	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
30-Jul	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
31-Jul	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	**July**
1-Aug	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
2-Aug	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
3-Aug	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
4-Aug	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
5-Aug	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
6-Aug	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
7-Aug	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
8-Aug	sunday	Low	Dressage	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762	
9-Aug	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0	
10-Aug	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
11-Aug	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
12-Aug	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
13-Aug	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
14-Aug	saturday	Low	Pony Club (PRPC) (1 d)	240	60	130	190	2333	1302	10417	14052	14,052	0	0	0	0	
15-Aug	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
16-Aug	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
17-Aug	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
18-Aug	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
19-Aug	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
20-Aug	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
21-Aug	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
22-Aug	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
23-Aug	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
24-Aug	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
25-Aug	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
26-Aug	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
27-Aug	friday	Low	Rodeo (day 1)	2800	200	10	200	22075	7981	10671	40727	15,000	25,727	0	25,727	5,727	1
28-Aug	saturday	Low	Rodeo (day 2)	4480	520	130	520	34920	12700	18792	66412	15,000	51,412	5,727	57,139	57,139	
29-Aug	sunday	Low	Rodeo (day 3)	1950	50	130	100	15945	5625	7050	28620	15,000	13,620	57,139	70,759	70,759	
30-Aug	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	70,759	55,714	55,714	
31-Aug	tuesday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	55,714	40,669	40,669	**August**
1-Sep	wednesday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	40,669	25,624	25,624	
2-Sep	thursday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	25,624	10,579	10,579	
3-Sep	friday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	10,579	0	0	
4-Sep	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
5-Sep	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
6-Sep	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
7-Sep	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
8-Sep	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
9-Sep	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
10-Sep	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
11-Sep	saturday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142	
12-Sep	sunday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284	
13-Sep	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0	
14-Sep	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
15-Sep	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
16-Sep	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
17-Sep	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
18-Sep	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
19-Sep	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
20-Sep	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
21-Sep	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
22-Sep	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
23-Sep	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
24-Sep	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
25-Sep	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
26-Sep	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
27-Sep	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
28-Sep	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
29-Sep	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
30-Sep	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	**September**
1-Oct	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
2-Oct	saturday	Shoulder	E' Zone	480	520	156	520	4425	2475	18792	25692	16,000	9,692	0	9,692	9,692	
3-Oct	sunday	Shoulder	E' Zone	480	520	156	520	4425	2475	18792	25692	16,000	9,692	9,692	19,384	19,384	
4-Oct	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	19,384	8,314	8,314	
5-Oct	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	8,314	0	0	
6-Oct	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
7-Oct	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
8-Oct	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
9-Oct	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
10-Oct	sunday	Shoulder	Pony Club (PRPC) (1 d)	240	60	156	216	2513	1345	11077	14934	14,934	0	0	0	0	
11-Oct	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
12-Oct	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
13-Oct	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
14-Oct	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
15-Oct	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
16-Oct	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
17-Oct	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
18-Oct	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
19-Oct	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
20-Oct	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
21-Oct	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
22-Oct	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
23-Oct	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
24-Oct	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
25-Oct	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
26-Oct	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
27-Oct	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
28-Oct	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
29-Oct	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
30-Oct	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
31-Oct	sunday	Shoulder	Dressage	400	100	156	256	3735	1817	12092	17644	16,000	1,644	0	1,644	1,644	**October**
1-Nov	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	1,644	0	0	
2-Nov	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
3-Nov	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
4-Nov	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
5-Nov	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
6-Nov	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
7-Nov	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
8-Nov	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
9-Nov	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
10-Nov	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
11-Nov	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
12-Nov	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
13-Nov	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
14-Nov	sunday	Shoulder	Pony Club (PRPC) (1 d)	240	60	156	216	2513	1345	11077	14934	14,934	0	0	0	0	
15-Nov	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
16-Nov	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
17-Nov	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
18-Nov	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
19-Nov	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
20-Nov	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
21-Nov	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
22-Nov	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
23-Nov	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
24-Nov	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
25-Nov	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
26-Nov	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
27-Nov	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
28-Nov	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
29-Nov	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
30-Nov	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	**November**
1-Dec	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
2-Dec	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
3-Dec	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
4-Dec	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
5-Dec	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
6-Dec	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
7-Dec	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
8-Dec	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
9-Dec	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
10-Dec	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
11-Dec	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
12-Dec	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
13-Dec	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
14-Dec	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
15-Dec	wednesday	High		0	0	350	350	325	924	14478	15727	15,727	0	0	0	0	
16-Dec	thursday	High		0	0	350	350	325	924	14478	15727	15,727	0	0	0	0	
17-Dec	friday	High		0	0	350	350	325	924	14478	15727	15,727	0	0	0	0	
18-Dec	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	0	4,232	4,232	
19-Dec	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	4,232	8,464	8,464	
20-Dec	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	8,464	8,191	8,191	
21-Dec	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	8,191	7,918	7,918	
22-Dec	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	7,918	7,645	7,645	
23-Dec	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	7,645	7,372	7,372	
24-Dec	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	7,372	7,099	7,099	
25-Dec	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	7,099	11,331	11,331	
26-Dec	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	11,331	15,563	15,563	
27-Dec	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	15,563	15,290	15,290	
28-Dec	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	15,290	15,017	15,017	
29-Dec	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	15,017	14,744	14,744	
30-Dec	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	14,744	14,471	14,471	
31-Dec	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	14,471	14,198	14,198	**December**

1-Jan	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	14,198	18,430	18,430	
2-Jan	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	18,430	22,662	22,662	
3-Jan	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	22,662	22,389	22,389	
4-Jan	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	22,389	22,116	22,116	
5-Jan	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	22,116	21,843	21,843	
6-Jan	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	21,843	21,570	21,570	
7-Jan	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	21,570	21,297	21,297	
8-Jan	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	21,297	25,529	25,529	
9-Jan	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	25,529	29,761	29,761	
10-Jan	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	29,761	29,488	29,488	
11-Jan	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	29,488	29,215	29,215	
12-Jan	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	29,215	28,942	28,942	
13-Jan	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	28,942	28,669	28,669	
14-Jan	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	28,669	28,396	28,396	
15-Jan	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	28,396	32,628	32,628	
16-Jan	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	32,628	36,860	36,860	
17-Jan	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	36,860	36,587	36,587	
18-Jan	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	36,587	36,314	36,314	
19-Jan	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	36,314	36,041	36,041	
20-Jan	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	36,041	35,768	35,768	
21-Jan	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	35,768	35,495	35,495	
22-Jan	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	35,495	39,727	39,727	
23-Jan	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	39,727	43,959	43,959	
24-Jan	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	43,959	43,686	43,686	
25-Jan	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	43,686	43,413	43,413	
26-Jan	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	43,413	43,140	43,140	
27-Jan	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	43,140	42,867	42,867	
28-Jan	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	42,867	42,594	42,594	
29-Jan	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	42,594	46,826	46,826	
30-Jan	sunday	High	Pony Club (PRPC) (1 d)	240	60	500	520	2693	1837	18792	23322	16,000	7,322	46,826	54,148	54,148	
31-Jan	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	54,148	53,875	53,875	**January**
1-Feb	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	53,875	53,602	53,602	
2-Feb	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	53,602	53,329	53,329	
3-Feb	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	53,329	53,056	53,056	
4-Feb	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	53,056	52,783	52,783	
5-Feb	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	52,783	57,015	57,015	
6-Feb	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	57,015	61,247	61,247	
7-Feb	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	61,247	60,974	60,974	
8-Feb	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	60,974	60,701	60,701	
9-Feb	wednesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	60,701	60,428	60,428	
10-Feb	thursday	High		0	0	350	350	325	924	14478	15727	16,000	-273	60,428	60,155	60,155	
11-Feb	friday	High		0	0	350	350	325	924	14478	15727	16,000	-273	60,155	59,882	59,882	
12-Feb	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	59,882	64,114	64,114	
13-Feb	sunday	High	Pony Club (PRPC) (1 d)	240	60	500	520	2693	1837	18792	23322	16,000	7,322	64,114	71,436	71,436	
14-Feb	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	71,436	71,163	71,163	
15-Feb	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	71,163	60,093	60,093	
16-Feb	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	60,093	49,023	49,023	
17-Feb	thursday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	49,023	37,953	37,953	
18-Feb	friday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	37,953	26,883	26,883	
19-Feb	saturday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	26,883	21,647	21,647	
20-Feb	sunday	Shoulder	Dressage	400	100	156	256	3735	1817	12092	17644	16,000	1,644	21,647	23,291	23,291	
21-Feb	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	23,291	12,221	12,221	
22-Feb	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	12,221	1,151	1,151	
23-Feb	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	1,151	0	0	
24-Feb	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
25-Feb	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
26-Feb	saturday	Shoulder	PRPC Zone	60	240	156	396	1185	1194	15645	18024	16,000	2,024	0	2,024	2,024	
27-Feb	sunday	Shoulder	PRPC Zone	60	240	156	396	1185	1194	15645	18024	16,000	2,024	2,024	4,048	4,048	
28-Feb	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	4,048	0	0	**February**
1-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
2-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
3-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
4-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
5-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
6-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
7-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
8-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
9-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
10-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
11-Mar	friday	Shoulder	Show (day 1)	1800	200	62	262	14650	5582	12255	32487	15,000	17,487	0	17,487	17,487	
12-Mar	saturday	Shoulder	Show (day 2)	4480	520	156	520	35100	12700	18792	66592	15,000	51,592	17,487	69,079	69,079	
13-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	69,079	63,843	63,843	
14-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	63,843	52,773	52,773	
15-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	52,773	41,703	41,703	
16-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	41,703	30,633	30,633	
17-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	30,633	19,563	19,563	
18-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	16,000	-11,070	19,563	8,493	8,493	
19-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	8,493	3,257	3,257	
20-Mar	sunday	Shoulder		0	0	156	156	600	610	9554	10764	16,000	-5,236	3,257	0	0	
21-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
22-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
23-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
24-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
25-Mar	friday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
26-Mar	saturday	Shoulder		0	0	156	156	600	610	9554	10764	10,764	0	0	0	0	
27-Mar	sunday	Shoulder	Pony Club (PRPC) (1 d)	240	60	156	216	2513	1345	11077	14934	14,934	0	0	0	0	
28-Mar	monday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
29-Mar	tuesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
30-Mar	wednesday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	
31-Mar	thursday	Shoulder		0	0	62	62	250	281	4399	4930	4,930	0	0	0	0	**March**
1-Apr	friday	High		0	0	350	350	325	924	14478	15727	15,727	0	0	0	0	
2-Apr	saturday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	0	4,232	4,232	
3-Apr	sunday	High		0	0	500	500	780	1167	18285	20232	16,000	4,232	4,232	8,464	8,464	
4-Apr	monday	High		0	0	350	350	325	924	14478	15727	16,000	-273	8,464	8,191	8,191	
5-Apr	tuesday	High		0	0	350	350	325	924	14478	15727	16,000	-273	8,191	7,918	7,918	
6-Apr	wednesday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	7,918	0	0	
7-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
8-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
9-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
10-Apr	sunday	Low	RFS	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762	
11-Apr	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0	
12-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
13-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
14-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
15-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
16-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
17-Apr	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
18-Apr	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
19-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
20-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
21-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
22-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
23-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
24-Apr	sunday	Low	Pony Club (PRPC) (1 d)	240	60	130	190	2333	1302	10417	14052	14,052	0	0	0	0	
25-Apr	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
26-Apr	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
27-Apr	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
28-Apr	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
29-Apr	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
30-Apr	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	**April**
1-May	sunday	Low	Dressage	400	100	130	230	3555	1775	11432	16762	16,000	762	0	762	762	
2-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	762	0	0	
3-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
4-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
5-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
6-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
7-May	saturday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142	
8-May	sunday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284	
9-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0	
10-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
11-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
12-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
13-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
14-May	saturday	Low	Dungog Motorcycle	100	400	130	520	1395	1525	18792	21712	16,000	5,712	0	5,712	5,712	
15-May	sunday	Low	Dungog Motorcycle	100	400	130	520	1395	1525	18792	21712	16,000	5,712	5,712	11,424	11,424	
16-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	11,424	0	0	
17-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
18-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
19-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
20-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
21-May	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
22-May	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
23-May	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
24-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
25-May	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
26-May	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
27-May	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
28-May	saturday	Low	Penning	100	400	130	520	1350	1510	18792	21652	16,000	5,652	0	5,652	5,652	
29-May	sunday	Low	Penning	100	400	130	520	1350	1510	18792	21652	16,000	5,652	5,652	11,304	11,304	
30-May	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	11,304	0	0	
31-May	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	**May**
1-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
2-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
3-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
4-Jun	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
5-Jun	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
6-Jun	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
7-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
8-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
9-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
10-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
11-Jun	saturday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142	
12-Jun	sunday	Low	Pony Club (PRPC) (2 d)	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284	
13-Jun	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0	
14-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
15-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
16-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
17-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
18-Jun	saturday	Low	PRPC Zone	60	240	130	370	1005	1152	14985	17142	16,000	1,142	0	1,142	1,142	
19-Jun	sunday	Low	PRPC Zone	60	240	130	370	1005	1152	14985	17142	16,000	1,142	1,142	2,284	2,284	
20-Jun	monday	Low		0	0	10	10	175	47	733	955	16,000	-15,045	2,284	0	0	
21-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
22-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
23-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
24-Jun	friday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
25-Jun	saturday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
26-Jun	sunday	Low		0	0	130	130	420	568	8894	9882	9,882	0	0	0	0	
27-Jun	monday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
28-Jun	tuesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
29-Jun	wednesday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	
30-Jun	thursday	Low		0	0	10	10	175	47	733	955	955	0	0	0	0	**June**


Wastewater Generation - Block 2, 3 & 4
Wastewater Generation - Total (L)
Cumulative Wastewater Storage (L)
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun

Appendix C

Soil Borelogs and Data Summary

Whitehead & Associates
Environmental Consultants

Key to Soil Borelogs

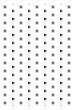
Symbols

W	Watertable depth	●	Sample collected
X	Depth of refusal		

Moisture condition

D	Dry
SM	Slightly moist
M	Moist
VM	Very moist
W	Wet / saturated

Graphic Log and Textures



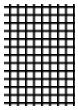
S - Sand
LS - Loamy sand
CS - Clayey sand

CL - Clay loam
SCL - Sandy clay loam
SiCL - Silty clay loam

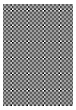
Gravel (G)

SL - Sandy loam

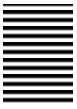
LC - Light clay
SC - Sandy clay



Parent material (stiff)



L - Loam
LFS - Loam fine sandy
SiL - Silty loam



MC - Medium clay
HC - Heavy clay

Parent material (weathered)

Soil Bore Log

Whitehead & Associates
Environmental Consultants

Client:	Emma Eldridge of Gresford Park Trust	**Borehole No:**	**BH1**
Site:	Gresford Show ground; 29 Park Street, East Gresford, NSW	Excavated/logged by:	Connor Morton & Ben Colautti
Date:	28th July 2021	Excavation type:	Auger, crowbar & shovel
Notes:	- refer to site plan for position of borehole		

PROFILE DESCRIPTION

Depth (m)	Graphic Log	Sampling depth/name	Horizon	Texture	Structure	Colour	Mottles/ Gley	Coarse Fragments	Moisture Condition	Comments
0.1 0.2 0.3		BH1/1	A1	LC	weak	very dark grayish brown	N/A	20-50% (<200mm)	M	Large Cobble in Profile
0.4 0.5 0.6 0.7 0.8		BH1/2	B1	MC	massive	dark brown	7% orange/light brown	10-20% (<60mm)	M	cobble in profile
0.9 1 1.1 1.2		Refusal on Floater								

Soil Bore Log

Whitehead & Associates ates
Environmental Consultants tants

Client:	Emma Eldridge of Gresford Park Trust	**Borehole No:**	**BH2**
Site:	Gresford Show ground; 29 Park Street, East Gresford, NSW	Excavated/logged by:	Connor Morton & Ben Colautti
Date:	28th July 2021	Excavation type:	Auger, crowbar & shovel
Notes:	- refer to site plan for position of borehole		

PROFILE DESCRIPTION

Depth (m)	Graphic Log	Sampling depth/name	Horizon	Texture	Structure	Colour	Mottles/ Gley	Coarse Fragments	Moisture Condition	Comments
0.1		BH2/1	A	SC	massive	brown	N/A	N/A	D	dry compacted sand. Thin layer of massive clay before bedrock
0.2										
0.3										
0.4		Refusal on Parent material (Stiff)								
0.5										
0.6										
0.7										
0.8										
0.9										
1										
1.1										
1.2										

Soil Bore Log

Whitehead & Associates
Environmental Consultants

Client:	Emma Eldridge of Gresford Park Trust	**Borehole No:**	**BH3**
Site:	Gresford Show ground; 29 Park Street, East Gresford, NSW	Excavated/logged by:	Connor Morton & Ben Colautti
Date:	28th July 2021	Excavation type:	Auger, crowbar & shovel
Notes:	- refer to site plan for position of borehole		

PROFILE DESCRIPTION

Depth (m)	Graphic Log	Sampling depth/name	Horizon	Texture	Structure	Colour	Mottles/ Gley	Coarse Fragments	Moisture Condition	Comments
0.1 0.2 0.3		BH3/1	A	SCL	weak	dark yellowish brown	N/A	20-50%	D	compacted
0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2		Refusal on Parent material (Weathered)								

Soil Sampling Schedule and Results of pH, EC and Emerson Aggregate Test Analysis

Site	Sample Name	Sample Depth (mm)	Texture Class	EAT [1]	Rating [2]	pH_f [3]	$pH_{1:5}$ [4]	Rating	$EC_{1:5}$ (µS/cm)	ECe (dS/m) [5]	Rating	Other analysis [6]
BH1	BH1/1	350	LC	3(2)	Low	n/a	6.73	Neutral	98	0.78	Non-saline	Ca, Mg, Na, K, P-Sorb, CEC & ESP
	BH1/2	850	MC	5	Low	n/a	6.78	Neutral	47	0.33	Non-saline	
	Ref		F							0.00		
BH2	BH2/1	300	SC	2(1)	Mod	n/a	6.85	Neutral	75	0.00	Non-saline	
	Ref		PM(S)							0.00		
BH3	BH3/1	350	SCL	2(1)	Mod	n/a	6.84	Neutral	83	0.00	Non-saline	
	Ref		PM(W)							0.00		

Notes:- (also refer Interpretation Sheet 1)

[1] The modified Emerson Aggregate Test (EAT) provides an indication of soil susceptibility to dispersion.

[2] Ratings describe the likely hazard associated with land application of treated wastewater.

[3] pH measured in the field using Raupac Indicator.

[4] pH measured on 1:5 soil:water suspensions using a *Hanna Combo* hand-held pH/EC/temp meter.

[5] Electrical conductivity of the saturated extract (Ece) = $EC_{1:5}$(µS/cm) x MF / 1000. Units are dS/m. MF is a soil texture multiplication factor.

[6] External laboratories used for the following analyses, if indicated:

- CEC (Cation exchange capacity)
- Psorb (Phosphorus sorption capacity)
- Bray Phosphorus
- Organic carbon
- Total nitrogen

Sheet 2 - Results of External Laboratory Analysis

Site	Name	Depth (mm)	CEC (me/100g)	Rating	Ca (mg/kg)	Rating	Mg (mg/kg)	Rating	Na (mg/kg)	Rating	K (mg/kg)	Rating	ESP (%)	Rating	P-sorp. (mg/kg)	Rating
1471_East Gresford_2015	1471	400	9.1	L	1214	M	300	M	36	L	45	VL	1.7	NS	111	H

Phone Office/Lab (02) 6775 1157

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Website: http://www.lanfaxlabs.com.au
Lab address: 493 Old Inverell Road
Postal address: PO Box 4690 Armidale NSW 2350
Director: Dr Robert Patterson FIEAust, CPSS, CPAg
Soil Scientists and Environmental Engineers

Lanfax Laboratories

ABN 72 212 385 096
Quality Assurance and Quality Control by Approved Methods

5th June 2015

Whitehead & Associates
197 Main Road
Cardiff NSW 2285

Soil Report: Job No. 1471
Sample received 1st June 2015, sample date
Samples dried to 50°C, crushed and sieved to minus 2 mm prior to analysis

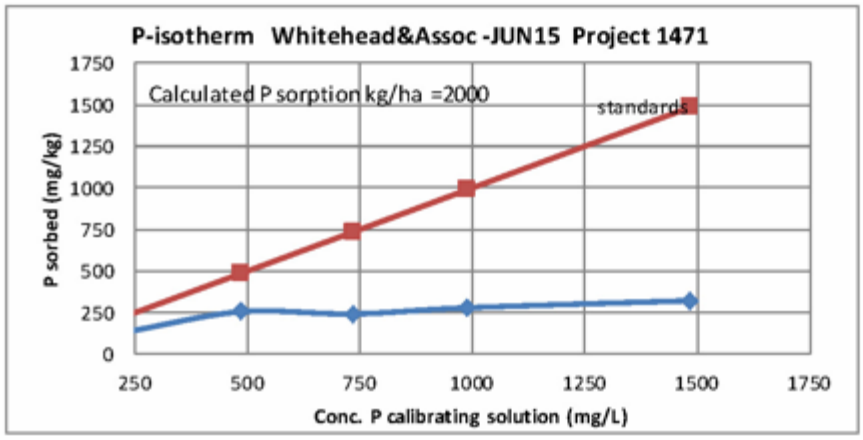
Whitehead & Assoc. Job 1471 27MAY15

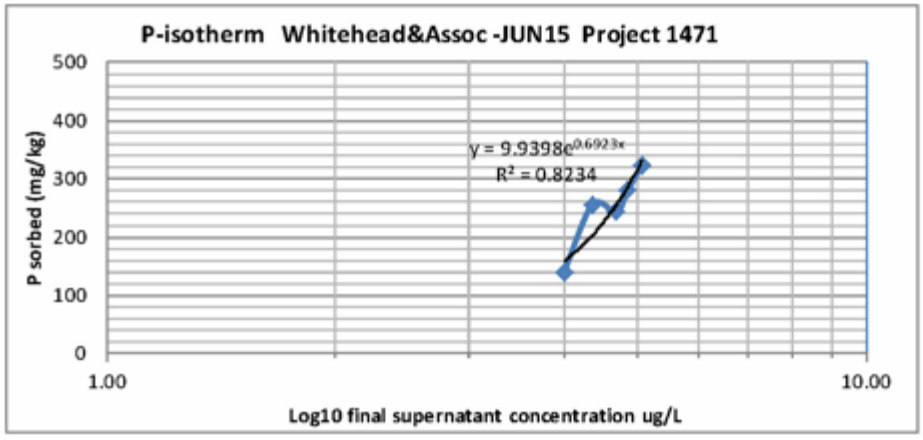
Exc.Al+H	Ca		K		Mg		Na		Base Sat.	ESP	CEC	Ca/Mg	Site Location
cmol+/kg	mg/kg	cmol+/kg	mg/kg	cmol+/kg	mg/kg	cmol+/kg	mg/kg	cmol+/kg	%	%	cmol+/kg	ratio	Sample ID
0.3	1214	6.06	45	0.12	300	2.47	36	0.15	96.5	1.7	9.1	2.4	Whitehead & Assoc. 1471

Methods: Rayment & Lyons 2011
P sorption modified method 9J1 - elevated equilibrating solutions, ICP determination of P
Cations: Method 15D3, no pretreatment
Exchangeable Acidity: Method 15G1

Yours faithfully,

Dr Robert Patterson FIEAust, CPSS(3), CPAg
Soil Scientist and Environmental Engineer





Percent sorbed is the proportion of the initial P sorbed during equilibration

Initial P	filtrate	sorbed P	Sample	Percent
mgP/L	P	mg/kg	I.D.	sorbed
	mg/L			(%)
24.0	10.00	139.5	Whitehead&Assoc -JUN15	58.3
48.7	23.09	256.2	Project 1471	52.6
73.4	49.13	242.7		33.1
99.0	71.00	279.8		28.3
148.4	116.14	322.6		21.7

Calculated P sorption kg/ha = 2000

P-isotherm Whitehead&Assoc -JUN15 Prc

Std line	filtrate	Y axis	X axis
	C	Log C	
	ugP/L		
240	9999	4.00	139.5
487	23090	4.36	256.2
734	49133	4.69	242.7
990	70997	4.85	279.8
1484	116143	5.06	322.6

Appendix D

Water and Nutrient Balance Modelling

BMT WBM

Land Application Management Tool

Run Model

Site Data

Application Area (m^2)	1200
Land Application Type	3
Storage Type	1
Application Method	1
Storage Capacity (m^3)	0
Storage Depth (m)	0
Average Slope (%)	1
Soil Type	pa_fill
Crop Type	Default

Soil Data

Add New

	Layer # (Single Layer Version) 1
Effective Saturation (mm)	414.0
Field Capacity (mm)	300.0
Permanent Wilting Point (mm)	100.0
Saturated Hydraulic Conductivity (mm/day)	1500.0
Soil Depth for P Sorption (m)	0.6
Bulk Density (kg/m^3)	1400.0
Depression Storage (mm)	0.0
Infiltration Rate (mm/day)	200.0
Infiltration Exponent	1.5
Coefficient P Sorption	79.3
Exponent P Sorption	0.30
Exponent P Desorption	0.15

Land Application and Acceptance Rates

Storage Seepage (mm/day)	0
Fixed Application Depth (mm)	0
Soil Water Trigger (mm)	0
Additional Application Depth (mm)	0
Nitrogen Crop Uptake (kg/ha/yr)	260
Phosphorus Crop Uptake (kg/ha/yr)	30

Wastewater Characteristics

Constant Daily WWF (m^3/day)	0
Total Nitrogen (mg/L)	60
Total Phosphorus (mg/L)	15
Virus (MPN/L)	100

Use WWF timeseries instead? Yes

View Data

8.8 m^3/day

Crop Data

Add New

January	1
February	1
March	1
April	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1

Meteorological Data

View Data

Number of Years 60.8

	R	ET	E	T
Max	221.6	9.3	16.5	35.2
Min	0.0	0.4	0.2	6.1
Average	2.5	3.4	4.0	18.0
Median	0.0	3.1	3.6	18.0
Standard Deviation	8.1	1.7	2.2	4.9

ONLY grey cells require input.
Refer to comments within cells for instructions

BMT WBM

Land Application Management Tool

View Timeseries Results

Summary of Results

Runoff (surcharge) frequency	**5.7**	days/year	
Runoff (surcharge) volume	**2.9**	% of total WWF volume	
Deep drainage volume	**2675.4**	m3/yr	**6.11** mm/day
Total phosphorus load in runoff	**1.0**	kg/yr	
Total nitrogen load in runoff	**0.2**	kg/yr	
Total phosphorus load in deep drainage	**42.5**	kg/yr	
PO4 concentration in deep drainage	**11.5**	g/cub.m	
Total nitrogen load in deep drainage	**5.2**	kg/yr	
NO3 concentration in deep drainage	**1.3**	g/cub.m	
Total site virus load	**12423721**	MPN/yr	
Total site virus concentration	**4.5**	MPN/L	
Total site phosphorus load	**43.5**	kg/yr	
Total site nitrogen load	**5.4**	kg/yr	
Storage overflow frequency	**0**	number of years	
	0.0	days/year	
Storage overflow volume	**0.0**	cub.m/yr	
	0.0	% of total WWF volume	

Appendix E

General Notes

2021 Calendar

Calendarpedia
Your source for calendars

January	February	March	April	May	June
1 Fr New Year's Day	1 Mo	1 Mo	1 Th	1 Sa	1 Tu
2 Sa	2 Tu	2 Tu	2 Fr	2 Su DRESSAGE	2 We
3 Su	3 We	3 We	3 Sa	3 Mo	3 Th
4 Mo	4 Th	4 Th	4 Su	4 Tu	4 Fr
5 Tu	5 Fr	5 Fr	5 Mo	5 We	5 Sa
6 We	6 Sa	6 Sa	6 Tu	6 Th	6 Su
7 Th	7 Su	7 Su	7 We	7 Fr	7 Mo
8 Fr	8 Mo	8 Mo	8 Th	8 Sa PRPC	8 Tu
9 Sa	9 Tu	9 Tu	9 Fr	9 Su PRPC	9 We
10 Su	10 We	10 We	10 Sa	10 Mo	10 Th
11 Mo	11 Th	11 Th	11 Su Gresford RFS Exer	11 Tu	11 Fr
12 Tu	12 Fr	12 Fr GDAS SHOW	12 Mo	12 We	12 Sa PRPC
13 We	13 Sa	13 Sa GDAS SHOW	13 Tu	13 Th	13 Su PRPC
14 Th	14 Su PRPC	14 Su	14 We	14 Fr	14 Mo
15 Fr	15 Mo	15 Mo	15 Th	15 Sa Dungog Motorcycle	15 Tu
16 Sa	16 Tu	16 Tu	16 Fr	16 Su Dungog Motorcycle	16 We
17 Su	17 We	17 We	17 Sa	17 Mo	17 Th
18 Mo	18 Th	18 Th	18 Su	18 Tu	18 Fr
19 Tu	19 Fr	19 Fr	19 Mo	19 We	19 Sa PRPC Zone Day
20 We	20 Sa	20 Sa	20 Tu	20 Th	20 Su PRPC Zone Day
21 Th	21 Su DRESSAGE	21 Su	21 We	21 Fr	21 Mo
22 Fr	22 Mo	22 Mo	22 Th	22 Sa	22 Tu
23 Sa	23 Tu	23 Tu	23 Fr	23 Su	23 We
24 Su	24 We	24 We	24 Sa	24 Mo	24 Th
25 Mo	25 Th	25 Th	25 Su PRPC	25 Tu	25 Fr
26 Tu	26 Fr	26 Fr	26 Mo	26 We	26 Sa Function booked
27 We	27 Sa PRPC ZONE	27 Sa	27 Tu	27 Th	27 Su
28 Th	28 Su PRPC ZONE	28 Su PRPC	28 We	28 Fr	28 Mo
29 Fr		29 Mo	29 Th	29 Sa PENNING tbc	29 Tu
30 Sa		30 Tu	30 Fr	30 Su PENNING tbc	30 We
31 Su PRPC		31 We		31 Mo	

2021 Calendar

Calendarpedia
Your source for calendars

July	August	September	October	November	December
1 Th	**1 Su**	1 We	1 Fr	1 Mo	1 We
2 Fr	2 Mo	2 Th	**2 Sa** E' ZONE TBC	2 Tu	2 Th
3 Sa	3 Tu	3 Fr	**3 Su** E' ZONE TBC	3 We	3 Fr
4 Su DRESSAGE	4 We	**4 Sa**	4 Mo	4 Th	**4 Sa**
5 Mo	5 Th	**5 Su**	5 Tu	5 Fr	**5 Su**
6 Tu	6 Fr	**6 Mo**	6 We	**6 Sa**	6 Mo
7 We	**7 Sa**	7 Tu	7 Th	**7 Su**	7 Tu
8 Th	**8 Su** DRESSAGE	8 We	8 Fr	8 Mo	8 We
9 Fr American Motor Cyc	9 Mo	9 Th	**9 Sa**	9 Tu	9 Th
10 Sa American Motor Cyc	10 Tu	10 Fr	**10 Su** PRPC	10 We	10 Fr
11 Su PRPC	11 We	**11 Sa** PRPC	**11 Mo**	**11 Th**	**11 Sa**
12 Mo	12 Th	**12 Su** PRPC	12 Tu	12 Fr	**12 Su**
13 Tu	13 Fr	13 Mo	13 We	**13 Sa**	13 Mo
14 We	**14 Sa** PRPC	14 Tu	14 Th	**14 Su** PRPC	14 Tu
15 Th	**15 Su**	15 We	15 Fr	15 Mo	15 We
16 Fr	16 Mo	16 Th	**16 Sa**	16 Tu	16 Th
17 Sa	17 Tu	17 Fr	**17 Su**	17 We	17 Fr
18 Su	18 We	**18 Sa**	18 Mo	18 Th	**18 Sa**
19 Mo	19 Th	**19 Su**	19 Tu	19 Fr	**19 Su**
20 Tu	20 Fr	20 Mo	20 We	**20 Sa**	20 Mo
21 We	**21 Sa**	21 Tu	21 Th	**21 Su**	21 Tu
22 Th	**22 Su**	22 We	22 Fr	22 Mo	22 We
23 Fr	23 Mo	23 Th	**23 Sa**	23 Tu	23 Th
24 Sa Mud Run TBC	24 Tu	24 Fr	**24 Su**	24 We	**24 Fr**
25 Su Mud Run TBC	25 We	**25 Sa**	25 Mo	**25 Th**	**25 Sa** Christmas Day
26 Mo	26 Th	**26 Su**	26 Tu	26 Fr	**26 Su**
27 Tu	27 Fr RODEO	27 Mo	27 We	**27 Sa**	27 Mo
28 We	**28 Sa** RODEO	28 Tu	28 Th	**28 Su**	28 Tu
29 Th	**29 Su** RODEO	29 We	29 Fr	29 Mo	29 We
30 Fr	30 Mo	30 Th	**30 Sa**	30 Tu	30 Th
31 Sa	31 Tu		**31 Su** DRESSAGE		31 Fr New Year's D. (obs.

Soil Physical Properties / Chemistry

pH

This test is used to determine the acidity or alkalinity of native soils. pH is measured on a scale of 0 to 14, with 7 being neutral. Results below 7 are considered acid, while those above 7 are alkaline. For land application of effluent, soil with a pH of 4.5 to 8.5 should typically pose no constraints. Soil pH affects the solubility and fixation of some nutrients; this in turn reduces soil fertility and plant growth. By correcting soil pH beneficial plant growth is improved, assisting in the assimilation of nutrient and improving evapotranspiration of effluent. Most Australian soils are naturally acidic.

Electrical Conductivity

Electrical conductivity (EC) is a measure of a soil or soil/water extracts ability to conduct an electrical current. It is used as an indirect measure of a soil's accumulation of water-soluble salts, mainly of sodium, with minor potassium, calcium and magnesium. High EC within a land application area reflects general soil salinity and is undesirable for vegetation growth. The tolerance of vegetation species to soil salinity varies among plant types. Typically, EC readings of <4dS/m pose no constraints. There are a number of measures available to counter high soil EC values for land application of effluent; however, the most important measure relates to the conservative selection of application rates and appropriate application area sizing.

Emerson Aggregate Test

The Emerson Aggregate Test (EAT) is a measure of soil dispersibility and susceptibility to erosion and structural degradation. It assesses the physical changes that occur in a single ped of soil when immersed in water, specifically whether the soil slakes and falls apart or disperses and clouds the water. Dispersive soils pose limitations to on-site sewage management because of the potential loss of soil structure when effluent is applied. Soil pores can become smaller or completely blocked, causing a decrease in soil permeability, which can lead to system failure.

Cation Exchange Capacity

The cation exchange capacity (CEC) is the capacity of the soil to hold and exchange cations (positively charged molecules). Because some soils have a dominant negative charge, they can adsorb cations. Soils bind cations such as calcium, magnesium, potassium and sodium, preventing them from being leached from the soil profile and making them available as plant nutrients. CEC is a major controlling agent for soil structural stability, nutrient availability for plants and the soils' reaction to fertilisers and other ameliorants. A CEC of greater than 15 cmol+/kg or me/100g is recommended for land application systems. Adding organic matter (compost/humus) to soil can greatly increase its CEC.

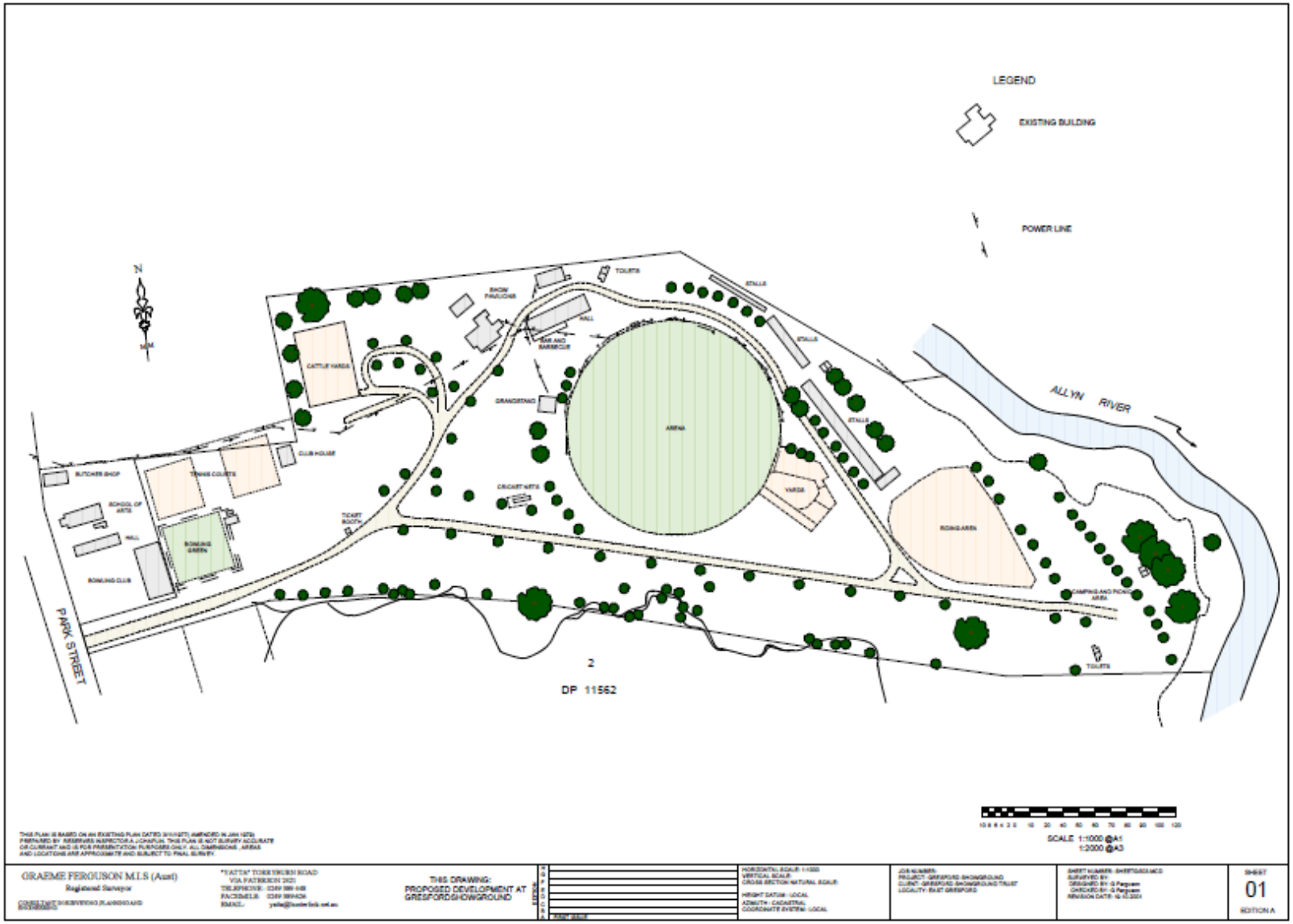
Exchangeable Sodium Percentage

The exchangeable sodium percentage (ESP) is an important indicator of soil sodicity, which affects soil structural stability and overall susceptibility to dispersion. Sodic soils tend to have a low infiltration capability, low hydraulic conductivity, and a high susceptibility to erosion. When sodium dominates the exchangeable cation complex, soil structural stability declines significantly. Soil ESP is considered acceptable for effluent application areas when it is below 5%, marginal between 5% – 10% and limiting >10%. The ESP of application area soils can be improved by the measured application of calcium (lime/gypsum).

Phosphorus Sorption Capacity

Phosphorus sorption (P-sorption) capacity is a direct measure of a soils ability to adsorb phosphorus. Phosphorus is an important plant nutrient and is the limiting available nutrient in many aquatic environments. Excess phosphorus can increase the production of nuisance vegetative growth such as algae. The P-sorption capacity of the soil in an effluent application area relates to its ability to assimilate the phosphorus in the wastewater for the design life of the application area. P-sorption values greater than 400mg/kg is considered acceptable for land application of effluent, while values below 150mg/kg present a constraint.

ATTACHMENT 8 – SURVEY



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