‘TERRINALLUM SOUTH’, 833 PURA ROAD, DARLINGTON

OFFSET MANAGEMENT PLAN

Watergardens Trust Pty Ltd

c/- Queensland Investment Corporation (QIC)

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1. BACKGROUND

Watergardens Trust Pty Ltd engaged Brett Lane & Associates Pty Ltd (BL&A) to prepare an Offset Management Plan to account for the proposed clearing of native vegetation and Matters of National Environmental Significance (MNES) at the Watergardens Town Centre, 399 Melton Highway, Taylors Lakes. The vegetation is to be cleared to provide for the extension of the Watergardens Town Centre.

Previous assessments of the impact site undertaken by BL&A are documented in Report 8117 (1.8). A flora and fauna assessment of the subject site was initially undertaken in July 2008, followed by targeted flora surveys for rare and threatened species in December 2008. The native vegetation boundaries were updated in June 2011 and additional targeted surveys for listed flora species were undertaken in October 2011. An updated targeted survey for Spiny Rice-flower was undertaken in August 2012.

The proposed development will result in the loss of 2.11 hectares of Plains Grassland (Victorian EVC 132_61), as well as 2.11 hectares of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) and 32 Spiny Rice-flower plants – both listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This native vegetation was assessed under the Victorian Native Vegetation Management Framework (which prevailed at the time) and was found to constitute 0.79 *habitat hectares* of *very high* conservation significance providing the best 50% of habitat for Spiny Rice-flower. State planning approval has been given for this removal, and the project must compensate for this removal to the satisfaction of the Department of Environment and Primary Industries and approval of the Responsible Authority.

The loss of NTGVVP and Spiny Rice-flower plants will require assessment and approval under the EPBC Act before it can proceed. The project was referred to the Federal Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) under the requirements of the EPBC Act (Referral 2012/6479). On the 22nd August 2012 the Department determined the project to be a controlled action under the EPBC Act, to be assessed by means of Preliminary Documentation.

A Planning Permit was granted by the Brimbank City Council on 18th May 2012, subject to a number of conditions (P1/2012). An extension has since been granted to this permit and states that removal of native vegetation must commence by 18th May 2016.

This Offset Plan has been prepared to meet both the state and federal offset requirements and to outline how offsets will be achieved at both levels. This plan details amongst other content:

- A summary of the impacts to state and federal ecological values at the impact site;
- Details of the offset site, including site location, extent and quality of native vegetation and presence and extent of MNES;
- Details of how the offset site meets the requirements of state and federal offset policies and the proposed means of offset security;
- Management actions required at the offset site; and
- Persons responsible and timeframes for implementing the plan.

This offset plan was prepared by Kylie Payze (Botanist) and Mal Wright (Senior Ecologist) at BL&A.

2. OFFSET SUITABILITY (PART A)

CLEARING SITE DETAILS	
Landowner of the site	Watergardens Trust Pty Ltd
Location and address of clearing site	399 Melton Highway, Taylors Lakes, Victoria
Bioregion	Victorian Volcanic Plain
Catchment Management Authority	Port Phillip and Westernport
Date approved	18th May 2012 (P1/2012) Extension to P1/2012 granted 18th March 2014

2.1. Proposed impacts

The proposed development will involve the expansion of the Watergardens Town Centre to occupy the entire site at 399 Melton Highway, Taylors Lakes. The following sections summarise the impacts to native vegetation at the state level as well as impacts to matters of national environmental significance (MNES).

2.1.1. Impacts to native vegetation

All native vegetation within the subject site is considered to be lost for the proposed development. Native vegetation losses are summarised in Table 1.

Table 1: Impacts to native vegetation

Habitat Zone	Framework Conservation Significance	Ecological Vegetation Class (EVC)	Area of removal (ha)	Habitat score (/100)	Total loss (Hha)
A	Very high	*Heavier soils* Plains Grassland (EVC 132_61)	1.13	36	0.41
B	Very high	*Heavier soils* Plains Grassland (EVC 132_61)	0.98	39	0.38
Totals			**2.11**		**0.79**

2.1.2. Impacts to matters of national environmental significance (MNES)

The development is considered to have the following impacts on MNES:

- Removal of 2.11 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) from Habitat Zones A and B.
- Removal of 32 Spiny Rice-flower plants.

2.2. Offset requirements

2.2.1. State offset requirements

The conservation significance of Habitat Zones A and B was upgraded from High to Very High on the basis of supporting the best 50% of habitat for Spiny Rice-flower. Therefore offsets for these areas of Plains Grassland would also need to support Spiny Rice-flower habitat.

The state offset requirement (Net Gain target), as specified in accordance with Victoria's Native Vegetation Management Framework (DNRE 2002) comprises:

- 1.58 habitat hectares of Very High conservation significance *Heavier-soils* Plains Grassland (EVC 132_61).

All Net Gain targets required to meet the Victorian state offset requirements will be achieved at the proposed offset site on implementation of this plan. Victorian net gain targets are presented in Table 2.

2.2.2. Commonwealth offset requirements

Offsets are required to be provided at a Commonwealth level, for all impacts to MNES from the proposed development.

The EPBC Act Environmental Offset Policy (DSEWPC 2012) states that suitable offsets must meet the following overarching principles:

- Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action
- Be built around direct offsets but may include other compensatory measures
- Be in proportion to the level of statutory protection that applies to the protected matter
- Be of a size and scale proportionate to the residual impacts on the protected matter
- Effectively account for and manage the risks of the offset not succeeding
- Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs
- Be efficient, effective, timely, transparent, scientifically robust and reasonable
- Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.
- Be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty
- Be conducted in a consistent and transparent manner.

The suitability of the proposed offset site is discussed in Section 3 of this Offset Plan.

Table 2: Victorian net gain targets for clearing remnant patches

							Habitat Hectares Target		
Target No.	Habitat Zones	Bioregion	EVC No.	Conservation significance	Min. habitat score for target	Other Like-for-Like reqts	Total Losses (Hha)	Multiplier	Gain Target (Hha)
VH1	A	VVP	132_61	Very High	36	SRF*	0.41	2	0.82
VH2	B	VVP	132_61	Very High	39	SRF*	0.38	2	0.76
Totals							0.79		1.58

* Best 50% of habitat for Spiny Rice-flower

2.3. Offset site description

An offset site has been proposed to meet both the State and Commonwealth offset requirements for the proposed development at the Watergardens Town Centre, Taylors Lakes. The offset site is located at 'Terrinallum South', 833 Pura Road, Darlington, approximately 200 kilometres west of Melbourne. It is bordered by Barnie Bolac Road to the west and adjacent private agricultural property to the north, south and east. The broader property is 2,200 hectares in area, of which approximately 300 hectares currently supports native vegetation, a large proportion of which is native grassland habitat. Native vegetation within the broader offset site is shown in Figure 1.

The offset site is managed in its entirety for conservation. It is currently grazed on a seasonal basis with livestock rotated throughout the area to assist in management of biomass. Discussions with the land owners Kate and Tom Calvert indicate that the study area has never been cropped or subject to pasture improvement. The property supports soils of volcanic origin on a varied undulating landscape. Connectivity of the site with adjacent habitats was considered to be low to moderate.

The property site lies within the Victorian Volcanic Plain bioregion and falls within the Glenelg Hopkins Catchment Management Authority area. It is currently zoned Farming Zone (FZ) in the Moyne Planning Scheme.

2.4. Offset zones

This site was assessed by BL&A during May 2013 (BL&A 2013). Extensive areas of native vegetation which provide ample scope to meet both the state and Commonwealth offset requirements were recorded at the offset site.

Of the native vegetation present, a large proportion comprises native grassland habitat, much of which meets the classification of the EPBC Act listed threatened ecological community, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP).

Incidental records of Spiny Rice-flower were first made by BL&A at the site in May 2013 during habitat hectare assessments. Targeted surveys for Spiny Rice-flower were undertaken by two senior botanists from BL&A a year later in May 2014, during which large numbers of Spiny Rice-flower plants were recorded. Several additional threatened flora and fauna species have also been recorded within the broader offset site.

The offset zones pertinent to this offset plan include:

- Offset Zone A – An area of Plains Grassland that supports a population of Spiny Rice-flower. This area will be protected and managed to achieve the required Commonwealth offset for Spiny Rice-flower and to achieve part of the required state native vegetation offset for Plains Grassland.
- Offset Zone B and C – Two quality zones of Natural Temperate Grassland of the Victorian Volcanic Plain. These zones will be protected and managed to achieve the balance of the required state native vegetation offsets for Plains Grassland as well as the Commonwealth offsets for *Natural Temperate Grassland of the Victorian Volcanic Plain*.

These offset zones are shown in Figure 1 and detailed in the following section. The whole offset site is managed for conservation, including adjacent zones of remnant native vegetation.

2.4.1. Native vegetation

Table 3: Native vegetation at the offset site

Offset Zone	Offset type		Area (ha)	Habitat Score (out of 100)*	Description
	Commonwealth	State			
A	Spiny Rice-flower	N/A	0.04	65	High quality habitat - Structure and species richness optimal; number of life forms present, cover and species richness across life forms near benchmark. Most likely due to management practices including stock exclusion and fire. Dominant species were Kangaroo Grass, spear grasses, with a high coverage of Lemon Beauty-heads. Weed coverage very low dominated by Wild Oat. Of the other assessable habitat components, organic litter cover and recruitment potential was moderate.
B	NTGVVP	*Heavier-soils* Plains Grassland (EVC 132_61)	5.11	62	High quality habitat - Structure and species richness optimal; number of life forms present, cover and species richness across life forms near benchmark. Dominant species were Kangaroo Grass, Grey Tussock-grass, spear and wallaby grasses, and a large variety of indigenous forbs. Introduced weed cover was moderate; majority of cover comprising moderate threat annual species such as Brown-top Bent-grass. Other assessable habitat components, such as organic litter cover and recruitment potential, were optimal.
C	NTGVVP	N/A	3.99	54	High quality habitat - Structure and species richness in both zones was optimal; number of life forms present, cover and species richness across life forms near benchmark. Dominant species were Kangaroo Grass, spear grasses, with a reasonable coverage of wallaby grass species. Weed coverage was moderate and dominated by annuals such as Brown-top Bent-grass. Organic litter was low at the time of survey, likely to be due to recent grazing in part of this area.

* Habitat Score based on Victorian habitat hectare methodology (BL&A 2013)

3. MEETING OFFSET REQUIREMENTS

Table 4 below outlines which offset zones will be utilised to achieve the relevant state and Commonwealth offsets.

Table 4: Offset zones

Offset Zone and area (ha)	Offsets to be achieved		
	State Offset	Commonwealth Offset	
	Native Vegetation	NTGVVP	Spiny Rice-flower
A – 0.04	0.01 Hha gain (EVC 132_61)		120 plants
B – 5.11	1.57 Hha gain (EVC 132_61)	5.11 hectares	
C – 3.99		3.99 hectares	
TOTALS	**1.58 Hha gain (EVC 132_61)**	**9.10 ha NTGVVP**	**120 plants**

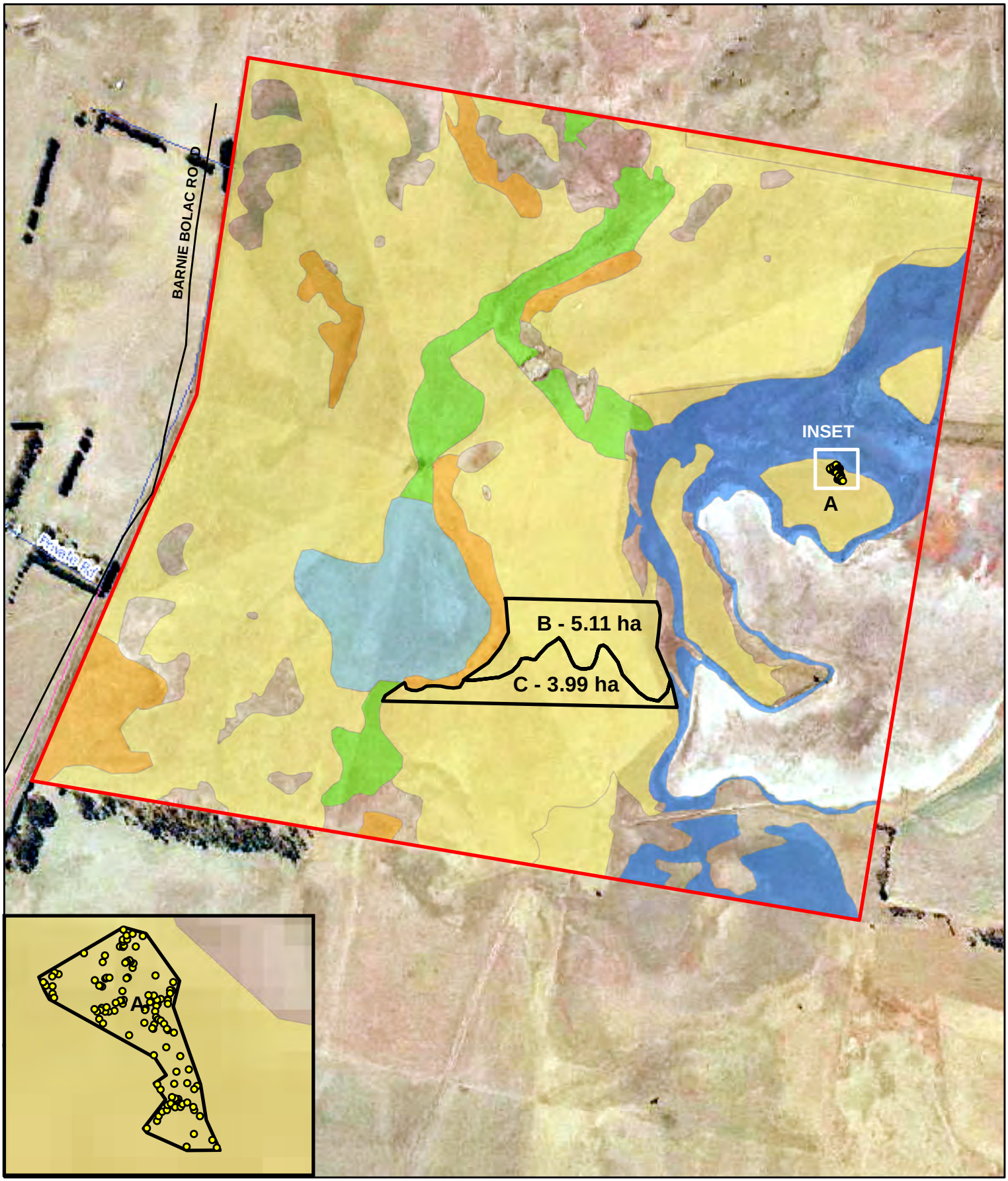
Note: NTGVVP = Natural Temperate Grassland of the Victorian Volcanic Plain; Hha = habitat hectare

3.1. State requirements

A total net gain of 1.58 habitat hectares is required to meet the state offset requirements. As shown in Table 4, State native vegetation offset requirements will be achieved in Offset Zones A & B (Figure 1).

3.1.1. Like-for-like criteria

Offset Zones A & B are located in the Victorian Volcanic Plain bioregion (as is the development site) and comprises native vegetation of the same EVC as that proposed for removal, with best 50% habitat for Spiny Rice-flower. The offset zones are of the same conservation significance as the loss zones and meet all the Like-for-Like criteria as specified in the Framework. Like-for-like criteria are addressed in Table 5.



Legend

- Offset Site
- Offset Zone

Native Vegetation

- Plains Grassland (EVC 132_61)
- Plains Grassy Wetland (EVC 125)
- Creekline Tussock Grassland (EVC 654)
- Stony Knoll Shrubland (EVC 649)
- Brackish Wetland (EVC 656)

Threatened Species

- Spiny Rice-flower (120)

0 155 310 620 Metres

Figure 1: Meeting State offset requirements

Project: Watergardens Town Centre

Client: QIC

Project No.: 13009	Date: 31/10/2014	Created By: M. Ghasemi / M. Wright

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Table 5: Meeting Like-for-Like criteria for clearing a remnant patch

Impact site							Offset site						
Target No.	Habitat Zones	Bioregion	EVC No.	Conservation significance	Min. habitat score for target	Other Like-for-Like reqts	Trading up	Offset Zones	Bioregion	EVC No.	Conservation significance	Habitat score	Other Like-for-Like attributes
VH1	HZA	VVP	132_61	Very High	36	SRF*	No	OZA & OZB	VVP	132_61	Very High	62	SRF*
VH2	HZB	VVP	132_61	Very High	39	SRF*	No	OZA & OZB	VVP	132_61	Very High	62	SRF*

* Best 50% of habitat for Spiny Rice-flower

3.1.2. Quantification of gains available on offset site

Table 6 quantifies the gains available at the offset site and the specific landowner commitments by which those gains were generated in accordance with the prescriptions in DEPI's vegetation gain approach manual (DSE 2006).

Table 6: Quantification of offset gains available to meet state offset requirements

Management Zone			A			B			C		
EVC No.			132_61			132_61			132_61		
Area (ha)			0.04			5.11			3.99		
Current Score (out of 100)			65			62			54		
Conservation Significance			Very high			Very high			Very high		
Bioregion			VVP			VVP			VVP		
Site Condition gain standardiser*			1.36			1.36			1.36		
		Score out of	*Current Score*	Maintenance	Improvement	*Current Score*	Maintenance	Improvement	*Current Score*	Maintenance	Improvement
Site Condition	Large Old Trees	15	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Canopy Cover	5	*N/A*	N/A	N/A	*N/A*	N/A	N/A	*N/A*	N/A	N/A
	Lack of Weeds	15	*11*	N/A	1	*9*	N/A	1	*9*	N/A	1
	Understorey	25	*15*	7.5	1.25	*15*	7.5	1.25	*15*	7.5	1.25
	Recruitment	10	*6*	3	1	*6*	3	1	*0*	0	1
	Organic Matter	5	*3*	1.5	1	*3*	1.5	1	*3*	1.5	1
	Logs	5	*N/A*	N/A	N/A	*N/A*	N/A	N/A	*N/A*	N/A	N/A
Subtotal of gains achievable in zone				*12*	*4.25*		*12*	*4.25*		*9*	*4.25*
Total gains achievable in zone			22.10			22.10			18.02		
Recognition of prior management			6.5			6.2			5.4		
Improved security gain			6.5			6.2			5.4		
Total HHa gained per ha			**0.35**			**0.35**			**0.29**		
Net Gain (habitat hectares)			**0.01**			**1.79**			**1.16**		

*** This standardiser is used to adjust the site condition score for EVCs that lack one or more habitat components (e.g. grassland standardiser = 1.36)**

3.1.3. Allocation of native vegetation gains

The required offset gains are allocated to Offset Zone B as detailed in Table 7.

Table 7: Allocation of native vegetation gains for clearing a remnant patch

Gain Target (impact site)		Trading up	Source of gains to meet the target		Outcome	
Target No.	Target (Hha)	Discount	Offset Zone	Gain available (Hha)	Gain used (Hha)	Surplus/ Deficit (Hha)
VH1 (HZ A)	0.82	n/a	OZ A	0.01	0.01	0.81 deficit
	0.81	n/a	OZ B	1.79	0.81	0.98 surplus
VH2 (HZ B)	0.76	n/a	OZ B	0.98	0.76	0.22 surplus

Under this offset plan a minimum net gain of 1.58 habitat hectares will be achieved within Offset Zones A & B to meet the state offset requirements. 1.16 habitat hectares of gain available in Offset Zone C are not required for State offsets; however, all three offset zones will be protected and managed to meet the Commonwealth offset requirements.

3.2. Commonwealth requirements

As shown in Table 4 all Commonwealth offset requirements will be achieved in Offset Zones A, B and C. The proposed offset is considered to appropriately compensate for the impacts to MNES at the impact site. A summary of the offsets to be provided is presented below for each MNES impacted by the proposed development.

Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)

The proposed development at Watergardens Town Centre will involve the removal of 2.11 hectares of NTGVVP. The protection and management of 9.10 hectares of NTGVVP within Offset Zone B and C is proposed to meet the offset requirements for the impact to this listed ecological community.

Spiny Rice-flower

The proposed development at Watergardens Town Centre will require the removal of 32 individuals of Spiny Rice-flower. The protection and management of 120 Spiny Rice-flower plants within Offset Zone A is proposed to meet the offset requirements for the direct impact to this threatened species. Offset Zone A will protect 120 Spiny Rice-flower plants within a broader patch of native grassland managed to promote recruitment (Figure 2).

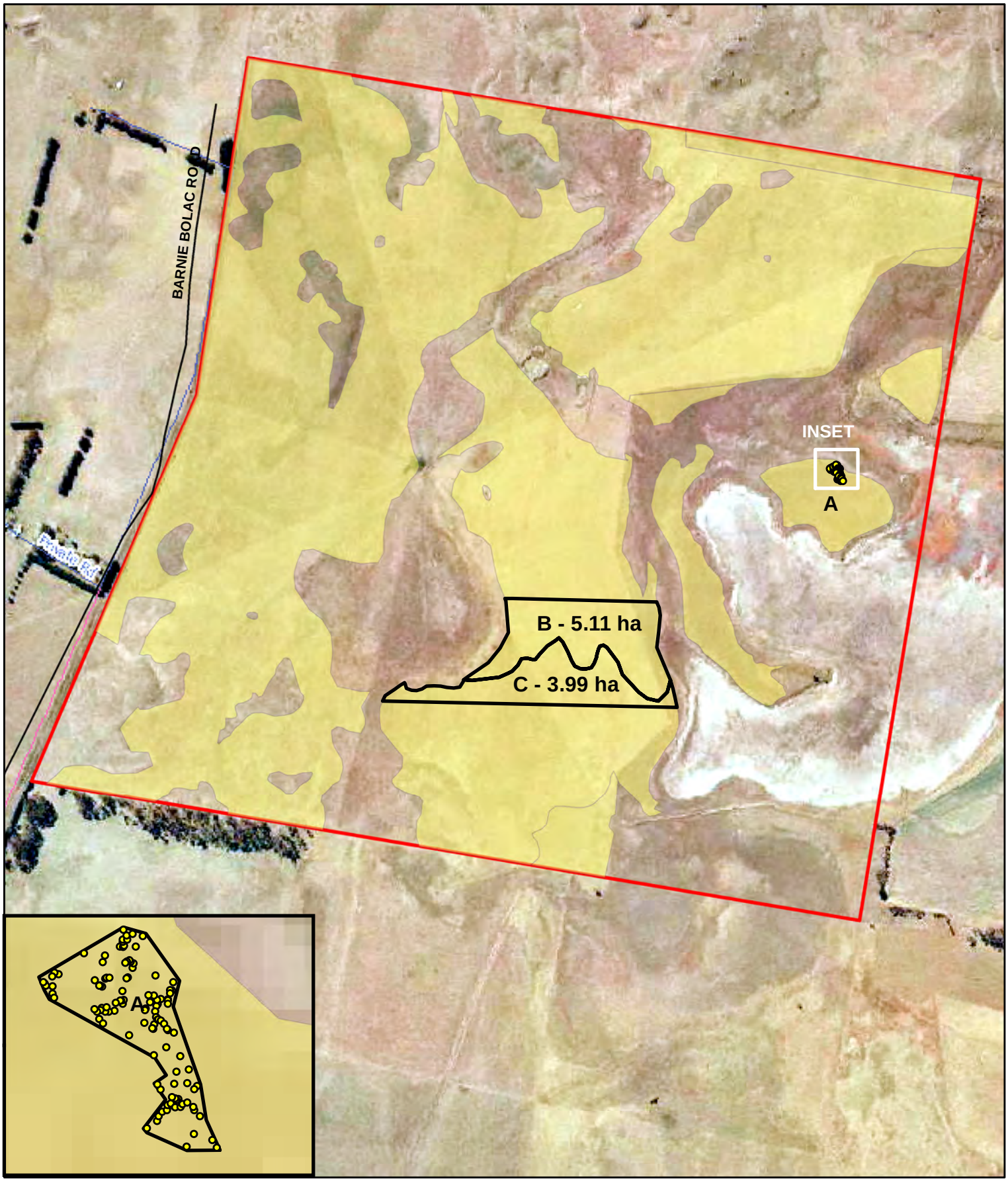
The Commonwealth Offset Policy (DSEWPC 2012) was reviewed to determine whether the proposed offset is consistent with the Commonwealth requirements. The proposed offset site has been assessed against the overarching principles of the Commonwealth Offset Policy in Table 8.

Further to this, calculations were undertaken using the Offsets Assessment Guide (DSEWPC 2012) to assist in the determination of whether the offsets proposed for the development would satisfy the Commonwealth offset requirements. Calculations are shown in Appendix 2.

Based on the outputs of the Assessment Guide calculator (Appendix 2), it is considered that all Commonwealth offset requirements for the proposed development can be achieved within Offset Zones A, B and C at 'Terrinallum South'.

Table 8: Meeting the Commonwealth Offset principles

Commonwealth Requirement	Proposed Offset Site (Terrinallum South)
Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The offset site contains NTGVPP and Spiny Rice-flower.
Be built around direct offsets but may include other compensatory measures	The offset is a direct offset involving the security and management of existing native vegetation and threatened species
Be in proportion to the level of statutory protection that applies to the protected matter	The level of statutory protection is in proportion to the matter being impacted
Be of a size and scale proportionate to the residual impacts on the protected matter	The area of listed ecological community proposed for offset is more than four times the size of the area being impacted. Four times the number of Spiny Rice-flower is proposed for offset than that being impacted.
Effectively account for and manage the risks of the offset not succeeding	Risks have been accounted for in the offset calculations (see Appendix 2).
Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs	The offsets proposed cover a larger area than is required to fulfil the state offset. Furthermore, the offset results in a surplus in achievable gain under the state offset policy.
Be efficient, effective, timely, transparent, scientifically robust and reasonable	This will be achieved by securing the site through a section 173 agreement and management of the site by the landowner.
Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	This is achieved by securing and managing the site, consistent with any EPBC Act and planning permit conditions.
Be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	Information of the clearing site and offset site has been compiled by experienced ecologists.
Be conducted in a consistent and transparent manner.	All details of the offset site have been provided to allow for transparency. Documentation has been consistent throughout.



Legend

- Offset Site
- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)
- Offset Zone

Threatened Species

- Spiny Rice-flower (120)

Metres

0 155 310 620

Figure 2: Meeeting Commonwealth offset requirements

Project: Watergardens Town Centre

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4. OFFSET IMPLEMENTATION

Landowner of offset site	Kate and Tom Calvert
Type of offset (onsite, 3rd party)	3rd Party
Location and address of offset site	'Terrinallum South', 833 Pura Road, Darlington
Area of offset site (ha) pertinent to this offset plan	9.14 hectares (Offset Zones A, B and C)
Offset site number (if applicable)	To be determined
Volume	8434
Folio	127
Parish	Jellalabad
Allotment	17a and 17b
Local Government Area	Moyne
Responsible Authority	Moyne Shire
Bioregion	Victorian Volcanic Plain

4.1. Strategy for offset site

The offset site is to be secured and managed for the purposes of conservation in perpetuity.

Who is liable/responsible for meeting offset requirements?	Watergardens Trust Pty Ltd
Type of security	Section 173 of the *Planning and Environment Act 1987 (Vic)*
Agreement or Planning Permit Number (ID)	P1/2012
Date 10-year offset management to commence	To be confirmed
Date 10-year offset management expires	To be confirmed
Registered on title? (Yes/No)	Yes
Offset site management responsibility	Landowner
Offset Monitoring Responsibility	Department of the Environment & Brimbank City Council

4.2. Achieving a net gain to meet state offset requirements

4.2.1. Ongoing land-use commitments

In accordance with the prescriptions in DEPI's vegetation gain approach manual (DSE 2006), the landowner must undertake the following in perpetuity to achieve the maintenance and improvement gain components of the offsets in Offset Zone B:

- Retain all native vegetation

- Retain leaf litter
- Exclude stock (except as required as part of the biomass management of the site)
- Maintain the improvement gain achieved at completion of this offset plan such that:
    - Weed cover does not increase beyond the level attained at the completion of Year 10
    - Pest animals are controlled to the level attained at the completion of Year 10.

4.2.2. Management actions

In accordance with the prescriptions in DEPI's vegetation gain approach manual (DSE 2006), the landowner must commit to the following management actions for the 10 year life of this plan to achieve the improvement gain components in Offset Zone B:

- Control all on-site grazing threats (i.e. rabbits and other pests)
- Implement a biomass management strategy (periodic biomass reduction at agreed timing/frequency) – to the satisfaction of the Commonwealth and State Departments.
- Eliminate high threat woody environmental weeds and ensure that cover of other high threat weeds does not increase beyond the level it was prior to inception of the offset plan

The above list comprises the commitments for Offset Zone B only for the purpose of achieving a minimum net gain of 1.58 habitat hectares.

4.3. Management actions to be undertaken

This section provides details of the management actions to be undertaken within Offset Zones A, B and C to meet requirements of the State and Commonwealth.

Fencing

The offset site is to be fenced permanently to prevent inadvertent damage to vegetation or soil disturbance. The boundaries of the offset plan are to be identified by a surveyor for the purpose of securing these areas on title.

Weed control

This Offset Plan requires the landowner to ensure that the cover of high threat weeds does not exceed the level present at commencement of the plan - in perpetuity. This applies to all species of weeds, regardless of their level of threat.

Furthermore, any high threat woody environmental weeds within the offset zone must be eliminated from the offset site. This must be accomplished by the 10 year time period. A weed species is considered to be effectively eliminated when its cover (excluding bare ground) is reduced to less than 1%.

Methods such as grazing, burning and herbicide application are considered to be appropriate means to achieve the weed control targets. The means by which the above weed control targets are met will be ultimately determined by the land manager. Weed control methods are discussed further below.

Grazing

Grazing is to be used to keep the biomass of weed species to manageable levels and to prevent them from flowering and setting seed. While sheep are to be used as the primary tool for biomass reduction, other stock may also be used at the discretion of the land manager. The most appropriate time to undertake grazing for this purpose is August to September when the winter active introduced grasses are most palatable to stock. It is understood that if winter extends and the growth of such winter active introduced grasses persist into spring, grazing may need to be extended to manage introduced grasses.

Herbicide

The application of appropriate herbicide is to be undertaken as required to control weed species in the offset areas. Care must be taken to ensure that there are no impacts to any rare or threatened flora and fauna species when using herbicides.

Burning

Burning should also be used as required as a means of weed and biomass control. Herbicide should be used prior to and following a burn, to maintain gaps between native grass tussocks and allow space for recruitment. The most appropriate time for burning is considered to be at the end of autumn to early winter.

Weed species which have been recorded in the broader offset site are:

- Cape Weed (Arctotheca calendula)
- Ox-tongue (Helminthotheca echioides)
- Flatweed (Hypochaeris radicata)
- Hairy Hawkbit (Leontodon taraxacoides subsp. taraxacoides)
- Rough Sow-thistle (Sonchus asper s.l.)
- Common Sow-thistle (Sonchus oleraceus)
- Spear Thistle (Cirsium vulgare)
- Yorkshire Fog (Holcus lanatus)
- Hare's-tail Grass (Lagurus ovatus)
- Toowoomba Canary-grass (Phalaris aquatica)
- Clustered Dock (Rumex conglomerates)
- Wild Sage (Salvia verbenaca)
- Horehound (Marrubium vulgare)

These weeds are to be controlled so that their cover does not increase beyond levels determined at the inception of this plan.

Pest animal control

Pest animals are to be appropriately controlled within the offset site for the life of the plan. This may involve warren destruction, rabbit baiting and shooting as required.

Biomass management

In 'high rainfall' grasslands, the absence of periodic biomass removal (e.g. fire, grazing) increases the risk of the native grasses becoming dominant over time leading to a loss of

the inter-tussock spaces that are important as habitat for a range of flora and fauna. If biomass is not removed then there can be a dramatic decline in overall vegetation quality within a 10-year period (DSE 2010). As such, for 'high' rainfall grassland EVCs, avoiding a decline in site condition requires some form of active biomass management.

It is understood through discussion with the landowners that to date, biomass at the offset site has been effectively managed through intermittent grazing. This is the favoured continued method for biomass management at the offset site.

As part of this offset plan, biomass within Offset Zones A, B and C will be managed by the rapid periodic grazing (pulse grazing) for a period of 2-7 days, with a resting period of no less than 100 days without grazing. Consideration must be given to threatened flora which exists on site in regards to biomass reduction actions.

Monitoring and reporting

Monitoring of native vegetation and associated MNES, along with pest plants and animals will be undertaken on a regular basis to ensure the successful implementation of this Plan and to inform adaptive management processes. Monitoring by an ecologist will be undertaken in the first year of the plan and then again in years 4, 7 and 10 and the results from this monitoring provided to the landowner to be included in the Landowner Monitoring and Report Form (Appendix 1). This is then distributed to the Department of the Environment, Brimbank City Council and QIC no later than three months after the end of the relevant monitoring year.

Adaptive management

This Plan provides actions for a period of 10 years. The timing of actions and whether they occur is based on adaptive management. By monitoring the outcomes of actions, management may be adapted to ensure the stated commitments in the Plan are upheld. For example, new techniques for controlling high threat weeds may become available, or further information on the ecology and status of the vegetation communities may necessitate adjustment to management actions.

The western districts of Victoria are known to be highly seasonal and conditions can vary greatly from year to year. This seasonality is acknowledged in this offset plan by allowing for flexibility around timing of actions at the discretion of the land manager.

4.3.1. Management action tables

The following tables identify specific management actions and targets pertaining to the management of the proposed offset.

Table 9: Year 1 actions

Offset Zone	Management Action	Timing	Target to be achieved	Responsible person	Completed (Yes/No)	Month and Year Completed
A, B, C	Undertake baseline survey of the offset site. This will include: ▪ Estimation of overall weed cover and cover of all high threat weeds ▪ Compilation of detailed flora list (*exotic and native and* % cover of native and exotic) ▪ Targeted survey for Spiny Rice-flower	Commencement of plan	▪ Overall weed cover documented; ▪ Cover of each *high threat* weed species documented; ▪ Number and location of all Spiny Rice-flowers on site documented.	Ecologist		
A, B, C	Ensure offset site is adequately fenced	Commencement of plan	Fencing must allow for adequate control of any stock access for biomass management	Landowner or Fencing contractor		
A, B, C	Pest control to be carried out if required as determined by Landowner.	As required	Pest animals controlled	Landowner or landowner nominated contractor		
A, B, C	Biomass reduction through pulse-grazing.	As required	▪ Grassy biomass layer reduced. ▪ Inter-tussock spaces maintained to optimise ecological function	Landowner		
A, B, C	Weed control: ▪ Grazing to reduce biomass of introduced species and prevent seed set ▪ Herbicide use as required	▪ Aug/Sep ▪ As required	▪ Weed cover does not exceed initial baseline cover. ▪ Any <u>woody</u> weeds eliminated	Landowner or Landowner nominated contractor		
A, B, C	Monitoring: ▪ Estimate overall weed cover and cover of *high threat* weed species ▪ Assess integrity of offset zone fencing; ▪ Assess biomass reduction management system; ▪ Monitor compliance with land-use commitments and other management commitments.	Spring/early summer	Monitoring results to be documented and retained for reporting purposes. Results should also inform management approaches and techniques.	Ecologist		
A, B, C	Report to be prepared documenting management actions undertaken and monitoring results.	Report due no later than three months after end of Year 1	Report delivered to the Department of the Environment, Brimbank City Council and QIC	Landholder		

Table 10: Years 2-10 actions

Offset Zone	Management Action	Timing	Target to be achieved	Responsible person	Year								
					2	3	4	5	6	7	8	9	10
A, B & C	Fence maintenance to be carried out as required	As required	Integrity of fencing maintained	Landowner or Landowner nominated contractor	X	X	X	X	X	X	X	X	X
A, B & C	Pest control to be carried out as required.	As required	Pest animals controlled	Landowner or Landowner nominated contractor	X	X	X	X	X	X	X	X	X
A, B & C	Biomass reduction through pulse-grazing.	As required	▪ Grassy biomass layer reduced ▪ Inter-tussock spaces maintained to optimise ecological function	Landowner	X	X	X	X	X	X	X	X	X
A & B	Targeted survey for Spiny Rice-flower	Winter (April to August)	Document population stability/growth.	Ecologist			X			X			X
A, B & C	Weed control: Grazing to reduce biomass of introduced species and prevent seed set Herbicide use as required Burning as required	Aug/Sep As required As required	▪ Weed cover does not exceed initial baseline cover (determined at the beginning of Year 1) ▪ Any <u>woody</u> weeds eliminated	Landowner or Landowner nominated contractor	X	X	X	X	X	X	X	X	X
A, B & C	Monitoring: Estimate overall weed cover and cover of each *high threat* weed species Assess integrity of offset zone fencing; Assess biomass reduction management system; Monitor compliance with land-use commitments and other management commitments.	Spring	Monitoring results to be documented and retained for reporting purposes. Results should also inform management approaches and techniques.	Ecologist			X			X			X
A, B & C	Report to be prepared documenting management actions undertaken and monitoring results.	No later than three months after the end of the monitoring year	Report delivered to the Department of the Environment, Brimbank City Council and QIC	Landholder			X			x			X

5. REFERENCES

Brett Lane and Associates Pty Ltd 2011, *Watergardens Town Centre Flora and Fauna Assessment, Report No. 8117 (1.7)*, Brett Lane and Associates Pty Ltd, Hawthorn, Victoria.

Brett Lane and Associates Pty Ltd 2013, *'Terrinallum South' 833 Pura Road, Darlington Vic 3271, Native Vegetation and Threatened Species Assessment, Report No. 12155 (1.1)*, Brett Lane and Associates Pty Ltd, Hawthorn, Victoria.

Department of Natural Resources and Environment 2002, *Victoria's Native Vegetation Management - a Framework For Action*. State of Victoria, Department of Natural Resources and Environment, Victoria.

Department of Sustainability, Environment, Water, Population and Communities 2012, *Environment Protection and Biodiversity Conservation Act 1999 – Environmental Offsets Policy,* October 2012, Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Department of Sustainability and Environment 2010, *Native Vegetation Management – Standards for management – Ecological grazing (Information Sheet No. 8):* Department of Sustainability and Environment, East Melbourne, Victoria.

Department of Sustainability and Environment 2006, *Native Vegetation: Vegetation Gain Approach – Technical basis for calculating gains through improved native vegetation management and revegetation*. Department of Sustainability and Environment, East Melbourne, Victoria.

Appendix 1: Landowner monitoring and reporting form

Landowner of offset site	
Location and address of offset site	
Offset site number	
Offset plan reference number	
Responsible Authority	
Report No.	
Signature	
Date	

Please attach a copy of Management Action Table from the Offset Plan with information on which actions have been completed for year/s of this reporting period.

Describe specific monitoring results from surveys undertaken, survival rates of revegetation works, fencing work, success of weed and pest animal control work, successful management tools (i.e. techniques used to control weed species, protection of new plants, monitoring techniques) and any problems or issues experienced (i.e. new infestation of weed species, storm damage to fencing).

Provide photographs showing evidence of works.

If any agreed management actions or commitments are incomplete or have not been undertaken in the times specified explain the reasons why and what program of action/s will be undertaken to implement the action. If no action is to be undertaken please explain the reason/s and how the targets specified will be met.

Appendix 2: EPBC Act Offset Calculator

Impact calculator				Offset calculator																			
Protected matter attributes	Quantum of impact		Units	Protected matter attributes	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?
Ecological communities				*Ecological Communities*																		
Area of community (NTGVVP)	Area	2.11	Hectares	Area of community (NTGVVP)	0.84	Adjusted hectares	Terrinallum South, 833 Pura Road, Darlington (Offset Zones A and B)	Risk-related time horizon (max. 20 years)	20	Start area (hectares)	9.1	Risk of loss (%) without offset	20%	Risk of loss (%) with offset	3%	1.55	70%	1.08	0.29	0.85	100.29%	Yes
	Quality	4	Scale 0-10									Future area without offset (adjusted hectares)	7.3	Future area with offset (adjusted hectares)	8.8							
	Total quantum of impact	0.84	Adjusted hectares					Time until ecological benefit	7	Start quality (scale of 0-10)	6	Future quality without offset (scale of 0-10)	5	Future quality with offset (scale of 0-10)	7	2.00	70%	1.40	0.88			
Threatened species				*Threatened species*																		
Number of Spiny Rice-flower plants	32	Count		Number of Spiny Rice-flower plants	32	Count	Terrinallum South, 833 Pura Road, Darlington (Offset Zone A)	Time horizon (years)	10	Start number	120	Future number without offset	90	Future number with offset	170	80	80%	64	33.15		103.59%	Yes