

Part B

Response to Issues Raised

B.1 Ecological Matters

B.2 Access

B.3 Owner's Consent

B.4 Conservation Area Management

B.5 Climate Change and Predicted Sea Level Rise

B.6 Bushfire Protection

B.7 Noise Impacts

B.1 ECOLOGICAL MATTERS

The Department of Planning (DoP) has reviewed the submissions made during the exhibition of the Environmental Assessment (EA) for the ‘Moonee Waters’ Concept Plan (the 2007 revised version). Relevantly, the DoP raises issues and requirements for additional information with respect to:

- how the proposal “maintains or improves the biodiversity values of the site”;
- impacts on “sub-regional corridor” across the Pacific Highway;
- the effect of the proposal with respect to four “key threatening processes”;
- assessment of an array of threatened fauna species;
- management of the Conservation Area, and dedication of that Area to Council;
- the need (or otherwise) for “buffers” and consideration/justification of the ‘buffers’ to be provided;
- the conservation value of the dry forest communities on the site;
- impacts on the Moonee Quassia and Rusty Plum;
- survey efforts for threatened plant species;
- the relevance of climate change and predicted sea level rises; and
- the requirements for bushfire and asset protection activities, and the effects thereof.

B.1.1 MAINTAIN OR IMPROVE BIODIVERSITY VALUES

As recently as 2000, Coffs Harbour City Council (CHCC) reviewed the zoning of the subject site at Moonee (**Figures 3a & 3b**). At that time, Council was entirely cognisant of the ecological issues which were of relevance to the zoning and potential future use of the subject site.

According to the CHCC Local Environmental Plan (LEP 2000):

- approximately 68% (69.05ha) of the subject site is currently zoned Residential 2E –Tourism; and
- and approximately 32% (32.95ha) of the site is zoned Environmental Protection 7A – Habitat and Catchment Protection (**Figure 3b**).

In direct contrast to that zoning, the ‘Moonee Waters’ Preferred Project Plan (**Figure 5**) involves:

- approximately 75% of the site (76.29ha) being retained for conservation purposes, by dedication to CHCC and/or the DECC; and
- approximately 21% (just 21.49ha) to be modified for development activities.

The proposed development includes the retention of 76.29ha of land in the Conservation Area, to be conserved in perpetuity. This is an increase by 43.24ha (or 132%) over and above the extent of land on the site which is currently zoned for biodiversity conservation purposes (Table 1).

Table 1 Differences between the current zoning of the subject by CHCC (in 2000) site and the areas proposed in the ‘Moonee Waters’ Preferred Project Plan.

Zoning	Zoning (LEP 2000)		Preferred Project Plan		Ratio
	Area	% of site	Area	% of site	
Residential	69.05ha	68%	21.49ha	21%	31% of LEP 2000
Conservation	32.95ha	32%	76.29ha	75%	232% of LEP 2000

At present, there are no active land uses by the owners on the subject site. However, local residents walk through and ride trail and motocross bikes on informal tracks through the site. This is especially evident in the northern portion of the site and around the tributary to Moonee Creek, where bike jumps and a ‘circuit’ have been created. This activity is impacting on both “endangered ecological communities” and threatened species and their habitats, especially the Moonee Quassia.

In addition to the impacts of uncontrolled access mentioned above, the site is subject to the dumping of cars and of urban debris and rubbish. The transmission line easement in the west of the site has also long been cleared for maintenance purposes. Further, a band along the frontal dune (down the whole eastern side of the site) had been mined for heavy minerals in the 1960s.

The design of the ‘Moonee Waters’ original and revised Concept Plans, and of the Preferred Project Plan, has been undertaken in consultation with Gunninah Environmental Consultants and subsequently with Environmental Team staff at Whelans InSites. This has been an ongoing process since the inception of the project, and ecological constraints have been the primary determinants of the development design, at all stages of the ‘Moonee Waters’ project.

The project design and the extent of the development Precincts has been determined by the ecological constraints on the site, which have defined the location, size and internal design of the two development Precincts. The ecological constraints were accepted by the landowners and the urban design team at the outset of the project.

This approach has resulted in the following positive outcomes (**Figure 5**):

- 99.77% of the “endangered ecological communities” on the subject site being retained within the Conservation Area (total of 56.29ha);
- all of the SEPP 14 Coastal Wetland being retained within the Conservation Area;
- all records of the Moonee Quassia and Rusty Plum (if present - see below) being retained within the Conservation Area;
- all watercourses on the site being retained within the Conservation Area;
- the retention of approximately 43.34ha of land (42%) of the site which was zoned in 2000 by CHCC for development purposes, and its management in perpetuity for biodiversity conservation purposes;
- the development of just 31% of the land zoned for residential purposes by CHCC in 2000, being just 21% of the site;
- the creation of a dedicated conservation reserve of approximately 76.3ha, and its dedication to the public at no cost to the public purse; and
- a commitment to rehabilitation and ongoing maintenance of the Conservation Area and/or its dedication to Council.

The proposed development adheres to the ‘Maintain or Improve’ principle by:

- a substantial increase in the extent of conservation lands in the locality through dedication of the majority of the site, for which there is no current conservation maintenance program or imperative;
- the provision of over 76ha of native vegetation for biodiversity conservation and public access purposes, for which there is currently no likely or probable alternative funding;
- the rehabilitation of areas of degraded and/or weed-infested land with the Conservation Area prior to its dedication, including:
 - » along existing uncontrolled access tracks;
 - » along existing weed-infested and degraded watercourses;
 - » within areas of bushland that have been degraded by the dumping of vehicles and urban debris; and
 - » in areas of previous heavy mineral mining activities near the frontal dune.

MAINTAIN OR IMPROVE OUTCOME

The ‘Moonee Waters’ Preferred Project Plan achieves a ‘Maintain or Improve’ outcome by:

- **INCREASING the extent of biodiversity conservation land by over 76 hectares;**
- **REPAIRING damage to important habitat for at least one threatened (“endangered”) species (the Moonee Quassia);**
- **committing to the REHABILITATION of degraded vegetation; and**
- **PREVENTING the ongoing degradation of or disturbance to the retained vegetation on the site.**

B.1 ECOLOGICAL MATTERS

B.1.2 POTENTIAL IMPACTS ON SUB-REGIONAL WILDLIFE CORRIDOR

The 'Moonee Waters' site contains part of an identified "Sub-regional Corridor" (**Figures 6a & 6c**) between the Orara East State Forest (west of the Pacific Highway) and the coast (Scotts 2003; Scotts & Drielsma 2003).

That purported "corridor", however:

- is clearly conceptual and theoretical in nature, and has not been the subject of any ground-truthing or objective or scientific analysis;
- ignores the existing extent of cleared land and/or inappropriate vegetation, particularly to the west of the Pacific Highway (**Figure 7; photos**);
- ignores the substantial and significant barriers provided by the existing cleared transmission line and services easement in the western part of the site, and the existing Pacific Highway; and
- ignores any impacts likely to arise as a consequence of the substantial (and inevitable) upgrade of the Highway, which will involve a four-lane dual carriageway road of approximately 40m+ width with major wildlife exclusion fencing and only one modest crossing and some "possible" 'rope bridges', as well as the two adjoining 2-lane 'collector roads'.

It is conceded, in a Report commissioned by the DoP (Sainty 2007), that "the Pacific Highway provides a formidable north-south barrier (see **Figure 11** for typical cross section) to some species and can result in wildlife fatalities" (emphasis added). Further, Sainty admits that "these effects may be compounded with the RTA planned upgrade of the Pacific" Highway. Nevertheless, the Sainty Report suggests that this "formidable .. barrier .. can be addressed by measures such as roadside barrier fences with culverts, underpasses and rope crossings" (emphasis added)

It should be noted that there is little or no evidence that such features provide any substantial or meaningful opportunities for other than a few mobile or "nimble species" to cross a road even of the size of the existing two-lane single carriageway Pacific Highway. There is little likelihood that most native fauna species (other than the "more nimble species" as identified in the Sainty Report, and species which would be able to cross the Highway in any case) would utilise any such features across the substantial 8 lanes and 4 carriageways which will be constructed at this location in accordance with the current RTA proposal.

In this regard, it is of significance and relevance to consider that:

- the Pacific Highway in its existing condition is indeed (as described in the Sainty Report) a "formidable north-south barrier" to many species of native fauna;
- only the "more nimble species" (as described in the Sainty Report) would be capable of crossing the Pacific Highway (either in its existing condition or following the construction of a dual carriageway 4-lane freeway and two adjacent 2-lane 'collector roads') other than by the use of culverts or 'rope bridges' crossings;
- the use of these features by wildlife to cross major infrastructure is (at best) haphazard, limited, equivocal and restricted to a small suite of species;

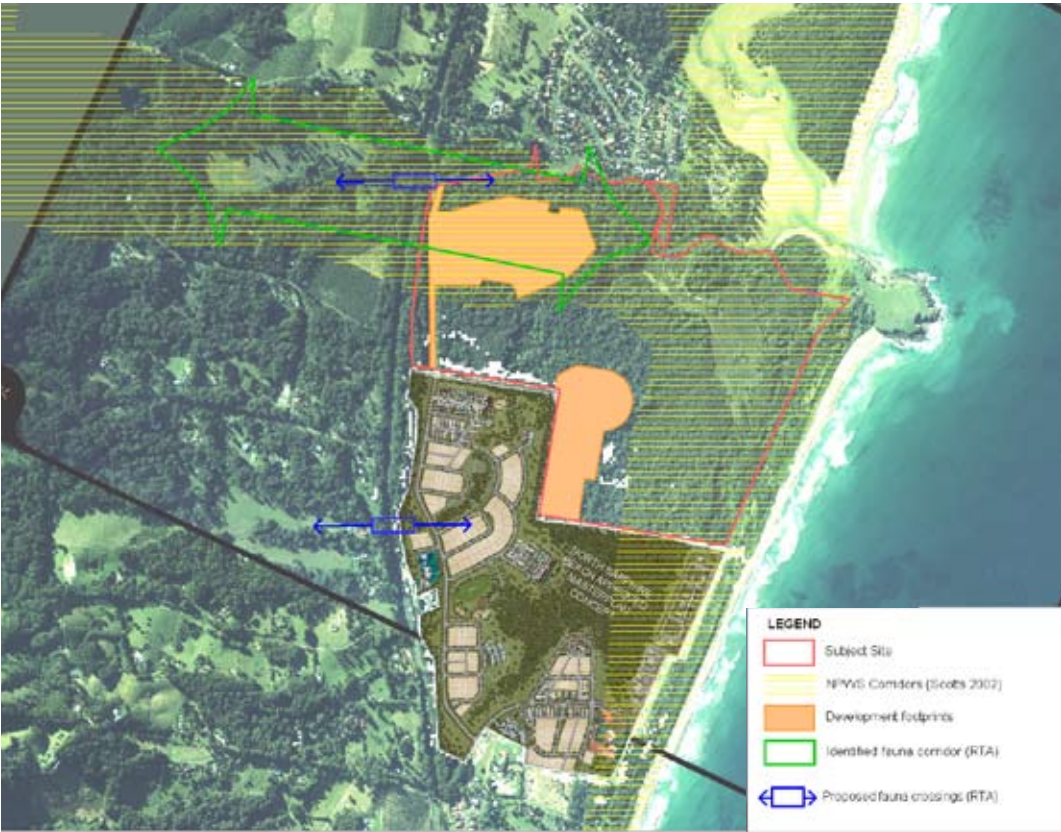


Figure 6a - DoP Proposed Corridors Through the Site

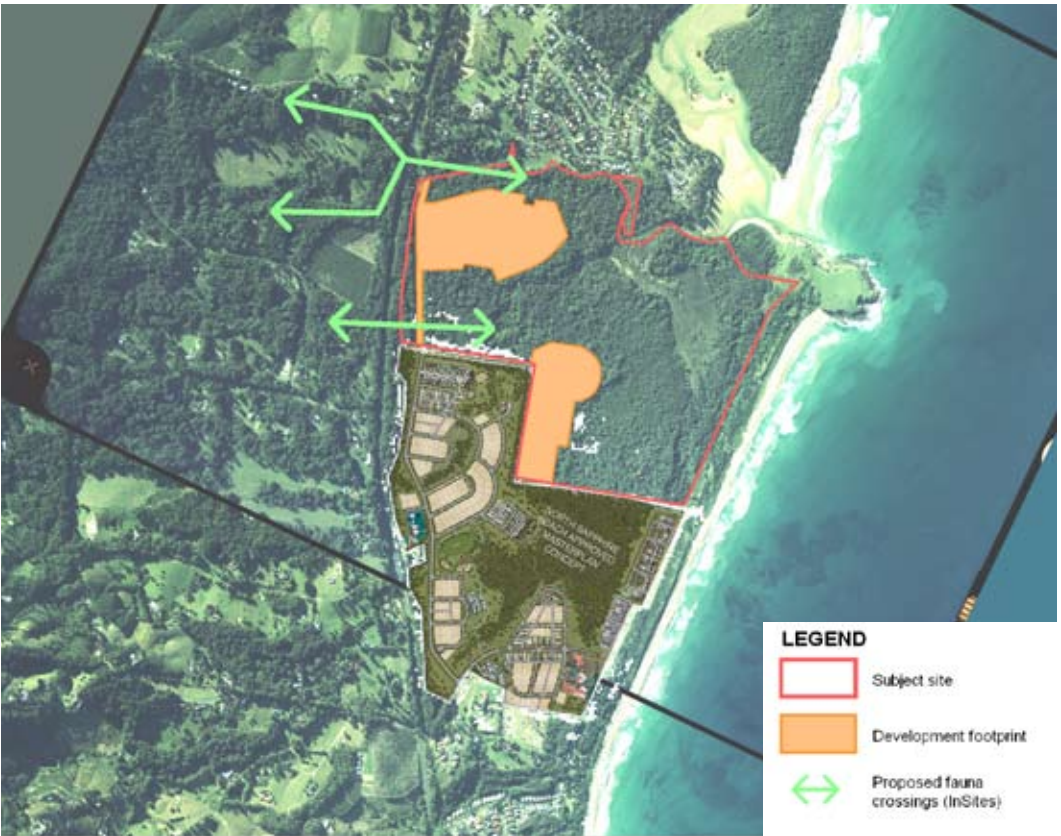


Figure 6b - Preferred Project Plan Corridors Through the Site

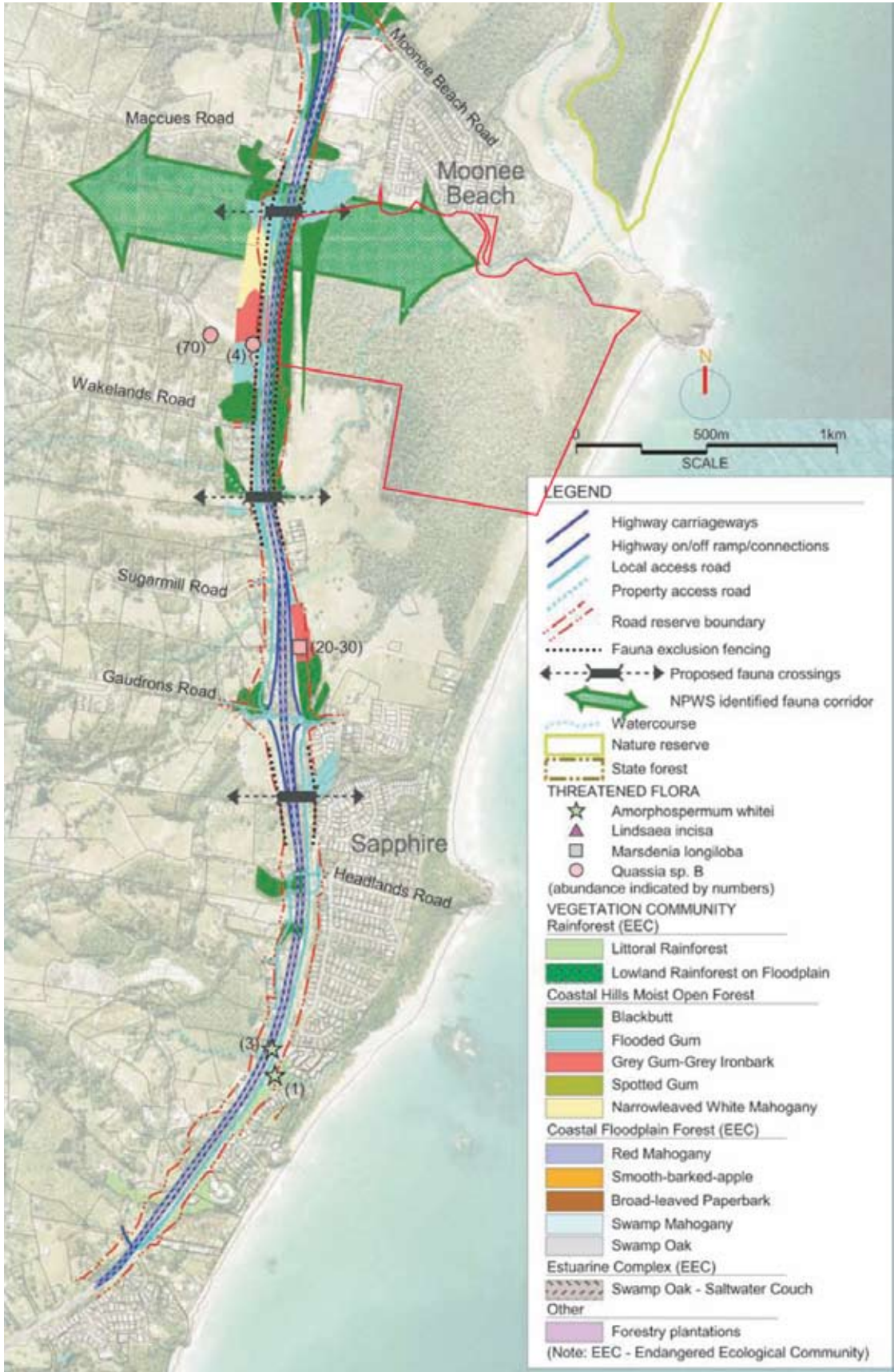


Figure 6c - RTA Identified Corridors Through the Site (source: Sapphire to Woolgoolga Pacific Highway Upgrade, Environmental Assessment).

B.1 ECOLOGICAL MATTERS

B.1.2 POTENTIAL IMPACTS ON SUB-REGIONAL WILDLIFE CORRIDOR

- there are no 'rope bridges' at present across the Pacific Highway;
- there are no dedicated fauna underpasses or wildlife crossings at present; and
- the existing drainage culverts under the Pacific Highway (at Sugar Mill Creek and the northern tributary to Moonee Creek) are largely unsuitable for traverse by most terrestrial fauna species.

Notwithstanding the likely employment of features for native wildlife to cross the Pacific Highway when it is upgraded, the construction of a four-lane dual carriageway road, with 2 adjacent two-lane 'collector roads' at this location, will significantly and substantially restrict opportunities for other than the "more nimble species" to cross the Highway.

Other than as restricted to the single fauna underpass currently proposed by the RTA at the northern tributary to Moonee Creek (which will provide only extremely limited opportunities for a few species), the upgraded Highway and associated roads will substantially and significantly constrain fauna movements to the west from or east to the subject site. The RTA does not propose any 'fauna crossing' features at Sugar Mill Creek, and commits only to the investigation of 'rope bridges' for gliders near the northern corner of the subject site.

Even with those features, the Pacific Highway will provide only very limited opportunities for wildlife (other than birds, bats and many insects) to cross the road. At the very best:

- the existing nature of the lands to the west of the Pacific Highway at the location of the 'Moonee Waters' site (**Figure 7; photos**) already provides a significant further constraint to fauna movements;
- that substantial extent of clearing has resulted in a highly fragmented landscape with only narrow bands of modified vegetation (many along roads or through yards or fields), and with a high degree of modification and edge effects';
- there is no provision in the RTA documentation for culverts or any other fauna crossing at Sugar Mill Creek;
- the watercourse crossing of the northern tributary to Moonee Creek will probably involve culverts (probably 2-4 box culverts) of less than 20m in total width and up to 50m in length, providing only restricted passage for some native species;
- the RTA Draft Statement of Commitments for the Sapphire to Woolgoolga upgrade of the Pacific Highway does not incorporate any bridges to facilitate fauna movements at this location; and
- there is only a Draft Commitment to "investigate" the need for glider crossings (which if provided would likely involve a few 'rope bridges'). There is, however, no "commitment" to any actual provision of such crossings.

Furthermore:

- there is no band of native vegetation west of the Pacific Highway which is even close in size to that being retained within the subject site along Sugar Mill Creek (which is 250m in width);
- the band of vegetation being retained along the northern tributary of Moonee Creek (on the northern side of the 'Moonee Waters' site) is approximately 50m wide. There is, however, additional



Figure 7 - Aerial view of site and surrounds showing significant cleared areas to the west of the Pacific Highway.



Photos of cleared land to the west of the highway in the proposed "corridor".

B.1 ECOLOGICAL MATTERS

B.1.2 POTENTIAL IMPACTS ON SUB-REGIONAL WILDLIFE CORRIDOR

vegetation to be retained (to the north of the site) which provides a 'corridor' of approximately 100m in width. That is more substantial than any band of vegetation west of the Highway;

- there is no guarantee or certainty with respect to the retention, enhancement or maintenance of any purported "nature corridors" west of the Pacific Highway. Those alleged 'corridors' are in private ownership, zoned rural and are considerably narrower than either of the habitat linkages to be maintained on the subject site (**Figure 7, 8 & 9**), and there is no mechanism in place (nor likely to be put in place) to ensure their maintenance, rehabilitation or long-term management; and
- the upgraded Pacific Highway will involve just one wildlife underpass to the northwest of the 'Moonee Waters' Northern Precinct. In addition to providing a major gap in the canopy immediately west of 'Moonee Waters' land, the Highway upgrade will include terrestrial fauna 'exclusion fencing' on both sides of the Highway to the immediate west of the Northern Precinct, extending both north and south of that Precinct.

The concerns expressed with respect to the potential impacts of the 'Moonee Waters' project (particularly the Northern Precinct) on the alleged east-west 'Sub-regional Corridor' are ill-informed and invalid because:

- the land proposed to be occupied by the Northern Precinct does NOT constitute part of any realistic wildlife corridor for any other than "the more nimble species" (birds, bats and insects) at present, given the existing Pacific Highway, the existing services easement and the current fragmentation of vegetation to the west; and
- the Pacific Highway upgrade and associated infrastructure will provide an even more "formidable barrier" to other than aerial species by virtue of:
 - » the proposed 4-lane dual carriageway;
 - » the lack of any proposed wildlife crossing at Sugar Mill Creek in the RTA proposal;
 - » the wildlife exclusion fencing proposed at the precise location of the Northern Precinct; and
 - » the two local/collector roads proposed (one each side of the Highway), effectively creating an 8-lane 4-carriageway barrier of approximately 100m width to wildlife movements at this location.

By contrast, the two bands of vegetation which are to be retained on the subject site (along the tributary to Moonee Creek on the northern side of the subject site and along Sugar Mill Creek) to facilitate the east-west movement of native fauna species:

- are substantial;
- have been designed specifically to provide real opportunities for habitat connectivity and fauna movements;
- are guaranteed to remain in the long-term; and
- are the least constrained 'corridors' in the vicinity
- propose adequate and appropriate access for a wide range of terrestrial species



Figure 8 - Wildlife corridor movements through and around the site.



Figure 9 - Aerial oblique of future highway looking north (source RTA).

- Potential Development (Moonee Waters)
- Adjacent Development (Sapphire Beach)
- > Corridors
- Cleared Land to West

B.1 ECOLOGICAL MATTERS

B.1.2 POTENTIAL IMPACTS ON SUB-REGIONAL WILDLIFE CORRIDOR

The 'Moonee Waters' Preferred Project Plan, including development of the Northern Precinct, will impose negligible constraints on any movement of wildlife within the purported 'corridors' in this locality.

The 'Moonee Waters' Preferred Project Plan contains the best, the widest, the most intact, the most varied and the most viable "wildlife corridors" in the vicinity. These are as strong and viable or more, as those proposed by DoP and RTA.

The 'Moonee Waters' project will impose no relevant adverse impacts on wildlife movements because:

- those movements will be seriously, significantly and substantially constrained by the upgraded Pacific Highway;
- the 'wildlife exclusion fencing' and the single watercourse 'underpass' to be provided at this location are the true determinants of wildlife movements;
- any such movements will be further constrained by the proposed 'collector roads' on both sides of the Highway;
- the existing fragmentation of land to the west of the Highway is a far greater constraint to wildlife movements than anything proposed on the 'Moonee Waters' site;
- the 'corridors' on the subject site considerably exceed any potential 'corridors' on other lands west of the Highway along the purported 'corridors'; and
- the 'corridors' on the 'Moonee Waters' site will be appropriately managed for biodiversity purposes. That surety is NOT available west of the Highway.

Any suggestion to the contrary is incorrect, on any objective, rational or reasonable analysis of the facts and of the relevant circumstances.

Strategies

The 'Moonee Waters' Preferred Project Plan implements the following strategies in response to potential impacts on sub-regional wildlife corridor (see also **Figure 10**):

- Fences in the western part of the Northern Precinct running north-south serve to redirect westward terrestrial movement to underpasses.
- Retained canopy allows unconstrained canopy movement in all directions.
- Southern Precinct and eastern half of Northern Precinct unfenced to facilitate terrestrial fauna movement.



Figure 10 - Fauna and avifauna movements through the site

IMPACTS ON WILDLIFE CORRIDORS

The 'Moonee Waters' Preferred Project Plan has specifically and pro-actively addressed the issue of 'wildlife corridors' at this location.

Development of the 'Moonee Waters' site, including creation of the Northern Precinct, will have NO adverse impact on the 'sub-regional corridor' because:

- **the Preferred Project Plan provides for the widest, the best, the most viable and the ONLY managed 'corridors' in this location;**
- **the Northern Precinct is adjacent to an infrastructure corridor which will contain two local (2-lane) roads, a four-lane dual carriageway major Highway and extensive 'wildlife exclusion fencing', ALL of which will prevent or highly constrain wildlife movements; and**
- **private lands to the west of the infrastructure corridor are already highly fragmented, and contain NO 'corridors' as wide as those proposed on the 'Moonee Waters' site.**

Any suggestion that the Northern Precinct or any other part of the 'Moonee Waters' project would constitute a constraint to the functioning of 'wildlife corridors' at this location is simply WRONG.



Figure 11 - Typical Cross Section at Moonee Looking North indicative of wildlife crossing (approximately 80m).

B.1 ECOLOGICAL MATTERS

B.1.3 KEY THREATENING PROCESSES

In 'Attachment 1' of its Advice of the 28th February 2008, the DoP identifies four "key threatening processes" (KTPs) listed in the TSC Act, and requires that further consideration be given as to how the proposed development (the Preferred Project Plan) "limits" these KTPs.

It should be noted that neither the imposition of nor the exacerbation of KTPs by a proposal would constitute a 'prohibition' on development activities. In addition, the consideration of those KTPs must acknowledge the considerable environmental benefits being derived from the dedication of over 76ha of land for biodiversity conservation purposes.

The following discussion identifies the likely or possible effects of the Preferred Project Plan with respect to those KTPs, and considers relevant measures which have been or will be implemented to "limit" the impacts of these KTPs.

B.1.3.1 Loss of Hollow-bearing Trees

All hollow-bearing trees within and immediately adjacent to the proposed 'Moonee Waters' development Precincts have been located by GPS, tagged and accurately mapped (**Figure 12**). In addition, details of the tree-hollows were recorded during the supplementary investigations conducted for this Report, and the raw data are included in **Appendix B**.

The 'Moonee Waters' development Precincts occupy approximately 21.49ha of the site, and contain 128 hollow-bearing trees, at a density of approximately 6 trees per hectare. As the age structure of the dry forest vegetation does not vary significantly across the site, it is reasonable to assume that tree-hollows would be distributed evenly throughout the 37.83ha of those vegetation types across the site. That extrapolation is supported by field observations on the site, yielding a total of approximately 226 hollow-bearing trees in the dry forests of the site. Additional hollow-bearing trees are also present in the moist forest communities, albeit generally at lower densities.

On that basis, tree-hollow resources are considered unlikely to be a limiting factor for hollow-obligate fauna which utilise the subject site.

Both the Northern and Southern Precincts of the Preferred Project Plan for the 'Moonee Waters' project have been re-designed (**Figures 13 & 14**) to retain as many hollow-bearing trees as possible within the development Precincts. Just 16 of 136 hollow-bearing trees within those Precincts need to be removed from the current development design (just 7% of those in the dry forest types).

In addition, the layouts of the two development precincts has been modified to retain the maximum number of hollow-bearing trees possible inter alia by:

- providing sufficient space within the 20m peripheral road/swale reserve around each development Precinct to allow for variations in the road alignment and in the precise locations of bio-retention swales to permit the retention of hollow-bearing trees within that reserve;
- the relocation of internal roads to maximize the retention of hollow-bearing trees within the Precinct footprints; and
- a lot layout and subdivision design which facilitates the retention of hollow-bearing trees and other canopy trees in clumps in the rear yards of adjoining allotments, thus retaining both the maximum number of hollow-bearing trees possible and an associated tree canopy. This approach will both protect the hollow-bearing trees and provide a source of replacement trees as older specimens senesce and die.

The Preferred Project Plan for the 'Moonee Waters' development will not actually contribute to the "loss of hollow-bearing trees", because of the ameliorative measures proposed. The project will have little effect in this regard on the biodiversity of the site, because:

- the overwhelming majority of hollow-bearing trees will be retained on the subject site, either within the Conservation Area or within the development footprints;
- tree-hollows which must be removed from the development Precincts will be collected and relocated into the Conservation Area; and
- any tree-hollows which are lost will be replaced by artificial nest boxes within the Conservation Area.



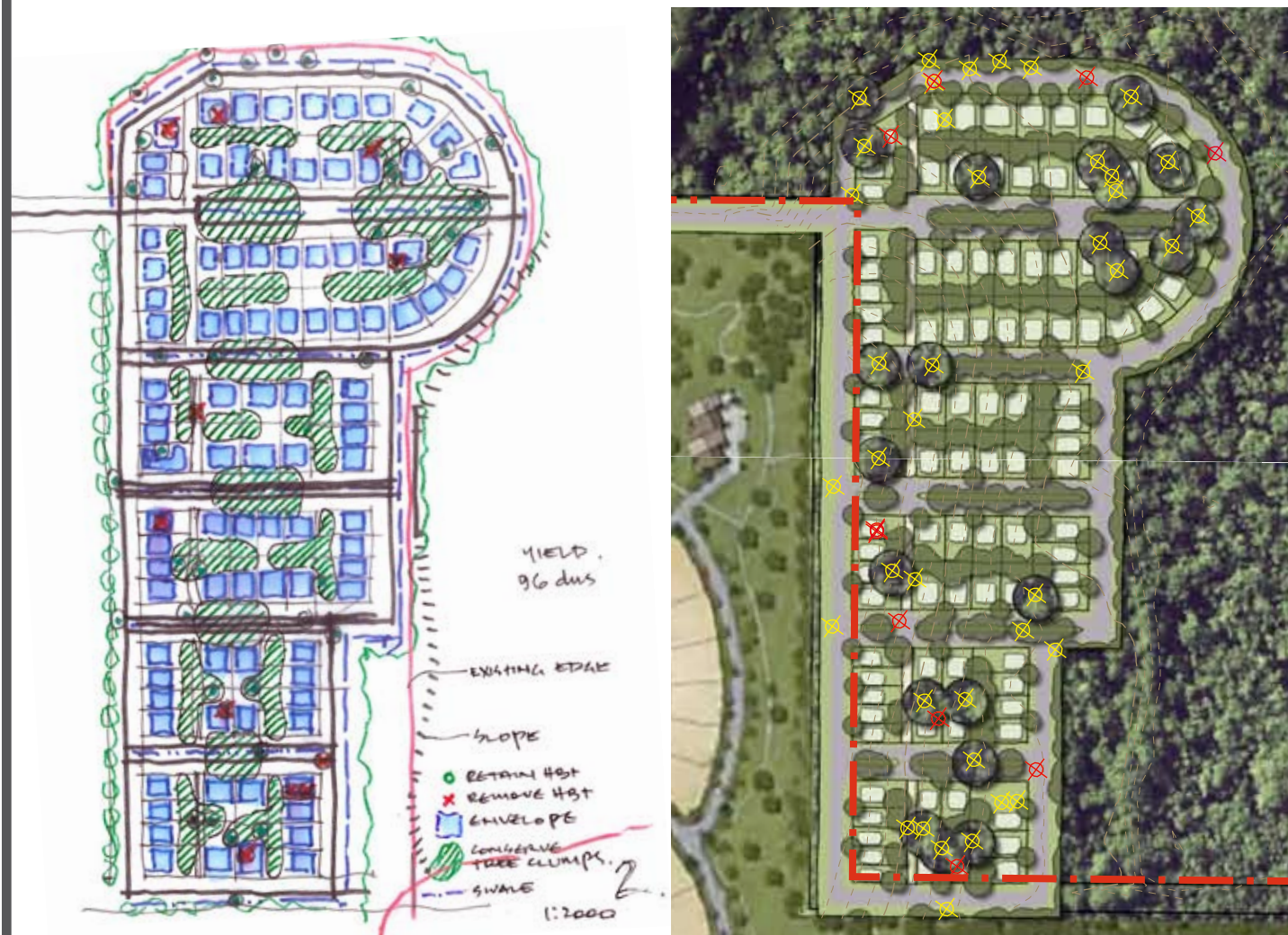
Figure 12 - Hollow-bearing trees on the site.

ALL hollow-bearing trees within the proposed development have been surveyed.
The lot layout has been re-designed to retain as many hollow-bearing trees as possible within the development footprint and by reducing the development area.

B.1 ECOLOGICAL MATTERS

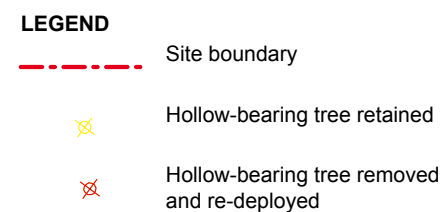
B.1.3 KEY THREATENING PROCESSES

Retained Tree Canopy and Hollow-bearing Trees - Southern Precinct



- Retention of hollow-bearing trees and associated tree canopy
- Retention of a substantial canopy throughout the development footprint
- Additional hollow-bearing trees retained by reducing the footprint
- Hollow-bearing trees to be retained in road reserves
- Lot yield reduced from 133 to 96
- Just 10 of the 51 hollow-bearing trees in the Southern Precinct may be lost, although on-site design may enable further HBT retention

Figure 13 - Hollow-bearing trees in and around the Southern Precinct.



Retained Tree Canopy and Hollow-bearing Trees - Northern Precinct



- Retention of hollow-bearing trees and associated tree canopy
- Retention of a substantial canopy throughout the development footprint
- Additional hollow-bearing trees retained by reducing the footprint
- Hollow-bearing trees to be retained in road reserves
- Lot yield reduced from 167 to 114
- Just 6 of the 85 hollow-bearing trees in Northern Precinct may be lost

Figure 14 - Hollow-bearing trees on the Northern Precinct.

THE LOSS OF HOLLOW-BEARING TREES

The 'Moonee Waters' Preferred Project Plan will NOT involve a nett loss of tree-hollows, by virtue of:

- **the retention of most hollow-bearing trees within the Development Precinct;**
- **the collection and re-deployment of tree-hollows removed; and**
- **the provision of supplementary nest boxes in the Conservation Area.**

B.1 ECOLOGICAL MATTERS

B.1.3 KEY THREATENING PROCESSES

B.1.3.2 Clearing of Native Vegetation

The proposed development will result in the clearing of a total of approximately 21.5 hectares of native vegetation from the subject site at Moonee. Conversely, over 76 hectares of vegetation (including 99.77% of the EECs identified on the site) will be retained, protected, rehabilitated where necessary, and dedicated for biodiversity conservation purposes (**Figure 15**).

Whilst the clearing associated with the proposed development involves a moderate area of native vegetation, the overall contribution of the project to the impacts of that “key threatening process” is not considered to be significant because:

the majority of the subject site (over 76 hectares) is to be retained and dedicated for conservation in perpetuity;

- the retained vegetation is to be treated by an intensive weed management and restoration strategy which will result in an improvement in its condition, and which will increase the habitat quality for threatened flora and fauna species known or likely to utilise the site;
- significant corridors to facilitate the movement of fauna and pollinators are proposed through the site, and any clearing associated with the proposed development will thus not fragment or isolate local populations of native biota; and
- all riparian zones within the subject site have been included within the Conservation Area, and will be the subject of ongoing management to improve the quality of these areas.

In relation to the “clearing of native vegetation”, the DoP identifies a number of “potential impacts of the proposal” which are claimed not to have been fully considered in the previous EAR.

It should be noted, however, that all of those matters were, in fact, considered by the project team in the impact assessments which had been undertaken previously with respect to the proposed ‘Moonee Waters’ project, including in the previous Section 5A Assessments of Significance.

It should also be noted that the Preferred Project Plan has been generated in an iterative manner, and has involved a reduction of 17% in the original proposed development area (from 25.94ha to just 21.49ha). The potential impacts of the “clearing of native vegetation” are thus of less relevance than had been considered previously.

The following discussion provides additional comments with respect to the eight “aspects of the proposal” revised by the DoP in relation to the “clearing of native vegetation”.



Fig 15 - Vegetation / EEC Conservation: The Product.

LEGEND

- EEC Extent
- SEPP 14 Wetland
- Zoning Boundary
- Hollow-bearing Trees

The Process

1. Locate Hollow-bearing Trees, EECs, wetlands etc.



2. Design Perimeter / Access Road. Avoid HBTs and other ecological / environmental features.



3. Design internal road system. Avoid HBTs whenever possible.



4. Subdivide / locate building envelopes. Avoid HBTs and other features. Retain maximum tree cover.



B.1 ECOLOGICAL MATTERS

B.1.3 KEY THREATENING PROCESSES

Clearing for Proposed Walkways Through the Conservation Area

Whilst no detailed design of the proposed pedestrian and bicycle paths through the Conservation Area has been undertaken to date, all such facilities will be located, designed and constructed in a manner which minimizes the need for “the clearing of native vegetation”, and which minimizes adverse impacts on the environment. Such facilities are regularly provided within National Parks and other conservation reserves without being identified as a significant adverse impact upon the conservation resources or values they contain.

Pedestrian paths and bicycle tracks will be designed, located and constructed according to “best practice” protocols, including:

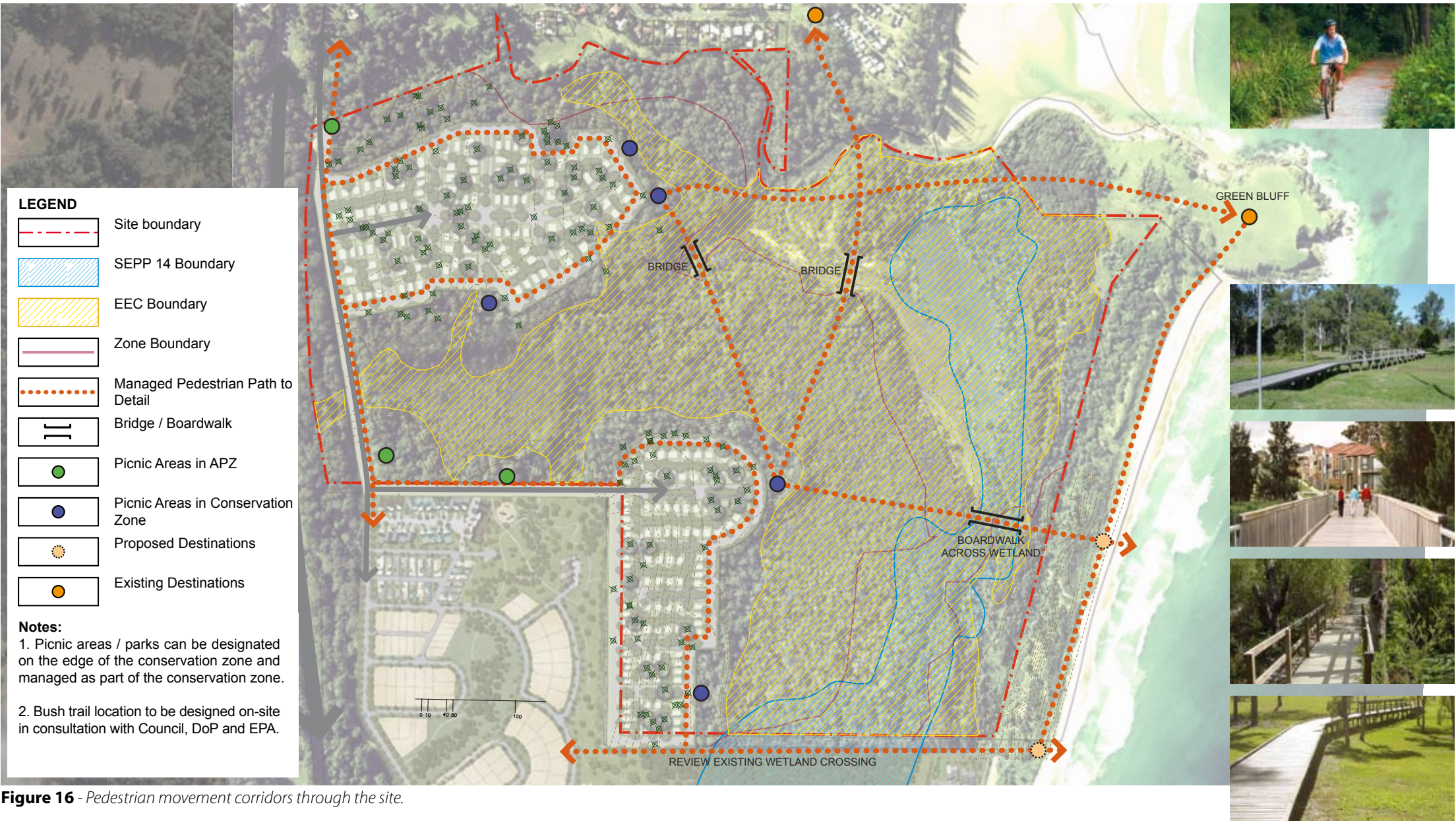
- the location of tracks to avoid the removal of trees or other significant vegetation;
- minimum construction footprints, and ensuring that no works occur outside of the footprint of the final pathways;
- the use of appropriate materials to avoid contamination of adjoining vegetation;
- limiting the width of pathways and tracks to the minimum appropriate for practical use;
- the use of elevated boardwalks through wetlands and through or over areas of significant vegetation; and
- strict controls on the management of waste both during the construction process and in the ongoing maintenance of those features.

The proposed pedestrian paths and bicycle tracks through the Conservation Area (**Figure 16**) will involve only the removal of narrow bands of groundcover at locations where the paths are ‘at grade’, but will not require the removal of canopy trees or tall shrub vegetation at all. The “clearing of native vegetation” for construction and ongoing maintenance of those paths, therefore, is negligible, particularly with respect to the considerable extent Conversation Area (in excess of 76ha).

It is also particularly relevant to note that the Preferred Project Plan includes, as a Commitment, the creation of those dedicated and properly designed and constructed paths and bicycle tracks to replace existing uncontrolled, unmanaged and environmentally damaging informal access tracks through and on the site. That Commitment is contingent upon the receipt of development consent for both the Northern and Southern Precincts.

The ‘Moonee Waters’ Preferred Project Plan will involve an environmental benefit in this regard by:

- closing off and discouraging access to existing degraded and informal tracks through the Conservation Area;
- preventing access to locations in the Conservation Area which are currently used by bike riders and which are adversely affecting threatened species (such as the Moonee Quassia) to a significant extent;
- rehabilitating those areas that are currently degraded by informal and uncontrolled access;
- providing a limited network of controlled and formal access through the subject site, in directions that would otherwise be subject to the creation of informal access tracks; and
- making a commitment to the design, construction and maintenance of formal access tracks through the Conservation Area which involves specific design and location (in consultation



Clearing for the Asset Protection Zones up to 10m into the Conservation Area

There is no requirement for Asset Protection Zones (APZs) to be provided within the Conservation Area, around either the Northern or the Southern Precinct in the ‘Moonee Waters’ project. All APZs for the development Precincts are contained wholly and completely within the Precinct footprints, occupying the 20m peripheral road/swale reserve and the front yard setbacks on individual lots (see Chapter B.6).

There is, therefore, no “potential impact”, nor indeed any actual “impact”, by provision of APZs for the ‘Moonee Waters’ project.

There is NO requirement for the provision of any Asset Protection Zones within the Conservation Area around the development Precincts.

Bridges & Boardwalks

Bridges and boardwalks proposed to cross water courses and wetlands. Precise locations to be determined at DA in consultation with Council, EPA and DoP.

The ‘Moonee Waters’ Preferred Project Plan will involve NEGLIGIBLE impacts as a consequence of the provision of walkways and bicycle paths through the Conservation Area. Those pathways will be provided with at least the same sensitivity as similar pathways provided in National Parks in coastal NSW.

B.1 ECOLOGICAL MATTERS

B.1.3 KEY THREATENING PROCESSES

Management of Areas up to 50m Wide as ‘Fuel-Managed Corridors’ Along the Roads to Both Precincts

There is no requirement to manage areas of vegetation “up to 50m wide as ‘fuel-managed corridors’ along the roads to both Precincts” on the ‘Moonee Waters’ site.

The requirements for the provision of appropriate asset protection and bushfire hazard protection measures along access roads on the ‘Moonee Waters’ project (as detailed in Chapter B.6 and Appendix D of this Report regarding bushfire protection measures) is for:

- a 20m wide Strategic Fire Advantage Zone (SFAZ), only within the dry forest vegetation, to the immediate east of the western collector road, and similar management of vegetation between that road and the eastern carriageway of the upgraded Pacific Highway. That access road is located within the western side of the subject site (parallel to the Pacific Highway), and traverses the site in a north-south direction providing (ultimately) part of the eastern ‘collector road’ to the village of Moonee; and
- a 30m wide SFAZ north of the access road alignment between the Pacific Highway and the Southern Precinct, again only within the Dry Blackbutt Forest community.

The requirement for ‘fuel management’ within those areas is restricted to the Dry Blackbutt Forest communities, within 20m or 30m of the relevant roads, and involves hazard reduction activities according to RFS management protocols.

The potential impacts of fuel management within those areas of vegetation (involving a total of 2.56ha) will be minimal because:

- the vegetation will be managed in an environmentally sound manner (by hand removal of excess fuel material and/or occasional managed fuel reduction burns);
- any removal of shrubs or understorey plants which may be required will be done in a selective and careful manner;
- management measures will be implemented to avoid incursion by weed species; and
- preference will be given to the removal of dead material and the accumulated leaf litter, thus retaining the important physical features of the natural environment.

It should be notes in this regard that ‘fuel reduction’ burns are standard practice in the National Parks and other conservation reserves in NSW.

On the basis of the approach which has been adopted to the ‘fuel-managed corridors’ associated with the access roads for the two development Precincts on the ‘Moonee Waters’ site, therefore, there will be very little impact on the natural environment or on the KTP known as the “clearing of native vegetation”.

Only SMALL areas of Dry Blackbutt Forest vegetation (up to 30m in width) will be managed as Strategic Fire Advantage Zones (SFAZs) along the two access roads within the Conservation Area. Management of those lands will be in accordance with RFS requirements, but, where the use of fuel reduction burns are required, these would be no more ‘destructive’ than the ‘fuel reduction burns’ conducted as normal practice by the DECC within National Parks and Nature Reserves in NSW.

Clearing for Local Parks within the Conservation Area

The extent of land proposed for the provision of local parks outside of the development Precincts and within the Conservation Area for the ‘Moonee Waters’ Preferred Project Plan is minuscule.

Four small local parks (400m² - 600m² each, with a combined total of approximately 0.2ha) are proposed to be located at the immediate edge of the development Precincts within the Conservation Area. This amounts to 0.26% of the Conservation Area, and will involve an extremely minute impact on the Conservation Area.

These local parks will be managed by:

- the selective removal of some groundcover vegetation and possibly a few trees;
- the provision of carefully selected and identified parking areas (within the development area where possible); and
- the provision of picnic areas and barbeques, and possibly picnic pavilions.

It is not intended that these areas be cleared of native vegetation or that introduced grasses or other exotic plants be used.

It should be noted that most National Parks in NSW contain substantial picnic and/or camping grounds within their boundaries. The proposed “local parks” associated with the ‘Moonee Waters’ project will be managed as well as any such facilities in the National Parks of coastal NSW.

The ‘local parks’ within the Conservation Area adjacent to the Northern and Southern Precincts occupy a MINISCULE area (approximately 0.2ha or 0.26% of the Conservation Area). Those ‘local parks’ are to be managed in a sympathetic manner, and will impose generally lesser impacts than are imposed by public access points within nearby National Parks.



Picnic shelters, amenities, lookouts, BBQ areas and children’s playgrounds can be determined at DA in consultation with Council, EPA and DoP. These will be low key facilities appropriate for their context and should not impact on conservation values of the area.

B.1 ECOLOGICAL MATTERS

B.1.3 KEY THREATENING PROCESSES

Disturbance for Installation of the Sewer Rising Mains

There is no requirement for the provision of any sewer rising mains within any part of the Conservation Area in the 'Moonee Waters' Preferred Project Plan.

The earlier mapping for the original (pre-2007) Concept Plan identified 'possible' locations of such features, but these have subsequently been deleted from the project, and are not part of the Preferred Project Plan.

There is, consequently, no "potential impact" as a result of sewer rising mains on any part of the Conservation Area in the 'Moonee Waters' Preferred Project.

Clearing Required for the Construction of Sewer Pumping Stations

There is no requirement for the provision of any sewer pumping stations within any part of the Conservation Area in the 'Moonee Waters' project.

Again, the earlier mapping for the original (pre-2007) Concept Plan identified 'possible' locations of such features, but these have subsequently been deleted from the project, and are not part of the Preferred Project Plan.

There is, consequently, no "potential impact" as a consequence of sewer pumping stations on any part of the Conservation Area.

Clearing for the Bio-Swales and 'Cleaning Ponds', Proposed as Part of the Water Cycle Management Plan

The bio-retention swales and the cleaning ponds, which are part of the stormwater management and water quality control measures for the 'Moonee Waters' project, are to be located entirely and wholly within the development footprints for the Northern and Southern Precincts (see Chapter C.5).

Bio-retention swales will be located along internal roads within the development Precincts, and a series of peripheral bio-retention swales and cleaning ponds are proposed within the 20m wide peripheral road/swale reserve around both development Precincts. There is no requirement whatsoever for any part of the bio-retention swales or cleaning ponds, or any other parts of the stormwater retention and water quality control system, to be located within the Conservation Area on the subject site.

There is, consequently, no "potential impact" from these features with respect to the Conservation Area on the 'Moonee Waters' site.

Indeed, the peripheral bio-retention swale and detention pond system is designed inter alia to provide protection for the adjoining Conservation Area:

- by controlling human access;
- by providing a functional "environmental buffer";
- by treating stormwater prior to discharge;
- by providing a 'filter' for possible weeds; and
- by providing supplementary habitat for native species.



The bio-retention swales and detention basins (or 'cleaning ponds') are to be located SOLELY and ENTIRELY within the development Precincts. There will be NO adverse impact as a result of these features on the Conservation Area at all.

Construction of Noise Mitigation Measures

As discussed below (Chapter B.7), there is no proposal for the provision of any "noise mitigation measures" within the Conservation Area in the 'Moonee Waters' Preferred Project Plan. Nor is there any requirement for such measures in or adjacent to the Northern Precinct on the subject site.

The "noise mitigation measures" which may be required for dwellings in the western part of the Northern Precinct would be applied as documented in Chapter B.7 of this Report by appropriate housing design and by the provision of appropriate measures for dwellings in that area. There is no provision for a noise bund or noise wall between the western side of the Northern Precinct and the upgraded Pacific Highway in the Preferred Project Plan. If a noise wall was to be found necessary, however, should be provided in the Pacific Highway road reserve rather than on the subject site, to maximise its efficacy.

The proposed development of the 'Moonee Waters' project does not involve the removal of any vegetation for the provision of "noise mitigation measures".

There is NO proposal for any noise mitigation measures within the Conservation Area in the 'Moonee Waters' Preferred Project Plan.

THE CLEARING OF NATIVE VEGETATION

The 'Moonee Waters' Preferred Project Plan will involve NEGLIGIBLE impacts as a consequence of the provision of walkways and bicycle paths through the Conservation Area. Those pathways will be provided with at least the same sensitivity as similar pathways provided in National Parks in coastal NSW.

There is NO requirement for the provision of any Asset Protection Zones within the Conservation Area around the development Precincts.

Only SMALL areas of Dry Blackbutt Forest vegetation (up to 30m in width) will be managed as Strategic Fire Advantage Zones (SFAZs) along the two access roads within the Conservation Area. Management of those lands will be in accordance with RFS requirements, but, where the use of fuel reduction burns is required, these would be no more 'destructive' than the 'fuel reduction burns' conducted as normal practice by the DECC within National Parks and Nature Reserves in NSW.

The 'local parks' within the Conservation Area adjacent to the Northern and Southern Precincts occupy a MINISCULE area (approximately 0.2ha or 0.26% of the Conservation Area). Those 'local parks' are to be managed in a sympathetic manner, and will impose no greater impacts than are imposed by public access points within nearby National Parks.

There will be NO disturbance at all within the Conservation Area for either sewer rising mains or sewer pumping stations.

The bio-retention swales and detention basins (or 'cleaning ponds') are to be located solely and entirely within the development Precincts. There will be NO adverse impact as a result of these features on the Conservation Area at all.

There is NO proposal for any noise mitigation measures within the Conservation Area in the 'Moonee Waters' Preferred Project Plan.