SCRIVENER ROAD GRAVEL RESERVES
FLORA AND VEGETATION REPORT

Reserves 26079 and 26080

Prepared for:
Shire of Serpentine Jarrahdale

Prepared by:
Dr Penny Hollick PhD (Botany), BSc Hons (1) (Environmental Science)
Postgrad. Cert. (Environmental Science & Management)

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Contents

EXECUTIVE SUMMARY

Implementation of the Shire of Serpentine Jarrahdale's Biodiversity Strategy has included Flora and Vegetation Surveys of the Shire's natural area reserves. For Scrivener Road Gravel Reserves, these include a desktop study and field assessment (using WALGA's Local Biodiversity Program's online Environmental Planning Tool mapping and Natural Area Initial Assessment proforma) and three permanent monitoring quadrats, set up in 2008 within the three floristic communities present (swamp, lateritic woodland and jarrah forest). The quadrats are periodically resurveyed and additional species from near the quadrats also recorded. A walk-through survey of the area identified for further gravel extraction in the Draft Management Plan for the Scrivener Road Gravel Reserves occurred on 21/9/2015.

The Local Biodiversity Program's desktop study identified the following features:

- The vegetation complexes (Heddle *et al.*, 1980) identified for the site are for the most part Dwellingup (100.31 ha) and Yarragil 1 (0.46 ha), which have less than 15% protected for conservation in the Jarrah Forest IBRA-region.
- A number of Threatened and Priority Listed Flora and Fauna, Fauna Habitat and Threatened and Priority Ecological Communities have been recorded within 5km of the study area (details available from the Department of Parks and Wildlife).
- The study area contains 106.29 ha of remnant vegetation requiring investigation for Carnaby's cockatoo feeding habitat, with 119.24 ha within a "possible" breeding area buffer and 119.24 ha within a "confirmed" roosting area buffer.
- The study area is adjacent to land managed by the Department of Parks and Wildlife and has been proposed in numerous State government publications to be added to the Serpentine National Park (R39825 and R28862). Karnet Nature Reserve (R32202) is also part of the surrounding reserve system.
- The study area has approximately 0.43 ha within an Environmentally Sensitive Area, is within EPA System 6 and the Swan Coastal Plain portion of System 1 region (EPA Guidance Statement No. 10, 2003) (119.24 ha), includes complexes considered potentially threatened, and is within the Southwest Australia Ecoregion study area.
- Approximately 58.57 ha of the study area are likely to be infested with *Phytophthora cinnamomi* dieback.

This report was generated in regards to the proposal to extract gravel from approximately one tenth of the Scrivener Road Gravel Reserves, followed by rehabilitation with Cockatoo Feeding Habitat Species. The total area proposed for gravel extraction is twelve hectares in two stages, with 6 cells of two hectares each. Ninety percent of the area is proposed to be managed for conservation purposes and eventually added, along with the rehabilitated area, to the national park.

1. Introduction

1.1 Background

Scrivener Road Gravel Reserves (also referred to as 'the reserves'), located at the top of the scarp south of Serpentine, are biodiverse and environmentally significant local natural area reserves, particularly valuable as they are one of only a few locations where all three protected black cockatoo species have been recorded nesting. The reserves are managed by the Shire of Serpentine Jarrahdale for the competing purposes of gravel extraction and conservation and it has been recommended that the reserves eventually be added to the Serpentine National Park.

Gravel supplies from the existing pits have been exhausted, and permission has not been granted at the current time to clear further areas of vegetation to extend the pits. Recently the Shire has been purchasing gravel for road construction from distant expensive sources. The Department of Mines and Petroleum recommends that available gravel reserves are utilized before areas are included into national parks, subject to offsets. The Scrivener Road Gravel Reserves area is recognised as a Regionally Significant Basic Raw Material location for gravel. The Environmental Protection Authority supports the rehabilitation and inclusion of the reserve into the Serpentine National Park.

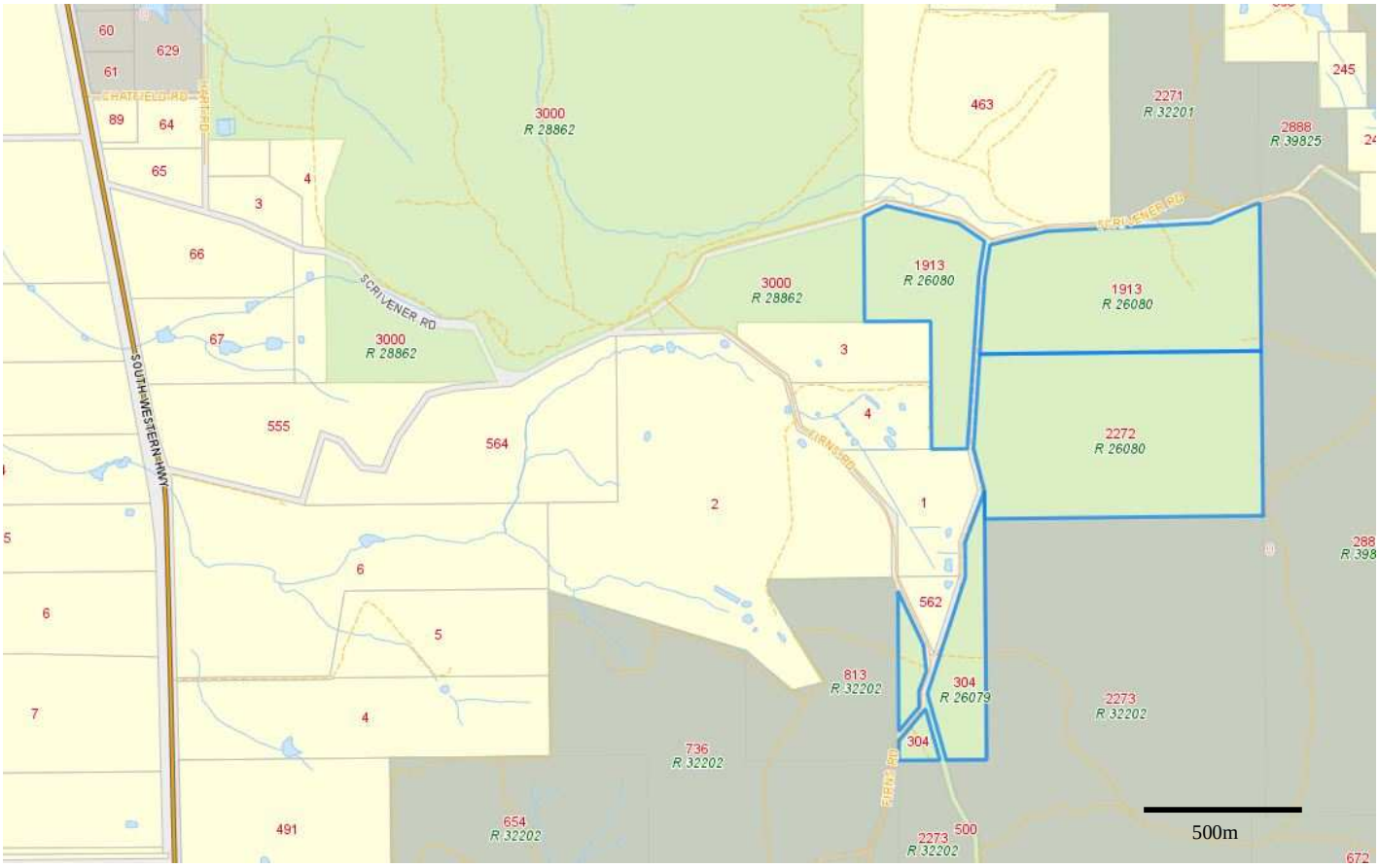
The Scrivener Road Gravel Reserves are located at the top of the scarp south of Serpentine, and consist of two reserves, R26080 and R26079. R26080 contains the two historical gravel pits and is divided into three parcels of land, two of which adjoin Scrivener Road (L1913) while the third lies to the south (L2272). R26079, to the southwest of R26080 also consists of three parcels of land, dissected by Firns Road (see Maps 1-3). The reserves adjoin Serpentine National Park to the west and east, and Karnet Nature Reserve to the south.

Two tributaries of the Serpentine River run to the north and west of the reserve; the river empties into the Peel Harvey Estuary. The total area of the two reserves is approximately 120 hectares.

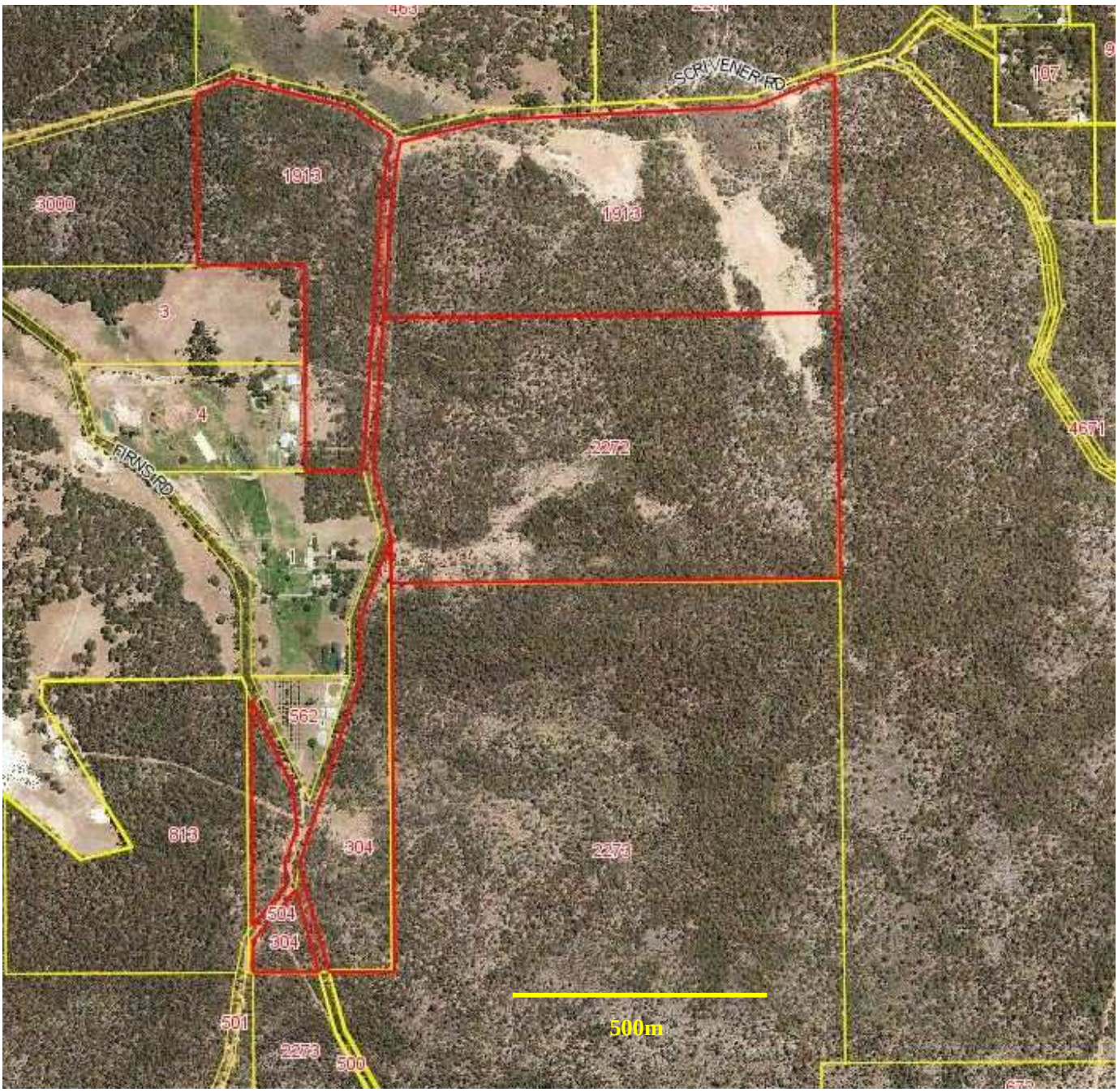
1.2 Purpose of this Report

The purpose of this report is to assess and document the botanical values of the study area, including the compilation of a species list and assessment of the plant communities present.

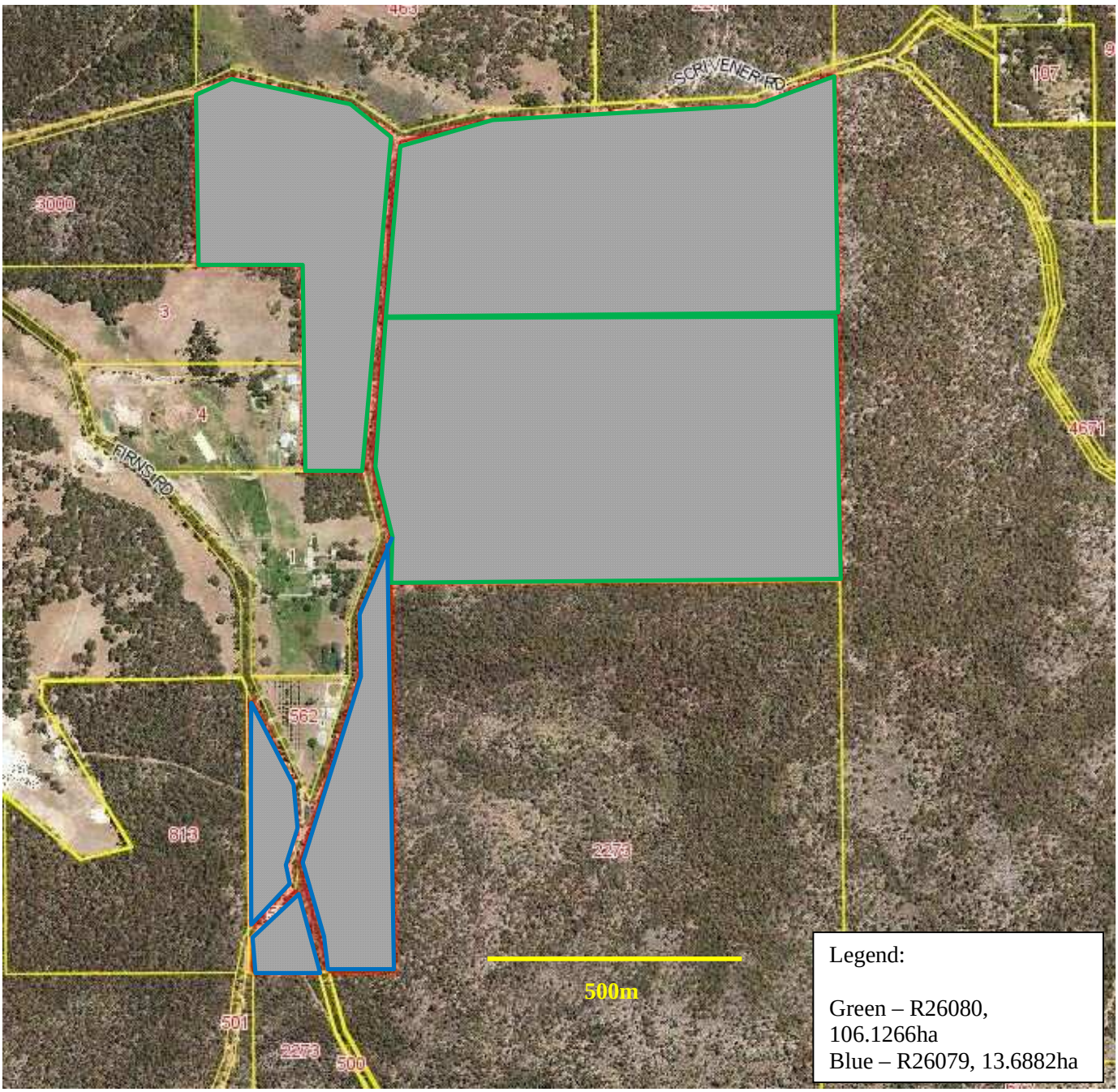
Map 1: Scrivener Road Gravel Reserve Location - Lots and Cadastre



Map 2: Scrivener Road Gravel Reserve Outline



Map 3: Scrivener Road Gravel Reserve Sections



2. Existing Environment

2.1 Desktop Study

The Local Biodiversity Program's Environmental Planning Tool desktop study identified the following features:

- The vegetation complexes (Heddle *et al.*, 1980) identified for the site are for the most part Dwellingup (100.31 ha) and Yarragil 1 (0.46 ha).
- These vegetation complexes are considered to have only 1500 hectares or 15% or less protected for conservation in the Jarrah Forest IBRA-region.
- Poorly represented vegetation complexes have conservation significance for the Perth and Peel Regions.
- A number of Threatened and Priority Listed Flora and Fauna, Fauna Habitat and Threatened and Priority Ecological Communities have been recorded within 5km of the study area (details available from the Department of Parks and Wildlife).
- The study area contains 106.29 ha of remnant vegetation requiring investigation for Carnaby's cockatoo feeding habitat, with 119.24 ha within a "possible" breeding area buffer and 119.24 ha within a "confirmed" roosting area buffer.
- The remnant vegetation is representative of the Northern Jarrah Forest (100.77 ha).
- The study area is adjacent to land managed by the Department of Parks and Wildlife and has been proposed in numerous State government publications to be added to the Serpentine National Park (R39825 and R28862). Karnet Nature Reserve (R32202) is also part of the surrounding reserve system.
- The study area has approximately 0.43 ha within an Environmentally Sensitive Area.
- The area is within EPA System 6 and the Swan Coastal Plain portion of System 1 region (EPA Guidance Statement No. 10, 2003) (119.24 ha).
- Approximately 100.77 ha of remnant vegetation meets criteria with legislative protection.
- As a priority for further consideration under the Metropolitan and Peel Regions Scheme zone and reserve provisions, 19.41 ha of remnant vegetation meets 0-5 prioritization criteria within land use categories that provide good opportunities for vegetation retention and 81.36 ha meets 6-11 prioritization criteria.
- The study area includes complexes considered potentially threatened. Retention and protection of remnant vegetation representative of these vegetation complexes should be a priority for consideration.
- The area is within the Southwest Australia Ecoregion study area.
- Approximately 58.57 ha of the study area is likely to be infested with *Phytophthora cinnamomi* dieback.

2.2 Flora and Vegetation

Remnant Vegetation Communities

The vegetation of the Jarrah Forest bioregion, which includes the geophysical regions of Plateau and Scarp, is still dominated by its namesake (*Eucalyptus marginata*). This vegetation covers the laterite plateaus. The forested area also includes other tree species such as marri (*Corymbia calophylla*), blackbutt (*Eucalyptus patens*), flooded gum (*Eucalyptus rudis*) and wandoo (*Eucalyptus wandoo*). Smaller tree species such as bull banksia (*Banksia grandis*), sheoak (*Allocasuarina fraseriana*) and snottygobble (*Persoonia longifolia*) form a lower layer with an understorey of varied sclerophyll shrubs. Open areas of granite outcrop support species such as pincushions (*Borya* spp.), fuchsia grevillea (*Grevillea bipinnatifida*), hakeas (such as *Hakea elliptica* and *Hakea undulata*), rock sheoak (*Allocasuarina huegeliana*) and Darling Range Ghost Gum (*Eucalyptus laeliae*).

Threatened Flora
No threatened or priority species of flora have been recorded in the reserve, but two threatened and one priority species occur within the adjacent Serpentine National Park (see Table 1).

Table 1: Threatened and Priority Flora, Serpentine National Park*

Species	**Category under State *Wildlife Conservation Act 1950***	**Category under Commonwealth *Environmental Protection and Biodiversity Act 1999***
Acacia horridula	P3	
Lasiopetalim pterocarpum	R	Endangered
Pimelea rara	R	Vulnerable

*Threatened and Priority Flora Lists are available for the selected area from the Department of Parks and Wildlife. Records within 5 kilometres of this site include: 72 species, 48 Threatened, 1 Priority 1 (Poorly Known Taxa), 1 Priority 2 (Poorly Known Taxa), 14 Priority 3 (Poorly Known Taxa) and 8 Priority 4 (Rare Taxa). WA Herbarium records similarly within 5 kilometres of the site include 72 species with a similar breakdown.

Threatening Processes
The Darling Plateau area has been greatly impacted by timber harvesting, bauxite mining and dieback disease but retains much of the original vegetation structure. Dieback (*Phytophthora cinnamomi*) has affected vast tracts of the Jarrah Forest across the Plateau. It is spread through water and the transport of infected soil, gravel and other materials. The disease is known to occur throughout the Shire, including in parts of the Scrivener Road Gravel Reserves.

Many Shire reserves with high biodiversity values have been invaded by aggressive weeds, and are subject to high levels of disturbance, often by recreation groups, which encourages weed invasion. Weeds may be a problem around the gravel pits at Scrivener Road Gravel Reserves for two main reasons:

- Weeds are a fire hazard, which affects landholder safety in the area, as well as the fauna of the reserve; and
- Weeds suppress native plant growth and recruitment into the gravel pits, affecting biological diversity and pit rehabilitation when weeds monopolise the sun, space, soil and water.

Weeds can, however, provide habitat for native fauna such as quenda, which are likely to occur within the reserves, but the adjacent expanses of dense native vegetation mean that the small areas of weeds around the pits are unlikely to be critical. Weed control is periodically carried out (every few years) within and around the pits.

Proposed Revegetation
Revegetation of Scrivener Road Gravel Reserves has not been a priority in the past, due to ongoing gravel extraction from the pit floors. The first area to be exhausted, at the far south of the pits, was ripped and revegetated in 2006 and 2007. Revegetation has been successful to a point and included some cockatoo feeding habitat species, but there is a need for supplemental planting to increase species richness and plant density to meet completion criteria.

The current use of the reserve is predominantly conservation. Further revegetation of the pits is a likely precondition for inclusion of the reserve into Serpentine National Park. Revegetation with cockatoo feeding habitat species is proposed to occur in stages as areas are mined.

Nearby local vegetation communities will be used as a guide to the local flora when revegetating the reserve. This information is available from the three monitoring quadrats (see Appendix A). A variety of understorey vegetation should be planted, along with local trees, which will provide quenda habitat and food sources for the black cockatoos. Concurrent weed control where necessary is an essential component of a revegetation plan. Rehabilitation will be in accordance with DPaW Guidelines for the Management and Rehabilitation of Basic Raw Material Pits, 2008.

3. Methods

Three permanent monitoring quadrats were set up on 3/11/2008, within each of the three floristic communities present in Scrivener Road Gravel Reserves (swamp, lateritic woodland and jarrah forest). These were resurveyed on 12/10/2009 and additional species from near the quadrats were also recorded. Repeat surveys occurred on 14/10/2010 and 17/9/2012. A walk-through survey of the proposed extraction area occurred on 21/9/2015, to pick up additional species not found in or near the quadrats. Each quadrat's location was recorded by GPS.

The plant communities present and their classification and condition were assessed using the Local Biodiversity Program's Natural Area Initial Assessment proforma.

The limitations of the flora surveys include their seasonality, having only been carried out in spring, and the lack of a specific targeted threatened flora survey. The vegetation survey is limited to the area of the quadrats, and a full classification and condition survey has not been carried out.

4. Results

4.1 Site Description

Scrivener Road Gravel Reserves have a highly diverse understorey in very good condition in the undisturbed areas, with minimal weed invasion except around the edges of the gravel pits. There are indications that dieback may be present in the vicinity of the gravel pits, such as deaths of indicator species, and may be spreading south into the forest.

4.2 Flora

The flora species occurring in the three monitoring quadrats in the reserve and from the walk-through survey of the area proposed for mining are shown in Appendix 1, with the quadrats located in the wetland in the northeast of the reserve, lateritic woodland south of the gravel pits, and jarrah forest at the western end of the reserve. 152 plant species were identified from 99 genera, with only 2 identified as introduced (exotic) species, which equates to 1.3% of the total plant species recorded. Weed species included *Hypochaeris glabra* and *H. radicata*, which occurred at low densities throughout the study site.

4.3 Vegetation Classification

Quadrat A is located in the wetland in the northeast of the reserve, dominated by a variety of tea-tree shrubs (including *Astartea scoparia*, *Pericalymma ellipticum* and *Taxandria linearifolia*) 1m to 1.5m tall, classified as Dense Heath B (see Table 2). Quadrat B is located south of the gravel pits, dominated by sparse marri (*Corymbia calophylla*) trees 15m to 30m tall, classified as Woodland. Quadrat C is located at the western end of the reserve, and is densely vegetated by jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) trees 15m to 30m tall, classified as Dense Forest.

The area proposed to be mined is mid densely forested by jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) trees 15m to 30m tall, classified as Forest, with some dense areas of sheoak (*Allocasuarina fraseriana*) 5m to 15m tall, classified as Dense Low Forest A.

Table 2: Vegetation Classification (from Muir, 1977)

LIFE FORM / HEIGHT CLASS	CANOPY COVER			
	DENSE 70 % - 100%	**MID DENSE 30% - 70%**	**SPARSE 10% - 30%**	**VERY SPARSE 2% - 10%**
Trees > 30 m	Dense Tall Forest	Tall Forest	Tall Woodland	Open Tall Woodland
Trees 15 – 30 m	Dense Forest	Forest	Woodland	Open Woodland
Trees 5 – 15 m	Dense Low Forest A	Low Forest A	Low Woodland A	Open Low Woodland A
Trees < 5 m	Dense Low Forest B	Low Forest B	Low Woodland B	Open Low Woodland B
Mallee tree form	Dense Tree Mallee	Tree Mallee	Open Tree Mallee	Very Open Tree Mallee
Mallee shrub form	Dense Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2 m	Dense Thicket	Thicket	Scrub	Open Scrub
Shrubs 1.5 – 2 m	Dense Heath A	Heath A	Low Scrub A	Open Low Scrub A
Shrubs 1 - 1.5 m	Dense Heath B	Heath B Low	Low Scrub B	Open Low Scrub B
Shrubs 0.5 – 1 m	Dense Low Heath C	Heath C Low	Dwarf Scrub C	Open Dwarf Scrub C
Shrubs 0 - 0.5 m	Dense Low Heath D	Heath D	Dwarf Scrub D	Open Dwarf Scrub D
Mat plants	Dense Mat Plants	Mat Plants	Open Mat Plants	Very Open Mat Plants
Hummock grass	Dense Hummock Grass	Mid-Dense Hummock Grass	Hummock Grass	Open Hummock Grass
Bunch grass > 0.5 m	Dense Tall Grass	Tall Grass	Open Tall Grass	Very Open Tall Grass
Bunch grass < 0.5 m	Dense Low Grass	Low Grass	Open Low Grass	Very Open Low Grass
Herbaceous species	Dense Herbs	Herbs	Open Herbs	Very Open Herbs
Sedges > 0.5 m	Dense Tall Sedges	Tall Sedges	Open Tall Sedges	Very Open Tall Sedges
Sedges < 0.5 m	Dense Low Sedges	Low Sedges	Open Low Sedges	Very Open Low Sedges
Ferns	Dense Ferns	Ferns	Open Ferns	Very Open Ferns
Mosses, liverworts	Dense Mosses	Mosses	Open Mosses	Very Open Mosses

4.3 Vegetation Condition

The vegetation condition recorded for each of the monitoring quadrats was Very Good to Excellent (see Table 3) and 85% of the area proposed to be mined was in Good to Very Good condition. A full condition survey has not been carried out through the reserves, but some areas of Degraded to Good vegetation have been noted, which include probable *Phytophthora* dieback or weed infestation and other areas likely to be affected by drought.

Table 3: Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.

5. Proposed Vegetation Retention

5.1 Area of Vegetation Retention and Rehabilitation

The area selected for further extraction of gravel is adjacent to and south of the existing gravel pit area and is intended to be rehabilitated in a manner to minimize the footprint of the mined cells and to maximize the utilization of the deep gravel deposit. Rehabilitation is proposed to occur progressively to maximize the benefits for terrestrial and avifauna, particularly with utilization of cockatoo attracting plant species.

The total area to be retained and managed (mostly as Scientific Reference Buffer area) is close to 90% of the total reserves area, with about 10% of the site proposed to be mined and rehabilitated. The area of gravel extraction will be rehabilitated to the satisfaction of the Department of Parks and Wildlife (proposed to inherit the reserves on their addition to the national park) and of the Department of Environment Regulation (regulation of the clearing and associated offset provisions and completion criteria).

5.2 Ecological Importance

The study area has evident environmental and biodiversity importance, which lies mainly in its value as a cockatoo breeding, roosting and feeding habitat and the associated research and monitoring over more than 15 years. Natural breeding hollows will be protected in the Scientific Reference areas and over 8 “Cockatubes” (artificial nesting hollows) installed in the area; ongoing research and monitoring will be invaluable.

From a flora and vegetation perspective, the importance of the study area lies more in its nature as an east-west corridor connecting separate portions of the Serpentine National Park than in the species and communities present. The area is currently becoming degraded through use by off-road vehicles (four-wheel-drives and motorcycles), firewood collection and dumping of rubbish, all of whichhave the potential to spread disease and weeds. It is possible that a greater presence, upgrading of access and facilities, signage and good management could promote both the productive capacity and conservation values and protection of the reserves.

6. Conclusions and Recommendations

Flora management is essential for increasing and maintaining biodiversity as a component of conserving natural heritage. The vegetation of the Scrivener Road Gravel Reserves is in very good condition, but under threat from weed invasion and *Phytophthora* dieback.

Natural regeneration of the gravel pits is likely to be ineffective due to the slow rate of recruitment to such a highly disturbed area which has no soil seed bank. It is therefore more productive to plant and direct seed the area, with concurrent necessary weed control. Species which provide feeding habitat for the black cockatoos are likely to be used, along with species such as *Acacia saligna* which are valuable as early colonisers. Tree species will also be planted, including *Corymbia calophylla* and *Eucalyptus marginata* in the drier areas, along with *Banksia littoralis* and *Eucalyptus rudis* where conditions more closely resemble the nearby wetland.

Tree management, including retaining habitat trees for breeding cockatoos, will be critical along with installing further “cockatubes” for black cockatoo breeding to replace any habitat trees lost.

Personnel

Field work was undertaken by:
Dr Penny Hollick and Chris Portlock

Report prepared by:
Dr Penny Hollick

Report checked by:
Chris Portlock

Ten by ten meter quadrat GPS locations provided by Dr Penny Hollick on request

REFERENCES

Beard, J.S. (1981). *Swan – The Vegetation of the Swan Area*. University of Western Australia Press, Crawley

Biggs, E.R. and Wilde, S.A. (1980). *Geology, Mineral Resources and Hydrology of the Darling System, Western Australia*. Department of Conservation and Environment, Perth, Western Australia

English, V.J. and Blyth, J. (1997). *Identifying and Conserving Threatened Ecological Communities (TEC'S) in the South West Botanical Province.* Department of Conservation and Land Management

Brown, K. and Brooks, K. (2002). *Bushland Weeds - A Practical Guide to Their Management*. Environmental Weed Action Network

Department of Conservation and Land Management (1999). *Environmental Weed Strategy for Western Australia*

Department of Environment and Conservation (2010a). *Declared Rare and Priority List for Western Australia.* Published list by the Department of Conservation and Land Mangement, Western Australia

Department of Environment and Conservation (2010b). *List of Communities on DECs Threatened Ecological Community Database.* http://www.calm.wa.gov.au

Department of the Environment, Water, Heritage and Arts (2010). *EPBC Act List of Threatened Flora* http://www.deh.gov.au/cgi-in/sprat/public/publicthreatenedlist.pl?wanted=flora

Environmental Protection Authority (1992) *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 (Lakes EPP).* Western Australian Government Gazette, 24 December, 1992.

Environmental Protection Authority (1993). *A Guide to Wetland Management in the Perth and Near Perth Swan Coastal Plain Area*. An Update to EPA Bulletin 374. Report to the Environmental Protection Authority. Bulletin 686

Environmental Protection Authority (2000). *Environmental Protection of Native Vegetation in Western Australia. EPA Position Statement No. 2*. EPA, Perth

Environmental Protection Authority (2002). *Strategy to Identify Regionally Significant Natural Areas in its Consideration of the Greater Bunbury Region Scheme portion of the Swan Coastal Plain*. Draft Report, August, 2002

Environmental Protection Authority (2003). *Level of assessment for proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 Region. Guidance for the Assessment of Environmental Factors, No 10.* Government of Western Australia

Environmental Protection Authority (2004a). *Guidance for the Assessment of Environmental Factors, Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia. No. 51.* EPA, Perth

Environmental Protection Authority (2004b). *Environmental Protection (Swan Coastal Plain Wetlands) Policy and Regulations 2004.* EPA Perth

Tingay, Alan & Associates (1998). *A Strategic Plan for Perth's Greenways – Final Report*. Prepared for Environment Australia

Water and Rivers Commission (2001). *Position Statement: Wetlands*

Western Australian Herbarium (2010b). *Florabase*. Department of Environment and Conservation. http://www.calm.wa.gov.au/science/florabase.html

Western Australian Planning Commission (2000). *Bush Forever*. Government of Western Australia

Appendix A: Flora Survey Data

Scrivener Road Gravel Reserves (R26079/26080)

Three permanent monitoring quadrats were set up on 3/11/2008, one within each of the three floristic communities present in Scrivener Road Gravel Reserves (A in Tea-Tree Dense Heath B, B in Marri Woodland, C in Jarrah-Marri Dense Forest). These were resurveyed on 12/10/2009 and additional species from near the quadrats were added to the list. Repeat surveys occurred on 14/10/2010 and 17/9/2012. A walk-through survey of the proposed extraction area (Jarrah-Marri Forest and Sheoak Dense Low Forest A) occurred on 21/9/2015, to pick up additional species not found in or near the quadrats.

Table 4: Flora List for Scrivener Road Gravel Reserve

Plant species	A	Near A	B	Near B	C	Near C	Walk-through
Acacia alata					*	*	
Acacia extensa		*					*
Acacia lasiocarpa	*						
Acacia lateriticola		*	*				
Acacia pulchella	*				*	*	
Acacia saligna				*			
Acacia urophylla			*	*			
Adenanthos barbiger					*		
Agrostocrinum hirsutum			*		*		
Allocasuarina fraseriana		*		*			*
Asplenium trichomanes	*						
Astartea scoparia	*						
Astroloma pallidum	*		*		*		
Austrodanthonia acerosa			*				
Baeckea camphorosmae		*			*		
Banksia grandis							*
Banksia littoralis	*	*					
Banksia nivea		*	*		*		
Banksia sessilis		*	*		*		
Billardiera heterophylla			*		*		
Boronia fastigiata	*						
Bossiaea ornata			*		*		
Burchardia congesta	*		*		*	*	
Caesia micrantha					*	*	
Caladenia flava	*		*		*		
Caladenia longicauda			*		*		
Cassytha pomiformis	*		*		*		
Chamaescilla corymbosa	*		*		*		
Chorizema rhombeum			*				
Clematis pubescens							*
Conostylis setigera			*		*		
Conostylis setosa			*		*		
Corymbia calophylla	*		*		*		
Craspedia variabilis			*		*		
Cyrtostylis huegelii							*

Plant species	**A**	**Near A**	**B**	**Near B**	**C**	**Near C**	**Walk-through**
Dampiera alata	*						
Dampiera linearis			*		*		
Daucus glochidiatus							*
Daviesia preissii					*		*
Diuris sp.					*		
Drosera erythrorhiza			*				
Drosera gigantea	*	*					
Drosera glanduligera	*	*					
Drosera menziesii			*				
Drosera pallida			*	*	*		
Elythranthera brunonis			*		*		
Eriochilus sp.			*		*		
Eucalyptus marginata	*		*		*		
Eucalyptus rudis	*						
Gastrolobium capitatum					*		
Gompholobium knightianum	*		*		*		
Gompholobium marginatum	*						
Gompholobium polymorphum					*		
Gompholobium preissii			*				
Gonocarpus pithyoides			*		*		
Goodenia pulchella							*
Grevillea pilulifera					*		
Haemodorum laxum	*	*					
Haemodorum simplex	*						
Hakea amplexicaulis							*
Hakea lissocarpha			*		*		
Hakea prostrata		*			*		
Hakea stenocarpa			*		*		
Hibbertia amplexicaulis				*	*		
Hibbertia commutata			*	*	*		
Hibbertia diamesogenos		*	*				
Hibbertia hypericoides		*	*		*		
Hibbertia lasiopus				*			
Homalosciadium homalocarpum							*
Hovea chorizemifolia			*				
Hovea trisperma			*		*		
Hyalosperma cotula		*	*				
Hypocalymma angustifolium	*		*				
Hypocalymma robustum		*					
**Hypochaeris glabra*			*		*		
**Hypochaeris radicata*							*
Hypolaena exsulca	*						
Isopogon sphaerocephalus			*		*		
Isotoma hypocrateriformis			*				
Kennedia prostrata					*		
Kunzea micrantha		*					
Labichea punctata					*		
Lagenophora huegelii			*		*		*
Lasiopetalum bracteatum							*
Laxmannia squarrosa		*					
Lechenaultia biloba		*	*		*		
Lepidosperma leptostachyum			*		*		

Plant species	**A**	**Near A**	**B**	**Near B**	**C**	**Near C**	**Walk-through**
Lepidosperma pubisquameum							*
Lepidosperma scabrum						*	
Lepidosperma sp. E Perth Flora			*		*		
Leptospermum erubescens							*
Leucopogon capitellatus			*		*		
Leucopogon sp.	*		*		*		
Levenhookia pusilla			*				
Lomandra capitellatus					*		
Lomandra purpurea			*		*		
Loxocarya sp.			*				
Macrozamia riedlei		*		*		*	
Melaleuca preissiana	*						
Millotia tenuifolia							*
Mirbelia dilatata	*						
Neurachne alopecuroidea	*		*	*	*		
Nuytsia floribunda		*					
Opercularia hispidula			*				
Opercularia vaginata			*		*		
Orthrosanthus laxus							*
Patersonia occidentalis					*		
Pentapeltis peltigera			*		*		
Pericalymma ellipticum	*						
Persoonia elliptica							*
Persoonia longifolia							*
Phyllanthus calycinus				*	*		
Pimelea preissii					*		
Pimelea suaveolens			*		*	*	
Platysace filiformis			*				
Pterostylis barbata			*				
Pterostylis nana			*		*		
Pterostylis recurva			*		*		
Ptilotus manglesii			*		*		*
Pyrorchis nigricans				*		*	
Scaevola calliptera			*		*		
Schoenus sp.	*						
Senecio hispidulus							*
Sphaerolobium aff. *macranthum*	*				*		
Stylidium brunonianum			*		*		
Stylidium bulbiferum		*	*				
Stylidium hispidum		*	*		*		
Stylidium junceum	*		*		*		
Stylidium piliferum			*		*		
Stylidium schoenoides				*			
Stylidium striatum			*		*		
Synaphea petiolaris			*				
Taxandria linearifolia	*						
Tetraria octandra	*				*		
Tetrarrhena laevis			*		*		
Tetratheca hirsuta					*		
Thelymitra antennifera		*					
Thelymitra crinita	*		*		*		
Thelymitra macrophylla			*				

Plant species	A	Near A	B	Near B	C	Near C	Walk-through
Thelymitra vulgaris					*	*	
Thysanotus manglesianus							*
Thysanotus tenellus	*		*				
Thysanotus thyrsoideus					*		
Trachymene pilosa			*				
Trichocline spathulata			*		*		
Tricoryne elatior	*				*		
Trymalium ledifolium			*		*		
Verticordia huegelii		*					
Viminarea juncea	*	*					
Xanthorrhoea gracilis					*		
Xanthorrhoea preissii	*		*		*		
Xanthosia huegelii			*		*		

* Introduced species