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31 May 2018

Re: Ecological assessment for the realignment of a 1st order watercourse, Lot 2 // DP 1233392, 579 Mamre Road, Orchard Hills

Dear George,

Please find below an outline of the ecological values and constraints made during a site visit carried out on 16 May 2018 in the north western portion of 579 Mamre Road, Orchard Hills, Lot 2 // DP 1233392 (hereafter referred to as the 'subject site', **Figure 1**).

Background and purpose of report

This assessment relates to a Section 96 modification for the realignment of a 1st order tributary of South Creek in the north west of Lot 2 // DP 1233392 (579 Mamre Road, Orchard Hills). The proposed works would require the:

- Decommissioning and filling of the existing channel with site won material;
- Realignment of the existing channel to the north of its current position;
- Reconstruction of the new channel to include jute meshing and revegetation.

The relocated watercourse will run in a north westerly direction until it coincides with the northern perimeter of Lot 2 // DP 123392. The watercourse will then run to the west adjacent with Lot 209 // DP 1013539 and Lot 208 // DP 1013539 until it meets with South Creek in the north western corner of Lot 2 // DP 1233392.

This report provides an assessment of the ecological constraints (ecological values) of the subject site for the realignment of the 1st order watercourse in the subject site based on field assessment and information previously collected within the broader study area, including:

- Ecoplanning (2015) Ecological and Riparian Assessment – Mamre West Precinct, Orchard Hills, Western Sydney Employment Area (v. 1.2). Prepared for ALTIS Property Partners Pty Ltd
- Ecoplanning (2016) Groundwater Dependent Ecosystems. Key Fish Habitat and Riparian Assessment – 585-649 Mamre Road, Orchard Hills, Western Sydney Employment Area (v 1.0 Final). Prepared for Altis Property Partners Pty Ltd
- Ecoplanning (2016). Landscape Vegetation Management Plan, Lot 2171 // DP 1153854, Mamre Rd, Orchard Hills v1.0. Prepared for ALTIS Property Partners Pty Ltd.

Methods

The ecological values and constraints within the subject were identified through a rapid site inspection conducted by Thomas Hickman (Ecologist, Ecoplanning) on 16 May 2018. A site specific literature review including a search of database records (Atlas of NSW Wildlife, OEH 2018) for records of threatened species previously recorded within 5 km of the subject site was also conducted.

Threatened species

Threatened species, populations and migratory species recorded within 5 km of the subject site (the locality) in a search of the Atlas of NSW Wildlife (OEH 2018) were consolidated and their likelihood of occurrence was assessed by:

- review of location and date of recent (<5 years) and historical (>5-20 years) records
- review of available habitat within the subject site and surrounding areas
- review of the scientific literature pertaining to each species and population
- applying expert knowledge of each species

The potential for each threatened species, population and/or migratory species to occur was then considered following review of available habitat within the subject site. The potential for species to utilise the site and to be affected directly or indirectly by the proposed action were considered as either:

- "Recent record" = species has been recorded in the subject site a within the past 5 years
- "High" = species has previously been recorded in the subject site (>5 years ago) or in close proximity (for mobile species), and/or habitat is present that is likely to utilised by a local population
- "Moderate" = suitable habitat for a species is present onsite but no evidence of a species detected and relatively ***high*** number of recent records (5-20 years) in the locality or species is highly mobile
- "Low" = suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively ***low*** number of recent records in the locality
- "Not present" – suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the subject site

No threatened flora or fauna species listed under the *Biodiversity Conservation Act 2016* (BC) or the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) were recorded during the site inspection, and searches of relevant databases (Atlas of NSW Wildlife, OEH 2018) did not identify any previous records of threatened flora or fauna species within the subject site. Twenty-eight (28) threatened species have been previously recorded within a 5 km radius of the subject site including 21 fauna and seven flora species (**Figure 2**). All of these species were assessed as either 'not present', or to have a 'low' likelihood of occurring in the subject site, given the absence of native vegetation and lack of habitat features within the site.

Vegetation mapping and threatened ecological communities

The subject site is not mapped under the regional vegetation mapping of OEH (2015) (**Figure 3**). Field assessment determined that the vegetation in the subject site is highly degraded and consists exclusively of other vegetation 'pasture' (**Figure 4** and **Figure 5**). Dominant exotic grasses and herbaceous weeds in the subject site included *Cenchrus clandestinus** (Kikuyu Grass), *Paspalum dilatatum** (Paspalum), *Phalaris aquatica** (Phalaris), *Nassella neesiana** (Chilean Needle Grass), *Taraxacum officinale** (Dandelion) and *Verbena bonariensis** (Purpletop) (**Appendix A**).

A small patch of Shale Plains Woodland (SPW) in an 'underscrubbed' condition is situated directly to the east of the subject site (**Figure 3**). Shale Plains Woodland is listed as a Critically Endangered Ecological Community (CEEC) under the EPBC Act and the BC Act. This vegetation is not situated within the subject site, therefore will not be impacted by the watercourse relocation (**Figure 4**). No threatened ecological communities were identified in the subject site.

Riparian corridors

Desktop survey and field assessment determined the subject site to contain a 1st order tributary of South Creek (**Figure 7**). The Section 96 modification would involve the realignment of the 1st order tributary to the north of its current location. The constructed channel would be revegetated and stabilised with jute matting and coir logs, much like the improvement works that were conducted along the existing channel (**Figure 6**).

The *Guidelines for Riparian Corridors on Waterfront Land* (DPI 2012) outlines the requirements for maintaining, establishing or rehabilitating a riparian corridor, or vegetated riparian zone (VRZ), as part of an application for a controlled activity approval. Consistent with DPI (2012) the riparian corridors required for the drainage line within the subject site have been determined based on the Strahler Stream Order, with the following buffers required within the subject site:

- 1st order stream – 10 m each side of the watercourse

The vegetation below top of bank within the 1st order watercourse was predominantly exotic. Where present, native species occurred in low abundance and cover and were limited to planted and self-recruited forbs, rushes and macrophytes. Native species recorded within the watercourse included *Typha orientalis* (Broadleaf Cumbungi), *Juncus usitatus* and *Tetragonia tetragonioides* (New Zealand Spinach). It is noted that 1st order watercourses are not often seen as a significant constraint by the NSW Office of Water.

Conservation values in the subject site

Based on the highly degraded condition of the subject site, lack of native vegetation and 'low' likelihood of threatened fauna to utilise the site, the subject site has been assessed to be of 'low' ecological value. No native vegetation communities were identified within the subject site, or will be impacted as a result of the realignment. No threatened flora species were identified during field survey and the seven species recorded in the locality were assessed as 'not present' within the subject site.

Conclusions and recommendations

Desktop analysis and field survey found that the subject site contains land of 'low' ecological value. The subject site consists exclusively of other vegetation 'pasture', which is dominated by exotic grasses and herbaceous weeds. Therefore, no native vegetation communities were prescribed to the subject site, threatened flora species were assessed as 'not present' and threatened and migratory species were assessed to have a 'low' likelihood of utilising the subject site. The subject site does not contain substantial fauna habitat components, such as hollow bearing trees, coarse woody debris or large habitat trees.

A 1st order stream occurs within the subject site. First order streams are not often a significant constraint by the NSW Office of Water, thus it will be unlikely that a 'controlled activity approval' will be necessary.

If you would like to discuss any of the above comments and recommendations further, please contact me on the below details.

Sincerely,

Lucas McKinnon

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References

NSW Office of Water (NOW) (2012) Controlled activities on waterfront land – Guidelines for vegetation management plans on waterfront land.

NSW Office of Environment and Heritage (NSW OEH) (2018a). BioNet Atlas of NSW Wildlife. Accessed at: http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx.

Office of Environment and Heritage (OEH) (2015). *Remnant Vegetation of the western Cumberland subregion, 2013 Update*. Office of Environment and Heritage for the NSW Government, Sydney.

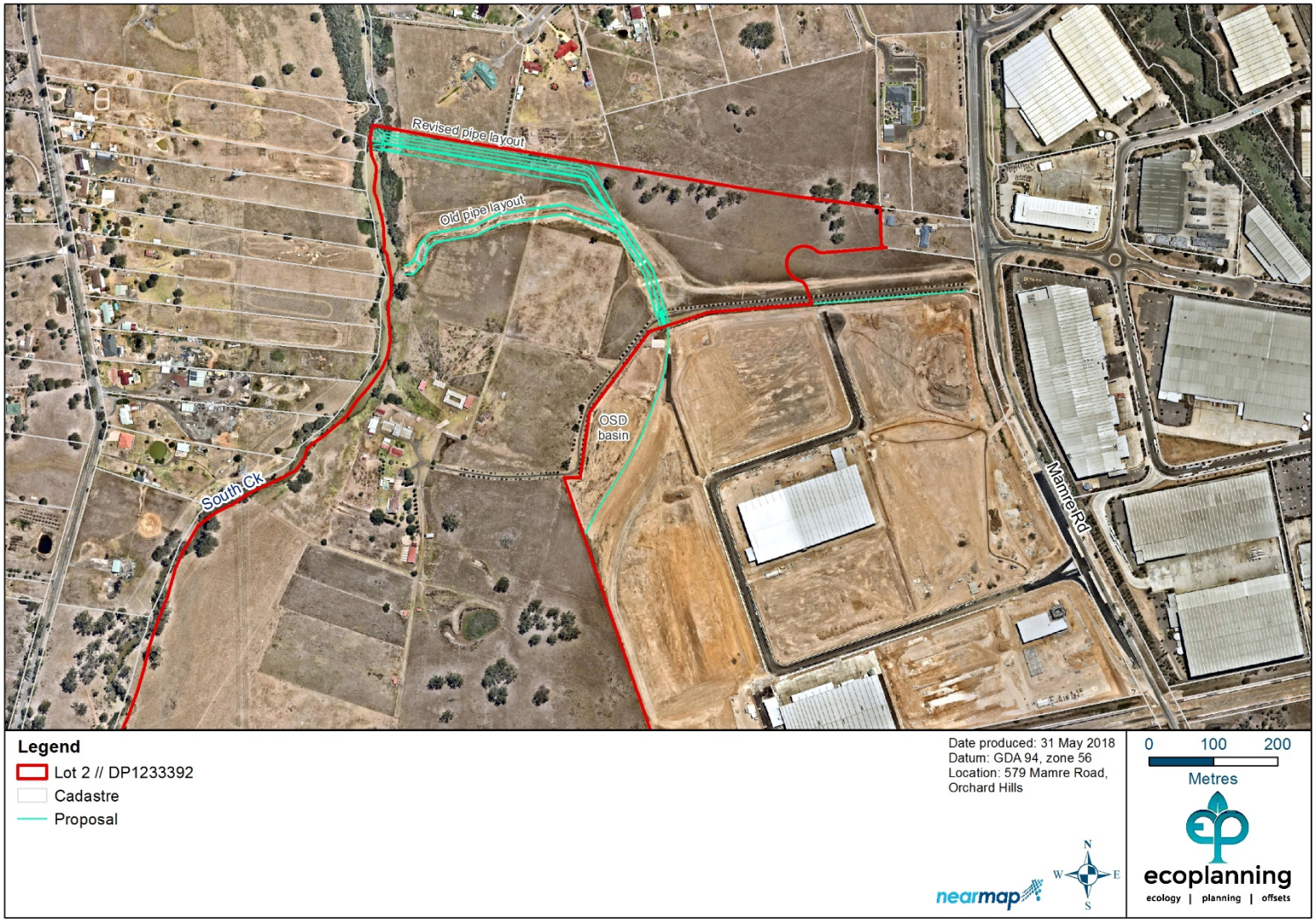

Figure 1:Subject site

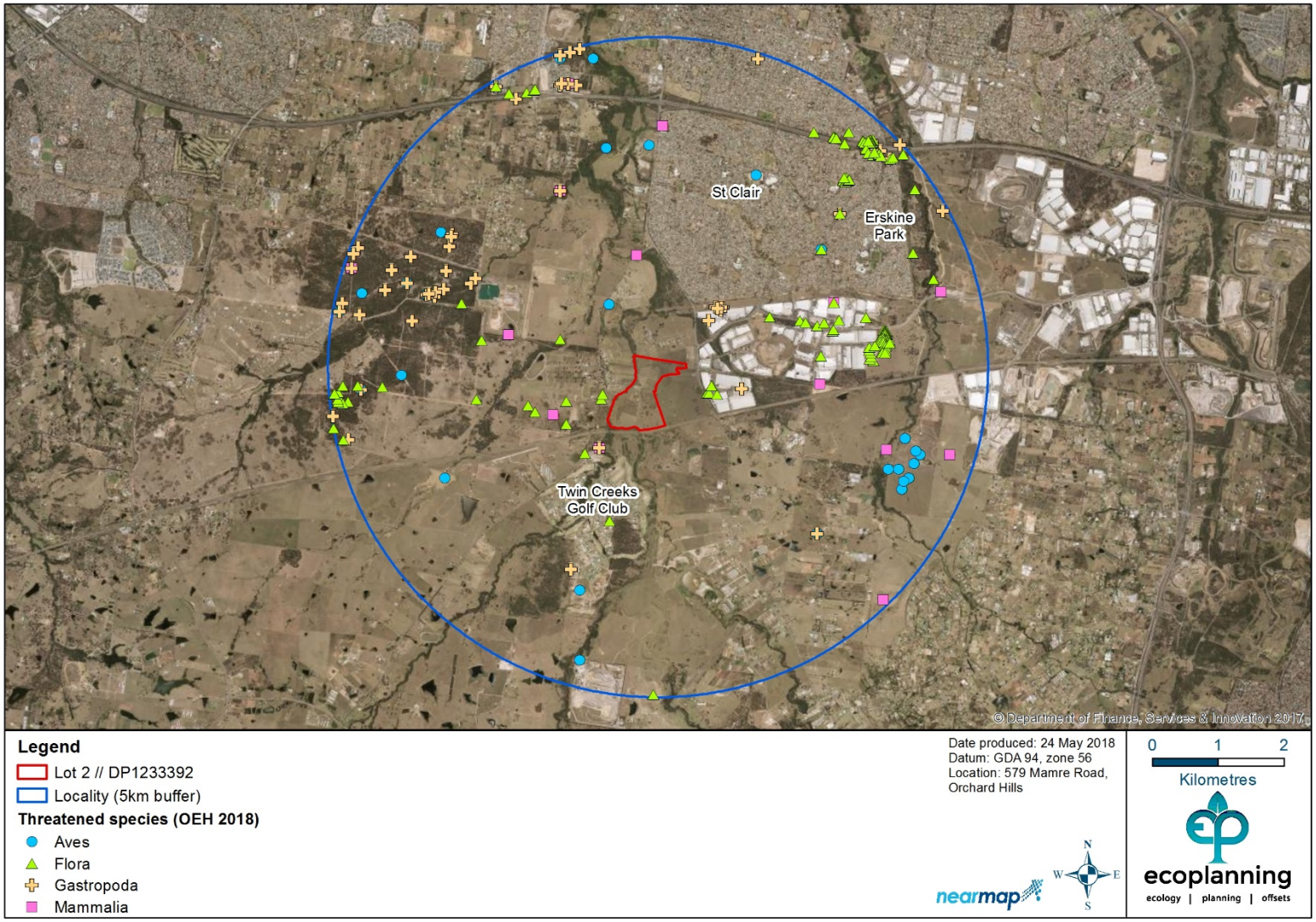

Figure 2: Threatened species in the locality (OEH 2018).

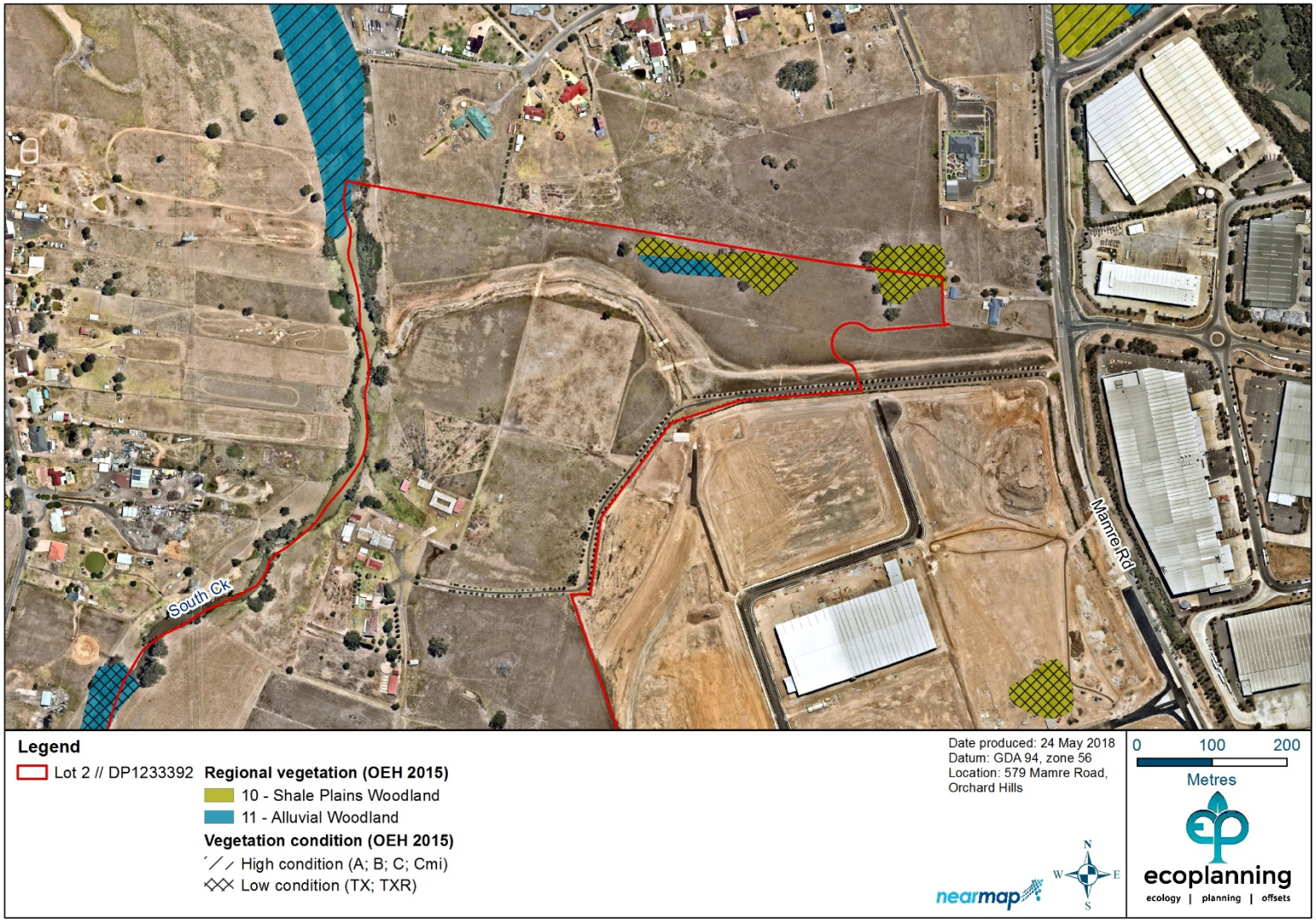

Figure 3: Regional vegetation mapping (OEH 2015).

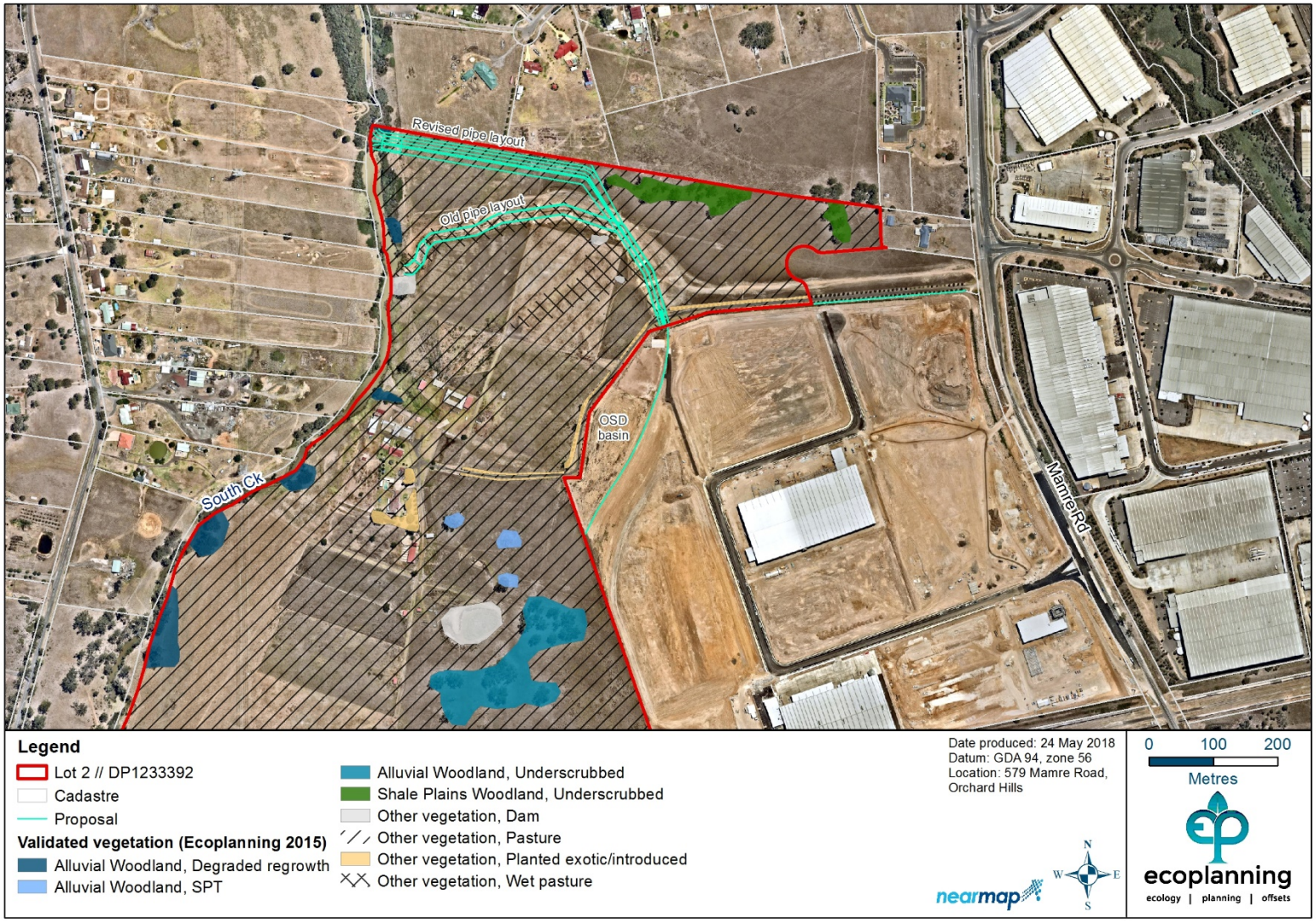

Figure 4: Field validated vegetation communities (Ecoplanning 2015) and proposed watercourse realignment.

Figure 5: Cleared land other vegetation 'pasture' in the west of the subject site.

Figure 6: The existing reconstructed channel with jute matting for bank retention.

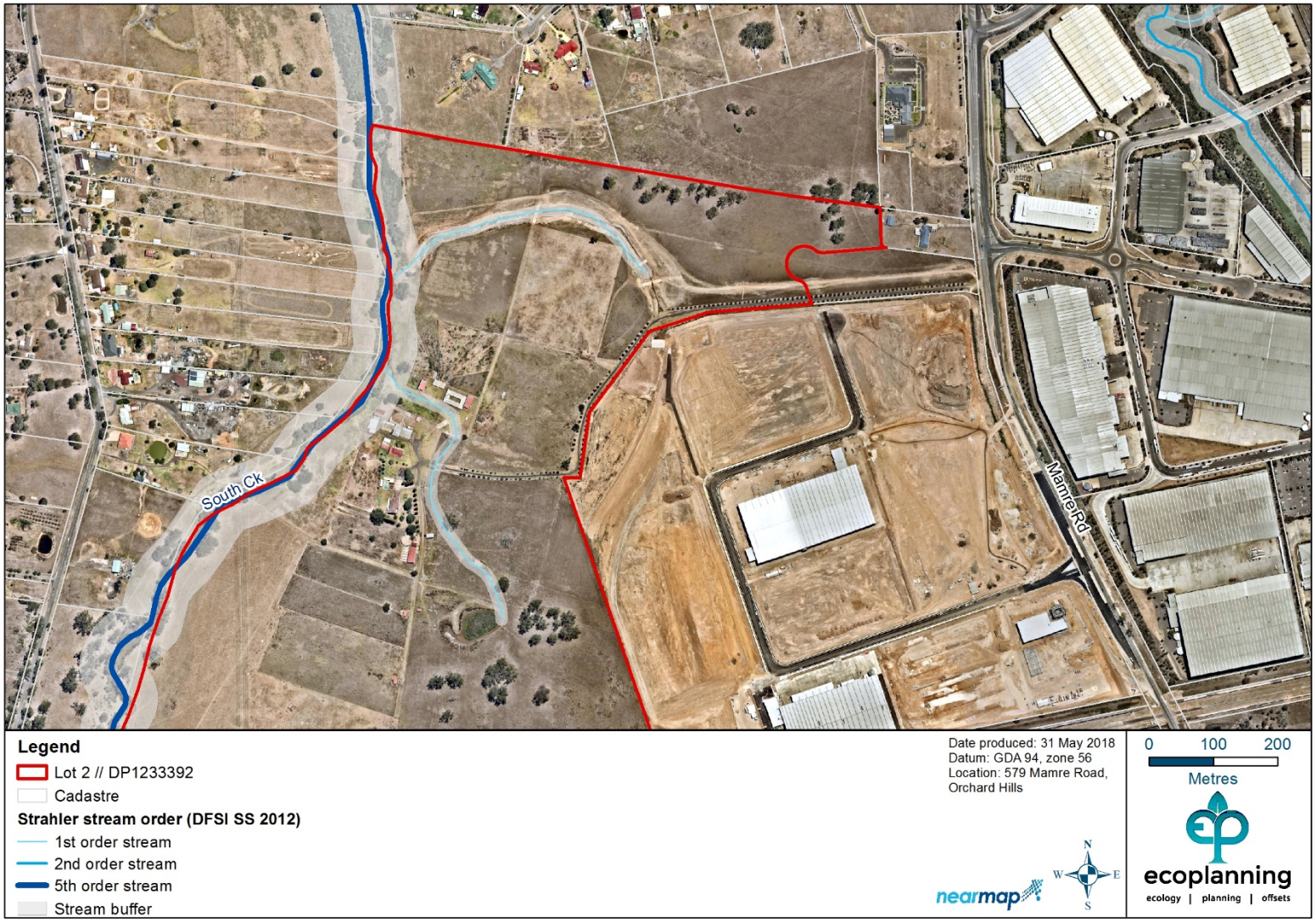

Figure 7: Strahler stream order and VRZs of the watercourses in the subject site and surrounds.

Appendix A – Flora species observed on site

Family	Scientific Name	Common name	Native/Exotic	Form
Aizoaceae	*Tetragonia tetragonioides*	New Zealand Spinach	Native	F
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	Exotic	F
Asteraceae	*Aster* sp.		Exotic	F
Asteraceae	*Cirsium vulgare*	Spear Thistle	Exotic	F
Asteraceae	*Senecio madagascariensis*	Fireweed	Exotic	F
Asteraceae	*Sonchus oleraceus*	Common Sowthistle	Exotic	F
Asteraceae	*Taraxacum officinale*	Dandelion	Exotic	F
Casuarinaceae	*Casuarina glauca*	Swamp Oak	Native	T
Cyperaceae	*Baumea articulata*	Jointed Twig-rush	Native	V
Juncaceae	*Juncus usitatus*		Native	R
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne	Exotic	F
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongue	Exotic	F
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass	Exotic	G
Poaceae	*Chloris truncata*	Rhodes Grass	Exotic	G
Poaceae	*Cynodon dactylon*	Couch	Exotic	G
Poaceae	*Hordeum* sp.		Exotic	G
Poaceae	*Lolium* sp.		Exotic	G
Poaceae	*Nassella neesiana*	Chilean Needle Grass	Exotic	G
Poaceae	*Paspalum dilatatum*	Paspalum	Exotic	G
Poaceae	*Phalaris aquatica*	Phalaris	Exotic	G
Poaceae	*Setaria parviflora*	Pigeon Grass	Exotic	G
Solanaceae	*Cestrum parqui*	Green Cestrum	Exotic	S
Solanaceae	*Lycium ferocissimum*	African Blackthorn	Exotic	S
Solanaceae	*Solanum sisymbriifolium*		Exotic	F
Typhaceae	*Typha orientalis*	Broadleaf Cumbungi	Native	V
Verbenaceae	*Verbena bonariensis*	Purpletop	Exotic	F

Form: (T) Tree; (S) Shrub; (G) Grass; (R) Rush; (F) Forb; (V) Sedge.

Appendix B: Fauna species observed on site

Class	Family	Scientific name	Common name	Native/ Exotic	Ecoplanning (16/05/18)
Aves	Anatidae	*Anas gracilis*	Grey Teal	Native	O
Aves	Ardeidae	*Ardea ibis*	Cattle Egret	Native	O
Aves	Artamidae	*Cracticus torquatus*	Grey Butcherbird	Native	W
Aves	Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	Native	W
Aves	Cacatuidae	*Eolophus roseicapillus*	Galah	Native	W
Aves	Cisticolidae	*Cisticola exilis*	Golden-headed Cisticola	Native	OW
Aves	Columbidae	*Ocyphaps lophotes*	Crested Pigeon	Native	O
Aves	Corvidae	*Corvus coronoides*	Australian Raven	Native	W
Aves	Hirundinidae	*Hirundo neoxena*	Welcome Swallow	Native	OW
Aves	Meliphagidae	*Manorina melanocephala*	Noisy Miner	Native	W
Aves	Monarchidae	*Grallina cyanoleuca*	Magpie-lark	Native	W
Aves	Psittacidae	*Psephotus haematonotus*	Red-rumped Parrot	Native	W
Aves	Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet	Native	W
Aves	Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	Native	OW
Aves	Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis	Native	O

O = observed; W = heard, OW = Observed and heard