Lot 5 in DP 262213 Ropes Creek
Ropes Creek Industrial Estate

Concept Plan & Concurrent Project Application
for
Employment Lands & Stage 1 Industrial Development

Ecological Issues & Assessment Report

16th August 2010

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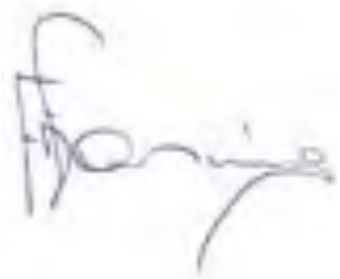
Statement of Veracity

The principal author of this *Ecological Issues & Assessment Report* (Mr F Dominic Fanning) states that this *Report* represents the true circumstances and condition of the natural environment and native biota on the subject site, and in its immediate vicinity, to the extent that those ecological circumstances are 'knowable' at any point in time, and on the basis of the information available to the author.

The information in the *Report* includes an array of data provided by other experts and consultants, the truth and accuracy of which I cannot vouchsafe. It also includes data provided by the DECCW and the DEWHA, which I accept at face value.

I also note that as a regular expert witness in the Land & Environment Court of NSW, I always apply the *Expert Witness Directions* and the *Uniform Civil Procedures Rules* to every project with which I am involved. I note in particular that in every instance I prepare my *Reports* on the basis of my own opinions and assessment, irrespective of the desires, opinions or goals of the proponent or of any government agency (or any other person).



F Dominic Fanning
Director – Environmental InSites

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PART A **INTRODUCTION & INFORMATION BASE**

1 INTRODUCTION

1.1 Background

The site that is the subject of this *Ecological Issues & Assessment Report* is Lot 5 in DP 262213 Ropes Creek (Figure 1), located within the Local Government Area (LGA) of Blacktown:

- to the north of the Sydney Water Supply Pipeline;
- to the east of Mamre Road and to the immediate east of Ropes Creek; and
- to the west of Wallgrove Road.

The subject site is an approximately square parcel of land with access from Old Wallgrove Road along a private road to its northeastern corner, and ultimately along a proposed major east-west regional link road (to be constructed by the RTA) along its northern boundary (see Chapter 1.3). The site occupies a total area of approximately 100 hectares, and is zoned predominantly *IN1 – General Industrial* pursuant to *State Environmental Planning Policy* (*Western Sydney Employment Area*) *2009* (the 'SEPP'), although there are also notable areas of zoned *E2 – Environmental Protection* (Figure 2).

The *E2 – Environmental Conservation* areas (Figure 2) are located:

- along Ropes Creek, which forms the western boundary of the site;
- along a minor drainage line which traverses the northern parts of the site, flowing west from the adjoining electricity substation to the immediate east; and
- along a second minor drainage line in the southwest of the site.

The site has been used for grazing over a long period (at least 70 years), and as a result has been largely cleared of native trees and most of its native groundcover vegetation (Appendix A). Substantial (hollow-bearing) trees only exist as scattered paddock specimens in the northeast of the site (Figure 3), with mature Swamp Oaks along Ropes Creek and smaller specimens along the drainage lines. As noted above, in addition to Ropes Creek (which is located to the immediate west of the site), there are two small drainage lines present on the subject site (see Chapter 3), and two farm dams. The entire site is fenced, and has long been used for agricultural and grazing purposes.

Aerial photograph with physical features of Lot 5 in DP 262211 Ropes Creek

1.2 Definitions

The definitions for relevant terms employed in this *Report* are:

- "*subject site*" Lot 5 in DP 262211 Ropes Creek
- "*study area*" the "*subject site*" and adjoining lands
- "*locality*" an area of 10km radius around the "*subject site*"

Other terms used in this *Report* conform to the definitions contained in the relevant legislation and planning instruments (see below and the *Bibliography*).

1.3 Proposed Development

Most of the subject site at Ropes Creek is currently zoned *IN1 – General Industrial* pursuant to *State Environmental Planning Policy* (*Western Sydney Employment Area*) *2009* (the 'SEPP'). Ropes Creek and the riparian zone along the western boundary of the subject site, as well as the two minor drainage lines, are zoned *E2 – Environmental Conservation* pursuant to the SEPP (Figure 2).

On the basis of the current zoning of the subject site pursuant to the SEPP, and on the basis of relevant considerations with respect *inter alia* to ecological issues and potential constraints, the site is proposed to be developed in a staged manner as an industrial estate (Figure A). The proposal is the subject of an application to the NSW Minister for Planning through the Department of Planning (DoP), pursuant to Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

The *Part 3A Application* for development of the subject site consists of two principal elements:

1 a *Concept Plan* (10_0127) for the whole of the subject site, which -

   - identifies the general industrial layout, indicative building pads, a road hierarchy and relevant management elements including stormwater control features, services delivery and the general approach to bushfire protection and management of the E2 zone (Figure 4); and

2 a *Project Application* for Stage 1 of the *Concept Plan* (10_0128), which includes *inter alia*:

   - an access road into the northeastern corner of the subject site and down the eastern boundary to the southeastern building site;
   - two industrial buildings on subdivided allotments in the northeastern corner and the southeastern corner of the subject site;
   - relevant design features including stormwater management, access and carparking, and physical features of the developments; and
   - a landscaping protocol for the *Stage 1 Project Application* (Figures 5A and 5B).

In addition to the ecological issues, which are addressed in this *Ecological Issues & Assessment Report*, a range of detailed investigations and reports have been prepared for the Part 3A *Applications*. Of relevance with respect to the consideration of ecological issues, and the potential impacts of development activities on the subject site at Ropes Creek, are:

- the *Bushfire Hazard Assessment Report* for the project and the recommendations contained therein (ABPP 2010);
- the stormwater management and treatment regime contained in the *Report* by Brown Consulting (2010);
- the *Landscape Plan* for the project (Clouston Associates 2010); and
- peripheral issues raised in a number of other *Reports*, including *inter alia* the road engineering and aboriginal heritage *Reports*.

1.4 Scope and Aims of this Report

The scope of this *Ecological Issues & Assessment Report* (EIAR) with respect to the subject site at Ropes Creek is:

- to collate existing relevant information regarding the subject site and adjoining lands;
- to undertake a search of the *Atlas of NSW Wildlife* (DECC) and to review the DECCW mapping of vegetation in western Sydney (Figure 6);
- to undertake a search of the EPBC[1] Act web database regarding *Matters of National Environmental Significance* (MNES);
- to consider the likely impacts of future development of the subject site on the natural environment in general, and on threatened biota and their habitats in particular;
- to address the requirements of the *Director-General's Requirements* (DGRs) for the Part 3A *Environmental Assessment Report* for the proposal, referred to by the Department of Planning (DoP) as *Concept Plan 10_0127* and *Major Project 10_0128*; and
- to address the relevant requirements of:
    - the *Environmental Planning & Assessment Act 1979* (EP&A Act);
    - the *Threatened Species Conservation Act 1995* (TSC Act); and,
    - the C*ommonwealth Environmental Protection & Biodiversity Conservation Act 1999* (EPBC Act).

The specific aims of this *Ecological Issues & Assessment Report* are:

- to determine the relevance of the subject site and/or elements within it for native biota and with respect to biodiversity conservation;
- to identify ecological constraints and/or issues which either would constrain the industrial development footprint and/or would identify matters that need particular consideration in the development design (particularly with respect to stormwater discharges and possibly to bushfire protection);
- to determine an appropriate and reasonable development outcome which *inter alia* maintains any biodiversity values on the subject site (if present) and also facilitates the protection and/or enhancement of any such biodiversity values; and
- to assist in the provision of an appropriate and balanced development outcome which *inter alia* is sensitive to any biodiversity conservation values present on the subject site.

[1] EPBC Act - *Environmental Protection & biodiversity Conservation Act 1999*.

2 INFORMATION BASE

This *Environmental Issues & Assessment Report* is based on a variety of sources of information, including *inter alia*:

- several inspections of the subject site by the principal author of this *Report* (in 2008 and 2010);
- a dedicated survey of the subject site for flora and fauna, undertaken on the 23rd of July 2010 by Environmental InSites staff;
- previous investigations on other similar lands in the general vicinity and *Reports* prepared therefore, including *inter alia*:
  - ecological investigations at Templar Road, Erskine Park (Environmental InSites 2008);
  - investigations on Lot A in DP 392643 Horsley Road (to the south of the subject site) over a number of years, and a current *Ecological Issues & Assessment Report* for that site (Environmental InSites 2010);
  - ecological investigations on Lot 4 (to the north of Lot 5 Ropes Creek) for Land & Environment Court *Proceedings* in 2009 (by the principal author of this *Report*); and
  - a variety of investigations undertaken by Gunninah Environmental Consultants and/or Environmental InSites, involving the principal author of this *Report*, within the *Erskine Park Employment Area* and on other developments along Old Wallgrove Road and the old Australian Wonderland site (to the northeast).

In addition to those investigations, a range of additional information and data has been inspected, including *inter alia*:

- the Wildlife Atlas of the DECCW, within a 10km radius of the subject site at Ropes Creek (Appendix B);
- information regarding *Matters of National Environmental Significance* (MNES) listed on the EPBC Act website within 10km of the subject site (Appendix C);
- the mapping of vegetation in western Sydney by the DECCW[2] (Figure 6);
- information contained on the DECCW website with respect to threatened biota, *Recovery Plans* and "*key threatening processes*"; and
- information regarding threatened biota and general native biota contained in the scientific and published literature.

[2] Department of Environment, Climate Change & Water. The DECCW includes the NSW Office of Water (NoW) and the NSW National Parks & Wildlife Service (NPWS), as well as the Environment Protection Authority (EPA). The DECCW was previously the Department of Environment & Climate Change (DECC) and prior to that the Department of Environment & Conservation (DEC).

3 EXISTING ENVIRONMENT

3.1 The Concept Plan

The subject site at Ropes Creek (which is the subject of the *Part 3A Concept Plan*) consists of undulating grazing land, with predominantly gentle slopes and/or flat areas, and elevations ranging from a high point of 75m on the northern boundary to a low point of 49m along Ropes Creek in the northwestern corner (see *Topographic Plan*).

The subject site slopes predominantly southwards and westwards, from a ridge on the northern boundary and from gentle ridges on the eastern boundary and in the southeastern corner. Ropes Creek flows northwards along the western boundary of the subject site, and there are two small drainage lines (as depicted on the *Topographic Plan*):

- a very small drainage line in the southwestern corner derived from piped discharges beneath the Sydney Water pipeline (located to the immediate south of the subject site); and
- a small drainage line which flows east-to-west across the northern part of the site, from near the northeastern corner.

In addition, very minor drainage lines and overland flow paths are located in the southeastern part of the subject site. As discussed below, these minor drainage lines are extremely degraded and of no biodiversity value. Similarly, the upper (eastern) half of the northern drainage line and the upper (southern) half of the southwestern drainage line are of extremely low ecosystem or biodiversity value.

The western boundary of the subject site is located on the upper bank of the Ropes Creek channel, with the channel itself located to the immediate west of the subject site.

The overwhelming majority of the subject site is occupied by cleared grazing pasture and/or areas which have been sown with oats for stock fodder, and very little native vegetation remains on the subject site (see aerial photograph on page 2; Figure 3; photographs in Appendix A).

Native vegetation which is present is generally highly modified and degraded, and is confined to the channel and immediate vicinity of Ropes Creek along the western side of the subject site, as well as in the lower parts of the two minor drainage lines. The upper parts of those drainage lines are generally extremely highly modified and degraded, and support only very narrow strips of native sedges or rushes (Appendix A; Figure 3). In addition, the subject site supports two farm dams, both of which are located beneath the major transmission lines which traverse the subject site.

There are two transmission line easements which traverse the subject site (Figure 3), emanating from (or terminating at) the sub-station located to its immediate east:

- an easement containing three sets of transmission lines traversing the northern part of the subject site in an east-west direction;
- a second easement containing two sets of transmission lines which traverses the subject site from its central eastern boundary in a southwesterly direction.

3.2 Stage 1 Project Application Area

The *Stage One Project Application* on Lot 5 at Ropes Creek, as detailed above (Figures 5A and 5B, involves the provision of an access road and services from the northeastern corner of the subject site, as well as the construction of two industrial buildings (in the northeastern corner and southeastern corner) and associated earthworks.

Most of the land which is the subject of the *Stage One Project Application* consists of gently undulating grazed pasture, which has long been cleared of any native vegetation. No native trees or shrubs will

require removal for the two industrial buildings, and most of the area to be affected consists of either pasture grasses or sown oats.

The southern industrial building for the *Stage One Project Application* is located in part over a very minor drainage line which carries channelled stormwater from the Transgrid Electricity Transmission Substation to the immediate east. This minor drainage feature is extremely highly modified from its original condition, and is characterised by weeds and introduced grasses, as well as patches of sedges and Spike Rush. It is not located within an *E2 – Conservation Zone* area of land on the subject site.

The access road from the northeastern corner of the subject site will traverse the upper part of the northern minor drainage line of Ropes Creek at the eastern boundary of the subject site. At this location, the drainage line is highly modified and degraded, and consists merely of a narrow channel with the steep eroding banks and stands of the Spike Rush. This is also derived from channelised flows around the electricity substation. There is a single Swamp Oak in the channel on the subject site, and a small stand of Swamp Oak immediately upstream (to the east).

4 FLORA and VEGETATION

4.1 Existing Vegetation

As indicated above, the majority of the subject site (approximately 93%) has long been cleared and managed for grazing and other agricultural activities. As a consequence, the majority of the site is characterised by introduced pasture grasses and pasture weeds, with only scattered trees remaining through the paddocks (Figure 3; Appendix A). There are two long-established farm dams present, which support aquatic and semi-aquatic vegetation and habitats.

The subject site supports four distinct vegetation types (Figure 7):

- Community 1 Low Closed Grassland (Pasture), which occupies the overwhelming majority of the site (approximately 93%);
- Community 2 Disturbed and Degraded Riparian Woodland, which is confined to Ropes Creek and the lower (eastern) part of the northern drainage line and upper (southern) part of the southwestern drainage line on the site (occupying a total of 1.64ha);
- Community 3 Highly Degraded Drainage Lines, along the upper part of the northern drainage line and along the small drainage line in the southeastern part of the site (occupying a total of 2.69ha); and
- Community 4 Artificial Freshwater Wetland, which occupies the two farm dams, in the western and southwestern parts of the site (occupying a total of 0.7ha).

Community 1 – Low Closed Grassland (Pasture)

The Low Closed Grassland (Pasture) vegetation type occupies the overwhelming majority of the subject site (approximately 93%), and has long been managed for agricultural purposes. Whilst the land doubtless originally supported a eucalypt woodland typical of western Sydney, there is little of that original vegetation type extant on the site other than a few scattered trees and the narrow bands of degraded riparian woodland along Ropes Creek and its drainage lines.

Substantial parts of the site are used for the production of stock feed, particularly oats (see Photo 1; Appendix A), including all of the *Stage 1 Project Application* area (Appendix A). Beyond those areas which have been ploughed and sown with oats, the grassland is dominated by the introduced pasture species Paspalum *Paspalum dilatatum*, Parramatta Grass *Sporobolus africanus*, Fire-weed *Senecio madagascariensis*, Kikuyu *Pennisetum clandestinum*, Slender Pigeon Grass *Setaria gracilis*, Lamb's Tongues *Plantago lanceolata*, White Clover *Trifolium repens,* Narrow-leaved Carpet Grass *Axonopus fissifolius*, Small-flowered Mallow *Malva parviflora*, Paddy's Lucerne *Sida rhombifolia* and African Love Grass *Eragrostis curvula*. Relatively sparse native groundcovers are also present (Appendix D).

There are a few scattered paddock trees within the subject site at Ropes Creek, in the northwestern corner. These are specimens of the Forest Red Gum, a few of which contain tree-hollows (see Chapter 5.1).

This community does not represent any native vegetation assemblage, and is the result of historic and ongoing clearing and agricultural activities.

Photo 1 Looking south from *Photo Point 2* across the extensive areas of pasture grassland and sown oats in the southern half of the site.

Community 2 – Disturbed or Degraded Riparian Woodland

Ropes Creek itself supports a disturbed riparian woodland community with various levels of degradation and weed-infestation. The whole of this vegetation type is contained within the *E2 Conservation Zones* on the subject site, as designated in the SEPP zoning map.

The two drainage lines on the subject site at Ropes Creek also support riparian woodland in parts, but the vegetation bands along these watercourses are narrow, discontinuous and highly degraded. The vegetation along these watercourses is restricted to a narrow and discontinuous linear band associated with a small incised drainage channel (Appendix A). The canopy is sparse due to historic clearing and grazing, and has a foliage cover of <10%.

These areas of vegetation are in extremely poor condition, and have little ecological functionality or value. Their inclusion in substantial *E2 Conservation Zones* is not warranted, given their narrow conformation, the levels of long-term disturbance and degradation, and their lack of connectivity to any relevant vegetation upstream.

Along Ropes Creek, the riparian woodland is in most places dense to moderately dense, and varies in width from approximately 10m to 50m (Figure 7), although much of that vegetation is located either within the channel or on land to the west of the subject site. Parts of the riparian woodland along Ropes Creek have been modified and subjected to ongoing lopping and maintenance beneath the electricity transmission line, but the remainder of the riparian woodland along Ropes Creek has a tree canopy of 10-20m in height and a variable, and generally weed-infested, understorey and shrub layer.

Trees present in these narrow bands of woodland include Swamp Oak *Casuarina glauca*, Narrow-leaved Ironbark *Eucalyptus crebra*, Cabbage Gum *Eucalyptus amplifolia* subsp. *amplifolia* and Broad-leaved Apple *Angophora subvelutina*. The shrub layer has been removed due to historic and on-going agricultural activities, and the ground layer is disturbed and dominated by Sharp Rush *Juncus acutus* along with a mixture of native and exotic species including Creeping Saltbush *Atriplex semibaccata*, Water Buttons *Cotula coronopifolia*, Water Couch *Paspalum distichum*, Common Couch *Cynodon dactylon*, Slender Knotweed *Persicaria decipiens, Juncus planifolius*, Wild Aster *Aster subulatus* and *Juncus usitatus*.

Photo 2 The degraded drainage line in the southwest of the subject site illustrating the very narrow band of Swamp Oak and the simplified understorey.

Photo 3 Looking south from *Photo Point 4* along the edge between grazed pasture and the Disturbed Riparian Woodland along Ropes Creek.

Community 3 – Highly Degraded Drainage Lines

The upper parts of the northern drainage line and the very minor degraded drainage lines in the southeast of the site have been very highly modified as a result of historical and ongoing agricultural practices. These portions of the drainage lines are generally devoid of trees or shrubs, and are characterised by a native and introduced sedges and grasses, with stands of Sharp Rush *Juncus acutus* dominant and a range of other sedges, pasture grasses and native and/or introduced groundcover species (Appendix D).

These areas do not represent examples of any listed "*endangered ecological community*", and have extremely little ecological value. Further, they do not represent habitat or features that warrant inclusion in the land zoned *2E – Conservation* given their very narrow conformation, the extremely high levels of long-term disturbance and degradation, and their lack of connectivity to any relevant vegetation upstream.

Photo 4 The highly degraded upper part of the northern drainage line on the subject site.

Community 4 – Artificial Freshwater Wetland

This vegetation type is located in the two farm dams on the site.

The dams are characterised by open water and by small patches of the exotic sedge species Sharp Rush *Juncus acutus*, with Tall Spike Rush *Eleocharis sphacelata* in western portion of the dam. Shallow parts of the dams contain Slender Knot-weed *Persicaria decipiens*, Water Ribbons *Triglochin procerum* and Swamp Lily *Ottelia ovalifolia*.

This vegetation type does not constitute an example of any listed "*endangered ecological community*". Given their artificial nature, these features do not warrant preservation in *E2 Conservation Zones*, although most of both the farm dams present are located beneath the transmission lines, and are therefore constrained in any case. Further, such features are readily re-created, as is proposed with the detention basins to be constructed through the development (see Chapters 9 and 11).

Photo 5 One of the farm dams beneath the transmission lines on the subject site.

4.2 Plant Species

A total of 63 plant species have been recorded on the subject site at Ropes Creek, of which 32 (51%) are exotic (Appendix C). The majority of the plant species present, and the majority of the vegetation cover, is of introduced species, predominantly those associated with grazing pastures and agricultural practices.

4.3 NPWS (2002) Vegetation Mapping

The NPWS (2002) vegetation mapping of western Sydney has identified a very small patch of Shale Plains Woodland in the northwestern corner of the subject site. However, not CPW (see Chapter 4.4).

The NPWS (2002) have also mapped patches of Alluvial Woodland along Ropes Creek and along parts of the two drainage lines on the site – the lower part of the northern drainage line and the upper part of the southwestern drainage line (Figure 7). These areas have been mapped by the NPWS study[3] (*Vegetation of the Cumberland Plain* – Map 4 of 16: October 2002) as Alluvial Woodland Type 11 (Sydney Coastal River-flat Forest). That community was subsumed into the REFCF "*endangered ecological community*" (EEC) in 2005.

All of the vegetation on the site other than that along Ropes Creek and the lower part of the northern drainage line are mapped as being less than 10% canopy cover (Figure 7), and all of the Alluvial Woodland mapped by the NPWS is contained with the *E2 Conservation Zone* land.

It is to be noted that the NPWS (2002) mapping of vegetation in western Sydney is broad-scale and generic, and was generated using (now dated) aerial photography, with only limited ground-truthing. It is extremely unlikely that the vegetation mapped by the NPWS on the subject site was ever ground-truthed (given its condition and value), and the NPWS mapping does not reflect the vegetation currently present on the site.

As is always the case, empirical data and information from current on-site investigations on any site supersedes and over-rides the generic and dated NPWS 2002 vegetation mapping.

4.4 Threatened Plants and Endangered Ecological Communities

No threatened flora species have been recorded from the subject site, and no such species are likely to be present, given the intensive agricultural practices which have been undertaken on the site over a long period.

There are no relevant "*endangered populations*" of any plant species in the locality.

Vegetation in the farm dams on the subject site does not constitute an example of an "*endangered ecological community*" (EEC) listed in the TSC Act.

[3] As noted above, that mapping is unlikely to have been ground-truthed on the subject site.

The NPWS (2002) mapping (Figure 6) identifies a small area of Shale Plains Woodland in the northwestern corner of the site. However, the field surveys by Environmental InSites demonstrate that the few scattered trees with pasture grasses and some limited native groundcover species does not conform to the Cumberland Plain Woodland (CPW) community because of the levels of disturbance and the lack of ecosystem functionality (Figure 7; Appendix A).

The degraded riparian vegetation in the *E2 Conservation Zone* along Ropes Creek and along parts of the two drainage lines on the subject site was mapped by the NPWS (2002) as Alluvial Woodland Type 11 (Sydney Coastal River-flat Forest). That community was subsumed into the REFCF "*endangered ecological community*" (EEC) in 2005. That vegetation in parts exhibits some of the floristic characteristics of the EEC known as River-flat Eucalypt Forest on Coastal Floodplains (REFCF) and/or Swamp Oak Floodplain Forest (SOFF).

However, that vegetation on the subject site does is not regarded as an example of the REFCF community or the SOFF community because none of the land along or adjacent to this part of Ropes Creek constitutes a "*coastal floodplain*". The subject site is located approximately 33km upstream of the Hawkesbury River (at Windsor), and cannot reasonably be said to be located on a "*coastal floodplain*".

The vegetation on the subject site, therefore, does not constitute either the REFCF community or the SOFF community.

Notwithstanding above considerations, it is noted that the riparian vegetation in question (Figure 7) is contained within those parts of the subject site at Ropes Creek which have been zoned *E2 – Environmental Conservation*, and are predominantly to be retained in any case. Whilst that along Ropes Creek is of ecological or biodiversity value, that along the drainage lines is of extremely limited ecological or biodiversity conservation value. The inclusion of such minor and highly degraded drainage lines in areas zoned *E2 – Environmental Conservation* is not justified on ecological grounds.

5 FAUNA and FAUNA HABITATS

5.1 Fauna Habitats

As discussed above, the subject site at Ropes Creek is highly modified, consisting predominantly of cleared land, paddocks sown with oats and grazed pasture. There are small narrow bands of highly disturbed woodland along parts of the two drainage lines on the subject site, and a less degraded band of riparian woodland along Ropes Creek itself. All of the patches or narrow strips of woodland and other vegetation along the drainage lines are located in the *E2 Conservation Zone*, notwithstanding the extremely degraded nature and condition of some of those areas.

The fauna species recorded on the subject site consist predominantly of amphibians and highly mobile bird species which are common in modified or disturbed environments, or in grasslands and on farms in rural and peri-urban environments.

The farm dams on the site provide suitable (albeit poor quality) habitat for a variety of wetland, wading and aquatic species, such as the Pacific Black Duck, Maned Duck, Australasian Grebe, Dusky Moorhen, Purple Swamphen and Little Pied Cormorant. These are widely distributed, and common to abundant, species regularly recorded throughout the Sydney Basin.

The farm dams also provide habitat opportunities for some amphibian species, specifically those that are able to adapt to life in disturbed environments (such as the Common Eastern Froglet, the Striped Marsh Frog and Peron's Tree Frog).

There are only a very few hollow-bearing trees present on the subject site at Ropes Creek, located in the northwestern corner of the site (Figure 8). These features provide potential habitat for a number of native (including threatened) fauna species, particularly including microchiropteran bats. However, such resources are also likely to be utilised by more common native species recorded on the subject site (such as the Maned Duck), and are also often in urban areas utilised by invasive and aggressive pest species (such as the Common Mynah and European Honey Bee).

5.2 Fauna Species

The fauna assemblage which has been recorded on the subject site at Ropes Creek is understandably depauperate, given the nature and condition of the subject site in general and the limited types and nature of the vegetation which is present.

Because of the limited resources and habitat features for native biota on the subject site, and because of the nature of the site, only a restricted suite of fauna species would be expected to occur, even on an occasional basis. A total of 38 native fauna species have been recorded on the subject site at Ropes Creek during the various investigations undertaken to date (Appendix D). These species can be divided into three main categories:

- species associated with the farm dams and wetland and aquatic habitats;
- species associated with open grasslands and/or sparse degraded woodlands; and
- species associated with woodland habitat.

A total of 36 bird species have been recorded on the subject site, of which three (Appendix D) are

introduced pest species. Of the remaining avifauna:

- an array of species are associated predominantly with open grassland habitats (*eg* the Masked Lapwing, Australian Magpie and Richards Pipit);
- a second suite of birds associated with trees or areas of shrubs within grassland habitats (eg the Willie Wagtail, Magpie-lark, Noisy Miner and Eastern Rosella; and
- a further suite of species associated with aquatic and semi-aquatic habitats in the farm dams (including ducks, the Australasian Grebe and the Little Pied Cormorant).

In addition, two wide-ranging raptors typical of grassland and open woodland communities have been recorded over the subject site (the Brown Falcon and Australia Kestrel). These species are typical of agricultural environments in western Sydney, and are widely distributed.

Two amphibian species were recorded in the farm dams on the subject (the Common Eastern Froglet and Striped Marsh Frog). Notwithstanding the presence of records of the Green & Gold Bell Frog in the Wildlife Atlas for the locality (*ie* within 10km), the farm dams present do not provide potential or likely quality habitat for this species, given the lack of over-wintering or shelter habitat and the very limited preferred aquatic habitat features and vegetation.

The only reptile species recorded on the subject site were the Grass Sun-skink and the Red-bellied Black Snake. A number of other widespread reptiles (such as the Eastern Blue-tongued Lizard and Jacky Lizard) would also be expected to occur.

The subject site is not of value or particular relevance for any native mammal species other than the Eastern Grey Kangaroo. This species was recorded on the site and has also been seen on lands in the general locality, although many of the individuals present are likely to be escapees from either the ADI site to the northwest or the old Australian Wonderland site to the northeast.

Highly mobile and widespread species (such as a number of microchiropteran bats and the Grey-headed Flying Fox) could also potentially or theoretically occur on the subject site on occasions. However, whilst individuals of a few microchiropteran bat species could potentially utilise part of the subject site either for foraging (along Ropes Creek and/or the scattered tree canopy along the small drainage lines, or around the farm dams) or could roost in the hollow-bearing trees on the site, the resources present are miniscule by comparison to those available through the general landscape. There are no relevant resources present for the Grey-headed Flying Fox.

5.3 Threatened Species

As indicated above, no threatened fauna species have been recorded within or adjacent to the subject site. Relevantly, the subject site does not provide significant habitat or resources for threatened fauna species, due to the highly disturbed condition of the vegetation and the isolation of the site from large areas of vegetation, as well as the nature of the habitat requirements of relevant species.

Whilst there are some extremely limited roosting resources for microchiropteran bats on the subject site (by way of hollow-bearing trees), and the limited tree canopy (particularly along Ropes Creek) on the subject site represents potential foraging habitat for microchiropteran bats, the vegetation present represents only a minute fraction of the home range or available foraging habitat for any such species. Further, very little of those resources will be removed for the proposal.

6 GENERAL CONSIDERATIONS

6.1 Site Value and Potential Impacts

The proposed development on the subject site at Ropes Creek, which is the subject of a *Part 3A Major Project Application* for both a *Concept Plan* and a *Stage 1 Project Plan*, has been designed in accordance with the recent zoning of the subject site pursuant to *State Environmental Planning Policy* (*Western Sydney Employment Area*) *2009* (the 'SEPP').

That zoning of the subject site (Figure 2), approved by the Department of Planning (DoP), identifies the majority of the subject site for general industrial development purposes. There are also three bands of *E2 - Environmental Conservation* land on the site, along Ropes Creek (on the western boundary of the subject site) and along two of the small drainage lines (in the southwestern portion of the subject site and across the northern part of the site). Given the nature and circumstances of the site, some of those *E2 Conservation Zones* (particularly the eastern half of the northern *E2 Zone* and the whole of the southwestern *E2 Zone*) would appear to neither have been ground-truthed nor to be appropriate or justified.

As discussed in some detail in this *Report*, the overwhelming majority of the subject site (including much of the land along the drainage lines) has long been highly modified and degraded (from an ecological perspective) for grazing and agricultural purposes. The overwhelming majority of the site constitutes either pasture grassland or sown oats as stock fodder (Figure 3). Those features also characterise the majority of the *Stage 1 Project Application* area (Appendix A).

There are only limited areas of native vegetation present on the subject site, including:

- a few scattered paddock trees in the northwestern part of the site;
- aquatic and emergent sedges and rushes in the two farm dams in the south of the site;
- very narrow bands of sedges and Spike Rush in the upper parts of the small drainage lines in the eastern parts of the site
- a highly degraded and depauperate narrow riparian woodland along the lower parts of the northern drainage line and an even more degraded riparian woodland along the smaller drainage line in the southwest; and
- a broader band of more intact, but weed-infested and disturbed, riparian woodland along Ropes Creek in and to the west of the subject site.

The subject site does not present any relevant ecological constraints to the proposed development activities, as virtually all even marginal habitat and resources are confined to areas of disturbed or degraded vegetation within the *E2 Conservation Zone* lands on the subject site. However, none of the vegetation present on the site is of particular ecological value or significance, with only that along Ropes Creek itself being of any real potential value. It is not considered likely that any native (including particularly threatened) biota would be dependent or reliant upon any of the vegetation, habitats or resources present on the subject site for their survival in this locality.

Given the nature and condition of the subject site at present, and on the assumption that development activities will be undertaken in accordance with the proposed *Concept Plan* and the *Stage 1 Project Plan* (including all relevant impact amelioration measures – see Chapter 11), it cannot be regarded as likely that the proposed development of the site would impose adverse impacts of any relevance or concern on the natural environment in general, or on threatened biota or their habitats in particular.

No resources, habitats or ecological features of particular value or conservation significance would be adversely affected by the proposal. Further, it is intended that regrowth and/or regeneration in relevant or appropriate parts of the *E2 Conservation Zone*, and the use of stormwater detention basins at various locations around the development site as habitat for native biota, would provide a range of resources and enhanced habitat features for native biota.

It is also to be assumed and anticipated that development of the subject site (including all necessary excavation, land clearing, construction and subsequent management) will be undertaken in an environmentally sensitive manner, applying all appropriate current "*best practice*" methods and measures to maintain water quality and to control sediment discharges and runoff.

6.2 Riparian Setbacks

Most of the riparian vegetation along Ropes Creek is to be rehabilitated according to an *Offset Strategy* (to be approved by the DoP) for an industrial development at Erskine Park. That *Offset Strategy* accounts for most of the E2 zoned land along Ropes Creek, with the balance to be rehabilitated as part of works associated with the Erskine Park Link Road and future development in the Erskine Park Industrial Area and/or in the immediate vicinity on Lot 5 (after final design of the regional road along the northern boundary of Lot 5). The *E2 Conservation Zone* land along Ropes Creek will be fenced and managed pursuant to the *Offset Strategy*.

No further riparian setbacks from Ropes Creek (beyond the *E2 Conservation Zone*) are required or warranted, given the width of the *Conservation Zone* and the existing commitment to rehabilitation works along most of Ropes Creek.

Similarly, no additional setbacks from or buffers to the degraded drainage lines which traverse the subject site are considered necessary. As discussed elsewhere in this Report, there is little value in or justification for the *E2 Conservation Zone* lands along the minor drainage lines on the subject site, given their current and long-term condition. These features do not currently provide habitat of value or conservation significance, and do not connect to any areas of habitat upstream.

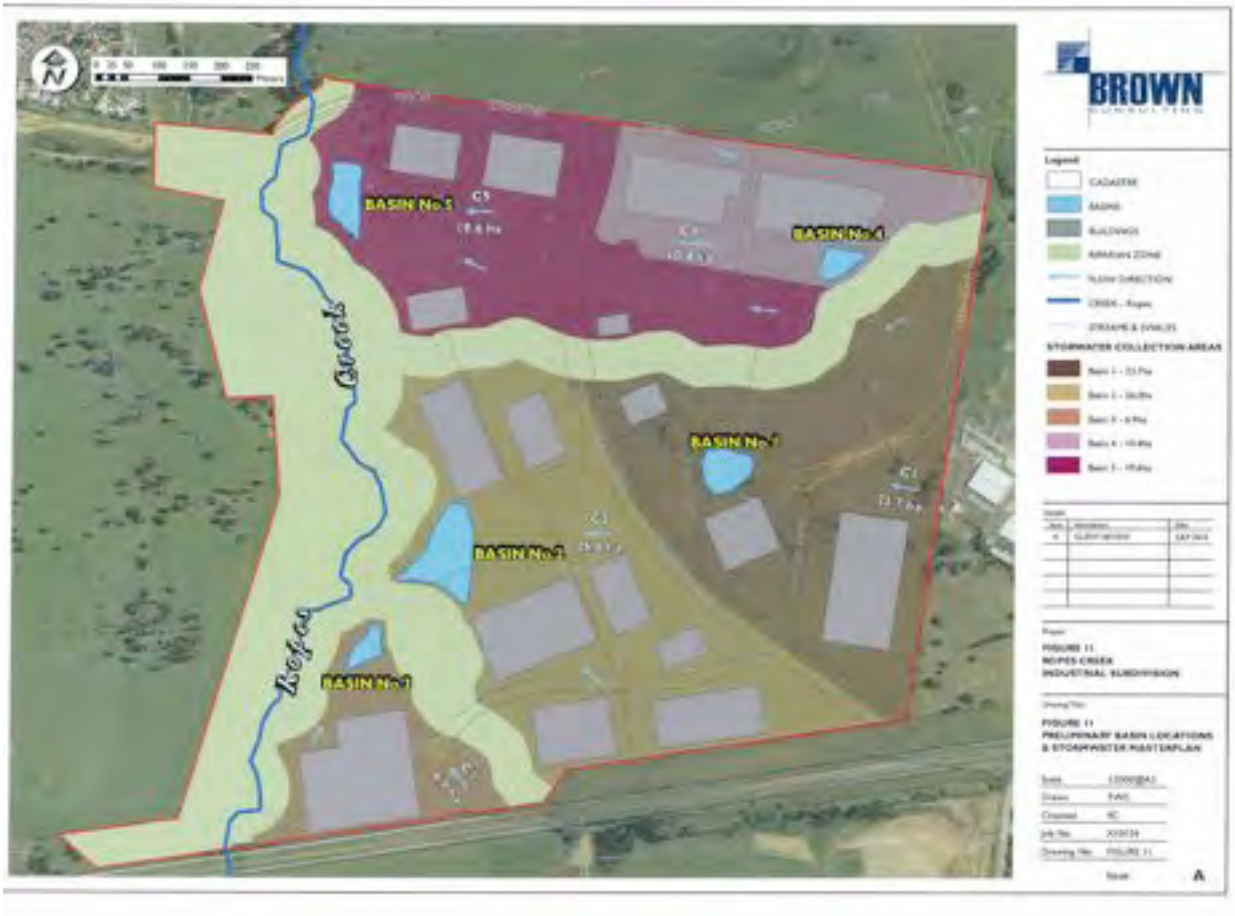
6.3 Stormwater Management Features

The *Stormwater Management & Trunk Drainage Strategy* prepared by Brown Consulting (2010) details the manner in which stormwater is to be managed and treated within both the whole of the Ropes Creek site for the *Concept Plan* (Figure 4), and within the *Stage 1 Project Application* area in the northeastern and southeastern corners of the site (Figures 5A and 5B).

The management of stormwater within the industrial development on the subject site, as detailed in the *Concept Plan* (Brown Consulting 2010), will incorporate an array of measures, including:

- piped and/or bioretention swale discharges to a number of detention basins at various locations on the subject site;
- the treatment of stormwater prior to discharge:
- a stormwater detention system to detain and manage the discharge of flows during a range of rainfall events; and
- the use of appropriate stormwater quality management measures including bioretention swales, gross pollutant traps and the retention of stormwater in a number of basins to provide aquatic environment and habitats for native biota.

With respect to the *Concept Plan*, Brown Consulting proposes a number of stormwater detention basins around the subject site at Ropes Creek (see plan below), in the approximate location of the two existing farm dams and at three other locations. It is proposed that those detention basins be specifically designed, constructed and planted to provide replacement habitat and resources for wetland and aquatic species displaced from the farm dams on the subject site for the purposes of the proposed industrial development. This approach would provide both a worthwhile ecological function and a valuable aesthetic role.



6.4 Bushfire Considerations

The potential for a bushfire threat to be imposed upon the proposed industrial development of the subject site at Ropes Creek has been addressed in detail in the *Bushfire Threat Assessment Report* of Australian Bushfire Protection Planners (ABPP 2010).

The only parts of the subject site in which there is some bushfire risk are those industrial lots which contain or abut part of the *E2 Conservation Zone* lands through the subject site. The bushfire threat or risk along the two drainage lines will be relatively minor because of the width of the *E2 Conservation Zone* lands, and because of the lack of adjoining bushland. Conversely, the riparian zone along Ropes Creek abuts a broad band of vegetation to the west, and constitutes a more significant bushfire risk for those lots which abut Ropes Creek.

Natural regrowth and/or assisted regeneration in the *E2 Conservation Zone* lands, and the ongoing management of those areas, will facilitate the provision of a mosaic of vegetation and plant community types, including:

- patches of moderately tall eucalypt or she-oak woodland, predominantly along the central parts of the riparian area;
- occasional scattered plantings of canopy trees;
- swathes of native grassland and sedgeland to provide significant vegetation breaks;
- small ephemeral ponds or swales within the riparian zone; and
- concentration of the tall canopy vegetation closer to the watercourse and away from the periphery of the E2-zoned land.

This approach will provide an array of quasi–natural or regenerating ecosystems and plant communities which mimic the natural circumstances of watercourses in western Sydney, whilst simultaneously limiting the bushfire risk through the provision of lower riparian vegetation and habitats (sedgelands, shrublands, ponds *etc*) close to the buildings, thus limiting flame heights and radiant heat loads. In their undisturbed condition, small watercourses in western Sydney would have included patches of sedgelands and grasslands, ponds and small channels, as well as patches or bands of canopy trees and an array of other features.

In addition to the management of vegetation within adjoining *E2 Conservation Zone* lands, the stormwater detention basins proposed by Brown Consulting adjacent to the E2-zoned land (see attached plan above) may ameliorate any bushfire risk in certain locations.

It is to be noted that there is no bushfire risk associated with the southeastern element of the *Stage 1 Project Application* area, but there is some (slight) risk associated with the northeastern building site. That risk will be minimised by the measures identified above.

6.5 Cumulative Impacts

Given the nature and condition of the subject site at Ropes Creek, the "*cumulative impacts*" of the proposed development of the site in ecological terms will be minimal. The overwhelming majority of

the land to be developed for industrial purposes is highly modified and (ecologically) degraded, and none of the area proposed for development purposes is of any conservation or biodiversity value.

As discussed above, the riparian and adjoining vegetation in and along Ropes Creek (which is the only vegetation on the site regarded as of any biodiversity conservation value or significance), is to be retained and rehabilitated. Vegetation along the minor drainage lines through the site is of little biodiversity value, and its loss would not constitute a relevant cumulative impact given its condition and context. That vegetation is to be retained, in any case, in the current proposal.

It is also of note that the subject site was rezoned for industrial development (with some areas designated *E2 – Conservation*) by the DoP in 2009, in consultation with other government agencies. That zoning specifically anticipated that development of most of the subject site and many surrounding lands for industrial purposes would proceed, and identified areas to be protected (the *E2 Conservation Zone* lands).

6.6 Further Consideration of the Part 3A Application

The remainder of this *Report* provides detailed consideration of the relevant elements of DGRs for the *Part 3A Application* for the subject site at Ropes Creek as required by the DoP, including:

- the *Director-General's Requirements* (DGRs) for the *Environmental Assessment Report* (Chapter 7 and following chapters);
- consideration of the objects of the EP&A Act (Chapter 8);
- consideration of the draft *DECC* (now DECCW) *Guidelines for Threatened Species Assessment* (Chapter 9);
- consideration of the relevant *Matters of National Environmental Significance* (MNES) of the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act), as documented in Chapter 10; and
- the provision of a number of recommendations with respect to impact amelioration and environmental management (Chapter 11) for both the *Part 3A Concept Plan Application*.

It is noted that earlier chapters of this *Report* have provided a detailed description of the existing natural features and condition of the subject site (Chapters 3 to 5), on which the consideration of the potential impacts of the proposal (contained in this Chapter) are based. Those chapters of the *Report* satisfy various of the requirements of the DGRs (see Chapter 7).

7 DIRECTOR-GENERAL'S REQUIREMENTS

The *Director-General's Requirements* (DGRs) for the proposed development on the subject site at Ropes Creek have been received from the Department of Planning (DoP ref: *Concept Plan 10_0127* and *Major Project 10_0128*). The DGRs were provided pursuant to Part 3A of the EP&A Act, and identify *inter alia* that the *Environmental Assessment* for the proposal must include:

- "*a detailed description of the project*" (the EAR and Chapter 1.3);
- "*a risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment*" (Chapters 6 and 9);
- "*a detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment (see above), which include*":
    - "*a description of the existing environment, using sufficient baseline data*" (Chapters 3, 4 and 5);
    - "*an assessment of the potential impacts of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions*" (Chapters 6 and 9); and
    - "*a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the project, including detailed contingency plans for managing any significant risks to the environment*" (Chapter 11);
- "*a suitable assessment of the .. issues specified below, outlining the measures that would be implemented to minimise the potential impacts of the project*" (Chapter 11);
- "*a conclusion justifying the project on .. environmental grounds, taking into consideration whether the project is consistent with the objects of the Environmental Planning & Assessment Act 1979*" (Chapter 8);
- "*a statement of commitments, outlining all the proposed environmental management and monitoring measures for the project*" (Chapter 11); and
- "*a signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading*".

With respect to the assessment of flora and fauna on the subject site, the following specific information and assessment is required:

- "*an assessment of any impacts on critical habitats, threatened species, populations or ecological communities and their habitats in the region*" (Chapters 6 and 9); and
- *"Details of measures to enhance and protect any riparian zones, including setbacks should also be provided*" (Chapter 11).

8 OBJECTS of the EP&A ACT

The relevant "*objects*" of the EP&A Act with respect to ecological issues are:

- "*the proper management, development and conservation of natural and artificial resources ... for the purpose of promoting the social and economic welfare of the community and a better environment*"; and
- "*the promotion and co-ordination of the orderly and economic use and development of land*"; and
- "*the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats*"; and
- the achievement of "*ecologically sustainable development*".

The proposed development of the subject site at Ropes Creek for employment purposes, in accordance with its zoning pursuant to the *Western Sydney Employment Area SEPP*, has sought to appropriately apply the "*objects*" of the EP&A Act as relevant, given the nature and condition of the subject site and the limited ecological or biodiversity conservation values contained thereon.

Satisfaction of the "*objects*" of the EP&A Act and the principles of "*Ecologically Sustainable Development*" (ESD) have been achieved by this project *inter alia* as a result of:

- the highly modified and (ecologically) degraded nature of the development area;
- the extremely limited habitats or features for native biota to be affected by the proposal;
- the retention and subsequent natural (and/or assisted) regrowth of riparian woodland within the *E2 - Environmental Conservation* land on the subject site;
- the provision of habitat and resources in the *E2 Conservation Zone* land;
- the use of stormwater detention basins and other stormwater management features within the proposed development for the provision of aquatic and semi-aquatic habitat and resources for native biota;
- the implementation of appropriate 'best practice' and high quality construction methods and techniques to ensure the control and management of sediment and of other potential contaminants; and
- the provision of 'best practice' measures within the stormwater management system for the future developed landscape to ensure the maintenance of water quality discharges to the conserved lands and/or watercourses and habitats downslope and downstream.

Given those circumstances, the proposed development of the subject site at Ropes Creek satisfies the requirements for *Ecologically Sustainable Development* (ESD), and appropriately applies the *Precautionary Principle* as required pursuant to the EP&A Act. The proposed development will promote "*the orderly and economic use and development of land*" and the "*social and economic welfare of the community*" whilst not adversely affecting the natural environment or any "*natural ... resources*". Further, the proposed development will not have any adverse impacts upon the "*protection and conservation of native animals and plants, including threatened species, populations and ecological communities and their habitats*".

9 DRAFT DECC GUIDELINES

The DGRs for the *Part 3A Concept Plan* (10_0127) and *Stage 1 Project Application* (10_0128) on the subject site at Ropes Creek (see Chapter 7) require *inter alia* addressing the DECC *Guidelines* for threatened biota survey and assessment.

9.1 Survey Guidelines

The DECC *Working Draft Threatened Biodiversity Survey & Assessment: Guidelines for Developments & Activities* dated November 2004 (the *Draft Survey Guidelines*) state *inter alia* that an array of relevant field surveys for threatened biota should be undertaken in order to assess the potential impacts of a development proposal. The *Draft Survey Guidelines* state *inter alia* that "*Designing an appropriate field survey requires consideration of both survey methods and effort*".

Whilst that is doubtless true, the design of "*an appropriate field survey*" (emphasis added) also requires consideration of the circumstances and condition of the site proposed for those activities. An "***appropriate** field survey*" for a 100ha paddock which has been for over 70 years cleared and grazed is not the same as an "***appropriate** field survey*" for 100ha of native forest.

As indicated in Chapter 5 of the *Draft Survey Guidelines*, "*Not all the survey methods detailed below will be appropriate or necessary in all situations, however adequate justification must be provided if appropriate survey methods are not applied*".

Given the nature and condition of the subject site at Ropes Creek (as documented in detail in Chapters 3-5 of this *Report*), it is clear that only minimal field investigations are necessary to address general ecological and threatened species issues. In particular, dedicated and intensive survey for threatened fauna species are not deemed appropriate or necessary on the subject site, given that over 93% of the site is pasture grassland or a sown oat crop, and another 5% is extremely degraded drainage lines. Further, as discussed in detail above, there are few resources of potential relevance for threatened fauna species, and those which will be removed for the proposal are limited in extent and can readily re-created, replaced or reproduced, in any case.

Given the circumstances of the subject site at Ropes Creek, 'non-compliance'[4] with the *Draft Survey Guidelines* of the DECCW (2004) is not a relevant concern.

9.2 Guiding Principles for Threatened Species Assessment

The *Draft Guidelines for Threatened Species Assessment* in respect of Part 3A matters (prepared by the DEC & DPI in July 2005) identified six *Guiding Principles for Threatened Species Assessment* (in Chapter 1.2 of the *Guidelines*). The *Draft Assessment Guidelines* state *inter alia* that the "*objective of the assessment process is to provide information to enable decision makers to ensure that developers deliver the following environmental outcomes*":

[4] It is to be noted that there is **NO** statutory requirement for 'compliance' with the *Draft Survey Guidelines* of the DECCW. Not only are these **only** 'guidelines' (*ie* **not** statutory requirements), they **remain** a "*working draft*" **despite** having been prepared over 6 years ago (in 2004).

1 "*Maintain or improve bio-diversity values (ie there is no net impact on threatened species or native vegetation)*";

2 "*Conserve biological diversity and promote ecologically sustainable development*";

3 "*Protect areas of high conservation value (including areas of critical habitat)*";

4 "*Prevent the extinction of threatened species*";

5 *"Protect the long-term viability of local populations of a species, population or ecological community*"; and

6 *"Protect aspects of the environment that are matters of natural environmental significance*".

The *Draft Assessment Guidelines* further state that the "*assessment is designed to provide information and analysis to demonstrate that feasible alternatives have been considered, that the project has been designed to be consistent with the principles outlined above, and where there are impacts, that adequate mitigation measures are implemented*".

It is to be noted that the *Draft Assessment Guidelines* of the DEC & DPI (2005) pay no heed to the need to generate an appropriate balance between development and conservation, and place the protection of wildlife and natural features above the provision of housing or resources for humans. The *Draft Assessment Guidelines* also ignore the economic and social elements of "*ecologically sustainable development*" *(*ESD), but rather 'require' *inter alia* that "*there is no net impact on threatened species or native vegetation*" (emphasis added).

As is the case with the *Draft Survey Guidelines* (the DECCW 2004), the *Draft Assessment Guidelines* (DECC and DPI 2005):

- are "*guidelines*", **not** statutory or mandatory requirements;
- **remain** "*draft*" despite having been prepared over 5 years ago; and
- have **not** been endorsed or adopted by the state government.

9.2.1 Maintain or Improve Biodiversity Values

There are few relevant "*biodiversity values*" present on the site at Ropes Creek, and none which warrant any particular or notable mitigation activities (given that most of the remnant degraded riparian woodland vegetation is contained within the *E2 Conservation Zone* on the site). The few hollow-bearing trees to be removed will be managed according the to the *Hollow-bearing Tree Protocol* detailed in Chapter 11. As noted elsewhere in this *Report*, the subject site is predominantly characterised by stock fodder (oats) and/or long utilised pasture grassland, and there are very few resources of any relevance for any native biota present.

The proposed development on the subject site will include retention of the scattered tree cover and highly degraded riparian vegetation within the *E2 Conservation Zones* on the subject site, notwithstanding the marginal nature and value of most of the vegetation along the drainage lines on the site. In particular, the upper parts of the northern drainage line and the whole of the southwestern drainage line do not contain any vegetation which can be regarded as of biodiversity conservation or other ecological value.

The two farm dams on the subject site will be re-constructed as part of the industrial development of the site as proposed in the *Concept Plan*, and three additional detention basins are to be created. Whilst the existing dams provide some limited habitat for some native fauna, they are not of significance with respect to biodiversity conservation in the general locality. Further, appropriate planting of native aquatic and semi-aquatic vegetation in and around the stormwater control basins on the subject site (as recommended in this *Report* – Chapter 11) would provide a considerably greater extent of such habitat values and features than is presently the case.

As a consequence of the considerations outlined above, the proposed development of the subject site at Ropes Creek as currently proposed, in accordance with the recent zoning of that land by the DoP pursuant to the *Western Sydney Employment Area SEPP*, will not adversely affect "*biodiversity values*" on the site or in the locality. In addition, the vegetation within parts of *E2 Conservation Zone* land (along Ropes Creek in particular) and the proposed new stormwater detention basins on the subject site will "*improve biodiversity values*" at this location.

9.2.2 Biological Diversity and ESD

As noted above, the subject site at Ropes Creek has very limited and constrained biodiversity values, and is characterised by very low levels of native biodiversity and extremely limited resources for native biota.

There is no "*biological diversity*" of any particular value or significance on the subject site (perhaps other than along Ropes Creek), and certainly none that would warrant any notable conservation measures. Nevertheless, degraded riparian vegetation and habitats will be retained in parts of the *E2 Conservation Zones* on the site, and natural (or assisted) regeneration will supplement that present. Conversely, some elements of the *E2 Conservation Zones* on the site (particularly the upper parts of the northern drainage line and the whole of the southwestern drainage line) do not warrant retention or rehabilitation, given their nature and condition.

In addition, it is proposed to salvage and re-use tree-hollows to be removed from the development areas on the subject site. Those actions will enhance the "*biological diversity*" of the subject site.

Whilst the proposed development will involve modification to the two artificial dams on the subject site at Ropes Creek, these features are neither natural nor of particular or high conservation value. Furthermore, it is proposed in this *Report* that the reconstructed dams and any new detention basins and ponds on the subject site be planted to provide replacement habitat for aquatic and semi-aquatic biota which utilise the farm dams present on the site, thus contributing to the conservation of "*biological diversity*" on the subject site.

With respect to the promotion of "*Ecologically Sustainable Development*" (ESD), the highly modified, artificial and agricultural nature of the overwhelming majority of the subject site renders the site of essentially no relevance in respect of native biota, habitats or ecosystems. There is little "*ecological*" value on the subject site which would relevantly be the subject of ESD principles.

Nevertheless, as noted above, the highly degraded riparian vegetation within parts of the *E2 Conservation Zones* (particularly along Ropes Creek) is to be retained and allowed to naturally regenerate and/or be the subject of assisted regeneration activities, thus facilitating an improvement in biodiversity conservation values on the site. Further, the proposed development is to be undertaken

using appropriate environmental management measures and controls, particularly with respect to stormwater quality and quantity discharges.

As a consequence of the development design and the approaches to development which are incorporated into the *Concept Plan* and the *Stage 1 Precinct Plan*, including *inter alia* the retention of vegetation in parts of the *E2 Conservation Zones*, the planting of reconstructed and/or newly created detention basins, and the salvage and re-use of tree-hollows, the relevant goals of the ESD philosophy are satisfied on the subject site at Ropes Creek.

9.2.3 Areas of High Conservation Value or Critical Habitat

There are no areas of "*critical habitat*", as defined in the *Threatened Species Conservation Act 1995 Act* (TSC), on the subject land at Ropes Creek.

Further, there are no "*areas of high conservation value*" on the subject site. Notwithstanding the designation of parts of the land containing two highly degraded drainage lines as *E2 - Environmental Conservation*, those parts of the site do not possess vegetation or biodiversity which could be regarded as of "*high conservation value*".

In any case, the small areas of degraded vegetation in the *E2 Conservation Zone* are to be retained and allowed to regenerate, and the habitat provided by the existing farm dams will be replaced by equivalent habitat in stormwater basins.

No threatened biota would be subjected to any "*significant effect*" as a result of the proposed development at Ropes Creek.

9.2.4 Prevent the Extinction of Threatened Species

There are no important or significant habitat or resources on the subject site at Ropes Creek which could be considered relevant to the survival of any threatened species. There is no potential for any threatened biota to be placed at any risk (or even the possibility) of "*extinction*" as a consequence of the proposal at Ropes Creek.

9.2.5 Long-Term Viability

The proposed development of the subject site at Ropes Creek will have no impact on the "*long-term viability of local populations*" of any threatened biota.

As discussed in some detail above, the areas proposed for development activities (pursuant to the SEPP zoning) on the subject site are of essentially no value for the viability of any threatened or other native biota, and there are extremely few resources or habitat features of relevance for any threatened biota in the locality. Areas of (degraded) native vegetation are to be retained within the *E2 Conservation Zone* on the land, and allowed to regenerate to enhance their biodiversity conservation values. It should be noted that the vegetation along the upper parts of the northern drainage line and the whole of the southwestern drainage line do not warrant retention or rehabilitation, given their nature and condition.

Further, the habitats currently located within the two farm dams will be replicated within the stormwater detention and treatment basins to be located around the site. In addition, tree-hollows from the development footprint are to be salvaged and re-used in the *E2 Conservation Zone,* pursuant to the *Hollow-bearing Tree Protocol* detailed in Chapter 11.

On the basis of the development design and of the general approach to environmentally responsible development on the subject site, there will be no adverse impacts upon the long-term viability of local populations of either threatened biota or any other native biota.

9.2.6 Matters of National Environmental Significance

The relevant *Matters of Natural Environmental Significance* (MNES) are considered elsewhere in this *Report* (Chapter 10).

As is the case with respect to threatened any biota listed on the TSC Act, the subject site at Ropes Creek is of little conservation value or relevance to any biota listed in the EPBC Act. No MNES will be adversely affected to any significant or relevant extent as a result of the proposed development of the subject site at Ropes Creek. Further, potentially relevant MNES have been appropriately addressed pursuant to the EPBC Act in the *Environmental Assessment* for the proposal (see Chapter 10).

9.2.7 Conclusions

Given the circumstances, the objectives of the *Guiding Principles for Threatened Species Assessment* contained in the 2005 DECC/DPI *Draft Guidelines* have been appropriately addressed and satisfied by the development proposed at Ropes Creek.

The subject site at Ropes Creek, as discussed in detail in earlier chapters of this *Report*, is highly to extremely modified, and is highly degraded (in ecological terms at least). The overwhelming majority of the subject site (particularly that area proposed for development activities) is of no relevance for biodiversity conservation, and the resources which might even conceivably be of any relevance for threatened or native biota are limited in extent on the subject site and widespread through the landscape generally.

The loss of a few potentially relevant wildlife resources (principally a few hollow-bearing trees) is not of any consequence or significance with respect to biodiversity conservation, either for native biota in general or for threatened species in particular. In any case, as indicated elsewhere in this *Report*, it is proposed that:

- the detention basins to be created for the development be designed, constructed and managed (including with native planting) to provide replacement habitat equivalent to (but in excess of) the existing artificial farm dams; and
- that a *Hollow-bearing Tree Protocol* (see Chapter 11) be implemented as part of the proposal which will *inter alia* salvage tree-hollows from hollow-bearing trees that need to be removed, and will relocate such salvaged tree-hollows into the *E2 Conservation Zone* land on the subject site.

9.3 The Assessment Process

The *Guidelines for Threatened Species Assessment*, prepared by the DEC[5] and the Department of Primary Industries (DPI) for assessments pursuant to Part 3A of the EP&A Act, have been addressed with respect to the assessment and evaluation of likely impacts of the proposed development.

In particular, the *Draft Guidelines* (DEC 2005) identify a number of "*steps in the assessment process*":

- *Step 1* *Preliminary Assessment*, which "*is primarily a desktop assessment involving searches of relevant databases .. and literature reviews to identify a list of threatened species which could potentially occur In the area*" (as detailed in Chapter 2 of this *Report*);
- *Step 2* *Field Survey and Assessment*. The conduct of those surveys is also discussed in the DEC *Draft Guidelines*, and has been addressed in this *Report* in Chapters 2, 3, 4 and 5;
- *Step 3* *Evaluation of Impacts* (which is the subject of Chapter 9.4 of this *Report*);
- *Step 4* *Avoid, Mitigate and Then Offset*, which involves "*the description and justification of measures to mitigate any adverse effects*" (as discussed in Chapter 8 of this *Report*); and
- *Step 5* *Key Thresholds* (discussed in Chapter 9.5 of this *Report*).

9.4 The Evaluation of Potential Impacts

Step 3 of the DEC *Draft Guidelines* (2005) indicates that the "*magnitude and extent of impacts*", and their significance is "*related to the conservation importance of the habitats, individuals and populations likely to be affected*" by the proposal. The *Draft Guidelines* state that the "*impacts will be more significant*" if:

- "*areas of high conservation value are affected*"; or
- "*individual animals, and/or plants and/or subpopulations that are likely to be affected by the proposal play an important role in the long-term viability of the species, population or ecological community*"; or
- "*habitat features that are likely to be affected by the proposal play an important role in maintaining the long-term viability of the species, population or ecological community*"; or
- "*the duration of impacts are long-term*"; or
- "*the impacts are permanent and irreversible*".

[5] The DEC is now the Department of Environment, Climate Change & Water (DECCW).

9.4.1 Areas of High Conservation Value

There is no vegetation, land or area of "*high conservation value*" within any areas proposed for development activities on the subject site at Ropes Creek (Figure 3). The proposed development of the subject site pursuant to the Part 3A *Concept Plan* and the *Stage 1 Project Application* will not involve the imposition of any impacts on or the loss of any "*areas of high conservation value*".

There are two small, narrow and highly degraded strips of riparian woodland along parts of two small drainage lines in the southwestern part and in the northern part of the subject site (Figures 3 and 7; Appendix A). As noted above, the vegetation along the upper parts of the northern drainage line and the whole of the southwestern drainage line do not warrant retention or rehabilitation, given their nature and condition, and this vegetation cannot be regarded as of "*high conservation value*". In addition, there is a band of disturbed riparian woodland along Ropes Creek itself, along the western boundary of the site, which has relatively higher (albeit not "*high*") "*conservation value*".

There is no vegetation anywhere on the subject site at Ropes Creek which is considered to be of "*high conservation value*". The riparian vegetation along Ropes Creek itself, however, is regarded as of some conservation value, and is to be retained in part of the site which has been zoned *E2 Conservation Zone*. This are will be retained and allowed to regenerate as part of the proposed development of the subject site.

9.4.2 Importance of Individual Biota

As discussed at some length above, the subject site at Ropes Creek is not considered of significance or "*importance*" to any native biota in terms of their survival in the general vicinity or locality. In particular, it is not likely that any elements or features of the subject site (Figure 7) which are to be affected by the proposal would be of significance with respect to the conservation of any threatened biota or their habitats.

Doubtless, individuals of some native species will rely on particular features or habitat elements present on the subject site (*eg* aquatic birds on the two farm dams, amphibians around the dams and individuals or pairs of the Masked Lapwing in the grasslands). However, these habitat features and resources are widespread through the general landscape, and are not confined to the subject site at Ropes Creek. Further, the relevant biota are generally common to abundant and widespread, and are predominantly resilient and adaptable. The removal of grasslands and a few hollow-bearing trees is not likely to impose a significant adverse impact upon any threatened biota in general at this locality.

In any case, as noted above, the farm dams are to be rehabilitated, and additional detention basins are to be planted to provide additional aquatic and wading habitat, and tree-hollows are to be salvaged and re-used. This approach will supplement the existing habitat on the site for native biota.

Given the considerations outlined above, and the context of the subject site at Ropes Creek, the proposed development of the subject site according to the *Part 3A Concept Plan* and *Stage 1 Project Application* does not constitute an activity which is likely to have a significant adverse impact upon either "*individual animals and/or plants and/or sub-populations*" of either threatened or other native biota. Those actions will not impose a relevant adverse impact on the "*long-term viability of* [any such] *species, population or ecological community*".

9.4.3 Importance of Habitat Features

As discussed above, none of the "*habitat features*" or natural resources on the subject site are regarded as of particular "*importance*" or conservation significance. The proposed development of the subject site will involve the modification of two farm dams and the relocation of a few hollow-bearing trees, as well as the planting of new detention basins. In any case, any loss of these "*habitat features*", if necessary, would not be regarded as of significance or value for any native species, including threatened biota.

The modification of resources and habitat features on the subject site which will be affected by the proposed development of the site at Ropes Creek is not considered "*likely*" to impose a "*significant effect*" upon any threatened biota, nor to impose a significant adverse impact upon the natural environment in general.

There are few resources or "*habitat features*" of any particular value on the subject site. In any case, the relevant resources and features are to be relocated and/or retained as part of the project.

9.4.4 Duration of Impacts

Obviously, the impacts of the proposed development with respect to the removal of (the extremely limited) habitat and resources (such as farm dams and a few hollow-bearing trees) within the development footprint on the subject site at Ropes Creek will be permanent.

However, those resources are of extremely limited value given their nature and condition, their context and their wide distribution through the general landscape. It is not likely that the removal of those resources from the subject site at Ropes Creek would impose any significant or relevant adverse impacts upon native biota in general or upon threatened species in particular.

9.4.5 Permanent and Irreversible Impacts

As noted above, the impacts of the development as proposed in the Part 3A *Concept Plan* and the *Stage 1 Project Application* on the subject site at Ropes Creek will involve "*permanent and irreversible*" impacts upon those areas of the site proposed for development activities. However, the fact that those impacts will be both "*permanent and irreversible*" has been taken into account in addressing the significance (or otherwise) of likely impacts upon threatened biota and their habitats, and on the natural environment in general.

In respect of both the "*duration of impacts*" and the imposition of "*permanent or irreversible impacts*", the proposed development on the subject site at Ropes Creek is considered of little concern because of the existing nature and condition of the subject site itself. In addition, the only vegetation which could potentially be regarded as of any ecological value is to be retained within the *E2 Conservation Zone* land along Ropes Creek on the western boundary of the subject site.

9.5 Key Thresholds

Step 5 of the assessment process identified in the DEC *Draft Assessment Guidelines* (2005) identifies four "*key thresholds*" which the DECCW states need to be addressed in providing "*a justification of the preferred option*" for the development application. The four "*key thresholds*" identified in the *Draft Assessment Guidelines* are:

- "*whether or not the proposal, including actions to avoid or mitigate impacts or compensate to prevent unavoidable impacts will maintain or improve biodiversity values*";
- "*whether or not the proposal is likely to reduce the long-term viability of a local population of the species, population or ecological community*";
- "*whether or not the proposal is likely to accelerate the extinction of the species, population or ecological community or place it at risk of extinction*"; and
- "*whether or not the proposal will adversely affect critical habitat*".

9.5.1 Maintain or Improve Biodiversity Values

As discussed above (in Chapter 9.2.1), the proposed development of the subject site at Ropes Creek will not adversely affect "*biodiversity values*" on the subject site or in the locality to any relevant or meaningful extent. Indeed, the overwhelming majority of the proposed development will have no adverse impacts upon "*biodiversity values*", and future management of parts of the E2-zoned land on the subject site, as well as the proposed detention basins, will in fact "*improve biodiversity values*".

There is no prospect under the current management regime on the subject site for any improvement in biodiversity values, given its long-term and ongoing use for agricultural purposes. Conversely, as discussed above, an improvement in "*biodiversity values*" within parts of the land designated *E2 – Environmental Conservation* on the subject site will be achievable, subject to the recommendations and considerations detailed in Chapter 11 of this *Report*.

9.5.2 Long-term Viability of Threatened Biota

As is the case with "*biodiversity values*" in general, the proposed development on the subject site at Ropes Creek will have no adverse impact upon the "*long-term viability*" of either individuals or populations of any threatened biota, or upon any "*endangered ecological communities*".

9.5.3 Extinction of Species

As discussed above, the proposed development of the subject site at Ropes Creek will not involve any likelihood of any threatened or other biota becoming extinct or being placed "*at risk of extinction*". Given the nature and condition of the subject site, there is no likelihood of even individuals of any threatened biota being place "*at risk of extinction*".

9.5.4 Impacts on Critical Habitat

The proposed development on the subject site at Ropes Creek will have no effect on any "*critical habitat*" for any threatened biota, as there is no listed "*critical habitat*" in the general vicinity.

9.5.5 Conclusions - Key Thresholds

The proposed development of the subject site at Ropes Creek satisfies the "*key thresholds*" identified in the *Draft Assessment Guidelines for Threatened Biota* (DEC & DPI 2005).

The proposal will not impose an adverse impact on any threatened biota or their habitats, and management of the *E2 Conservation Zone* land along Ropes Creek, and of detention basins constructed on the subject site, will constitute a net environmental benefit in the long-term.

9.6 Section 5A of the EP&A ACT

The *Threatened Species Conservation Act 1995* (TSC Act) has modified the *Environmental Planning & Assessment Act 1979* (EP&A Act) by, *inter alia*, including a requirement to determine "*whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats*".

It is noted here that Section 5A of the EP&A Act is not a relevant consideration for an application pursuant to Part 3A of the EP&A Act. Section 5A does not refer to any Section of the EP&A Act relevant to Part 3A of the Act, and there is no requirement within Part 3A of the Act to consider whether a "*significant effect*" is "*likely*" to be imposed upon any "*threatened species*, *populations or ecological communities*, *or their habitats*". Nevertheless, the likelihood or otherwise of a "*significant effect*" being imposed on any threatened biota is addressed below.

Given the nature and condition of the subject site at Ropes Creek, and the scarce resources of any potential relevance for threatened biota, it is considered extremely unlikely that a "*significant effect*" would be imposed upon any "*threatened species, populations or ecological communities, or their habitats*". In this regard:

- none of the vegetation to be removed constitutes an example of an "*endangered ecological community*" (EEC);
- none of the resources to be removed are regarded as of significance or particular relevance for any threatened species or "*endangered populations*"; and
- the retention and management of vegetation in parts of the *E2 Conservation Zone* would enhance the ecological outcomes for the site.

Similar considerations apply with respect to other threatened species that could potentially occur on the subject site, on occasions. The proposed development of the subject site at Ropes Creek is not "*likely*" impose a "*significant effect*" on any threatened biota given:

- the nature and condition of the subject site;
- the lack of features or resources of conservation value within the areas to be affected by the proposal; and
- the implementation of appropriate impact amelioration and environmental management measures.

10 ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT

The Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act) seeks *inter alia*:

- "*to provide for the protection of the environment, especially those aspects of the environment that are Matters of National Environmental Significance*";
- "*to provide ecologically sustainable development*"; and
- "*to promote the conservation of biodiversity*".

Implementation of the EPBC Act requires *inter alia* consideration as to whether a development or activity is likely to impose adverse impacts on "*Matters of National Environmental Significance*" including *inter alia* listed threatened biota and migratory species.

Of the MNES within 10km of the subject site at Ropes Creek (Appendix B), there are no locations, features or biota which are likely to be adversely affected to any relevant extent by the proposed development on the subject site. In this regard:

- there are no relevant Commonwealth marine areas, properties or other Commonwealth features in the vicinity;
- the proposal will have no impact upon listed marine species or any threatened species or "*endangered ecological communities*" listed in the EPBC Act;
- there are no nuclear issues; and
- no World Heritage Areas or Ramsar wetlands would be adversely affected by the proposal.

The subject land does not constitute a significant element of the habitat or resources for any individuals of the species listed on the EPBC Act within their normal home ranges. It is not likely that an individual of any such species would be reliant on or dependent on those parts of the subject land proposed for development activities for their survival, even on a local basis.

There is no likelihood of a "*significant impact*" being imposed on any biota listed in the EPBC Act as a result of the proposed development of the subject site at Ropes Creek.

Whilst individuals of a few of the migratory birds species listed on various international treaties to which Australia is a signatory are or could be present (*eg* the Masked Lapwing, Cattle Egret or White Egret), the subject site is essentially of no relevance to the survival of these species on even a local basis. Those species, in any case, are substantially sedentary in eastern Australia, and individuals of those species at this location are not likely to be migratory.

It is extremely unlikely that the proposal would have any adverse impacts of any relevance upon any threatened or migratory species listed on the EPBC Act.

Given those considerations, there is no relevant issue with respect to the EPBC Act. There is no proposal to or requirement for a '*Referral*' of the proposed development to the Commonwealth for the purposes of assessment or for an approval by the Federal Minister for the Environment.

11 IMPACT AMELIORATION and ENVIRONMENTAL MANAGEMENT MEASURES

Notwithstanding the modified and degraded nature of the subject site at Ropes Creek, appropriate impact amelioration and environmental management measures would be anticipated as a standard requirement for any development on the site for industrial purposes.

The subject site is not regarded as of any biodiversity value or significance, given:

- the modified nature and condition of the subject site due to a long history of agricultural activities; and
- the lack of any significant or important resources or features of particular relevance for native biota, particularly threatened biota.

The only vegetation on the subject site which is regarded as of any biodiversity value is the riparian vegetation along Ropes Creek, which is to be retained within the *E2 Conservation Zone* along the western boundary of the site.

Nevertheless, specific environmental management measures which have been incorporated into the development design for the site at Ropes Creek and/or which should be included are:

- the management of stormwater discharge rates and water quality from the development area, both during construction activities and following completion and occupation of the site, according to current 'best practice' principles (as proposed by Brown Consulting 2010);
- the implementation of 'Water Sensitive Urban Design' principles in the development, including the capture and re-use of stormwater runoff, the treatment of water to be discharged from the development, and minimisation of the use of potable water for other purposes;
- the use of sediment fences and other appropriate control measures during construction activities to manage erosion and sediment discharge or the discharge of other contaminants;
- the use of detention basins within the proposed development to provide supplementary habitat in addition to that in the reconstructed artificial farm dams which need to be removed or modified by *inter alia*:
    - the design of features to ensure that some or all of the detention basins remain as permanent ponds (other perhaps than during major droughts);
    - construction of the detention basins with varying depths and substrate slopes to provide a variety of aquatic and sub-aquatic features;
    - the planting of detention basins with native sedge, reed and rush species to provide habitat and shelter for wetland birds and amphibians; and
    - the provision of relevant adjacent features (such as logs and rock piles) to provide resources for amphibians within and adjacent to the detention basins;
- the implementation of a management regime during the construction process to ensure that no wastes (including building rubble, garbage, contaminants, fuels, oils, paints or other chemicals) are discharged from the construction area, and that all such wastes and contaminants are contained within the construction footprint and are appropriately managed;

- the retention of vegetation in that part of the *E2 Conservation Zone* along Ropes Creek to allow natural regeneration without the adverse impact of grazing cattle in order to facilitate the long-term viability of native flora and fauna which do or could utilise the site; and
- the implementation of a *Hollow-bearing Tree Protocol* which includes *inter alia*;
    - the 'dismantling' by professional tree experts of hollow-bearing trees in order to salvage tree-hollows, wherever possible;
    - the placement of salvaged tree-hollows on either existing large trees to be retained within the *E2 Conservation Zone* or on wooden poles adjacent to existing trees within the *E2 Conservation Zone*;
    - alternatively, the placement of salvaged tree-hollows on the ground as hollow log habitat where erection within the *E2 Conservation Zone* is not practical; and
    - the use of artificial nest boxes to replace tree-hollow which cannot be salvaged.

GLOSSARY

Activity	means: (a) the erection of a building; (b) the carrying out of a work in, on, over or under land; (c) the use of land or of a building or work; and (d) the subdivision of land, and includes any act, matter or thing for which provision may be made under Section 26 of the EP&A Act and which is prescribed for the purposes of this definition, but does not include: (e) any act, matter or thing for which development consent under Part 4 is required or has been obtained; or (f) any act, matter or thing which is prohibited under an environmental planning instrument.
DA	*Development Application* prepared pursuant to the EP&A Act.
Development	in relation to land, means: (a) the erection of a building on that land; (b) the carrying out of a work in, on, over or under that land; (c) the use of that land or of a building or work on that land; and (d) the subdivision of that land, but does not include any development of a class or description prescribed by the regulations for the purposes of this definition.
DEC	Department of Environment & Conservation.
DECC	Department of Environment & Climate Change.
DECCW	Department of Environment, Climate Change & Water.
DGRs	*Director-General's Requirements*.
Director-General	the Director-General of the Department of Planning.
Endangered Ecological Community	"*an ecological community specified in Part 3 of Schedule 1*" of the TSC Act.
Endangered Population	"*a population specified in Part 2 of Schedule 1*" of the TSC Act.
	EP&A Act *Environmental Planning & Assessment Act 1979*.
Key Threatening Process	"*a threatening process specified in Schedule 3*" of the TSC Act.
Locality	the area within a 10km radius of the study area.
NPWS	NSW National Parks & Wildlife Service.
Proposal	the development, activity or action proposed.
Recovery Plan	"*a plan prepared and approved under Part 4*" of the TSC Act.
Region	"*a bioregion defined in a national system of bioregionalisation that is determined (by the Director-General by order published in the Gazette) to be appropriate for those purposes*" (TSC Act).
SIS	*Species Impact Statement* prepared pursuant to Sections 109, 110 and 111 of the TSC Act.
Threatening Process	"*a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities*" (TSC Act).
Threatened Species	"*a species specified in Part 1 or 4 of Schedule 1 or in Schedule 2*" of the TSC Act.
TSC Act	*Threatened Species Conservation Act 1995*.

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Figure 1

The subject site at Ropes Creek and surrounding lands

ENVIRONMENTAL INSITES DEVELOPMENT CONSULTANTS

ENV-A3-L1.1

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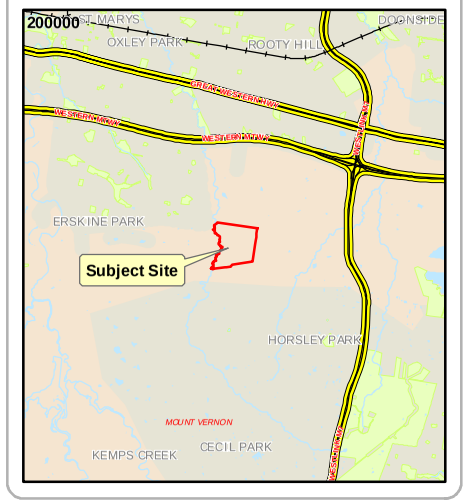
0 200 400 600 800 1,000
Metres

NOTES:

1. Digital Cadastral DataBase (DCDB) © 2010 NSW Dept. of Lands.
2. Aerial Image © 2008 Ausimage
3. Subject Site boundary based on DCDB 2010
4. Map Locator Base Map © Mapinfo 2009
5. All features are approximate only and subject to detailed survey

LEGEND

- Subject Site
- DCDB
- Roads



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CO-ORDS :	MGA
DATUM :	N/A
DATE OF PLAN :	29-07-2010
CHECKED BY/DATE :	SAS/29-07-2010
APPROVED BY/DATE :	FI/29-07-2010
JOB REF:	G729
GIS REF:	G729-G-001.mxd

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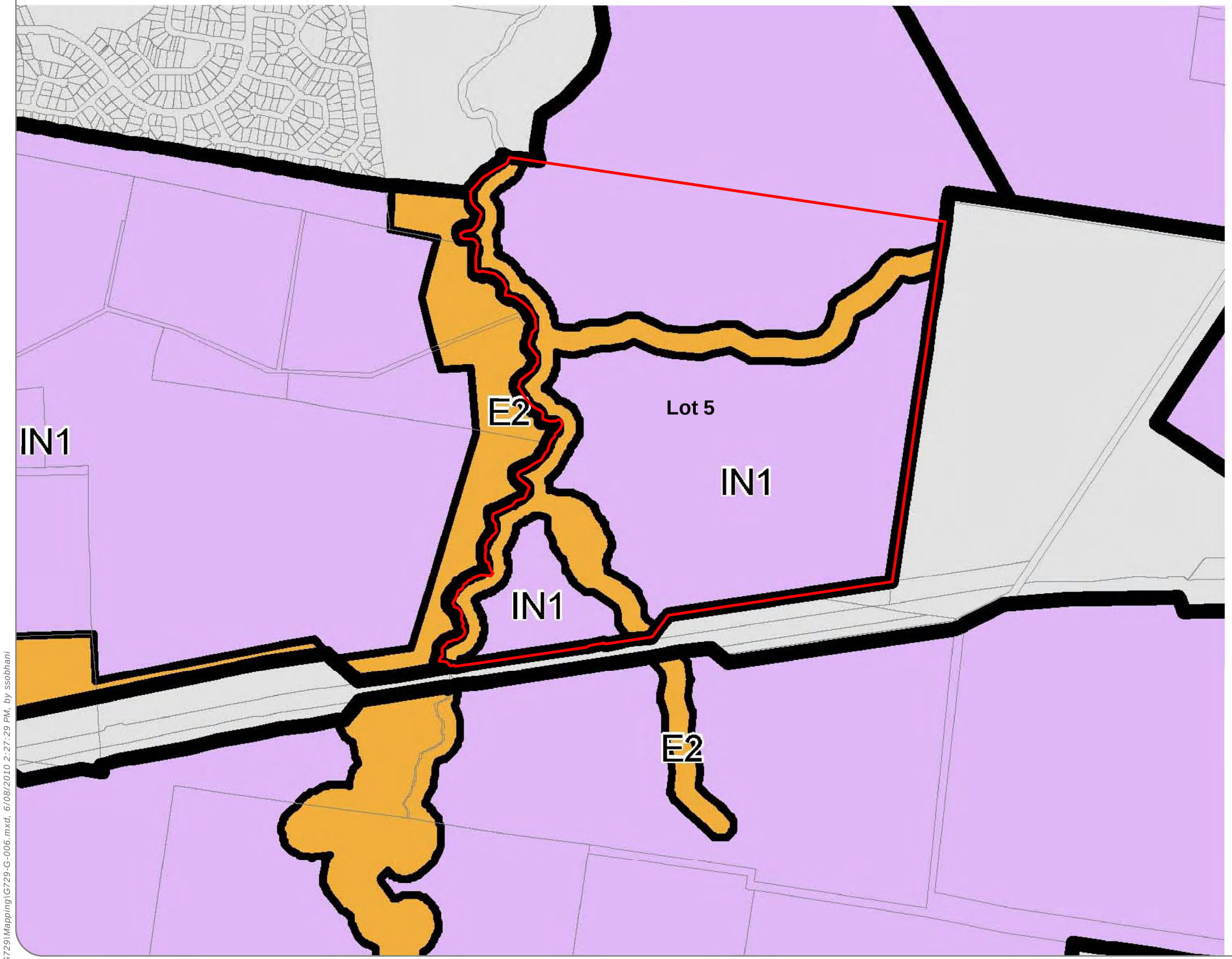
Figure 2

SEPP zoning of the subject site and surrounds at Ropes Creek



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NOTES:

1. Subject Site boundary based on DCDB 2010
2. SEPP zoning mapping © Department of Land
3. All features are approximate only and subject to detailed survey

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Subject Site

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GIS REF:	G729-G-006.mxd

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Figure 3

Details and features of the subject site at Ropes Creek

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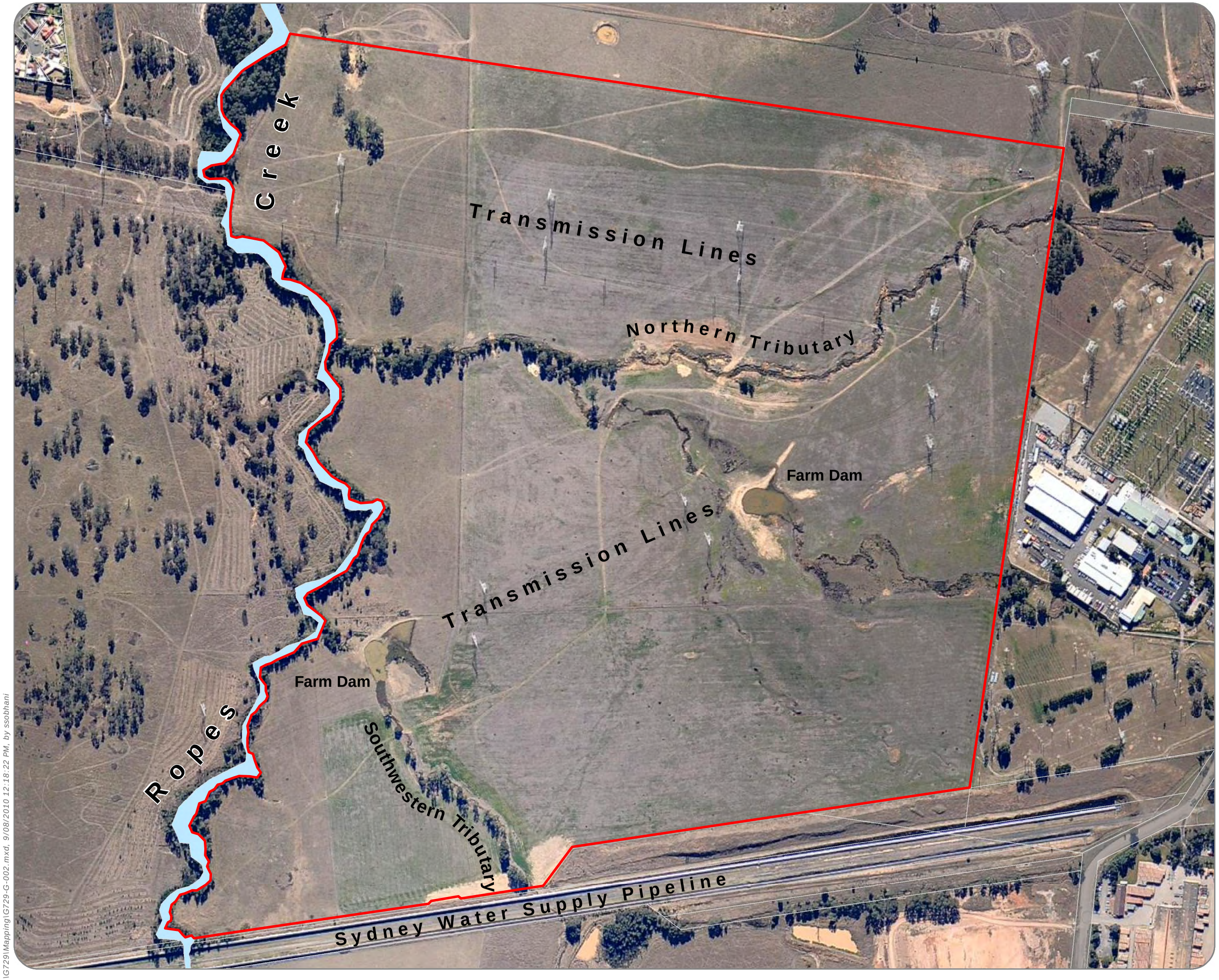

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NOTES:

1. Digital Cadastral DataBase (DCDB) © 2010 NSW Dept. of Lands.
2. Aerial Image © Nearmap 15/07/2010
3. Subject Site boundary based on DCDB 2010
4. Development site boundary is based on Concept Plan
5. All features are approximate only and subject to detailed survey

LEGEND

- Subject Site
- Development Site
- DCDB
- Roads

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Figure 4 Proposed concept plan for the subject site at Ropes Creek

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Key

- Site Boundary
- E2 Environmental Conservation Zone
- Existing Trees/Vegetation
- Existing Pylons with 15m Setback Zone
- Transmission Line Easements
- Defendable Space
- SC Potential Service Centre Location (Subject to Road and E2 Alignment)
- Indicative Lot Boundary
- Developable Area Outside Easements
- Stage I Project Application Buildings
- 20m Building Line Setback to Regional Road
- Indicative Building Footprint
- Regional Road One: 40m Reserve
- Temporary Access Road
- Local Road One: 21.5m Reserve
- Local Road Two: 21.5m Reserve
- Local Road Three: 21.5m Reserve
- Indicative Internal Road Access
- Permanent Access Road to be Provided when Erskine Park Link Road is Operational
- Roundabout
- Erskine Park Link Road

N

Lot 5 DP 262213, Ropes Creek Employment Precinct - Concept Plan

Prepared for Jacfin Pty Ltd
06 August 2010
1:5000 @ A3

JBA planning

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JOB REF:	G729

CO-ORDS:	MGA
DATUM:	N/A
DATE OF PLAN:	17-08-2010

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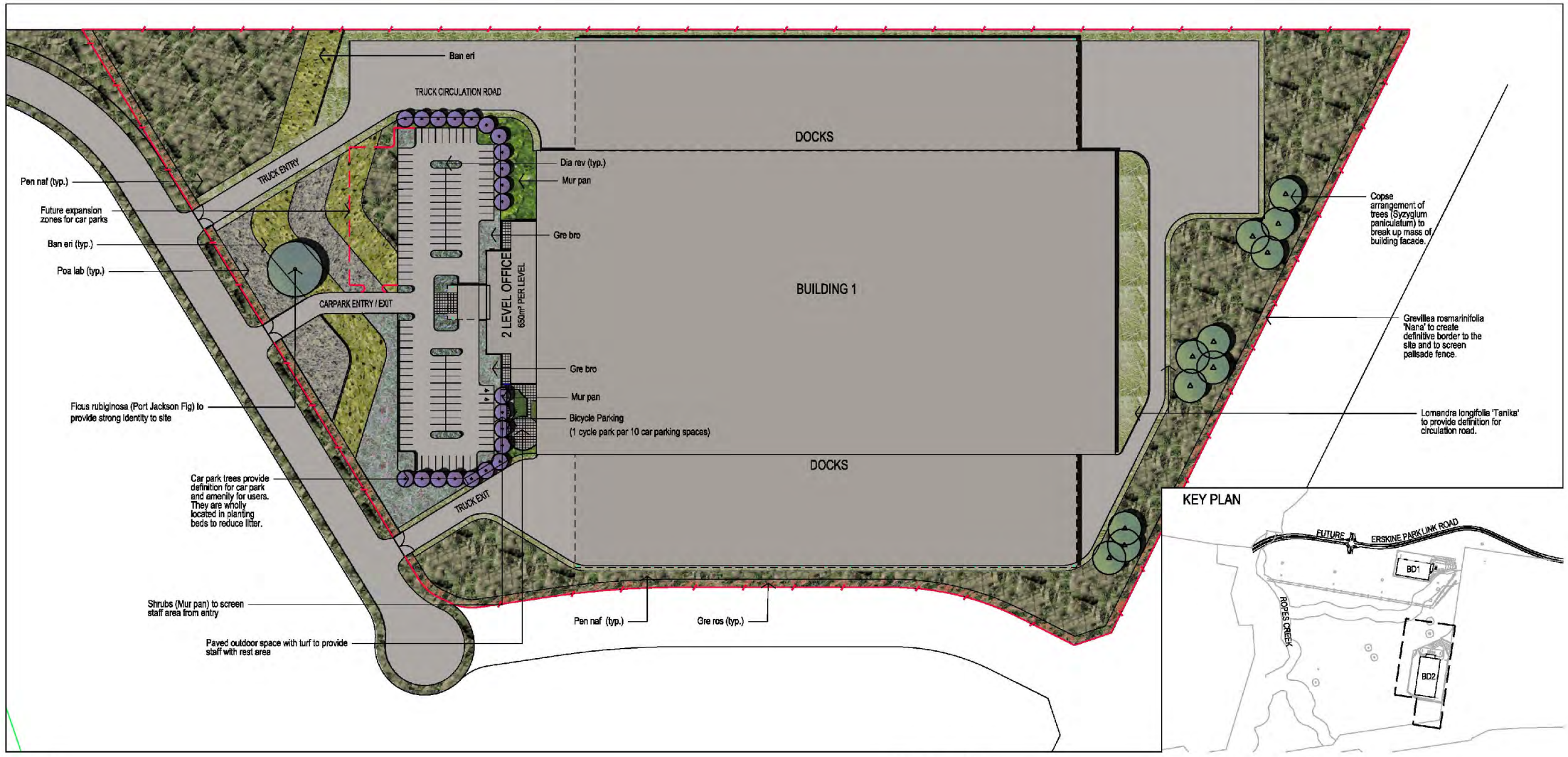

LEGEND

Entry Tree (Refer plan for species)

Screen Tree (Syzygium paniculatum)

Car Park Tree (Cupaniopsis anacardioides)

Turf

Paving

Palisade Fence

Shrubs

Banksia ericifolia (Ban eri)

Murraya paniculata (Mur pan)

Groundcovers and grasses

Lomandra longifolia 'Tanika' (Lom lon)

Grevillea 'Bronze Rambler' (Gre Bro)

Poa labillardieri 'Eskdale' (Poa lab)

Grevillea rosmarinifolia 'Nana' (Gre ros)

Dianella revoluta (Dia rev)

Pennisetum 'Nafray' (Pen naf)

PLANT SCHEDULE

CODE	BOTANICAL NAME	COMMON NAME	Mature Height	Mature Spread
Trees				
Fic rub	*Ficus rubiginosa*	Port Jackson Fig	25m	25
Cup ana	*Cupaniopsis anacardioides*	Tuckeroo	12m	8
Syz pan	*Syzygium paniculatum*	Magenta Cherry	15m	10
Shrubs				
Ban eri	*Banksia ericifolia*	Heath Banksia	4m	3m
Gre ros	*Grevillea rosmarinifolia 'Nana'*	Rosemary Grevillea	1m	1m
Mur pan	*Murraya paniculata*	Orange Jessamine	3m	3m
Ground Covers and Grasses				
Dia rev	*Dianella revoluta 'Little Rev'*	Blue Flax Lily	0.6m	0.8m
Gre Bro	*Grevillea 'Bronze Rambler'*	Grevillea 'Bronze Rambler'	0.3m	1m
Lom lon	*Lomandra longifolia 'Tanika'*	Spiney head Mat-rush	1m	1m
Pen naf	*Pennisetum alopecuroides 'Nafray'*	Pennisetum Nafray	0.5m	0.5m
Poa lab	*Poa labillardieri 'Esk dale'*	Tussock Grass	0.4m	0.5m

NOTES

- Refer Architects for further details on building.
- Refer Engineers for further details on levels and sediment control.

CLOUSTON associates

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Client: JACFIN	1:750 @ A1	ropes creek • building 1	NS 1110
		LANDSCAPE CONCEPT	07/10 issue: C

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NOTES:

1. All features are approximate only and subject to detailed survey

No.	Date	Revision Details	INI

SCALE :	Not to scale
CO-ORDS :	MGA
DATUM :	N/A
DATE OF PLAN :	29-07-2010
CHECKED BY/DATE :	SAS/29-07-2010
APPROVED BY/DATE :	FI/29-07-2010
JOB REF:	G729
GIS REF:	G729-G-005A.mxd

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