

**Vegetation Management Plan for Killara being utilised for  
Biodiversity and Vegetation Offset**

Area 20ha

Owners: [REDACTED] [REDACTED] [REDACTED] Lot 1 on RP 50207

[REDACTED] [REDACTED] [REDACTED] [REDACTED]  
[REDACTED] [REDACTED]

**For Environmental Approval**

1	2011/6181	Federal Approval dated 27/09/2012
2	2013/000199	Queensland Approval dated 9/04/2013

**(Woleebee Creek to Glebe Weir Pipeline Project – SunWater Ltd)**

This vegetation management plan template may be used for either a Voluntary Declaration (VDec) under the *Vegetation Management Act 1999* (VMA), or for a statutory covenant under the *Land Act 1994* or *Land Title Act 1994*.

A VDec must be accompanied by a vegetation management plan that contains information that demonstrates how the area will be managed to conserve its high nature conservation value or an area vulnerable to land degradation.

If this template is used for a statutory covenant, then the vegetation management plan has effect through a statutory covenant entered into with the landowner and the Department of Natural Resources and Mines (DNRM), and registered under the *Land Act 1994* and *Land Title Act 1994*.

A VDec and statutory covenant must be accompanied by a management plan for a stated area (s19E (2)). The written notice required the Chief Executive to declare this vegetation management plan is binding on current and future owners and occupiers, for both VDecs and statutory covenants.

This vegetation management plan should be read in conjunction with the VDec or statutory covenant documents attached.

Except where a contrary intention appears, words and expressions used in this vegetation management plan have the same meaning as those defined in the *VMA* or *Sustainable Planning Act 2009*.

The Department strongly recommends that you obtain independent legal advice prior to entering into a VDec or a statutory covenant.

# Section 1

## 1.1 Property and ownership details

Name of Registered Owner/ Licensee/s or Trustee/s	[REDACTED]
Postal Address	[REDACTED]
Phone	[REDACTED]
Email address	[REDACTED]
Property Name	Killara
Real Property Description	Lot 1 on RP 50207
Area of Property (ha)	314 ha
Tenure Type	Freehold

## 1.2 Registered Interests

Parcel (lot and plan)	Type of Registered Interest*	Registered interest holder's name and contact details
Lot 1 RP 50207	[REDACTED]	[REDACTED]

\*Registered interests are mortgages, leases, subleases, covenants, profit à prendes, easements and building management statements, that have been registered under the *Land Act 1994* or the *Land Title Act 1994*.

## Section 2

### Description of Offset Area

<b>Size and location of Offset Area</b>	20ha. Map at Attachment 1.
<b>Landzone/geology</b>	Landzone number 4, Clay Plains
<b>Pre-clear Regional ecosystem (V6.1)</b>	11.3.1/11.4.3a
<b>Existing Vegetation</b>	Brigalow over 25 years of age with structure and composition of regional ecosystem 11.4.3
<b>Estimated age of vegetation</b>	In excess of 25 Years
<b>Known fauna species occurring on site</b>	See Wildlife Online Extract at Attachment 2.
<b>Is there a PMAV currently over all or part of the property?</b>	Yes - PMAV No 2005/100144

## Section 3

### General Management Intent

#### **MANAGEMENT INTENT**

*“To manage, enhance and protect from clearing vegetation to meet the offset policy requirements for clearing proposed by SunWater as part of the Woleebee Creek to Glebe Weir Pipeline Project.*

*A legally binding mechanism, in the form of a Voluntary Declaration under the Vegetation Management Act 1999 will protect and manage this vegetation from clearing in conjunction with this management plan. These areas will be managed to the Management Outcomes and will be certified on a regional ecosystems map, for regional ecosystems 11.4.3.”*

## Section 4

### Specific Management Outcomes

#### **MANAGEMENT OUTCOMES:**

- 1) The Declared Areas will be managed; restored and protected until:
  - a. the vegetation in the Offset Area achieves:
    - i. 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4; and
    - ii. not more than 2.5% weed cover; or
  - b. 1 October 2052,  
*whichever comes first.* The area will be managed to enhance the presence of characteristic vegetation communities; including:
    - i. Maintenance and enhancement of natural groundcover
    - ii. Management for fuel load reduction
    - iii. Control of weed species
    - iv. Maintenance and enhancement of natural tree and shrub regeneration
    - v. Exclusion of fire whenever practically possible

Habitat values associated with the areas will be maintained or enhanced and protected through management, including:

- i. Retention of habitat trees, including dead and fallen timber
    - ii. Application of fire management (only as necessary) as per Annexure B that enhances the vegetation community
    - iii. Exclusion of fire whenever practically possible
    - iv. Control of pests
- 2) The Landowner acknowledges and agrees that at the commencement of this Management Plan a Property Map of Assessable Vegetation (PMAV) will be placed over the Offset Area by DNRM. The effect of this PMAV will be to make the Offset Area Category A on a PMAV. Once the outcomes at subsection 1 above have been met, the Landowner may apply for a Landholder PMAV. This will have the effect of revoking the department placed PMAV with the Landowner PMAV which will result in changing the areas from Category A to Category B (remnant) on a PMAV.
- 3) The Management Outcomes listed at 1) a. i. and ii. are expected to occur within 3 years.

## Section 5

### Current Threats and Potential Risks to Achieving Management Outcomes

Identify any current threats and potential risks to achieving the management intent and outcomes so that actions can be taken to prevent or minimise these risks. Note that when identifying a current threat and potential risk below, a commitment is made to comply with all mandatory activities associated with that threat or risk.

<input checked="" type="checkbox"/> <b>Weed Management</b>  The area has <10% weed cover however small amounts of <i>Tree pear</i> are evident	<input checked="" type="checkbox"/> <b>Vegetation Management</b>	<input checked="" type="checkbox"/> <b>Land Management</b>
<input checked="" type="checkbox"/> <b>Fire Management</b>  Unplanned/wildfire	<input type="checkbox"/> <b>Development</b>  Please identify (e.g. material change of use (rezoning), reconfiguring a lot (subdivision))	<input checked="" type="checkbox"/> <b>Pest Animal management</b>
<input checked="" type="checkbox"/> <b>Grazing</b>  Stock will be selectively grazed for fuel reduction purposes only	<input type="checkbox"/> <b>Restoration, Regeneration &amp; Revegetation</b>	<input type="checkbox"/> <b>Drought</b>  Please identify (e.g. lack of permanent water)
<input type="checkbox"/> <b>Disturbance / Damage</b>  Please identify (e.g. activities affecting nests/burrows, or modification of banks of waterways/wetlands)	<input type="checkbox"/> <b>Illegal Access</b>  Please identify (unauthorised entry to Offset Area)	<input type="checkbox"/> <b>Other identified threats/ Potential risks</b>

The threats and risks identified in the box above must be addressed in Section 6 by identifying management actions that will be undertaken to meet management outcomes.

## Section 6

### Offset Area Requirements

This section must detail the activities that will be undertaken in the Offset Area to address the identified risks and threats, and achieve the identified management intent and outcomes.

#### 6.1 Weeds

##### 6.1.1 ☒

Minimise the introduction; establishment and spread of non-native weeds including Declared Pest Plants listed under the *Land Protection (Pest and Stock Route Management) Act 2002*. The Landowner is to use all reasonable endeavours to ensure that the Management Outcome of no more than 2.5% weed cover over the Offset Area is achieved within 3 years.

##### 6.1.2 ☒

Control existing infestations of non-native weeds including Declared Pest Plants under the *Land Protection (Pest and Stock Route Management) Act 2002* to ensure that the non-native weed cover is reduced. The Landowner is to use all reasonable endeavours to ensure that the Management Outcome of no more than 2.5% weed cover over the Offset Area. E.g. *Harrisia Cactus*, *Prickly Pear* is achieved within 3 years.

##### 6.1.3 ☒

Minimise the spread of any non-native pasture species within the Offset Area in accordance with management activities in Annexure A.

Existing weed control efforts on this property are very effective (i.e. the current levels of weed infestation are low) however to achieve the Management Outcomes, the weed control will need to be at more frequent intervals and/or more intensive. Any weed control required will be undertaken as early as practicable within the natural regeneration process throughout the Offset Area and then periodically as required to treat the weeds at the optimum time in their life cycles to control and minimise the spread of the existing weed species. The methodologies to achieve the required level of control will be consistent with those recommended as per the Queensland Primary Industries and Fisheries on the Department of Agriculture, Forestry and Fisheries website as at Annexure B.

#### 6.2 Vegetation Management

If vegetation clearing will occur in the Offset Area, it must be identified within this section. The area subject to clearing must be supported by sufficient information on why and when clearing will occur. The area should be reflected in mapping attached to the management plan.

##### 6.2.1 ☒

Under the *Sustainable Planning Act 2009*, native vegetation clearing is considered assessable (and therefore requires approval) unless the activity qualifies for an exemption. The following are the clearing exemptions for the Offset Area on Lot 1 on RP50207:

- Clearing vegetation in an area declared under the VMA, section 19F if the clearing is carried out under the management plan for the area;
- To remove or reduce imminent risk of serious personal injury or damage to infrastructure posed by vegetation;
- To maintain existing roads and fence lines.

### 6.2.2 ☒

Vegetation clearing may not be undertaken within the Offset Area unless detailed in this management plan.

## 6.3 Fire Management

### 6.3.1 ☒

Maintain firebreaks relative to the Offset Area.

Firebreaks are collocated with existing roads and fence lines on the property. Fire is not used as a tool for regrowth management on the property and the risk of wildfire is managed in cooperation with neighbours.

The Landowner within six months from the date of this management plan coming into effect will request to have the designated fire warden for the area (as qualified by the Rural Fire Service Brigade (RFSB)) to assess the suitability of the current and proposed firebreaks and, where recommended by the RFSB, will implement those recommendations within six months from receipt of those recommendations. Firebreaks are to be located outside of the Offset Area and clearing for firebreaks is not permitted within the Offset Area.

## 6.4 Pest Animal Management

### 6.4.1 ☒

Minimise the introduction of pest animals and control of existing populations of pest animals within the Offset Area in accordance with the *Land Protection (Pest and Stock Route Management) Act 2002*.

## 6.5 Watercourses

### 6.5.1 ☒

Minimise the introduction of chemicals by the use of non-residual herbicides for thinning and control of weeds by spot spraying and biological agents respectively.

# Section 7

## Monitoring

Ongoing monitoring is required to ensure the Management Plan achieves the outcomes identified. Monitoring activities must link back to the outcomes defined in Section 4, and be a measurement of how the area is progressing in achieving these outcomes, and managing the potential threats and risks to achieving these outcomes. The frequency of monitoring will depend on the management activities required for the area.

There are three parts to the monitoring process of the Offset Area, namely:

- annual photo point monitoring for the first six years and then every two years thereafter (to be undertaken by SunWater, its agents, contractors or assigns);
- BioCondition site assessments at the third year and then every seven years starting at year seven (to be undertaken by SunWater, its agents, contractors or assigns); and
- Landowner records.

Further details are provided below.

Annual photo monitoring in the Offset Area for the first six years after impact and then every two years thereafter. Locations as follows (these are the BioCondition Assessment sites 1 - 4):

BioCondition Site	Easting	Northing
1	313556	7089996
2	313603	7089981
3	313425	7089854
4	313434	7089899

**See Offset Area Map at Attachment 1**

### 7.1. Annual Photo Monitoring ☒

SunWater will undertake annual photo monitoring for the first six years and then every two years thereafter at these locations as follows:

Each site to include:

- Photo monitoring overlapping in a north, south, east and west direction; and
- Photos clearly marked with the date, location and direction (this can be hand written on the reverse of the photo).

### 7.2. BioCondition Site Assessment ☒

BioCondition site assessment is to be undertaken at the third year and then every 7 years starting at year 7 (BioCondition Monitoring Period) until:

- a) such time as a suitably qualified professional undertaking the BioCondition site assessment deems the area to have achieved:-
  - i) 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4; and
  - ii) not more than 2.5% weed cover; OR
- b) 1 October 2052,



whichever comes first. The BioCondition site assessment is to be undertaken at the points as above as per the BioCondition Assessment Methodology developed by the Qld Herbarium.

### **7.3 Landowner Records** ☒

The Landowner is to maintain records outlining the amount of rainfall that the Offset Area has had for each quarter (Spring, September to November, Summer, December to February, Autumn, March to May, Winter, June to August). Hereinafter referred to as **Landowner Records**.

The purpose of the above is to ensure that the Landowner is monitoring the fuel loads in the Offset Area and adjacent paddocks, and taking appropriate action to lower ground cover throughout the Offset Area to mitigate fire risk. The Landowner is required to provide these full records for the reporting periods to the entity/person with the responsibility for same as advised by SunWater to the Landowner in writing from time to time. This entity/person will then on forward the reports and Landowner Records to the Commonwealth Department of Environment and DNRM in accordance with the Reporting requirements outlined at Section 8 below.

If requested in writing by the Commonwealth Department of Environment and/or DNRM, the Landowner will provide to the Commonwealth Department of Environment and/or DNRM a copy of the full records for the reporting periods within 20 business days.

## Section 8

### Reporting

SunWater will prepare and provide the reports to the Commonwealth Department of Environment and DNRM (their successors or assigns), detailing the progress against the proposed management outcomes. Reports are required to be received by the Commonwealth Department of Environment and DNRM by 30 June each year for the first six years after this Management Plan comes into force and thereafter every two years until:

- a) the vegetation in the Offset Area achieves:-
  - i) 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4; and
  - ii) not more than 2.5% weed cover; or

b) 1 October 2052,

*whichever* comes first. Reports in relation to BioCondition site assessments are required to be received by the Commonwealth Department of Environment and DNRM by 30 June the third year and every seven years starting at year seven until:

- a) the vegetation in the Offset Area achieves:-
  - i) 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 for the Threatened Ecological Community; and
  - ii) not more than 2.5% weed cover; or

b) 1 October 2052,

*whichever* comes first.

DNRM will provide notice within 30 days from receipt of an application from SunWater on behalf of the Landowner or the Landowner whether it agrees that the Offset Area has achieved:-

- a) 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4; and
- b) not more than 2.5% weed cover.

DNRM may request this be extended for a further 30 days by giving written notice to SunWater on behalf of the Landowner or the Landowner which will be automatically granted upon the SunWater on behalf of Landowner or the Landowner receiving that notice. Management, monitoring and reporting will cease on a site:

- a) when DNRM acknowledges to SunWater on behalf of the Landowner or the Landowner in writing that the vegetation in the Offset Area has achieved:-
  - i) 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4; and
  - ii) not more than 2.5% weed cover; or

b) on 1 October 2052,

*whichever* comes first.

***The yearly/two yearly reports should contain, as a minimum:***

- Name and contact details of Landowner. If someone other than the Landowner is undertaking management activities (i.e. a contractor) then their details must also be provided;
- eLVAS case number;
- Lot on Plan property description and postal address;
- Where SunWater on behalf of the Landowner is proposing that the Offset Area has achieved 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover OR the Offset Area has been managed until 1 October 2052 (whichever comes first) and the report is being submitted as the final report, SunWater on behalf of the Landowner must provide evidence of the relevant fact.
- Annual/two yearly photo monitoring.
- Annexure A- Management Activities Schedule with the progress section completed.
- An overview of the progress of the Offset Area in achieving the management outcomes and how any risks or threats have impacted on the area.
- An indication of any risks or potential threats that have become apparent to the Offset Area since the development of the management plan, and activities to be undertaken to manage these threats and/or risks.
- The Landowner Records.

***The reports to be conducted after each BioCondition Monitoring Period (the third year and then every seven years starting at year seven) should contain as a minimum all of the information in the annual reports and:-***

Vegetation data collected from transects conducted, outlining species present, average canopy cover and height of vegetation. All data should be correctly labelled with date, location, GPS points for end points of transect and any other observations.

## Section 9 – Intentionally Deleted (State Forest Products)

### Section 10

#### Supporting Documentation

1. The areas which the management plan applies to is clearly identified on suitable mapping/imagery and attached to the management plan – *map at Attachment 1.*
2. Areas requiring specific management attention i.e. weeds should be identified on suitable imagery, such as aerial photography and attached to the management plan – *not applicable.*
3. Management Activities: Schedule 2 – Annexure A, completed with proposals to achieve each of the identified management outcomes.
4. Fire Management Guidelines (REDD): Schedule 2 – B.1 Annexure B
5. Weed Fact sheets (DAFF): Schedule 2 – B.2 Annexure B
6. Attachment 1: Offset Map
7. Attachment 2: Wildlife Online Extract
8. Attachment 3: Offset Boundary GPS Points
9. Attachment 4: Biocondition Scores

Section 11

Consent Agreement

SIGNED by the (enter name of the delegate of the Chief Executive Officer and the relevant delegation) to indicate approval of the Vegetation Management Plan.

Name: [REDACTED]

Position: MANAGED

Signature: [REDACTED]

Date: 8/5/14

SIGNED by [REDACTED] being the current owners of the abovementioned property to indicate that the terms of this Offset Area Management Plan have been read understood and accepted.

The landowner agrees that any non-compliance with the requirements of this Management Plan shall constitute a breach of the terms and conditions of this Management Plan entered into.

The landowner intends that their obligations under this Management Plan will take effect only upon the making of a declaration under section 19F of the Vegetation Management Act 1999 in the event of their acceptance of a letter of offer from DNRM in relation to such a declaration.

(Tick whichever is applicable)

I have obtained independent legal advice on my obligations under this plan.

OR

I have not obtained independent legal advice on my obligations under this plan and accept the risks with doing so.

Name: [REDACTED]

Signature: [REDACTED]

Date: 8/5/14

Name: [REDACTED]

Signature: [REDACTED]

Date: 8/05/14

Name: [REDACTED]

Signature: [REDACTED]

Date: 8-5-14

Name: [REDACTED]

Signature: [REDACTED]

Date: 8/5/14

### Annexure A – Management Activities Schedule

The following management activities will be undertaken in the timeframes outlined. These activities are to be consistent with identified risks and potential threats in Section 5. More management activities should be added if required.

To commence upon Certification of Voluntary Declaration PMAV.

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
<b>Offset Area:</b> Lot 1 on RP 50207							
<b>Weed Management</b>	Increase the existing weed monitoring and control program including the use of non-residual herbicides for thinning and control of weeds which will be applied by spot spraying and biological agents respectively. Biological control agents will be used for management of the Tree Pear to ensure that the weed cover reaches no more than 2.5% cover of the total Offset Area within 3 years.	Biological Control of Tree Pear throughout property to ensure that the weed cover reaches no more than 2.5% cover of the total Offset Area within 3 years.	Maintained for the life of this Management Plan	Landowner	Written records of the landowner as per the Landowner Records below.  Annual photo monitoring in all Offset Areas for the first six years after the commencement of operations and subsequently every two years until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as		[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
					<p>contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. BioCondition monitoring at the third year then every seven years starting at year seven until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. This monitoring is to be undertaken by</p>		

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
					SunWater, its agents, contractors or assigns.		
<b>Fire Management</b>	Maintain fire breaks to enhance biodiversity and reduce fuel loads. All practical measures are maintained to exclude fire from the Offset Area by the maintenance of the road and firebreaks on a biennial (two yearly) basis if required.	Throughout property	Maintained for the life of this Management Plan	Landowner in conjunction with neighbours	Written records of the Landowner.  Annual photo monitoring in all Offset Areas for the first six years after the commencement of operations and subsequently every two years until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed		██████████ ██████████ ██████████ ██████████ ██████████



Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
					<p>cover or 1 October 2052, whichever comes first. BioCondition monitoring at the third year then every seven years starting at year seven until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. This monitoring is to be undertaken by SunWater, its agents, contractors or assigns.</p>		

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
<b>Biodiversity Management</b>	Allow the accumulation of fallen timber/debris and the establishment of natural undergrowth	Offset Area	Maintained for the life of this Management Plan	Landowner	<p>Written records of the landowner as per the Landowner Records below.</p> <p>Annual photo monitoring in all Offset Areas for the first six years after the commencement of operations and subsequently every two years until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. BioCondition</p>		N/A

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
					<p>monitoring at the third year then every seven years starting at year seven until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. This monitoring is to be undertaken by SunWater, its agents, contractors or assigns.</p>		
<b>Restricted Access</b>	The Landowner restricts access to only those invitees, employees and subcontractors that are	Offset Area	Maintained for the life of this Management Plan	Landowner	N/A		■

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
	permitted on the entire property.						
<b>Landowner Records</b>	The Landowner is to maintain records outlining the following:- 1. The amount of rainfall that the Offset Area has had for each quarter (Spring, September to November, Summer, December to February, Autumn, March to May, Winter, June to August).	Offset Area	Maintained for the life of this Management Plan	Landowner	The Landowner is required to provide these full records for the reporting periods to the entity/person with the responsibility for same as advised by SunWater to the Landowner in writing from time to time. This entity/person will then on forward the reports and Landowner Records to the Commonwealth Department of Environment and DNRM in accordance with the Reporting requirements outlined at Section 8.	As detailed in Section 7	■
<b>Monitoring</b>	Refer to Section 7 of this	Offset Area	Maintained for the	SunWater, its	Annual photo		

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
and Reporting as required by Section 7 and 8	Management Plan		life of this Management Plan	agents, subcontractors or assigns	monitoring in all Offset Areas for the first six years after the commencement of operations and subsequently every two years until the Offset Area achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. BioCondition monitoring at the third year then every seven years starting at year seven until the Offset Area		

Management activity	How the activity will be carried out	Where the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Progress	Comments	Estimated Costs to be borne by the Registered Owner
					achieves 70% of the bench mark scores for the Threatened Ecological Community as contained at Attachment 4 and not more than 2.5% weed cover or 1 October 2052, whichever comes first. This monitoring to be undertaken by SunWater, its agents, contractors or assigns.		

## Annexure B – Supporting documentation

### B.1 - Fire Management Guidelines from REDD

The information provided below describes best practice burn intervals to manage fuel loads and/or native biodiversity, but that the intent in terms of fire management for the Offset Area is to exclude fire and, instead, rely on grazing to reduce fuel loads

#### 11.4.3

**STRATEGY:** Maintain fire management of surrounding country so that wildfires will be very limited in extent. Frequent fire at the edge of this RE keeps fuel loads low. Protection from fire is necessary.

**ISSUES:** Casuarina cristata is fire sensitive, although germination can be good in bare areas. Brigalow is soft-seeded, so germination is not promoted by fire. Buffel grass invasion will increase risk from fire. High intensity fires will cause damage to over storey. Grazing may be an option for reducing fuel loads where exotic grass such as buffel has invaded.

# Prickly pear

*Opuntia*, *Nopalea* and *Acanthocereus* spp.



The introduction and spread of prickly pear into Queensland and New South Wales is one of the greatest environmental invasions of modern times.

Prickly pear was introduced into pastoral districts in the 1840s. By 1900, over 4 million hectares in Queensland and New South Wales was infested by prickly pear. By 1925, the pest had invaded over 24 million hectares. Control costs were prohibitive and the only effective herbicide at the time was hazardous. This resulted in landholders abandoning large tracts of land.

Research for biological control agents commenced in 1912, and in 1914 cochineal insects were released to control one of the minor prickly pear species. Control of this minor prickly pear species by these introduced insects occurred within a few years.

The success of the cochineal insects led to renewed efforts against other types of prickly pear in the 1920s. These efforts resulted in the control of the major pest prickly pear by the moth *Cactoblastis cactorum*; by the mid-1930s, prickly pear was no longer a major problem.

Several prickly pear species have since remained as minor weeds.





## Declaration details

*O. ficus-indica* is not declared. *O. stricta*, *O. aurantiaca*, *O. monacantha*, *O. tomentosa* and *O. streptacantha* species are Class 2 declared pest plants and all other species are declared Class 1.

## Description and general information

'Prickly pear' is a general term used to describe some plants of the Cactaceae family. The term includes species of *Opuntia*, *Nopalea* and *Acanthocereus*. All of these plants originate in the Americas. The term 'prickly pear' also relates to the fruit, which is often spiny and pear-shaped. Plants are normally leafless succulent shrubs. Stems are divided into segments (pads or joints) that are flat and often incorrectly called leaves.

Young shoots have true leaves resembling small fleshy scales that fall off as the shoot matures.

Flowers are large, normally seen during spring and can be yellow, orange, red, pink, purple or white depending on the species. Prickly pear fruits vary between species and can be red, purple, orange, yellow or green.

Areoles (spots with clusters of spines) are found on both the pads (joints, segments) and fruit. In addition to spines, areoles often have clusters of sharp bristles (glochids) and tufts of fibre ('wool'). Each areole contains a growing point that can produce roots or shoots.

## Life cycle

Prickly pear species have several features that enable them to compete and become pests.

Prickly pear species are drought resistant because of their succulent nature, their lack of leaves and their thick, tough skins. These features result in plants that use the majority of their internal tissues for water storage and their outer parts to reduce water loss and damage by grazing and browsing animals. They can remain vigorous in hot, dry conditions that cause most other plants to lose vigour or even die. Some species develop underground bulbs that enable the plant to resist fire and mechanical damage.

Prickly pear species reproduce both sexually and asexually. Birds and other animals readily eat the many-seeded fruits and deposit seeds in their droppings. The seeds have hard seed coats that allow them to survive heat and lack of water. Asexual reproduction (cloning) of prickly pear occurs when pads (joints, segments) or fruits located on the ground take root and produce shoots. Animals and floods move broken pads long distances. These pads can survive long periods of drought before weather conditions allow them to set roots.

## Habitat and distribution

Prickly pear species considered pests in Queensland are:

- Common pest pear *Opuntia stricta* var. *stricta* (= *O. inermis*)
- Spiny pest pear *Opuntia stricta* var. *dillenii* (= *O. stricta*)
- Tiger pear *Opuntia aurantiaca*
- Drooping tree pear *Opuntia vulgaris* (= *O. monacantha*)
- Velvety tree pear *Opuntia tomentosa*
- Westwood pear *Opuntia streptacantha*
- Devil's rope pear *Opuntia imbricata*
- Coral cactus *Opuntia cylindrica*
- Snake cactus *Opuntia fulgida* × *O. imbricata*
- Sword pear *Acanthocereus pentagonus*

### Common pest pear (*Opuntia stricta* var. *stricta*)

This bushy, spreading plant grows up to 1.5 m high and forms large clumps. The stems are divided into oval, blue-green spineless pads 20 cm long and 10 cm wide. Areoles are in diagonal lines along the pads 2.5 cm to 5 cm apart and have a cushion of brown wool containing bristles but usually no spines. When spines occur they are stout, yellow and up to 4 cm long.

Common pest pear produces flowers that are 7.5 cm wide, bright lemon yellow and green at the base. The fruit is oval-shaped, has a deep cavity on one end and tapers at the other. It is purple, 6 cm long and 3 cm wide, with carmine-coloured (dark red) seeds and a fleshy pulp.

Common pest pear is found as small to large clumps of varying density. The clumps are usually broken up by the action of *Cactoblastis cactorum*. Common pest pear occurs throughout most of central and southern Queensland and is still spreading westwards. It is often found along beaches and on offshore islands.

### Spiny pest pear (*Opuntia stricta* var. *dillenii*)

This succulent shrub grows 1–2 m high. The stems are hairless and bluish-green or dull green. The stems are divided into pads up to 30 cm long, 15 cm wide and 1–2 cm thick. The areoles have tufts of short and finely barbed bristles accompanied by one or two yellow spines between 2 cm and 4 cm long. Small scale-like leaves are found on areoles of immature pads.

Spiny pest pear produces 6–8 cm wide flowers that are lemon yellow with green or pink markings on the back. The fruit is pear-shaped and about 4–6 cm long with a red-purple skin. The areoles located on fruits have fine, barbed bristles. The red flesh of fruits contains rounded seeds that are yellow or pale brown.



While this prickly pear once formed large-scale dense infestations, it is now found as small clumps or as scattered plants. These clumps are usually broken by the action of *Cactoblastis cactorum*. It is found in eastern central Queensland, the Burnett district, the Darling Downs and south-eastern Queensland.

### **Tiger pear (*Opuntia aurantiaca*)**

This succulent low shrub with underground tubers usually grows 30–60 cm high. The stems are divided into very spiny, slightly flattened pads that are 1–30 cm long and 1–5 cm wide. The stems are dark green to purple and red in colour. The areoles have 3–7 brown barbed spines up to 4 cm long surrounded by tufts of short, fine bristles. The pads detach easily and are transported on the skins of animals. Small and scale-like leaves are found on areoles of immature pads.

Tiger pear produces 6 cm wide yellow flowers. The rarely formed fruits are pear-shaped and about 2.5 cm long. When ripe, they are red with purple markings.

Dense tiger pear forms an impenetrable spiny groundcover and is prevalent in southern Queensland but extends into central Queensland.

### **Drooping tree pear (*Opuntia vulgaris*)**

This erect succulent shrub with fibrous roots grows up to 5 m high but is usually 2–3 m high. The branches are divided into glossy light green pads up to 45 cm long, 15 cm wide and 1.5 cm thick. The dark grey trunk grows up to 25 cm in diameter. Drooping tree pear gets its name because the upper segments tend to droop. The areoles on the older pads have 1–5 sharp spines about 5 cm long.

Small, scale-like leaves are found on areoles of very young pads and are quickly shed as the pad grows. Drooping tree pear produces yellow flowers that are 6 cm wide and have red markings on the back. The fruit is pear-shaped and 4–7 cm long with a green skin. The flesh of the fruit is red and pulpy and contains round seeds that are yellow or pale brown. The fruits have areoles with tufts of fine, barbed bristles.

Dense thickets result when drooping tree pear is allowed to grow freely. Small scattered infestations occur in the south-east corner of Queensland and in coastal northern Queensland.

### **Velvety tree pear (*Opuntia tomentosa*)**

This tree-like plant forms a central woody trunk over 40 cm wide and grows up to 5 m high. The stems are divided into oblong pads that are dull green and velvety to touch due to the dense covering of short fine hairs. The pads are 15–35 cm long, 8–12 cm wide and 1.5–2 cm thick.

Young plants have 2–4 white or pale yellow spines located in the areoles with one spine reaching a length of 2.5 cm. The areoles usually become spineless as the plant matures. A more spiny variety does exist and has more than 50 spines in each areole on the trunk.

The flowers are a deep orange. The fruit is egg-shaped, about 5 cm long and 3 cm wide, and dull red. The top of the fruit is saucer-shaped with circular lines that meet in the centre and give the fruit a shrivelled appearance. The fruit produces many seeds within a reddish pulp.

Velvety tree pear is found predominantly throughout the brigalow belt of Queensland and is still extending its range. It is occasionally found as dense shrubs, but more usually as small clumps of trees or as trees scattered over the landscape.

### **Westwood pear or Cardona pear (*Opuntia streptacantha*)**

Westwood pear is a shrub-like or tree-like plant that forms clumps by branching from the base and is usually 2–4 m high. The stems are divided into almost circular dull green pads, 25–30 cm long and 15–20 cm wide. The areoles have white spines that vary in number and size when the plant matures.

Young pads have 2–5 white spines 1–2 cm long, accompanied by two hair-like spines 0.5 cm long in the lower part of the areole. Spines increase in number (up to 20) and size (5 cm long) in areoles along the trunk of the plant.

The flowers are yellow and fruits are barrel-shaped, 6 cm long and 5 cm wide with a flat top. The fruit has a purple skin and a rind that is 1 cm thick. Fruits contain red seeds buried in a dark red (carmine) pulp.

Westwood pear is found in eastern central Queensland as small clumps or as plants scattered over the landscape.

### **Devil's rope pear (*Opuntia imbricata*)**

This open-branching shrub grows 1.5–3 m high. The stems are divided into hairless, dull green, cylindrical pads that vary up to 37 cm in length and are 3.5–5 cm thick. The pads have a series of short raised ridges that give them a twined, rope-like appearance. The areoles are found on these ridges and produce 3–11 pale yellow or white spines, with the longest being 2.5 cm long. Papery sheaths cover these spines.

The flowers are a dull, red-purple colour and found at the ends of pads. The yellow fruit resembles a small, 5 cm wide custard apple and has a spineless areole at the top.

Devil's rope pear occurs in Queensland as a small infestation at Gladfield.



### Coral cactus (*Opuntia cylindrica*)

Coral cactus grows as a branching shrub 1–1.5 m high. The stems of coral cactus are divided into green cylinder-like pads that are fist-like and obtuse at their apex. Mature coral cactus pads widen, become distorted and wavy, and resemble a piece of coral. Areoles along the pads have a number of short white spines.

Coral cactus produces small (1–2 mm wide) scarlet flowers. The fruit is yellow-green and 2–5 cm wide.

Coral cactus has been located near Mount Isa, Longreach, Wyandra, Eulo and Hungerford but its potential spread includes all of far western Queensland.

### Snake cactus (*Opuntia fulgida* × *O. imbricata*)

This open-branching shrub grows 1–2 m high. The stems are divided into hairless, dull green, cylindrical pads that vary up to 20 cm in length and are 3.5–5 cm thick. The pads have a series of short raised ridges that give them a twined rope-like appearance. The areoles are found on the bottom of these ridges and produce 5–10 pale yellow to brown spines, with the longest being 3 cm long.

The flowers are light red to dark rose and commonly 5–7 cm wide. Snake cactus produces fruit that is yellow and 2–5 cm wide.

Snake cactus has been located near Longreach but its potential spread includes all of north-western Queensland.

### Sword pear (*Acanthocereus pentagonus*)

This elongated branching shrub grows in clumps up to 4 m high. The stems are erect, up to 1.5 m long, 3–8 cm wide and divided into many joints. Sword pear stems are three-angled, four-angled or five-angled and resemble star-picket posts. The areoles are found on the edges of the joints and produce many white spines 1–4 cm long.

The flowers are white, funnel-shaped and 14–20 cm long. The flowers open at night between spring and summer. Sword pear produces bright red sphere-shaped fruits that are 5 cm in diameter. The fruit has a red pulp and black seeds.

Sword pear occurs in the Gogango area west of Rockhampton.

## Control

### Biological control

Investigations into biological control agents against prickly pear began in 1912. Over 150 insect species were studied throughout the world, with 52 species selected for transport to Queensland. Following intensive host specificity testing, 18 insects and one mite were released in Queensland. Nine insects and the mite remain established in Queensland. These species are:

- *Cactoblastis cactorum*, a stem-boring moth
- *Dactylopius ceylonicus*, a cochineal mealy bug
- *Dactylopius opuntiae*, a cochineal mealy bug
- *Dactylopius confusus*, a cochineal mealy bug
- *Dactylopius tomentosus*, a cochineal mealy bug
- *Dactylopius austrinus*, a cochineal mealy bug
- *Chelinidea tabulata*, a cell-sucking bug
- *Tucumania tapiacola*, a stem-boring moth
- *Archlagocheirus funestus*, a stem-boring beetle
- *Tetranychus opuntiae*, prickly pear red spider mite.

These biological control agents continue to keep several prickly pear species under control. It is important to remember not all the agents attack all species.

The most successful of these agents were the moth *Cactoblastis cactorum* and five cochineal mealy bugs—*Dactylopius ceylonicus*, *D. opuntiae*, *D. confusus*, *D. tomentosus* and *D. austrinus*. The other agents are still around but not in sufficient numbers to provide control.

### *Cactoblastis cactorum* (cactoblastis moth)

Larvae of this moth were introduced from Argentina in 1925. *Cactoblastis* proved to be the most effective agent against the common and spiny pest pears, destroying massive infestations in Australia. Larvae keeps these two pest pears controlled to an acceptable level most of the time, although it is less effective in some coastal and far western areas.

The larvae collectively eat out the contents of the pads, leaving empty pad skins and piles of mushy droppings. The orange and black larvae are occasionally observed on the outsides of pads. *Cactoblastis* also attacks most types of prickly pear but is not effective against them.

### *Dactylopius* spp. (cochineal insects)

All female cochineal insects are small, sessile mealy bugs that spend their adult lives permanently attached to their host plants sucking plant juices. They are covered by a fine, white, waxy secretion and when crushed yield a carmine colouring. The adult males are small, free-flying insects that do not feed.

### *Dactylopius ceylonicus* (monacantha cochineal, Argentine cochineal)

This South American mealy bug was released in 1914 and 1915 to control drooping tree pear. It destroyed the dense infestations existing at that time. It is specific to drooping tree pear and today remains the only effective biological control agent for drooping tree pear. This insect needs to be distributed manually.



### ***Dactylopius opuntiae* (prickly pear cochineal)**

This mealy bug was introduced from Mexico and southern United States between 1920 and 1922. It is effective against common pest pear, spiny pest pear, velvety tree pear and Westwood pear and remains the main biological control agent against velvety tree pear and Westwood pear. This insect spreads slowly in nature and can be assisted manually.

### ***Dactylopius confusus* (prickly pear cochineal)**

This mealy bug was introduced from Florida and released in 1933 against spiny pest pear. It remains effective against spiny pest pear in central Queensland but spreads slowly. This insect can be spread manually.

### ***Dactylopius tomentosus* (devil's rope pear cochineal)**

This mealy bug was introduced from southern United States in 1925 and 1926. It is effective against devil's rope pear but works slowly.

### ***Dactylopius austrinus* (tiger pear cochineal)**

This mealy bug was introduced from Argentina in 1932. It is specific to and effective against tiger pear. It rapidly reduces tiger pear populations but dies out in a paddock after the destruction of tiger pear. It needs to be reintroduced after tiger pear regrows.

### ***Chelinidea tabulata* (prickly pear bug)**

This plant-sucking bug was introduced from Texas in 1921. It was effective against dense common pest pear before *Cactoblastis cactorum* was but is now relatively ineffective. This insect also attacks most other prickly pears. The adult is a pale brown bug up to 20 mm long that leaves characteristic round bleached spots on the surface of the cactus.

### ***Tucumania tapiacola* (prickly pear moth-borer)**

This moth was introduced from Argentina in 1934 against tiger pear. Its solitary larvae feed internally and eat out tiger pear pads with limited effect. It has been observed attacking common pest pear and harrisia cactus.

### ***Archlagocheirus funestus* (tree pear beetle)**

This stem-boring beetle was introduced from Mexico in 1935. It was effective against velvety tree pear and Westwood pear but has become rare since the dense stands of these prickly pears have gone.

### ***Tetranychus opuntiae* (prickly pear spider mite)**

This mite was introduced from southern United States and Mexico in 1922. It was effective against common pest pear but is now rare and difficult to find. It causes distinctive scar tissue formation around areoles.

## **Distributing biological control agents**

### **Cactoblastis**

Cactoblastis can be spread manually by distributing eggs or larvae. Cactoblastis moths lay chains of eggs (eggsticks) on prickly pear pads from January to February and from September to November. The eggsticks are distinguished from spines by their curved appearance.

1. Collect the fragile eggsticks carefully.
2. Glue single eggsticks to small pieces of paper using a starch-based adhesive.
3. Pin the egg papers to prickly pear pads. (Eggs take up to one month to hatch.)
4. Collect pads or plants in which larvae are obviously still active.
5. At a release site place all the collected plant material in a small part of the infestation.
6. Subsequent generations of moths will disperse through the infestation.
7. Follow up the biological control with either herbicide or mechanical treatment.

### **Cochineals**

Because several cochineal insects affect some prickly pears and not others, it is essential to know what prickly pear you wish to control.

1. Identify your prickly pear type.
2. Find the same prickly pear type which is being attacked by a cochineal.
3. Collect pads of the prickly pear with the insects.
4. Place affected pads against unaffected prickly pears at the release site.
5. Follow up the biological control with either herbicide or mechanical treatment.

### **Tiger pear cochineal**

Tiger pear cochineal is easy to multiply quickly after collection.

1. Carefully collect a reasonable quantity of unaffected tiger pear in a container (box or bucket).
2. Place a few pieces of cochineal-affected tiger pear into the same container.
3. Cover the container with a cloth and store under cover for a few weeks.
4. Check the cactus occasionally.
5. When most of the tiger pear in the container has cochineal, it is ready to distribute.
6. At the release site place affected pads against unaffected prickly pears.
7. Follow up the biological control with either herbicide or mechanical treatment.

Note: It is best to multiply tiger pear cochineal before release.



## Mechanical control

Mechanical control using machinery is difficult because prickly pear pads can easily re-establish. A hot fire is an effective control method for dense prickly pear infestations. Before burning, consult Biosecurity Queensland to see if this practice is suitable for your pasture and land management practices.

## Herbicide control

Herbicide options available for the control of prickly pears in Queensland are shown in Table 1.

Landholders and contractors should check if the property is in a hazardous area as defined in the *Agricultural Chemicals Distribution Control Act 1966* prior to spraying.

## Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland (call 13 25 23 or visit our website at [www.biosecurity.qld.gov.au](http://www.biosecurity.qld.gov.au)).

**Table 1** Herbicides registered for the control of prickly pears

Pest name	Situation	Herbicide	Rate	Method
Common prickly pear	Agricultural land—non-crop	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel	
	Forests—timber production	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel 3 L/100 L or 1 L/75 L diesel	Basal bark/cut stump Foliar
	Land—commercial/industrial/public	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel 3 L/100 L or 1 L/75 L diesel	Basal bark/cut stump Foliar
	Land—non-agricultural	Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel	Basal bark/cut stump
	Land—rights of way	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel 3 L/100 L or 1 L/75 L diesel	Basal bark/cut stump Foliar
	Pastures	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	3 L/100 L or 0.8 L/60 L diesel	Basal bark/cut stump
			3 L/100 L or 1 L/75 L diesel	Foliar
	Coral cactus	Agricultural land—non-crop	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel
Land—commercial/industrial		Triclopyr (240 g/L) + picloram (120 g/L)	See permit PER10550 (expires 30 June 2013)	
		Triclopyr (300 g/L) + picloram (100 g/L)		
		Triclopyr (300 g/L) + picloram (100 g/L) + aminopyralid (8 g/L)	See permit PER0532 (expires 30 June 2013)	
Forests—timber production	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump	

Pest name	Situation	Herbicide	Rate	Method
Drooping tree pear	Land—non-agricultural	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	0.8 L/60 L diesel	Basal bark/cut stump
	Land—rights of way	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
		Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
		Triclopyr (600 g/L)	0.8 L/60 L diesel 1 L/75 L diesel	Basal bark/cut stump Foliar
	Pastures	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
		Triclopyr (300 g/L) + picloram (100 g/L)	0.5 L/100 L	
Triclopyr (600 g/L)		0.8 L/60 L diesel 1 L/75 L diesel	Basal bark/cut stump Foliar	
Velvety tree pear	Agricultural land—non-crop	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
	Forests—timber production	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
	Land—around buildings	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
Velvety tree pear	Land—commercial/industrial/public	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
		Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
	Land—non-agricultural	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
	Land—rights of way	Amitrole (250 g/L) + ammonium thiocyanate (220 g/L)	1 mL/3 cm (inject) or 1 L/25 L (small plants/regrowth)	
		Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump
Pastures	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump	
Spiny pest pear Westwood pear Devil's rope pear Snake cactus	Agricultural land—non-crop Forests—timber production Land—commercial/industrial/public Land—rights of way Pastures	Triclopyr (240 g/L) + picloram (120 g/L)	1 L/60 L diesel	Basal bark/cut stump

Fact sheets are available from Department of Agriculture, Fisheries and Forestry (DAFF) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at [www.biosecurity.qld.gov.au](http://www.biosecurity.qld.gov.au) to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should be used in accordance with the restrictions (federal and state legislation, and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, DAFF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

C51027 12/12



# Attachment 1

## Offset Map



### Legend

- ★ Killara Bioconditions
  - ▭ Killara Offset
  - ▭ Existing Offset
- RE**
- ▭ E-dom
  - ▭ E-subdom
  - ▭ NotOfC
  - ▭ O-dom
  - ▭ O-subdom
  - ▭ non-rem

150 75 0 150 Meters



Projection: UTM (MGA Zone 56)  
Datum: GDA 94



### Killara Lot 1 Plan RP50207

The data and information used to produce this drawing was current at the date of the drawing. Enviro-dynamics does not accept liability for any errors contained within the data supplied on this map and any changes made after the date of drawing.

Client	Earthtrade
Regional Council	South Burnett
Source	DERM 2012
Job No	SW_2_4_2013
Drawn by	██████████
Date	15-Apr-13



## Attachment 2

### Wildlife Online Search



**Queensland  
Government**

### Wildlife Online Extract

Search Criteria: Species List for a Specified Point  
Species: All  
Type: Native  
Status: Rare and threatened species  
Records: All  
Date: All  
Latitude: 26.2964  
Longitude: 145.1316  
Distance: 2  
Email: [REDACTED]@earthtrade.com.au  
Date submitted: Friday 12 Apr 2013 14:39:16  
Date extracted: Friday 12 Apr 2013 14:40:02

There were no records retrieved for your selection

#### **Disclaimer**

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.



## Attachment 3

### Offset boundary GPS points

Reference Point	Easting	Northing
1	313463.2938	7090191.658
2	313451.2465	7090082.524
3	313804.1605	7090034.335
4	313753.5237	7089692.02
5	313226.6415	7089777.001
6	313288.7536	7090212.908

## Attachment 4: Biocondition Scores

Indicators	Average scores from KBC2 &3 11.4.3	Benchmark and Regional Ecosystem Description Database of 11.4.3	Offset Site % of benchmark
Tree canopy cover (%)	52%	70%	75%
Tree canopy height (m)	12	16	75%
Organic litter cover (%)	72	75	96%