

Enquiries: Shane Collins  
Our Ref: 03/2912, 06/4129-02  
Your Ref:

Chief Executive Officer  
Department Of Environment and Conservation  
144 St Georges Tce  
PERTH WA 6000

ATT: Emma Bramwell

Dear Sir,

### **REID HIGHWAY – ALEXANDER DRIVE INTERCHANGE OFFSET PACKAGE**

Main Roads' Clearing Purpose Permit CPS 818/4 stipulates a requirement for offsets to be approved for clearing at variance with the Ten Clearing Principles in s51 of the *Environmental Protection Act 1986*. This applies to approximately 2.1 ha of native vegetation required to be cleared for construction of an interchange at the intersection of Reid Highway and Alexander Drive. The Department of Environment and Conservation have determined that this clearing may be at variance with Clearing Principles "a", "b" and "g", that "Native vegetation should not be cleared if it comprises a high level of biological diversity, comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia, and is likely to cause appreciable land degradation".

Department of Environment and Conservation's letter to Main Roads dated 30<sup>th</sup> July 2009 specifies Carnaby's Black Cockatoo foraging habitat and buffering of regionally significant remnant vegetation as important qualities of the vegetation to be cleared, and that there is a risk of erosion following its removal.

Main Roads has endeavoured to site the proposed bridge and ramps where vegetation comprises the least area cover and condition, and to avoid impacts to the Bush Forever Site 385 north of the project area. In addition, the following offsets are proposed:

- 1) Appropriate, ecologically sensitive rehabilitation of approximately 2 ha of degraded land located within the adjacent Bush Forever Site 385, at the corner of Reid Highway and Malaga Drive, Malaga. We propose to achieve "good" condition native vegetation consistent with the composition, structure and diversity of mapped complexes for the area.

LOT TYPE	FID	LAND ID NUMBER	PI PARCEL	LOT NUMBER	OWNER
Freehold	663435	3619903	P051435	1001	STATE OF WA
Reserve	383951	3738473	R 49328	R 49328	-

2) Weed control and revegetation of approximately 1.2 ha is proposed for land located in the north-west corner of Roe Highway and Great Northern Highway. This provides an opportunity to improve the ecological value of the vegetation south of Jane Brook and Bush Forever Site 302, and will create a buffer for the existing remnant riparian vegetation.

LOT TYPE	FID	LAND ID NUMBER	PI PARCEL	LOT NUMBER	OWNER
Freehold	740682	1165799	D002455	15	COMMISSIONER OF MAIN ROADS
Easement	723683	3526244		Easement – doc(15 – A923194)	
Freehold	7511133	1165800	D002456	16	COMMISSIONER OF MAIN ROADS
Easement	722068	3526245		Easement – doc(16 – A923194)	
Freehold	750702	1166415	D002942	17	COMMISSIONER OF MAIN ROADS
Freehold	750394	1397927	P003105	30	COMMISSIONER OF MAIN ROADS

3) Complementary to the offsets will be the protection of nearby wetlands and vegetation by the installation of a stormwater oil and sediment separator, a device to treat water draining from Reid Highway and Alexander Drive. This will improve the quality of water draining to the Agett Street Wetland, as well as providing capacity for intercepting hydrocarbon spills that may occur at the interchange before they can affect adjacent native vegetation and associated fauna.

4) Mitigation of potential wind and water erosion of loose sand as a result of clearing will be specifically achieved through dust management, earthworks and revegetation. Requirements for no sheet erosion, no erosion of drains and swales, frequent soil monitoring, management of runoff from disturbed areas, mitigation of active rilling and reinstatement of affected landscaping will be addressed as part of the works. As required by Main Roads Purpose Clearing Permit 818/4, these details will be supplied to the Commissioner of Soil and Land Conservation.

Together, the proposed revegetation offsets represent a larger area than that to be cleared by the interchange project, with “no net loss” of native vegetation. The rehabilitation area will contain similar species to the area to be cleared, supplemented with species that enhance the ecological function of the area, are reflective of the pre-European vegetation community, provide buffering of existing “good” remnant Bush Forever vegetation, and represent suitable foraging habitat for Carnaby’s Black Cockatoo.

Appropriate species for offset 1, representing those occurring in the area to be cleared, would include:

<i>Acacia celsa</i>	<i>Conostylis setigera</i>	<i>Kunzea recurva</i>
<i>Acacia longifolia</i>	<i>Corymbia calophylla</i>	<i>Lechenaultia floribunda</i>
<i>Acacia pulchella</i>	<i>Dampiera linearis</i>	<i>Lysinema ciliatum</i>
<i>Adenanthos cygnorum</i>	<i>Dasypogon bromeliifolius</i>	<i>Melaleuca ryeae</i>
<i>Allocasuarina fraseriana</i>	<i>Daviesia decurrens</i>	<i>Melaleuca seriata</i>
<i>Allocasuarina humilis</i>	<i>Daviesia divaricata</i>	<i>Melaleuca trichophylla</i>
<i>Amphipogon turbinatus</i>	<i>Desmodium flexuosum</i>	<i>Mesomelaena pseudostygnia</i>
<i>Anigozanthus humilis</i>	<i>Dodonaea viscosa</i>	<i>Nuytsia floribunda</i>
<i>Austrostipa elegantissima</i>	<i>Drosera erythrorhiza</i>	<i>Oxalis perennans</i>
<i>Banksia attenuata</i>	<i>Drosera menziesii</i>	<i>Patersonia occidentalis</i>
<i>Banksia grandis</i>	<i>Eremaea pauciflora</i>	<i>Petrophile mactostachya</i>
<i>Banksia ilicifolia</i>	<i>Eucalyptus erythrocorys</i>	<i>Pimelia sulphurea</i>
<i>Banksia menziesii</i>	<i>Eucalyptus marginata</i>	<i>Pododactylis angustifolia</i>
<i>Banksia prionotes</i>	<i>Gompholobium capitatum</i>	<i>Pododactylis gnaphalioides</i>
<i>Beaufortia squarrosa</i>	<i>Gompholobium tomentosum</i>	<i>Ptilotus polystachyus</i>
<i>Borya sphaerocephala</i>	<i>Hakea trifurcata</i>	<i>Rhodanthe chlorocephala</i>
<i>Bossiaea eriocarpa</i>	<i>Hardenbergia comptoniana</i>	<i>Scaevola repens</i>
<i>Burchardia congesta</i>	<i>Hemianthus linearis</i>	<i>Stirlingia latifolia</i>
<i>Calectasia narragara</i>	<i>Hibbertia hypericoides</i>	<i>Stylidium calcaratum</i>
<i>Callistemon phoeniceus</i>	<i>Hybanthus calycinus</i>	<i>Synaphea spinulosa</i>
<i>Calothamnus quadrifidus</i>	<i>Hypocalymma angustifolium</i>	<i>Thelymitra macrophylla</i>
<i>Calytrix lechenaultia</i>	<i>Hypocalymma robustum</i>	<i>Thysanotus manglesianus</i>
<i>Conospermum atoechadis</i>	<i>Jacksonia floribunda</i>	<i>Xanthorrhoea brunonis</i>
<i>Conostephium pendulum</i>	<i>Jacksonia furcellata</i>	<i>Xanthorrhoea preissii</i>
<i>Conostylis aculeate</i>	<i>Jacksonia sternbergiana</i>	

Appropriate species for offset 2, appropriately zoned according to proximity to Jane Brook, would include:

<i>Acacia alata</i>	<i>Dampiera linearis</i>	<i>Hovea pungens</i>
<i>Acacia pulchella</i>	<i>Darwinia citriodora</i>	<i>Hypocalymma angustifolium</i>
<i>Allocasuarina fraseriana</i>	<i>Daviesia horrida</i>	<i>Juncus pallidus</i>
<i>Banksia grandis</i>	<i>Diplopeltus huegelii</i>	<i>Juncus subsecundus</i>
<i>Banksia nivea</i>	<i>Eucalyptus marginata</i>	<i>Lechenaultia biloba</i>
<i>Banksia sessilis</i>	<i>Eucalyptus rudis</i>	<i>Melaleuca preissiana</i>
<i>Beaufortia purpurea</i>	<i>Eucalyptus wandoo</i>	<i>Melaleuca ryeae</i>
<i>Bossiaea aquifolium</i>	<i>Hakea cristata</i>	<i>Melaleuca scabra</i>
<i>Calothamnus quadrifidus</i>	<i>Hakea lissocarpa</i>	<i>Melaleuca seriata</i>
<i>Carex appressa</i>	<i>Hakea petiolaris</i>	<i>Melaleuca trichophylla</i>
<i>Clematis pubescens</i>	<i>Hakea trifurcata</i>	<i>Nuytsia floribunda</i>
<i>Corymbia calophylla</i>	<i>Hibbertia hypericoides</i>	<i>Verticordia plumosa</i>
<i>Dampiera alata</i>	<i>Hibbertia montana</i>	<i>Xanthorrhoea preissii</i>

Where possible, seed to be used on the sites will be collected in spring 2009, locally and under advisement of the land owners/managers. Those species that would benefit from placement as tubestock, such as the eucalypts, will be raised from this period until ripping and planting in winter 2010 at a density of 2500 plants/ha. The site will be sprayed with glyphosate in spring 2009 and winter 2010 prior to ripping and planting. Species other than those raised/obtained as tubestock will be direct seeded around June/July 2010 at a rate of 4 kg/ha.

The success of the rehabilitation will be monitored every 6 months within a 3 year establishment period, involving qualitative visual and photographic assessment of the whole site areas and quantitative assessment of two randomly-sited 10x10 m quadrats in each revegetation location. Percentage cover of weeds and natives, native species diversity and stem density will be quantified. The proposed completion criteria are:

Species diversity:	> 25 species
Vegetation survival:	> 75 % of individuals planted
Native plant occurrence:	> 60 % cover within the rehabilitated area
Weed occurrence:	< 20 % cover within the rehabilitated area

It is proposed that long-term management of the sites be vested in the current land managers, to occur at the end of the three-year establishment and monitoring period – winter 2013 – following successful compliance with completion criteria. Any remedial weed control and infill planting of like native species required to achieve the proposed targets will be done by Main Roads throughout the establishment period and in winter 2013 if necessary.

We believe that the offset proposed is a positive outcome and adequately satisfies your requirements. As part of our due diligence process and legal compliance, we require your authority to proceed with our construction activities as a matter of urgency. If you require any further information to assist your evaluation of this project, please contact me on 9323 4424.

Yours faithfully

Shane Collins  
PROJECT ENVIRONMENTAL OFFICER METROPOLITAN REGION

20<sup>th</sup> August 2009

Attached:

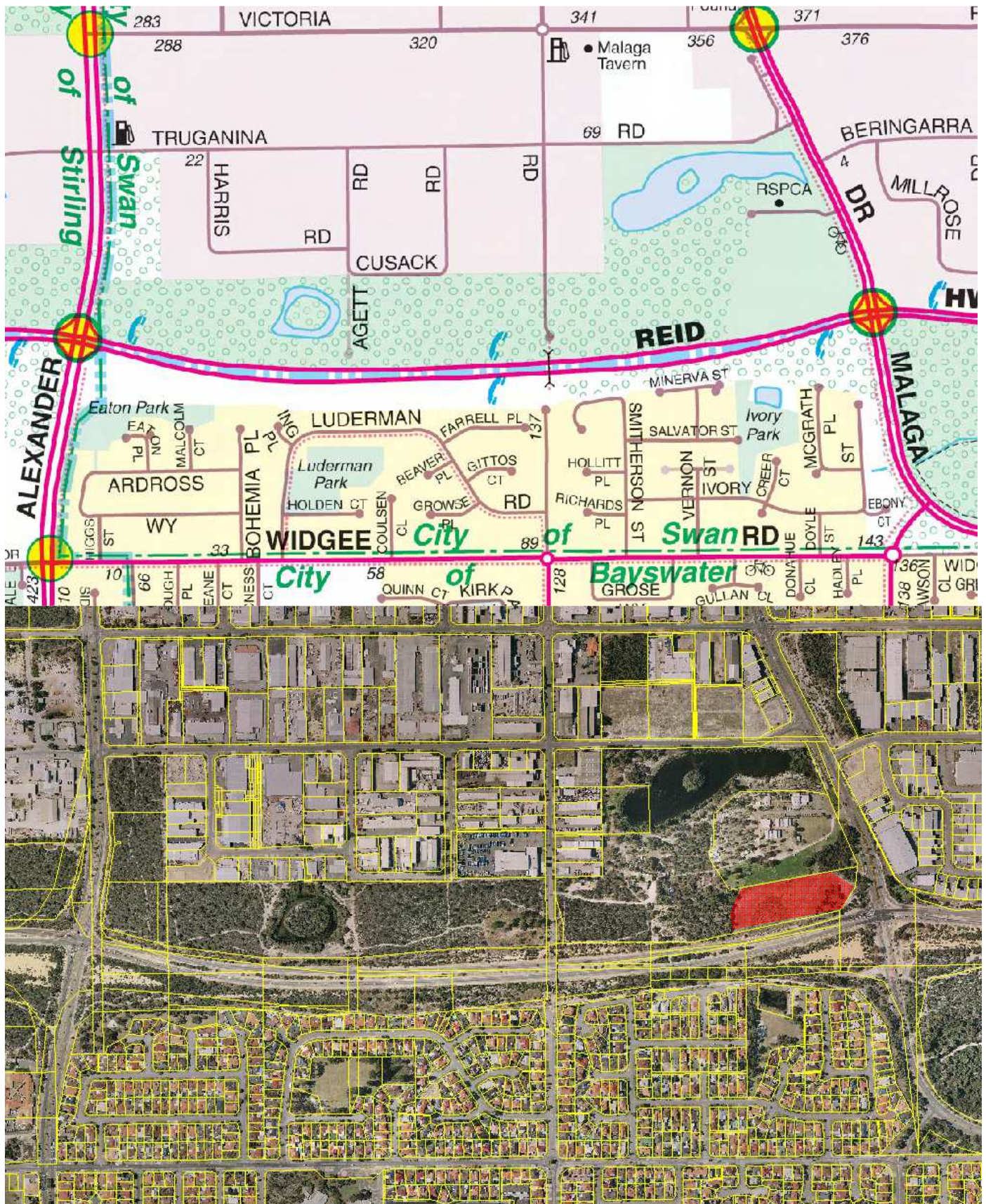
OFFSET AREA 1

- Figure 1 – Street Map
- Figure 2 – Aerial Photo
- Figures 3-5 – Photos

OFFSET AREA 2

- Figure 6 – Street Map
- Figure 7 – Aerial Photo
- Figures 8-10 – Photos





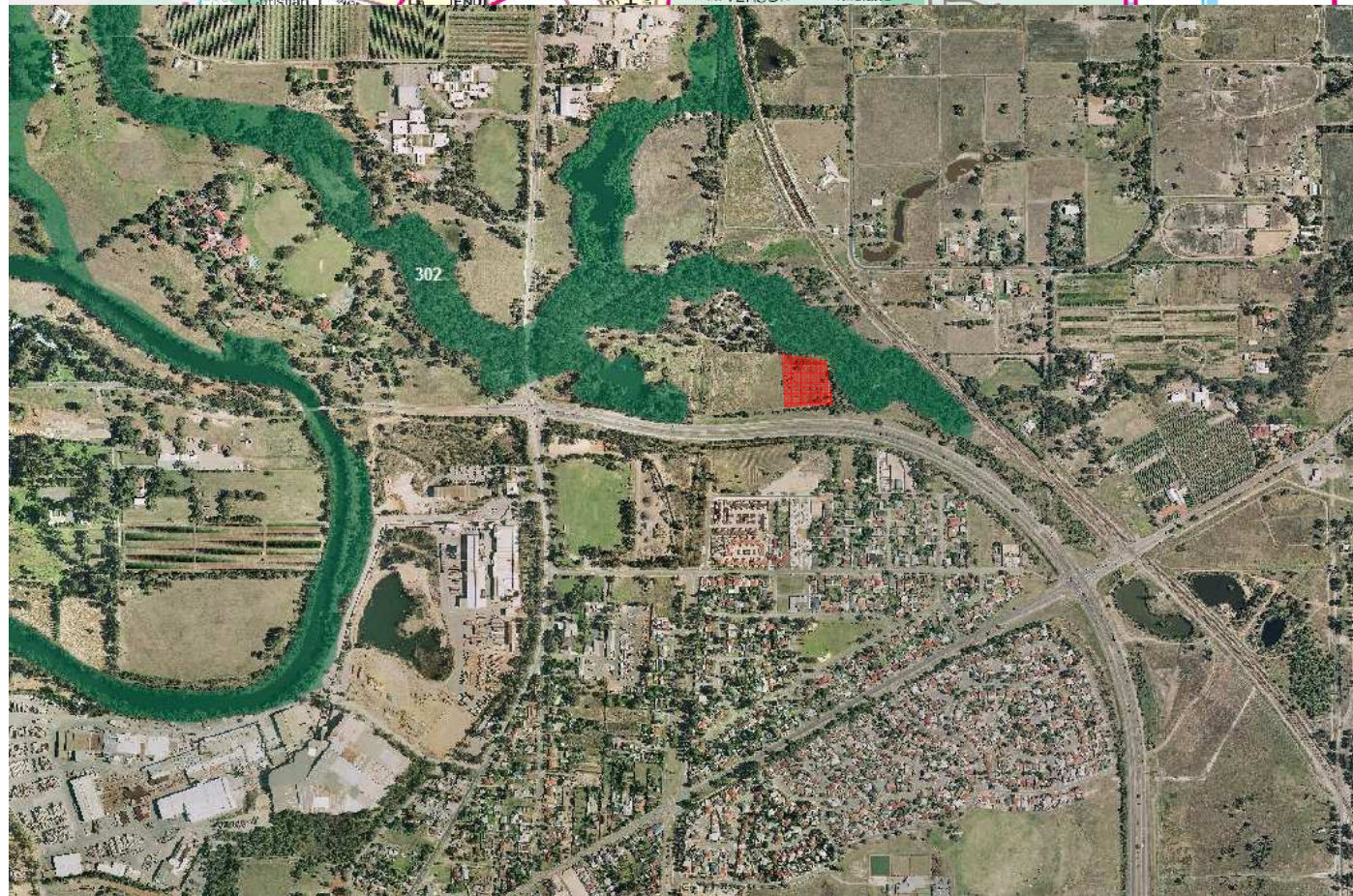
Figures 1 and 2 – Street map and aerial photo with proposed offset shaded red.





**Figures 3-5 – Photos of proposed offset area near NW corner of Reid Highway and Malaga Drive, showing views moving eastward.**





**Figures 6 and 7 – Street map and aerial photo with proposed offset shaded red.**





**Figures 8-10 – Photos of proposed offset area near NE corner of Roe Highway and Great Northern Highway, showing views moving eastward.**