

THE NEW CHILTERN QUARRY:

Offset Management Plan

February 2010

Report to Holcim (Australia) Pty Ltd

THE NEW CHILTERN QUARRY:
Offset Management Plan

Final Report 8 February 2010

prepared by

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Chiltern Quarry Offset Plan

Planning Permit Number (ID)/Work Authority No:

Proponent: Holcim (Australia) Pty Ltd

Address:

Landowner and Permit (Work Authority) Holder Statement

Permit (Work Authority) Holder

Print Name:

Signature:

Date:

Landowner of Offset Sites

1. Print Name: Greg Eames

Signature:

Date:

Referral Authority Statement

The native vegetation credits described in this plan provide an offset for the removal of native vegetation specified in this plan to the satisfaction of the Department of Sustainability and Environment.

Print Name:

Position:

Department of Sustainability and Environment

Date: / /2010

Responsible Authority Approval

This Offset Plan has been approved by the Indigo Shire. This Offset Plan is now endorsed and forms part of Planning Permit No:

Print Name:

Position:

Responsible Authority:

Signature:

Date: / /2010

Date of Commencement:

No modification variation or amendment of this Offset Plan agreed upon by the parties shall be of any force or effect unless such modification, variation or amendment is in writing and has been executed by all parties.

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- Robert Fitzgerald
- Daniel Gilmore
- Mark Venosta
- Nicola Barnes

ABBREVIATIONS

DSE	Department of Sustainability & Environment
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
sp.	Species (one species)
spp.	Species (more than one species)

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1.0 INTRODUCTION

1.1 Project Background

Biosis Research Pty. Ltd. was commissioned by EnviroRisk Management, acting on behalf of Holcim (Australia) Pty Ltd to prepare an Offset Management Plan (OMP) for the new Chiltern Quarry.

An ecological assessment of the site, including a habitat hectare assessment, is documented by Biosis Research (2009). That report provides the basic ecological information to support this OMP.

A Planning Permit application has been lodged for the proposed new quarry (09-0202). Clearing associated with the development of the quarry is currently being assessed by the Department of Primary Industry (DPI), the Department of Sustainability and Environment (DSE) and the Indigo Shire Council as part of the development approvals process.

The plans submitted to council would result in clearing of 15.91 hectares of native vegetation from three Ecological Vegetation Classes (EVCs) and the loss of 38 large old trees (37 within patches).

Protection and management of other areas of native vegetation (101.79 ha) on the Eames property in and around the proposed work authority could generate all of the prescribe habitat hectare offsets associated with the proposed clearing for the New Chiltern Quarry. This would also protect 291 Large Old Trees (LOT). This provides most of the prescribed like-for-like LOT offsets with the balance to be subject to a non-conforming agreement with DSE such that all prescribed habitat hectare and LOT offsets available within the defined offset site will provide a net gain outcome for this project.

The study area is within the Northern Inland Slopes Bioregion (www.dse.vic.gov.au).

1.2 Objectives

The objectives of this plan are to:

- Identify the area within the Eames property that is nominated as a Net Gain offset site, and:
 - To provide an offset plan to the satisfaction of DSE and the endorsement of DPI;

- To contribute a vegetation ‘gain’ in accordance with the principles of the Native Vegetation Framework (NRE 2002a) to offset vegetation losses from permitted clearing of native vegetation;
 - Identify the necessary management actions to protect and improve the quality of native vegetation and fauna habitat within the offset site;
 - Identify the Large Old Tree (LOT) offset values associated with the site and outline management actions required for their protection and recruitment.
- Describe any remaining offsets that need to be sourced off site, and
 - Indicate in general terms, where and how any off site offsets are proposed to be achieved.

2.0 PART A: OFFSET SUITABILITY

2.1 Clearing Site Details

Landowner of clearing site	Mr. Greg Eames
Location and address of clearing site	Off Black Dog Creek Road, Chiltern
Local Government Area	Indigo Shire
Catchment Management Authority	North East
Responsible Authority	DPI
Permit applicant	Holcim (Australia) Pty Ltd
Planning Permit Number (ID)/Work Authority Number	09-0202/WA1391 (to be approved)
Date Approved	/ /2010

2.2 Vegetation Approved for Removal

Vegetation removal has not been approved at this time. Vegetation proposed for removal is described in the flora and fauna assessment (Biosis Research 2009) and provided below in Table 1.

Table 1: (Part A) Summary of proposed losses of patches of native vegetation

Habitat Zone		1	2	3	6	7	8	9	11	13	16	18	Total
Bioregion: Northern Inland Slopes													
EVC name		GW	GW	GW	BI	BI	CL	VG	VG	GW	GW	GW	
EVC Bioregional Conservation Status		E	E	E	V	V	E	E	E	E	E	E	
HABITAT SCORE (/100)		48	48	37	65	57	29	43	30	46	35	35	
Habitat Zone area to be cleared (ha)		1.71	0.04	10.28	0.26	0.64	0.01	0.09	0.26	0.03	2.21	0.37	15.91
HABITAT HECTARE LOSS (Hha)		0.82	0.02	3.80	0.17	0.36	0.00	0.04	0.08	0.01	0.77	0.13	6.22
Conservation Significance	Conservation Status x Hab Score	VH	VH	High	VH	VH	High	VH	High	VH	VH	VH	
	Threatened Species Rating*	VH	VH	VH	VH	VH	High	VH	VH	VH	VH	VH	
	Other Site Attribute Rating	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	Lo	
	Overall Conservation Significance	VH	VH	VH	VH	VH	High	VH	VH	VH	VH	VH	
Net Outcome Ratio		2	2	2	2	2	1.5	2	2	2	2	2	
Gain target (Hha)		1.64	0.03	7.61	0.34	0.73	0.00	0.08	0.16	0.13	1.55	0.26	12.43
No Large Old Trees to be removed in each habitat zone		24	0	8	0	0	0	5	0	0	0	0	37
Tree protection multiplier		8		8				8					
Large Old Trees to be protected		192		64				40					296

* Some zones have Very High conservation significance due to presence of habitat for Tree Goanna, Diamond Firetail and Barking Owl.

Note: Full numbers are used for calculations, however values shown are rounded for reporting purposes. Values for each quality zone are rounded to 2 decimal places and the final total is rounded to 1 decimal place.

Table 2: (Part A) Summary of proposed losses of scattered trees

Bioregion	Pre-1750 EVC #: Name	Bioregional Conservation Status	Conservation Significance	Tree Size Class			
				VLOT	LOT	MOT	ST
Northern Inland Slopes	175-62: <i>Rainshadow</i> Grassy Woodland	Endangered	High	0	1	0	0

2.3 Gain Targets

Vegetation losses and offset requirements are all for the Northern Inland Slopes Bioregion.

The offset requirement as specified in accordance with the Framework (NRE 2002a) are outlined in Tables 3 and 4, and comprises:

- 12.43 Hha of Very High Conservation Significance vegetation
- The protection of 296 Large Old Trees (and associated recruitment of 1480 new trees)
- Offsets for loss of scattered trees, through recruitment of 100 new plants

All of the gain targets are to be met through the approval of a slightly non-conforming offset agreement by the proposed offsets able to be generated on the Eames property and the acquisition of some road reserves within and adjacent to the work authority. This area totals 101.79 ha and the available offsets include:

- 14.88 Hha of Very High Conservation Significance vegetation;
- 0.48 Hha of High Conservation Significance vegetation;
- The protection of 291 Large Old Trees (and associated recruitment of 1455 new trees); and the
- Recruitment of 100 new plants.

Table 3: (Part A) Gain targets for clearing remnant patches (habitat hectares and LOTs).

Target No.	Habitat Zone	EVC No: Name	Min Habitat score for target*	Like-for-like requirements#	Area of loss (ha)	Habitat hectare loss	Net outcome ratio	Net Gain Offset	Large Tree Protection Target		
									Total LOTs Lost	Protection multiplier	LOTs to be protected [^]
Very High Conservation Significance											
VH1	HZ 1	175-62: Grassy Woodland	43	Grassy Woodland	1.71	0.82	2	1.64	24	8	192
VH2	HZ 2	175-62: Grassy Woodland	43	Grassy Woodland	0.04	0.02	2	0.03			
VH3	HZ 3	175-62: Grassy Woodland	33	Threatened Fauna Habitat	10.28	3.80	2	7.61	8	8	64
VH4	HZ 6	61: Box Ironbark Forest	59	Box Ironbark Forest	0.26	0.17	2	0.34			
VH5	HZ 7	61: Box Ironbark Forest	51	Box Ironbark Forest	0.64	0.36	2	0.73			
VH6	HZ 9	47: Valley Grassy Forest	39	Valley Grassy Forest	0.09	0.04	2	0.08	5	8	40
VH7	HZ 11	47: Valley Grassy Forest	27	Valley Grassy Forest	0.26	0.08	2	0.16			
VH8	HZ 13	175-62: Grassy Woodland	41	Grassy Woodland	0.03	0.01	2	0.03			
VH9	HZ 16	47: Valley Grassy Forest	32	Valley Grassy Forest	2.21	0.77	2	1.55			
VH10	HZ 18	175-62: Grassy Woodland	32	Grassy Woodland	0.37	0.13	2	0.26			
High Conservation Significance											
H1	HZ 8	68: Creekline Grassy Woodland	22	VH significance vegetation	0.004	0.00	1.5	0.00	0		0
	TOTAL				15.91	6.22		12.43	37		196

other than being within the Northern Inland Slopes Bioregion * Based on the quality objectives for the offset specified in Table 6 of the Framework (NRE 2002a).

[^] By protecting a Large Old Tree, it is assumed 40 recruits will be generated. To be considered protected, twice the canopy diameter for a tree must be fenced and protected from adverse impacts. It has therefore been assumed that protection of a tree will generate 40 recruits and no separate recruitment targets have been calculated.

Table 4: (Part A) Gain targets for clearing scattered trees.

Target No. (Habitat Zone)	Pre 1750 EVC	Conservation Significance	Tree Size	# Trees to be removed	Tree Protection		Recruit Only	
					Multiplier	Offset Total*	Multiplier	Offset Total
H15	Grassy Woodland	High	LOT	1	2	2	100	100
TOTAL number of plants to be recruited								100

2.4 Description of Offset Site – Eames Property

A description of the flora and fauna values within the Eames property is included in the flora and fauna assessment (Biosis Research 2009). The property which includes the areas to be protected and managed as a Net Gain Offset Site is located approximately three kilometres south-east of Chiltern and 230 km north-east of Melbourne (Figure 1).

Sections of the property assessed by Biosis Research (2009) are bounded to the north by the Chiltern - Mt. Pilot National Park and Forrest Lane, to the east by the Chiltern - Mt. Pilot National Park and to the west and south by private farmland, Black Dog Creek Road and the Chiltern – Beechworth Road. This section of the property does not appear to have been cultivated in the past. Most of the land proposed to be the Net Gain Offset Site is dominated by native vegetation and will be securely fenced to control access by stock.

A total of 151 indigenous and 73 introduced plant species have been recorded from the study area. This species list is included in Appendix 1.

A description of the Ecological Vegetation Classes (EVC) present and their different quality zones is as follows:

Rainshadow Grassy Woodland EVC 175-62

This community occupies hill tops and rocky slopes and is dominated by White box *Eucalyptus albens*, Red Box *E. polyanthemos* and Blakely's Red-gum *E. blakelyi*. The grassy, relatively herb-rich ground cover typically supports an obvious cover of Dense Spear-grass *Austrostipa densiflora*, together with Cane Wire-grass *Aristida ramosa*, Wallaby-grasses *Austrodanthonia* spp., Weeping Grass *Microlaena stipoides*, Tall Raspwort *Gonocarpus elatus*, Wattle Mat-rush *Lomandra filiformis*, and Many-flowered Mat-rush *L. multiflora*.

An open cover of scattered shrubs and small trees is present and this is likely to have been reduced in prominence by the site's long history of grazing by domestic stock. Species present include Lightwood *Acacia implexa*, Drooping Sheoak *Allocasuarina verticillata* and Daphne Heath *Brachyloma daphnoides*.

Common exotic species included Sweet Vernal-grass *Anthoxanthum odoratum*, Squirrel-tail Fescue *Vulpia bromoides*, Bulbous Meadow-grass *Poa bulbosa*, Wimmera Rye-grass *Lolium rigidum*, Barley-grass *Hordeum leporinum*, Clover *Trifolium* spp. Big Heron's-bill *Erodium botrys* and Cape Weed *Arctotheca calendula*.

Areas with a relatively intact canopy such as Patches 1 and 2 are dominated by mature trees but have a highly degraded understorey and lack any understorey tree or shrub cover. While both native and exotic species have relatively low cover and species richness, either may be seasonally abundant.

Areas with only scattered trees (Patches 3, 13, 16 and 18) have a more diverse understorey dominated by a variety of grasses, herbs and low shrubs.

Valley Grassy Forest EVC 47

The gentle slopes and undulating areas of low relief to the north west, west and south of the central ridge within the offset site support outwash areas with a relatively high cover of Red Stringybark *E. macrorhyncha* and while Mugga is still present so are scattered occurrences of Yellow Box *E. melliodora*, Red Box and River Red-gum *E. camaldulensis*. Shrubs and small trees are largely absent but scattered individuals of Lightwood and Sweet Bursaria *Bursaria spinosa* are present.

Common grasses include Lobed Wallaby-grass *A. auriculata*, Velvet Wallaby-grass *A. pilosa*, Bristly Wallaby-grass *A. setacea*, Knotty Spear-grass *A. nodosa*, Common Wheat-grass *Elymus scaber*, Silvertop Wallaby-grass *Joycea pallida*, Grey Tussock-grass *Poa sieberiana* var. *hirtella* and Kangaroo Grass *Themeda triandra*.

As with Grassy Woodland, common exotic species included Sweet Vernal-grass *Anthoxanthum odoratum*, Squirrel-tail Fescue *Vulpia bromoides*, Bulbous Meadow-grass *Poa bulbosa*, Wimmera Rye-grass *Lolium rigidum*, Barley-grass *Hordeum leporinum*, Clover *Trifolium* spp. Big Heron's-bill *Erodium botrys* and Cape Weed *Arctotheca calendula*.

Areas with a relatively intact canopy such as Patches 9, 10 and 12 are dominated by mature trees but have a highly degraded understorey and lack any understorey tree or shrub cover. While both native and exotic species have relatively low cover and species richness, either may be seasonally abundant.

Areas with only scattered trees (Patches 4, 5, 11 and 16) have a more diverse understorey dominated by a variety of grasses, herbs and occasionally low shrubs.

Box Ironbark Forest EVC 61

The northern lower slopes of the central ridge support remnant stands of Mugga *E. sideroxylon* typical of this EVC. Both patches 6 and 7 are relatively similar other than Patch 7 lacking most of its overstorey. The understorey is relatively sparse but includes a low open shrub cover including species such as Golden Wattle *Acacia pycnantha*, Varnish Wattle *Acacia verniciflua*, Ploughshare Wattle

Acacia gunnii, Silver Wattle *Acacia dealbata*, Small-leaf Parrot-pea *Dillwynia phyllicoides*, Common Wedge-pea *Gompholobium huegelii*, Showy Parrot-pea *Dillwynia sericea*, Erect Guinea-flower *Hibbertia riparia* and Cat's Claw *Grevillea alpina*.

The sparse ground cover includes a range of annual and perennial species including Wallaby-grasses *Austrodanthonia* spp., Spear-grasses *Austrostipa* spp., Blue Finger-flower *Cheiranthra cyanea*, Black-anther Flax-lily *Dianella revoluta*, Common Raspwort *Gonocarpus tetragynus*, Trailing Goodenia *Goodenia lanata*, Moss Sunray *Hyalosperma demissum*, Small Pennywort *Hydrocotyle callicarpa* and Shiny Everlasting *Xerochrysum viscosum*.

Weed cover is very low in this environment with only a scattered cover of a small number of exotic annual grasses, such as Large Quaking-grass *Briza maxima* and Great Brome *Bromus diandrus*, observed.

Creepline Grassy Woodland EVC 68

The well defined drainage lines descending from the central ridgeline also have a distinctive flora dominated by Tall Sedge *Carex appressa*, Weeping Grass *Microlaena stipoides* and Rushes *Juncus* spp. At the extremes of the study area these drainage lines occasionally support remnant River Red-gum, however they are otherwise currently treeless.

Other common species found along these drainage lines include Rushes *Juncus* spp., Wattle Mat-rush, Common Love-grass *Eragrostis brownii* and Smooth Wallaby-grass *Austrodanthonia laevis*.

Common weeds include exotic annual and perennial grasses such as Toowoomba Canary-grass *Phalaris aquatica*, Wimmera Rye-grass *Lolium rigidum*, Yorkshire Fog *Holcus lanatus*, Couch *Cynodon dactylon* and Sweet Vernal-grass *Anthoxanthum odoratum*.

2.4.1 Threatened species

Flora

Three flora species of state conservation significance were recorded within the study area. One is rated as vulnerable while the other two are rare in Victoria.

Narrow Goodenia *Goodenia macbarronii*, is considered to be vulnerable in Victoria and is listed under the FFG Act. This small herb typically grows on the margins of drainage lines, swamps, soaks and artificial wetlands. This species was observed at eight locations within minor drainage lines on the southern side of the main ridgeline. An estimated 2100 individuals were observed. No

individuals were observed beyond the southern slopes of the central ridge within or immediately adjacent to the study area.

Mugga *Eucalyptus sideroxylon* is the dominant tree in areas of Box Ironbark around Chiltern. Within the study area this species occurs on the northern aspect and lower slopes of the central ridge. Few if any of this species would be impacted by the proposed extraction area but it is likely that some mature individuals would be impacted by the associated infrastructure.

Dwarf Brooklime *Gratiola pumilo* grows on the margins of drainage lines, swamps, soaks and artificial wetlands. While unlikely to be directly impacted by the proposed quarry, impact on the drainage lines flowing from the central ridge and the farm dam in the north western corner of the study area would have a negative impact on the populations and available habitat for this species.

Another vulnerable species, late-flower Flax-lily *Dianella tarda*, was observed within the flora reserve adjacent to the Beechworth Chiltern Road. This species was not observed within the study area and is unlikely to occur within the study area due to the grazing of domestic stock.

Fauna

Five state significant fauna species were recorded from the study area during the present assessment.

- Hooded Robin *Melanodryas cucullata* – a single bird was recorded in the Box Ironbark Forest remnant near the boundary with the Chiltern-Mt Pilot National Park.
- Speckled Warbler *Chthonicola sagittata* – two birds were observed within the Box Ironbark Forest on the northern slope of the central ridgeline where coarse woody debris and ground cover provided structural diversity at ground level.
- Brown Treecreeper *Climacteris picumnus victoriae* was recorded throughout wooded sections of the study area.
- A single Painted Honeyeater *Grantiella picta* was heard calling in the Box Ironbark Forest remnant near the interface with Chiltern-Mt Pilot National Park. The eucalypts with clumps of mistletoe within the study area provide food and nesting sites for this species.
- A single Black Falcon *Falco subniger* was observed flying over the study area and may be resident and/or forage within open areas of the study area.

Two additional species have been recorded within the study area.

- Barking Owl *Ninox connivens* – the study area is known to form part of a home range for a resident pair of Barking Owls. Natasha Shedvin of

Healesville Sanctuary has been studying this pair as part of her PhD research on the species and has observed both birds foraging within the remnant woodland within the study area (N. Shedvin, Healesville Sanctuary, pers. comm.). The study area provides good foraging habitat for this species.

- Tree Goanna *Varanus varius* – this species was observed by Holcim contractors during a routine site inspection and by Biosis Research during botanical surveys. The abundant hollow logs, large dead and live trees and provide suitable foraging and refuge habitat for this large lizard.

There are records of numerous other threatened species from the general area and these are discussed in following sections.

2.4.2 Best or remaining 50% habitat for rare and threatened species

This section considers all species listed on the DSE Advisory list for Rare or Threatened Plants in Victoria which have been recorded from the site, which are likely to be present or for which the habitat could be important. For any rare or threatened species likely to be present or for which the habitat could be important, the following provides a description of whether the site constitutes the best 50% of habitat for the species or the remaining 50% in accordance with Table 5 page 53 of the Framework and using Table 2 on page 11 of *Native Vegetation Guide for assessment of referred planning permit applications*. The decision making process for making this determination is detailed in Table 1.

None of the vegetation proposed for clearing represents the best 50% of habitat for any threatened flora species. However the drainage lines supporting Narrow Goodenia on the southern side of the main ridge, which will be included within the offset site, represent the best 50% of habitat for this species. While there may be some indirect impact on half of the populations observed, changes in hydrology associated with the decrease in catchment area produced by the quarry are not expected to adversely impact this species.

The woodland habitat present was assessed as the best 50% of habitat for threatened birds such as Barking Owl *Ninox connivens* and Diamond Firetail *Stagonopleura guttata*, reptiles such as the Tree Goanna *Varanus varius* and mammals such as the Brush-tailed Phascogale *Phascogale tapoatafa*. The site also provides potential habitat for other threatened and near threatened species such as Bandy Bandy *Vermicella annulata*, Squirrel Glider *Petaurus norfolcensis*, Grey-crowned Babbler *Pomatostomus temporalis*, Turquoise Parrot *Neophema pulchella*, Regent Honeyeater *Xanthomyza Phrygia* and Swift Parrot *Lathamus discolor*. However, the potential impact generated by the proposed quarry is unlikely to be significant for these species.

Table 1 (Part A): Determination of best/remaining habitat for rare or threatened flora species

Habitat Zone:					
Species	Conservation status	Steps [1]	Determination of Best 50% / Remaining 50% [2]	Conservation significance [3]	Notes
<i>Goodenia macbarronii</i>	Vulnerable	ABC	Best (8 & 14)	Very High	Species is common within drainage lines identified on the southern side of main spur.
<i>Eucalyptus sideroxylon</i>	Rare	ABEF	Best (6, 7 & 9)	High	Dominates Patches 6 and 7, Scattered to common in Patch 9
<i>Gratiola pumilo</i>	Rare	ABEF	Best (8 & 14)	High	No direct impact from the proposed quarry
<i>Caladenia concolor</i>	Endangered	AD	Remaining	High	No direct impact from the proposed quarry on potential habitat. Suitable as a translocation receptor site.
<i>Swainsona recta</i>	Endangered	AD	Remaining	High	No direct impact from the proposed quarry on potential habitat. Suitable as a translocation receptor site.
<i>Senecio garlandii</i>	Endangered	AD	Remaining	High	No direct impact from the proposed quarry on potential habitat. Suitable as a translocation receptor site.
<i>Acacia deanei</i> subsp. <i>deanei</i>	Endangered	ADF	Remaining	High	Large species, not seen on site. Suitable as a translocation receptor site
<i>Acacia deanei</i> subsp. <i>pauci</i> .	Rare	ABEF	Remaining	Medium	Large species, not seen on site. Suitable as a translocation receptor site
<i>Acacia doratoxylon</i>	Rare	ABEF	Remaining	Medium	Large species, not seen on site. Suitable as a translocation receptor site
<i>Acacia triptera</i>	Rare	ADF	Remaining	Medium	Large species, not seen on site. Suitable as a translocation receptor site
<i>Brachyscome gracilis</i>	Vulnerable	AD	Remaining	High	Potential as a translocation receptor site
<i>Calochilus imberbis</i>	Rare	AD	Remaining	Medium	Suitable as a translocation receptor site
<i>Calotis cuneifolia</i>	Rare	AD	Remaining	Medium	Suitable as a translocation receptor site
<i>Cassinia ozothamnoides</i>	Rare	ADF	Remaining	High	Large species, not seen on site. Suitable as a translocation receptor site
<i>Centipeda nidiformis</i>	Rare	AD	Remaining	Medium	Potential habitat present but unlikely to occur.
<i>Dianella tarda</i>	Vulnerable	AD	Remaining	High	Potential habitat present but unlikely to occur. Recorded adjacent to site. Grazing would have eliminated this species.
<i>Dipodium hamiltonianum</i>	Endangered	AD	Remaining	High	Suitable as a translocation receptor site.

<i>Diuris punctata</i> var. <i>punct.</i>	Vulnerable	AD	Remaining	High	Suitable as a translocation receptor site.
<i>Fimbristylis velata</i>	Rare	AD	Remaining	Medium	Potential habitat present but unlikely to occur.
<i>Goodia medicaginea</i>	Rare	AD	Remaining	Medium	Potential habitat present but unlikely to occur.
<i>Indigofera adesmiifolia</i>	Vulnerable	AD	Remaining	High	Potential habitat present but unlikely to occur.
<i>Isoetes pusilla</i>	Endangered	AD	Remaining	High	Potential habitat present but unlikely to occur.
<i>Pultenaea foliolosa</i>	Rare	AD	Remaining	Medium	Large species, not seen on site. Suitable as a translocation receptor site

[1] From Table 2 in the *Guide for Assessment of Referred Planning Permit Applications* (DSE 2007) specify steps taken in habitat assessment to determine best 50% or remaining 50% of habitat.

[2] Specify 'best' or 'remaining'.

[3] Conservation significance of the habitat zone based on consideration of threatened species.

Table 1 (Part B): Determination of best/remaining habitat for threatened fauna species

Habitat Zones: As per patch numbers under Best/ Remaining 50%					
Species	Conservation status	Steps [1]	Determination of Best 50% / Remaining 50% [2]	Conservation significance [3]	Notes
Swift Parrot <i>Lathamus discolor</i>	Endangered	ADF	Best (1, 2, 6, 9, 10, 17, 18)	Very High	Assumes the species does make significant use of the woodlands
Regent Honeyeater <i>Xanthomyza phrygia</i>	Endangered	AD	Not Considered	NA	Assumes the species does not make significant use of the site
Spot-tailed Quoll <i>Dasyurus maculatus mac.</i> (SE main pop)	Endangered	AD	Not Considered	NA	Assumes the species does not make significant use of the site
Pink-tailed Worm-lizard <i>Aprasia parapulchella</i>	Endangered	AD	Not Considered	NA	Targeted survey did not locate this species.
Striped Legless Lizard <i>Delma impar</i>	Endangered	AD	Not Considered	NA	Targeted survey did not locate this species.
Growling Grass Frog <i>Litoria raniformis</i>	Endangered	AD	Not Suitable	NA	No suitable habitat present
Golden Sun Moth <i>Synemon plana</i>	Endangered	AD	Not Considered	NA	Targeted survey did not locate this species.

Red-chested Button-quail <i>Turnix pyrrhotorax</i>	Vulnerable	AD	Not Considered	NA	Assumes the species does not make significant use of the site
Barking Owl <i>Ninox connivens</i>	Endangered	ABEF	Best (1, 2, 6, 9, 10, 17, 18)	Very High	Site is included in the territory of a breeding pair
Powerful Owl <i>Ninox strenua</i>	Vulnerable	ADF	Remaining	High	Species is a likely visitor to the woodlands within the site.
Turquoise Parrot <i>Neophema pulchella</i>	Near Threatened	ADF	Best (all patches)	High	Good quality woodland breeding habitat present.
Grey-crowned Babbler <i>Pomatostomus temporalis</i>	Endangered	AD	Not Considered	NA	Assumes the species does not make significant use of the site
Chestnut-rumped Heathwren <i>Hylacola pyrrhopygia</i>	Vulnerable	ADF	Remaining (all)	High	Likely visitor to woodland areas.
Speckled Warbler <i>Chthonicola sagittata</i>	Vulnerable	ABEF	Best (1, 2, 6, 9, 10, 17)	Very High	Recorded in Box Ironbark Forest
Brown Treecreeper <i>Climacteris picummus victor.</i>	Near Threatened	ABEF	Best (1, 2, 6, 9, 10, 17)	High	Common in woodlands on the site
Painted Honeyeater <i>Grantiella picta</i>	Vulnerable	ABEF	Best (1, 2, 6, 9, 10, 17)	Very High	Likely visitor to woodland areas.
Diamond Firetail <i>Stagonopleura guttata</i>	Vulnerable	ADF	Best (all patches)	Very High	Likely resident of woodland areas.
Hooded Robin <i>Melanodryas cucullata</i>	Near Threatened	ABEF	Best (all patches)	High	Recorded on site.
Crested Bellbird <i>Oreoica gutturalis</i>	Near Threatened	ADF	Best (1, 2, 6, 9, 10, 17)	High	Possible visitor to woodland areas.
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	Vulnerable	ADF	Best (1, 2, 6, 9, 10, 17, 18)	Very High	Likely resident of woodland areas.
Squirrel Glider <i>Petaurus norfolcensis</i>	Endangered	ADF	Best (1, 2, 6, 9, 10, 17)	Very High	Likely resident of woodland areas.
Tree Goanna <i>Varanus varius</i>	Vulnerable	ABEF	Best (all patches)	Very High	Recorded on site.
Bandy Bandy <i>Vermicella annulata</i>	Near Threatened	AD	Not Considered	NA	Assumes the species does not make significant use of the site
Brown Toadlet <i>Pseudophryne bibronii</i>	Endangered	AD	Not Considered	NA	Assumes the species does not make significant use of the site

[1] From Table 2 in the Guide for Assessment of Referred Planning Permit Applications (DSE 2007) specify steps taken in habitat assessment to determine best 50% or remaining 50% of habitat.

[2] Specify 'best' or 'remaining'.

[3] Conservation significance of the habitat zone based on consideration of threatened species.

2.4.3 Management issues (threats)

Narrow Goodenia

In order to guide management for Narrow Goodenia, four populations will be subject to detailed population monitoring, two from potentially impacted drainage lines and two from drainage lines not impacted by the proposed extraction limit. At each of the four populations of Narrow Goodenia monitored the extent of the population will be defined and marked. Within that area four one metre square plots would be established and permanently marked. The number of Narrow Goodenia within each 1x1 m plot would then be recorded. On going monitoring will evaluate whether the extent of each population is expanding or contracting and if the numbers within each 1x1 m plot is changing.

If monitoring suggests that any of the populations is declining then various mitigation measures will be evaluated and discussed with DSE and approved measures implemented. Mitigation options include artificial augmentation of water input into impacted sub-catchments and seed collection and/or propagation to establish a translocated population in other nearby areas of suitable habitat.

Hollow Dependant Fauna

While the Large Old Tree offsets prescribed by the Framework provide compensation for the loss of hollow bearing trees through the increased protection of other LOTs, there is still a loss of hollows within the immediate area of impact. This results in a short to medium term decline in the local availability of hollows which provides an important resource for hollow dependant fauna.

To compensate for this loss 100 suitably designed and maintained nest boxes will be placed in areas of retained and managed native vegetation. This will provide additional den sites for species such as the Brush-tailed Phascogale, Squirrel Glider and hollow-nesting birds such as the Turquoise Parrot. These will be placed within the offset areas and/or within the neighboring Chiltern-Mt Pilot National Park (subject to negotiations with DSE and Parks Victoria) where hollows are a scarce resource. All three species have been recorded using nest boxes in the Chiltern area and the local population of these species can be expected to benefit from these boxes.

2.5 Like-for-like Criteria

The offset is located in the Northern Inland Slopes Bioregion and comprises all relevant EVCs (*Rainshadow* Grassy Woodland, Valley Grassy Forest, Box Ironbark Forest and Creekline Grassy Woodland). The offset zones are of the

same or higher conservation significance as the loss zones and generally meet all the like-for-like criteria as specified in Appendix 4, Table 6, pp.54-55 of *Victoria's Native Vegetation Management: A Framework for Action (NRE 2002a)*:

- Bioregion
- Vegetation/ habitat type
- Landscape role
- Quality objectives
- Proportion of revegetation included in the offset

The majority of the prescribed Habitat Hectare offsets for the new Chiltern Quarry are available within the Eames property and contiguous leased road reserves proposed to be purchased and protected by Holcim. However, the existing condition scores for some habitat hectare offsets proposed for the loss of Grassy Woodland are lower than prescribed by the 90% criterion identified by the Framework (NRE 2002a) (i.e. offsets for Patch 1 need to have a minimum score of 0.43 and therefore the offsets from Patch 3, which has a score of 0.37, cannot provide a like-for-like offset). Also the proportion of the large old trees (LOTs) available for protection is greater than prescribed for Valley Grassy Forest and less than that prescribed for Grassy Woodland.

Holcim has therefore proposed a non-conforming offset for DSE approval. To compensate for this variation, Holcim would provided a greater habitat hectare offset than prescribed for all EVCs except Grassy Woodland and protection for all LOTs within the defined offset site. Therefore while the proposed offset package largely conforms to the like-for-like criteria, a broader package of offsets providing a good conservation result is to be protected and managed as a Net Gain outcome for the new Chiltern Quarry.

Table 5: (Part A) Meeting like-for-like criteria for clearing a remnant patch

Clearing site					Offset site						
Target No.	Habitat Zone	EVC #: Name	Min Habitat score for target*	Other Like-for-like requirements (beyond being in the same Bioregion)	Trading up	Offset zones	Bioregion	EVC#: Name	Conservation significance	Habitat score	Other Like-for-like requirements
Very High Conservation Significance											
VH1	HZ 1	175-62: Grassy Woodland	0.43	Grassy Woodland	No	HZ 2, 13 & 17	NIS	175-62: Grassy Woodland	Very High	0.44 – 0.48	NA
VH2	HZ 2	175-62: Grassy Woodland	0.43	Grassy Woodland	No	HZ 2, 13 & 17	NIS	175-62: Grassy Woodland	Very High	0.44 – 0.48	NA
VH3	HZ 3	175-62: Grassy Woodland	0.33	Best 50% for Diamond Firetail and Tree Goanna	No	HZ 3 & 18	NIS	175-62: Grassy Woodland	Very High	0.37 – 0.35	Best 50% for Diamond Firetail and Tree Goanna
VH4	HZ 6	61: Box Ironbark Forest	0.59	Box Ironbark Forest	No	HZ 6	NIS	61: Box Ironbark Forest	Very High	0.65	NA
VH5	HZ 7	61: Box Ironbark Forest	0.51	Box Ironbark Forest	No	HZ 6 & 7	NIS	61: Box Ironbark Forest	Very High	0.57 – 0.65	NA
VH6	HZ 9	47: Valley Grassy Forest	0.39	Valley Grassy Forest	No	HZ 9 & 10	NIS	47: Valley Grassy Forest	Very High	0.43 – 0.45	NA
VH7	HZ 11	47: Valley Grassy Forest	0.27	Best 50% for Diamond Firetail and Tree Goanna	No	HZ 9, 10 & 11	NIS	47: Valley Grassy Forest	Very High	0.30 - 0.43	Best 50% for Diamond Firetail and Tree Goanna
VH8	HZ 13	175-62: Grassy Woodland	0.41	Grassy Woodland	No	HZ 13	NIS	175-62: Grassy Woodland	Very High	0.46	NA
VH9	HZ 16	47: Valley Grassy Forest	0.32	Best 50% for Diamond Firetail and Tree Goanna	No	HZ 16	NIS	47: Valley Grassy Forest	Very High	0.35	Best 50% for Diamond Firetail and Tree Goanna
VH10	HZ 18	175-62: Grassy Woodland	0.32	Best 50% for Swift Parrot, Barking Owl, Tree Goanna & Brush-tailed Phascogale	No	HZ 18	NIS	175-62: Grassy Woodland	Very High	0.35	Best 50% for Swift Parrot, Barking Owl, Tree Goanna & Brush-tailed Phascogale

High Conservation Significance											
H1	HZ 8	68: Creeklime Grassy Woodland	0.22	Creeklime Grassy Woodland or a VH significance vegetation	No	HZ 8 & 14	NIS	68: Creeklime Grassy Woodland	High	0.29	NA

Table 6: (Part A) Meeting like-for-like criteria for clearing scattered trees

Clearing site						Offset site				
Target	Tree numbers	Bioregion	Pre-1750 EVC#: Name	Conservation significance	Other like-for-like reqts	Offset zone	Bioregion	EVC#: Name	Conservation significance	Other like-for-like reqts
H1	1 Large Old Tree	Northern Inland Slopes	175-62: Grassy Woodland	High	NA	Revegetation area near HZ 2 & 13	Northern Inland Slopes	Appropriate for Grassy Woodland	Nil	NA

2.6 Quantification of Gains Available on Offset Site – Eames Property

Table 7: (Part A1) Quantification of offset gains available – protection and management of a remnant patch

Offset Zone		HZ 2			HZ 3			HZ 4			HZ 5			TOTAL		
Land Tenure		Private			Private			Private			Private					
Overlays applying to zone		Nil			Nil			Nil			Nil					
Property size (ha)		101.79			101.79			101.79			101.79					
Patch size (ha)		1.38			15.39			14.11			3.49					
Security arrangement		Section 173 of the Planning and Environment Act 1987														
Bioregion		NIS			NIS			NIS			NIS					
EVC Name		Grassy Woodland			Grassy Woodland			Valley Grassy Forest			Valley Grassy Forest					
EVC standardiser		n/a			n/a			n/a			n/a					
EVC Bioregional Conservation Significance		Very High			Very High			Very High			High					
		Max. Possible Score	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement		
Scores	Large Old Trees	10	3	na	na	3	na	na	3	na	na	0	na	na		
	Canopy Cover	5	0	0.25	0	0	0	0.6	0	0	0.6	0	0	0.6		
	Lack of Weeds	25	5	0.5	2.5	5	0.5	2.5	5	0.5	2.5	5	0.5	2.5		
	Understorey	15	6	na	2	6	na	2	6	NA	2	6	na	2		
	Recruitment	10	0	0	0	0	0	0	0	0	0	0	0	0		
	Organic Matter	5	3	0.3	2	3	0.3	2	3	0.3	2	3	0.3	2		
	Logs	5	3	3.4	0	3	3	0	0	0	0	0	0	0		
	Standardised Site Condition		32			20			17			14				
	Landscape Context	25	16			17			17			17				
	Current habitat score of zone	100	48			37			34			31				
Conservation significance	Conservation status x Habitat Score		VH			H			H			H				
	Threatened Species Rating		VH			VH			VH			H				
	Other Site Attribute Rating		L			L			L			L				
	Overall Conservation Significance		VH			VH			VH			H				
Subtotals of Maintenance & improvement gains				4.7	6.5			3.8	7.1			0.8	7.1		0.8	7.1
Standardised Sum of Maintenance + Improvement Gain				11.2				10.9				7.9			7.9	
Prior management Gain (10% of current habitat score)				4.8				3.7				3.4			3.1	
Security Gain				4.8				3.7				3.4			3.1	
Total gain in Habitat Points per hectare				20.8				18.3				14.7			14.1	
Habitat Score gained per hectare (gain points/100)				0.21				0.18				0.15			0.14	
Size of the offset zone (ha)				1.38				15.39				14.11			3.49	
Total Gain (Hha)				0.29				2.82				2.07			0.49	
Large old trees available for protection				22				2				6			0	
Medium old trees available for protection																

Table 8: (Part A2) Quantification of offset gains available – protection and management of a remnant patch

Offset Zone		HZ 6			HZ 7			HZ 13			HZ 16			TOTAL		
Land Tenure		Private			Private			Private			Private					
Overlays applying to zone		Nil			Nil			Nil			Nil					
Property size		101.79			101.79			101.79			101.79					
Patch size (ha)		4.02			2.34			0.24			19.50					
Security arrangement		Section 173 of the Planning and Environment Act 1987														
Bioregion		NIS			NIS			NIS			NIS					
EVC Name		Box Ironbark Forest			Box Ironbark Forest			Grassy Woodland			Valley Grassy Forest					
EVC standardiser		n/a			n/a			n/a			n/a					
EVC Bioregional Conservation Significance		Very High			Very High			Very High			Very High					
		Max. Possible Score	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement		
Scores	Large Old Trees	10	6	na	na	3	na	na	3	na	na	3	na	na		
	Canopy Cover	5	3	0.15	0.4	0	0	0	0	0	0.6	0	0	0.6		
	Understorey	25	15	1.5	5	15	1.5	5	15	1.5	2.5	5	0.5	5		
	Lack of Weeds	15	13	na	4	13	na	4	6	na	2	9	na	4		
	Recruitment	10	6	0.6	4	6	0.6	4	0	0	2	0	0	0		
	Organic Matter	5	3	0.3	2	3	0.3	2	3	0.3	2	3	0.3	2		
	Logs	5	2	2.4	0	0	0	0	2	2	0	0	0	0		
	Standardised Site Condition		48			40			29			20				
	Landscape Context	25	17			17			17			15				
	Current habitat score of zone	100	65			57			46			35				
Conservation significance	Conservation status x Habitat Score															
	Threatened Species Rating															
	Other Site Attribute Rating															
	Overall Conservation Significance															
Subtotals of Maintenance & improvement gains				4.95	15.4			2.4	15.			3.8	9.1		0.8	11.6
Standardised Sum of Maintenance + Improvement Gain				20.35				17.40				12.9			12.40	
Prior management Gain (10% of current habitat score)				6.50				5.70				4.6			3.50	
Security Gain				6.50				5.70				4.6			3.50	
Total gain in Habitat Points per hectare				33.35				28.80				22.1			19.40	
Habitat Score gained per hectare (gain points/100)				0.33				0.29				0.22			0.19	
Size of the offset zone (ha)				4.02				2.34				0.24			19.50	
Total Gain (Hha)				1.34				0.67				0.10			3.78	
Large old trees available for protection				45				0				2			3	
Medium old trees available for protection												0				
															50	

Table 9: (Part A3) Quantification of offset gains available – protection and management of a remnant patch

Offset Zone		HZ 9			HZ 10			HZ 17			HZ 18			TOTAL	
Land Tenure		Private			Private			Private			Private				
Overlays applying to zone		Nil			Nil			Nil			Nil				
Property size		101.79			101.79			101.79			101.79				
Patch size (ha)		4.98			1.35			3.08			13.09				
Security arrangement		Section 173 of the Planning and Environment Act 1987													
Bioregion		NIS			NIS			NIS			NIS				
EVC Name		Valley Grassy Forest			Valley Grassy Forest			Grassy Woodland			Grassy Woodland				
EVC standardiser		n/a			n/a			n/a			n/a				
EVC Bioregional Conservation Significance		Very High			Very High			Very High			Very High				
		Max. Possible Score	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	Current Site Condition Components	Maintenance	Improvement	
Scores	Large Old Trees	10	6	na	na	6	na	na	3	na	na	3	na	na	
	Canopy Cover	5	5	0.25	0	5	0.25	0	5	0.25	0	0	0	0.6	
	Understorey	25	5	0.5	2.5	5	0.5	2.5	5	0.5	5	5	0.5	5	
	Lack of Weeds	15	6	na	2	6	na	2	13	na	4	9	na	4	
	Recruitment	10	0	0	0	0	0	0	0	0	0	0	0	0	
	Organic Matter	5	3	0.3	2	3	0.3	2	3	0.3	2	3	0.3	2	
	Logs	5	3	3.4	0	5	5	0	0	0.4	0	0	0	0	
	Standardised Site Condition		28			30			29			20			
	Landscape Context	25	15			15			15			15			
	Current habitat score of zone	100	43			45			44			35			
Conservation significance	Conservation status x Habitat Score														
	Threatened Species Rating														
	Other Site Attribute Rating														
	Overall Conservation Significance														
Subtotals of Maintenance & improvement gains				4.45	6.5			6.05	6.5			1.7	11.0	0.8	11.6
Standardised Sum of Maintenance + Improvement Gain				10.95				12.55				12.7		12.40	
Prior management Gain (10% of current habitat score)				4.3				4.5				4.40		3.50	
Security Gain				4.3				4.5				4.40		3.50	
Total gain in Habitat Points per hectare				19.55				21.55				21.5		19.40	
Habitat Score gained per hectare (gain points/100)				0.20				0.22				0.22		0.19	
Size of the offset zone (ha)				4.98				1.35				3.08		13.09	
Total Gain (Hha)				0.97				0.29				0.66		2.54	
Large old trees available for protection				39				14				25		21	
Medium old trees available for protection												0		70	
														99	
														70	

Note also that a roughly triangular area to the east of the proposed Work Authority is included in the Eames property offset site as a LOT protection area (Figure 2). This area will protect an additional 109 LOTs and 121 Medium Old Trees within Valley Grassy Forest. This brings the total number of trees to be protected to 286 LOTs and 191 Medium Old Trees (MOTS).

2.7 Allocation of Native Vegetation Gains

Table 10: (Part A) Allocation of native vegetation gains for clearing a remnant patch

Gain Target		Trading Up	Source of gains to meet the target		Outcome	
Target No.	Target (Hha)	Discount	Offset Zones	Gain (Hha)	Total Gains (Hha)	Surplus Deficit (Hha)
VH1 (HZ1)	1.64 VHCS	NA	HZ2 (part), 13 & 17	0.99	0.99	0.65 VHCS deficit
VH2 (HZ2)	0.03 VHCS	NA	HZ2 (balance)	0.03	0.03	0.00
VH3 (HZ3)	7.61 VHCS	NA	HZ3, 18(part), 4(part), 5 & 6	7.61	7.61	0.00
VH4 (HZ6)	0.34 VHCS	NA	HZ6 (part)	0.79	0.79	0.94 VHCS Surplus
VH5 (HZ7)	0.73 VHCS	NA	HZ6 (balance) & 7	0.73	0.73	0.00
VH6 (HZ9)	0.08 VHCS	NA	HZ9	0.97	0.97	0.89 VHCS Surplus
VH7 (HZ11)	0.16 VHCS	NA	HZ4(balance) & 5	2.56	2.56	2.40 VHCS Surplus
VH8 (HZ13)	0.03 VHCS	NA	HZ13	0.03	0.03	0.00
VH9 (HZ16)	1.55 VHCS	NA	HZ16	3.78	3.78	2.23 VHCS Surplus
VH10 (HZ18)	0.26 VHCS	NA	HZ18 (balance)	0.26	0.26	0.00
H1 (HZ8)	0.00 HCS	NA	HZ8 & 14	0.22	0.22	0.22 HCS surplus

VHCS = Very High Conservation Significance; HCS = High Conservation Significance

Table 11: (Part A) Allocation of tree offsets for clearing scattered trees or trees in a remnant patch

Gain Target				Source of tree offsets to meet the target			Outcome		
Target No.	Trees to be protected		Plants to be recruited	Offset Zone	Trees protected		Plants recruited	Tree protection surplus/ deficit	Tree recruit surplus/ deficit
VH1	LOT Patch 1	192	960	HZ 2, 3, 13, 17 & 18	LOT	72	960	120 deficit	0
VH3	LOT Patch 3	64	320	HZ4, 6, 8 & 10	LOT	67	320	3 surplus	0
VH6	LOT Patch 9	40	200	HZ9 & 16	LOT	42	200	2 surplus	0
H1	LOT scattered in Patch 15	-	100	Revegetation of Patch 15	NA		100	NA	0

VHCS = Very High Conservation Significance; HCS = High Conservation Significance

Note that an area to the east of the defined offset site supports an additional 109 LOTs and 121 MOTs within Valley Grassy Forest. Protection of this resource is allocated as an offset for the deficit associated with the offset prescription for VH1.

3.0 PART B: OFFSET IMPLEMENTATION – EAMES PROPERTY

3.1 Offset Site Details

Landowner of offset site	Mr. Greg Eames
Type of offset (onsite, 3 rd party)	On site
Location and address of offset site	Off Black Dog Creek Road, Chiltern
Area of offset site (ha)	101.78
Offset site number (if applicable)	
Volume	6569
Folio	733
Parish	
Allotment	
Local Government Area	Indigo Shire
Responsible Authority	Indigo Shire
Bioregion	Northern Inland Slopes

3.2 Strategy for Offset Site

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

3.3 Offset Security and Management Responsibility

Who is liable/responsible for meeting offset requirements?	Holcim (Australia) Pty Ltd
Type of security (i.e. Agreement under Section 69 of the Conservation, Forest and Lands Act 1987, Agreement under Section 173 of the Planning and Environment Act 1987 or Covenant under the Victorian Conservation Trust Act 1972)	Agreement under Section 173 of the Planning and Environment Act 1987
Date 10-year offset management to commence	
Date 10-year offset management expires	
Date agreement registered on-title	
Offset site management responsibility (i.e. Landowner, Authority Name)	Holcim (Australia) Pty Ltd
Offset Monitoring Responsibility (i.e. Responsible Authority, DSE)	Indigo Shire / DPI / DSE

An offset site must be protected in perpetuity to qualify as generating an offset gain. A mechanism to ensure ongoing management and permanent protection of

the site needs to be specified (e.g. s.173 agreement, s. 69 agreement, Trust for Nature covenant) (DSE 2006).

An offset area including and otherwise contiguous within the new Chiltern Quarry will be secured in-perpetuity through an appropriate legal encumbrance registered on the property. The encumbrance registered on title will require the landholder to manage the land in accordance with this Offset Management Plan. In addition, the Deed will specifically state the in-perpetuity land-use commitments across the site to:

- Retain all standing trees (dead or alive);
- Retain all fallen timber/branches/leaf litter;
- Exclude domestic stock except as permitted by this plan;
- Eliminate all high threat environmental woody weeds (to <1% cover) and ensure that the cover of other high threat weeds does not increase beyond current levels;
- Exclude fertilizer application; and
- Control the accumulation of ground cover biomass.

Holcim (Australia) Pty Ltd will enter into an arrangement with the landowner to take responsibility for the implementation of this offset plan for the period over which they intend to occupy the site (expected to be 50 years or more). After this period the landowner will resume responsibility for maintaining the offset site. The implementation of the management plan will be monitored by an independent ecologist who will verify that the actions have been carried out appropriately.

Implementation of these actions to improve security yields a gain of 10% of the current habitat score for the offset site (DSE 2006). The 10 year management period will commence when the Section 173 agreement becomes active and no net gain credits will accrue until the agreement is in force.

3.4 Ongoing Land-use Commitments

Offsets will be achieved by:

- Retaining fallen logs, fallen branches and leaf litter;
- Excluding stock (unless required as part of the ecological management of the site and prior consent has been obtained from DSE Biodiversity Services);

- Retaining all native vegetation, dead or alive including trees; and
- Foregoing entitlement to harvest timber.

The landowner will continue to manage the offset site after the completion of Year 10 as specified in 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.

Any proposed uses or development of the site which conflict with the landowner commitments are not allowed under this plan.

3.5 Management Actions

Offsets will be achieved by:

- Fencing, information and access control;
- Weed control
 - Ensuring that weed cover does not increase beyond current levels
 - Eliminating all high threat environmental weeds (<1% cover);
- Managing logs and organic litter;
- Ecological burning (see Section 3.5.3) as required;
- Biomass control; and
- Supplementary planting and revegetation.

The management actions listed below outline the prescribed actions for achieving the habitat hectare gains identified in Table 7 through active management (maintenance and improvement) and permanent protection of the offset site. Table 12 details these prescribed actions and outlines the relevant timing for implementation. These actions will be applied to the entire Offset Areas identified in Figure 2.

3.5.1 Fencing, information and access control

The offset area required by Holcim is to be managed for conservation. While this area is contiguous with other areas of native vegetation, this plan only applies to the defined areas which provide the offsets required by Holcim (Figure 2).

The site is private property and no access provisions are made for the general public. Parts of the offset site could be used for educational purposes.

The defined offset site is partially fenced with standard farm fencing which is adequate to exclude domestic stock from some of the defined offset area. The site does support informal tracks or pathways relating to access to other sections of the owners property. Alternatives to these access paths are required by this plan as general stock movements across these areas will be prohibited and vehicle access by non-management vehicles discouraged. At least one access gate is required for each section of the defined offset site.

Significant populations of feral pests such as Rabbits *Oryctolagus cuniculus* and Hares *Lepus europeaus* are present both on site and in the broader environment. Where control of these feral pests cannot be done in the broader area (nominally within 500 m of the offset site) rabbit proof fencing can contribute to the effective control of these serious pests. Upgrading the fencing of the offset site to a rabbit proof standard to restrict the movement of rabbits and hares from adjacent areas not subject to active control works is therefore a primary requirement of this plan.

A process for communicating relevant information within this OMP to any other contractors working within the new Chiltern Quarry site shall be developed. As a minimum, a process shall be in place via the Safety Health and Environment Management System for ensuring all staff on site (not just managers) are aware of the offset areas and that access or disturbance within these areas is prohibited.

ACTIONS

- Construct appropriate fencing (e.g. standard stock/farm fencing with lockable gate) around the Offset Area to control vehicle access.
- Maintain fencing in functional condition and repair promptly if damage occurs. Fencing to be upgraded to rabbit-proof if required.
- Install signage to ensure that everyone is aware of the offset area boundaries and no-one enters these areas inadvertently. Signage should clearly state that access is prohibited and include a contact number for any construction related enquiries.
- Develop and implement a process for communicating relevant information about the offset areas to all staff who work within the Chiltern Quarry site (e.g. integrate into induction or JSA process).

3.5.2 Recruitment

Improvement in the scores for recruitment is achieved through control of all threats to recruitment such as grazing, weed invasion and biomass accumulation. Grazing by European Rabbits and Hares is evident and is likely to have a significant impact within the proposed offset area (even at low numbers). It is anticipated that improved recruitment will occur naturally through the control of feral pests and, if dense swards of grass develop, the controlled use of grazing by sheep. Grazing by other domestic stock such as goats, horses and cattle will be prohibited.

DSE guidelines indicate that commercial grazing in this bioregion is not permitted in offset areas within sites identified as being of low productivity. This includes the areas of Grassy Woodland within the Eames offset site and potentially includes the areas of Valley Grassy Forest. The gradual development of a shrub and tree layer in more open areas of the offset site and grazing by indigenous macropods is expected to restrict the development of dense swards of grassy ground cover. However the growth of the ground cover vegetation will need to be closely monitored to ensure dense swards of grass do not develop for any prolonged period. If such swards do develop they are likely to have a negative impact on the species richness of the affected area. If such swards persist over a prolonged period (over a number of years) they will have a negative impact on the gains which can be achieved within the offset site. Ecological monitoring of the offset site will determine whether biomass needs to be actively managed. Management options include the use of short duration pulse grazing by sheep within affected areas or localised ecological burning.

Supplementary planting of locally (within the site) extinct species or existing species unlikely to readily recruit **is a requirement** within areas of Grassy Woodland and Valley Grassy Forest of the offset areas (Figure 2). DSE define supplementary planting as the establishment of overstorey and/or understorey plants within a remnant patch. Typically this includes the planting or direct-seeding of defined life forms but can take the form of predicted recruitment of canopy tree species from on-site or adjoining areas.

Supplementary planting using tube-stock or direct seeding will be conducted in a manner consistent with DSE standards (DSE 2006). This will require the use of species within woody life forms of Grassy Woodland and Valley Grassy Forest such as prostrate shrubs, small shrubs, medium shrubs, understorey trees or large shrubs and overstorey trees. Including other understorey life form species (e.g. herbs, graminoids) may be appropriate in some cases.

For the EVCs within the Eames property DSE (2006) prescribe the target number of overstorey trees as 50 plants per hectare. If satisfactory natural recruitment is not evident within the first three years of this plan then these trees should be

propagated from locally collected seed. Targets for other life forms are presented in Table 12 while the species recommended for use in the supplementary planting program are listed in Appendix 2.

Table 12: Supplementary planting standards required by DSE to achieve prescribed gains

EVC	Life Form (No. of species and plants/ha)			
	Prostrate Shrub	Small shrub	Medium Shrub	Understorey Tree
Grassy woodland	2 sp., 100/ha	1 sp., 100/ha	1 sp., 200/ha	2 sp., 100/ha
Valley Grassy Forest	NA	3 sp., 500/ha	3 sp., 400/ha	3 sp., 100/ha

ACTIONS

- Within patches 2, 3, 4 & 5 eliminate all high threat woody environmental weeds (to <1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels. This will primarily be achieved by spot spraying with an appropriate herbicide or manual removal. Rates of application, modes of action and when best to apply which herbicide to a particular weed will vary depending on the species being targeted. Herbicide application details should be recorded so that the effectiveness of treatments can be monitored and assessed.
- Within patches 6, 7, 16, 17 & 18 eliminate all high threat environmental weeds (woody, grassy and herbaceous) (to <1% cover) and ensure that cover of other weeds does not increase beyond current levels. This will primarily be achieved by spot spraying with an appropriate herbicide or manual removal. Rates of application, modes of action and when best to apply which herbicide to a particular weed will vary depending on the species being targeted. Herbicide application details should be recorded so that the effectiveness of treatments can be monitored and assessed.
- Reduce and control European Rabbits and Hares using poison baits or similar methods, without soil disturbance. Control of rabbits should be undertaken in accord with *Victorian Pest Management: A Framework for Action – Rabbit Management Strategy* (NRE 2002b) and must be undertaken as part of a wider (at least property wide) pest animal control strategy (i.e. a persistent source population for rabbits was noted to occur around Black Dog Creek to the south and is also likely to occur within the neighbouring national park).

- Monitor the natural recruitment of overstorey species during the initial three years. If satisfactory recruitment is not evident then initiate supplementary planting to provide the target density of trees within three years.

3.5.3 Understorey, Organic Litter and Weed Control

Montpellier Broom *Genista monspessulana* is the only shrubby weed observed within the offset area. This species only occurs as scattered individuals and as such it will be readily removed from the site. Elimination of this species from the site is a high priority for this weed control program.

There are also relatively small infestations of a number of other potentially serious weeds species present including Paterson's Curse *Echium plantagineum* and St John's Wort *Hypericum perforatum*. Manual or chemical control efforts should be able to locally eliminate these species from the offset area. The control of these species is a high priority and should be conducted as soon as possible and before any new seed is set. Broader control works within the Eames property and immediately adjacent areas of the National Park should also be facilitated to reduce the reinvasion of this site.

Potential high threat weed species for the offset areas are given in Table 13. These species are based on the survey conducted by Biosis Research (2009). Any other significant environmental weeds identified during the ongoing site monitoring should also be controlled.

Table 13: High threat weeds for priority control (Biosis Research 2009).

Name	Common Name
<i>Echium plantagineum</i>	Paterson's Curse
<i>Genista monspessulana</i>	Montpellier Broom
<i>Hypericum perforatum</i>	St John's Wort
<i>Agrostis capillaris</i>	Brown-top Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Carduus pycnocephalus</i>	Slender Thistle
<i>Chondrilla juncea</i>	Skeleton Weed
<i>Cirsium vulgare</i>	Spear Thistle
<i>Citrullus spp.</i>	Melon
<i>Paspalum dilatatum</i>	Paspalum
<i>Phalaris aquatica</i>	Toowoomba Canary-grass
<i>Poa bulbosa</i> var. <i>bulbosa</i>	Bulbous Meadow-grass
<i>Rosa rubiginosa</i>	Sweet Briar

Fire is considered to be a reliable management tool to manage the build-up of ground cover biomass in the Northern Inland Slopes bioregion and is the preferred method for biomass reduction. As a tool to reduce biomass it can be applied in a more controlled manner than grazing by domestic stock and provides the natural reproductive cues required by many species to regenerate from seed. Fire is also a valuable tool in the control of exotic species, particularly exotic annual grasses, when strategically applied to destroy seed crops, to stimulate dormant soil stored seed or used to remove the build up of dead material from herbicide application. However the ecological application of fire may be logistically difficult and undesirable, at least in the early stages of establishment for vegetation subject to supplementary planting. Therefore the use of ecological burning should be considered as a management tool to control biomass and environmental weeds as directed by ecological advice on the management of this site but is not a compulsory component of this management plan. Any use of ecological burning would only be implemented under benign weather conditions and be conducted by DSE or other appropriately licensed and trained professionals approved by DSE and under DSE instruction or other relevant authorities.

DSE advise that the grazing of stock is not considered appropriate for control of herbaceous weeds or biomass control in grassy woodland vegetation in this bioregion. Stock is therefore to be excluded from the offset area of 101.79 ha through the construction and maintenance of a stock-proof farm fence (part or all of which may need to be rabbit proof). However, sheep grazing may be permitted under exceptional circumstances such as the unacceptable build up of ground cover biomass. Grazing would only be considered in consultation with DSE and the ecologist monitoring this offset site.

Dead branches, bark and leaves shed from large trees contribute to a range of benefits in the restoration of habitat including providing nursery sites for germinating plants as well as shelter and feeding areas to ground-dwelling animals. All fallen litter in the offset area is to be retained and not disturbed, with firewood collection explicitly prohibited.

ACTIONS

- Eliminate all high threat environmental woody weeds (to <1% cover) in Patches 2, 3, 4 & 5 and ensure that the cover of other high threat weeds does not increase beyond current levels.
- Within patches 6, 7, 16, 17 & 18 eliminate all high threat environmental weeds (woody, grassy and herbaceous) (to <1% cover) and ensure that cover of other weeds does not increase beyond current levels.
- Control weeds in a timely way (i.e. before seeding).

- Monitor offset areas for new weeds.
- Monitor ground cover biomass on at least an annual basis and every three months in areas where there is an undesirable build up of rank grass (as per advice from the monitoring ecologist).
- Reduce ground cover biomass by either grazing or ecological burning in areas where the ground cover is consistently above 70%.
- Protect natural regeneration or plantings of tree/shrub species.

3.5.4 Logs

The areas of woodland support a substantial cover of coarse woody debris. This is an important habitat feature and one that must be maintained and enhanced. Any trees or tree branches which fall in the offset site must be retained. Actions to move this material are only acceptable where such debris falls across the perimeter fence or is a significant obstruction to site access.

Any trees lopped or removed in association with the development of the quarry should have the coarse woody debris placed within areas of Patches 3 and 4 to increase the cover of this valuable ecological resource. Any existing coarse woody debris within the extraction zone should also be examined for its potential to be moved into the offset site.

ACTIONS

- Place coarse woody debris from any trees cleared in association with the New Chiltern Quarry within Patches 3 & 4 with minimal soil disturbance. This can be achieved by placing logs and branches within the offset site just beyond the margin of the extraction limit. Machine activity could therefore be restricted to the extraction limit.

3.5.5 Biomass Control

Control of the build up of ground cover biomass is expected to be achieved through macropod grazing and natural decomposition. Where there is a sustained build up in ground cover biomass over any one year and the combined ground cover of plants and litter is consistently above 70%, biomass will need to be actively reduced. While the controlled application of fire is the preferred method of biomass reduction this may not always be appropriate. While the grazing by domestic stock, such as goats, horses and cattle, will be explicitly prohibited by the legal encumbrance to the site which establishes this area as a net gain offset site, grazing by sheep may be strategically used to lower ground

cover biomass. However, the use of domestic stock is likely to be incompatible with the regeneration of many understorey lifeforms in the early stages of this offset plan and the build-up and persistence of grass biomass will need to be carefully monitored and appropriate management action implemented to achieve the best ecological outcome.

Strategically timed grazing for limited periods of time (pulse grazing) can maintain an open grassy structure essential for providing recruitment opportunities for non-grass life-forms in this ecosystem. However the use of grazing is restricted by this plan to when the total vegetation cover is consistently higher than 70% for a period of a year. It is unlikely that the entire offset site would be in such condition and therefore temporary electric fencing should be used to constrain the area grazed by sheep. The use of grazing is also likely to be constrained by the need to protect eucalypt regeneration and enhancement plantings.

Ecologically there are times when grazing can provide more benefits than disadvantages. Grazing in autumn, after the exotic annual grasses have germinated, allows sheep to target these species and reduce their cover and impact later in the season.

Otherwise, if possible, grazing should be avoided during very wet or very dry conditions. During these times the physical disturbance associated with the impact of hard hooves can cause significant damage to the soil crust which provides a significant impediment to weed invasion.

The use of sheep also provides a vehicle for weed propagules to be transported into the offset site via their faeces and wool. To minimise this potential impact sheep should be kept offsite in a holding pen without food for a short period of two days. This will allow their gut contents to pass before they enter the offset site. Sheep should also have either been recently shorn or their current fleece must not have been exposed to areas supporting viable weed seeds which are readily carried in wool (i.e. Bathurst Burr *Xanthium spinosum*).

ACTIONS

- Evaluate the need for biomass control on at least an annual basis;
- Maintain the total vegetation cover at no less than 70% (excluding areas of surface rock);
- If biomass control is considered necessary, evaluate the options of doing nothing, ecological burning or using pulse grazing to provide the best overall, ecological outcome;

- If pulse grazing is required, hold sheep outside the offset site without food for enough time to allow their gut contents to pass prior to them grazing the offset site;
- Ensure, as far as practical, that sheep are either recently shorn or there is a low likelihood that their fleece is contaminated with weed seeds.

3.5.6 Other Actions

3.5.6.1 Feral Predator Control

Predation on native fauna by the introduced Red Fox *Vulpes vulpes* and Feral Cat *Felis catus* are a listed threatening process under Victoria's *Flora and Fauna Guarantee Act 1988*. During the recent flora and fauna assessment of the site, several foxes were observed within or adjacent to the study area over a two day period, suggesting that a large population of this species is present (Biosis Research 2009). Feral Cats are also likely to be resident in this area.

Foxes and cats are strongly implicated in the decline of the Bush Stone-curlew and are likely to be preying on a number of other small terrestrial vertebrates including the Yellow-footed Antechinus *Antechinus flavipes*. As such, the control of these predators should be high priority. To be effective, fox and cat control must be undertaken throughout the local area, not just within the area covered by the conservation covenant. As such, foxes and cats should be controlled throughout the broader farm property and on adjacent properties, including the reserve managed by Parks Victoria. Methods for control include baiting and shooting.

Any measure to control foxes and cats should also focus on reducing introduced prey populations – principally the European Rabbit. A substantial rabbit population occurs in the vicinity of the proposed quarry area to the south of the site, where there are numerous warrens along Black Dog Creek.

ACTIONS

- Liaise with DSE on how to work with adjacent landowners to achieve coordinated and effective fox and cat control.
- Control foxes and cats using a combination of baiting and shooting.
- Control introduced prey populations within the broader farm property (See Section 2.5.2).

Table 12: Management Plan Actions and Timing for offsets on the Chiltern Quarry offset site.

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
1	1.1	None	Establish offset area	As soon as possible	83.4	ha	HOLCIM, Land Owner	Section 173 agreement
1	1.2	1.1	Using an appropriately qualified person, undertake baseline monitoring, establish monitoring points and refine management actions based on baseline results as outlined in Section 3.0.	Oct - Nov	-	-	HOLCIM, Land Owner	Prepare standard report including photos and identify agreed performance measures outlined in Section 3.0 and Table 3
1	1.3	1.1	Upgrade the fence to offset area as required under Section 2.5.2 and maintain fences in good working order.	Immediate (fence construction and upgrade), Continuous (inspection and management)	-	-	HOLCIM, Land Owner	Stock proof/Rabbit proof fence established as prescribed
1	1.4	1.2	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. Control total cover of weeds.	July - Oct	83.4	ha	HOLCIM, Land Owner- with technical input from relevant qualified person	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
1	1.5	1.3	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area (within 500m of offset site where possible).	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	No surface disturbance within offset site. No active rabbit warrens present within offset site, minimal surface harbour for rabbits and hares present (but excluding natural harbour such as rocks).

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
1	1.6	None	Evaluate ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
1	1.7	None	Collect propagation material for supplementary planting. Monitor site for tree recruitment.	Sept - Dec	-	-	HOLCIM, Land Owner	Enough material to plant out offset site in second year
2	2.1	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner- with technical input from relevant qualified person	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
2	2.2	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
2	2.3	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
2	2.4	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
2	2.5	1.7	Establish supplementary planting and collect additional material for replacement plantings. Monitor site for tree recruitment.	April - Dec	-	-	HOLCIM, Land Owner	Enough material to plant out offset site in second year

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
3	3.1	1.2	Undertake monitoring and refine management actions based on results.	Nov	-	-	HOLCIM, Land Owner- with technical input from relevant qualified person	As outlined in Section 3.0 and required by Table 3-
3	3.2	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner- with technical input from relevant qualified person	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
3	3.3	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
3	3.4	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
3	3.5	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
3	3.6	2.6	Monitor supplementary planting and replace any dead plantings. Monitor site for tree recruitment. Initiate supplementary plants of trees if required (see Section 2.5.3).	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
4	4.1	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
4	4.2	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
4	4.3	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
4	4.4	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
4	4.5	3.7	Monitor supplementary planting and replace any dead plantings. Supplementary plant overstorey trees if required.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
5	5.1	1.2	Undertake monitoring and refine management actions based on results	Nov	-	-	HOLCIM, Land Owner	As outlined in Section 3.0 and required by Table 3-
5	5.2	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
5	5.3	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
5	5.4	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
5	5.5	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
5	5.6	4.6	Monitor supplementary planting and replace any dead plantings.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
6	6.1	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
6	6.2	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area.	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
6	6.3	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
6	6.4	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
6	6.5		Monitor supplementary planting and replace any dead plantings	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
7	7.1	1.2	Undertake monitoring and refine management actions based on results.	Nov	-	-	HOLCIM, Land Owner	As outlined in Section 3.0 and required by Table 3-

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
7	7.2	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
7	7.3	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area.	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
7	7.4	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
7	7.5	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
7	7.6		Monitor supplementary planting and replace any dead plantings.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
8	8.1	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
8	8.2	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area.	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
8	8.3	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
8	8.4	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
8	8.5		Monitor supplementary planting and replace any dead plantings.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
9	9.1	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds at end of 10 years No increase in cover of other weeds beyond current levels. Minimum off-target damage
9	9.2	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area.	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
9	9.3	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
9	9.4	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
9	9.5		Monitor supplementary planting and replace any dead plantings.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings
10	10.1	1.2	Undertake final monitoring and refine on-going management actions based on results.	Nov	-	-	HOLCIM, Land Owner	As outlined in Section 3.0 and required by Table 3-

Year number	Action No	Required preceding action*	Activity Description	Timing of activity – month(s)	Quantity	Units	Who is responsible for this action?	Standard to be achieved
10	10.2	1.4	Spot spray all high threat grass / herb weeds before seed set using appropriate herbicide and eliminate all high threat woody environmental weeds. All High threat weeds will be reduced to a cover of less than 1%. Ensure that the cover of other weeds does not increase beyond current levels.	July - Oct	83.4	ha	HOLCIM, Land Owner	<1% cover of High threat environmental weeds No increase in cover of other weeds
10	10.3	1.5	Control pest animals (e.g. rabbits, hares, foxes and cats) within the offset and surrounding area.	Sept – Nov Feb – Apr	-	-	HOLCIM, Land Owner	Absence of evidence of grazing/browsing by pest animals
10	10.4	1.1	Maintain fence.	Continuous	-	-	HOLCIM, Land Owner	Regular inspection and repairs as required
10	10.5	None	Evaluated ground cover biomass and assess options for grazing by sheep as per Section 2.5.5. Consider ecological burning over small defined areas for biomass reduction and weed control.	Continuous	83.4	ha	HOLCIM, Land Owner	Maintain at minimum 70% ground cover of native vegetation.
10	10.6		Monitor supplementary planting and replace any dead plantings.	April - Aug	-	-	HOLCIM, Land Owner	Greater than 80% survival of plantings

3.6 Monitoring and Reporting

To ensure that the vegetation within the offset area is being managed appropriately, and that the objectives of Net Gain are being achieved, DSE require the landowner to submit a Landowner Monitoring and Reporting Form (Appendix 3) in the second, fifth and tenth year of management. However the site is also proposed to provide an offset for the EPBC-listed White Box – Yellow Box – Blakely’s Red Gum grassy woodland and Derived Native Grassland community and as such more detailed monitoring is proposed to satisfy DEWHA that significant improvements for this community are achieved on site.

The vegetation should be monitored as specified below by a qualified ecologist over a 10 year period. Monitoring reports should be presented to DSE within one month of the monitoring assessments or at the end of June for each year in which monitoring occurs. Formal monitoring will occur at the beginning of Years 1, 3, 5, 7 and 10.

Management activities (weed control, pest control, and periods of grazing) will be fully documented and included in the monitoring report.

ACTIONS

- A minimum of 20 permanent photo points will be established, marked and accurately located by GPS or similar within the reserve. Photo points will be located to adequately characterise the current vegetation condition, and include a range of weed species.
- At each photo point, establish a permanent quadrat (e.g. 10 x 10 metres) and record (Appendix 3) estimates of:
 - Diversity and percentage cover of indigenous species;
 - Percentage cover of high threat exotic species; and
 - Total percentage cover of exotic species.
- Short inspections by the managing ecologist to monitor management progress are recommended every three months for the first two years. After that additional inspections (over and above formal monitoring) will be conducted in years 4, 6, 8 and 9.
- An annual works program will be prepared by the end of June each year. The vegetation management contractor (if applicable) will assist with development of the works program. The works program for the coming year will also address issues that may not have been anticipated in formulating this original management plan.

- A monitoring report will be prepared at the end of years 1, 3, 5, 7 and 10 to the responsible authority, DSE and DEWHA.

Each monitoring report will include:

- Results from the photo points and permanent monitoring quadrats.
- A summary of management activities and comment on effectiveness, and report against each action and target in Table 3.
- Recommendations for adjustment to management actions if required.
- A completed Landowner monitoring and reporting form (required by DSE in years 2, 5, 10 and within three months as requested in writing by DSE after year 10).

3.7 Timing

The time frame of the OMP is 10 years from commencement of management works, in accordance with the Native Vegetation Framework (NRE 2002a). Gains are required to be achieved over this ten year period.

This management plan is current until the end of June 2020 however it should be periodically reviewed and modified if necessary.

Prior to works being undertaken each year the annual works program (based on Table 3) should be reviewed. The person undertaking the works should prepare a detailed works program. The works program for the coming year should also address issues that may not have been anticipated in formulating this original management plan.

4.0 THREATENED SPECIES MANAGEMENT

Over and above the monitoring requirements prescribed for net gain, a number of management actions are prescribed for threatened species and their habitat.

DSE have indicated that additional management actions are required for Narrow Goodenia *Goodenia macbarronii* and significant arboreal mammals such as Brush-tailed Phascogale *Phascogale tapoatafa* and Squirrel Glider *Petaurus norfolcensis*. Other threatened species which occur in the local area, such as Crimson Spider-orchid *Caladenia concolor* Mountain Swainson-pea *Swainsona recta*, should also be considered for translocation into the offset site where they can be protected and actively managed. However such actions would require the approval of both DSE, DEWHA and Holcim.

4.1 Narrow Goodenia

Populations of Narrow Goodenia have been observed at eight locations within minor drainage lines on the southern side of the main ridgeline. Four of these populations may be influenced indirectly by the extraction of rock as the upper catchment of the minor drainage line which they inhabit will be removed. The catchments of the other four populations will not be impacted by rock extraction. Other indirect impacts associated with the broader change in land use could include increased competition from weeds or the accumulation of ground cover biomass.

In order to guide management for this species, four populations will be subject to detailed population monitoring, two from potentially impacted drainage lines and two from drainage lines not impacted by the proposed extraction limit. At each of the four populations of Narrow Goodenia monitored the extent of the population will be defined and marked. Within that area four one metre square plots would be established and permanently marked. The number of Narrow Goodenia within each 1x1 m plot would then be recorded. On going monitoring will evaluate whether the extent of each population is expanding or contracting and if the numbers within each 1x1 m plot is changing.

If monitoring suggests that any of the populations is declining then various mitigation measures will be evaluated and discussed with DSE and approved measures implemented. Mitigation options include artificial augmentation of water input into impacted sub-catchments and seed collection and/or propagation to establish a translocated population in other nearby areas of suitable habitat.

ACTIONS

- Establish monitoring at four populations of Narrow Goodenia as described above.
- Conduct monitoring on an annual basis for the first five years upon establishing this area as an offset site. Subsequent monitoring would be every five years.
- Report the results of monitoring to DSE and respond to any negative trends in population size.

4.2 Mountain Swainson-pea

This endangered species is not known from the proposed offset site. However, given DSE approval, Holcim would fund local expertise to collect and propagate seed from the nearby population of this species known from the Chiltern-Mt Pilot National Park with the objective of establishing a new population within suitable protected habitat in the offset site.

Any material planted within the offset site would be subject to protective fencing and careful monitoring. The general area would also be the subject of intensive control works for rabbits and hares. It is suggested that areas of Valley Grassy Forest receiving additional runoff from the southern side of the main spur would provide a suitable environment for this species.

4.3 Hollow Dependant Fauna

While the Large Old Tree offsets prescribed by the Framework provide compensation for the loss of hollow bearing trees through the increased protection of other LOTs, there is still a loss of hollows within the immediate area of impact. This results in a short to medium term decline in the local availability of hollows which provides an important resource for hollow dependant fauna.

To compensate for this loss 100 suitably designed and maintained nest boxes will be placed in areas of retained and managed native vegetation. This will provide additional den sites for species such as the Brush-tailed Phascogale, Squirrel Glider and hollow-nesting birds such as the Turquoise Parrot. These will be placed within the offset areas and/or within the neighboring Chiltern-Mt Pilot National Park (subject to negotiations with DSE and Parks Victoria) where hollows are a scarce resource. All three species have been recorded using nest boxes in the Chiltern area and the local population of these species can be expected to benefit from these boxes.

ACTIONS

- Establish 100 nest boxes for hollow dependant fauna within the offset areas and/or other areas identified in consultation with DSE;
- Monitor and maintain (annually) these nest boxes for the life of the quarry and report usage to DSE.

4.4 Reptile Salvage

A protocol will be developed for the salvage for reptiles during the establishment of the pit and other site infrastructure. This plan will be completed to the satisfaction of DSE but would include the supervision of habitat destruction and the capture and translocation of reptiles before the existing soil/rock surface is destroyed.

The Bandy Bandy *Vermicella annulata* will be a particular focus of this salvage protocol and all suitable habitat for this species (i.e. hollow logs and stumps) will be carefully remove from the construction footprint in order to minimise any potential impact on this species.

REFERENCES

Biosis Research 2009. *Flora, fauna and Net Gain assessment of the proposed New Chiltern Quarry, Victoria*. Report for Holcim Australia. Authors: S. Mueck, M. Venosta and D. Gilmore.

Briggs, J.D. & Leigh, J.H. 1996. *Rare or Threatened Australian Plants*. CSIRO Australia & Australian Nature Conservation Agency.

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

DSE 2007. *Native vegetation: Guide for assessment of referred planning permit applications*. Department of Sustainability and Environment, Victoria.

NRE 2002a. *Victoria's Native Vegetation Management: A Framework for Action*. Department of Natural Resources & Environment, Victoria.

NRE 2002b. *Victorian Pest Management: A Framework for Action – Rabbit Management Strategy*. Department of Natural Resources and Environment.

APPENDICES

APPENDIX 1

Flora Species List

A1.1 Species recorded within the offset sites at the proposed new Chiltern Quarry

Following is a full list of flora recorded from the Chiltern Quarry site, taken from the flora and fauna assessment (Biosis Research 2009). Additional species are likely to be recorded from within the proposed offset site as some of these areas were not as intensively searched as the areas proposed to be impacted by the quarry.

Status (Australia/Victoria):

V/v Listed under EPBC Act as vulnerable / vulnerable in Victoria
R/r Rare (Briggs & Leigh 1996) / rare in Victoria

Species of regional significance (**49**) are highlighted in **bold**

Species	Common Name
Rare or Threatened Native Species	
r <i>Eucalyptus sideroxylon</i>	Mugga
v <i>Goodenia macbarronii</i>	Narrow Goodenia
r <i>Gratiola pumilo</i>	Dwarf Brooklime
Native Species	
<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia gunnii</i>	Ploughshare Wattle
<i>Acacia implexa</i>	Lightwood
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Acacia verniciflua</i>	Varnish Wattle
<i>Acaena echinata</i>	Sheep's Burr
<i>Acaena ovina</i>	Australian Sheep's Burr
<i>Allocasuarina verticillata</i>	Drooping Sheoak
<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Amphibromus nervosus</i>	Common Swamp Wallaby-grass
<i>Amyema miquelii</i>	Box Mistletoe
<i>Amyema miraculosa</i> subsp. <i>boormanii</i>	Fleshy Mistletoe
<i>Aphanes australiana</i>	Australian Piert
<i>Aristida behriana</i>	Brush Wire-grass
<i>Aristida ramosa</i>	Cane Wire-grass
<i>Arthropodium fimbriatum</i>	Nodding Chocolate-lily
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Austrodanthonia auriculata</i>	Lobed Wallaby-grass
<i>Austrodanthonia bipartita</i>	Leafy Wallaby-grass
<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
<i>Austrodanthonia duttoniana</i>	Brown-back Wallaby-grass
<i>Austrodanthonia eriantha</i>	Hill Wallaby-grass
<i>Austrodanthonia fulva</i>	Copper-awned Wallaby-grass
<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass
<i>Austrodanthonia laevis</i>	Smooth Wallaby-grass
<i>Austrodanthonia pilosa</i>	Velvet Wallaby-grass
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	Slender Wallaby-grass

Species	Common Name
Native Species (cont.)	
<i>Austrodanthonia setacea</i> var. <i>setacea</i>	Bristly Wallaby-grass
<i>Austrostipa densiflora</i>	Dense Spear-grass
<i>Austrostipa nodosa</i>	Knotty Spear-grass
<i>Austrostipa scabra</i> subsp. <i>falcata</i>	Rough Spear-grass
<i>Brachyloma daphnoides</i>	Daphne Heath
<i>Brunonia australis</i>	Blue Pincushion
<i>Bulbine bulbosa</i>	Bulbine Lily
<i>Burchardia umbellata</i>	Milkmaids
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	Sweet Bursaria
<i>Caladenia carnea</i>	Pink Fingers
<i>Callitris glaucophylla</i>	White Cypress-pine
<i>Carex appressa</i>	Tall Sedge
<i>Carex inversa</i>	Knob Sedge
<i>Centipeda elatinoides</i>	Elatine Sneezeweed
<i>Centipeda minima</i> subsp. <i>minima</i>	Spreading Sneezeweed
<i>Centrolepis strigosa</i> subsp. <i>strigosa</i>	Hairy Centrolepis
<i>Chamaesyce drummondii</i>	Flat Spurge
<i>Cheilanthes austrotenuifolia</i>	Green Rock-fern
<i>Cheilanthes distans</i>	Bristly Cloak-fern
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	Narrow Rock-fern
<i>Cheiranthra cyanea</i> var. <i>cyanea</i>	Blue Finger-flower
<i>Chenopodium pumilio</i>	Clammy Goosefoot
<i>Chloris truncata</i>	Windmill Grass
<i>Cotula australis</i>	Common Cotula
<i>Crassula decumbens</i> var. <i>decumbens</i>	Spreading Crassula
<i>Crassula sieberiana</i>	Sieber Crassula
<i>Cynoglossum suaveolens</i>	Sweet Hound's-tongue
<i>Cyperus gunnii</i> subsp. <i>gunnii</i>	Flecked Flat-sedge
<i>Cyperus sanguinolentus</i>	Dark Flat-sedge
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea
<i>Desmodium varians</i>	Slender Tick-trefoil
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily
<i>Dillwynia phyllicoides</i>	Small-leaf Parrot-pea
<i>Dillwynia sericea</i>	Showy Parrot-pea
<i>Diuris</i> spp.	Diuris
<i>Drosera glanduligera</i>	Scarlet Sundew
<i>Drosera peltata</i> subsp. <i>auriculata</i>	Tall Sundew
<i>Drosera peltata</i> subsp. <i>peltata</i>	Pale SunDEWHA
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Eleocharis atricha</i>	Tuber Spike-sedge
<i>Elymus scaber</i> var. <i>scaber</i>	Common Wheat-grass
<i>Eragrostis brownii</i>	Common Love-grass
<i>Eragrostis diandra</i>	Close-headed Love-grass
<i>Eucalyptus albens</i>	White Box
<i>Eucalyptus blakelyi</i>	Blakely's Red-gum
<i>Eucalyptus camaldulensis</i>	River Red-gum
<i>Eucalyptus macrorhyncha</i>	Red Stringybark
<i>Eucalyptus melliodora</i>	Yellow Box
<i>Eucalyptus nortonii</i>	Silver Bundy
<i>Eucalyptus polyanthemus</i> subsp. <i>vestita</i>	Red Box
<i>Galium gaudichaudii</i>	Rough Bedstraw
<i>Geranium potentilloides</i>	Cinquefoil Cranesbill

Species	Common Name
Native Species (cont.)	
<i>Geranium retrorsum</i>	Grassland Cranesbill
<i>Geranium</i> sp. 2	Variable Cranesbill
<i>Glycine clandestina</i>	Twining Glycine
<i>Glycine tabacina</i>	Variable Glycine
<i>Gompholobium huegelii</i>	Common Wedge-pea
<i>Gonocarpus elatus</i>	Tall Raspwort
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	Ivy Goodenia
<i>Goodenia lanata</i>	Trailing Goodenia
<i>Grevillea alpina</i>	Cat's Claw Grevillea
<i>Hibbertia riparia</i>	Erect Guinea-flower
<i>Hovea heterophylla</i>	Common Hovea
<i>Hyalosperma demissum</i>	Moss Sunray
<i>Hydrocotyle callicarpa</i>	Small Pennywort
<i>Hypericum gramineum</i>	Small St John's Wort
<i>Hypoxis vaginata</i> var. <i>vaginata</i>	Yellow Star
<i>Isolepis cernua</i> var. <i>cernua</i>	Nodding Club-sedge
<i>Isolepis hookeriana</i>	Grassy Club-sedge
<i>Isolepis inundata</i>	Swamp Club-sedge
<i>Isotoma fluviatilis</i> ssp. <i>australis</i>	Swamp Isotome
<i>Joycea pallida</i>	Silvertop Wallaby-grass
<i>Juncus amabilis</i>	Hollow Rush
<i>Juncus australis</i>	Austral Rush
<i>Juncus bufonius</i>	Toad Rush
<i>Juncus homalocaulis</i>	Wiry Rush
<i>Juncus planifolius</i>	Broad-leaf Rush
<i>Juncus remotiflorus</i>	Diffuse Rush
<i>Juncus semisolidus</i>	Plains Rush
<i>Juncus subsecundus</i>	Finger Rush
<i>Lachnagrostis filiformis</i>	Common Blown-grass
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Leptorhynchos squamatus</i>	Scaly Buttons
<i>Levenhookia dubia</i>	Hairy Stylewort
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	Wattle Mat-rush
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush
<i>Luzula meridionalis</i> var. <i>densiflora</i>	Common Woodrush
<i>Lythrum hyssopifolia</i>	Small Loosestrife
<i>Melichrus urceolatus</i>	Urn Heath
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass
<i>Microseris</i> sp. 3	Yam Daisy
<i>Microtis unifolia</i>	Common Onion-orchid
<i>Myriophyllum</i> spp.	Water-milfoil
<i>Opercularia hispida</i>	Hairy Stinkweed
<i>Ophioglossum lusitanicum</i>	Austral Adder's-tongue
<i>Oxalis chnoodes</i>	Plains Wood-sorrel
<i>Oxalis exilis</i>	Shady Wood-sorrel
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Panicum effusum</i>	Hairy Panic
<i>Persicaria hydropiper</i>	Water Pepper
<i>Persicaria prostrata</i>	Creeping Knotweed
<i>Phragmites australis</i>	Common Reed
<i>Pleurosorus rutifolius</i>	Blanket Fern

Species	Common Name
Native Species (cont.)	
<i>Poa sieberiana</i> var. <i>hirtella</i>	Grey Tussock-grass
<i>Poa tenera</i>	Slender Tussock-grass
<i>Poranthera microphylla</i>	Small Poranthera
<i>Ranunculus sessiliflorus</i>	Annual Buttercup
<i>Rumex brownii</i>	Slender Dock
<i>Schoenus apogon</i>	Common Bog-sedge
<i>Siloxerus multiflorus</i>	Small Wrinklewort
<i>Thelymitra peniculata</i>	Trim Sun-orchid
<i>Thelymitra</i> spp.	Sun Orchid
<i>Themeda triandra</i>	Kangaroo Grass
<i>Thysanotus patersonii</i>	Twining Fringe-lily
<i>Tricoryne elatior</i>	Yellow Rush-lily
<i>Triptilodiscus pygmaeus</i>	Common Sunray
<i>Wurmbea dioica</i>	Common Early Nancy
<i>Xerochrysum viscosum</i>	Shiny Everlasting
Introduced Species	
<i>Acetosella vulgaris</i>	Sheep Sorrel
<i>Agrostis capillaris</i>	Brown-top Bent
<i>Aira caryophylla</i>	Silvery Hair-grass
<i>Aira cupaniana</i>	Quicksilver Grass
<i>Aira elegantissima</i>	Delicate Hair-grass
<i>Anagallis arvensis</i>	Pimpernel
<i>Anagallis minima</i>	Chaffweed
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Aphanes microcarpa</i>	Small Piert
<i>Arctotheca calendula</i>	Cape Weed
<i>Avena fatua</i>	Wild Oat
<i>Briza maxima</i>	Large Quaking-grass
<i>Briza minor</i>	Lesser Quaking-grass
<i>Bromus diandrus</i>	Great Brome
<i>Bromus hordeaceus</i> subsp. <i>hordeaceus</i>	Soft Brome
<i>Bromus lanceolatus</i>	Mediterranean Brome
<i>Bromus madritensis</i>	Madrid Brome
<i>Carduus pycnocephalus</i>	Slender Thistle
<i>Centaureum tenuiflorum</i>	Slender Centaury
<i>Cerastium glomeratum</i>	Sticky Mouse-ear Chickweed
<i>Chondrilla juncea</i>	Skeleton Weed
<i>Cirsium vulgare</i>	Spear Thistle
<i>Citrullus lanatus</i>	Camel Melon
<i>Cucumis myriocarpus</i> subsp. <i>leptodermis</i>	Paddy Melon
<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch
<i>Echium plantagineum</i>	Paterson's Curse
<i>Erodium botrys</i>	Big Heron's-bill
<i>Erodium moschatum</i>	Musky Heron's-bill
<i>Galium aparine</i>	Cleavers
<i>Genista monspessulana</i>	Montpellier Broom
<i>Geranium molle</i> var. <i>molle</i>	Dove's Foot
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hordeum leporinum</i>	Barley-grass
<i>Hypericum perforatum</i> subsp. <i>veronense</i>	St John's Wort
<i>Hypochoeris glabra</i>	Smooth Cat's-ear

Species	Common Name
Introduced Species (cont.)	
<i>Hypochoeris radicata</i>	Cat's Ear
<i>Isolepis hystrix</i>	Awned Club-sedge
<i>Isolepis levynsiana</i>	Tiny Flat-sedge
<i>Juncus capitatus</i>	Capitate Rush
<i>Lactuca serriola</i>	Prickly Lettuce
<i>Lolium rigidum</i>	Wimmera Rye-grass
<i>Malva</i> spp.	Mallow
<i>Medicago polymorpha</i>	Burr Medic
<i>Moenchia erecta</i>	Erect Chickweed
<i>Myosotis discolor</i>	Yellow-and-blue Forget-me-not
<i>Parentucellia latifolia</i>	Red Bartsia
<i>Paspalum dilatatum</i>	Paspalum
<i>Pentaschistis airoides</i> subsp. <i>airoides</i>	False Hair-grass
<i>Petrorhagia dubia</i>	Velvety Pink
<i>Phalaris aquatica</i>	Toowoomba Canary-grass
<i>Phytolacca octandra</i>	Red-ink Weed
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa bulbosa</i> var. <i>bulbosa</i>	Bulbous Meadow-grass
<i>Polypogon monspeliensis</i>	Annual Beard-grass
<i>Romulea rosea</i>	Onion Grass
<i>Rosa rubiginosa</i>	Sweet Briar
<i>Setaria parviflora</i>	Slender Pigeon Grass
<i>Sherardia arvensis</i>	Field Madder
<i>Silybum marianum</i>	Variegated Thistle
<i>Solanum nigrum</i>	Black Nightshade
<i>Soliva sessilis</i>	Jo Jo
<i>Sonchus asper</i>	Rough Sow-thistle
<i>Sonchus oleraceus</i>	Common Sow-thistle
<i>Stellaria media</i>	Chickweed
<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover
<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover
<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover
<i>Trifolium dubium</i>	Suckling Clover
<i>Trifolium fragiferum</i> var. <i>fragiferum</i>	Strawberry Clover
<i>Trifolium glomeratum</i>	Cluster Clover
<i>Trifolium subterraneum</i>	Subterranean Clover
<i>Vulpia bromoides</i>	Squirrel-tail Fescue
<i>Vulpia myuros</i>	Rat's-tail Fescue

APPENDIX 2

Species for Supplementary Planting

A2.1 Species recommended for supplementary planting within the Eames property

Grassy Woodland

Understorey Trees (2 species, 10% cover)

<i>Acacia implexa</i>	Lightwood
<i>Allocasuarina verticillata</i>	Drooping Sheoak

Medium Shrubs (1 species 5% cover)

<i>Acacia acinacea</i>	Gold-dust Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Acacia rubida</i>	Red-stem Wattle
<i>Acacia verniciflua</i>	Varnish Wattle
<i>Daviesia latifolia</i>	Hop Bitter-pea
<i>Indigofera adesmiifolia</i>	Tick Indigo

Small Shrubs (1 species, 1% cover)

<i>Brachyloma daphnoides</i>	Daphne Heath
<i>Cheiranthra cyanea</i>	Blue Finger-flower
<i>Dillwynia cinerascens</i>	Grey Parrot-pea
<i>Pimelea humilis</i>	Common Rice-flower
<i>Pimelea linifolia</i>	Slender Rice-flower

Prostrate Shrubs (2 species, 5% cover)

<i>Acrotriche serrulata</i>	Honey-pots
<i>Astroloma humifusum</i>	Cranberry Heath

Valley Grassy Forest

Understorey Tree (3 species, 10% cover)

<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia implexa</i>	Lightwood
<i>Acacia melanoxylon</i>	Blackwood
<i>Brachychiton populneus</i>	Kurrajong
<i>Callitris glaucophylla</i>	White Cypress-pine
<i>Exocarpos cupressiformis</i>	Cherry Ballart

Medium Shrub (3 species, 10% cover)

<i>Acacia deanei</i>	Deane's Wattle
<i>Acacia genistifolia</i>	Spreading Wattle
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia verniciflua</i>	Varnish Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Cassinia aculeata</i>	Dogwood
<i>Dodonaea viscosa</i>	Narrow-leaf Hop-bush
<i>Indigofera australis</i>	Austral Indigo

Small Shrub (3 species, 5% cover)

<i>Acacia gunnii</i>	Ploughshare Wattle
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea
<i>Dillwynia phyllicoides</i>	Small-leaf Parrot-pea
<i>Dillwynia sericea</i>	Showy Parrot-pea
<i>Grevillea alpina</i>	Cat's Claw Grevillea
<i>Hibbertia obtusifolia</i>	Grey Guinea-flower
<i>Hibbertia riparia</i>	Erect Guinea-flower
<i>Hibbertia riparia</i>	Erect Guinea-flower
<i>Platylobium formosum</i>	Handsome Flat-pea

APPENDIX 3

A3.1 DSE Owner Monitoring and Reporting Form

Landowner of offset site	
Location and address of offset site [1]	
Offset site number (if applicable)	
Offset plan reference number (if applicable)	
Responsible Authority	
Report #	
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.

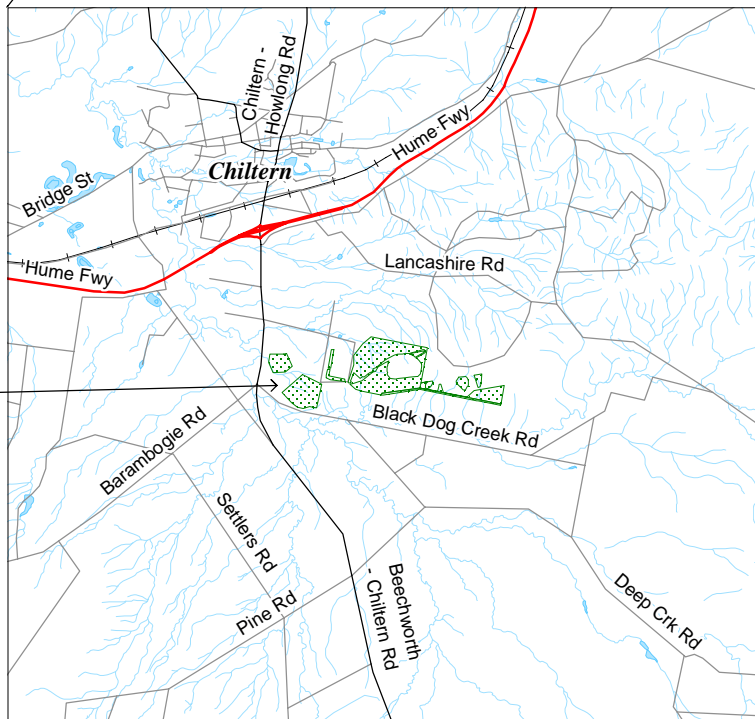
If any agreed management actions or commitments are incomplete or have not been undertaken in the times specified explain the reasons why and what program of action/s will be undertaken to implement the action. If no action is to be undertaken please explain the reason/s and how the targets specified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

A3.2 Monitoring results for patches of native vegetation

	Understorey Vegetation	% cover (to nearest 10%)*					
		2010	2011	2013	2015	2018	2019
Weeds	Woody weeds						
	Herb weeds						
	Grass weeds						
	OVERALL weed cover						
Natives	Native grasses						
	Native forbs						
	Native shrubs (small <1m)						
	Native shrubs (large >1m)						
	Native climbers/scramblers						
	Immature trees (eucalypts)						
	OVERALL native understorey cover						

* cover less than 5% is also noted separately

FIGURES



Acknowledgement: VicRoads
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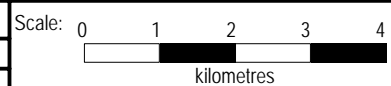
Biosis Research Pty. Ltd.
 38 Bertie Street
 (PO Box 489)
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 VICTORIA 3207
 Offices also in: Sydney, Ballarat,
 Wollongong, Queanbeyan & Wangaratta

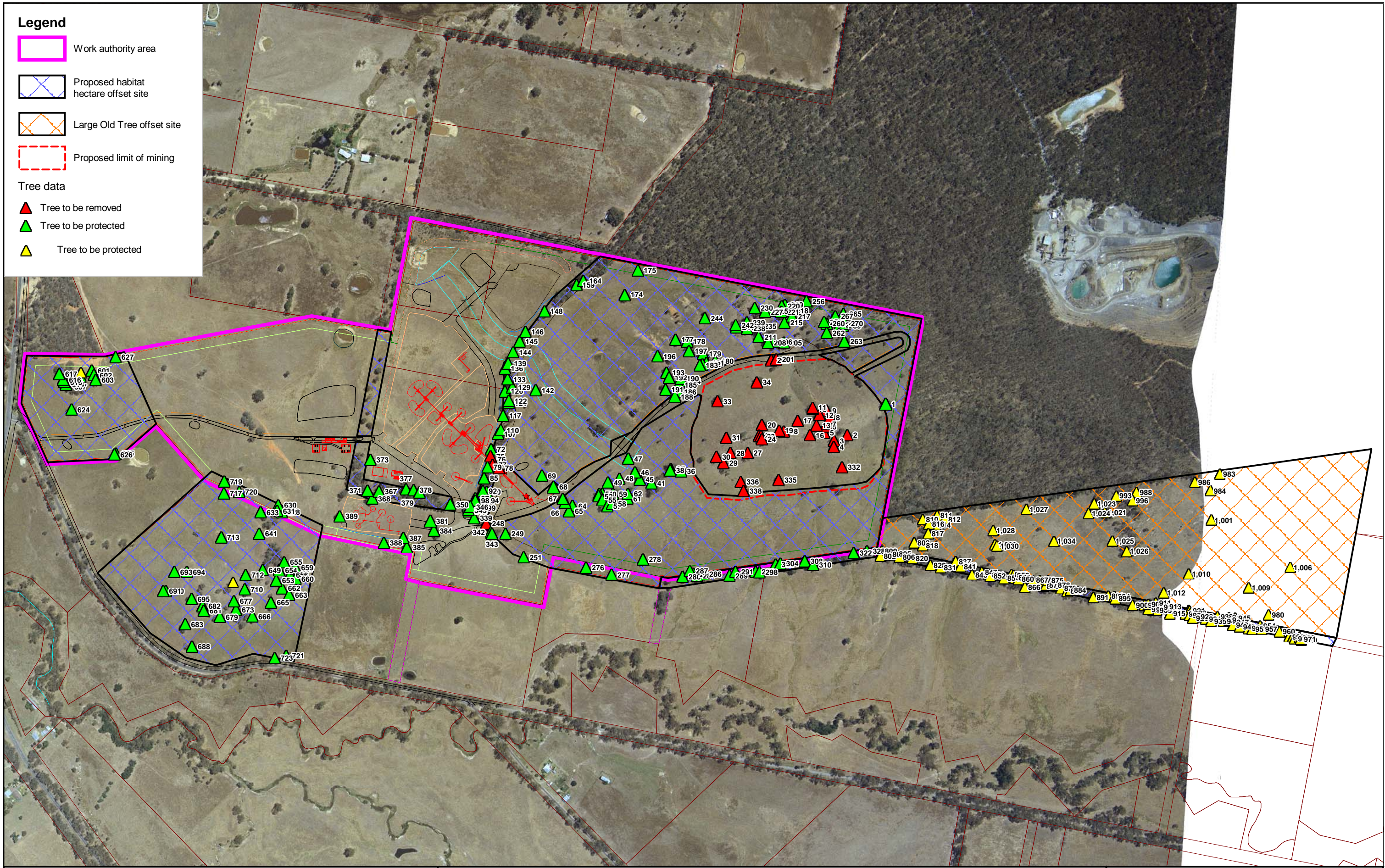
Figure 1: Location of the proposed offset site, Chiltern, Victoria

DATE: 16 September 2009

Checked by: SGM Drawn by: PJY File number: 7594

Location: MRG 7500s\7594\Mapping\7594 Figure 1 OMP.wor







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Figure 2: Location of offsets within the Chiltern Quarry site, Chiltern, Victoria

DATE: 21 January 2010
 Checked by: SGM Drawn by: PJY File number: 7594
 Location: P:\MRG 7500s\7594\Mapping\7594 Figure 2 OMP 200110.wor

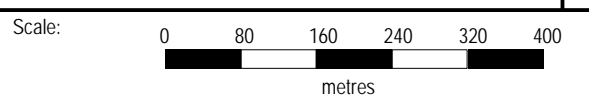


Figure 2: Location of offsets within the Chiltern Quarry site, Chiltern, Victoria

