



MLA PDS L.PDS.2203

**ADDIS PDS SITE
REPORT**



About the Project

2022-2027

In early 2022 the Gillamii Group was successful in obtaining funding for a new project through Meat and Livestock Australia (MLA) Producer Demonstration Sites (PDS) Program. The project is called 'Productive Saltland Pastures for Southern WA' and is a continuation of Gillamii's commitment to the remediation of salt-affected land into productive pasture systems for livestock grazing.

This PDS Project aims to improve members' knowledge and skills in the establishment, management, and benefits (profitability, productivity, and sustainability) of salt-tolerant forage systems on moderately salt-affected land. The objective of this program is to establish 150 hectares of salt-tolerant forage pastures on 6 local sites to demonstrate variation in productivity of key shrub and understory varieties and a paddock scale increase in:

- a. late summer/autumn (February – April) biomass production (up to 300%)
- b. soil organic carbon and total carbon

A cost-benefit analysis will also be conducted at each site to determine relative economic performance of the salt-tolerant feed-base systems as well as key livestock data (stocking rates, grazing days and liveweight gain of livestock).

This project is funded through Meat and Livestock Australia's (MLA) Producer Demonstration Sites (PDS) Program, supported by a group of dedicated host farmers.

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Project Stakeholders



The Team

Role	Responsibility
<p>Freya Spencer Gillamii Centre Project Manager</p>	<p>Responsible for the management of the project (deliverables as per Project Deliverables: Gillamii Responsibility section of landholder agreement, milestone stones, organisational structure, reporting and finances).</p>
<p>Alana McEwan MLA Project Manager</p>	<p>Responsible for the management of MLA's National PDS Program.</p>
<p>Hilary Waterson Gillamii Centre Financial Manager</p>	<p>Responsible for day-to-day management of project finances and financial audits.</p>
<p>PDS Host Landholder Tomlinson Addis Standish House</p>	<p>Responsible for project deliverables as per Project Deliverables: Landholder Responsibility section of the landholder agreement.</p>

Project Partners

Role	Responsibility
<p>Meat & Livestock Australia</p>	<p>Provide main financial support for site establishment, monitoring and extension.</p>
<p>CSIRO</p>	<p>Provide technical support for site establishment, extension and in-kind pasture analysis (nutrition and biomass).</p>
<p>DPIRD</p>	<p>Provide technical support for site establishment and extension.</p>

Addis PDS Site



Addis Family

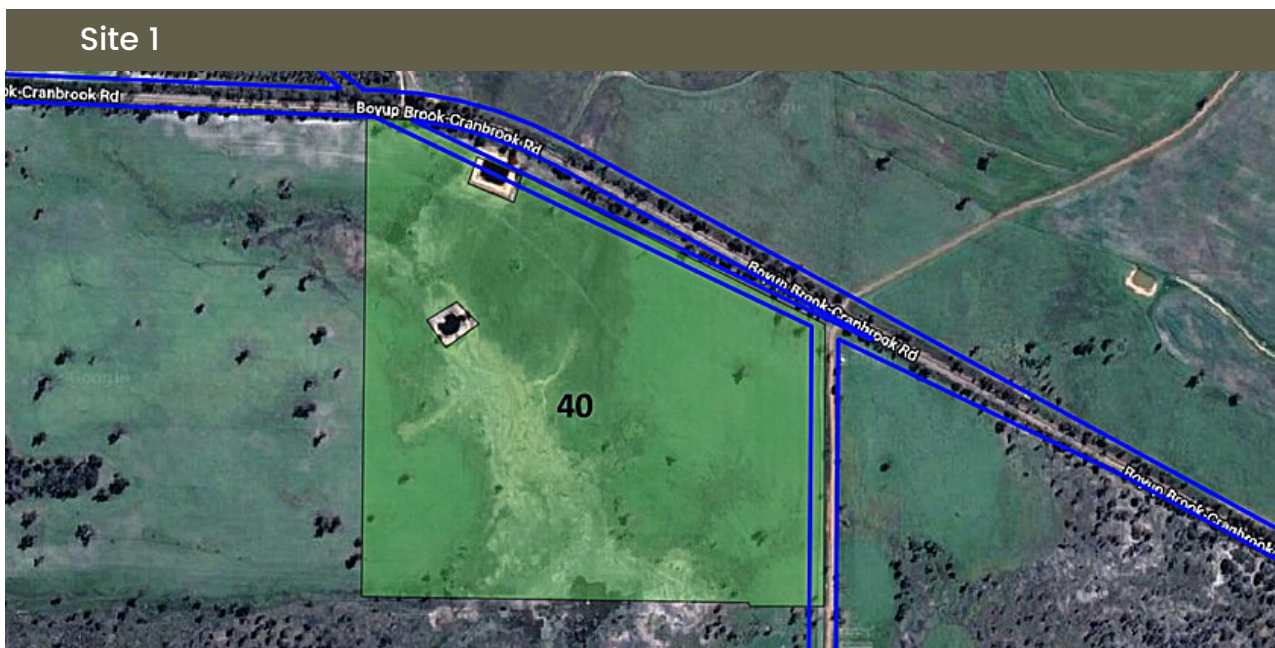


Addis Road, Cranbrook



Site 1: 40 Hectares

Site 2: 58 Hectares



Baseline Monitoring

2022



Soil Analysis

The Veris U3/iScan scans a field's major physical, biological and chemical properties to help manage each hectare to its full potential. The Veris U3 allows rapid data collection over a wide window of soil and cropping conditions.



Soil - Elevation

Topographic attributes are calculated from elevation measurements collected simultaneously with the on-the-go sensing systems using a real-time kinematic GPS.

Soil - pH

Veris on-the-go pH sensor has only one moving part – a soil sampler shoe. When the hydraulic cylinder pushes it in the ground, soil flows through. When the cylinder picks up the shoe, the soil in the shoe trough is pressed against the pH electrodes. After a few seconds the shoe is lowered again to collect more soil. As it does, the new soil coming in moves the previous soil sample out the back of the shoe trough and spray nozzles clean the pH electrodes.

Soil - OM (%)

Soil organic carbon is a component of soil organic matter. Organic matter is primarily made up of carbon (58%), with the remaining mass consisting of water and other nutrients such as nitrogen and potassium. The OpticMapper sensor module is an optical sensor that measures soil reflectance. Soils that are higher in organic matter (OM) absorb more light, but can also appear darker when moist. The OpticMapper senses the subsurface where the moisture effect is minimized, and where soil color is primarily related to soil organic matter variations. Soil measurements are acquired through a sapphire window on the bottom of a furrow 'shoe' underneath crop residue and dry surface soil. Readings are collected every second and matched to their GPS location.

Soil - Salinity (ECa ms/m)

Electrical Conductivity: the ECa collected by the iScan is technically 'bulk apparent electrical conductivity' and is measured in situ primarily to map differences in soil texture (sand/silt/clay) across a paddock. When harmful levels of salinity are present in a paddock, the Veris iScan ECa can identify these areas. The more commonly known ECe measured in the lab is typically a saturated paste extract that removes any signal from the soil texture particles.

Site 1

PP1



PP2



PP3



PP4



Photo Point Map



Photo Points

Site 2

PP1



PP2



PP3



PP4

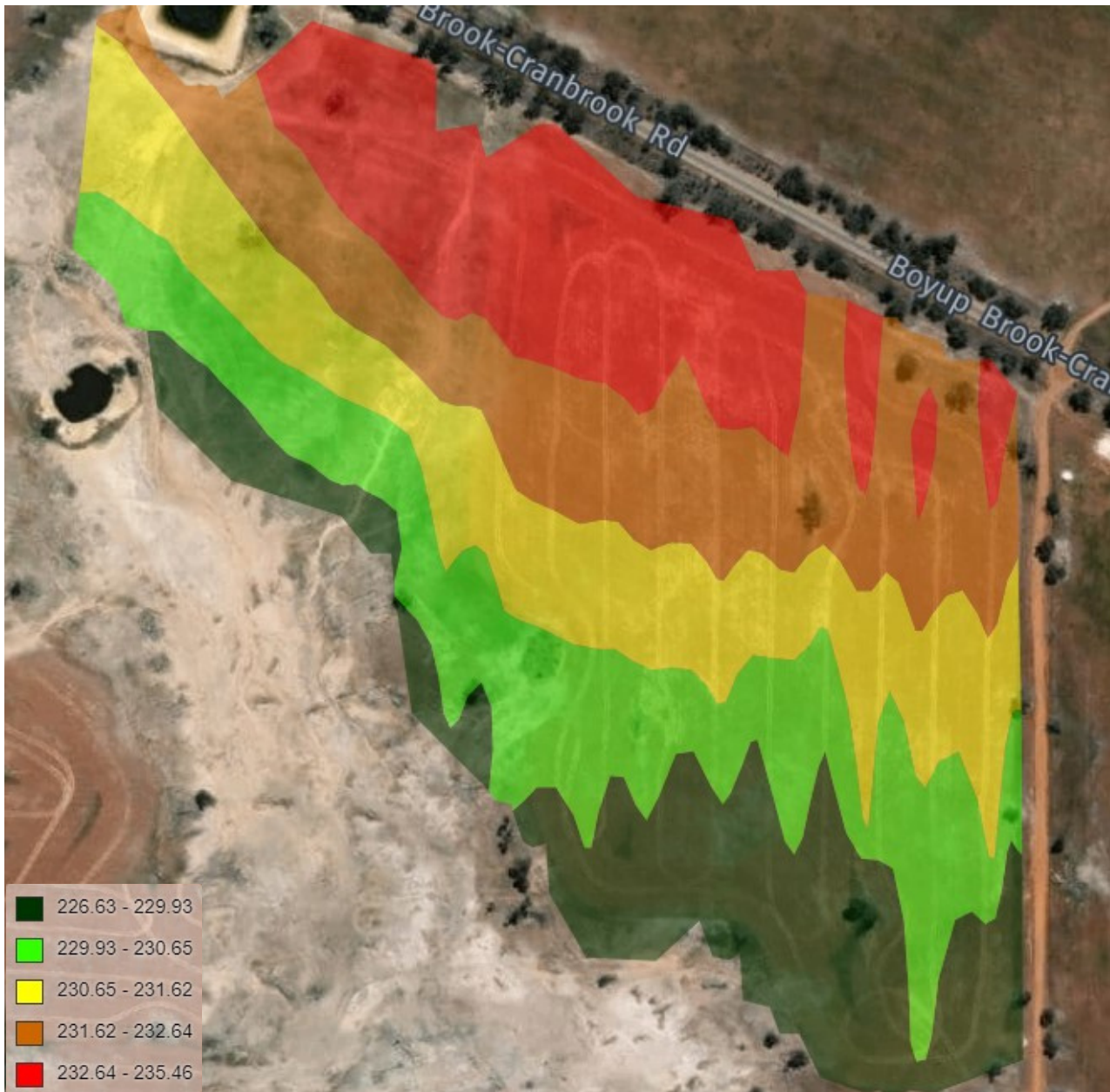


Photo Point Map



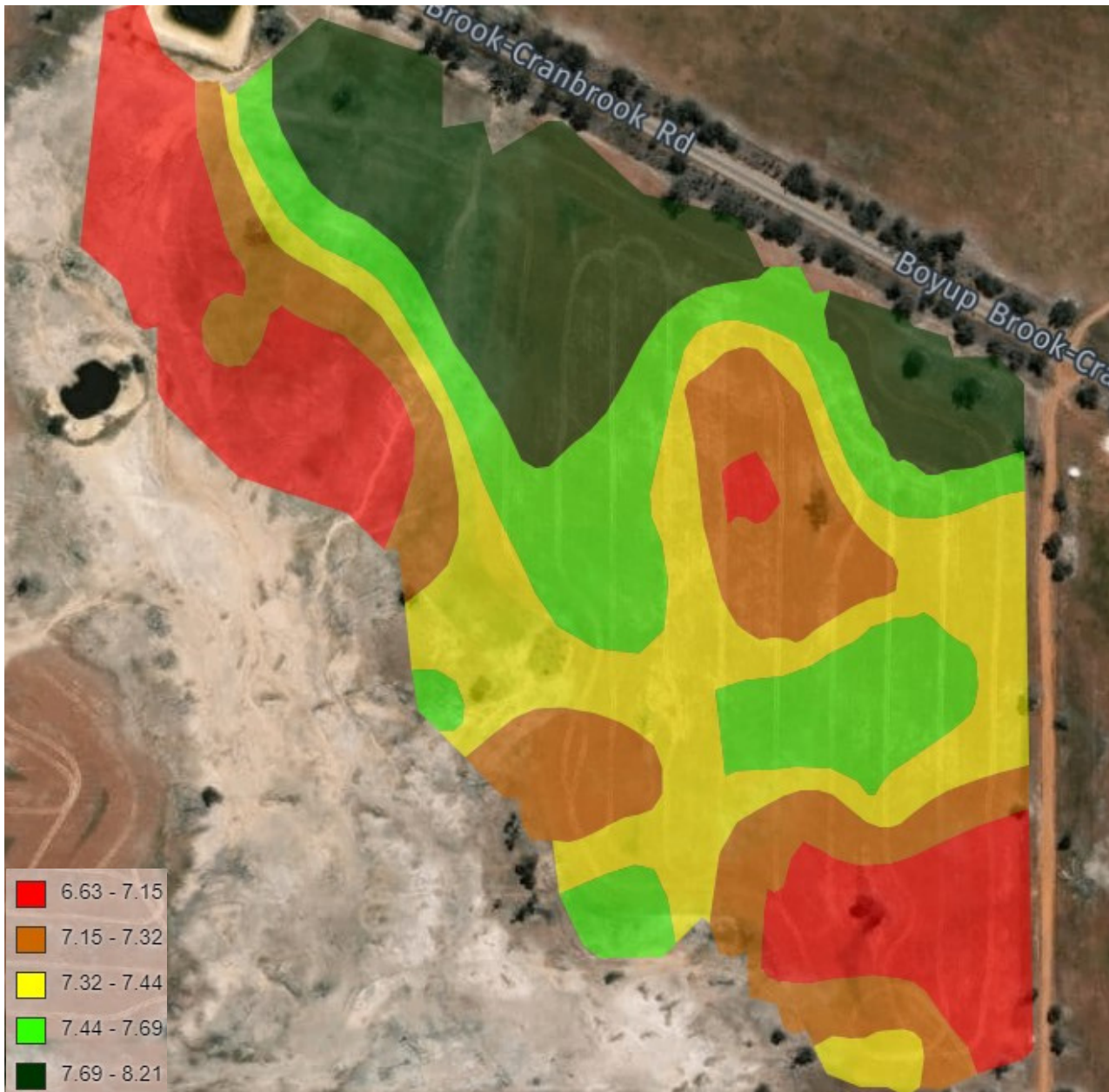
Soil - Elevation

Site 1



Soil - pH

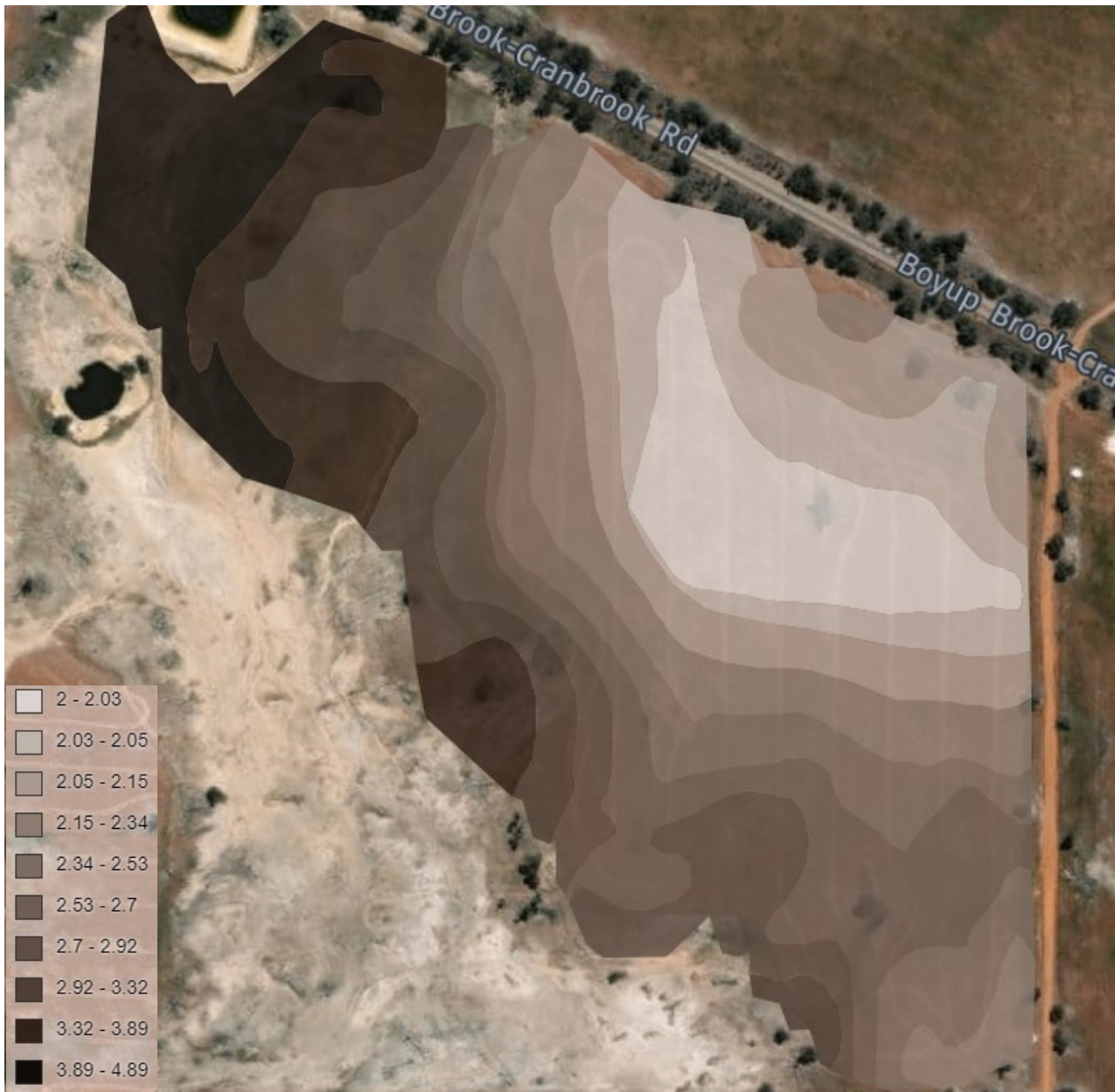
Site 1



Ideal Range 5.5-7.5

Soil - OM (%)

Site 1



Soil - Salinity (ECa ms/m)

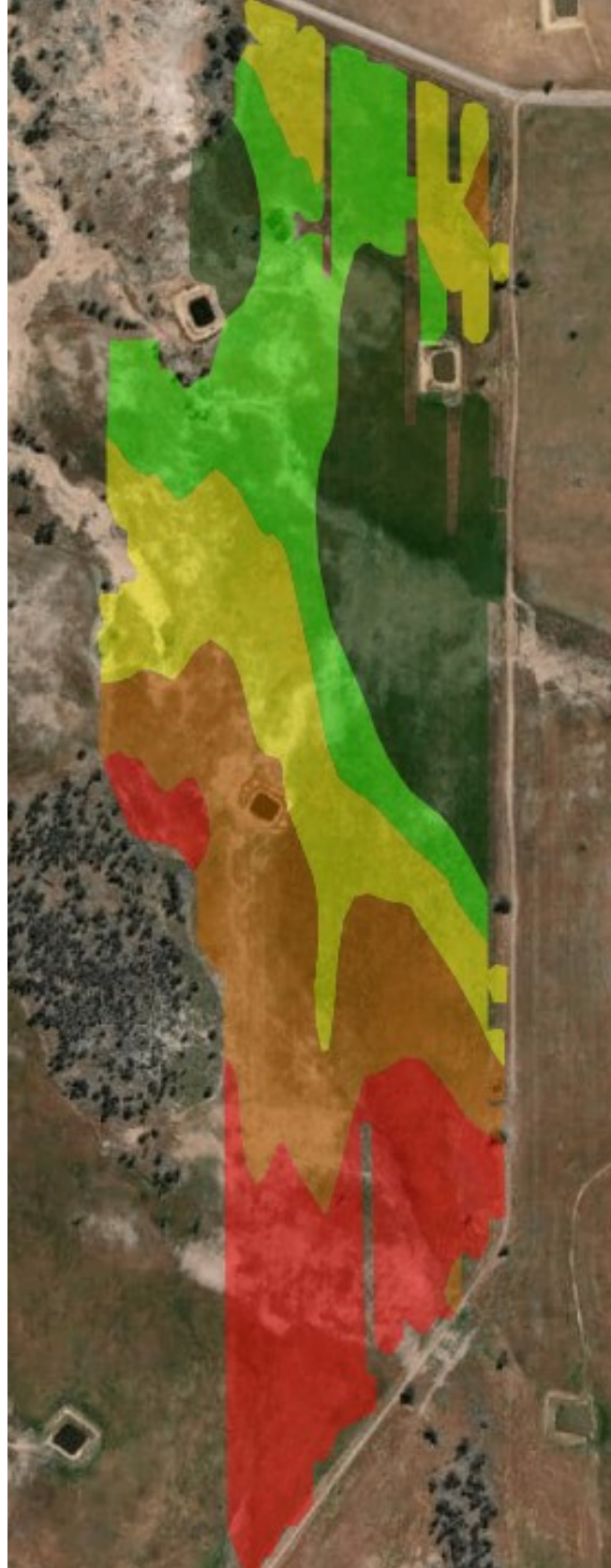
Site 1



Salinity class	EC _e all soils (mS/m)	EC _a EM38 horizontal mode (mS/m)
Non-saline	<200	<50
Slightly	200–400	50–100
Moderately	400–800	100–150
Highly	800–1600	150–200

Soil - Elevation

Site 2



Soil - pH

Site 2



Ideal Range 5.5-7.5

Soil - OC

Site 2



Soil - Salinity (ECa ms/m)

Site 2



Salinity class	EC _a all soils (mS/m)
Non-saline	<200
Slightly	200–400
Moderately	400–800
Highly	800–1600

Salinity class	EC _a EM38 horizontal mode (mS/m)
Non-saline	<50
Slightly	50–100
Moderately	100–150
Highly	150–200

Pasture: Biomass

Biomass Breakdown

Sampled on the 18th March 2022

Summer-Autumn Rainfall to Date: 27.4mm (Kendenup DPIRD Station)

Site 1:

Mean rank = 2.1

biomass/ha = 1598kg DM

biomass/site = 63933kg DM

Site 2:

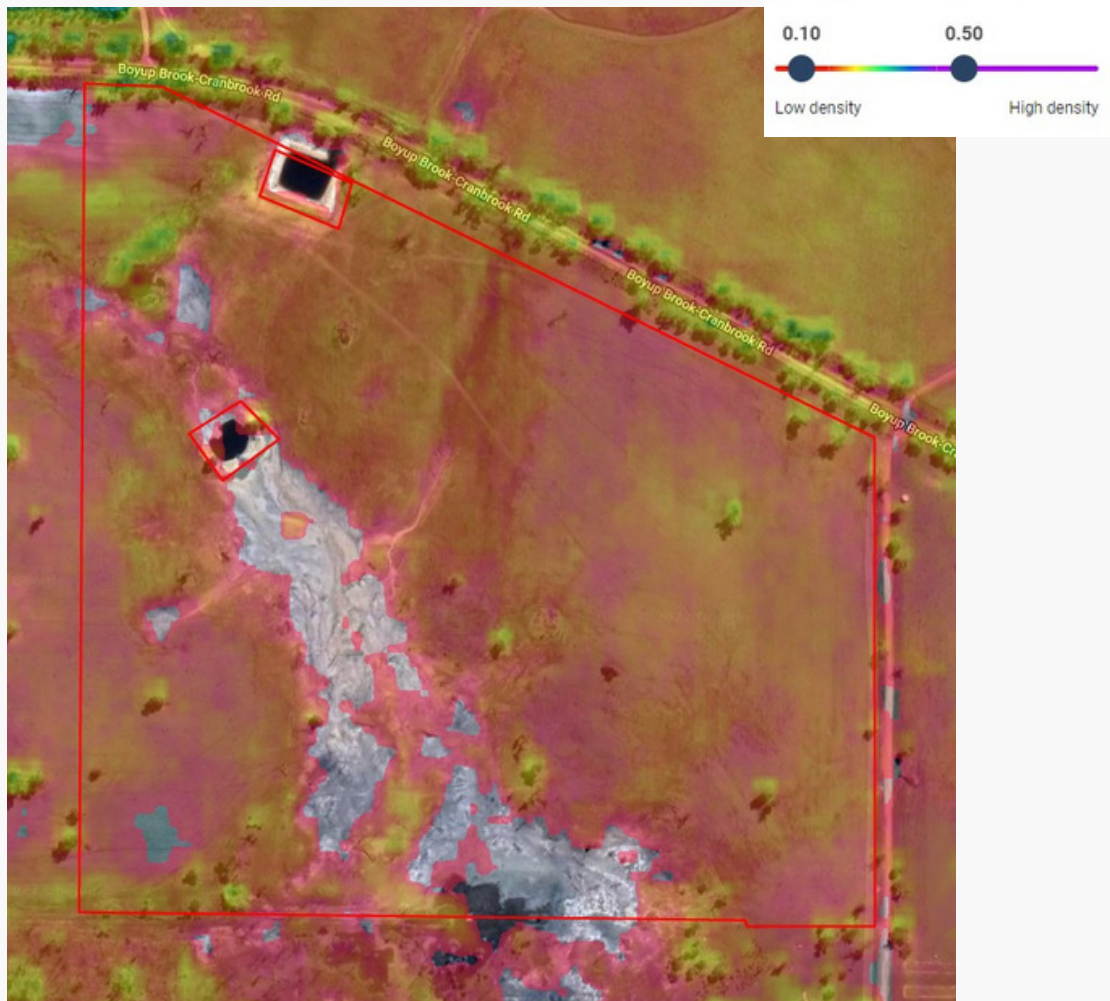
Mean rank = 3.1

biomass/ha = 2099kg DM

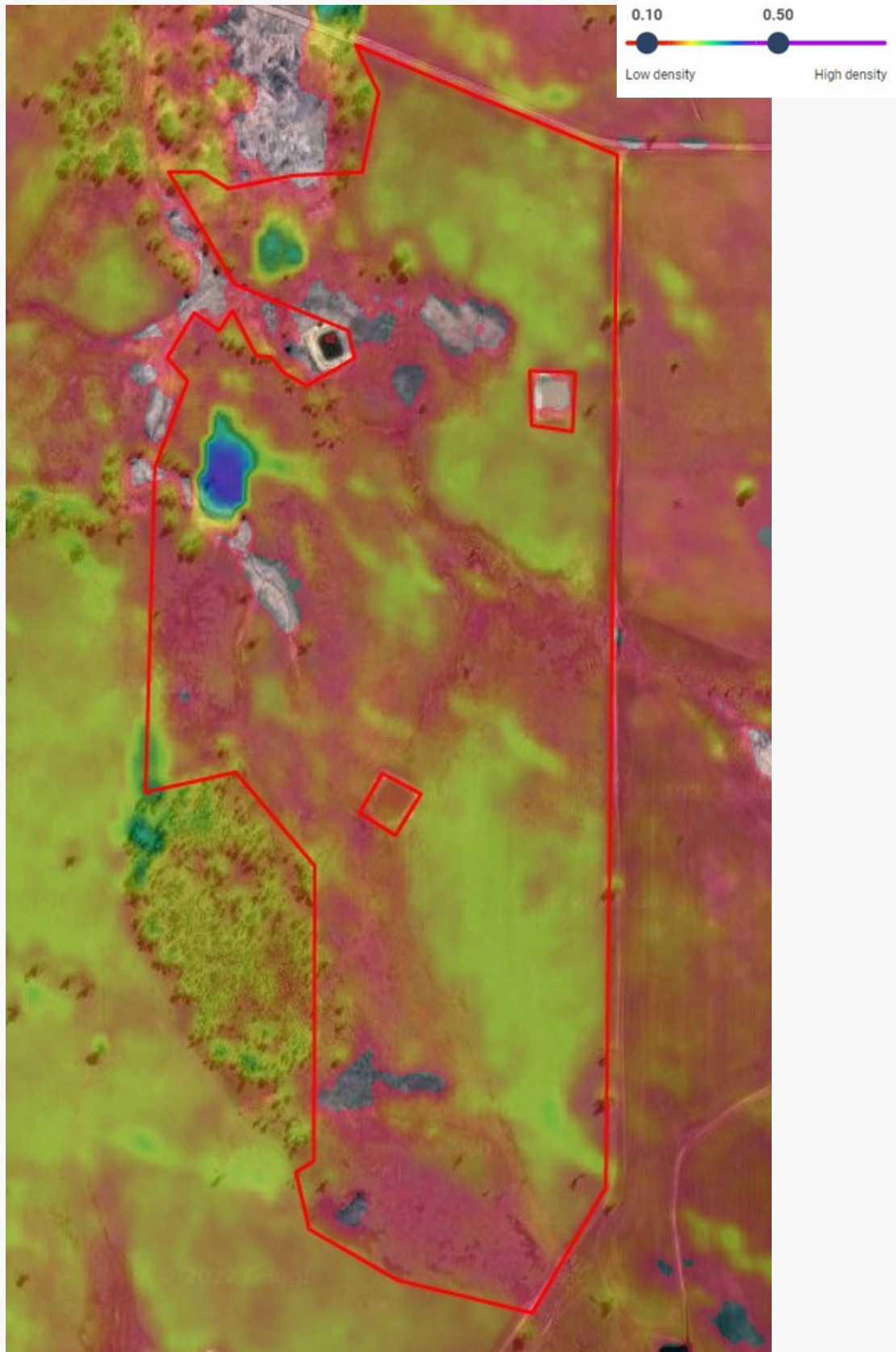
biomass/site = 121732kg DM

Please note that total biomass is not FOO and therefore does not represent total feed available to stock – see Pasture Nutrition section below for further information.

Site 1: NDVI February 2022 - March 2022

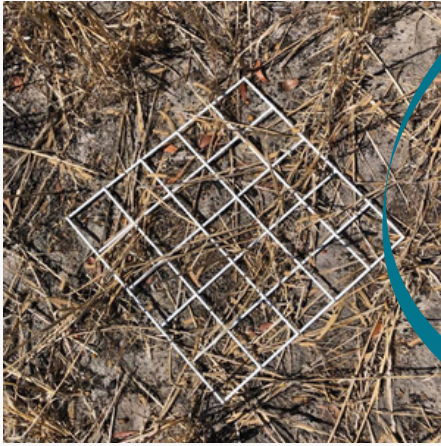


Site 2: NDVI February 2022 - March 2022



Site 1: Biomass (Rank)

1



2



3



4



5



Average Ranking of 2.1

Site 2: Biomass On Offer (Rank)

1



2



3



4



5



Average Ranking of 3.1

Pasture: Nutrition

Species Composition

Site 1	Site Composition	Kg DM/Ha
Barley Crop Stubble	53.2%	850
Unknown 1	29.2%	467
Ryegrass	11.3%	102
Barley Grass	6.4%	180

Site 2	Site Composition	Kg DM/Ha
Millet/Sorghum	36.1%	757
Barley Crop Stubble	21.9%	461
Chenopodium (fat hen)	13.7%	288
Barley Grass	10.1%	213
Ryegrass	7.2%	151
Bulrush	5.1%	106
Wireweed	3.9%	82
Unknown 2	1.0%	20
Paddy Melon	1.0%	20

Red = Non edible species (livestock)

Species Nutrition

Site 1	DMD (%)	MJME/kgDM/Ha	Crude Protein (%)
Barley Crop Stubble	35.70	3769	2.69
Rye Grass	33.84	420	1.84
Barley Grass	37.75	861	3.89

Average DMD = 35.7 % (low)

Total MJME/KGDM available for the site (40ha) = 201988

Average Crude Protein = 2.8% (inadequate)

Site 2	DMD (%)	MJME/kgDM/Ha	Crude Protein (%)
Millet/Sorghum	40.00	5953	7.29
Barley Crop Stubble	55.65	2384	4.14
Barley Grass	38.83	1059	2.97
Ryegrass	34.85	647	5.83

Average DMD = 42.3 % (low)

Total MJME/KGDM available for the site (58ha) = 582494

Average Crude Protein = 5.1% (inadequate)

Species Nutrition

Dry Matter Digestibility (DMD)

DDM (or DMD) is the portion of the dry matter in a feed that is digested by animals at a specified level of feed intake.

Metabolisable Energy (ME)

The energy value of a feed available for an animal's maintenance or growth, and can be expressed in megajoules per kilogram of dry matter (MJ/kgDM). ME is calculated from feed digestibility and estimates the total energy available to the animal.

Crude Protein (CP)

The protein in a feed is estimated from the measured nitrogen (N) content of that feed. The estimate is termed crude protein, and is expressed as a percentage.

- Weaner lambs and pregnant or lactating ewes need 15% protein
- Growing adult sheep need 12% protein
- 9% protein is needed for survival

Site Plan & Establishment

2022



Site Planning Workshop

Overview

On the 23rd of June 2022 a group of local producers and Department of Primary Industries and Regional Development (DPIRD) staff, hosted by Gillamii, spent the day visiting the MLA PDS Sites to workshop ideas for saltland pasture establishment.

This planning workshop was developed in partnership with the Department of Primary Industries and Regional Development, supported by funding through the Western Australian Government's State NRM program.

The aim of the workshop was to utilise the knowledge of Gillamii's producers, experienced in productive saltland pastures, and connect them with the new PDS producers, aided by expertise from DPIRD to discuss the best pasture mixes, site design and establishment plan, tailored to our local conditions and based on producer experiences.

The outcome of the workshop was the site plan on the following page, designed to help guide the establishment of the PDS sites in 2022. Baseline monitoring (presented in the first section of this report) was used to provide the group with additional information allowing for efficient and robust discussions out on site.



Site planning workshop at House PDS Sites



natural resource
management program



Department of
Primary Industries and
Regional Development

GOVERNMENT OF
WESTERN AUSTRALIA

Site 1 Plan & Establishment

40 hectare site including salty tributary, 20 hectares to be established with 2 shotgun saltland pasture mixes and 20ha of salty creekline to be fenced and revegetated (outside of project scope).

Site Preparation

TBC

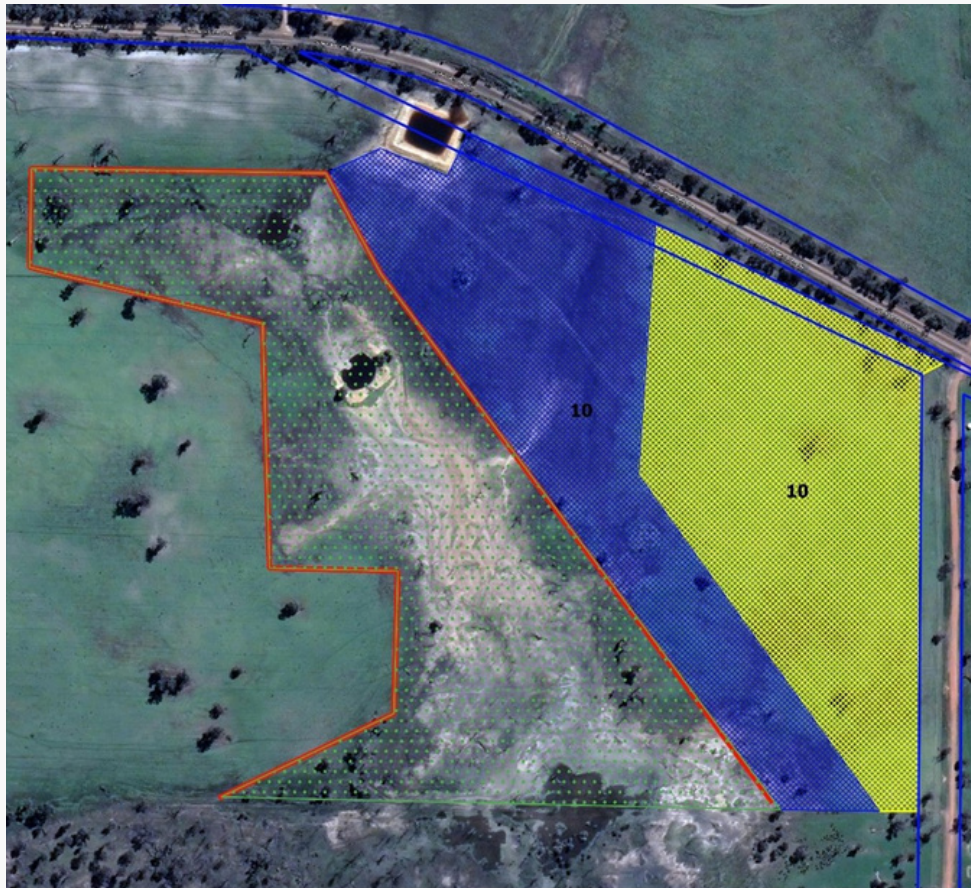
Site Seeding

TBC

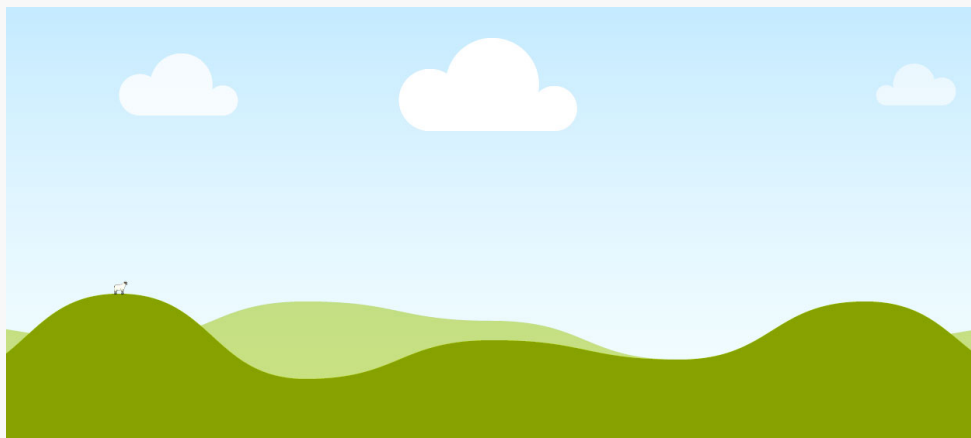
Post Seeding

TBC

Site 1 Plan & Establishment

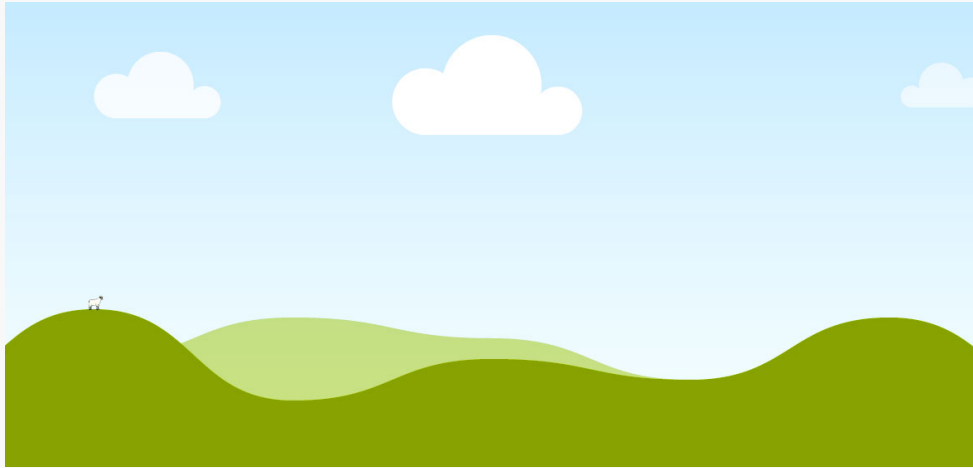


Site 1 Final Saltland Pasture Plan. Upper Shotgun Mix of 10ha (yellow) including chicory, panic, cocksfoot, tall wheat grass and clover. Lower Shotgun Mix of 10ha (blue) including tall wheat grass and puccinellia. Red lines indicate advised fencing of salty tributary and green dots represent advised native revegetation.

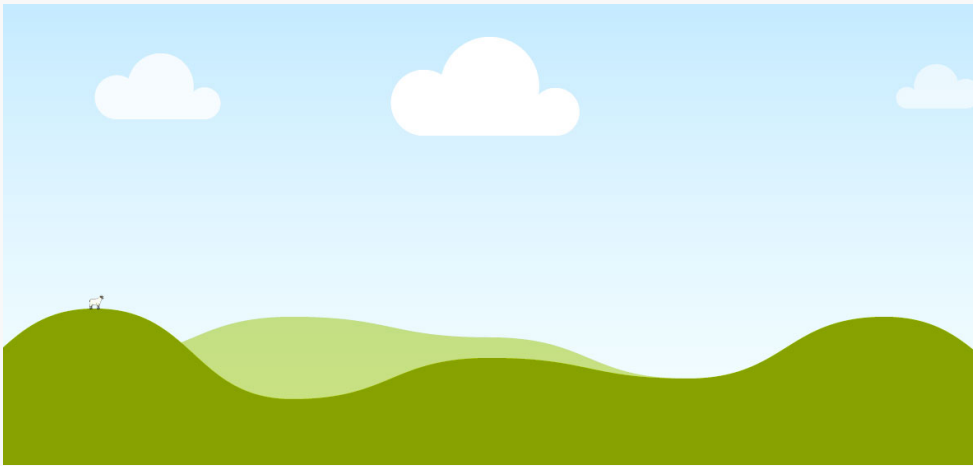


TBC

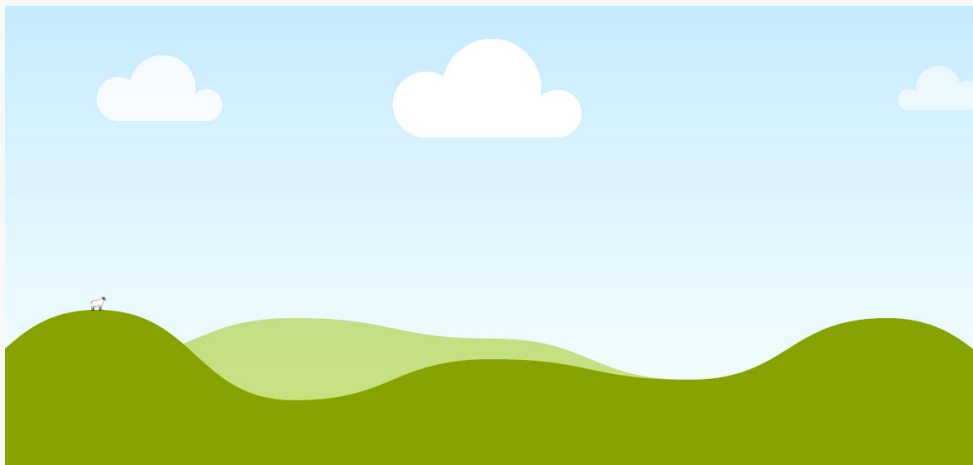
Site 1 Germination - Photos



TBC



TBC



TBC

Site 2 Plan & Establishment

90 hectares total including the Gordon River, 50 hectares to be established with saltland pastures and dual row alleys of direct seeded saltbush.

Site Preparation

TBC

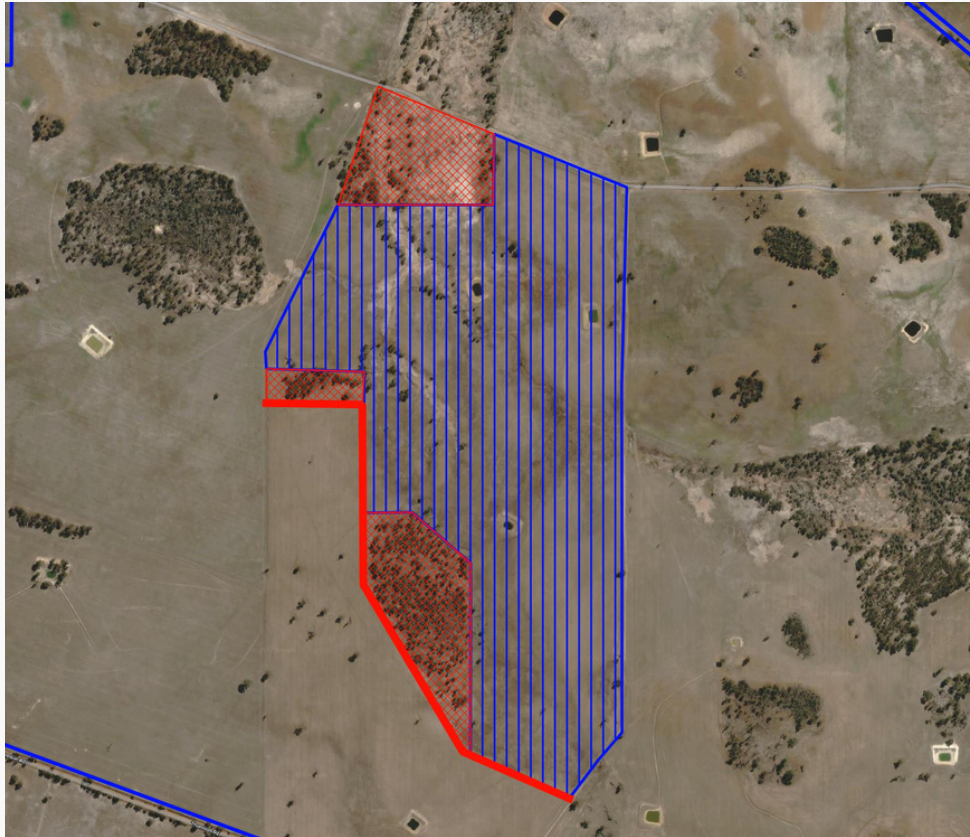
Site Seeding

TBC

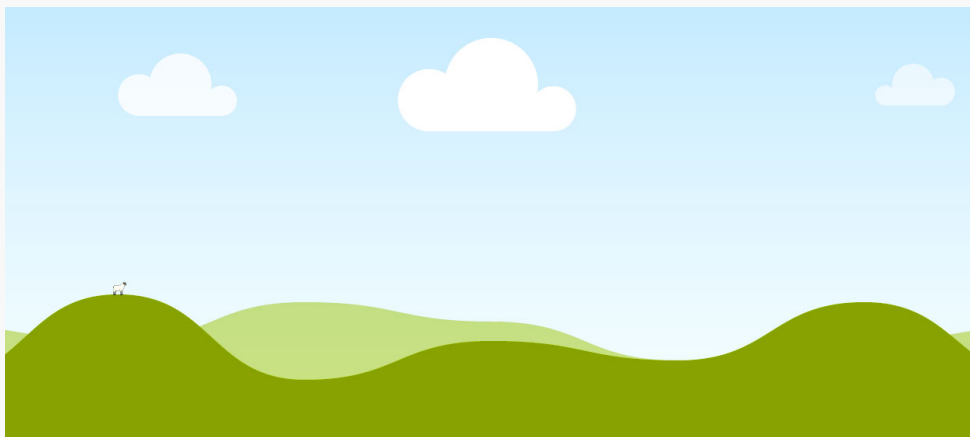
Post Seeding

TBC

Site 2 Plan & Establishment

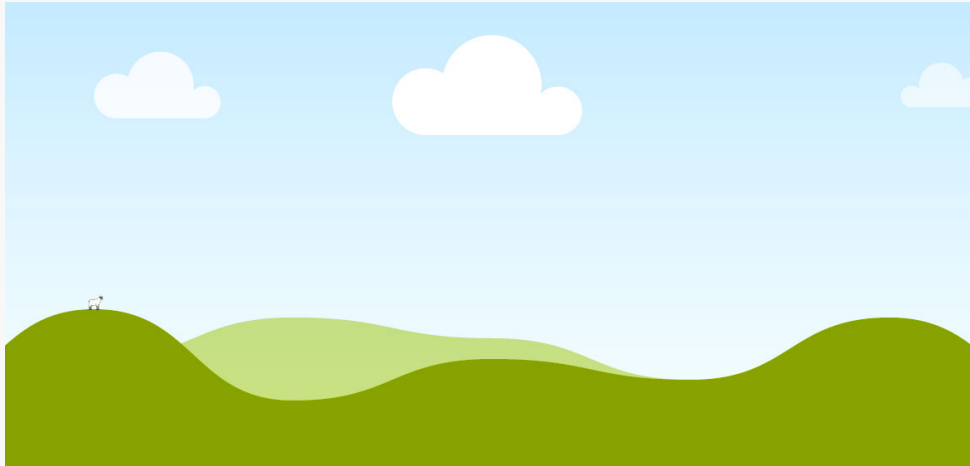


Site 2 Final Saltland Pasture Plan with a 50ha Shotgun Mix of tall wheat grass and puccinellia and dual rows of direct seeded saltbush alleys (blue).

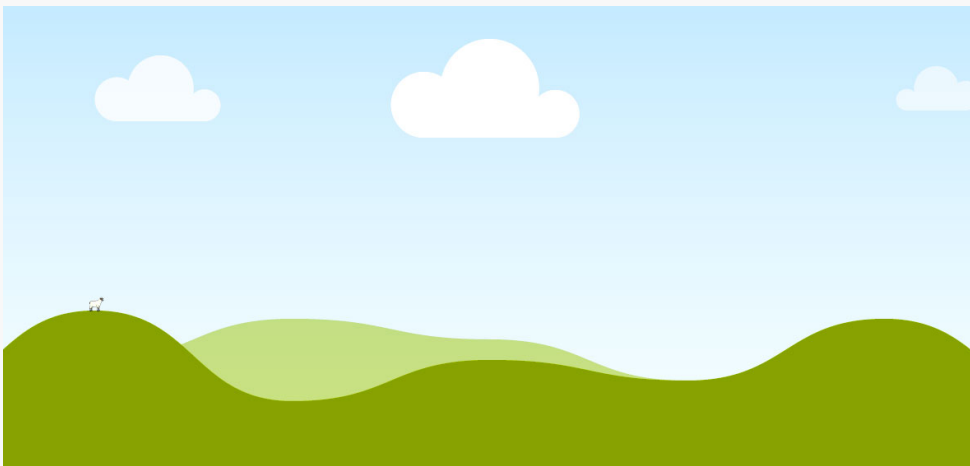


TBC

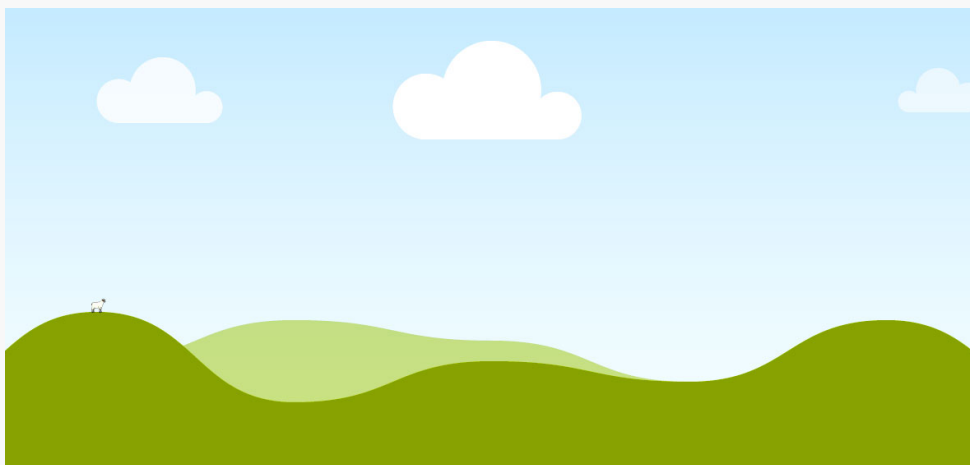
Site 2 Germination - Photos



TBC



TBC



TBC

Site Management Plan

2022 - 2027



Site 1 & 2 - TBC

Cost-Benefit Analysis

2022 - 2027



Site 1 Costings

Establishment Cost Summary - 2022

Seed	Amount	Unit Cost	Total Cost
• Commander Chicory	3kg/ha	\$18.90	\$567.00
• Howlong Cocksfoot	2kg/ha	\$16.80	\$336.00
• Megamax Panic	3kg/ha	\$23.00	\$690.00
• Tall Wheat Grass	10kg/ha	\$12.00	\$1200.00
• Balansa Clover	3kg/ha	\$5.40	\$162.00
• Puccinellia	2kg/ha	\$32.50	\$650.00

Fertiliser/Chemical

• TBC	TBC	TBC	TBC
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Operational

• TBC	TBC	TBC	TBC
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Cost/ha = \$TBC

Cost/Site = \$TBC

Maintenance Cost Summary - Annual

TBC	Amount	Unit Cost	Total Cost
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Site 1 Income

Income Summary

TBC	Amount	Unit Cost	Total Cost
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Site 2 Costings

Establishment Cost Summary - 2022

Seed	Amount	Unit Cost	Total Cost
• Tall Wheat Grass	10kg/ha	\$12.00	\$6000.00
• Puccinellia	2kg/ha	\$32.50	\$3250.00
Fertiliser/Chemical			
• TBC	TBC	TBC	TBC
Operational			
• Seeding Saltbush (including seed cost & vermiculite)	80km	\$50.00/km	\$4000.00

Cost/ha = \$TBC

Cost/Site = \$TBC

Maintenance Cost Summary - Annual

TBC	Amount	Unit Cost	Total Cost
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Site 2 Income

Income Summary

TBC	Amount	Unit Cost	Total Cost
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