Shire of Woodanilling

Planning and Development Act 2005

Shire of Woodanilling

Notice of public advertisement of planning proposal

The local government has received an application to use and/or develop land for the following purpose and public comments are invited.

Lot Nos .: 1 and 4 **Street:** Youngs Road **Suburb:** Beaufort River

Proposal: -

Fletcher International Export Pty Ltd (FIE) has submitted an application for a proposed Sheep Feedlot at Ronneby Park Beaufort River with a maximum capacity of **90,000 head of sheep**. The sheep will be held for a minimum of 35 days before being transported to the FIE abattoir at Narrikup.

The development will include approximately 130 sheep pens; a biosolid stockpile area for sheep manure and carcass management; a sedimentation pond (6,500m3) and an evaporation pond (42,548m3) for capture and holding of effluent runoff. An area for feedlot facilities/operations which will include; truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment. Accommodation will be provided on site for up to 16 employees, using the existing dwellings and five transportable accommodation buildings.

Water for the stock will be provided from an existing ground water bore which is proposed to be 4 litres / head / day. This gives a total extraction of 131 ML per annum.

The application includes:

- Site Plan and Location Plan;
- Feedlot Concept Plan;
- Operational Environmental Management Plan;
- Water Management Plan;
- Bushfire Management Plan; and
- Construction Management Plan

Details of the proposal are available for inspection at the local government office and can also be viewed on the Council's website www.woodanilling.wa.gov.au

Comments on the proposal may be submitted to the local government in writing on or before the 30th January 2020.

Signed: Stephen Gash Dated: 18th December 2019

Chief Executive Officer

Ronneby Park Beaufort River - Sheep Feedlot

Fletcher International Export Pty Ltd (FIE) has submitted a development application under the Shire of Woodanilling Town Planning Scheme No 1 for a sheep feedlot, employee quarters and supporting facilities, at Lots 1 and 4 Youngs Road, Beaufort River.

Ronneby Park is approximately 42 kilometres west of Woodanilling, 32 kilometres north of Kojonup and 6 kilometres west of Albany Highway. The subject land has an area of 424 hectares.

The application is for a maximum of 90,000 sheep held for a minimum of 35 days before being transported to the FIE abattoir at Narrikup. The development will consist of;

- Approximately 130 sheep pens (50m long by 25m wide) designed to hold up to 600 head of sheep each;
- A biosolid stockpile area for sheep manure;
- A separate biosolid stockpile area for carcass management;
- Sedimentation pond (6,500m^3) and an evaporation pond (42,548m^3) for capture and holding of effluent runoff;
- An area for feedlot facilities/operations which will include; truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment.
- A sheep processing area including; weighbridge, office hut, covered sheep weighing yards and unloading ramps.
- Accommodation for employees, which will include the existing dwellings and five transportable accommodation buildings for up to 16 people.

The feedlot development area is located in the south western portion of the property and has an area of 108 hectares. This includes the sheep pens; feed storage, waste management evaporation ponds, office and weighbridge. The sheep pens and associated development will require approximately 40 hectares of land which will be subject to earth working. The maximum cut depth is approximately 1.6m with the maximum fill being approx. 1.0m.

The application includes:

- Site Plan and Location Plan;
- Feedlot Concept Plan;
- Operational Environmental Management Plan;
- Water Management Plan;
- Bushfire Management Plan; and
- Construction Management Plan

Gravel for the sheep pens will be extracted from approximately 63 hectares of the site over a 12 month period.

Water for the stock will be provided from an existing ground water bore which is proposed to be 4 litres / head / day. This gives a total extraction of 131 ML per annum.

The feedlot will operate 24/7, however it is intended that the livestock delivery and departure will occur during daylight hours to facilitate supervision of loading and unloading. It is estimated that there will be approximately 12 staff employed along with several contractors.

There will be 4 - 6 RAVs (pocket road trains/B-doubles) in and 4 - 6 RAVs (pocket road trains/Bdoubles) out per day. The RAVs will access and leave the feedlot via Youngs Road. Additionally, there will be modest traffic using Youngs Road such as for feedlot workers and FIE management.

Manure will be collected from the feedlot pens on a regular basis to avoid build-up in the pens and stockpiled in biosolids storage areas (manure stockpiles). The stockpiles of manure will be removed off site on a regular basis by a licenced and approved third party operator.

The effluent management system

- Diversion banks/bunds constructed around the sheep feedlot;
- A sedimentation pond designed to capture and hold the peak flow; and
- An evaporation pond designed to capture and hold effluent following treatment in a sedimentation system.

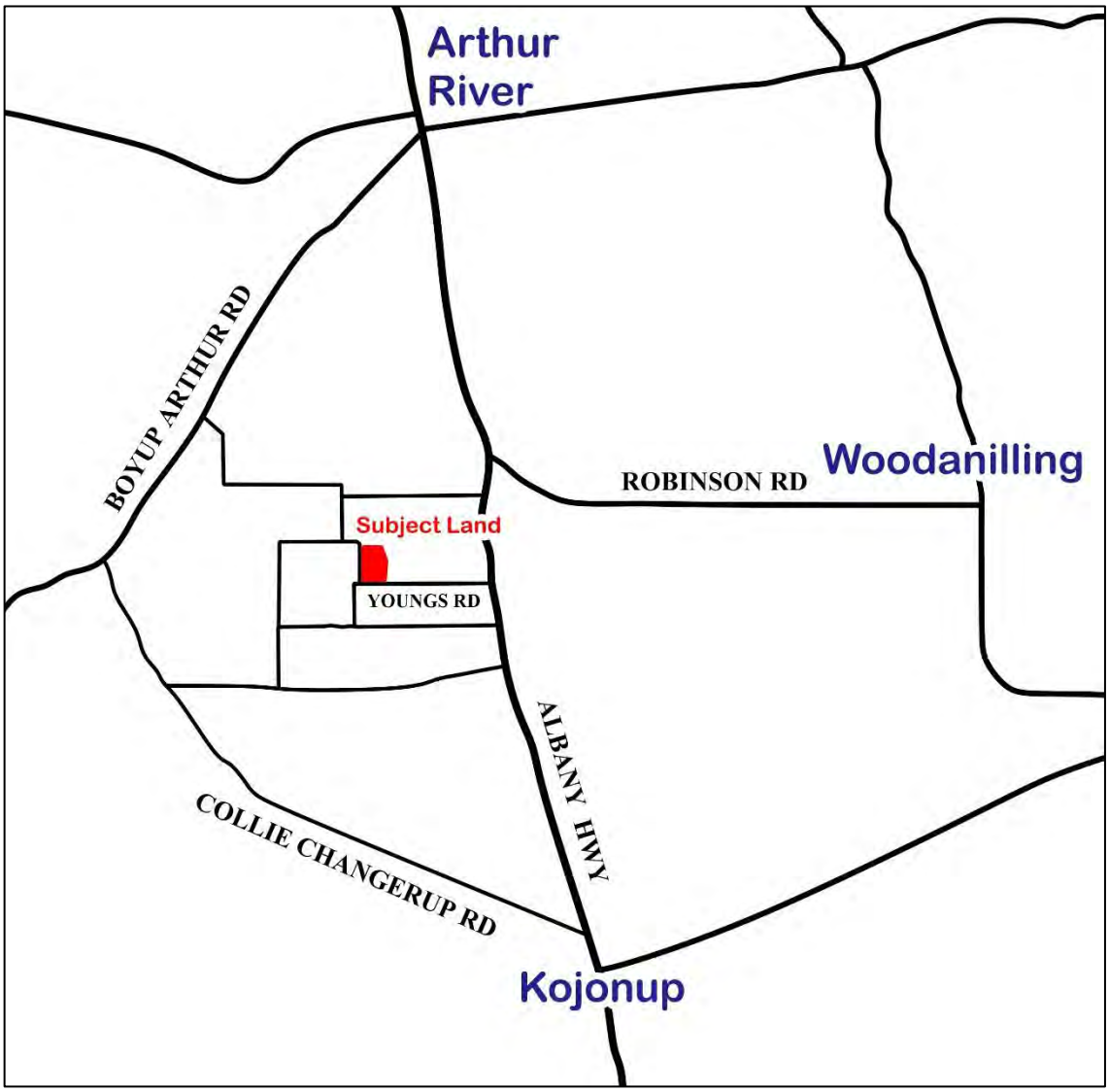
Quarterly monitoring of one groundwater monitoring bore downstream of the feedlot and ponds is proposed.

Once the effluent runoff reaches the sedimentation pond the organic matter within the effluent settles out and forms a sludge layer at the base of the pond. This sludge will be removed once its volume has reached approximately 10% of the pond's capacity or if a strong odour is detected from the pond. The sludge will be removed via excavator and stockpiled in the manure stockpile area.

It has been submitted that dust emissions are anticipated to be minimal during the operation of the facility and that no additional water supplies will be required for dust suppression.

An Annual Environmental Report (AER) shall be prepared and submitted to the Department of Water and Environmental Regulation (DWER) in accordance with the reporting conditions of the feedlot licence.

It has been submitted that approval and implementation of the feedlot will have various economic benefits including supporting local employment, supporting local services, assisting in a more sustainable local economy and it will add to Woodanilling's overall viability, vitality and prosperity.



Location Plan

Planning Report in support of Development Application for Ronneby Park Sheep Feedlot, employee quarters and supporting facilities

Lot 1 on Plan 21594 and Lot 4 on Plan 21594 Youngs Road, Beaufort River

Prepared for Fletcher International Export Pty Ltd

www.edgeplanning.com.au

November 2019

Contents

PLANNING REPORT

1. INTRODUCTION

The purpose of this report is to explain the proposal from Fletcher International Export Pty Ltd (FIE) for a proposed Ronneby Park Sheep Feedlot, employee quarters and supporting facilities, and to set out the planning and environmental merits.

The planning report is supported by associated plans, technical reports prepared by Bio Diverse Solutions and technical investigations undertaken by sub-consultants.

The subject land (to be called the 'site' or Ronneby Park) is shown in Attachment 1, while the site's location is provided in Attachment 2.

In summary, the Development Application seeks development approval from the Shire for:

- a 90,000 head of sheep feedlot – classified in the *Shire of Woodanilling Town Planning Scheme No. 1 (TPS1) as* 'animal husbandry – intensive'. The feedlot is shown in the Feedlot Concept Plan (Attachment 3);
- 4 sets of 4 bedroom dongas (total 16 rooms) with shower and toilet for each room (employee quarters) - classified as 'residential building' in TPS1;
- 1 donga for cooking and entertainment (12 metres in length);
- 2 shower blocks; and
- 2 toilet blocks.

The floor plans and elevations for employee quarters and supporting facilities are shown in Attachment 4. Detailed plans will be supplied at building approval stages.

During the process of development approval, FIE will seek a Works Approval and then a licence to operate from the Department of Water and Environmental Regulation (DWER) for the proposed feedlot.

2. BACKGROUND

2.1 Context

Ronneby Park is approximately 42 kilometres west of Woodanilling and approximately 32 kilometres north of Kojonup. The site is also located around 6 kilometres west of Albany Highway (see Attachment 2).

The site is surrounded by agricultural farmland. There is also conservation land adjacent to the west of Ronneby Park.

2.2 Cadastral details

A copy of the Certificates of Title and associated Deposited Plans are provided in Attachment 5. Cadastral details for the site are summarised below in Table 1.

Table 1 – Cadastral Details

Lot and address	Lot 1 Youngs Road Beaufort River	Lot 4 Youngs Road Beaufort River
Plan	21594	21594
Volume/Folio	2106/443	2106/446
Area	184.1821 hectares	240.1037
Owner	Benale Pty Ltd	Benale Pty Ltd

2.3 Physical characteristics

The site is shown in Attachment 1. In summary, the site:

- is largely cleared through past land uses, including clearing to allow for extensive broadacre agricultural activity and grazing. Other than a few isolated trees, the proposed footprint for the feedlot will be located on cleared land;
- contains two dwellings, various sheds, a sheep yard and a few dams on Lot 4. Lot 1 is predominantly used for grazing. It also contains a conservation covenant paddock area and a pine plantation;
- is currently used for livestock and has been used for cereal cropping in the past;
- the development footprint is undulating with a high point of 282.5m AHD in the north east of the site and a low point of 257.5m AHD in the north western corner of the

site. There is also a valley that runs from east to west in the southern portion of the site that has a low point of 261m AHD;
- drains to the west and north west and is within the Blackwood River Catchment; and
- contains different soil profiles as revealed by the soil testing and geotechnical investigations undertaken by Great Southern Geotechnics (see Attachment 7). The geotechnical investigation confirmed the capability and suitability of the site for the proposed feedlot.

Details related to the site are outlined in Attachments 6 - 9. The technical investigations confirm that the site's physical characteristics present no constraints to the proposed feedlot.

2.4 Services

The unsealed Youngs Road adjoins the site on its western and southern boundaries.

As set out at https://mrwebapps.mainroads.wa.gov.au/hvsnetworkmap, Youngs Road can be used by certain Restricted Access Vehicles (RAVs) in addition to as-of-right vehicles. Youngs Road is classified as Tri Drive Concessional LVL 1 for Tri Drive TD 1.1 vehicles (Level 1 – Tri-drive RAV Category 1). Further details are outlined at https://www.mainroads.wa.gov.au/UsingRoads/HVS/Permits/Permits/Pages/AMMS.aspx

The site is provided with on-site water collection and on-site sewerage disposal.

Power and telecommunication services are currently available to the site.

2.5 Heritage

The Department of Planning, Lands and Heritage's Aboriginal Heritage Inquiry System at https://maps.daa.wa.gov.au/ahis/ reveals there are no Registered Aboriginal Sites applying to the subject land. While noting this, landowners and land developers have an obligation under the *Aboriginal Heritage Act 1972* to protect places and objects in Western Australia that are important to Aboriginal people because of the connections to their culture.

Additionally, the site does not contain any structure or place of non-indigenous heritage significance on the *Shire of Woodanilling Municipal Inventory* or on the Shire's Heritage List.

3. PLANNING FRAMEWORK

3.1 Overview

This section will outline how the proposed feedlot suitably addresses relevant legislation, planning policies, strategies, plans and TPS1. These documents consider key planning, environmental, servicing and economic development matters. Other legislation, policy and guidelines are considered in Attachments 6 - 9.

3.2 State planning framework

The following legislation, strategies and policies are of relevance to the Development Application:

- *Planning and Development Act 2005;*
- *Planning and Development (Local Planning Schemes) Regulations 2015;*
- *State Planning Strategy 2050* - sets a broad strategic plan for Western Australia built on sustained growth and prosperity. The Strategy highlights the importance of job creation, economic diversity, value-adding and supports developing strong and resilient regions. In relation to agriculture and food, the objective is 'To enable the State's food supply chains to meet the projected demands of its domestic and global food and fisheries market' (page 51);
- *State Planning Policy 1 State Planning Framework Policy;*
- *State Planning Policy 2 Environment and Natural Resources;*
- *State Planning Policy 2.5 Rural Planning* – objectives include supporting and expanding primary

production, promotes economic growth, avoid and minimise land use conflicts, protect and manage environmental, landscape and water resources. Section 5.7 highlights that 'Animal premises are important contributors to the food needs of Western Australia's residents and to the State's economy.' The WAPC policy is 'animal premises are a rural land use, and are generally supported and encouraged on rural land provided rural amenity and environmental impacts can be effectively managed';

- *State Planning Policy No. 2.9 Water Resources;*
- *State Planning Policy 3.4 Natural Hazards and Disasters;*
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas;*
- *State Planning Policy 4.1 State Industrial Buffer Policy;*
- *Guidelines for Planning in Bushfire Prone Areas;*
- *Rural Planning Guidelines;*
- *Visual Landscape Planning in Western Australia Manual;*
- *EPA Guidance Statement 3 – Separation Distances between Industrial and Sensitive Land Uses;*
- *EPA Guidance Statement 33 – Environmental Guidance for Planning and Development;* and
- *DWER Water Quality Protection Note 33 – Nutrient and Irrigation Management Plans.*

3.3 Regional planning framework

3.3.1 Great Southern Regional Planning and Infrastructure Framework

The Framework promotes economic development, diversification and value adding including a growing agricultural sector. The Framework recognises the importance of business development and job creation. Additionally, the Framework supports upgrading important freight routes including Albany Highway.

3.3.2 Great Southern Regional Blueprint

The Blueprint establishes priorities for economic development and growth in the Great Southern region and provides an analysis of local, regional, national and global factors influencing the region. A strategic economic growth plan and proposed transformational projects are set out. The Blueprint supports a growing economy, economic diversification and adding value to primary production.

The Blueprint sets out several transformational projects. Transformational Project 1: Growing Value seeks to further expand the production, value adding and international marketing of the region's food products. Transformational Project 4: Avenues to Opportunity relates to transport and industry hubs and includes support for upgrading Albany Highway, including more passing lanes.

3.4 Local planning framework

3.4.1 Shire of Woodanilling Town Planning Scheme No. 1

The site is zoned 'Regional Rural' in TPS1.

Sections of TPS1, relevant to the Development Application, include:

- Clause 1.6, the aims of the Scheme, includes to:
  - ensure there is sufficient supply of serviced and suitable land for employment;
  - assist employment and economic growth;
  - promote the sustainable use of agricultural land for agricultural purposes whilst accommodating other rural activities;
  - protect and enhance the environmental values and natural resources;
  - safeguard and enhance the character and amenity of the built and natural environment of the Shire;
- Clause 4.2 outlines zone objectives. The objective for the 'Regional Rural' zone is 'To provide for a

range of rural pursuits such as broadacre and diversified farming which are compatible with the capability of the land and retain the rural character and amenity of the locality';

- Clause 4.3 and Table 1 set out the Zoning Table. A feedlot is best described as 'animal husbandry - intensive' which as a 'D' (discretionary) use in the Regional Rural zone. The proposed employee quarters are best described as a 'residential building' which is an 'A' (advertising) use in the Regional Rural zone;
- Clause 5.11 Regional Rural Zone outlines several clauses including to preserve agriculturally productive land, ensure new development/uses address land use compatibility and amenity and provisions for more than one dwelling on a lot;
- Schedule 1 defines 'animal husbandry - intensive' as 'means premises used for keeping, rearing or fattening pigs, poultry (for either egg or meat production), rabbits (for either meat or fur production) and other livestock in feedlots'; and
- Schedule 1 defines 'residential building' as 'has the same meaning as in the Residential Planning Codes'.

A 'residential building' is defined in *State Planning Policy 7.3 Residential Design Codes Volume 1* as:

> 'A building or portion of a building, together with rooms and outbuildings separate from such building but incidental thereto; such buildings being used or intended, adapted or designed to be used for the purpose of human habitation:
>
> - temporarily by two or more persons; or
> - permanently by seven or more persons, who do not compromise a single family, but does not include a hospital or sanatorium, a prison, a hotel, a motel or a residential school.'

3.4.2 Local Planning Strategy

The Shire does not have a Local Planning Strategy.

3.4.3 Local Planning Policies

Draft Local Planning Policy No.6 – Bushfire Planning and Development has been addressed in the Bushfire Management Plan (Attachment 8).

There are no adopted Local Planning Policies of relevance to the Development Application.

3.4.4 Shire of Woodanilling Strategic Community Plan 2012 - 2022

The Strategic Community Plan (SCP) sets the community's vision for the future and it is the principal strategic guide for the Council's future planning and activities. The vision is 'In 2022 the Shire of Woodanilling will be a Shire that is energetic and progressive with a strong connection to its independence and encourages the sustainable development of the natural environment through ways that value the cultural heritage and sense of place provided by living in Woodanilling.'

The SCP establishes themes and objectives relating to social, environment, civic leadership and economic objectives. This includes objectives to 'Protect and sustainably use natural resources' (page 17) and 'To maintain a quality road transport network which is safe and accessible to all users' (page 14).

The SCP notes there is 'a focus on economic development' (page 13).

The Development Application is consistent with the vision and objectives of the SCP.

3.5 Commonwealth legislation and national guidelines

Commonwealth legislation and national guidelines relevant to the proposed

feedlot include *Environmental and Protection and Biodiversity Conservation Act 1999* and *National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems*.

3.6 Planning framework implications for the Development Application

Common themes of the policies, strategies, plans and TPS1 and their implications for the Development Application include:

- addressing land use compatibility;
- addressing key environmental assets;
- addressing bushfire risk;
- addressing landscape impact;
- supporting sustained growth, job creation, value-adding and economic development;
- supporting local communities and local economies; and
- appropriate servicing.

Based on the above, the Development Application is consistent with the planning framework and is consistent with the principles of orderly and proper planning.

4. DEVELOPMENT PROPOSAL

4.1 Proposed feedlot and employee quarters

The Development Application proposes a sheep feedlot accommodating up to 90,000 sheep along with supporting infrastructure and facilities at Ronneby Park.

In relation to the proposed feedlot, classified as 'animal husbandry – intensive' in TPS1, the proposal is:

- to accommodate up to 90,000 head of sheep;
- for the feedlot to be developed on a 108 hectare portion of the site as outlined on the Feedlot Concept Plan (Attachment 3);
- for approximately 130 sheep pens (50m long by 25m wide) designed to hold up to 600 head of sheep each;
- a biosolids stockpile area for sheep manure;
- a separate biosolids stockpile area for carcass management;
- sedimentation and evaporation ponds for capture and treatment of effluent runoff;
- a sheep processing area for drop off/pick up and draughting of sheep; and
- an area for feedlot facilities/operations which will include truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment.

The proposed operation will generally involve receival of sheep stock, ration feeding for a minimum of 35 days and dispatch of stock.

The feedlot will operate 24/7, however it is intended that the livestock delivery and departure will occur during daylight hours to facilitate supervision of loading and unloading.

As outlined in the Construction Management Plan (Attachment 9), revegetation will occur in the valley (depression) south of the feedlot site.

FIE estimate there will be approximately 12 staff employed along with several contractors. The financial benefit to farmers and the economic benefits to the district and region are expected to be significant.

FIE and its contractors propose to use pocket road trains/B-doubles to transport sheep and feed to the site and in-turn, transport sheep to the FIE abattoir at Narrikup. Further details are outlined in section 5.7.

Further details relating to the feedlot are set out in the Operational Environmental Management Plan (Attachment 6).

The Development Application also seeks approval for employee quarters and supporting facilities. In particular, approval is also sought for:

- 4 x 4 bedroom dongas with shower and toilet for each room (employee quarters) - classified as 'residential building' in TPS1. Total of 16 rooms. The accommodation blocks are 13.4 metres long and 3 metres wide;
- 1 donga for cooking and entertainment (12 metres in length);
- 2 shower blocks; and
- 2 toilet blocks.

The floor plans and elevations for employee quarters and supporting facilities are shown in Attachment 4. Detailed plans will be supplied at building approval stages. The location of the future employee quarters is adjacent to the existing farm sheds as shown on Attachment 3.

4.2 Feedlot Concept Plan

A Feedlot Concept Plan is provided in Attachment 3 which conceptually shows how the site is proposed to be developed. The Feedlot Concept Plan has considered the site's context, including adjoining and nearby land uses, considered the future requirements of FIE and considered land use compatibility.

The Feedlot Concept Plan only shows part of Lots 1 and 4. The development footprint for the feedlot and supporting infrastructure is approximately 108 hectares. The balance of the site will continue to be used for predominantly livestock grazing.

4.3 Construction management

The Construction Management Plan (see Attachment 9) outlines the construction methodology and associated environmental management strategies. The Construction Management Plan includes details of proposed gravel extraction areas which are located within the Ronneby Park boundary. The gravel will be used to form the base of the feedlot, feedlot facility/processing area and the roads.

Cut and fill earthworks will be undertaken to create the pens, runoff and drainage controls, drains, roads and sedimentation/evaporation ponds. They will also prepare for the foundations of buildings and structures that are to be erected including silage bunkers, workshop and sheep processing facilities. The balanced cut and fill earthworks will ensure adequate drainage of the feedlot is achieved, earthworks are minimised, and importation of material is avoided. The cut and fill earthworks will be undertaken using material from the site.

The Construction Management Plan also includes the following:

- Erosion and Sediment Control Plan;
- Noise Management Plan;
- Dust Management Plan;
- Rehabilitation;
- Fauna management;
- Dieback and General Hygiene Management Plan; and
- Control of environmental incidents and contingency procedures.

4.4 Other required approvals

In addition to seeking development approval, Bio Diverse Solutions on behalf of FIA will lodge a Works Approval application to DWER for the feedlot.

DWER will consider granting a Works Approval with associated conditions for the design and construction of the operations.

After a Works Approval has been issued and the works implemented, FIE need to apply to DWER for a Licence (for operation).

Works Approvals and Licences are issued by DWER with legally binding conditions that apply to specific premises and are intended to prevent or minimise the potential for pollution.

DWER will be the primary public agency responsible for the day-to-day management and operation of the feedlot. It is recognised that issues and procedures under the *Environmental*

Protection Act 1986 fall outside the Shire's jurisdiction.

5. PLANNING CONSIDERATIONS AND PLANNING JUSTIFICATION

5.1 Overview

This section brings together an assessment of the site's attributes and the planning framework in considering key planning matters and justifying the Development Application.

5.2 Planning suitability for feedlot

The site is suitable for the sheep feedlot (animal husbandry - intensive) for reasons including:

- it is consistent with the planning framework;
- the uses are complementary to surrounding farming operations and conservation;
- it has generous buffers to off-site dwellings. The closest off-site dwelling is located approximately 1300 metres to the south-west;
- it is sited away from townsites, settlements and rural living/hobby farms;
- the site is generally cleared and key environmental assets, including water resources, can be suitably addressed;
- soil types and proposed mitigation measures address land capability and suitability;
- traffic impacts will be manageable, and traffic can readily be accommodated on Youngs Road;
- vehicles can enter and leave the site in a forward gear and unloading/loading will occur on-site;
- the development will be appropriately serviced;
- there are minimal landscape considerations given the landform, siting of development and that Youngs Road is not a tourist route;
- the site is not subject to heritage constraints nor is it located in a public drinking water source area;
- the proposal will complement Woodanilling and the district, increasing its overall viability, vitality and prosperity, increasing the economic viability of existing services and adding to the range of services that can be provided;
- it will support the local economy by providing employment opportunities;
- it adds value to agriculture production and supports district and regional employment;
- the site has convenient access to the State and regional road network; and
- it is conveniently/centrally located to FIE's clients.

Further details relating to the site's suitability for the proposed feedlot are outlined in this section and summarised in Table 2.

5.3 Compatibility with adjoining and nearby land uses

A key planning requirement is separating potentially conflicting land uses. This section outlines how the Development Application is compatible with adjoining and nearby land uses.

Environmental Protection Authority Guidance Statement No. 3 *Separation Distances between Industrial and Sensitive Land Uses (Guidance 3)* provides recommendations on separation distances for industrial (which includes various rural activities) and sensitive land uses. The purpose of Guidance 3 is to outline generic setback distances between industrial and sensitive land uses, in order to ensure that the impacts of industrial development do not adversely affect the amenity and enjoyment of sensitive land uses.

The proposed feedlot is best described in Guidance 3 as an 'animal feedlot'. Guidance 3, which relates to sheep, sets a generic buffer distance of 1000-2000 metres (depending on size). The key impacts are noise, dust and odour.

As stated on Page 2 of Guidance 3:

'In line with the requirements of the EP Act, it is necessary for individual industrial developers to take all reasonable and practicable measures to prevent or minimise emissions from their premises. It is generally expected that, through appropriate site layout, design of facilities, and the implementation of engineering and process controls, emissions from an individual industrial land use can be prevented from causing an adverse environmental impact beyond the boundaries of the particular site or beyond the boundaries of an industrial estate.'

The Development Application is compatible with adjoining and nearby land uses/development. The reasons include:

- an appropriate buffer is provided to existing off-site dwellings with the closest dwelling located approximately 1300 metres to the south-west. Due to prevailing winds, it should result in limited off-site impacts to the south-west. Other off-site dwellings are a considerable distance from the proposed feedlot;
- there is a requirement for operators to appropriately manage their operation and control their impacts on their own property in accordance with standard practice and legal principles;
- future operations on the site are required to control emissions and impacts on-site and this will be further assessed through the DWER Works Approval and Licence processes; and
- conditions imposed by the Shire through the development approval will assist to control the impacts of the feedlot.

5.4 Bushfire management

Bio Diverse Solutions have assessed bushfire risks and have prepared a Bushfire Management Plan (BMP) for the site as set out in Attachment 8. The BMP addresses *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, the *Guidelines for Planning in Bushfire Prone Areas* and the relevant requirements of the Shire's Annual Fire Break Notice. As outlined in section 6 of the BMP, the BMP will be implemented during construction of the feedlot and through on-going operations.

5.5 Landscape

The site and area are characterised by farming operations on generous sized landholdings and conservation uses.

The site is overall discrete within its setting due to its location and topography. In particular, the feedlot and associated development are not visible from Albany Highway or from other tourist routes.

5.6 Environmental impact

Attachments 6 – 9 set out how environmental impacts will be managed. This includes:

- Solid waste management;
- Effluent management;
- Dust management;
- Odour management;
- Erosion and Sediment Control Plan;
- Rehabilitation;
- Fauna management;
- Dieback and General Hygiene Management Plan;
- Complaints management; and
- Environmental incident management.

No large-scale native vegetation clearing is proposed as part of the feedlot development. A few isolated paddock trees may require clearing in the location of the sheep pens and processing area. Clearing of the isolated paddock trees is not considered to trigger any disturbance of threatened or priority flora or fauna species.

Based on Attachments 6 - 9, it is expected the feedlot will have manageable environmental impacts given the site is cleared, and stormwater, effluent, noise, dust and odour can be effectively managed.

Further details will be provided in the application for DWER Works Approval.

5.7 Traffic

The site has convenient access to the State and regional road network.

There are various ways to access Ronneby Park including from Rees Road/Leggoe Road and Harrison Road. While noting this, FIE propose that the main vehicle access to and from Ronneby Park will be via Youngs Road.

Ronneby Park is approximately 6 km from the junction of Youngs Road/Albany Highway. Restricted Access Vehicles (RAVs) delivering sheep and feed along with transporting sheep to the Narrikup Abattoir will use Youngs Road for access. As-of-right vehicles will predominately use Youngs Road, although access for feedlot workers and others may at times be on other local roads.

As set out in section 2.4, Youngs Road can be used by certain RAVs.

FIE advise on average there will be 4 - 6 RAVs (pocket road trains/B-doubles) in and 4 - 6 RAVs (pocket road trains/B-doubles) out per day. The RAVs will access and leave the feedlot via Youngs Road. Additionally, there will be modest traffic using Youngs Road such as for feedlot workers and FIE management.

It is noted that:

- grain trucks and other uses operate on Youngs Road;
- the level of traffic to and from Ronneby Park will be modest and the development will have manageable impacts on local roads;
- the existing road network and intersections have sufficient capacity to address traffic generation from the proposed feedlot;
- Youngs Road is suitable and capable of handling the additional traffic created by the feedlot operations;
- there are no sensitive uses such as schools along Youngs Road. Should any school buses use Youngs Road, FIE will ensure that suitable arrangements are established and maintained to enhance the safety of all road users;
- it is recognised there will be a need to upgrade the intersection of Youngs Road/Albany Highway. With upgrading, it is suggested the Youngs Road/Albany Highway intersection is suitable and capable of supporting the modest number of truck movements to and from the feedlot and addressing associated safety; and
- vehicles will enter and leave Ronneby Park in a forward gear and all loading/unloading will be on-site.

There may be a separate need to change the RAV classification of Youngs Road.

5.8 Services

Future development is required to be appropriately serviced.

Water for the feedlot facility will be provided from a groundwater production bore located in the north east corner of Ronneby Park. Groundwater will be pumped to a holding tank and from there it is gravity fed/piped to the feedlot.

FIE will gain approvals and establish extra bores.

Further details are set out in Attachment 6.

5.9 Water management

The Water Management Plan (Attachment 7) addresses water, waste, nutrient and effluent management. There is guidance relating to drains, sedimentation pond, evaporation pond, drain and pond lining, groundwater monitoring and contingency plans.

The systems will be effectively designed, constructed and managed to the satisfaction of the Shire and DWER.

5.10 Supporting the local and regional economy

The Shire promotes employment and economic growth as outlined in publications such as the SCP and TPS1.

Approval and implementation of the feedlot will have various economic benefits including supporting local employment, supporting local services, assisting in a more sustainable local economy and it will add to Woodanilling's overall viability, vitality and prosperity.

A growing and more diverse economy will provide an important foundation for the future economic base of the community. This is consistent with the planning framework which promotes employment and economic growth in general and in Shire of Woodanilling in particular.

The feedlot is expected to create 12 full time equivalent positions. Employees will be sourced where possible, from the local labour market. FIE will engage other contract employees as required. FIE utilises local services and industries where available and practical.

The feedlot will provide benefits to the local community through direct and indirect employment opportunities and multiplier effects from the economic benefits flowing from the activities of FIE.

Approval and implementation of the feedlot will add value to agricultural products. The financial benefit to farmers along with the economic benefits to the district and region are expected to be significant.

5.11 Planning justification

The planning justification for the Development Application is summarised in Table 2. As outlined below, the Development Application is consistent with the planning framework and the principles of orderly and proper planning.

Table 2 – Summarised Planning Justification

Strategic	Land Use Planning	Environment and Landscape	Transport and Servicing	Economic and Community
The Development Application is consistent with the planning framework. The feedlot will support the development and sustainability of Woodanilling and the district. The site is well located for a feedlot including it is compatible with adjoining and nearby uses.	There are appropriate buffers to off-site dwellings and a range of mitigation measures to address land use compatibility. The site is suitable and capable for a feedlot. Development will be effectively controlled through the proposed management plans and as required through development conditions. There is a separate requirement to gain DWER works approval and an operating licence.	The site contains limited environmental assets and the feedlot is expected to create manageable environmental impacts. Bushfire risks can be managed. There are limited landscape impacts given the site cannot be viewed from Albany Highway or other tourist routes. There are opportunities to enhance the site's amenity through replanting in the valley of the subject site. There are no heritage constraints nor is the site located in a public drinking water source area.	The site has convenient access to the State and regional road network. Traffic impacts can be accommodated on Youngs Road. There are opportunities to upgrade the intersection of Youngs Road / Albany Highway. Safe vehicular access can be achieved between the site and local roads. All loading and unloading will be undertaken on-site. The feedlot will be appropriately serviced.	The feedlot will promote job creation by supporting the development of Woodanilling/the district and assist to diversify and grow the local/regional economy. The development will generate economic activity. The proposal will assist in enhancing Woodanilling and assist in creating jobs. This includes adding to its overall viability, vitality and prosperity and adding to the range of services that can be provided. It shows long term confidence in the district and region given the feedlot represents a considerable investment.

6. CONCLUSION

This report confirms that the Development Application is consistent with the planning framework and that the site is both suitable and capable of accommodating a feedlot (animal husbandry - intensive) along with associated employee quarters (residential building) and supporting facilities.

The support of the Shire is respectfully requested.

ATTACHMENT 1

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

BIO DIVERSE SOLUTIONS

29 Hercules Crescent
Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575

Legend

- Ronneby Park
- Subject Site (Feedlot Development)
- Existing Buildings/Structures
- Proposed Feedlot Development
- Cadastre
- Topography (mAHD)

Scale
1:100,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers International WA
670 Youngs Road
Beaufort River WA

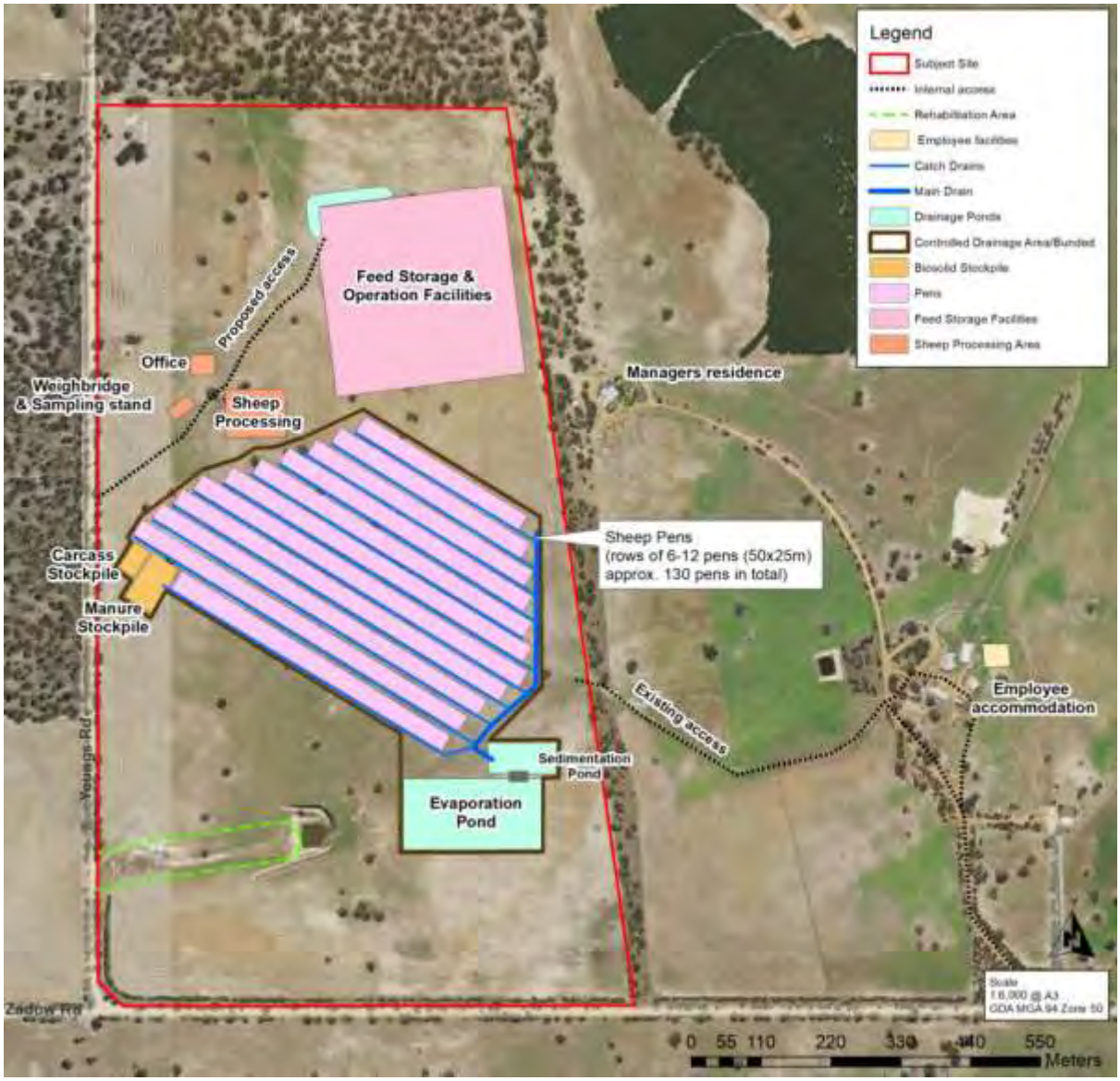
Ronneby Park Site Plan

BAL Assessor	*QA Check*	*Drawn by*
Initials	**KK**	**CC**
STATUS	*FILE*	*DATE*
FINAL	**MSC0249**	**22/10/2019**

ATTACHMENT 2

Location Plan

ATTACHMENT 3

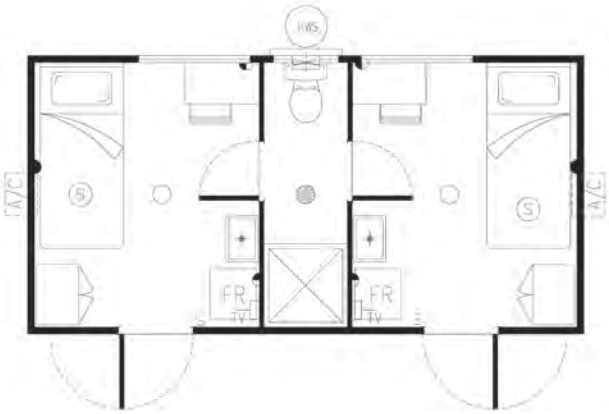


Feedlot Concept Plan

ATTACHMENT 4

Accommodation units

SPQ-001 6.0 x 3.0m



SPQ-002 8.4 x 3.3m

SPQ-003 14.4 x 3.3m

Please contact **AMS** if you would like more information about our Mining, Resources and Construction Building Range.

AMS specialise in the use of a number of products and construction techniques for the mining and resource sectors e.g. Concrete or steel floors, steel, panel and/or composite wall systems. We can provide all necessary designs, manufacture, transport and installation services to meet your industry or remote area construction requirements.

Floor plans and elevations are for illustration purposes only.

ABN 28 106 655 458 Builder Reg No: 12568

AUSSIE MODULAR SOLUTIONS

T +61 8 9356 1086
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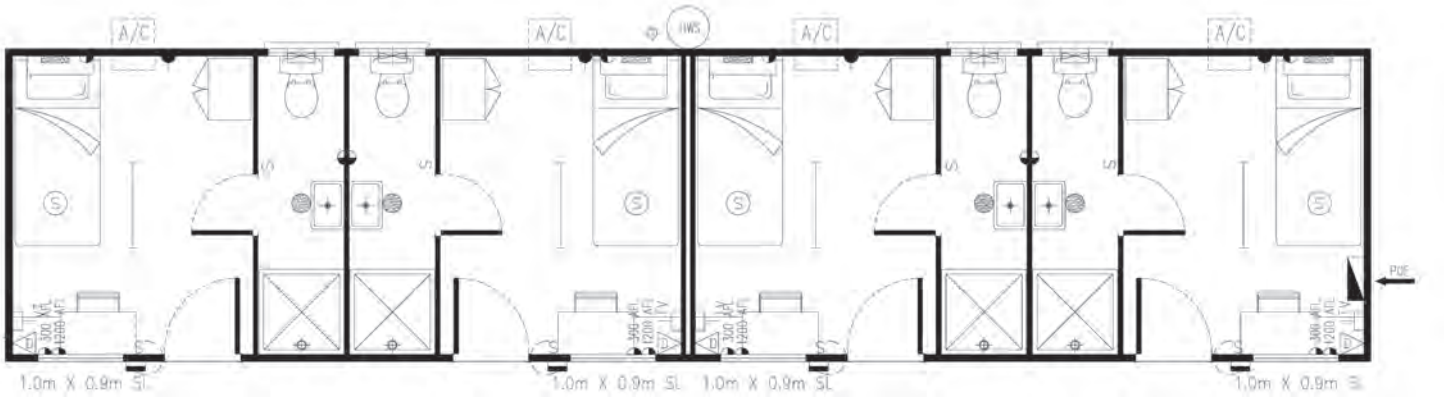
sales@ams-group.com.au

www.ams-group.com.au

Accommodation units

SPQ-004 14.4 x 3.3m



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External view of donga

Kitchen

ATTACHMENT 5

WESTERN AUSTRALIA

REGISTER NUMBER
1/P21594

DUPLICATE EDITION	DATE DUPLICATE ISSUED
2	**4/5/2004**

VOLUME	FOLIO
2106	**443**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 1 ON PLAN 21594

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BENALE PTY LTD OF LOT 11 YARRANDALE ROAD DUBBO NSW 2830

(T O125841) REGISTERED 5/4/2019

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *G403295 MEMORIAL. SOIL AND LAND CONSERVATION ACT 1945. AS TO PORTION ONLY. REGISTERED 21/2/1997.
2. H548183 PROFIT A' PRENDRE. CERTAIN RIGHTS AND INTERESTS TO EXECUTIVE DIRECTOR OF THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT FOR A PERIOD OF 40 YEARS FROM AND INCLUDING 1.1.2000. REGISTERED 13/9/2000.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 2106-443 (1/P21594)
PREVIOUS TITLE: 1710-146
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY: SHIRE OF WOODANILLING

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING N202252

WESTERN AUSTRALIA

REGISTER NUMBER		
4/P21594		
DUPLICATE EDITION	DATE DUPLICATE ISSUED	
2	4/5/2004	

VOLUME	FOLIO
2106	446

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 4 ON PLAN 21594

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BENALE PTY LTD OF LOT 11 YARRANDALE ROAD DUBBO NSW 2830

(T O125841) REGISTERED 5/4/2019

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	2106-446 (4/P21594)
PREVIOUS TITLE:	1710-146
PROPERTY STREET ADDRESS:	670 YOUNGS RD, BEAUFORT RIVER.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF WOODANILLING

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING N202252

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

BIO DIVERSE SOLUTIONS

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Ronneby Park Site Plan

BAL Assessor	*QA Check*	*Drawn by*
Initials	**KK**	**CC**
STATUS	*FILE*	*DATE*
FINAL	**MSC0249**	**22/10/2019**

Feedlot Concept Plan

Prepared for Fletcher International Exports Pty Ltd

Operational Environmental Management Plan

Ronneby Park Sheep Feedlot

Bio Diverse Solutions

29th October 2019

DOCUMENT CONTROL

Title: Operational and Environmental Management Plan - Ronneby Park Sheep Feedlot

Location: Lot 1 and 4 Youngs Road, Beaufort River WA 6395

Author (s): Chiquita Cramer

Reviewer (s): Kathryn Kinnear

Job No.: MSC0249-003

Client: Fletcher International Exports Pty Ltd

REVISION RECORD

Revision	Summary	Prepared By	Reviewed by	Date
Draft Id 1	Internal QA review	C. Cramer	K. Kinnear	02/10/2019
Draft Id 2	Review by client	K. Kinnear	F. Fletcher	02/10/2019
Final Id 1	Final issued	C. Cramer	K. Kinnear	29/10/2019

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1 Introduction

1.1 Background

This Operational Environmental Management Plan (OEMP) has been prepared by Bio Diverse Solutions on behalf of Fletcher International Exports Pty Ltd (FIE) in support of a Development Application and Works Approval Application with the Department of Water Environmental Regulation (DWER) for a 90,000 head of sheep feedlot at Ronneby Park, located near Beaufort River, Western Australia.

1.2 OEMP Objectives

This OEMP identifies the operating procedures and provides an environmental management plan that establishes a commitment to environmental performance at the proposed sheep feedlot at Ronneby Park.

The objectives of this OEMP are to:

- Comply with applicable environmental legislation;
- Identify and manage environmental risk;
- Comply with Fletcher's International Exports Pty Ltd environmental guidelines and requirements;
- Ensure all environmental safeguards are implemented correctly; and
- Monitor, review and report on environmental impacts and compliance.

1.3 Key Legislation, Policy and Guidelines

The OEMP complies with the following key legislation, policies and guidelines:

- *Environmental Protection Act 1986*;
- *Environmental and Protection and Biodiversity Conservation Act 1999;*
- National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011);
- Water quality protection note 33 – Nutrient and irrigation management plans (DWER, 2010);
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas (WAPC, 2015);
- Shire of Woodanilling Draft Local Planning Policy No 6;
- DPAW Spill Management Brochure (DEC 2011); and
- Guidelines for Planning in Bushfire Prone Areas, version 1.3 (DPLH, 2017)

2 Site Location

Ronneby Park is located approximately 32kms north of Kojonup WA in the Shire of Woodanilling, accessible from Kojonup via Albany Hwy to the north (26kms) and west along Youngs Road (6kms) as shown on Figure 1. The proposed sheep feedlot will be developed on a 108ha portion of Ronneby Park farm herein referred to as the Subject Site (Figure 1).

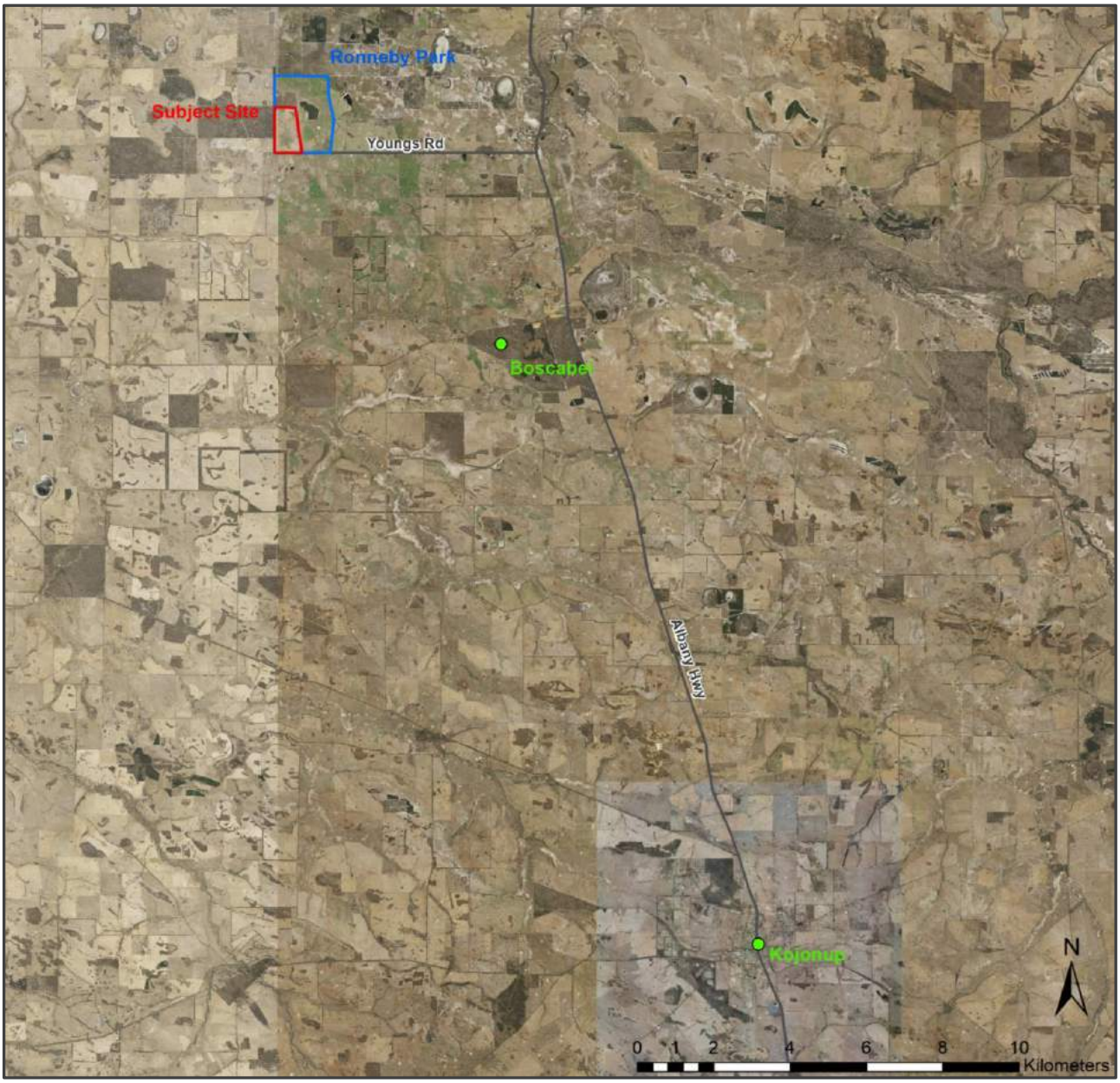

Figure 1: Location Plan

3 Development

It is proposed the sheep feedlot be developed on a 108ha portion of Ronneby Park farm (the Subject Site). The development will consist of;

- Approximately 130 sheep pens (50m long by 25m wide) designed to hold up to 600 head of sheep each;
- A biosolid stockpile area for sheep manure;
- A separate biosolid stockpile area for carcass management;
- Sedimentation and evaporation ponds for capture and holding of effluent runoff;
- An area for feedlot facilities/operations which will include; truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment.
- A sheep processing area including; weighbridge, office hut, covered sheep weighing yards and unloading ramps.
- Accommodation for employees, which will include the existing dwellings and five transportable accommodation buildings for up to 16 people.

A conceptual site plan of the proposed feedlot is shown on Figure 2.

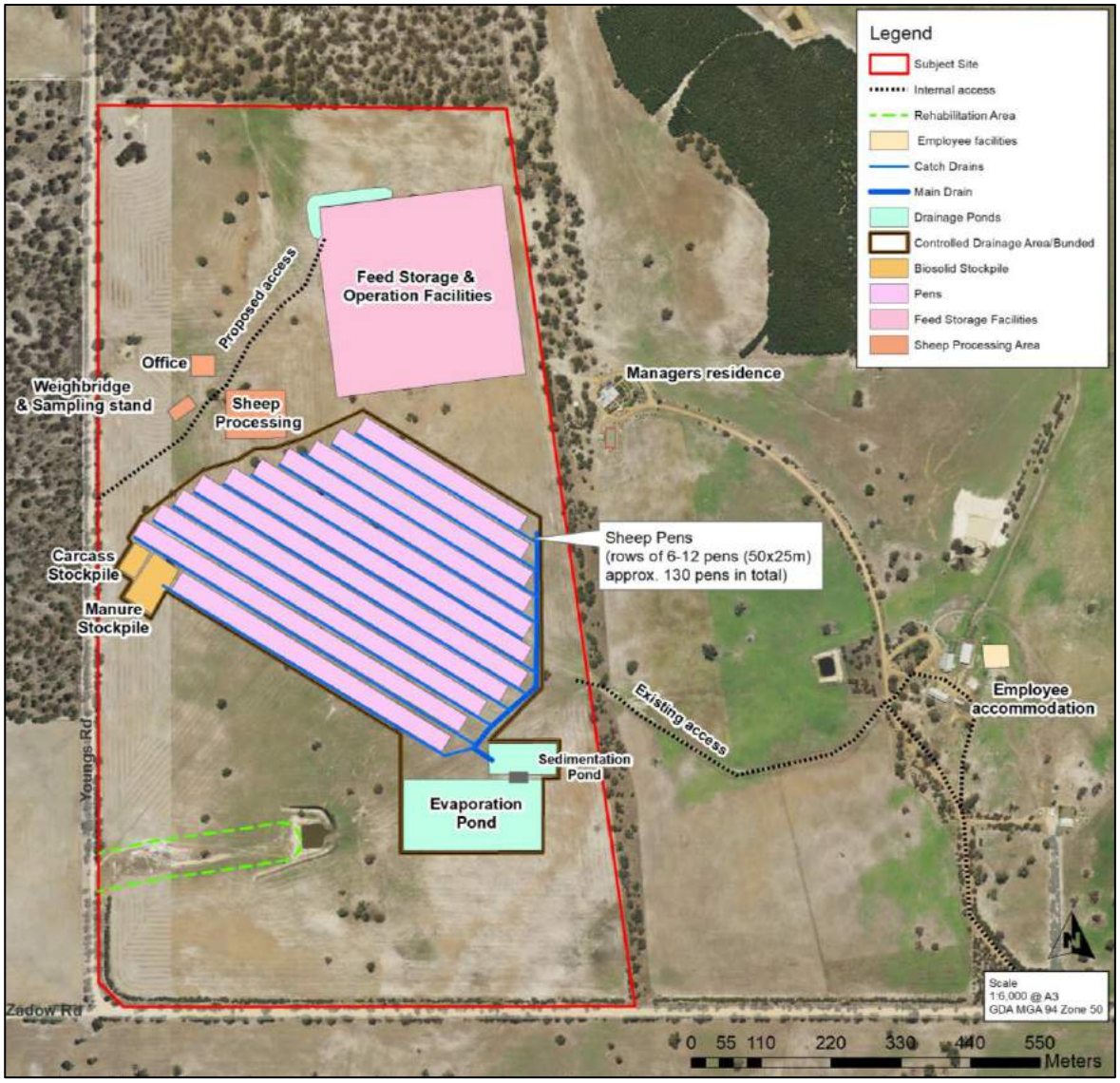

Figure 2: Sheep Feedlot Concept Plan

4 Operations and Site Management

4.1 General Operations

4.1.1 Feedlot Activities

The operation of the site generally involves receival of sheep stock, ration feeding for a minimum of 35 days and dispatch of stock.

4.1.2 Operating Hours

The feedlot operates 24/7, however it is intended that the livestock delivery and departure will occur during daylight hours to facilitate supervision of loading and unloading.

4.1.3 Machinery and Equipment

The operation of the facility requires the use of specialised equipment and machinery typical of feedlot operations and other general equipment not specific to the feedlot, including:

- Transport, access and maintenance machinery including trucks, all-terrain vehicles, tractors and forklifts,
- Ramps for loading/unloading of stock;
- Pens and fences; and
- General maintenance equipment.

4.1.4 Water Supply

Water for the feedlot facility is provided from a groundwater production bore located in the north east corner of Romney Park. Groundwater will be pumped to a holding tank and from there it is gravity fed/piped to the feedlot. The water quality of the production bore has been tested and found to be suitable for feedlot operations (Appendix A).

Water supply to the dwellings and accommodation will be via rainfall capture (stand-alone tanks connected to roof gutters) and bore supply when required.

4.2 Bushfire Management

A Bushfire Management Plan (BMP) was prepared by Bio Diverse Solutions (2019) on behalf of the client to guide the development and operations of the feedlot in relation to bushfire risks and management. The BMP includes a Bushfire Attack Level (BAL) Contour Plan prepared for the sheep pens/feedlot and a Bushfire Hazard Level (BHL) Plan prepared for the whole of farm site including employee accommodation.

4.2.1 Sheep Welfare

A BAL Contour Plan was prepared for the sheep feedlot to investigate the expected radiant heat impact on the pens and the external bushfire risks associated with the pens. The BAL Contour Plan indicates that a BAL rating of 12.5 will be subject to the pens and the primary bushfire risks are associated with the large areas of remnant vegetation to the north and west of the feedlot. If a bushfire incident occurs form the north or west and is within 25km of the feedlot the sheep will be herded out of the pens to the surrounding paddocks prior to the arrival of fire.

4.2.2 Buildings/Accommodation

A BHL Plan was prepared for the whole of farm site to include any existing and/or future buildings and accommodation. According to the BHL Plan the existing residential dwellings and the proposed location for future employee accommodation (adjacent to the existing farm sheds) are located in Moderate BHL areas (grasslands) and are not within the WA Bushfire Prone Area Mapping (OBRM, 2018) and therefore are not

legally required to build to AS3959, however all buildings are proposed to be built to AS3959 BAL 12.5. Asset Protection Zones (APZ) areas are to be to 20m and maintained to a low fuel status (refer to BMP report).

4.2.3 Access

Access to and from Ronneby Park is via Youngs Road and Albany highway to the east. Youngs Road has continuing access to the south to Zadow Road onto Corben Soak Road; to the north continues to Leggoe Road (which connects to Albany highway in the north); and ultimately connects to Boyup Brook- Arthur Road in the north west (via Gom and Bokal Roads).

Internal to the site there will be two-way access in the west to Youngs Road as shown on the Concept Plan (Figure 2) and to the south east to Youngs Road through the existing internal driveway and an existing internal access from the shed to the feedlot. All internal tracks are to be maintained to 4m wide trafficable surface,6m horizontal clearance and 4.5m vertical clearance (BDS,2019).

4.2.4 Water Supply

Two standalone tanks for firefighting (10,000L min capacity) will be installed on site, with one located near the sheep processing area and the other adjacent to the existing sheds and proposed accommodation in the east of the farm. These tanks will be fitted with camlock fittings at the base for Bushfire Brigades (BFB) to access water supply (for quick refill) close to infrastructure in an emergency.

There are dams located in each paddock of the farm which are mostly maintained with water year-round for water supply for bushfire attack.

A mobile firefighting unit is to be permanently located at the feedlot with a minimum of 800L capacity during the summer month (15th November to 15th April inclusive).

4.3 Solid Waste Management

Management of solid waste in the form of manure, carcasses and sludge from ponds is necessary to prevent contamination of downstream waterways/waterbodies, the environment and minimise injury/disease to the sheep.

4.3.1 Manure

Manure will be collected from the feedlot pens on a regular basis to avoid build-up in the pens and stockpiled in biosolids storage areas (manure stockpiles). There may be multiple manure stockpiles to avoid transporting times during collection, however all manure stockpiles will be located within the controlled drainage area, ensuring rainfall runoff from stockpiles is directed to the sedimentation pond. The interval between manure collection and stockpiling will vary depending on sheep numbers and manure build-up at any one time. The stockpiles of manure will be removed off site on a regular basis by a licenced and approved third party operator.

4.3.2 Carcasses

Once a carcass has been identified it is removed as soon as possible from the pens and stockpiled in a separate area to the manure stockpile(s), where it is composted with layers of manure to accelerate break down of organic matter and reduce odour. Once the carcass biosolids stockpile has reached capacity, it will be removed off site by a licenced and approved third party operator.

4.3.3 Pond Sludge

Once the effluent runoff reaches the sedimentation pond the organic matter within the effluent settles out and forms a sludge layer at the base of the pond. This sludge will be removed once its volume has reached approximately 10% of the pond's capacity or if a strong odour is detected from the pond. The sludge will be removed via excavator and stockpiled in the manure stockpile area. The sludge (and manure) will be transported off site by a licenced and third-party operator once stockpile(s) have reached capacity.

It is probable the sedimentation pond only requires desludging every few years (Refer to Section 5 and 6 for further detail).

It is not expected the evaporation pond will receive effluent runoff often/if ever however sludge removal here will occur in a similar manner to the sedimentation pond (Refer to Section 5 and 6 for further detail).

4.4 Effluent Management

A Water Management Plan (WMP) was prepared by Bio Diverse Solutions (2019) on behalf of the client to guide the development and operations of the feedlot in relation to drainage and effluent management. The construction and operation of the feedlot will be consistent with the WMP (BDS, 2019).

The effluent management system for the proposed feedlot has been designed in accordance with the National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011). The key components of the drainage system for this development are;

- Diversion banks/bunds constructed around the sheep feedlot complex to capture all effluent runoff from the Controlled Drainage Area (CDA) and divert external freshwater upslope of the complex away from the CDA.
- Drains will be designed to capture runoff from the feedlot pens and all other surfaces within the sheep feedlot complex, ultimately conveying the runoff to the sedimentation pond. The drains are designed to convey peak flow rates from the 20yr ARI design storm event and will carry this flow at a non-scouring velocity.
- A sedimentation pond designed to capture and hold the peak flow from a 20yr ARI design storm event. The sedimentation process is achieved via gravity settling; where runoff is retained for sufficient time to allow the majority of the entrained solids to settle out.
- An evaporation pond designed to capture and hold effluent following treatment in a sedimentation system. The evaporation pond is designed to hold and evaporate the runoff from a 90th percentile wet year.
- The sedimentation pond and evaporation pond will be underlain with a 300mm compacted clay lining which will have a permeability of $< 1 \times 10^{-9}$ m/day to minimise seepage to the groundwater.

For further information regarding the drainage and effluent management of the feedlot refer to the WMP (BDS,2019).

5 Operational Procedures

5.1 Bushfire Management

5.1.1 Objective

Identify the bushfire risks of the site and implement protection measures to reduce the risk of bushfire to an acceptable level. Ensure the safety of employees and maintain sheep welfare.

5.1.2 Procedures

1. The feedlot manager shall ensure if a bushfire incident occurs from the north or west and is within 25km of the feedlot, the sheep will be herded out of the pens to the surrounding paddocks prior to the arrival of fire.
2. The feedlot manager shall ensure the two internal access ways to/from the feedlot are unobstructed and maintained to technical standards (4m wide trafficable surface, 6m horizontal clearance and 4.5m vertical clearance) at all times.
3. Two standalone tanks for firefighting to be maintained with a minimum 10,000L capacity.
4. A fast attack trailer mounted unit with a minimum of 800L capacity is to be located in the feedlot paddock during the summer months (15th November to 15th April inclusive), assisting with any fires arising within the farm area.

5.2 Solid Waste Management

5.2.1 Objective

To sustainably manage solids waste from the feedlot facility, to prevent contamination of waterway/ waterbodies, groundwater and to prevent disease and injury to livestock.

5.2.2 Procedures

1. The Feedlot Manager shall undertake monthly inspection of the pen floors to schedule cleaning.
2. The Feedlot Manager shall schedule pen cleaning at a time that does not interfere with livestock receival and processing. Material removed from the pens will be placed in biosolid stockpiles within a controlled drainage area.
3. The Feedlot Manager shall arrange removal within 48 hours of any solid wastes that are generating a strong odour that is noticeable at the site boundary in a downwind direction.
4. Solids from the sedimentation and evaporation ponds shall be removed once they reach 10% of the pond's capacity. Removal off site shall be conducted by a licenced and approved third party operator.
5. In the event of dead stock, immediate action will be taken to remove the dead stock for burial in manure in the carcass stockpile area within the controlled drainage area.
6. In the event of mass stock death or notifiable disease, the Feedlot Manager shall consult with the Department of Primary Industries and Regional Development (DPIRD) to determine the appropriate management strategy and follow their direction. Most likely a mass death event will be managed through on-site burial (depending on the directions from government agencies) in which case:
    - The burial pit would be located within Ronneby Park farm boundary at least 500m from the feedlot complex and any residences/accommodation.
    - The burial pit would be constructed in deep clay soil.
    - Carcasses would be covered with a minimum of 1.0 m of clay soils.
7. The Feedlot Manager shall ensure all solid waste removed from the site is only to be removed by a third-party operator that is licensed and approved to accept the waste.
8. The Feedlot Manager shall require that any vehicles removing solid waste are appropriately sealed/waterproof to avoid any potential leakage and covered to prevent dust.
9. The Workers shall ensure that all solid wastes are stored in their designated area to prevent run-off of wastes.
10. The Feedlot Manager shall ensure that receptacles are provided for general refuse and the separation of recyclables. All staff are responsible for ensuring refuse is placed in bins and that bins are routinely emptied for collection.

5.3 Effluent Management

5.3.1 Objective

To sustainably manage effluent (liquid waste) from the feedlot facility, to prevent contamination of groundwater, waterways/waterbodies and prevent disease and injury to livestock.

5.3.2 Procedures

1. The feedlot manager shall undertake regular inspections (minimum monthly) of the drainage system to ensure the drainage system is operating as intended; ensuring there is no ponding, sediment build up in the drains or scouring.
2. The feedlot manager shall conduct at minimum quarterly inspections of drain/pond embankments, with particular note of any potential structural problems (e.g. cracking or slumping of banks and batters) that might affect the integrity of the structure, noting the date of inspections and any significant outcomes of that inspection.
3. The feedlot manager shall conduct at minimum quarterly inspection of pond clay liners to identify potential areas of erosion or leakage, noting the date of inspections and any significant outcomes of that inspection.
4. The feedlot manager shall conduct monitoring of the sediment depth in the sedimentation pond following rainfall events to determine the depth of deposited material and the rapidity with which it dries.
5. The feedlot manager shall ensure the sedimentation pond and evaporation pond are operating as intended with water levels consistent with rainfall frequency and intensity.
6. The Feedlot Manager shall ensure that all fuel, oils and chemicals used on site are stored in the approved and bunded lockable chemical shed.
7. In the event of a fuel or chemical spill, all efforts will be made by all Workers to contain and clean up the spill, but ONLY where safe to do so. Refer to 4.11.3 of this report.
8. A fuel or chemical spill or other chemical handling incident will be reported as an incident by the Worker(s) involved and the Feedlot Manager shall complete the Environmental Incident Report in accordance with Section 4.8.
9. Liquid waste shall be monitored in accordance with Section 6 and the WMP (BDS, 2019).
10. Groundwater shall be monitored for any adverse impacts in accordance with Section 5 and the WMP (BDS, 2019).
11. Groundwater and liquid waste monitoring results shall be reported in the Annual Environmental Report in accordance with Section 6.1.

5.4 Dust Management

5.4.1 Objective

To ensure that operations are conducted in a manner that minimises the potential for dust generation and impacts on local air quality.

5.4.2 Procedures

Dust emissions are anticipated to be minimal during the operation of the facility.

1. Dust management during construction of the feedlot is identified the CMP (BDS, 2019) and shall be consistent with the procedures outlined in the report.
2. The proponents are responsible for minimising dust generation as far as is practicable.
3. The proponent is to ensure that work is suspended in high or extreme wind events.
4. Any unsealed roads within the site shall be routinely inspected to ensure they are adequately maintained to minimise wheel dust generation. If damage to roads is identified corrective action shall take place.
5. Dust shall be monitored by recording any complaints received in accordance with Section 4.7 – Complaints Management. A summary of any dust complaints, causes and corrective actions shall be provided in the Annual Environmental Report in accordance with Section 6.1.

5.5 Odour Management

5.5.1 Objective

To ensure the operations are conducted in a manner that does not cause or permit the emission of potentially offensive odour beyond the boundary of the premises.

5.5.2 Procedures

1. The feedlot manager shall ensure that solid wastes are managed in accordance with Section 5.2 to minimise the footprint of the solid waste and the amount of solid waste stored on-site.
2. The feedlot manager shall ensure sheep carcasses are covered with manure to reduce odour in accordance with Section 5.2.
3. The feedlot manager shall ensure that the effluent runoff is managed in accordance with Section 5.3 to minimise the spread of waste within the runoff and ensure it is directed to the sedimentation pond.
4. The feedlot manager shall ensure that all wastes to be transported off site shall be transported in suitably enclosed systems to ensure negligible odour generation occurs.
5. The Feedlot Manager shall arrange removal within 48 hours of any solid wastes that are generating a strong odour that is noticeable at the site boundary in a downwind direction.
6. Workers shall ensure that any leakage/spill of odour generating materials shall be immediately cleaned up.
7. Odour shall be monitored by recording any complaints in accordance with Section 4.10 - Complaints Management. A summary of any odour complaints, causes and corrective actions shall be provided in the Annual Environmental Report in accordance with Section 6.1.

5.6 Noise Management

5.6.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for noise generating activities to impact on the local amenity.

5.6.2 Procedures

1. Noise management during construction of the feedlot is addressed in the CMP (BDS, 2019) and shall be consistent with the procedures outlined in the report.
2. The facility will operate 24/7, however it is intended that livestock delivery and departure will occur during daylight hours to facilitate supervision, induction and processing into the feedlot. All other tasks including cleaning and maintenance will also be undertaken during daylight hours.
3. Noise shall be monitored by recording any complaints received in accordance with Section 4.10 - Complaints Management. A summary of any odour complaints, causes and corrective actions shall be provided in the Annual Environmental Report in accordance with Section 6.1.

5.7 Complaints Management

5.7.1 Objective

To ensure any complaint received is recorded and kept correctly, investigated, and options for avoiding recurrence are considered.

5.7.2 Procedures

1. The Feedlot Manager shall make available and maintain a telephone number for complaints and ensure that it is operational during operating hours.
2. Any complaint received by any staff member at the facility shall be reported immediately to the Feedlot Manager.
3. All details of any complaint and subsequent investigation will be recorded on a complaint form by the Feedlot Manager.
4. The Feedlot Manager shall be responsible for follow-up investigation for all complaints received, and assessing options for avoiding recurrence.
5. Where required, the Feedlot Manager shall provide acknowledgement and feedback to community members following closure of a compliant raised by a community member.
6. A summary of complaints, causes and corrective actions shall be provided in the Annual Environmental Report in accordance with Section 6.1.
7. The Feedlot Manager shall ensure a copy of the Annual Environmental Report is made available to community members and relevant authorities on request.
8. The Feedlot Manager will ensure that the record of a complaint will be kept for at least four (4) years after the complaint was made, and that the records are available to any authorised officer who asks to see them.

5.8 Environmental Incident Management

5.8.1 Objective

To ensure all incidents with the potential to impact adversely on the environment are investigated and documented and that options for avoiding recurrences are implemented.

5.8.2 General Procedures

1. All incidents that may result in an adverse impact on the environment must be reported by workers immediately (once safe and practicable to do so) to the feedlot manager and appropriate actions taken to avoid adverse impact.
2. The feedlot manager is responsible for notifying Fletchers International senior management of any incidences that adversely impact the environment.
3. In the event of an environmental incident resulting in emergency situation, immediate action should be taken and the feedlot manager shall contact the appropriate service immediately to arrange assistance (i.e. Ambulance, Fire Services, Police etc.)
4. The feedlot manager will notify all relevant authorities of incidents of pollution, environmental hazard or other activities potentially harmful to the environment within 24 hours of occurrence of the incident.
5. In the event of an environmental incident involving workplace, health and safety and dangerous goods, the feedlot manager must notify WorkSafe WA by calling 1300 307 877.
6. All environmental incidences shall be recorded on an Environment Incident Report.
7. The feedlot manager shall provide written notification of the incident to the DWER within 7 days of the date on which the incident occurred.
8. All incidents with the potential to impact adversely on the environment shall be investigated by the feedlot manager and options for avoiding recurrence are implemented. Corrective actions shall be noted on an Environmental Incident Report.
9. A summary of environmental incidents, causes and corrective actions shall be provided in the Annual Environmental Report in accordance with Section 6.1.

5.8.3 Spill Management Procedures

The following information is from the DPAW Spill Management Brochure (DEC 2011). This should be the methodology employed should a spill from fuel or chemical occur.

Dealing with minor spills

A small spill is considered to be a spill of 5 litres or less providing the product is not concentrated. For concentrated products of any quantity the spill must be treated as a large spill.

1. Assess safety. Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.
2. Stop the source. Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.
3. Contain and clean up the spill. The spill should be mopped up immediately.
4. Record the spill. Record when, what, how and where the spill occurred, clean up measures undertaken and the names of any witnesses. Also make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

Dealing with large spills

A large spill is considered to be anything over 5 litres or concentrated chemicals of any volume.

5. Assess safety. Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.
6. Consult the Material Safety Data Sheet (MSDS). The MSDS will have instructions on how to deal with specific chemical spills.
7. Put on protective clothing. If necessary, put on gloves and goggles, a mask and an apron.
8. Stop the source. Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.
9. Contain and control the flow. The spill should be prevented from filtrating into the ground or entering the stormwater system. The outer edge of the spill should be dammed with rags, blankets, sand, sands bags, mops and/or absorbent booms.
10. Clean up the spill. Promptly cover the spill using absorbent materials such as the correct absorbent granules for the product (Note that some strong acids will react with some types of granules and sawdust), sand and rags, being mindful not to splash the spill. Using a dustpan or spade, the absorbent granules or sand must then be scooped up and placed into a container. This waste material is not to be buried or thrown into the environment. The method of disposing this waste will depend on the amount and the type of chemical that was spilt. The Department of Environment Controlled Waste Section will advise on the appropriate disposal of hazardous substances. There are several contractors that will dispose of contaminated substances and soils. All contact phone numbers can be found below
11. Notify the appropriate authority. If the spill does enter a stormwater drain or open ground, the Department of Environment and your local council must be notified. Please refer to the phone numbers listed below. If there is a hazard to health or property, call Fire and Rescue on 000 immediately.
12. Record the incident. Record what, how and where the spill occurred and the names of any witnesses. Also make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

Who to call in an emergency

All hours phone numbers

Life / property emergencies: Ambulance, Fire or Police	000
Pollution emergencies – DWER	1800 018 800
Poisons Information Centre	13 11 26
Water Corporation – Emergencies and water service difficulties	13 13 75

Business hours phone numbers

Fire and Emergency Services Authority	9323 9300
Department of Environment	9222 7123
Department of Mineral and Petroleum Resources – Explosive and Dangerous Goods	9222 3333

5.9 Staff Training

5.9.1 Objective

To ensure all employees, contractors and sub-contractors are trained in the appropriate OEMP procedures, are aware of and comply with requirements of the OEMP, and are aware of their responsibilities with respect to environmental management.

5.9.2 Procedures

1. The Feedlot Manager shall ensure all employees and contractors undergo induction training to ensure they are aware of their responsibilities with respect to environmental management.
2. The Feedlot Manager shall ensure that all site staff have received the appropriate training at commencement of their employment.
3. The Feedlot Manager shall ensure that all relevant site staff have read and are familiar with the OEMP.
4. The Feedlot Manager shall keep relevant staff informed of any updates to the OEMP.
5. Records of training shall be maintained by the feedlot manager.

6 Monitoring

6.1 Climate Monitoring

A weather station will be installed within the facility. The weather station will monitor rainfall and wind speed and direction. The rainfall will be correlated to pond levels to ensure the capacity of the sedimentation and evaporation pond is as designed (sedimentation pond designed to hold and a 20yr ARI design storm event and evaporation pond designed to hold a 90th percentile rainfall year).

6.2 Overflow from Evaporation Pond

Sampling and analysis of surface water shall occur from the evaporation pond spillway in the event that the spillway overflows. In addition the volume of discharge (kL) will be estimated using the overflow depth and duration of spill.

Water quality parameters that will be measured as part of the monitoring program include;

- pH
- Electrical Conductivity/ Total Dissolved Solids
- Total Phosphorus
- Total Nitrogen
- Total Kjeldahl Nitrogen
- Ammonium
- Nitrate and Nitrite

Water quality monitoring will be conducted by a suitably qualified NATA accredited laboratory.

6.3 Groundwater Monitoring

Quarterly monitoring of one groundwater monitoring bore downstream of the feedlot and ponds is proposed. Groundwater was discovered at one test pit location downstream of the feedlot during the Geotechnical Investigation (TP42). Monitoring shall occur at this location post construction in the months of January, April, July and October with results presented in the Annual Return.

Water quality parameters that will be measured as part of the monitoring program include;

- pH
- Electrical Conductivity/ Total Dissolved Solids
- Total Phosphorus
- Total Nitrogen
- Total Kjeldahl Nitrogen
- Ammonium
- Nitrate and Nitrite

Water quality monitoring will be conducted by a suitably qualified NATA accredited laboratory.

7 Compliance Reporting

7.1 Annual Environmental Report

An Annual Environmental Report (AER) shall be prepared and submitted to the Department of Water and Environmental Regulation (DWER) in accordance with the reporting conditions of the feedlot licence. The AER shall be submitted no later than 30 days after the end of the Annual Period.

The AER will include the following:

1. The monthly and cumulative total number of sheep entering the feedlot for the reporting Annual Period;
2. The monthly and cumulative total number of sheep exiting the feedlot for the reporting Annual Period;
3. The maximum number of sheep held at any one time during each month of the reporting Annual Period;
4. The monthly and cumulative total number of sheep that die within the feedlot complex and are subsequently moved to the carcass composting stockpile in the reporting Annual Period.
5. The monthly and cumulative total tonnes of solid waste (manure and composted carcasses) disposed off-site;
6. The date, time, duration and estimated volume of any evaporation pond spill events and the water quality analysis results from samples taken at the spillway during the overtopping event.
7. The quarterly groundwater sampling results, including identification of any trigger level exceedances.
8. A summary of any complaints records for the reporting Annual Period and any actions taken in response to complaints received.

7.2 Annual Audit Compliance Report

The Annual Audit Compliance Report (AACR) allows the licence holder to self-audit their operations for compliance with their licence requirements throughout the reporting period and determine whether or not the OEMP is being correctly implemented and maintained.

The AACR Form (downloaded from the DWER website) will be completed by FIE and submitted to the DWER no later than 30 days after the end of the Annual Period or as stated in the conditions of the Licence Approval.

7.3 OEMP Revisions

FIE shall review and if necessary revise the OEMP within three (3) months of:

a) Any incident report (Section 5.7 – Environmental Incident Management);

b) An Annual Audit Compliance Report (Section 7.2 – Internal Audit); or

c) Any modifications to conditions of the licence approval.

This is to ensure that the OEMP is updated on a regular basis, and incorporates any recommended measures to improve environmental performance.

The following will prompt and be classed as ‘major’ revisions:

- Changes to operations or processes;
- Additional procedures or improvement actions;
- Changes made in response to an incident; and/or

- Changes requested by the DWER.

Major revisions shall be identified by the whole number in the version number (i.e. 1.0, 2.0, 3.0....) and shall be approved by the DWER before re-issue.

The following will be classed as 'minor' revisions:

- Minor typing and grammar corrections;
- Changes to position titles;
- Updates to recording forms to suit operations; and
- Changes/additions to Appendices/Attachments.

Minor revisions shall be identified by the decimal point in the version number (i.e. 1.1, 2.2, 3.3....) and will not require DWER approval prior to re-issue.

8 References

Department of Water & Environmental Regulation (2010) Water quality protection note 33 – Nutrient and Irrigation Management Plans.

Department of Water & Environmental Regulation (2019) *250K Hydrogeological mapping dataset.*

Great Southern Geotechnics (2019) *Geotechnical Investigation – 670 Youngs Road, Beaufort River.* Report prepared for the client.

Luke, G.L, Burke, K.L. & O'Brien, T.M. (1988) *Evaporation data for Western Australia*

Meat and Livestock Australia (2011) *National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems.*

Office of Bushfire Risk Management (DFES) *(2018) WA Bushfire Prone Area Mapping.*

Western Australian Planning Commission (WAPC) (2015) *State Planning Policy 3.7 – Planning in Bushfire Prone Areas.*

Prepared for Fletcher International Exports Pty Ltd

Water Management Plan

Ronneby Park Sheep Feedlot

Bio Diverse Solutions

24th October 2019

DOCUMENT CONTROL

Title: Water Management Plan - Ronneby Park Sheep Feedlot

Location: Lot 1 and 4 Youngs Road, Beaufort River WA 6395

Author (s): Chiquita Cramer

Reviewer (s): Kathryn Kinnear

Job No.: MSC0249-002

Client: Fletcher International Exports Pty Ltd

REVISION RECORD

Revision	Summary	Revised By	Date
Draft Id 1	Internal QA review	C. Cramer	10/09/2019
Draft Id 2	Review by client and Craig Pippin	C. Cramer	10/09/2019
Final Id 1	Final Report issued to client	C. Cramer	3/10/2019
Final Id 2	Further review by client	C. Cramer	29/10/2019

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1 Introduction

1.1 Background

This Water Management Plan (WMP) has been prepared by Bio Diverse Solutions on behalf of Fletcher International Exports Pty Ltd 'the Client' in support of a Development Application for a 90,000 head of sheep feedlot at Ronneby Park, located near Beaufort River, Western Australia.

The WMP provides the framework for the application of total water cycle management to the proposed development and is consistent with all relevant guidelines, policies and legislations.

1.2 Location

Ronneby Park is located approximately 32kms north of Kojonup WA in the Shire of Woodanilling, accessible from Kojonup via Albany Hwy to the north (26kms) and west along Youngs Road (6kms) as shown on Figure 1. The Subject Site is surrounded by agricultural farm land.

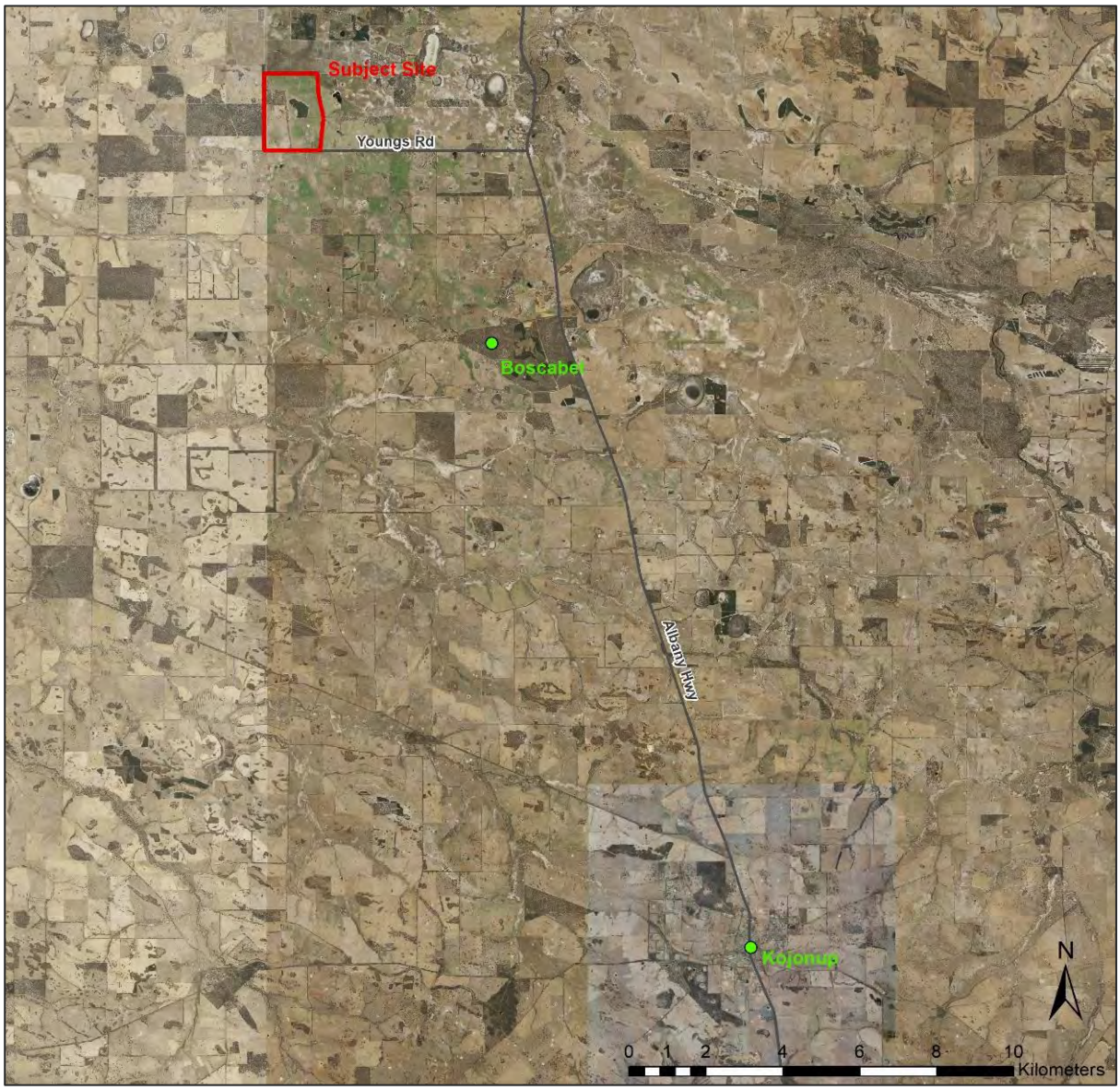

Figure 1: Location Plan

1.3 Key Design Principles and Objectives

The WMP employs the following key documents to define its content, key principles and objectives:

- National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011);
- Western Australian Guidelines for Biosolids Management (DEC, 2012); and
- Water quality protection note 33 – Nutrient and irrigation management plans (DWER, 2010).

1.3.1 National Procedures and Guidelines for Intensive Sheep and Lambing Systems (MLA, 2011)

Meat and Livestock Australia (MLA) released *a National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems* in 2011. The document was released to provide a guideline for best planning and management practices in relation to the development of a sheep feedlot. The document recommends procedures and guidelines for environmental protection and best management. Key procedures and guidelines identified in the document relevant to this WMP are shown in Table 1.

Table 1: Relevant Procedures and Guidelines

Category	Recommended Procedure/Guideline
Environmental Protection	• Intensive feeding systems be sited, constructed and operated so that underground and surface water resources do not become contaminated. • Where the site is to be located above groundwater resources at risk of infiltration/contamination an expert independent assessment should be conducted prior to establishment. • Groundwater management strategies should include infiltration reduction around the intensive feeding area and manure stockpiles. • Groundwater quality should be monitored on a regular basis. Monitoring frequency should be included in the intensive feeding system's environmental management plan. • Surface water management strategies should include management of; feeding area and manure stockpile runoff, effluent, contaminated sub-surface flow, and discharge of contaminated groundwater.
Site Selection	• The site has access to an adequate supply of suitable quality water to service the needs of all livestock on site and for dust and fire control. • The site not be developed in flood prone areas unless safeguards are incorporated. • Soil types at the site be suitable for or modified to suit water, manure and stock management. • A buffer zone be maintained between intensive feeding systems and watercourses.
Design and Construction	• Spillage and waste water drains directly into a drainage system. • A drainage system minimises the risk of groundwater and surface water contamination, and promotes the rapid drying of the pen surface after a rainfall event. This drainage system includes where appropriate: ➢ Diversion banks or drains upslope of outdoor feeding pens to divert external freshwater away from the complex. ➢ Drains within the controlled drainage area to convey runoff to the treatment and storage systems. ➢ Solids separation by gravity settling where the runoff is retained for sufficient time on a pond, terrace, or basin to allow the majority of the entrained solids to settle out by gravity. ➢ Holding or storage ponds of sufficient size to contain major storm events and/or extended periods of storage. • Where composting areas exist, all runoff from this area be controlled and managed.

1.4 Report Author

This Water Management Plan has been prepared by Chiquita Cramer, who has over 10 years of experience working as a hydrologist and hydrogeologist.

Chiquita Cramer has the following tertiary qualifications:

- Bachelor of Science in Natural Resource Management (University of Western Australia); and
- Graduate Certificate in Hydrogeology (University of Western Australia).

Chiquita completed a Bachelor of Science in Natural Resource Management in 2008 at the University of Western Australia. She then went on to work as a hydrologist and senior hydrologist at JDA Consultant Hydrologists in Perth where she worked for 8 years. Chiquita's experience includes preparation of multiple local and urban water management strategies, hydrological and hydraulic investigations, surface water and groundwater monitoring reports and hydrogeological reports. Tasks undertaken by Chiquita as part of her time at JDA and include project management, report writing, mapping using GIS software, field work including installation and monitoring of groundwater bores, modelling of stormwater and groundwater using various software programs and liaising with clients, sub-consultants and approving agencies.

Chiquita furthered her studies in 2012 by completing a Graduate Certificate in Hydrogeology and in 2017 she joined Bio Diverse Solutions to provide expertise in hydrology and hydrogeology to the company. Since joining Bio Diverse Solutions Chiquita has worked on several hydrological investigations and water management plans for a variety of developments.

This report has also been peer reviewed by Craig Pippin Director and Principal Engineer of Pippin Civil Engineering Pty Ltd.

Craig completed a Bachelor of Engineering (Civil) at Curtin University, a Diploma in Business (Frontline Management) and has studied project management through the education arm of Engineers Australia.

With over 23 years' experience in Civil Engineering, Craig has a thorough knowledge of the land development industry and its civil engineering requirements. During this extensive experience Craig has been involved with the complete range of civil infrastructure projects from minor servicing works to major master planned residential estates, taking projects from feasibility, through design to implementation, supervision and contract administration. Craig possesses an extensive knowledge of water and sewerage infrastructure reticulation, road design, stormwater drainage, local government requirements and the development process within Western Australia enabling clear, concise and practical solutions for any civil engineering project. With an extensive knowledge base in stormwater management and the implementation of Water Sensitive Urban Design (WSUD) Craig has undertaken numerous, Local Water Management Strategies, Urban Water Management Plans and Stormwater Strategies for residential, commercial and industrial developments. Craig has previously been involved as the Principal Engineer for several major residential estates within the South West of Western Australia and has extensive experience in the development of large-scale retirement/lifestyle village and strata developments.

2 Proposed Development

It is proposed the sheep feedlot be developed on a 108ha portion of Ronneby Park farm herein referred to as the Subject Site. The development will consist of;

- Approximately 130 sheep pens (50m long by 25m wide) designed to hold up to 600 head of sheep each;
- A biosolid stockpile area for sheep manure;
- A separate biosolid stockpile area for carcass management;
- Sedimentation and evaporation ponds for capture and treatment of effluent runoff;
- A sheep processing area for drop off/pick up, this will include a weighbridge/sampling stand and office/lunchroom/toilet facilities; and
- An area for feedlot facilities/operations which will include; truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment.

A conceptual site plan of the proposed feedlot is shown on Figure 2.

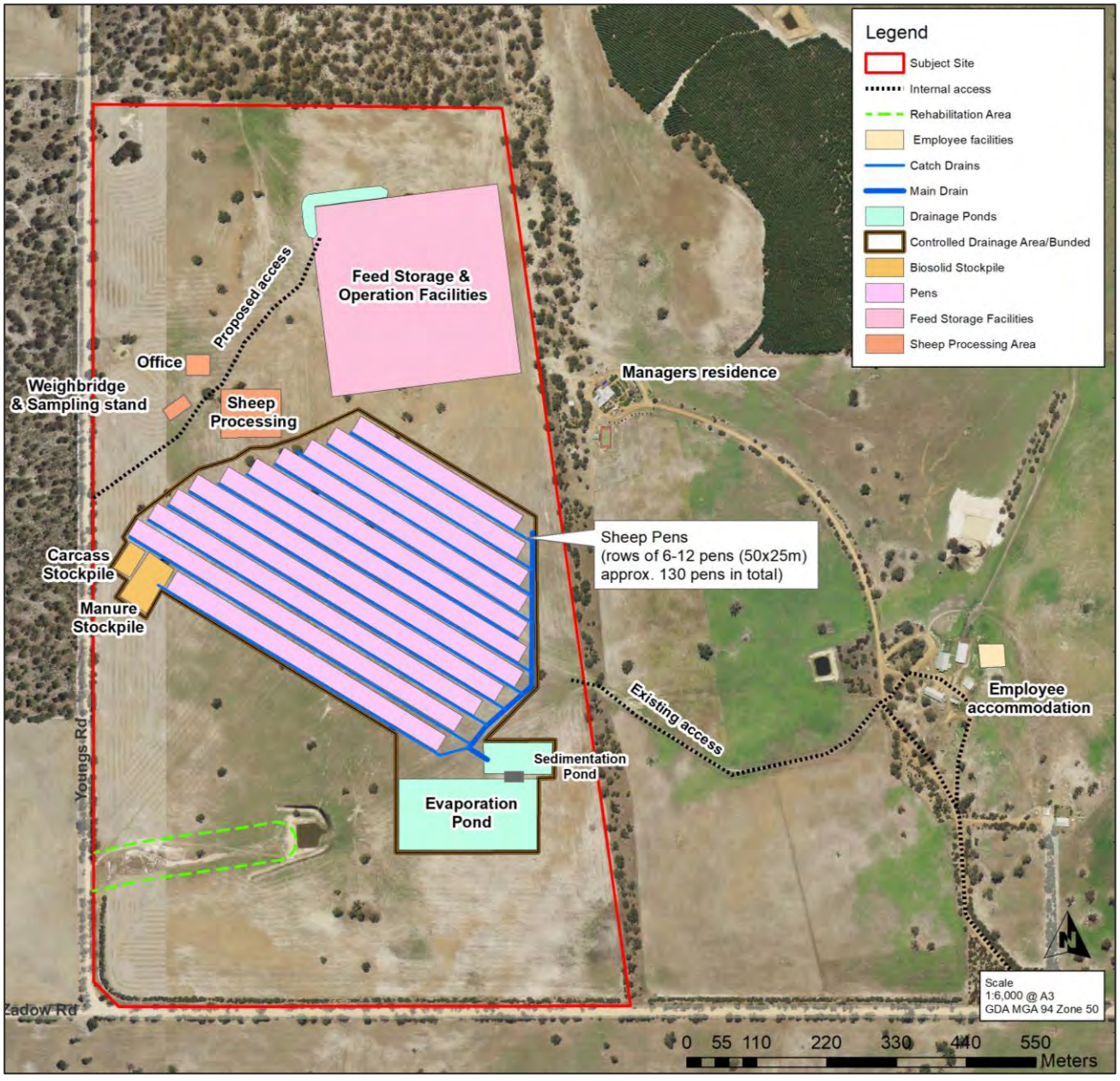

Figure 2: Sheep Feedlot Concept Plan

3 Pre-development Environment

3.1 Existing Land Use

The Subject Site consists of cleared agricultural land, the proposed development area is completely cleared except for a few scattered trees and there is one farm dam located towards the south of the Subject Site. Directly east of the development site, approximately 700m from the proposed feedlot, is agricultural sheds and sheep yards and to the north-west of that is a residential dwelling (approximately 300m from the proposed sheep pens and 120m from the proposed feed storage bunkers). The Subject Site is currently being used for livestock and has been used for cereal cropping in the past.

Photograph 1: View to the west across cleared Subject Site.

Photograph 2: View of dam at low point of Subject Site.

Photograph 3: View to the north across cleared Subject Site.

Photograph 4: View to the west in northern corner of the site.

3.2 Climate

The Subject Site is characterised by a Mediterranean climate with warm dry summers and cool wet winters. Rainfall data is observed from nearby Bureau of Meteorology (BoM) Boscabel site (Site No. 10520).

The long-term average annual rainfall is 521mm (1916 to 2019). This average has decreased between 2000 and present, to an average annual rainfall of 460mm, reflecting a 13% reduction compared to the long-term average, consistent with a general drying trend in the South West of WA.

The total rainfall distribution has also altered, with a reduction of average winter monthly rainfall, but no significant reduction in average summer monthly rainfall.

The average annual pan evaporation for the Subject Site area is approximately 1826mm (Luke et al, 1988).

3.3 Topography

A feature survey for the Subject Site was conducted by Caldwell Land Surveys (2019), topographic contours from the survey are shown on Figure 3. The Subject Site topography is undulating with a high point of 282.5mAHD in the north east of the site and a low point of 257.5mAHD in the north western corner of the site. There is also a valley that runs from east to west in the southern portion of the site that has a low point of 261mAHD. The Subject Site topography will be altered as part of the proposed development to ensure adequate drainage of the sheep pens and associated facilities.

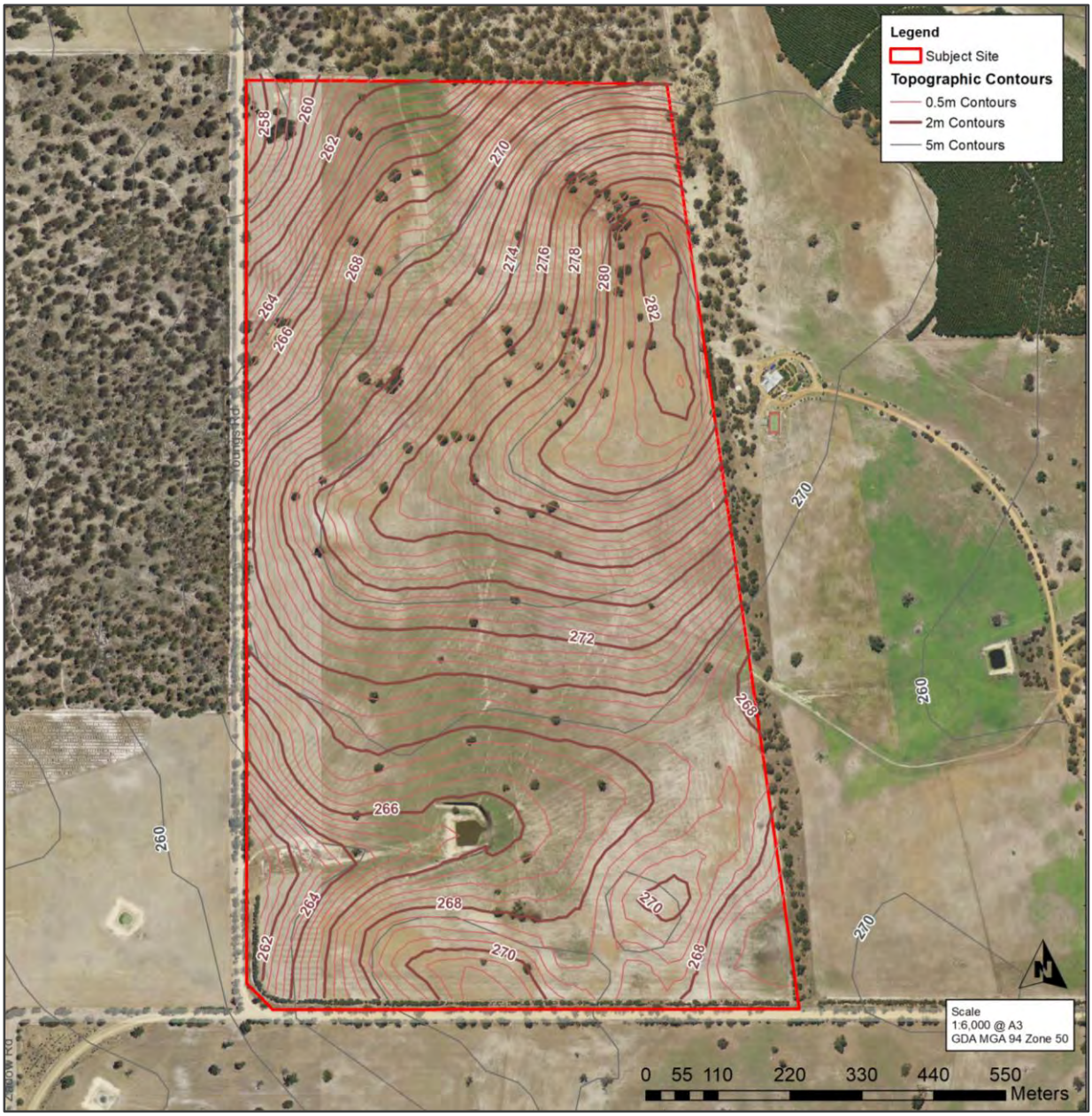

Figure 3: Topography

3.4 Geology and Soils

NRInfo (Department of Industries and Regional Development, 2019) classifies the soils within the Subject Site as the '*Boscabel System*' characterised by; '*Gently undulating rises and narrow valley floors, in the south of the Eastern Darling Range. Sandy gravel mainly pale coloured, grey deep sandy duplex and pale deep sand. Wandoo-marri-jarrah woodland.'* And within the '*Boscable 1 Subsystem'* characterised by *'Sandy gravels, usually pale coloured, on broad hill crests and upper slopes, small swamps and lunettes scattered on this unit.'*

Soil testing was conducted at the Subject Site on the 29th – 31st July 2019 by Great Southern Geotechnics (GSG), the Geotechnical Investigation (GSG, 2019) has been included as Appendix A. The Geotechnical Investigation was conducted to assess the suitability of the site for the proposed development. Soil testing included soil analysis, photographic recording, logging of soil types, measuring of water table and laboratory analysis of permeability and Phosphorus Retention Index (PRI). In total 36 test pits were excavated and assessed within the Subject Site, 33 of the test pits were excavated to a depth of 2m and 3 test pits were excavated deeper (4-6m).

In summary the geotechnical investigation showed that soils across the proposed development area predominantly consisted of a shallow top soil layer of sand with silt (to approximately 100mm depth), over a sandy gravel layer, over a clayey gravel layer, over a sandy clay layer. Depths of layers varied depending on the location of the test pit within the landscape. Generally, the top of the sandy clay layer was between 600 and 1000mm depth. Lithological logs of the test pits are shown in Appendix A.

Permeability

Permeability testing was conducted on the sandy clays found at the Subject Site by Liquid Labs WA as part of the Geotechnical Investigation (Appendix A). Permeability results on the sandy clays are shown in Table 2, a map showing the location of the Test pits tested is shown in Appendix A.

Table 2: Permeability Results

Test Pit	TP1	TP9	TP13	TP22	TP24	TP25	TP26
Depth of clay layer (mm)	1600-2000	850-2000	1300-2000	1600-2000	2500-5200	500-2000	1500-5200
Coefficient of Permeability (m/s)	1.43×10^{-9}	1.14×10^{-10}	1.68×10^{-9}	2.83×10^{-9}	2.88×10^{-10}	5.32×10^{-10}	4.34×10^{-9}

Permeability results showed that the sandy clays found at the Subject Site had very low permeability (practically impermeable) and therefore are considered suitable for the operations of a sheep feedlot and the prevention of groundwater contamination.

3.5 Surface Water Hydrology

Surface water generally runs off the Subject Site towards a low point in the north west corner and a depression that runs from east to west in the southern portion of the Subject Site. There is a manmade dam within the depression, which appears to be surface water fed with some potential groundwater intrusion. Once the dam is full it overflows to the west where there is evidence of seasonal surface water flow. The proposed feedlot development is located over 100m from the depression area, in addition this area will be rehabilitated as part of development works. Rehabilitation will include native revegetation to 30 meters either side of the depression.

More broadly the Subject Site drains to the west and north west and is within the Hardy Estuary and Blackwood River Catchment.

The pre-development surface water hydrology of the site and surrounding areas is shown on Figure 4. The surface water hydrology outside of the Subject Site will be maintained post-development.

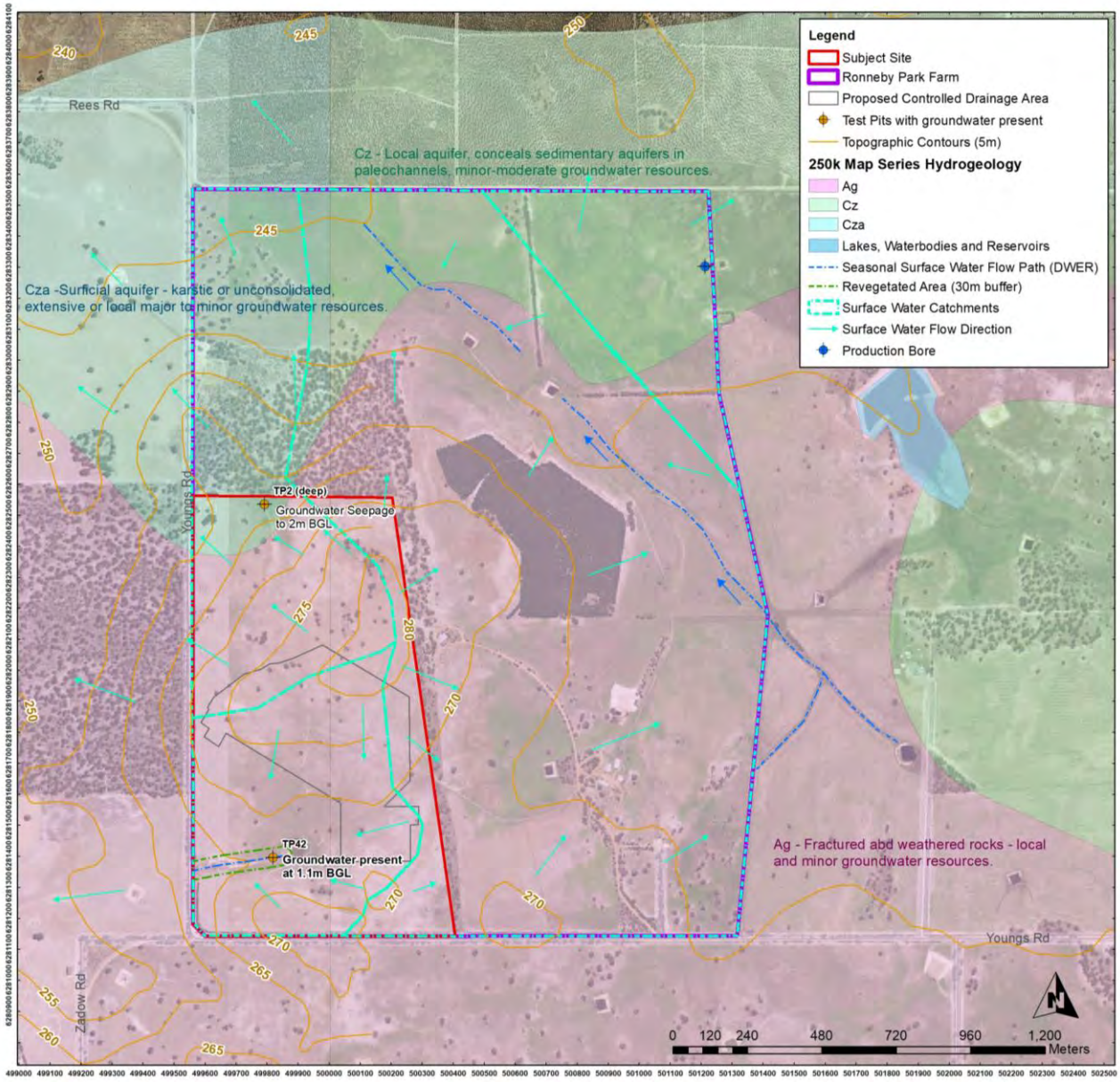

Figure 4: Pre-development Hydrology and Hydrogeology

3.6 Hydrogeology and Groundwater

Australian Geoscience Mapping and Department of Water and Environmental Regulation 250K Hydrogeological mapping (DWER, 2019) places the Subject Site within the '*Archaen Period (Ag)'* with the geology described as; *'Granitoid rock, porphyritic and even-grained; subsurface generally weathered to clayey sand (indicated by lighter colour)'.* The aquifer is described as; '*Fractured and weathered rocks - local aquifer, minor groundwater resources.'* DWER 250K Hydrogeological mapping is shown on Figure 4.

DWER 250K Hydrogeological mapping is consistent with findings by Great Southern Geotechnics with groundwater encountered at only 2 test pits (TP2 and TP42). Groundwater at TP2 appeared to be the result of a perched water table with the less permeable sandy clay layer below the sandy gravel layer being dry and the test pit filling up from seepage through the more permeable sandy gravel layers above. TP42 consisted of a deeper sand layer (150-1000mm depth) compared with the other test pits within the Subject Site. The water table was found to be 1100mm BGL 24 hours after excavation (GSG, 2019). The test pits surrounding TP42 were found to be dry to a depth of up to 6m (TP24) indicating the groundwater at TP42 is likely the result of a localised perched water table within the highly permeable sand layer. The location of the two test pits with ground water present are shown on Figure 4.

There is one existing production bore located within Ronneby Park to the north east of the Subject Site (Figure 4). DWER 250K Hydrogeological mapping places the bore in the '*Cainozoic – Phanerozoic Period'* with the aquifer described as; '*Surficial aquifer - local aquifer, conceals sedimentary aquifers in paleochannels, minor-moderate groundwater resources'.* The groundwater in the production bore was found to be suitable for sheep feedlot operations, the water quality analysis of the bore water is included as Appendix B.

The Subject Site is not located within a Public Drinking Water Source Protection Area (DWER, 2019).

3.7 Wetlands

A desktop analysis of Department of Parks and Wildlife (DBCA) Geomorphic Wetlands dataset (2019) found there are no known significant wetlands within the Subject Site or within a 5 kilometre radius of the Subject Site.

4 Waste Management Strategy

Management of waste in the form of manure, carcasses, effluent runoff and sludge from ponds is necessary to prevent contamination of downstream waterways/waterbodies, the environment and minimise injury/disease and allow sheep to stand and walk comfortably. Further information on the proposed waste management strategies and operational procedures at the feedlot is presented in the Operational Environmental Management Plan (BDS, 2019).

4.1 Manure

Manure will be collected from the feedlot pens on a regular basis and stockpiled in biosolids storage area(s). The interval between manure collection and stockpiling will vary depending on sheep numbers at any one time. There may be multiple manure stockpiles to avoid transporting times during collection, with all manure stockpiles located within the controlled drainage area. The stockpile(s) of manure will be removed off site on a regular basis by a licenced and approved third party operator.

4.2 Carcasses

The carcasses will be removed from the pens as soon as possible upon inspection and stockpiled in a separate biosolids stockpile where they will be composted with layers of manure to accelerate break down of organic matter and reduce odour. Once the carcass biosolids stockpile has reached capacity, it will be removed off site by a licenced and approved third party operator.

4.1 Effluent Runoff

The sheep pens, biosolids storage areas and the sheep processing area are contained via bunding within a controlled drainage area (CDA). The CDA ensures all effluent runoff from the feedlot complex as a result of rainfall is contained and directed via drains to a sedimentation pond. The sedimentation pond is designed to detain the runoff allowing the organic matter to settle out and the water to be evaporated. If the sedimentation pond reaches capacity it will overflow and be retained by a larger evaporating pond (Refer to Section 5 for further detail).

4.1 Pond Sludge

Once the effluent runoff reaches the sedimentation pond the organic matter within the effluent settles out and forms a sludge layer at the base of the pond. This sludge will be removed once its volume has reached approximately 10% of the pond's capacity or if a strong odour is detected from the pond. The sludge will be removed via excavator and stockpiled in the manure stockpile area. The sludge (and manure) will be transported off site by a licenced and third-party operator once stockpile(s) have reached capacity.

It is probable the sedimentation pond only requires desludging every few years (Refer to Section 5 and 6 for further detail).

It is not expected the evaporation pond will receive effluent runoff often/if ever however sludge removal here will occur in a similar manner to the sedimentation pond (Refer to Section 5 and 6 for further detail).

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5 Effluent Management Strategy

The effluent management system for the proposed feedlot has been designed in accordance with the National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011). The key components of the drainage system for this development are;

- Earthworks will be undertaken to ensure the sheep pens, biosolids stockpile areas and sheep processing area drain towards one allocated low point (pond location).
- Diversion banks/bunds constructed around the sheep feedlot complex to capture all effluent runoff from the Controlled Drainage Area (CDA) and divert external freshwater upslope of the complex away from the CDA.
- Drains will be designed to capture runoff from the feedlot pens and all other surfaces within the sheep feedlot complex, ultimately conveying the runoff to the sedimentation pond. The drains are designed to convey flow rates from the 20yr ARI design storm event and will carry this flow at a non-scouring velocity.
- A sedimentation pond designed to capture and detain the peak flow from a 20yr ARI design storm event, overflowing to the evaporation pond at the 20yr ARI top water level via a broad low point in the bund which will be designed with large rock/ballast to trap sediment and allow water to pass.
- An evaporation pond designed to capture and retain effluent when/if capacity of the sedimentation system is exceeded. The evaporation pond is designed to hold and evaporate the runoff from a 90th percentile wet year.
- The sedimentation pond and evaporation pond will be underlain with a 300mm compacted clay lining which will have a permeability of < 1 x 10^{-9} m/day to minimise seepage to the groundwater.

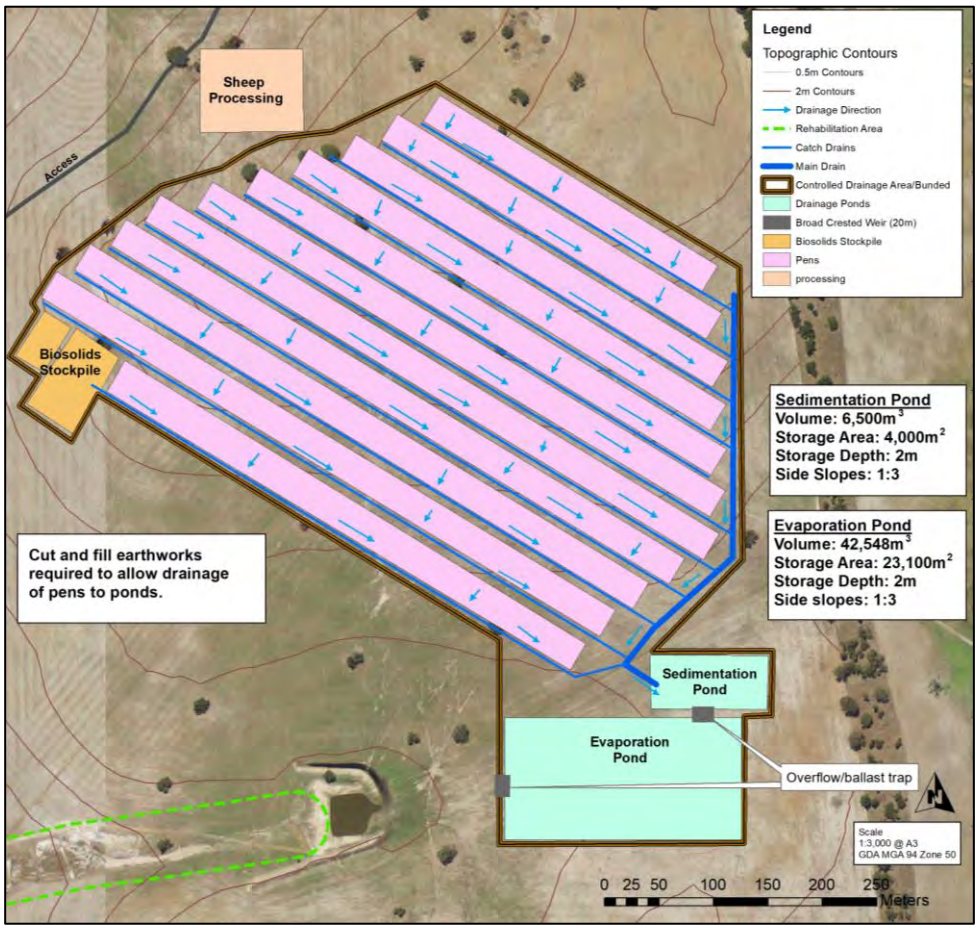

Figure 5: Effluent Management Plan

5.1 Drains

Catch drains are located between and to the downslope of each row of feedlot pens and designed to capture runoff from the pens and all other surfaces within the CDA, and ultimately convey that runoff via a main drain to the sedimentation pond. The drains are designed to ensure that pens drain quickly after rainfall, but that runoff is not so rapid that it scours excessive amounts of manure from the pen surface. The downslope gradient in feedlot pens will be approximately 2% consistent with the national guidelines (MLA, 2011). A conceptual plan of the catch and main drains are shown on Figure 5.

5.1.1 Drain Sizing

Drains are designed to carry the peak flow rates resulting from a design storm event with an ARI of 20 years. The design storm event for the CDA is the 30 min 20yr ARI storm event resulting in a peak flow rate of 2.71m^3/s (Refer to Section 5.2.1).

The catch and main drains have been designed with a v-shaped cross-section. The manning's formula has been used to estimate the approximate size of the drains required to convey the peak 20yr ARI storm event. The approximate size of the catch and main drains required is shown in Table 3.

Table 3: Drain Sizing

	Drain side slope	Peak Flow (m^3/s)	Drain Width (m)	Flow Depth (m)	Drain Depth (m)
Catch Drains	1:3	0.18	2.1	0.20	0.35
Main Drain	1:3	2.71	4.3	0.57	0.72

It is noted the sizing of the drains (Table 3) is based on the point in the drain with the highest flow (downstream end), drain sections further upstream may be constructed according to the incoming flow at that point. It is also assumed all feedlot drains and embankments will have a crest height, following postconstruction consolidation, at least 0.15 m above the design flow depth in a 20-year ARI design storm.

5.2 Sedimentation Pond

The objective of the sedimentation (or settling) process is to remove a large proportion of the solids from the effluent runoff generated from the majority of rainfall events which is expected to have a high organic matter content. The sedimentation process is achieved via gravity settling; where runoff is retained for sufficient time to allow the majority of the entrained solids to settle out.

Capturing the organic matter in the sedimentation system prior to entering the larger evaporation pond helps reduce odour emissions and reducing the rate of sludge deposition increases the interval between the de-sludging operations required to maintain the design storage volume in the evaporation pond.

5.2.1 Sedimentation Pond Sizing

The sedimentation pond for the CDA has been sized using the methods outlined in the National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011). This method uses the following formula;

V = Qp x (l/w) x (z/v)

Where:

V = Sedimentation system volume (m^3);

Qp = Peak inflow from a design storm having a peak average recurrence interval (ARI) of 20yrs (m^3/s);

l/w = Length to width ratio, where l is along the direction of flow;

z = A scaling factor, 6 for this site as it is using ponds (MLA,2011);

v = Flow velocity (m/s), maximum = 0.005 m/s (MLA, 2011).

The time of concentration (t_c) was calculated using the Bransby Williams method and used to determine the peak 20yr ARI design storm event. The peak inflow from the design storm event was calculated using the rational method;

Qp = ciA

Where:

Qp = Peak inflow from a design storm having a peak ARI of 20yrs (m^3/s);

c = Runoff coefficient (0.8 for this site consistent with Feedlot Guidelines (MLA, 2011));

i = Rainfall intensity of design storm (49.2mm/hr used based on a 30min 20yr ARI storm event (BOM, 2019)); and

A = Drainage Area (248,200m^2).

A summary of the calculation is provided in Table 4 and a plan showing the sedimentation pond and its storage capacity is shown on Figure 5.

Table 4: Sedimentation Pond Sizing

t_c	Qp (m^3/s)	l/w	V (m^3)
29 mins	2.71	2	6,500

Flow from the sedimentation pond to the evaporation pond is regulated by a control weir (broad crested weir) set at the peak 20yr ARI top water level. A minimum freeboard of 0.9 m is provided between the weir crest and the crest of the sedimentation pond embankment. The control weir will be 20m wide and is capable of discharging the peak flow from a 50-year ARI design storm without the system embankment overtopping. The depth of flow over the weir during a 30 min 50yr ARI storm event (3.46m^3/s peak flow) was calculated to be less than 0.2m.

5.3 Evaporation Pond

The sedimentation system is designed in accordance with the sheep feedlot guidelines (MLA, 2011) to capture the majority of the organic matter from effluent runoff generated from the majority of rainfall events, however in wet years when the sedimentation system is at capacity the evaporation pond provides additional storage and evaporation capacity. The overflow from the sedimentation pond is still likely to contain substantial levels of organic matter and by capturing the runoff in the evaporation pond allows the microbial degradation of much of the organic matter that remains after the sedimentation system. Due to the substantial 'slug' loads these periodic inflows provide, this biological degradation is almost entirely anaerobic.

5.3.1 Evaporation Pond Sizing

The evaporation pond is designed to hold runoff from a 90th percentile wet year consistent with the National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011). A water balance using the precipitation from a 90th percentile wet year was adopted to calculate the volume requirement for the evaporation pond.

Rainfall data used in the water balance is from nearby BoM Boscabel site (Site No. 10520). The mean monthly rainfall data and the 90th percentile monthly rainfall data from the Boscabel site is shown in Table 5. Boscabel

average rainfall data is based on readings from 1916 to 2019, which is conservative for volume requirements as it does not allow for drying climate and reduced rainfall in more recent years.

As the total rainfall of individual 90th percentile months (939mm) is much larger than the actual annual 90th percentile rainfall total (640mm) (the chances of recording 12 consecutive 90th percentile months are low) monthly 90th percentile totals are adjusted so that;

$MR_{adj} = (YR^{90}/\sum MR^{90}) \times MR^{90}$

This method smooths the monthly rainfall to better reflect the seasonal patterns than does just using the 90th percentile 'wet year'.

Evaporation data used in the water balance is from BoM Kojonup site (Site No. 10582). This is the nearest available evaporation data. The monthly average evaporation (E_{pan}) for the site is shown in Table 5.

The water balance has been determined using the following equation;

Change in storage volume = $V_{runoff} + (V_{precipitation} - V_{evaporation})$

Where;

$V_{runoff} = MR^{90}_{adj} \times A_{catchment} \times C_x$ (m^3);

$V_{precipitation} = MR^{90}_{adj} \times A_{pond}$ (m^3);

$V_{evaporation} = ER \times A_{water\ surface}$ (m^3);

C_x = runoff coefficient (0.4 used consistent with national guidelines (MLA, 2011);

$A_{catchment}$ = Controlled drainage area (248,200m^2);

A_{pond} = pond area to centreline of embankment (m^2);

$A_{water\ surface}$ = surface area from which evaporation occurs (m^2).

The storage capacity of the sedimentation pond has been subtracted from the storage volume required to determine the storage requirement of the evaporation pond. The water balance and total evaporation pond volume required is shown in Table 5.

Table 5: Water balance for evaporation pond sizing

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual /Total
Mean Rainfall (mm)	17	13	24	31	64	88	85	72	52	36	22	15	521
90th %ile Monthly Rainfall (mm)	45	36	71	64	113	145	131	107	83	62	46	38	939
Adjusted 90th %ile Monthly Rainfall (mm)	31	25	48	43	77	98	89	73	57	42	31	26	640
Mean Monthly Evaporation (E_{pan}) (mm)	239	190	164	93	59	42	43	56	75	112	156	223	1,452
Volume of Effluent Runoff (m^3)	2974	2385	4710	4207	7479	9573	8658	7095	5492	4081	3047	2524	62,228
Pond Surface Flux (precip - evap) (m^3)	-5832	-4648	-3184	-1322	663	1795	1470	631	-412	-1888	-3467	-5533	-
Change in Storage Volume (m^3)	-2857	-2263	1526	2885	8143	11367	10128	7727	5080	2193	-420	-3009	-
Storage Volume Required (m^3)	0	0	1526	2885	8143	11367	10128	7727	5080	2193	0	0	49,048
Storage Required (minus Sedimentation Storage (m^3)	-	-	-	-	-	-	-	-	-	-	-	-	42,548

A seepage factor was not used in the water balance, in general, most studies show that whilst there is some initial leakage of ponds, over time it is reduced significantly as a result of sealing due to physical, chemical and biological processes within the pond. The sealing of a pond floor is aided by clogging by microbes and particulate matter and the formation of a sludge blanket.

The evaporation pond spillway is designed in accordance with the Sheep Feedlot Guidelines (MLA, 2011) to discharge a 1 in 50yr ARI design storm event. The spillway from the evaporation pond is a 20m wide broad crested weir, the depth of flow during a 30 min 50yr ARI storm event (3.46m^3/s flow rate) is less than 0.2m. A

minimum freeboard of 0.9 m is provided between the weir crest and the crest of the evaporation pond embankment.

5.4 Pond and lining

To minimise the risk of groundwater pollution, the sedimentation pond and evaporation pond will be lined with at least 300mm of low-permeability clay able to provide a design permeability of <1 x 10-9 m/s (~0.1 mm/d).

The clay will be sourced on site, Section 3.4 shows the permeability results of the clay found at the Subject Site. The sandy clay at 3 of the test pits analysed had a permeability of <1 x 10-9 m/s (~0.1 mm/d).

6 Implementation Actions

6.1 Performance Indicators

6.1.1 Drainage System

Satisfactory performance in drains occurs when:

- Drains have sufficient capacity so that they do not overtop in 'normal' circumstances.
- Feedlot catch drain and main drain performance is not impeded by excessive sedimentation or tall vegetation.
- significant scouring of drains does not occur (within design limits).

6.1.2 Sedimentation System

The following indicate satisfactory performance in the sedimentation system:

- Requires desludging only every few years (assuming desludging occurs when sludge takes up a maximum 10% of the design capacity of the pond).
- Spill frequency does not exceed a peak 1 in 20yr ARI storm event.
- Local groundwater quality should not be affected by seepage from the evaporation pond.
- No catastrophic failure of pond embankments.

6.1.3 Evaporation Pond

The following indicate satisfactory performance of the evaporation pond:

- Spill frequency does not exceed an average of one in 10 years.
- Biological activity in the ponds should provide for:
  – rapid stabilisation of the pond contents following a significant inflow
  – odour emissions remaining within acceptable limits.
- Local groundwater quality should not be affected by seepage from the evaporation pond.
- No catastrophic failure of pond embankments.
- It is anticipated the evaporation pond will very rarely if ever receive effluent from the sedimentation pond spillway.

6.2 Monitoring Program

The monitoring program has been designed to allow a quantitative assessment of hydrological impacts of the proposed development.

6.2.1 Drainage System

- Visual monitoring of sediment depth and vegetation height if growing.
- Visual monitoring of scouring and damage during cleaning operations.
- Quarterly inspections of embankments, with particular note of any potential structural problems (e.g. cracking or slumping of banks and batters) that might affect the integrity of the structure – noting the date of inspections and any significant outcomes of that inspection. One of the inspections will occur prior to winter rains.
- Records to be kept of the date of cleaning operations and of any repairs and maintenance.

6.2.1 Sedimentation System

- Visual monitoring of sludge depth in sedimentation pond following rainfall events to determine the depth of deposited material and the rapidity with which it dries.
- Visual monitoring of damage to, and condition of, the lining material during cleaning operations.
- Quarterly inspection of sedimentation system embankments with particular note of any potential structural problems (e.g. cracking or slumping) that might affect the integrity of the structure—noting the date of inspections and any significant outcomes of that inspection. One of the inspections will occur prior to winter rains.
- Records to be kept of dates of cleaning operations and of any repairs and maintenance.

6.2.2 Evaporation Pond

- Record and report any pond spills (including details of antecedent weather conditions, and any relevant management actions).
- Sample and analyse surface water from pond spillway where/if spillway overflows and enters the adjacent dam. Water quality parameters measured will be as per Groundwater Monitoring (Section 6.2.3).
- Record any desludging, cleaning and maintenance operations.
- Quarterly inspections of embankments, with particular note of any potential structural problems (e.g. cracking or slumping of banks and batters) that might affect the integrity of the structure – noting the date of inspections and any significant outcomes of that inspection). One of the inspections will occur prior to winter rains.

6.2.3 Groundwater Monitoring

- Quarterly monitoring of one groundwater monitoring bore downstream of the CDA and ponds is proposed. Groundwater was discovered at one test pit location downstream of the CDA during the Geotechnical Investigation (TP42) as shown on Figure 4. It is proposed the groundwater monitoring bore be located near TP42 within the localised perched water table. The groundwater table was not encountered up to 6m depth within the CDA and the proposed location of the ponds and therefore additional groundwater monitoring in this area is deemed unnecessary.
- Water quality parameters that will be measured as part of the monitoring program include;
    - pH
    - Electrical Conductivity/ Total Dissolved Solids
    - Total Phosphorus
    - Total Nitrogen
    - Total Kjeldahl Nitrogen
    - Ammonium
    - Nitrate and Nitrite
- It is recommended that at least one round of pre-development monitoring be conducted to establish baseline data and trigger values.

6.2.4 Climate Monitoring

A weather station will be installed within the facility. The weather station will monitor rainfall and wind speed and direction. The rainfall will be correlated to pond levels to ensure the capacity of the sedimentation and

evaporation pond is as designed (sedimentation pond designed to hold and a 20yr ARI design storm event and evaporation pond designed to hold a 90th percentile rainfall year).

6.3 Contingency Plan

Contingency Plans are developed to outline remedial action or a change if any operational problems or adverse environmental effects are detected.

The key risks of the effluent management strategy are;

- Overtopping or scouring out of drains, sedimentation ponds and evaporation ponds more frequently than design intension.
- Contamination of groundwater and/or adjacent surface waterways/bodies.

If overtopping or scouring of bunds/banks of the drains and ponds occurs more frequently than its design capacity the following contingency measures will be implemented:

- The design capacity of the drains and ponds will be reviewed and altered if required;
- An assessment of the structural integrity of the structure in question will be conducted, altering the structure accordingly.
- A review of the inspection/monitoring program, increasing inspections and remediating actions accordingly.

Trigger values for groundwater and surface water quality parameters will be determined by baseline (pre-development) monitoring and using the applicable guidelines. During assessment of quarterly groundwater quality readings and readings from any overflow from the evaporation pond spillway, if it appears that the trigger values are exceeded the following contingency measures will be implemented:

- The design capacity of the drains and ponds will be reviewed and altered if required;
- An assessment of the pond lining will be conducted to ensure it is functioning as intended;
- A review of the operating strategies with particular focus on waste management and removal will be conducted, with remediating actions put in place immediately.

The appropriate government authority will be notified if a significant non-conformance against any of the licence conditions or operating strategy commitments occurs. They will be notified as soon as the non-compliance has been made aware.

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Prepared for Fletcher International Exports Pty Ltd

Construction Management Plan

Ronneby Park Sheep Feedlot

Bio Diverse Solutions

29th October 2019

DOCUMENT CONTROL

Title: Construction Management Plan – Ronneby Park Sheep Feedlot

Location: Lot 1 and 4 Youngs Road, Beaufort River WA 6395

Author (s): Chiquita Cramer

Reviewer (s): Kathryn Kinnear

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Client: Fletcher International Exports Pty Ltd

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CONTENTS

1. Introduction

1.1. Background

This Construction Management Plan (CMP) has been prepared by Bio Diverse Solutions on behalf of Fletcher International Exports Pty Ltd (FIE) 'the Client' in support of a Development Application for a 90,000 head of sheep feedlot at Ronneby Park, located near Beaufort River, Western Australia. The CMP outlines the construction methodology and associated environmental management strategies.

1.2. Location

Ronneby Park is located approximately 32kms north of Kojonup WA in the Shire of Woodanilling, accessible from Kojonup via Albany Hwy to the north (26kms) and west along Youngs Road (6kms) as shown on Figure 1. The Subject Site is surrounded by agricultural farm land.

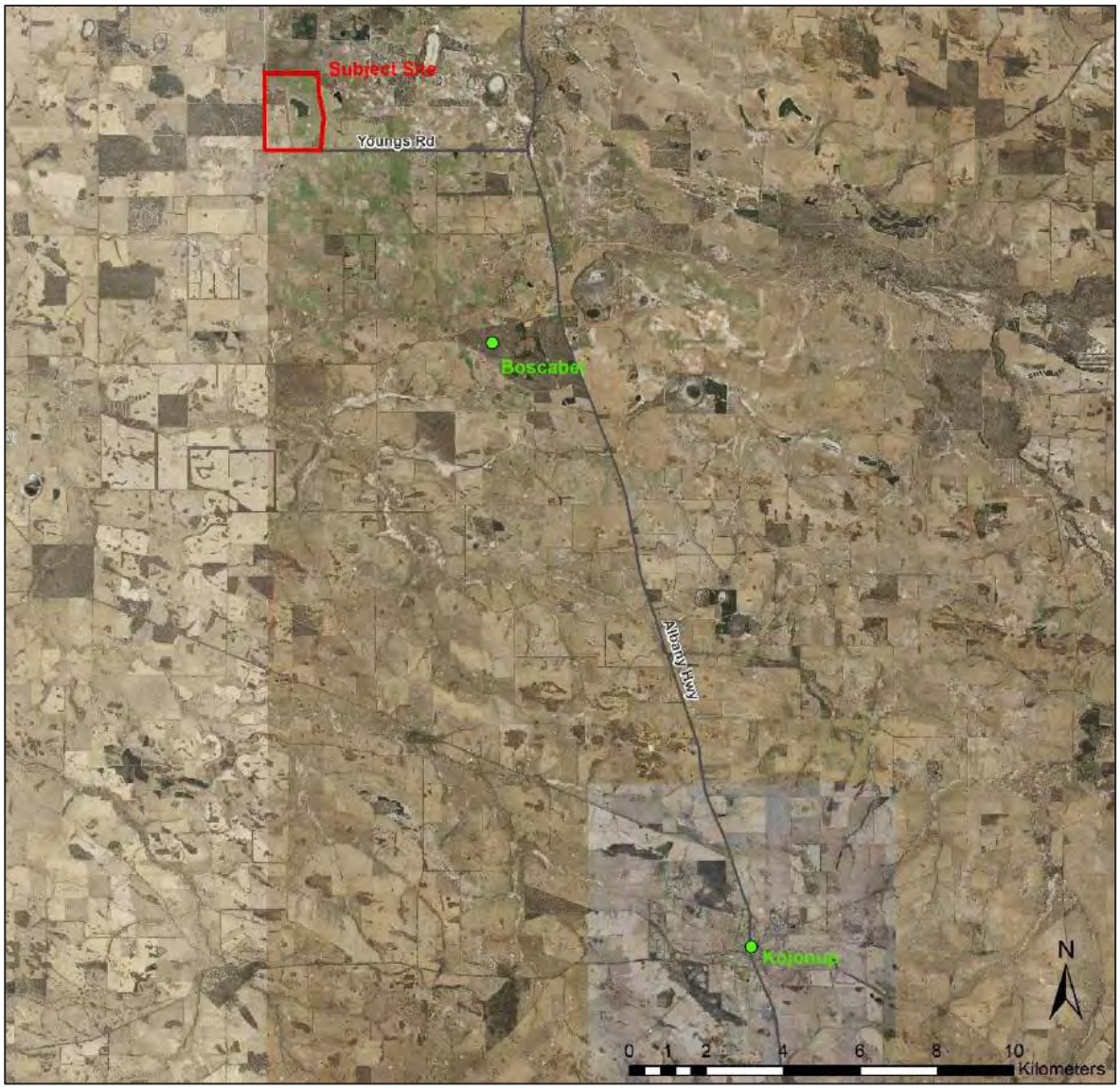


Figure 1: Location Plan

1.3. Existing Land Use

The Subject Site consists of cleared agricultural land, the proposed development area is completely cleared except for a few isolated trees and there is one farm dam located towards the south of the Subject Site. Approximately 700m east of the proposed feedlot is agricultural sheds and sheep yards and to the north-west of that is a residential dwelling (approximately 200m from the proposed feedlot). The Subject Site is currently being used for livestock and has been used for cereal cropping in the past.

1.4. Alignment to Legislation, Policy and Guidelines

The CMP complies with the following key legislation, policies and guidelines:

- *Environmental Protection Act 1986*;
- *Environmental and Protection and Biodiversity Conservation Act 1999;*
- National Procedures and Guidelines for Intensive Sheep and Lamb Feeding Systems (MLA, 2011);
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas (WAPC, 2015); and
- Guidelines for Planning in Bushfire Prone Areas, version 1.3 (DPLH, 2017).

1.5. Proposed Feedlot Development

It is proposed the sheep feedlot be developed on a 108ha portion of Ronneby Park farm herein referred to as the Subject Site. The development will consist of;

- Approximately 130 sheep pens (50m long by 25m wide) designed to hold up to 600 head of sheep each;
- A biosolids stockpile area for sheep manure;
- A separate biosolids stockpile area for carcass management;
- Sedimentation and evaporation ponds for capture and treatment of effluent runoff;
- A sheep processing area for drop off/pick up, this will include a weighbridge/sampling stand and office/lunchroom/toilet facilities; and
- An area for feedlot facilities/operations which will include: truck turnaround areas, grain and silage bunkers and feedlot machinery and equipment.

A conceptual site plan of the proposed feedlot is shown on Figure 2.

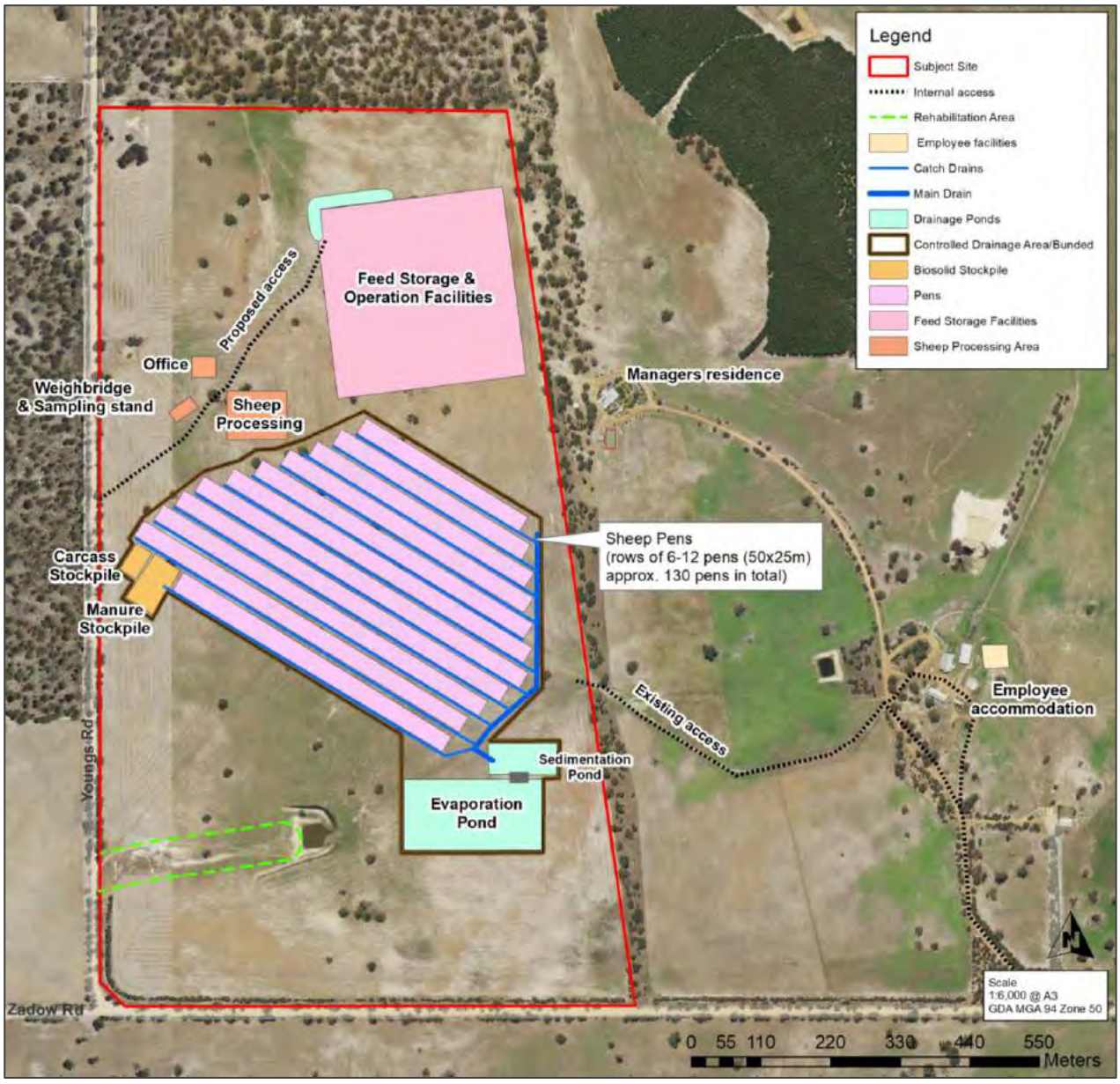


Figure 2: Feedlot Concept Plan

2. Site Characteristics

2.1. Existing Land Use

The Subject Site consists of cleared agricultural land. The proposed development area is completely cleared except for a few isolated trees and there is one farm dam located towards the south of the Subject Site. Directly east of the proposed feedlot (approximately 700m) within Ronneby Park are agricultural sheds and sheep yards and to the north of that is a residential dwelling (approximately 200m from proposed feedlot). The Subject Site is currently being used for livestock and has been used for cereal cropping in the past.

Photograph 1: View to the west across cleared Subject Site.

Photograph 2: View of dam at low point of Subject Site.

Photograph 3: View to the north across cleared Subject Site.

Photograph 4: View to the west in northern corner of the site.

2.2. Climate

The Subject Site is characterised by a Mediterranean climate with warm dry summers and cool wet winters. Rainfall data is observed from nearby Bureau of Meteorology (BoM) Boscabel site (Site No. 10520).

The long-term average annual rainfall is 521mm (1916 to 2019). This average has decreased between 2000 and present, to an average annual rainfall of 460mm, reflecting a 13% reduction compared to the long-term average, consistent with a general drying trend in the South West of WA.

The total rainfall distribution has also altered, with a reduction of average winter monthly rainfall, but no significant reduction in average summer monthly rainfall. The average annual pan evaporation for the Subject Site area is approximately 1826mm (Luke et al, 1988).

2.3. Topography

A feature survey for the Subject Site was conducted by Caldwell Land Surveys (2019). Topographic contours from the survey are shown on Figure 3. The Subject Site topography is undulating with a high point of 282.5mAHD in the north east of the site and a low point of 257.5mAHD in the north western corner of the site. There is also a valley that runs from east to west in the southern portion of the site that has a low point of 261mAHD.

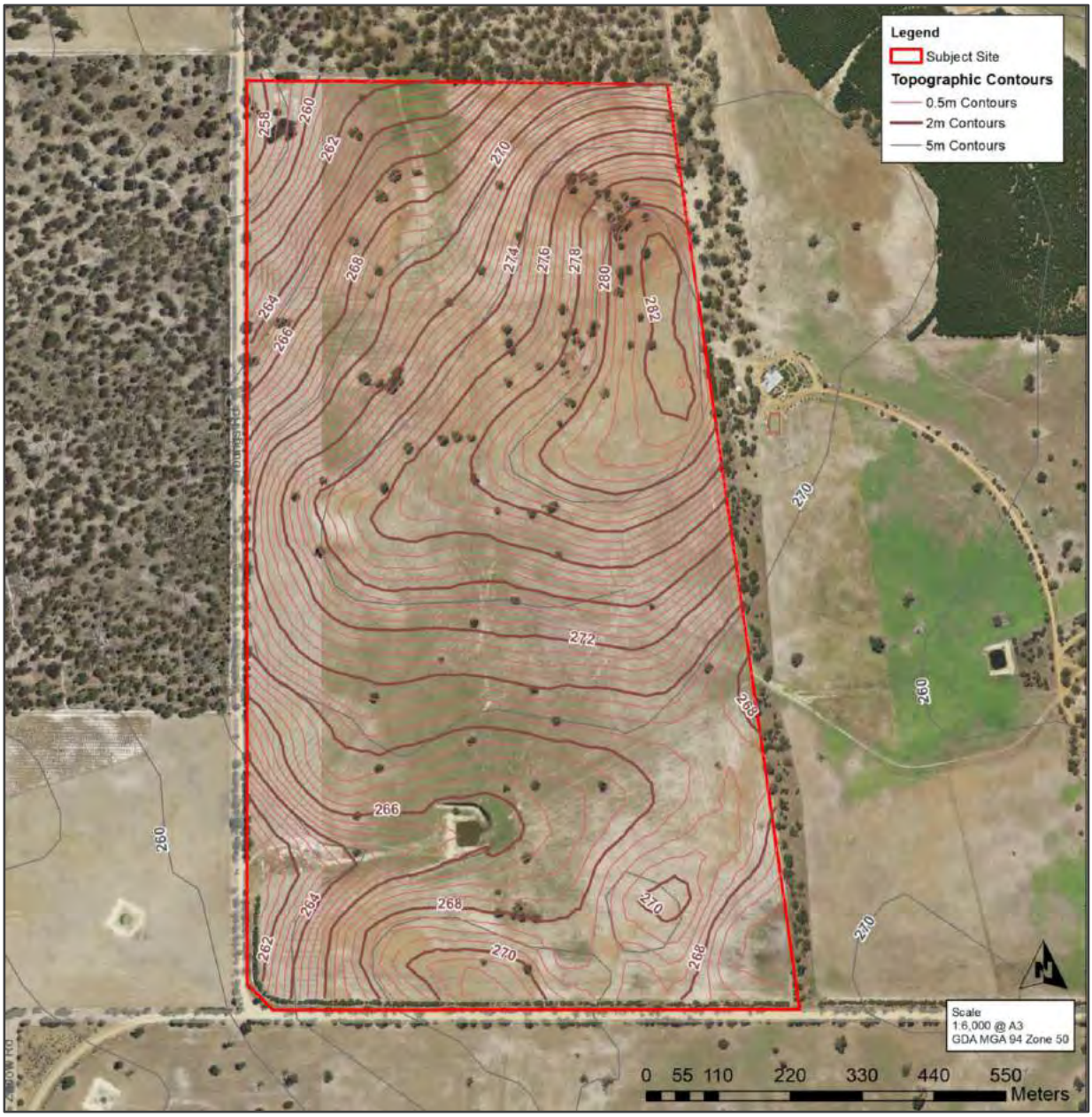


Figure 3: Topography

2.4. Geology and Soils

NRInfo (Department of Industries and Regional Development, 2019) classifies the soils within the Subject Site as the '*Boscabel System*' characterised by; '*Gently undulating rises and narrow valley floors, in the south of the Eastern Darling Range. Sandy gravel mainly pale coloured, grey deep sandy duplex and pale deep sand. Wandoo-marri-jarrah woodland.'* And within the '*Boscable 1 Subsystem'* characterised by *'Sandy*

gravels, usually pale coloured, on broad hill crests and upper slopes, small swamps and lunettes scattered on this unit.'

Soil testing was conducted at the Subject Site on the 29th – 31st July 2019 by Great Southern Geotechnics (GSG). The Geotechnical Investigation (GSG, 2019) has been included as Appendix A. The Geotechnical Investigation was conducted to assess the suitability of the site for the proposed development. Soil testing included soil analysis, photographic recording, logging of soil types, measuring of water table and laboratory analysis of permeability and Phosphorus Retention Index (PRI). In total, 36 test pits were excavated and assessed within the Subject Site. 33 of the test pits were excavated to a depth of 2m and 3 test pits were excavated deeper (4-6m).

In summary, the Geotechnical Investigation showed that soils across the proposed development area predominantly consisted of a shallow top soil layer of sand with silt (to approximately 100mm depth), over a sandy gravel layer, over a clayey gravel layer, and over a sandy clay layer. Depths of layers varied depending on the location of the test pit within the landscape. Generally, the top of the sandy clay layer was encountered between 600 and 1000mm depth. Lithological logs of the test pits are shown in Appendix A.

Permeability

Permeability testing was conducted on the sandy clays found at the Subject Site by Liquid Labs WA as part of the Geotechnical Investigation (Appendix A). Permeability results on the sandy clays are shown in Table 1, a map showing the location of the Test pits tested is shown in Appendix A.

Table 1: Permeability Results

Test Pit	TP1	TP9	TP13	TP22	TP24	TP25	TP26
Depth of clay layer (mm)	1600-2000	850-2000	1300-2000	1600-2000	2500-5200	500-2000	1500-5200
Coefficient of Permeability (m/s)	1.43×10^{-9}	1.14×10^{-10}	1.68×10^{-9}	2.83×10^{-9}	2.88×10^{-10}	5.32×10^{-10}	4.34×10^{-9}

Permeability results showed that the sandy clays found at the Subject Site had very low permeability (practically impermeable) and therefore are considered suitable for the operations of a sheep feedlot and the prevention of groundwater contamination.

2.5. Surface Water Hydrology

Surface water generally runs off the Subject Site towards a low point in the north west corner and a depression that runs from east to west in the southern portion of the Subject Site. There is a manmade dam within the depression, which appears to be surface water fed with some potential groundwater intrusion. Once the dam is full it overflows to the west where there is evidence of seasonal surface water flow. The proposed feedlot development is located over 100m from the depression area, in addition this area will be rehabilitated as part of development works. Rehabilitation will include native revegetation to 30 meters either side of the depression.

More broadly the Subject Site drains to the west and north west and is within the Hardy Estuary and Blackwood River Catchment.

The pre-development surface water hydrology of the site and surrounding areas is shown on Figure 4. The surface water hydrology outside of the Subject Site will be maintained post-development.

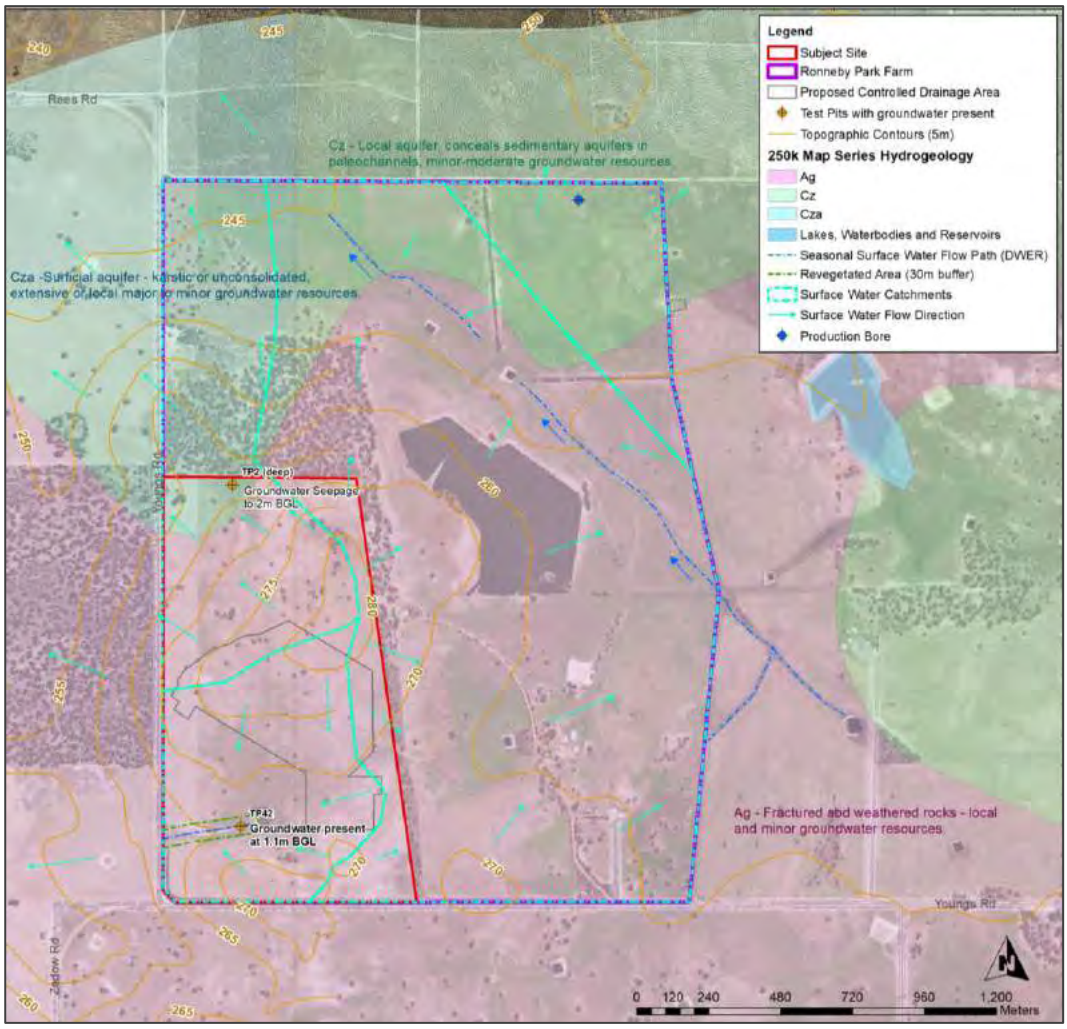


Figure 4: Pre-development Hydrology and Hydrogeology

2.6. Hydrogeology and Groundwater

Australian Geoscience Mapping and Department of Water and Environmental Regulation 250K Hydrogeological mapping (DWER, 2019) places the Subject Site within the '*Archaen Period (Ag)'* with the geology described as; *'Granitoid rock, porphyritic and even-grained; subsurface generally weathered to clayey sand (indicated by lighter colour)'.* The aquifer is described as: '*Fractured and weathered rocks - local aquifer, minor groundwater resources.'* DWER 250K Hydrogeological mapping is shown on Figure 4.

DWER 250K Hydrogeological mapping is consistent with findings by Great Southern Geotechnics (2019) with groundwater encountered at only 2 test pits (TP2 and TP42). Groundwater at TP2 appeared to be the result of a perched water table with the less permeable sandy clay layer below the sandy gravel layer being dry and the test pit filling up from seepage through the more permeable sandy gravel layers above. TP42 consisted of a deeper sand layer (150-1000mm depth) compared with the other test pits within the Subject Site. The water table was found to be 1100mm BGL 24 hours after excavation (GSG, 2019). The test pits surrounding TP42 were found to be dry to a depth of up to 6m (TP24) indicating the groundwater at TP42 is likely the result of a localised perched water table within the highly permeable sand layer. The location of the two test pits with ground water present are shown on Figure 4.

There is one existing production bore located within Ronneby Park to the north east of the Subject Site (Figure 3). DWER 250K Hydrogeological mapping places the bore in the '*Cainozoic – Phanerozoic Period'* with the

aquifer described as: '*Surficial aquifer - local aquifer, conceals sedimentary aquifers in paleochannels, minor-moderate groundwater resources'.* The groundwater in the production bore was found to be suitable for sheep feedlot operations, the water quality analysis of the bore water is included as Appendix B.

The Subject Site is not located within a Public Drinking Water Source Protection Area (DWER, 2019).

2.7. Wetlands

A desktop analysis of Department of Biodiversity, Conservation and Attraction Geomorphic Wetlands Dataset (2019) found there are no known significant wetlands within the Subject Site or within a 5 kilometre radius of the Subject Site.

2.8. Flora

The Subject Site is predominantly surrounded by cleared agricultural land. There is a small area of natural bushland directly north of the Subject Site and a large area to the west of the Subject Site and Youngs Road. Department of Primary Industries and Regional Development classifies the vegetation at the location of the Subject Site as the 'Beaufort System' characterised by 'Jarrah, marri and wandoo - *Eucalypt marginata*, *Corymbia calophylla, E. wandoo.*'

The subject site lies within the JAF02 – Southern Jarrah Forest Bio-geographic Regional Area (IBRA bioregion). The vegetation has been mapped on a broad scale by J.S. Beard (Shepherd et al 2002) in the 1970s, where a system was devised for state-wide mapping and vegetation classification based on geographic, geological, soil, climate structure, life form and vegetation characteristics (Sandiford and Barrett 2010). A GIS search of J.S. Beard's vegetation classification for the general area places the site within 2 Vegetation Associations (DPIRD, 2018):

System Association Name: Beaufort
Vegetation Association Number: 1073
Vegetation Description: Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*.

System Association Name: Beaufort
Vegetation Association Number: 4
Vegetation Description: Jarrah, marri and wandoo *Eucalyptus marginata*, *Corymbia calophylla*, *E. wandoo*.

There is no large-scale native vegetation clearing proposed as part of the feedlot development. A few isolated paddock trees may require clearing in the location of the sheep pens and processing area. Clearing of the isolated paddock trees is not considered to trigger any disturbance of threatened or priority flora species.

2.9. Fauna

As the subject site is located in an area that has already been cleared and highly modified for agricultural practices, there will be no further impacts to fauna than are already present. A Targeted Fauna Survey was conducted within the Subject Site from the 24th to the 26th of September 2019. The aim of the fauna survey was to gain an understanding of what species and habitat are present in the area and to determine the likelihood of threatened species utilising the area as well as the significance of the habitat to them. The focus was on the significant trees that will be directly impacted by the proposed development / gravel extraction. Each individual tree with a DBH >500mm (>300mm for wandoo) were measured, mapped and assessed for habitat potential. All evidence of threatened species was GPS'd and all hollows were GPS'd and checked using an extendable nestcam. In addition to the targeted surveys of significant trees evidence of other fauna activity was documented and potential habitat was identified.

The survey area focus was on the existing paddock area, and two small patches of remnant vegetation located to the east and west of the paddock area. The remaining stands of trees located near the Pine plantation can be protected and thus were not formally assessed.

Findings show that the only threatened species identified / observed to be utilising the survey area was Baudin's cockatoo. Three individuals were seen flying over the survey area whilst some recent feeding activity was identified at one paddock tree. The feed evidence was not significant. No other threatened species were identified.

Of the 205 significant trees identified, 15 contained hollows (5 in marri, 5 in jarrah and 5 in wandoo), with a further 5 trees in the stages of developing hollows in trunks and / or branches. One hollow was occupied by Australian Ringneck parrots and the other by Brushtail possum.

3. Construction Proposal

3.1. Gravel Extraction

The proposed gravel extraction areas are located within the Ronneby Park boundary and have been identified on the property through a geotechnical investigation conducted by Great Southern Geotechnics. The gravel will be used to form the base of the feedlot, feedlot facility/processing area and the roads. The amount of extracted gravel will depend upon final cut to fill requirements for the site. The location and extent of the proposed gravel extraction areas is shown on Figure 3.

The extraction of the gravel involves the following steps:

- Setout (GPS locating and pegging);
- Clearing vegetation (only a few isolated trees remain within the extraction areas apart from within the pine plantation extraction area. A Targeted Fauna Survey of the site conducted by Bio Diverse Solutions (2019) identified one significant tree adjacent to the proposed feedlot, in addition, two small areas of remnant trees adjacent to the pine plantation were not assessed, these trees will have a 10m buffer to any disturbing activity. The 10m tree buffer is shown on Figure 5;
- The topsoil is removed to a depth of 400mm and stockpiled in windrows (5-8m wide and up to 2.5m high) along the boundary of the extraction area.
- Any non-gravel material between the topsoil and gravel layer is removed and stockpiled (5-8m wide and up to 2.5m high) along the boundary of the extraction area.
- The gravel is extracted, pushed up and stockpiled within the extraction area (pit). The gravel is then fed into a crushing and screening plant prior to being loaded onto trucks for spreading on the feedlot and hardstand areas.
- The site is rehabilitated by replacing, compacting and levelling the non-gravel material followed by the replacement of the top soil.

It is proposed the extraction areas as shown on Figure 5 will be staged so that only one to two extraction areas (pits) are exposed at any one time.

The extraction of gravel will be conducted by a suitable contractor. No blasting is required on site as a portable crushing and screening equipment will be utilised. The crushing of large gravel “boulders” will only occur when required and it is therefore expected that most of the extracted resource will not require crushing. The extraction process is expected to occur immediately after development approval is obtained and is expected to take approximately 3-6 months. Operation times for the gravel extraction will be restricted to the hours between 7:30am and 4:30pm Mondays to Saturdays, not including Public Holidays.

3.2. Cut and Fill Earthworks

Cut and fill earthworks will be undertaken to create the pens, runoff and drainage controls, drains, roads and sedimentation/evaporation ponds. They will also prepare for the foundations of buildings and structures that are to be erected including silage bunkers, workshop and sheep processing facilities. The balanced cut and fill earthworks will ensure adequate drainage of the feedlot is achieved, earthworks are minimised and importation of material is avoided. The cut and fill earthworks will be undertaken using material from the site, the suitability of the material has been confirmed by the Geotechnical Investigation (GSG, 2019). The area that requires cut and fill earth works is shown on Figure 5.

The cut and fill earthworks will include the following steps:

- Setout (GPS locating and pegging);
- Clearing vegetation (only a few isolated trees remain on the Subject Site and no significant tree were identified in the Targeted Fauna Survey (BDS, 2019);
  - The topsoil is removed to a depth of 400mm and stockpiled in windrows (5-8m wide and up to 2.5m high) along the southern and western boundary of the Subject Site.
- Any unsuitable material beneath the top soil layer will be removed and stockpiled;
- Balanced cut and fill earthworks will occur to achieve desired levels and adequate drainage. This includes construction of the bunds/embankments, drains and ponds;
- Crushed and screened gravel from the extraction areas will be trucked in, spread and compacted across the pen, processing facility and road areas to technical requirements.
- Top soil is returned to bunds/embankments and areas surrounding the feedlot which were disturbed but won't form part of the feedlot.

The cut and fill earthworks will be conducted by a suitable contractor and it is anticipated the earthworks will take approximately 6 - 12 months to complete the sheep feedlot. Operation times for the earthworks will be restricted to the hours between 7:30am and 4:30pm Mondays to Saturdays, not including Public Holidays.

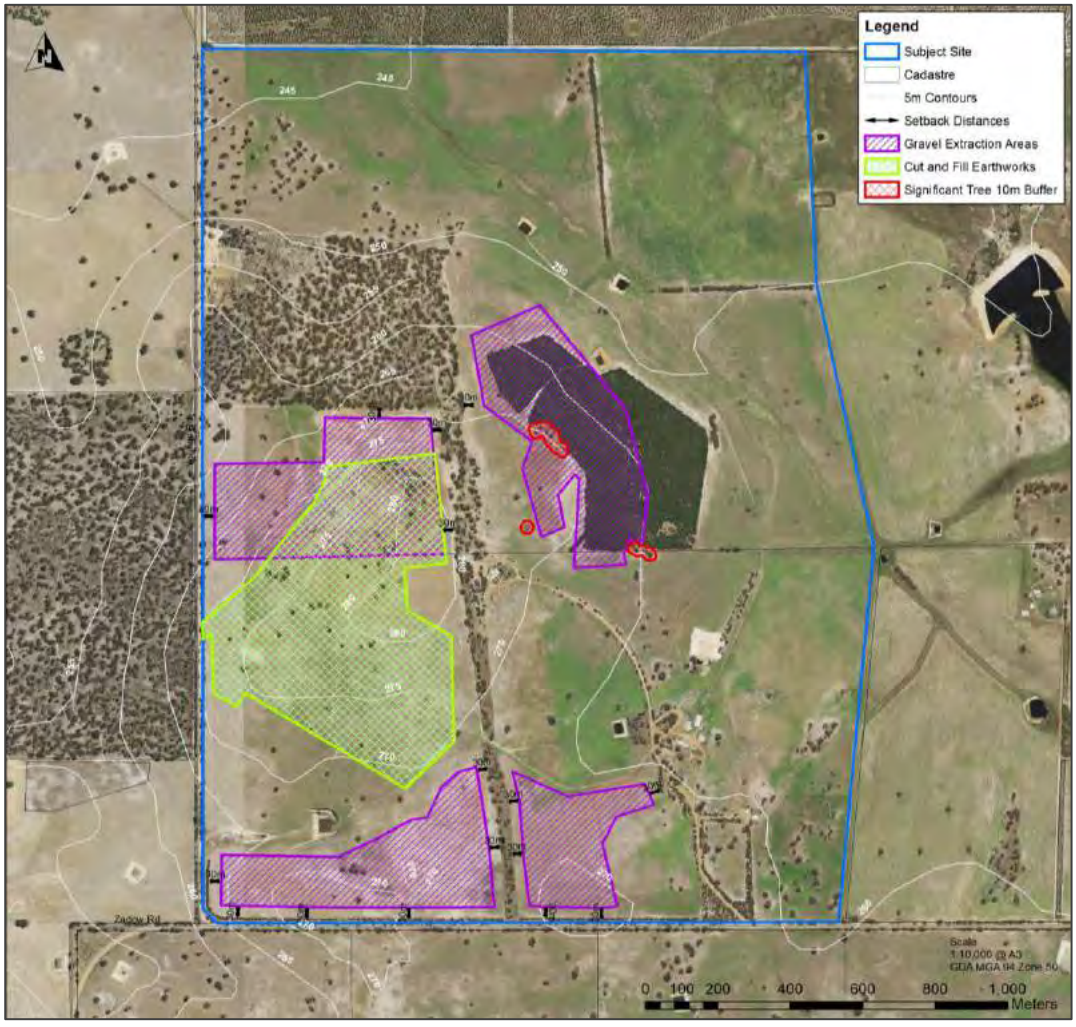


Figure 5: Gravel extraction and earthworks area

4. Environmental Management

4.1. Erosion and Sediment Control

Effective erosion and sediment and erosion control measures shall be implemented to protect the working area as well as the surrounding environment. Sediment and erosion control measures will ensure there is no runoff from the Ronneby park property during construction and therefore the surrounding environment and waterways will not be adversely impacted by the construction of the feedlot.

4.1.1 Erosion and Sediment Control Plan

The aims of the erosion and sediment control plan are to:

- Minimise erosion of the working area and surrounding environment;
- Minimise sediment transportation from the working area; and
- Ensure runoff is contained within the Ronneby Park property boundary.

The following is to be implemented by the contractor during construction:

- Only one to two extraction areas (pits) as shown on Figure 5 to be exposed at any one time;
- Stockpiles to be located in extraction areas and along the edge of pits to minimise runoff from stockpiles away from the extraction areas. Stockpiles will not be located on slopes which will direct runoff from the property;
- Long-term stockpiling will be avoided where possible. Where long term stockpiling is unavoidable, stockpiles will be stabilised to reduce C-factor to <0.10 and a bund will be constructed on the upslope side to divert water around stockpiles;
- Stockpiles will be placed a minimum of 30m from remnant vegetation;
- The time between extraction and rehabilitation will be minimised as much as possible;
- Cut and fill construction of the feedlot shall occur concurrently with construction of the drains and ponds to ensure the working area is well drained and no runoff is leaving the site; and
- Construction of the drains and ponds should include permanent or temporary stabilisation and compaction within 10 days of construction.

4.2. Noise Management

Noise is anticipated during earthworks and extraction processes. Noise management strategies will be implemented to reduce noise, ensuring noise levels do not reach levels that adversely impact health, welfare, surrounding amenities and the environment.

4.2.1 Noise Management Plan

The aims of the Noise Management Plan are to:

- Ensure noise does not prevail over adjacent residences and properties;
- Ensure all employees and contractors are educated to minimise noise from all operations; and
- Ensure noise is controlled and minimised at all times.

The following is to be implemented by the contractor during excavation operations:

- All crushing and screening to occur within the designated boundary of extraction area (pit) as shown on Figure 5;
- All extraction operations and vehicular movements are to be carried out only between 0730 and 1630 hours, Monday to Saturday;
- Stockpiling of topsoil/other material along the edge of pits to act as noise bunds to further assist in noise reduction to properties nearby;
- The nearest residential dwelling outside of the Ronneby Park is approximately 750m to the south-west of the proposed development. The extraction area in the south west corner of the property will have a 30m setback to the Youngs Road reserve to create noise (and visual) buffers. The contactor will arrange the topsoil stockpiles across the southern and western boundaries of the Subject Site to assist in noise and visual impacts from any gravel extractions here. Roadside vegetation to the south and west of the Subject Site will further act as noise buffers;
- Regular inspections of all plant and machines on site to ensure working and functioning correctly, without excess noise.
- Traffic routines internal to the site will be planned out in such a way as to minimise vehicle reversing requirements and thus minimise reversing alarm noise (particularly for the nearest residence) if noise issues arise. Replacing standard “beeping” reversing alarms with a mixed frequency alarm (which does not carry as far) will also be considered to further reduce noise issues if they arise;
- Education to employees and contractors to raise awareness of noise management issues; and
- Noise complaint register in place to record any issues from neighbours. Any noise related complaints will be recorded by the site manager and acted on immediately. A contractor sign at the front gate is to be erected, clearly showing the contractors contact details.

4.3. Dust Management

Dust emissions are anticipated during topsoil removal, gravel excavation, crushing and screening, loading, haulage and wind erosion of exposed surfaces in adverse weather conditions. Dust management strategies will be implemented to reduce dust emissions; ensuring dust levels do not reach levels that adversely impact health, welfare, surrounding amenities and the environment.

4.3.1 Dust Management Plan

The aims of the dust management plan are to:

- Ensure dust is not prevailing over adjacent residences and properties;
- Maintain a dust free working environment for all employees on site;
- Ensure all employees and contractors are educated to minimise dust from all operations; and
- Ensure dust is controlled and minimised at all times.

The following is to be implemented by the contractor during excavation operations:

- Only one extraction area (pit) as shown on Figure 5 to be exposed at any one time;
- Topsoil/other material stockpiles to be no greater than 2.5 metres in height;
- Stockpiles to be located in extraction areas and along the edge of pits to assist with dust reduction from the pit. Stockpiles will not be located in areas subject to adverse environmental conditions such as prominent ridges (subject to prevailing winds);
- Stockpile to be configured to accommodate easy access for watering/dust minimisation.
- Long-term stockpiling will be avoided where possible. Where long-term stockpiling is unavoidable, stockpiles will be stabilised to reduce the C-factor to<0.10 and a bund will be constructed on the upslope side to divert water around stockpiles;
- All crushing and screening to occur within the designated extraction areas as shown on Figure 5.
- The access road, immediate extraction area and fixed plant (screen) to be watered as required to minimise dust emissions;
- Education to employees and contractors to raise awareness of dust management issues;
- The time between extraction and rehabilitation will be managed as much as possible;
- Managing operations to minimise work in windy conditions to minimise dust emissions. Works only to occur in low velocity winds (i.e. less than 20km/hr);
- Truck to be fully covered by tarpaulins when fully loaded and/if leaving the site;
- Operations generally cease during times of high winds, and water trucks and water shall be available to suppress dust; and
- Dust complaint register in place to record any issues from neighbours. Any dust related complaints will be recorded by the site manager and acted on immediately. A contractor sign at the front gate to be erected clearly showing the contractors contact details.

4.4. Clearing and Rehabilitation

Limited clearing is proposed as part of the construction, only a few isolated trees remain on the Subject Site in the location of the proposed feedlot and feedlot facilities. There is a pine plantation in the location of one of the extraction areas. The pine trees will be cleared as required for gravel extraction. The native trees surrounding the pine plantation in the north east of the farm will remain and have a 10m no disturbance buffer (Figure 5).

4.4.1 Gravel Extraction Areas

The gravel extraction areas will be rehabilitated to return to pasture paddocks. Rehabilitation will include replacing unsuitable/unused material to the pits, followed by the topsoil (0-400mm depth) before being levelled and compacted. If regeneration of pasture is slow then pasture seed shall be collected at the first spring period and spread at the first autumn rains (usually after three continuous rain days is recommended). It is anticipated that most species will regenerate from site topsoil. Paddock trees will be planted where appropriate to assist in wind buffers for the long-term agricultural pursuits.

4.4.2 Cut and Fill Areas

The topsoil from the feedlot area will be used to cover the bunds/embankments that surround the feedlot (the drainage control bunds) and to rehabilitate the areas surrounding the feedlot that were disturbed during construction. The bunds and surrounding areas will be rehabilitated to paddock grasses to reduce erosion and trees will be planted where appropriate to assist with wind buffers for the feedlot.

4.4.3 Low Depression Area

The low depression area in the south-west of the subject site will be rehabilitated to prevent further erosion during high rainfall events (unrelated to the construction) and reduce risks of contamination from the feedlot. This low depression area is completely degraded with almost no native species.

The revegetation and rehabilitation work will aim to:

- Establish and preserve existing vegetation and regeneration of denuded areas with local endemic species without increasing bushfire risks;
- Reduce the risk of erosion during high rainfall events; and
- Reduce risk of possible contamination from the feedlot spreading off-site.

The following strategies are to be employed on the site to reach successful revegetation of the depression area:

- Revegetation to take place within a 30m boundary along either side of the entire depression area;
- The 30m boundary as described above is to be fenced to prevent accidental damage by stock;
- Planting local and endemic native vegetation to reinstate/increase the future biodiversity of the area;
- Resulting revegetation area is to be classified as ‘Shrubland Type C’ for bushfire management purposes;
- To implement a weed management plan to reduce competition of weeds with native species; and
- To assist the establishment of native vegetation by supplementary watering in the first year.

The following methodology is proposed; however, dependent on the timing may be adapted as required to suit conditions.

1. **Surface preparation**

Given the degraded and compacted nature of the site, it is recommended that the site is prepared prior to planting by first controlling weeds with a broad-spectrum herbicide during a dry period in Autumn, and if soil at the site is heavily compacted ripping along contour lines.

2. **Species selection and plant allocations**

Where practicable plant species used in revegetation works will be of local provenance, defined as propagated from plant in the immediate geographic area or from areas that closely match the physical environment and the plant community types of the area to be planted. Seedlings can be sourced from local nurseries that are accredited by the Nursery Industry Accreditation Scheme of Australia (NIASA) which will guarantee the quality of the supplied material and screen for Phytophthora Dieback. Species selected must also be hardy and quick to establish.

Table 2 outlines the plant species as a guide, and final selection may be subject to budget, soil conditions and availability of stock at time of revegetation. Some occasional trees are incorporated into the revegetation plan, although they must be planted in very low density to be consistent with a ‘Shrubland Type C’ vegetation class.

Table 2: Species for Revegetation

Shrubs	Trees
Acacia saligna	*Eucalyptus wandoo*
Kunzea recurva	*Eucalyptus marginata*
Calytrix leschenaultia	*Corymbia calophylla*
Calytrix tetragona	
Allocasuarina humilis/corniculata	
Hibbertia acerosa	
Leptosperma erubescens	
Daviesia polycephala	
Adenanthos cygnorum	
Calothamnus quadrificus/planifolius	
Baeckea preissiana	
Petrophile squamata	

(Taken from Beaufort System, dominant plant species, Beard 1980, in The Native Vegetation Guide to the Shire of Kojonup and the Native Vegetation Guide to the Shire of Katanning, pub by DAFWA, 1994)

The above table is a guide and can be refined when seed stock/seedling availability is defined. Proposed planting densities of the tree and sedges/rush species are:

- Trees: 1 stem per 20m^2 throughout revegetation area
- Understorey/shrub vegetation: 4 stems per 5m^2.

3. Seedling Planting

Planting of seedlings will commence after the season's first major rains (typically June/July) when the soil is sufficiently wet to plant without the need for additional watering and to allow maximum root growth and plant establishment before summer. It is generally an optimum time after three to four continuous rain days observed in autumn months. However, later planting due to recent drier climate patterns can extend this period into June/July. Individual species will be planted irregularly to reflect the distribution found in natural areas. It is recommended that locally-based contractors are used to undertake the planting.

4. Site and Plant Protection

The site will need to be protected by fencing – ringlock is recommended to prevent stock incursion, with suitable access for follow-up maintenance.

5. Maintenance

Follow-up maintenance is ideally needed for the first 2-3 years post-planting. However, the most important period is during the first year. Watering will need to be undertaken during the drier months as often as is practical, and weed controlled during this time as per the weed management plan to prevent out-competing and smothering of seedlings.

4.5. Discharge to Water

There will be no discharge to surface or ground water during construction. There is no significant surface water ways or waterbodies within the vicinity of the Subject Site. Groundwater was not encountered at the location of the proposed feedlot to a depth of 2 meters. The site is not located in a Public Drinking Water Area (DWER, 2019).

4.6. Wetland Management

The Subject Site does not contain any wetlands and there are no wetlands within a 5km radius of the Subject Site.

4.7. Fauna Management

As the subject site is located in an area that has already been cleared and highly modified for agricultural practices, there will be no further impacts to fauna than are already present. A fauna management plan is not deemed required for the construction process. During the clearing of the paddock trees, some general principles to be applied by contractors on site include:

- Incorporate discussion on fauna impacts and mitigation measures into site induction for construction personnel/contractors. Contractors should be familiar with processes to be put in place if they unexpectedly come across fauna during clearing works;
- Ensure areas to be cleared are clearly identified, defined and inspected. Areas to be retained should also be clearly communicated to contractors prior to works commencing;
- Prior to felling of trees i.e. hollows present (or trees within which fauna has been observed) they should be “bumped/shaken” to encourage any remaining undetected fauna present to move on;
- Wait and observe the tree for a short amount of time prior to felling the tree;
- Felled habitat trees should remain on the ground for a short period of time to be inspected by the operator allowing any undetected or trapped fauna to be removed and/or safely escape; and
- Inspection of trees with hollows once felled to ensure no undetected fauna has become trapped or is sheltering inside. This should occur immediately after their felling, prior to any further processing works.

All efforts to minimise disturbance to fauna should be undertaken. These may include:

- No direct, unnecessary contact with fauna;
- No disturbance to remaining trees;
- Ensure slow vehicular speed limits to reduce the chance of fauna fatalities; and
- Ensure contractor management plans/strategies for dust, noise etc. are adhered to.

4.8 Heritage

Not applicable as no heritage sites were detected within or surrounding the subject site or the property.

4.9 Vehicles and Machinery

No hydrocarbons, chemicals, fuels, coolants etc. will be stored onsite. These will be transported onsite as required by a contained mobile service vehicle which will be appropriately equipped with spill kits in the unlikely event there is a spillage. Furthermore, no trucks will be stored on site outside of operation hours (Mon-Sat 7:30am to 4:30pm). Only screening and crushing equipment will be stored on site. If major servicing of these machines is required they will be removed from site and work undertaken in specialised workshops. In the unlikely event of a major breakdown onsite all necessary precautions to ensure no hydrocarbons or other liquids enter the environment, and any contaminated soil will be removed and disposed of at an appropriate location.

4.10 Dieback and General Hygiene Management

4.10.1 Dieback and General Hygiene Management Plan

The aims of the dieback and hygiene management are to:

- To ensure there is zero spread of *Phytophthora* and other diseases into and out of the area; and
- Implement measures for successful completion of the project in terms of education to personnel, decontaminating equipment, and defining access measures.

The following will apply to all aspects of operations and will form part of the hygiene management briefing to all site workers:

- Earth moving vehicles and equipment are to be cleaned prior to entering site;
- Visual inspections on vehicles, plant, equipment and footwear are clean when entering the site;
- Access to the site during excavation will be controlled;
- Completed areas will be rehabilitated as soon as practicable;
- The rehabilitated surface will be free draining and not contain wet or waterlogged soils;
- Materials used in rehabilitation will be from on-site stockpiled material; and
- Road and transport vehicles are to be restricted to defined road reserve, loading and turn around areas.

Clean down specification:

A visual inspection of in-coming and out-going vehicles is necessary to determine whether or not vehicles, machinery or equipment is free of a build-up of:

- Clods of soil and plant material and/or slurry consisting of a mixture of soil, plant and water;
- Dust and grime adhering to the sides of vehicles need not be removed before entering the site; and
- Records of inspections and clean downs are to be maintained.

4.11 Bushfire Risk and Management

A Bushfire Management Plan (BMP) was prepared by Bio Diverse Solutions (2019) on behalf of the client to guide the construction and operations of the feedlot in relation to bushfire risks and management. The BMP includes a Bushfire Attack Level (BAL) Contour Plan prepared for the sheep pens/feedlot and a Bushfire Hazard Level (BHL) Plan prepared for the whole of farm site including employee accommodation.

The BMP identifies the bushfire hazards internal to the site as the remnant Forest Type A areas and Woodland Type B areas which present an Extreme BHL as per WAPC definitions (WAPC, 2017). Internal grasslands are classified as a Moderate BHL. External to the site, remnant vegetation to the west of Youngs Road presents an extreme risk from the north-west and west of the proposed sheep feedlot. All structures for the proposal are being placed in A Moderate Bushfire Hazard Level.

There is a potential fire risk from construction operations in paddock areas on High/Very High/Extreme “Fire Danger Index” (FDI) rated days. The predominant fire risk associated with the site is the adjacent reserve to the west where native vegetated areas (Extreme Risks) under hot conditions can give rise to hot and intense fires. The following fire control methods should be enforced at all times during summer periods.

Fire control methods during construction periods:

- Abide by Shire imposed vehicle movement and/or harvest ban due to dangerous fire weather conditions or if there are bush fires already burning during the Restricted and Prohibited Burning Times (i.e. High-Very High Fire Danger days);
- Maintain at all times standalone minimum 10,000L of water in separate tank for fire fighting purposes; and
- A mobile fire fighting appliance dedicated to fire fighting operations is located on the property at all times during summer (15th November to 15th April inclusive), operations (fast attack min 800L).

4.12 Acid Sulphate Soil Management

As the site operation does not involve excavation or disturbance of soils to wetlands or creek areas, there is no requirement to treat Acid Sulphate Soils.

5 Implementation

5.1 Control of Environmental Incidents

An important aspect in the environmental program is management of non-conformance or incidents. An environmental incident is an event which could result in pollution to the local environment. The planning of site works and methodology as outlined within this management plan limits the risk and harm of construction works impacting on-site or off-site.

If an incident or event occurs during operations and excavation, it should be emphasised to all personnel working on site that all incidents are documented. Investigations should be conducted and action plans established in order to ensure the event does not happen again. The Site Operations Manager will be responsible for maintaining records of environmental incidents and reporting.

Examples of an “incident” for this project may include:

- Hygiene protocols not adhered to;
- Topsoil has not been appropriately placed;
- Unplanned vegetation clearing has occurred;
- Mechanical breakdown occurring along a waterway and hydraulic oil spill occurs;
- Complaints from “stakeholders” or neighbours; and
- Any event which causes non-compliance with the Operations Management Plan.

Should an incident occur which leads to a non-conformance, the Site Manager shall inform the owner of the property of any non-compliance or potential non-compliance within seven days of that non-compliance being known, and if further action is required then the Shire of Woodanilling will be informed.

5.1.1 Corrective and Preventative Actions

An environmental investigation should include the following basic elements:

- Identify the cause of the incident;
- Identifying and implementing the necessary corrective action;
- Identifying the personnel responsible for carrying out corrective action;
- Implementing or modifying controls necessary to avoid repetition;
- Recording changes in written procedures required; and
- Reporting to the appropriate government agencies if required.

5.1.2 Corrective and Preventative Actions

The following information is from the PaWS Spill Management Brochure (DWER, 2011). This should be the methodology employed should a spill from fuel or chemicals occur.

Dealing with minor spills

A small spill is considered to be a spill of 5 litres or less providing the product is not concentrated. For concentrated products of any quantity the spill must be treated as a large spill.

1. Assess safety. Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.

2. Stop the source. Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.

3. Contain and clean up the spill. The spill should be mopped up immediately.

4. Record the spill. Record when, what, how and where the spill occurred, clean up measures undertaken and the names of any witnesses. Also, make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

Dealing with large spills

A large spill is considered to be anything over 5 litres or concentrated chemicals of any volume.

1. Assess safety. Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.

2. Consult the Material Safety Data Sheet (MSDS). The MSDS will have instructions on how to deal with specific chemical spills.

3. Put on protective clothing. If necessary, put on gloves and goggles, a mask and an apron.

4. Stop the source. Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.

5. Contain and control the flow. The spill should be prevented from filtrating into the ground or entering the stormwater system. The outer edge of the spill should be dammed with rags, blankets, sand, sands bags, mops and/or absorbent booms.

6. Clean up the spill. Promptly cover the spill using absorbent materials such as the correct absorbent granules for the product (Note that some strong acids will react with some types of granules and sawdust), sand and rags, being mindful not to splash the spill. Using a dustpan or spade, the absorbent granules or sand must then be scooped up and placed into a container. This waste material is not to be buried or thrown into the environment. The method of disposing this waste will depend on the amount and the type of chemical that was spilt. The Department of Environment Controlled Waste Section will advise on the appropriate disposal of hazardous substances. There are several contractors that will dispose of contaminated substances and soils. All contact phone numbers can be found below

7. Notify the appropriate authority. If the spill does enter a stormwater drain or open ground, the Department of Environment and your local council must be notified. Please refer to the phone numbers listed below. If there is a hazard to health or property, call Fire and Rescue on 000 immediately.

8. Record the incident. Record what, how and where the spill occurred and the names of any witnesses. Also, make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

5.2 Monitoring

Environmental controls during construction will be checked at frequent intervals as outlined in Table 3 below. This will be the responsibility of the Site Supervisor (whom reports to the owner representative) to ensure all the below activities are carried out.

Bushfire Management Plan
Ronneby Park

Site Details			
Address:	Lot 1 and 4 Youngs Road		
Suburb:	Beaufort River	**State:**	WA
Local Government Area:	Shire of Woodanilling		
Description of Building Works:	Development Approval		
Stage of WAPC Planning	N/A		

BAL Contour Plan Details			
Report / Job Number:	MSC0249-004	**Report Version:**	FINAL
Assessment Date:	29/9/2019	**Report Date:**	29/10/2019
BPAD Practitioner	Kathryn Kinnear	**Accreditation No.**	BPAD30794

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

SECTION 1: Proposal Details

Bio Diverse Solutions was commissioned to assess Ronneby Park at Lot 1 and 4 Youngs Road, Beaufort River (the subject site) for bushfire planning requirements. The subject site is zoned 'Agriculture' and is owned by Fletcher International Exports Pty Ltd (the client). The BMP report has been prepared to support a Development Application for a 90,000 head of sheep feedlot at Ronneby Park, located near Beaufort River, Western Australia.

Ronneby Park is located approximately 32kms north of Kojonup WA in the Shire of Woodanilling, accessible from Kojonup via Albany Hwy to the north (26kms) and west along Youngs Road (6kms) as shown on Figure 1. The subject site is surrounded by agricultural farm land.

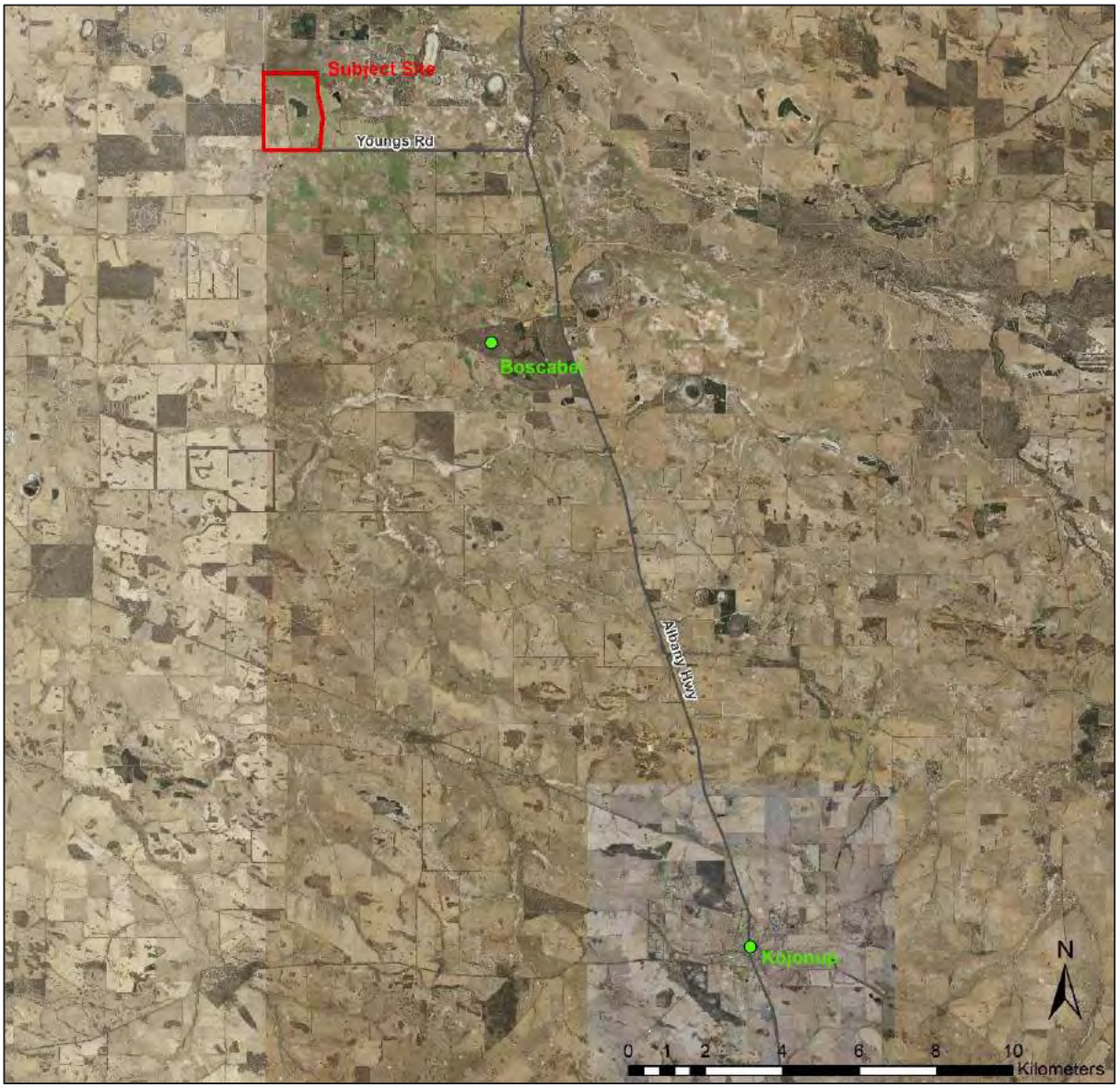


Figure 1: Location Plan

The development proposal includes construction of sheep feedlots, sheep processing/staging area, construction of internal access tracks, and workers accommodation. A conceptual site plan of the proposed feedlot is shown in Figure 2. The subject site is partially located in the WA bushfire prone area mapping (OBRM, 2019), refer to Figure 3.

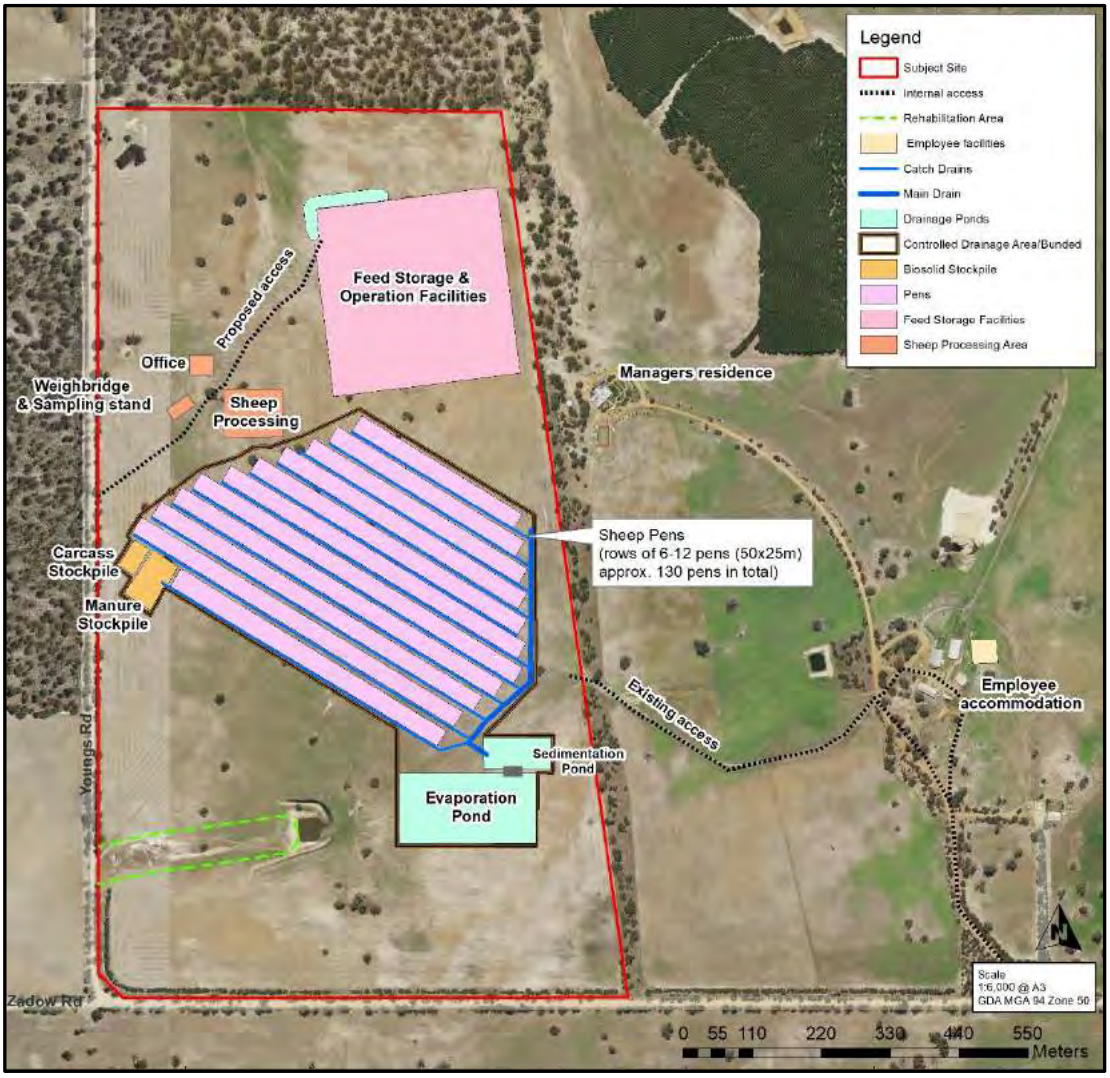


Figure 2: Sheep Feedlot Concept Plan

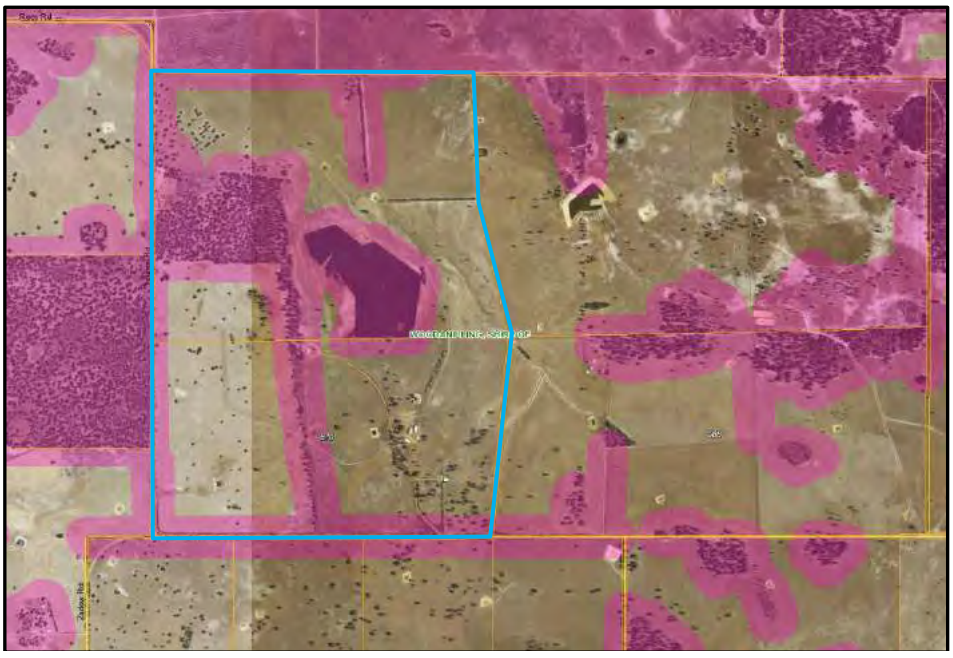


Figure 3: State Bushfire Prone Area Mapping (OBRM, 2019)

SECTION 2: Environmental Considerations

Vegetation modification proposed: There is no native vegetation clearing of the site for the proposed development, some isolated paddock trees will be removed for the construction of the pens and feedlot. It is noted that pasture areas for the construction periods will be removed for gravel extraction and re-instated to pasture during the term of the development.

Re-vegetation/landscape plans: No revegetation or landscaping plans are proposed for the proposal.

SECTION 3: Assessment Results

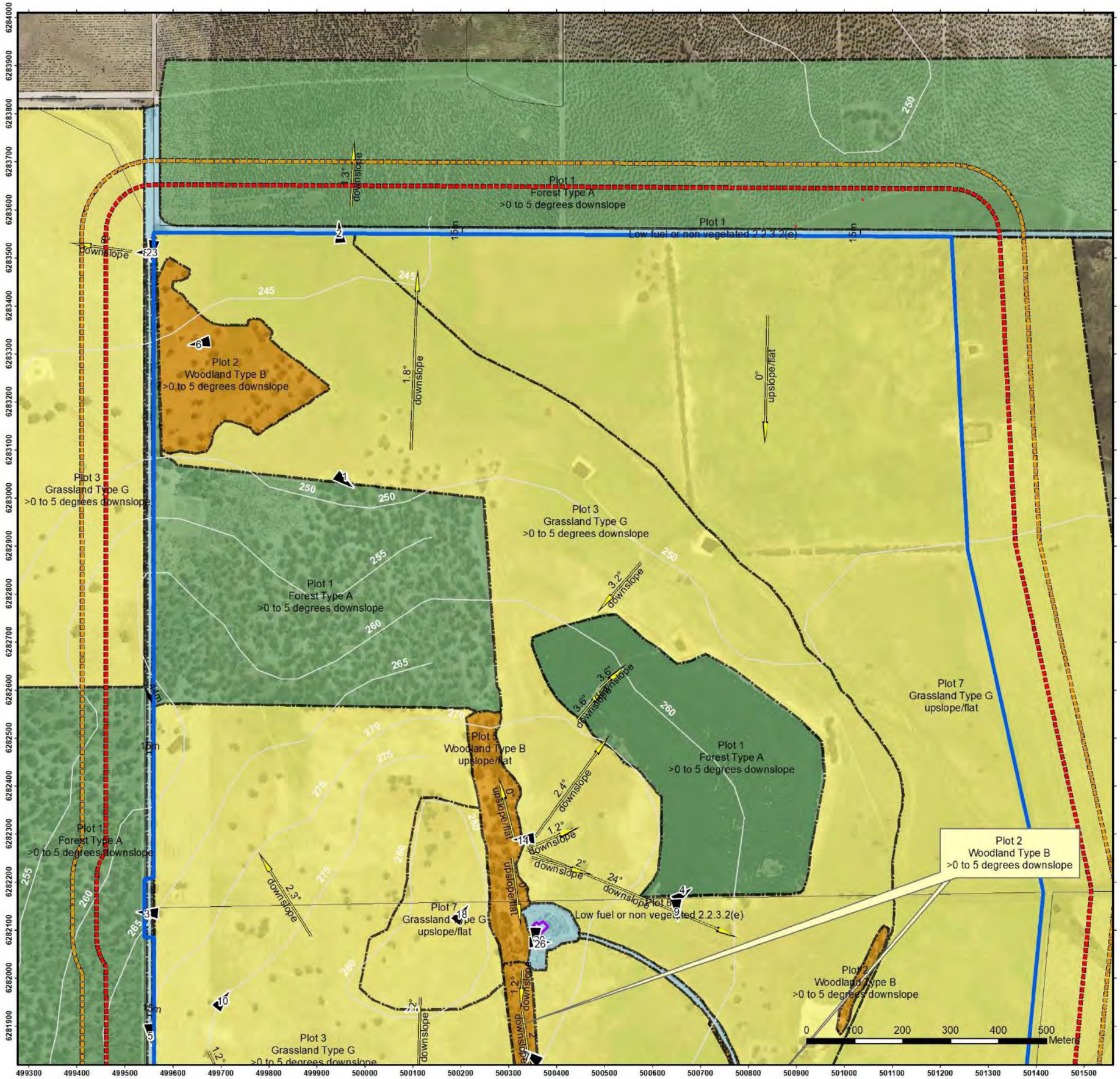
SECTION 3.1 – Assessment Inputs

Bushfire Assessment inputs for the site have been calculated using the Method 1 procedure as outlined in AS3959-2018. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes;
- Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

Vegetation Classification (Bushfire Fuels)

A method 1 BAL Assessment was undertaken of the subject site. A site inspection was undertaken on the 29th July 2019 by Level 2 Bushfire Practitioner Kathryn Kinnear (BPAD 30794) to assess the current land use, topography/slope, vegetation, and conditions of the site and its surroundings. Photographs of the subject site and surrounding areas were taken and have been presented in the following pages. All vegetation within 150m of the lot boundary was classified in accordance with Table 2.3 and Exclusion clauses 2.2.3.2 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages.



This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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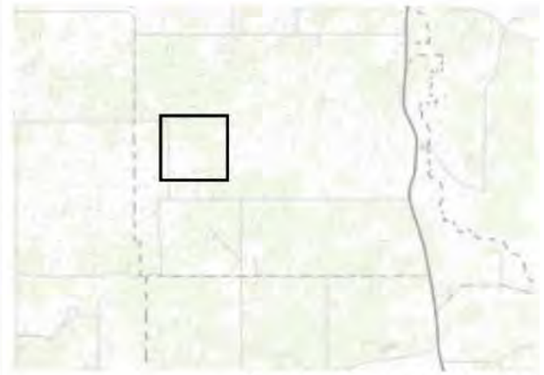


Overview Map Scale 1:250,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Photo Point
- Slopes Degrees
- Separation Distance
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Grassland Type G
- Low fuel or non vegetated 2.2.3.2

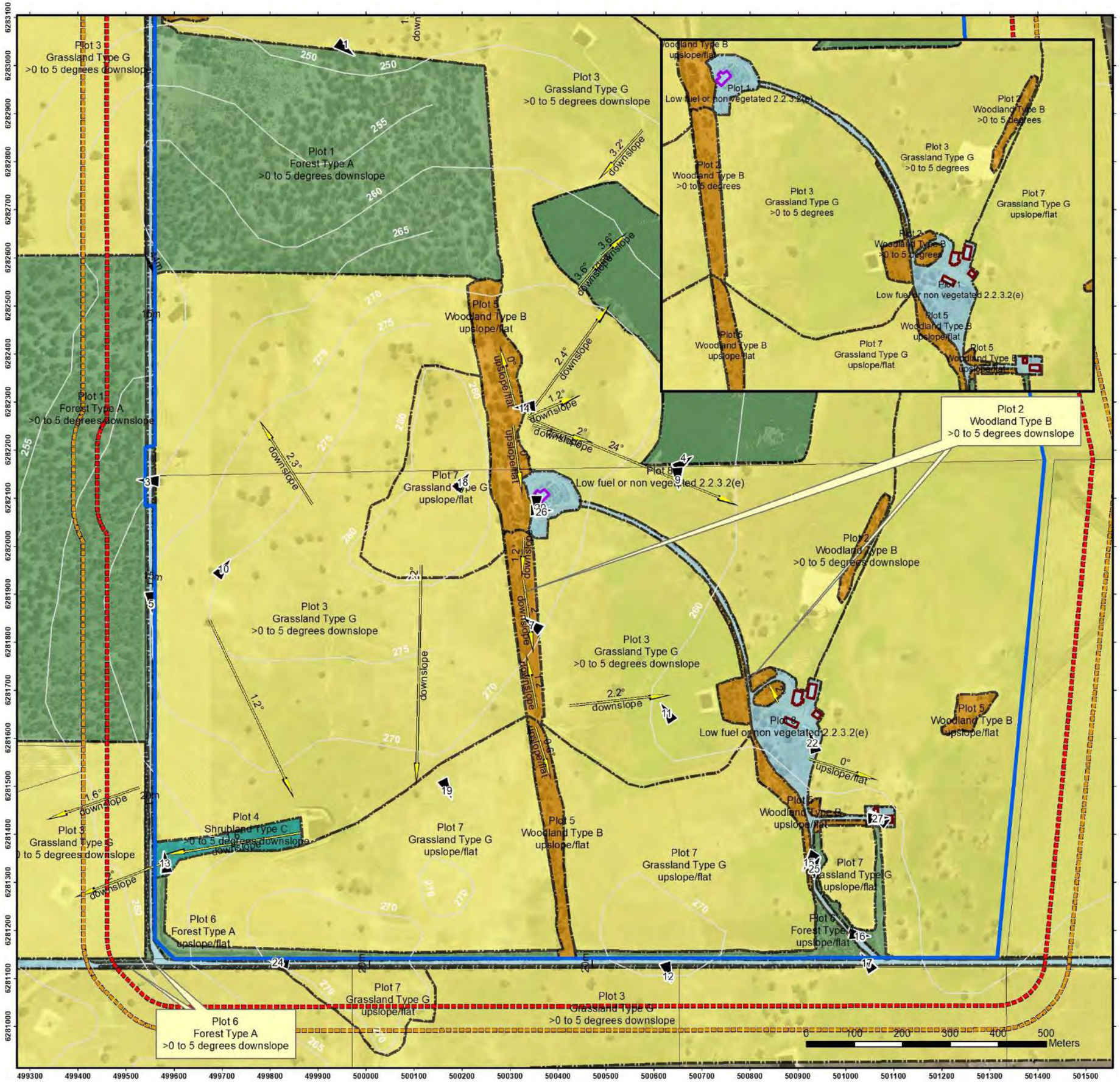
Scale
1:7,750 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers Internation WA
670 Youngs Road
Beaufort River, WA 6394

Vegetation Classes - North

BAL Assessor	QA Check	Drawn by
KK	KK	BT
STATUS	**FILE**	**DATE**
FINAL	MSC0249	18/09/2019



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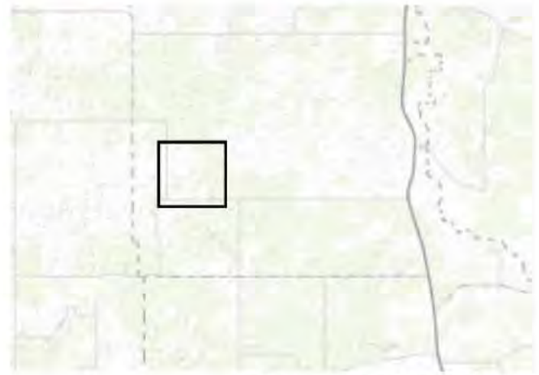


Overview Map Scale 1:250,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Photo Point
- Slopes Degrees
- Separation Distance
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Grassland Type G
- Low fuel or non vegetated 2.2.3.2

Scale
1:7,750 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers Internation WA
670 Youngs Road
Beaufort River, WA 6394

Vegetation Classes - South

BAL Assessor	QA Check	Drawn by
KK	KK	BT
STATUS	**FILE**	**DATE**
FINAL	MSC0249	18/09/2019

Plot	1	Classification or Exclusion Clause	Forest Type A
			**Location:** To the north of the proposed feedlot internal to the site. **Separation distance:** 0m (internal) 15m external. **Dominant species & description:** Wandoo Open Woodland with a grassy understorey. Not grazed, area of conservation covenant. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Downslope >0-5 degrees.

Photo Id 1: View to the south east through Plot 1 located central west in the farm.

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Location:** To the north of the farm in adjacent private property. **Separation distance:** 22m. **Dominant species & description:** Planted blue gum plantation. **Average vegetation height:** 6m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Downslope >0-5 degrees.

Photo Id 2: view to the north of adjacent blue gum plantation.

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Location:** To the west of the farm, west of Youngs Road in Reserve. **Separation distance:** 15m **Dominant species & description:** Jarrah and Wandoo Open Woodland with a midstorey of Acacia, Melaleuca, juvenile trees and herbs and shrubs understorey. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Downslope >0-5 degrees.
Photo Id 3: View to the west through Plot 1 located west of Youngs Road.			

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Location:** Internal to the site in the north east. **Separation distance:**0m (internal). **Dominant species & description:** Pine plantation. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Downslope >0-5 degrees.
Photo Id 4: View to the north east of the pine plantation.			

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Photo of Plot 1 in roadside of Youngs Road.
Photo Id 5: View to south along Youngs Road showing roadside vegetation.			

Plot	2	Classification or Exclusion Clause	Woodland Type B
			**Location:** Internal to the site in grazed paddocks. **Separation distance:** 0m (internal). **Dominant species & description:** Wandoo Open Woodland with a grassy understorey. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Downslope >0-5 degrees.
Photo Id 6: View to the west through Plot 2 located in the north of the farm area.			

Plot	2 cont.	Classification or Exclusion Clause	Woodland Type B
			**Additional photo of Plot 2.**

Photo Id 7: View to the north west of Plot 2 located to the south of the existing (northern) farm house.

Plot	3	Classification or Exclusion Clause	Grassland Type G
			**Location:** internal to the site and adjacent to the farm in grazed paddocks. **Separation distance:** 0m internal to site and 20m external. **Dominant species & description:** Paddock grasses and cropped areas (adjacent farms). **Average vegetation height:** 50mm to 200mm. **Vegetation Coverage:** <10% trees. **Available fuel loading:** 4.5 t/ha. **Effective slope:** Downslope >0-5 degrees.

Photo Id 8: View to the west through adjacent farm cropped paddock (located north west of subject site).

Plot	3 cont.	Classification or Exclusion Clause	Grassland Type G
			**Additional photo of Plot 3.**
Photo Id 9: View to the south internal to the farm adjacent to the pine plantation.			
Plot	**3 cont.**	**Classification or Exclusion Clause**	**Grassland Type G**
			**Additional photo of Plot 3.**
Photo Id 10: View to the north east through Plot 3 located in the proposed feedlot paddock.			

Plot	3 cont.	Classification or Exclusion Clause	Grassland Type G
			**Additional photo of Plot 3.**

Photo Id 11: View to the north west through paddock to the east of the feedlot paddock.

Plot	3 cont.	Classification or Exclusion Clause	Grassland Type G
			**Additional photo of Plot 3.**

Photo Id 12: View to the south east through Plot 2 located south of Youngs Road in adjacent paddock.

Plot	4	Classification or Exclusion Clause	Shrubland Type C
			**Location:** Creek area located to the south of the proposed feedlot. **Separation distance:** 0m (internal). **Dominant species & description:** Sedges and occasional trees, future possible revegetation area. **Average vegetation height:** 0.5-1.0m. **Vegetation Coverage: 10-30% foliage cover.** **Available fuel loading:** 15 t/ha. **Effective slope:** Downslope >0-5 degrees.
Photo Id 13: View to the north through Shrubland Type C.			
Plot	**5**	**Classification or Exclusion Clause**	**Woodland Type B**
			**Location:** Internal to the site in grazed paddocks. **Separation distance:** 0m (internal). **Dominant species & description:** Wandoo Open Woodland with a grassy understorey. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Upslope/flat.
Photo Id 14: View to the north west of Plot 5 located to the north of the existing (northern) farm house.			

Plot	5 cont.	Classification or Exclusion Clause	Woodland Type B
			**Additional photo of Plot 5.**
Photo Id 15: View of planted trees adjacent to southern house driveway.			
Plot	**6**	**Classification or Exclusion Clause**	**Forest Type A**
			**Location:** Internal driveway in the south east and to the south along Youngs Road reserve. **Separation distance:** 0m (internal) and adjacent to property boundary (south). **Dominant species & description:** Wandoo Open Woodland with a grassy understorey. Not grazed, revegetated areas and roadside reserve areas. Disturbed areas which are deemed regenerating. **Average vegetation height:** 12-15m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35t/ha **Effective slope:** Upslope/Flat.
Photo Id 16: View of Forest Type A internal to the site along main driveway access.			

Plot	6 cont.	Classification or Exclusion Clause	Forest A
			**Additional photo of Plot 6.**
Photo Id 17: View to the north west through Plot 6 located within Youngs Road Reserve and along the southern boundary of the subject site.			

Plot	7	Classification or Exclusion Clause	Grassland G
			**Location:** internal to the site and adjacent to the farm in grazed paddocks. **Separation distance:** 0m internal to site and 20m external. **Dominant species & description:** Paddock grasses and cropped areas (adjacent farms). **Average vegetation height:** 50mm to 200mm. **Vegetation Coverage:** <10% trees. **Available fuel loading:** 4.5 t/ha. **Effective slope:** Upslope/Flat.
Photo Id 18: View internal to the feedlot site of Grassland Type G.			

Plot	7 cont.	Classification or Exclusion Clause	Grassland G
			**Additional photo of plot 7**.
Photo Id 19: View internal to the feedlot site of Grassland Type G.			
Plot	**8**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)**
			**Location:** internal to the site, house and shed areas of the existing farm. Includes the formed road of Youngs Road. **Description:** Bare areas, hardstand, roads and buildings. As per exclusion clause 2.2.3.2 (e) of AS3959.
Photo Id 20: View internal of the house site (north) in the farm property.			
Plot	**8 cont.**	**Classification or Exclusion**	**Low fuel or non-vegetated**

		Clause	**areas exclusion 2.2.3.2 (e)**
			**Additional photo of Plot 8.**
Photo Id 21: View to the east of existing farm house in the south of the property.			
Plot	**8 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)**
			**Additional photo of Plot 8.**
Photo Id 22: View to the north west of shed and hardstand areas existing on the farm.			

COMMENTS ON VEGETATION CLASSIFCATIONS:

- Distances from vegetation were made based on surface fuels to edge of lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS3959-2009) Simplified procedure was used for vegetation classification and BAL Assessment process;
- All vegetation was classified within the subject site and within 150m of the subject site boundaries to AS3959 Table 2.3; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.

SECTION 3.2 Bushfire Assessment Outputs

3.2.1 BAL Contour Plan – Feedlot paddock

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposed subdivision, this includes mapping over: the proposed feedlot area to assess the risk for the sheep contained in the feedlot. The BAL Contours are depicted in accordance with AS 3959-2018 and WAPC defined methodology. The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL.

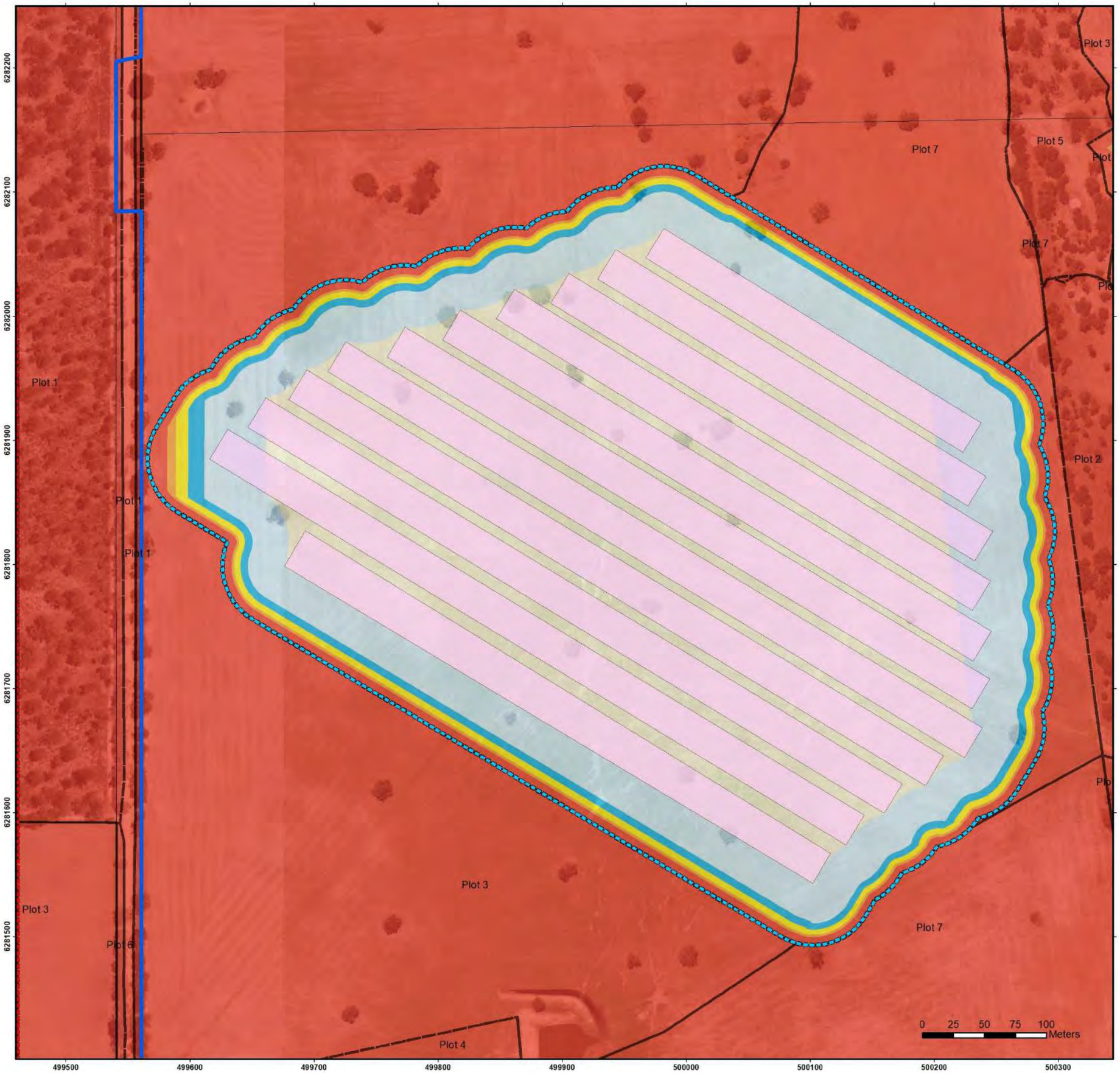
The potential bushfire impact to the feedlot from each of the identified vegetation plots are identified below in Table 1and shown in the BAL Contour Plan Page 22.

Table 1 - Potential Bushfire impacts to AS3959

Plot number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)	Separation distance to vegetation (m)	Highest BAL Contour
1	Forest Type A	Downslope >0-5 degrees	>50m	BAL 12.5
2	Woodland Type B	Downslope >0-5 degrees	>35m	BAL 12.5
3	Grassland Type G	Downslope >0-5 degrees	>20m	BAL 12.5
5	Woodland Type B	Upslope	>29m	BAL 12.5
7	Grassland Type G	Upslope	>17m	BAL 12.5

Assumptions in BAL Contour Plan:

- Internal Grasslands are a bushfire threat however all internal grassland areas adjacent to the feedlot will be maintained in a low fuel condition for 50m. This will ensure BAL 12.5 prevails over the feedlot (sheep area).



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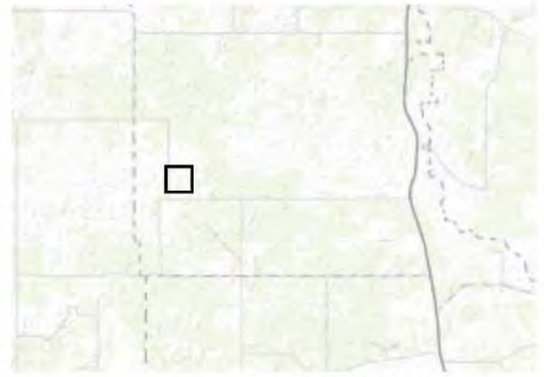

Overview Map Scale 1:250,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 50m Low Fuel Area
- Pens
- Vegetation/Plot Boundary

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

Scale
1:3,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers Internation WA
670 Youngs Road
Beaufort River, WA 6394

BAL Contour - Holding Pens

BAL Assessor	*QA Check*	*Drawn by*
KK	**KK**	**BT**
STATUS	*FILE*	*DATE*
FINAL	**MSC0249**	**18/09/2019**

3.2.2 Bushfire Hazard Level Assessment – whole of farm

The BHL process provides an indication of the likely impact of a bushfire event as it interacts with the bushfire hazards within and adjacent to the site. The BHL is a measure of the likely intensity of a bushfire and the likely level of bushfire attack on a site by categorizing the hazard (WAPC, 2017). The allocation of category of the bushfire hazard is determined as per Table 3 of the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017). Refer to Figure 7 below.

Table 3: BHL and classified vegetation (as per AS-3959)

HAZARD LEVEL	CHARACTERISTICS
Extreme	• Class A: Forest • Class B: Woodland (05) • Class D: Scrub • Any classified vegetation with a greater than 10 degree slope
Moderate	• Class B: Open woodland (06), Low woodland (07), Low open woodland (08); Open shrubland (09)* • Class C: Shrubland • Class E: Mallee/Mulga • Class G: Grassland, including sown pasture and crops • Vegetation that has a low hazard level but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.
Low	• Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. • Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 millimetres. • Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops.

Figure 7: BHL Assessment allocation of category

(WAPC, 2017)

3.2.3 Potential Bushfire Impacts - BHL allocation

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below in Table 2 and shown on the Pre-development BHL mapping (page 21) and Post Development BHL Mapping (Page 22).

Table 2 - Potential Bushfire impacts to BHL Methodology

Plot number	Vegetation Type (Table 2.3)	Effective Slope (Table 2.4.3)	BHL Pre Construction	BHL post Construction
1	Forest Type A	Downslope >0-5 Degrees	Extreme	Extreme
2	Woodland Type B	Downslope >0-5 Degrees	Extreme	Extreme
3	Grassland Type G	Downslope >0-5 Degrees	Moderate	Moderate
4	Shrubland Type C	Downslope >0-5 Degrees	Moderate	Moderate
5	Woodland Type B	Upslope/Flat	Extreme	Extreme
6	Forest Type A	Upslope/Flat	Extreme	Extreme
7	Grassland Type G	Upslope/Flat	Moderate	Moderate
8	Low fuel or non-vegetated areas exclusion (e)	NA	Moderate	Moderate

NOTES ON BHL ASSESSMENT

- The BHL assessment was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD30794); and
- The BHL Assessment and map has been prepared in accordance with Department of Planning (WAPC) Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC, 2017);
- Subject site is partially located in a Bushfire Prone Area, see Figure 3 (OBRM, 2018).

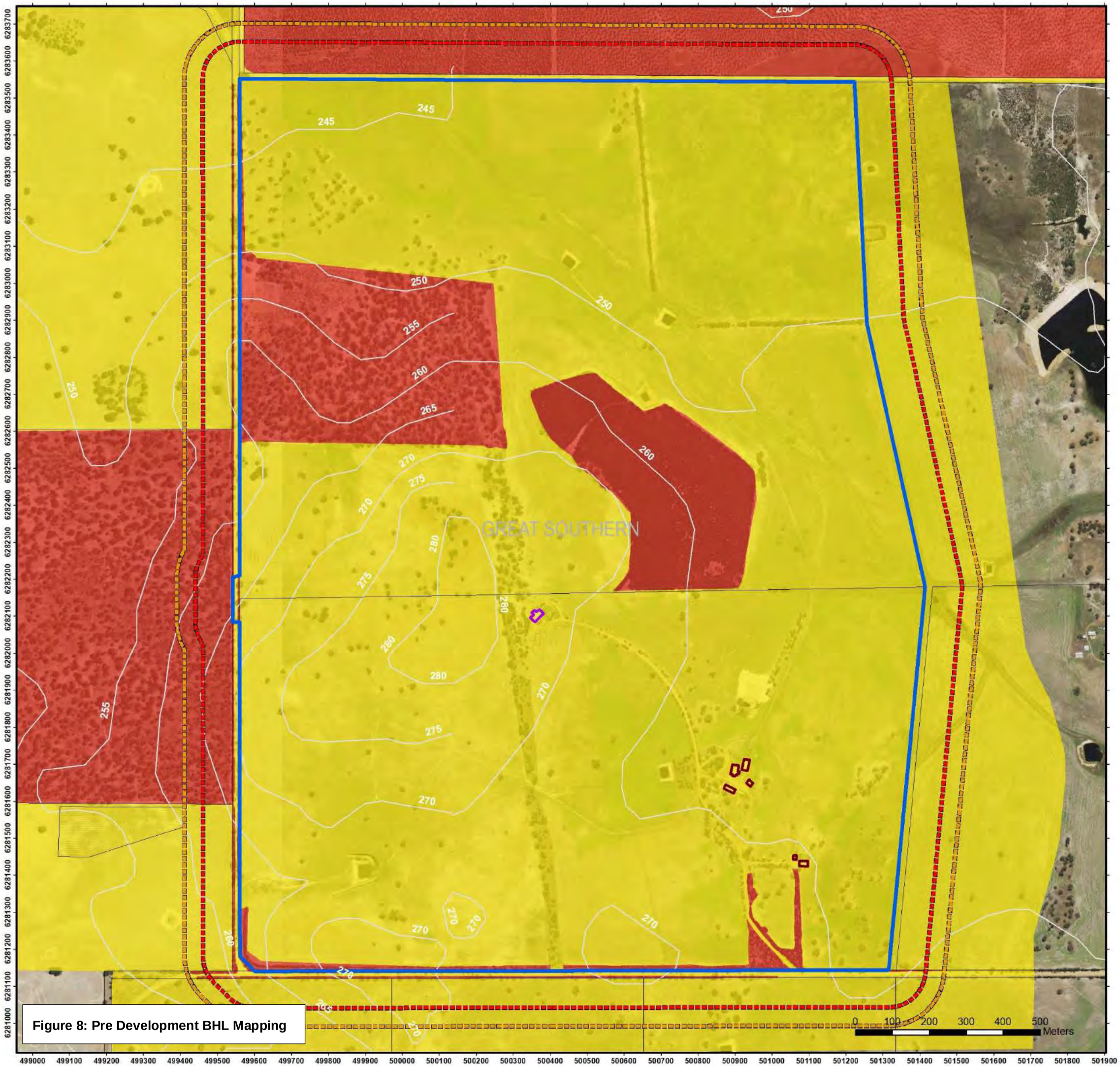

Figure 8: Pre Development BHL Mapping

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Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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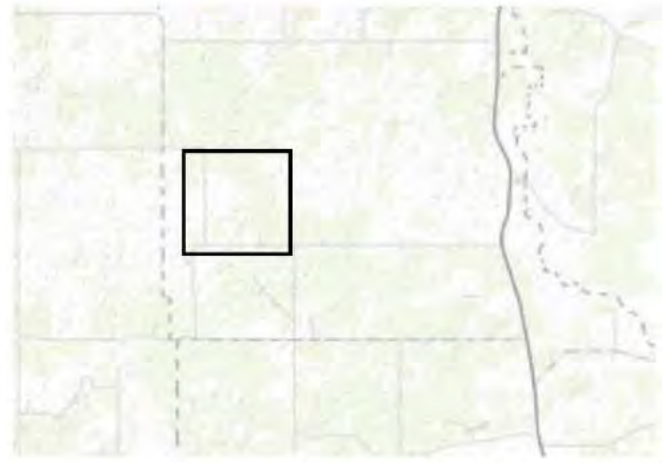

Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours

Bushfire Hazard Level

- Extreme
- Moderate
- Low

Scale
1:10,000@ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers Internation WA
670 Youngs Road
Beaufort River, WA 6394

Pre Development BHL Mapping

BAL Assessor	QA Check	Drawn by
KK	KK	BT
STATUS	**FILE**	**DATE**
FINAL	MSC0249	18/09/2019

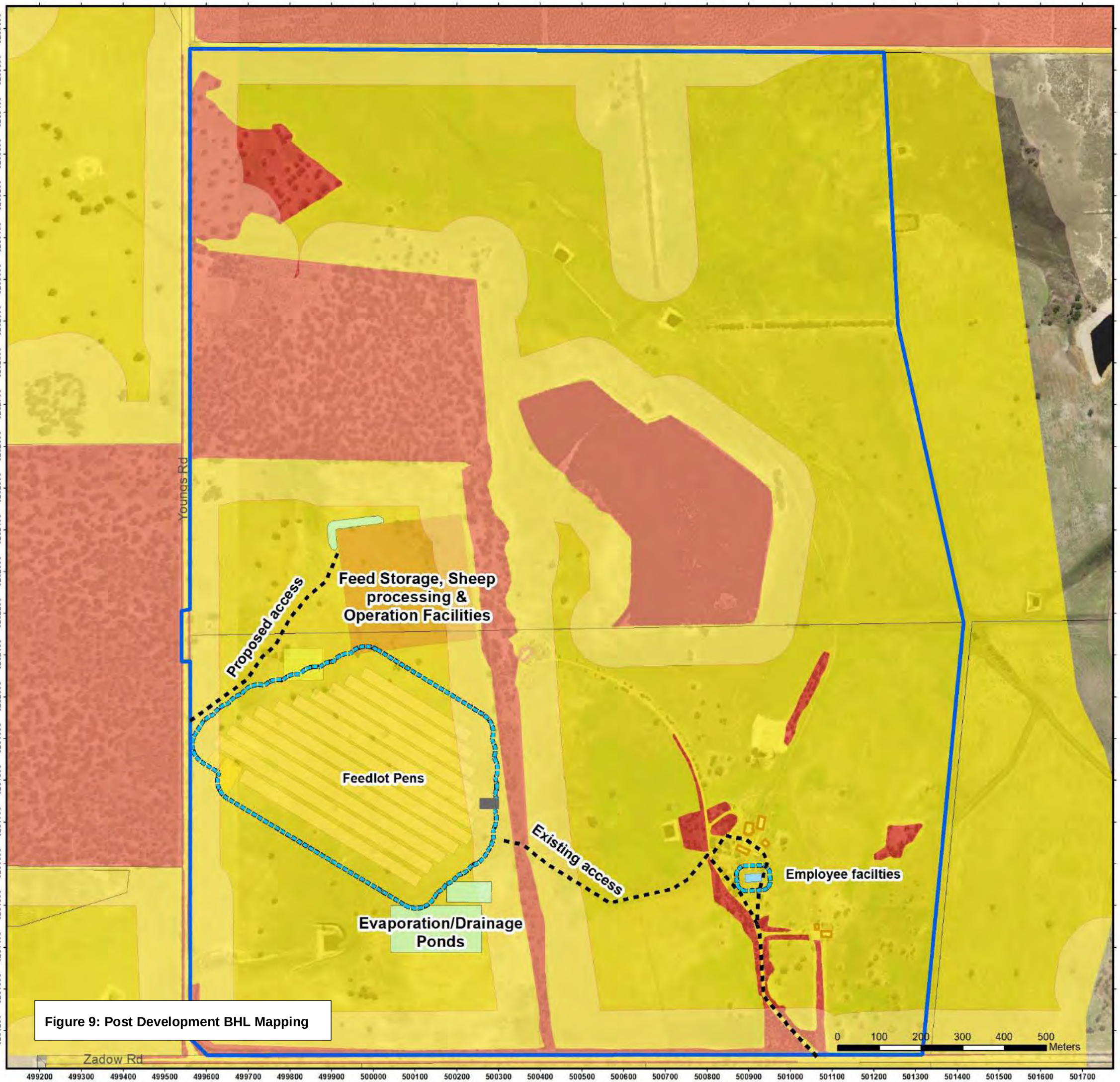

Figure 9: Post Development BHL Mapping

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Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

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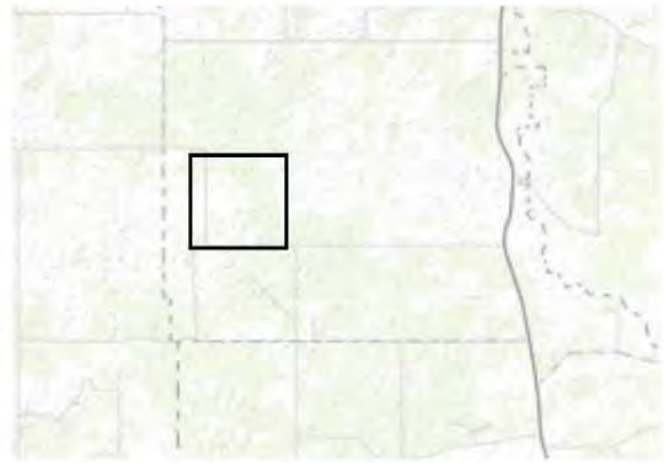


Overview Map Scale 1:100,000

Legend

- Subject Site
- Cadastre
- Internal access
- Low Fuel Area (APZ)

Feed Lot Pens

- Biosolid Stockpile
- Pens
- Feed Storage Facilities
- Sheep Processing Area
- Drainage Ponds
- Employee facilities
- WA_BushfireProneAreas_20190601

Bushfire Hazard Level

- Extreme
- Moderate
- Low

Scale
1:9,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Fletchers Internation WA
670 Youngs Road
Beaufort River, WA 6394

Post Development BHL Mapping

BAL Assessor	*QA Check*	*Drawn by*
KK	KK	BT
STATUS	*FILE*	*DATE*
FINAL	MSC0249	20/09/2019

SECTION 4: Identification of Bushfire Impacts

Bushfire hazards

The bushfire hazards internal to the site are the remnant Forest Type A areas and Woodland Type B areas which present an Extreme BHL as per WAPC definitions (WAPC, 2017). Internal grasslands are classified as a Moderate BHL, the feedlot will have a 50m low fuel buffer around to ensure safety for the sheep in the pens.

External to the site, remnant vegetation to the west of Youngs Road presents an extreme risk from the north-west and west of the proposed sheep feedlot pens. A BAL contour Plan was produced to investigate the radiant heat impact on the pens and the external bushfire risks to the west of Youngs Road. The BAL contour Plan indicates that a BAL of 12.5 will be subject to the pens. Management of the sheep and animal welfare in the pens is discussed further below and in the Operational Management Plan (OEMP, Bio Diverse Solutions, 2019).

It is noted on the concept plan that any future accommodation buildings near the existing sheds are in a Moderate BHL area and are not within the WA Bushfire Prone Area Mapping and therefore are not legally required to build to AS3959.

It is also noted through the Shire of Woodanilling Fire Break Notice (2018/2019) that a low fuel zone of 10m is required around all homesteads, buildings and haystacks within 200m of a building, fuel storage tanks and drums.

Access

Access to and from Ronneby Park is via Youngs Road and Albany highway to the east. Youngs Road has continuing access to the south to Zadow Road onto Corben Soak Road; to the north continues to Leggoe Road (which connects to Albany highway in the north); and ultimately connects to Boyup Brook- Arthur Road in the north west (via Gom and Bokal Roads).

Internal to the site there will be two-way access in the west to Youngs Road as shown on the Concept Plan (Figure 2) and to the south east to Youngs Road through the existing internal driveway and an existing internal access from the shed to the feedlot. All existing internal tracks were inspected by Kathryn Kinnear and noted to be 4m wide trafficable surface with 6m horizontal clearance. Refer to evidence Appendix B. All future internal access tracks (west in concept plan) will be constructed to the same standards.

Water

Water supply is via rainfall capture to the existing houses and bore supply when required. Two standalone tanks for firefighting (10,000L min capacity) is to be located near the sheep processing area and the existing sheds in the east of the farm. These are to be fitted with camlock fittings at the base for Bushfire Brigades (BFB) to access water supply (for quick refill) close to infrastructure in an emergency. There are dams located in each paddock which are maintained with water year-round for water supply for bushfire attack. A mobile firefighting unit is to be permanently located on the farm with a minimum of 800L capacity during the summer month (15th November to 15th April inclusive), also see section below.

Sheep welfare – bushfire incidents

The bushfire risks around the feedlot are predominantly from the west and north west of the pens. If a bushfire incident occurs from the north or west and is within 25km of the feedlot the sheep will be herded out of the pens to the surrounding paddocks prior to the arrival of fire. This procedure is documented in the Operational Environmental Management Plan (OEMP, Bio Diverse Solutions, 2019). A fast attack trailer/ute mounted unit with a minimum of 800L capacity is to be located on site

during the summer months (15th November to 15th April inclusive) in the feedlot paddock. This will assist with any fires arising within the farm areas. Also refer to Section below.

Construction Fire management Procedures

There is a potential fire risk from construction operations in paddock areas on High/Very High/Extreme "Fire Danger Index" (FDI) rated days. The predominant fire risk associated with the site is the adjacent reserve to the west where native vegetated areas (Extreme Risks) under hot conditions can give rise to hot and intense fires. The following fire control methods should be enforced at all times during summer periods.

Fire control methods during construction periods:

- Abide by Shire imposed vehicle movement and/or harvest ban due to dangerous fire weather conditions or if there are bush fires already burning during the Restricted and Prohibited Burning Times (i.e. High-Very High Fire Danger days);
- Maintain at all times standalone minimum 10,000L of water in separate tank for firefighting purposes; and
- A mobile firefighting appliance dedicated to firefighting operations is located on the property at all times during summer (15th November to 15th April inclusive), operations (fast attack min 800L).

SECTION 5: Assessment to Guidelines for Planning in Bushfire Prone Area

The Bushfire Protection Criteria has been provided by WAPC in the "Guidelines for Planning in Bushfire Prone Areas" (WAPC, 2017) to assist the assessment of the proposal in bushfire prone areas. The BMP report assesses the proposal to the "Acceptable Solutions" of the four elements a summary of this assessment is outlined over the page (Table 2).

Table 2: Bushfire protection criteria applicable to the site

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant. All existing buildings are located in a moderate BHL, any future buildings are proposed near the existing shed area which is also subject to a Moderate BHL. It is noted that any proposed buildings on site are not located in the OBRM Bushfire Prone Area mapping and therefore are not currently legally subject to AS3959 building construction requirements. It is recommended that any habitable buildings are built to BAL 12.5 for bushfire safety and protection of employees. Proposal meets acceptable solution A1.1
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	Compliant. APZ areas apply to the existing buildings and are a minimum of 20m. APZ areas are to be to WAPC standards as presented in Appendix A of this report. APZ areas around any new building are to be a minimum of 20m to ensure BAL 12.5 prevails to grassland areas. See Post Development BHL Mapping (Figure 9) indicating a 20m Asset Protection Zone around any future employee facilities. The APZ areas for each existing and new building are contained within the farm site. Proposal meets acceptable solution A2.1
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	Compliant. Access is via driveways (existing) onto Youngs Road. Youngs Road has connections to the south, north and north west to other Shire maintained roads. Internal access is to the west and the south east meeting Acceptable Solutions A3.1
	A3.2 Public Road	No	No public roads are proposed. Not assessed to A3.2.
	A3.3 Cul-de-sacs	No	No cul-de-sacs are proposed. Not assessed to A3.3.
	A3.4 Battle axes	No	No battle axes are proposed. Not assessed to A3.4.

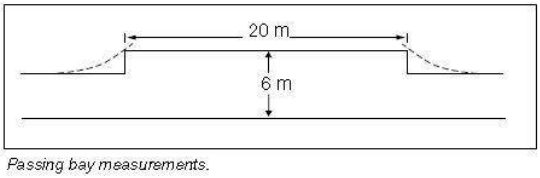
Table 2 cont.

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
	A3.5 Private driveways	Yes	Compliant. Driveways are already installed to the existing dwelling(s) and shed areas and meets the minimum technical requirements of the guidelines. Refer to evidence Appendix B. New internal driveways to the feedlot are to be installed with passing lanes (every 200m, refer to Figure 9. Turnaround areas will be provided as per Figure 9 at the proposed Sheep Processing area (consistent for road trains access and manoeuvring) and new buildings in the east near the shed. Ongoing maintenance of driveways is to be as per Table 3 standards. Proposal meets acceptable solution A3.5.
	A3.6 Emergency Access Ways	No	No EAWs proposed as the public road network will be utilised. Not assessed to A3.6.
	A3.7 Fire Service Access Ways	No	No FSA's proposed as the public road network will be utilised. Not assessed to A3.7.
	A3.8 Firebreaks	Yes	Noted installed on site and compliant to Shire Fire Management Notice.
Element 4 – Water	A4.1 Reticulated areas	No	Not assessed to A4.1.
	A4.2 Non-reticulated areas	No	Not assessed to A4.2.
	A4.3 Individual lots in non-reticulated areas	Yes	Compliant. Water supply will be through the use of existing standalone water tanks for domestic and farm supply (roof-top via rainfall supply and bore supply). New 2 x standalone water supply for bushfire to be installed at shed area in the east and new feedlot area in the west. Couplings, hardstand and turnaround areas to be provided adjacent to the tanks as per Figure 9. Tanks to be installed prior to operations of the feedlot. Proposal meets acceptable solution A4.3.

Table 3 –Vehicular Access Technical Requirements (WAPC, 2017)

Technical requirements	Private Driveways
Minimum trafficable surface (m)	4m all-weather trafficable
Horizontal clearance (m)	6m
Vertical clearance (m)	4.5m
Maximum grades	1 in 10
Minimum weight capacity (t)	15
Maximum crossfall	1 in 33
Curves minimum inner radius (m)	8.5
Driveways >50m	Turnaround area at houses and fire tanks, passing bays every 200m.

Any driveway located >50m from a public road is to have a turnaround area located at the house and passing bays every 200m for 20m. Refer to Figure 9 below.



Passing bay measurements.

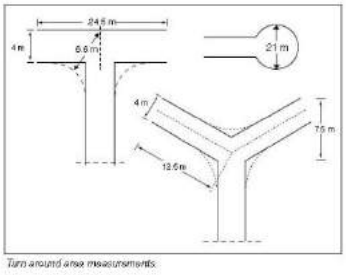

Turn around area measurements

Figure 9: Passing bays and turnaround requirements for internal driveways> 50m.

Individual Bushfire Plan

Residents should prepare their own individual fire plans, as they need to make a commitment to develop a bushfire survival plan detailing preparations and actions to take if a bushfire threatens. By compiling information as outlined above, the individual lot owner can be prepared for their response in a bushfire emergency. Home owners should not rely on emergency personnel to attend their home and thus it is stressed to prepare an individual bushfire emergency plan regarding their intentions and property. This Bushfire Management Plan is not an individual bushfire emergency plan. More information can be gained from the DFES website (s):
www.dfes./wa.gov.au
www.emergency.wa.gov.au

www.emergency.wa.gov.au

SECTION 6: Implementation Actions

The responsibilities of the Developer (Fletchers International) during regular operations and construction periods are shown in Table 6.

Table 4 – Implementation Actions Developer

Ongoing operations		
No	**Implementation Action**	**All times**
1	Maintain APZ areas over existing dwellings in accordance with WAPC guidelines (Appendix A)	☐
2	APZ standards to apply to WAPC standards (See Appendix A) to any new buildings and maintained by Fletchers International at all times. A minimum of 20m APZ to apply to any new buildings.	☐
3	Driveways to be maintained to 6m horizontal clearance and 4.5m vertical clearance at all times.	☐
4	2 x standalone 10,000L firefighting supply water tanks to be installed prior to operations of the feedlot at feedlot area (west) and current shed area (east).	☐
During Construction		
No	**Implementation Action**	
1	Detailed BAL certification at Building Approval stages on any proposed habitable buildings. Buildings to be located in BAL12.5 zones.	☐
2	New 2 x standalone water supply for bushfire to be installed at Shed area in the east and new feedlot area in the west. Couplings, hardstand and turnaround areas to be provided adjacent to the tanks as per Figure 9. Tanks to be installed prior to operations of the feedlot. Appropriate Storz fittings for extraction to be supplied.	☐
3	New internal driveways to be installed to the minimum standards as outlined in Table 5	☐
4	A fast attack trailer/ute mounted unit with a minimum of 800L is to be located during the summer months.	☐
5	Abide by Shire imposed Vehicle Movement and/or Harvest ban due to dangerous fire weather conditions or if there are bush fires already burning during the Restricted and Prohibited Burning Times (i.e. High-Very High Fire Danger days);	☐

SECTION 7: Disclaimer

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2015), and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

AS3959-2018 disclaimer

The survivability of buildings is also dependant on a combination of measures such as landscaping, water supplies, access, building design and maintenance. Care should also be exercised when siting and designing for these measures when constructing a building under this Standard.

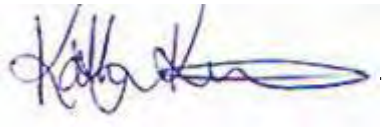
(AS3959, 2018)

This Standard is primarily concerned with improving the ability of buildings in designated bushfire-prone areas to better withstand attack form bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.

(AS3959-2018)

SECTION 8: Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2009 (Incorporating Amendment Nos 1, 2 and 3) and the Guidelines for Planning in Bushfire Prone Areas Ver. 1.3 (WAPC, 2017).

SIGNED, ASSESSOR: ..  ..... DATE: 25/9/2019

Kathryn Kinnear, Bio Diverse Solutions
Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

References

AS 3959-2009 Australian Standard, Construction of buildings in bushfire-prone areas, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

Department of Fire and Emergency Services Bushfire ready website, accessed 30/3/2018 from: www.emergency.wa.gov.au

Department of Fire and Emergency Services (SLIP) (2018) Map of Bushfire Prone Areas. Office of Bushfire Risk Management (OBRM) data retrieved from: https://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx

Shire of Woodanilling 2018/2019 Fire Break Notice, retrieved from: https://www.woodanilling.wa.gov.au/services/fire-services/fire-break-notice.aspx

Shire of Woodanilling Draft Local Planning Policy No 6, Bushfire Planning and Development. Retrieved from: https://www.woodanilling.wa.gov.au/

Western Australian Planning Commission (WAPC) (2017) Guidelines for Planning in Bushfire Prone Areas Version 1.3. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC) (2015) State Planning Policy 3.7 Planning in Bushfire Prone Areas. Department of Planning WA and Western Australian Planning Commission.

REVISION RECORD

Revision	Summary	Revised By	Date
DRAFT ID 18/9/2019	Internal QA review	Chiquita Cramer	18/9/2019
DRAFT ID 23/9/2019	Draft issued to client for review	Kathryn Kinnear	23/9/2019
FINAL ID 25/9/2019	Issued to client as final	Kathryn Kinnear	25/9/2019

Appendix A

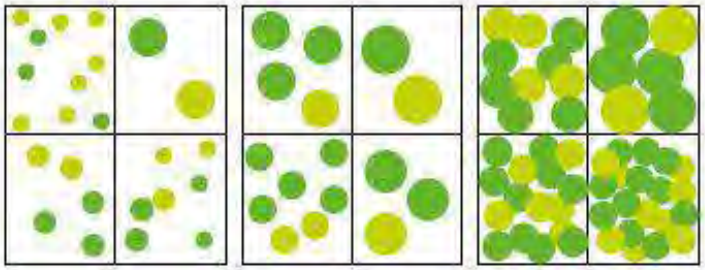
WAPC Asset Protection Zone (APZ) standards to apply

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Appendix B

Documented evidence from site assessment

Access Routes and Private Driveways	
	Access roads
Photo Id 23: View to the south of Youngs Road from the north west corner of the Subject Site.	
	Access roads
Photo Id 24: View to the west of Youngs Road south of the Subject Site	

	Internal driveways
Photo Id 25: Internal driveways, existing.	
	Turnaround areas
Photo Id 26: Internal driveway and turnaround area at the northern existing house.	

	Turnaround areas

Photo Id 27: Internal driveway and turnaround area at the southern existing house. View to north west towards existing sheds (in background).