

Appendix G

Response to Submissions Report

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Lot 52 in DP 831284 and Lot 84 in DP 792945
Belle O'Connor Street, South West Rocks

Proposed Residential Development
Major Project MP 08_0167

Ecological Issues

Response to Submissions

30th July 2010



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LOT 52 in DP 831284 and LOT 84 in DP 792945
BELLE O'CONNOR STREET, SOUTH WEST ROCKS

PROPOSED RESIDENTIAL DEVELOPMENT
MAJOR PROJECT MP 08_0167

ECOLOGICAL ISSUES
RESPONSE to SUBMISSIONS

30th July 2010

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PROPOSED RESIDENTIAL DEVELOPMENT
MAJOR PROJECT MP 08_0167

ECOLOGICAL ISSUES
RESPONSE to SUBMISSIONS

30th July 2010

1 INTRODUCTION

1.1 Background

The proposed residential development on the subject site at Belle O'Connor Street, South West Rocks has been subject of an application pursuant to *Part 3A* of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The application has been considered by the Department of Planning (DoP) and the Minister for Planning, and an *Environmental Assessment Report* (EAR) has been prepared pursuant to the *Director-General's Requirements* (DGRs) which had been issued by the DoP for the project.

The EAR incorporated a number of specialist expert *Reports* including *inter alia* an *Ecological Issues & Assessment Report* prepared by Environmental InSites, dated August 2009. That *Report* considered the nature and condition of the subject site and its context, and the likely impacts (both direct and indirect) of the proposed development on ecological matters generally, and on threatened biota and their habitats in particular.

The InSites 2009 *Report* on ecological matters was based on a range of data and information sources, including *inter alia*:

- flora and fauna investigations of the subject land and surrounding lands (Parker 2002; Kendall & Kendall 2003; Umwelt 2004; ERM 2006; Connell Wagner 2005, 2008);
- a dedicated further field survey of the subject site, involving an array of survey techniques, undertaken by Cumberland Ecology (2008);
- an initial site inspection by Environmental InSites, a supplementary site survey in March 2009, and three supplementary site inspections;
- the published scientific information regarding relative threatened biota;
- vegetation mapping of the general locality (DEC and DNR 2001);
- the Wildlife Atlas of the NPWS¹; and
- other information on ecological values, biota and habitats in the locality.

¹ The National Park & Wildlife Service (NPWS) is now part of the Department of Environment, Climate Change & Water (DECCW).

The *Environmental Assessment Report* (EAR) and its accompanying documentation were advertised and displayed for consideration by the general public, and were referred to an array of relevant government agencies for comment. Subsequent to that process, the Department of Planning (DoP) has provided a comprehensive response to the applicant, which includes *inter alia*:

- an *Attachment* containing the “*Key Issues*” which have been identified by the DoP and which require either some response or some additional information;
- a number of submissions from various government agencies, relevantly the Department of Environment, Climate Change & Water (DECCW), Kempsey Shire Council and the Northern Rivers Catchment Management Authority (CMA); and
- a number of submissions received from the general public regarding the proposal.

1.2 Structure and Scope of This Report

This *Response Report* has been prepared to provide additional information and data (where appropriate) as requested by the DoP, the DECCW and/or other authorities. The *Report* addresses the amended *Preferred Project Plan*, and also provides:

- further justification in relation to the array of investigations which have been undertaken on the subject site and in the immediate vicinity, by various consultants;
- further assessment of environmental constraints and of potential adverse impacts upon native (including threatened) biota and their habitats addressed in the original Report; and
- further justification for the proposed development as currently configured.

It is noted that there have been some modifications to the development design since the original proposal (Figure 1) in order to accommodate some of the matters raised by the DoP and/or other government agencies and authorities. Those modifications (detailed in the *Preferred Project Plan* and associated *Report* by AECOM) have included *inter alia*:

- modifications to the stormwater design to ensure that the *Conservation Area* is further protected, and that stormwater discharge quality and quantities are maintained for the benefit of ecosystems downstream and downslope (Appendix A);
- the removal of some original proposed recreation areas (small parks) and pedestrian/bicycle pathways from the *Conservation Area* (Appendix B); and
- amendments in the northwestern part of the development area to reduce the overall development footprint (Appendix B).

The following Chapters of this *Report* deal with number of issues and matters raised by:

- the Department of Planning (Chapter 2);
- the DECCW (Chapter 3);
- Kempsey Shire Council (Chapter 4); and
- the Northern Rivers CMA (Chapter 5).

1.3 Planning Basis for the Proposal

The Local Environmental Plan

The subject site (and other nearby lands) were rezoned for a variety of purposes (including residential development and conservation) in a *Local Environmental Plan* (LEP) approved by the Minister for Planning in August 2008, and gazetted on the 14th of August 2009 (Figure 2). That rezoning identified and specified approximately 65% of the site for development purposes and 35% for conservation purposes) is reflected in the EAR, and was the basis *inter alia* for the proposed development design on the subject site at South West Rocks (Figure 1).

The Mid-North Coast Regional Strategy

Significantly, the subject site and adjoining lands are also identified in the *Mid-North Coast Regional Strategy* as ‘Proposed Future Urban Release Areas’ (Figure 3). As discussed in detail below (Chapter 2.2.2), the *Regional Strategy* is “an **agreed** NSW Government position on the future of the Mid North Coast”, and is “the **pre-eminent** planning document” for the Region (DoP 2009). Designation of the site as a “Proposed Future Urban Release Area” in 2009, by the ‘whole of government’ (including *inter alia* the DECCW, the DoP and other relevant agencies) **MUST** be a relevant consideration.

Relevant Considerations

In considering the proposed development on the subject site, a number of matters and underlying assumptions **must** be taken into account:

- the relevant authorities and agencies, including the DoP and the DECCW, analysed and assessed the appropriate zoning of the subject site (amongst other lands) in 2008 and 2009. As a consequence of that **current** and **relevant** assessment, the northern part of the site was identified as most appropriate for conservation purposes and the southern part (as reflected in the development design) for residential development purposes;
- that rezoning of these lands was undertaken **after** consideration of a *Local Environmental Study* (LES), which *inter alia* described the ecological attributes of the subject site;
- the rezoning of the subject site was considered by the DoP, the DECCW, other government agencies, the community and local Council through the LES/LEP process;
- the rezoning is **current** (it was only gazetted in August 2009), and therefore **must** be regarded as the relevant indicator of appropriate development on the subject site, and on other lands in the immediate vicinity; and
- the rezoning also **reflects** the strategic approach to urban and residential development identified in the *Mid-North Coast Regional Strategy*, which has been prepared by the DoP and which has been the subject of input and consideration by (*inter alia*) the DECCW.

On the basis of the **recent** rezoning of the subject site for a mix of conservation and residential purposes, as endorsed *inter alia* by the DoP and the DECCW, and underpinned by the LES/LEP process, the development of the subject site as proposed in the EAR (assuming an environmentally responsible approach):

- **must** be accepted as reflecting the assumptions, goals and desires of the government agencies (including *inter alia* the DoP, DECCW and Council) and the local community, as identified in the LEP and the *Regional Strategy* (else these documents are irrelevant);
- **must** be deemed appropriate (else the LES/LEP process be meaningless), and
- **must** be considered reasonable in the local and general context (including with respect to “cumulative impacts”, as these issues were part of the relevant considerations in the LES/LEP process.

The original *Concept Plan* development design for the subject site at South West Rocks, as detailed in the EAR and EIAR, and the *Preferred Project Plan*, reflect:

- the current zoning of the land as documented in the LEP (which has been approved by the DoP), and as justified by the LES;
- the *Mid-North Coast Regional Strategy* promulgated by the DoP, which represents the “**agreed** NSW Government position on the future of the Mid North Coast”, including *inter alia* for the subject site (see Chapter 2.2.2); and
- the ecological constraints which have been identified on the land by an array of ecological consultants, including the author of this *Report*.

As discussed in some detail below, the *Strategy* was also the subject of considerable consultation, discussion and deliberation by a range of government agencies and other authorities, including *inter alia* (it is assumed given the statutory process) the DECCW, the CMA, Council and other relevant groups. The *Strategy* (which promotes development of the subject site) reflects the “**agreed** NSW Government position on the future of the Mid North Coast”. It is (as noted above) “the **pre-eminent** planning document” for the Region.

As indicated in the **current zoning** (approved by the DoP in 2009) of the subject site (Figure 2):

- the southern part of the subject site (approximately 65% of the site) is zoned 2(a) – *Residential ‘A’*. This area contains essentially all of the proposed development on the subject site, other than the proposed northern access road; and
- the northern part (approximately 35% of the site) of the subject site (which includes the *Conservation Area* as proposed in the EAR) has been zoned:
 - 7(a) – *Wetlands Protection*. This part of the land contains the SEPP 14 wetland around Saltwater Creek, and is located in the northeastern part of the site within the *Conservation Area*; and
 - 7(b) – *Environmental Protection (Habitat)*. This environmental protection zone contains the remainder of the *Conservation Area*, and provides a ‘buffer’ between residential areas on the subject site and Saltwater Creek and Saltwater Lagoon.

2 DEPARTMENT of PLANNING

2.1 Introduction

Following the public exhibition phase of the EAR for the Project, and review of the proposal by various government agencies, correspondence from the NSW Department of Planning (the DoP), with three Attachments, has been received (dated the 17th of November 2009). That document:

- delineates a number of “*Key Issues*” identified by the DoP itself (in Attachment 1),
- includes submissions from the DECCW and CMA (in Attachment 2); and
- also contains a summary of the issues contained in public submissions on the Project (Attachment 3).

This chapter of this *Response to Submissions Report* addresses the “*Key Issues*” raised by the DoP (Chapters 2.2 to 2.8) and matters raised in the public submissions (Chapter 2.9). Specific responses to the relevant government agencies and Council with respect to ecological matters are contained in Chapters 3, 4 and 5 of this *Response to Submissions Report*. In all instances, the documentation refers to the *Preferred Project Plan* and the associated *Report* by AECOM.

2.2 Cumulative Impacts

2.2.1 Introduction

The DoP notes that “*10 threatened species .. were recorded on the site – primarily within the Conservation Area*”, and requests that “*Consideration and justification should be given to the cumulative impacts of residential development upon the threatened species and their environment*”.

The DoP identifies a number of “*cumulative impacts*” that “*may include, but are not limited to*”:

- increased traffic generation;
- an increase in noise;
- “*vegetation removal*”;
- “*degradation of existing habitats and movement corridors*”; and
- “*an increased human presence*”.

The following parts of this Chapter of the *Report*:

- 1 discuss the regional strategic and planning basis for the consideration of cumulative impacts (Chapter 2.2.2); and
- 2 address the specific issues raised by the DoP in respect of potential cumulative impacts on threatened biota (Chapter 2.2.3).

Issues raised by the DECCW with respect to cumulative impacts are addressed in Chapter 4 of the *Report*.

2.2.2 The Basis for Consideration of Cumulative Impacts

In the first instance, the concentration of threatened species within the proposed *Conservation Area* on the subject site *inter alia* indicates the **appropriateness** of the development design, which was based *inter alia* on identification of the most important habitat areas on the site for threatened (and other native) biota.

Further, it has to be accepted that the imposition of “*cumulative impacts*” as a consequence of ongoing residential development such as that currently proposed at South West Rocks (as contemplated in the 2009 rezoning of the site and in the *Mid-North Coast Regional Strategy* of the DoP) is inevitable. More houses, more people and more infrastructure in a location **inevitably** lead to an increase in impacts.

However, the imposition of adverse impacts upon the natural environment in general and upon threatened biota (including *inter alia* the ten species identified by InSites on the subject site) in particular, has been taken into account in the original *Environmental Assessment* for the proposal and in the accompanying *Ecological Issues & Assessment Report* (InSites 2009). That assessment was made on the basis of both the impacts of the proposal *per se* on threatened biota, as well as in the context of the recently approved development to the immediate southwest and in the knowledge of the likelihood and/or indeed certainty of residential development on lands to the north and south.

In addition, it needs to be acknowledged that the Department of Planning (DoP) itself, through the vehicle of the *Mid-North Coast Regional Strategy* (the *Strategy*), is actively promoting the development for urban purposes of both the subject land itself and the land to its north and south (Figure 3). These lands are identified in the “*Growth Areas Map 9 – Kempsey*” (on page 55 of the *Strategy*) as “*Proposed Future Urban Release Areas*”. As a consequence, and inevitably, the DoP (and other relevant government agencies) already accept and acknowledge that “*cumulative impacts*” will be imposed in this precise location.

Whilst site-specific constraints and circumstances need to be addressed, the currency of both the *Regional Strategy* and the recent rezoning of the subject site clearly indicate the appropriate level of development of the site. The recent rezoning of the subject site, and its identification in the *Regional Strategy inter alia* for future urban growth by the state government, government agencies and the Council, it MUST be assumed are the result of informed decision-making processes. Those outcomes MUST have assumed that “*cumulative impacts*” would arise AND that those impacts would be acceptable.

Furthermore, as additional residential development throughout New South Wales is inevitable, it is proper to determine where are the best and most appropriate places for such further development to occur. Generally speaking, it can reasonably be assumed that most further residential development would best be located adjacent or close to existing residential areas. That is precisely what is being promoted by the DoP in the *Mid-North Coast Regional Strategy* (Figure 3).

The *Mid-North Coast Regional Strategy*, which is promulgated and championed by the DoP, states on page 11 (*"The Strategy at a Glance"*) that *The Strategy* aims *inter alia*:

- to "*protect the coast and the character of coastal villages [including *inter alia* South West Rocks] by limiting growth to the agreed growth areas of towns and villages leaving green belts between settlements*" (emphases added); and
- to "*limit development in places constrained by coastal processes, flooding, wetlands, important in primary industry land and landscapes of high scenic and conservation value*".

It is on the basis of those "*aims*" that the DoP (and other relevant agencies) have identified both the subject site, and lands to the immediate north and immediate south, as appropriate for future residential development (Figure 3).

It is further noted that the *Mid-North Coast Regional Strategy* states in its opening commentary that the "*Regional Strategy represents an **agreed** NSW Government position on the future of the Mid North Coast. It is the **pre-eminent planning document** for the Mid North Coast and **complements** and **informs** other relevant state planning instruments*".

The *Strategy* also states (on page 19) that the approach to urban settlement within the Region will involve local planning which "*will align with the regional strategies settlement network .. **to contain the spread of urban development**, efficiently utilising existing services and infrastructure, and **protect areas of high conservation value***". As noted above, the subject site and the lands to its immediate north and immediate south are **specifically identified** within the *Mid-North Coast Regional Strategy* as "***proposed future urban release areas***".

That there will inevitably be "*cumulative impacts*" on the natural environment and on threatened biota as a result of the proposed development on the subject site, as well as on the adjoining lands to the north and south, is acknowledged and accepted. Each of those developments will inevitably contribute to the "*cumulative impacts*" in the locality. However, it cannot be the requirement of any one development to address and deal with the "*cumulative impacts*" of development in the vicinity.

2.2.3 Cumulative Impacts Identified by the DoP

Increased Human Presence, Traffic Generation and Noise

There will doubtless be an "*increased human presence*", and an associated "*increased traffic generation*" and increase in noise on a local basis, as a consequence of the proposal at South West Rocks, given that the proposal is for an additional 318 residences on the subject site. There will also be a substantially greater number of additional dwellings on the lands to the immediate north and immediate south, as anticipated by the 'whole of government' in the *Mid-North Coast Regional Strategy* (see above).

It should be noted, however, that the subject site represents only a relatively small proportion of the total increase in “*human presence*” (including the resulting “*increased traffic generation*” and increase in noise) which will inevitably occur as a consequence of all of the anticipated development at this location. Further, the increases in traffic and noise will predominantly occur within an envelope which encompasses the future residential areas as well as the existing residential parts of the South West Rocks village, and will be highly localised.

The increase in noise associated purely with the residential development and with “*increased traffic*” will be limited in quantum (albeit real), and generally highly localised. These low-level increases are not regarded as of significance with respect to biodiversity conservation in general or to threatened biota in particular, given their localised nature.

The various development proposals will somewhat extend the urban footprint of South West Rocks to the east, but will also leave substantial tracts of land in the vicinity and locality. Importantly, development on the subject site and surrounding lands confines the “*cumulative impacts*” to a contained footprint. In any case, as noted above, these increases are anticipated in the recent rezoning of the lands in this locality *inter alia* for residential purposes, and in the *Mid-North Coast Regional Strategy*, both of which were supported by and promulgated by the DoP.

Notwithstanding the fact that development of the subject site and of other lands in the vicinity will involve an “*increased human presence*” and the associated “*increased traffic generation*” and noise, it is not considered likely that such phenomena would adversely affect any native biota to a significant or notable extent, particularly threatened species, known or likely to occur on the subject site at South West Rocks. Whilst habitats in the immediate vicinity of the development footprint along the northern boundary of that area may be rendered less suitable for some native biota (those particularly sensitive to noise and/or light), such impacts will be of extremely local distribution and limited effect.

In this regard, it is noted that:

- those threatened biota which occur on the subject site are already subjected to various impacts arising from modified land uses and/or adjoining urban activities;
- many of those species are regularly recorded within or adjacent to urban environment in any case; and
- the *Conservation Area* on the subject site, combined with that on the land to the immediate north and the considerable extent of natural habitats to the northwest, constitute a broad tract of native vegetation habitats into which the relevant biota can retreat, if necessary.

It is not considered likely that those phenomena associated (with an “*increased human presence*” as a result of both of the proposed development of the subject site and of other lands in the vicinity) would impose a significant adverse impact upon any of the threatened biota known or likely to occur on the site or in the vicinity. The potential for adverse impacts (including “*cumulative impacts*”) to be imposed upon such threatened biota have been taken into account already, and were presumably considered

when land at this location was rezoned in 2009 and during preparation of the *Mid-north Coast Regional Strategy* in 2009.

Vegetation Removal and Habitat Degradation

Similarly, the concerns of the DoP (and others) with respect to “*vegetation removal*” and the “*degradation of existing habitats and movement corridors*” have been appropriately discussed and thoroughly addressed in the original EAR and in the accompanying *Reports*. Nevertheless, some further consideration of these issues is provided below.

Again, the removal of vegetation for the residential development of this land, and other adjoining lands, was anticipated and accepted as appropriate, as implied in both the recent rezoning of the land and in current the *Mid-North Coast Strategy*. Had the removal of vegetation not been regarded as acceptable, then presumably the rezoning of the land for these purposes and the designation of the land for urban development in the *Mid-North coast Regional Strategy* would not have been appropriate.

Further, the proposal specifically involves the removal of vegetation which is generally of lower conservation value from the site, and deliberately protects the most ecologically valuable vegetation and habitats (in accordance with the LEP and the *Regional Strategy*). This approach is consistent with habitat retention and protection on adjoining developments, providing an appropriate response to potential “*cumulative impacts*”.

The proposal at South West Rocks has already addressed the “*degradation of existing habitats and movement corridors*”, and provides for the protection and enhancement of the most important areas of vegetation and habitat within the *Conservation Area*.

In this regard:

- approximately 37% of the subject site (14.9ha) is to be protected for the purposes of biodiversity conservation, in a *Conservation Area* which is to be rehabilitated and ultimately dedicated (to Council or the DECCW) for permanent conservation purposes;
- the proposal includes the enhancement of vegetation within the *Conservation Area* (pursuant to a VMP), involving *inter alia* the enhancement (rather than the “*degradation*”) of “*existing habitats*”;
- the maintenance of the southern half of a riparian corridor along Saltwater Creek to provide a movement corridor across the subject land between Saltwater Lagoon and the golf course; and
- the provision of stormwater treatment features in the eastern part of the subject site which will facilitate the movement of Wallum Froglets between their core habitat in the northeastern part of the subject site and land to the immediate south (to the extent that Wallum Froglets make such movements).

The contribution of the proposed development on the subject site to the removal of native vegetation and/or to habitat degradation at this general location is regarded as of limited concern given:

- the extent of habitats and resources to be retained on the subject site in the *Conservation Area*;
- the extent of native habitat and resources conserved in the immediate and general locality, including within extensive National Parks;
- the information base and considerations which were part of the process of determining the appropriate zoning of the subject land in 2009 and in developing the *Mid-north Coast Regional Strategy* as a 'whole of government' planning approach *inter alia* to South West Rocks; and
- the native biota, particularly threatened species, present or likely on the subject site and the distribution of relevant habitats for those biota.

In respect of those considerations, the proposed development is regarded as an appropriate balance between development opportunities and conservation goals, including in a “*cumulative*” sense. As indicated in the *Mid-north Coast Regional Strategy*, development of the subject site as currently proposed (which is consistent with both its recent rezoning and the *Strategy*) will assist in “*limiting growth to the agreed growth areas of towns and villages leaving green belts between settlements*” and will *inter alia* “*limit development in places constrained by .. high scenic and conservation value*”.

With respect to alleged “*movement corridors*”, this issue was dealt with at length in the original InSites 2009 *Report*. No relevant “*corridors*” (other than that which might encompass Saltwater Creek and its **immediate** environs) are present across the subject site, or other proposed development sites in the immediate vicinity. There will be no relevant “*cumulative impacts*” on any real “*movement corridors*” at this general location.

As discussed below (in Chapter 3), the alleged “*regional corridor*” which encompasses *inter alia* the subject site is not a matter of fact, but of desire. Much of that corridor to the immediate west of the subject site is occupied either by the golf course or by existing residential development. Any functionality that corridor may have is dubious with respect to wildlife movements for species other than those which are capable of moving through urban areas in any case.

Conversely, the maintenance of the *Conservation Area* in the northern part of the subject site, as well as that proposed on the land to the immediate north, will provide a broad (approximately 300m wide) band of retained and conserved native vegetation along Saltwater Creek. This approach will provide a “*movement corridor*” for wildlife between the golf course and Saltwater Lagoon, and will also provide *insitu* habitat for a range of native biota, including threatened species known or likely to occur on the subject site.

The proposed development of the subject site and adjoining lands represents an appropriate balance between residential development requirements and biodiversity conservation outcomes, and is consistent with the recent LEP for the lands and the *Mid-North Coast Strategy*, both of which are supported by the DoP and other government agencies.

2.3 Saltwater Lagoon & Saltwater Creek

As noted by the DoP, “*Saltwater Lagoon and Saltwater Creek provides breeding, foraging and shelter habitat to [sic] a number of threatened species, including the Wallum Froglet*”.

That situation was acknowledged and addressed in the Environmental InSites 2009 *Ecological Issues & Assessment Report*, and original EAR and *Concept Plan*. The necessity for stringent stormwater management and control measures (relating both to water quality and water volumes) was a key feature of discussions amongst the project team during the iterative process that lead to the ultimate design elements of the proposal in the *Preferred Project Plan*.

Further, it should be noted that the 50m (horizontal) ‘buffer’ identified in the LES from the 1:100 flood line on the subject site (to protect Saltwater Creek and Saltwater Lagoon) has been respected, and encompasses a substantial part of the *Conservation Area* on the subject site. This area of native vegetation provides further protection to Saltwater Creek and Saltwater Lagoon, although it is not intended that any notable discharge of nutrients or contaminants (above nature levels) result from the proposed development.

Whilst the proposal may involve some minor and limited impacts “*on the functioning of the nearby Lagoon and Creek*”, these have been acknowledged in the *Environmental Assessment Report*. The potential for such impacts has been addressed:

- by appropriate urban design (maintaining substantial buffers to the Creek and Lagoon); and
- by the incorporation of comprehensive water management and water quality control features into the project.

The “*mitigation measures to minimise such impacts*” have already been detailed in the EAR, and in the associated ecological and stormwater *Reports*. Those measures, as previously documented, include:

- the use of ‘*Water Sensitive Urban Design*’ (WSUD) principles in the whole of the development, including the capture and re-use of stormwater on individual allotments;
- the direction of road runoff into bio-retention swales within the development to facilitate the cleaning of stormwater runoff and infiltration into the groundwater table;
- the use of detention basins within the development area both to detain and treat stormwater, and also to provide further opportunities for the infiltration of stormwater into the groundwater table; and

- the use of bio-retention swales along the lower (northern) parts of the development both for the purposes of detaining stormwater and providing appropriate discharge volumes and rates and to treat stormwater prior to its discharge either by overland flow or by infiltration into the groundwater table.

It should be noted that (as discussed in some detail below) the primary habitat for the Wallum Froglet is located in the wet heath vegetation in the northeastern part of the subject site, not along Saltwater Creek or in Saltwater Lagoon *per se*. The Wallum Froglet does not, in fact, inhabit such water bodies but utilises shallow and often ephemeral swampy areas characterised by sedges, small shrubs and wallum, particularly where the water is slightly acidic.

Given those circumstances, as discussed in the original EIAR, the Wallum Froglet is located primarily within the northeastern low-lying parts of the subject site, rather than along Saltwater Creek itself or within Saltwater Lagoon.

As also discussed in the EIAR, the stormwater treatment features in the eastern part of the subject site have been designed specifically *inter alia* to provide potential movement habitat for Wallum Froglets, connecting the primary habitat on the subject site (in the northeastern corner) to the cleared paddock to the immediate south. In the event that Wallum Froglets move between the subject site and the paddock to the south, it is intended that the proposed development will not prevent such movements. It should be noted, however, that the cleared paddock to the immediate south has been identified for future development purposes.

2.4 The Wetlands Protection Zone

The 7(a) - *Wetlands Protection* zone, which surrounds Saltwater Creek and Saltwater Lagoon has been established (as noted by the DoP) “*to protect water quality and supply so that the continuing operation of wetland eco-systems are not jeopardized*”. That is precisely what the *Conservation Area* on the subject site will do.

Furthermore, the proposal has been designed specifically to provide the best available water quality controls so that the stormwater that leaves the subject site does not contain elevated levels of nutrients or contaminants. Indeed, it is intended that parts of the stormwater management system will be used by the Wallum Froglet for foraging and/or other purposes.

As discussed above, and as detailed in the *Martens Report* and in the EAR, the proposal incorporates features and measures designed specifically “*to protect water quality and supply*” in order to protect the *Wetlands Protection Zone*, Saltwater Lagoon, Saltwater Creek and the Wallum Froglet.

2.5 Swamp Sclerophyll Forest on Coastal Floodplains

The vegetation identified on the subject site as *Swamp Sclerophyll Forest on Coast Floodplains* (the SSFCF community), which is mapped in the InSites 2009 *Report* as Broad-leaved Paperbark Open Forest *Fluvial Variant*, is located adjacent to Saltwater Creek along the northern boundary of the subject site at South West Rocks. That community is located entirely within the proposed *Conservation Area* on the subject site (Figure 8 of the InSites 2009 *Report*), and is separated by a minimum of approximately 50m from any proposed development areas. The intervening vegetation, therefore, will function *inter alia* to protect that community.

Further, the proposed development has specifically incorporated a range of 'Water Sensitive Urban Design' (WSUD) measures and features intended to maintain water quality and soil water conditions. This design approach was adopted in order to minimise impacts on swamp communities, including the SSFCF community, downslope and downstream of the proposed development. In addition, as the SSFCF community is located within the *Conservation Area*, it will be protected because general human access into the *Conservation Area* is neither proposed nor will be encouraged.

The *Vegetation Management Plan* (VMP) which is to be prepared for ongoing management of the *Conservation Area* on the subject site will document an array of rehabilitation and enhancement measures for the SSFCF. However, the development design, including controlled access along pedestrian walkways and bicycle paths, and the limited extent of disturbance within the *Conservation Area* (involving only the northern access road), will ensure protection of the SSFCF community.

2.6 Wallum Froglet and Squirrel Glider Foraging Habitat

The DoP *Key Issues* document "*suggests that Wallum Froglet and Squirrel Glider foraging habitat is widespread across the site*".

To the **contrary**, however, the areas of preferred or quality "*foraging habitat*", and indeed other habitat and resources, for the Wallum Froglet and Squirrel Glider, are **relatively concentrated** on the subject site. They are **NOT** "*widespread across the site*" (emphasis added).

2.6.1 Squirrel Glider

With respect to the Squirrel Glider:

- the **overwhelming majority** of relevant habitat for this species (*ie* open forest and woodland vegetation), including **all** of that within which Squirrel Gliders have been recorded, is located within the *Conservation Area* in the northwestern part of the subject site;

- the narrow band of modified re-growth woodland through the central part of the subject site (which is to be removed for development) represents only a **minor** and **marginal** element of potential habitat for this species;
- the areas of heath and shrubland (which characterise most of development area on the site) do **not** constitute relevant habitat for this species; and
- the area of Swamp Oak along the artificial drainage line in the southeastern part of the site, and the small area of Swamp Oak vegetation in the southeastern corner, **do not** constitute relevant habitat for the Squirrel Glider.

Based on those observations, the **overwhelming majority** of habitat for (*ie* open forest and woodland vegetation) and **important** habitat features (particularly hollow-bearing trees) for the Squirrel Glider will be **retained** within the *Conservation Area*, and protected and managed **in perpetuity**.

Specific measures in this regard will include:

- retention of the overwhelming majority of hollow-bearing trees within the *Conservation Area* on the subject site;
- retention of the overwhelming majority of known habitat for the Squirrel Glider (and all of that in which the species was recorded) within the *Conservation Area*;
- the provision of supplementary hollow resources either by the re-use of salvaged tree-hollows removed from the development footprint or by the provision of artificial nest boxes; and
- management of the *Conservation Area* in perpetuity *inter alia* for the purposes of providing habitat and resources for the Squirrel Glider.

Given those circumstances, the potential impacts which could be imposed upon the Squirrel Glider as a result of subdivision and development of the subject site as proposed are **minimal**.

2.6.2 Wallum Froglet

Similar considerations apply to the Wallum Froglet.

Relevant habitat for the Wallum Froglet is located primarily in the low-lying portions of the subject site, predominantly in the northeastern part of the land where moist soil conditions, acidic conditions and swampy habitats are prevalent. Whilst Wallum Froglets undoubtedly use other parts of the subject site on occasions during periods of high rainfall, these areas only constitute peripheral or marginal habitat used on an occasional basis, dependent upon appropriate climatic circumstances.

Specific measures which have been incorporated into the project at South West Rocks (either by way of design features or by ongoing management) for the purposes of protecting the Wallum Froglet and its habitat include:

- retention of **all** of the important and significant habitat for Wallum Froglets in the northeastern parts of the subject site;
- the **retention** of much of the potential or likely foraging and 'home range' for Wallum Froglets in slightly higher adjoining parts of the *Conservation Area*;
- the **maintenance** of appropriate stormwater discharge regimes including both water quality and overland flow discharge volumes and rates;
- the provision of features designed *inter alia* to facilitate the infiltration of stormwater runoff into the groundwater layer; and
- the provision of artificial stormwater features (the bio-retention swales and detention basins) designed to provide supplementary habitat for Wallum Froglets.

Given those circumstances, the potential impacts which could be imposed upon the Wallum Froglet as a result of subdivision and development of the subject site as proposed are also **minimal**.

2.6.3 Biodiversity Values

The proposed subdivision and subsequent development of the subject site at South West Rocks satisfies the "*maintain or improve*" principle on the basis that:

- development has been concentrated primarily in areas which have long been modified by the removal of existing forest vegetation and ongoing slashing for agricultural purposes;
- approximately 14.9ha (37%) of the subject site is to be dedicated for biodiversity conservation purposes, and will be subjected to habitat enhancement measures including weed removal and control, and management of human access;
- the development design, including particularly the stormwater management regime, has been specifically designed to both protect the stormwater quality and existing groundwater flows, and to provide supplementary habitat for threatened biota such as the Wallum Froglet;
- a commitment has been made to the enhancement of habitat and resources for Squirrel Gliders within the *Conservation Area* on the subject site; and
- riparian vegetation along Saltwater Creek is to be retained and managed, and an east-west wildlife corridor along the watercourse (partly on the subject site and partly on land to its immediate north) will also be maintained.

The rehabilitation and dedication of a substantial area of land (37% of the subject site), which will complement the retention of native vegetation on the southern side of the development area to the north, constitutes a significant benefit to the environment in the long-term.

2.6.4 Conclusions

It is to be noted in particular that the rezoning of the subject site and of other lands in the immediate vicinity has determined that the southern portion of the site is appropriate for residential development and that the northern part of the site should be retained for biodiversity conservation purposes. That rezoning was based *inter alia* on a *Local Environmental Study* (LES) prepared by Connell Wagner (2008), which relied on an array of previous ecological studies (Parker 2002; Kendall & Kendall 2003; Connell Wagner 2005). A supplementary survey undertaken in 2008 by Connell Wagner for the Wallum Froglet, including *inter alia* on the subject site, also contributed to the final rezoning design for the subject site.

The rezoning of the land into its current conformation (as gazetted in August 2009), including in part for residential development, reflects the considered opinion of the DoP, having had the benefit of input from a range of ecologists and the DECCW. Similarly, the *Mid-North Coast Regional Strategy* which was prepared in cognisance of these issues and data, and (presumably) on the basis *inter alia* of advice from the DECCW (given that it “represents the NSW government’s agreed position” on development in this Region), identifies the subject site as part of the “future urban growth areas”.

2.7 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 Guidelines* state that the “objective of the assessment process is to provide information to enable decision makers to ensure that developers deliver the following environmental outcomes”:

- 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 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”.

2.7.1 Maintain or Improve Biodiversity Values

The proposed development of the subject site at South West Rocks has attempted, as far as is reasonably practicable, to “*maintain or improve bio-diversity values*” through the appropriate location of development activities and through the incorporation of measures to retain, protect and enhance areas of high biodiversity value.

In this regard:

- much of the vegetation within the development footprint has previously been slashed and/or used for agricultural pursuits over a long period;
- areas of high biodiversity value have been identified and incorporated into the proposed *Conservation Area*;
- ‘best practice’ stormwater management and treatment features have been incorporated into the project to both ensure that water quality and quantities are maintained and that habitat for threatened biota is maintained within the *Conservation Area*, and is provided within the water treatment elements of the project;
- the proposal has identified a commitment to the maintenance, rehabilitation and enhancement of vegetation within the *Conservation Area* to “*improve bio-diversity values*”; and
- the proposal also has incorporated measures to control human access into the *Conservation Area* in order *inter alia* to “*maintain .. bio-diversity values*” in that part of the site.

The *Conservation Area* on the subject site is proposed to be transferred to the ownership of Council or the DECCW, as a contribution to the maintenance of biodiversity values at this location. The rehabilitation and enhancement of any disturbed areas within the *Conservation Area*, and ongoing management pursuant to the *Vegetation Management Plan* (VMP) identified in the InSites 2009 *Report* and in the *Statement of Commitments* for the project, will contribute in a positive manner to the maintenance and improvement of biodiversity conservation values at this location.

On the basis of the protection and long-term management and enhancement of the *Conservation Area*, which constitutes the overwhelming majority of habitat for threatened species known to occur on the subject site or likely to be present, the proposal does achieve a “*no net impact on threatened species or native vegetation*” outcome. Protection of that land in perpetuity (by dedication or otherwise), and its enhancement and management, are acknowledged as appropriate means to compensate for the loss of other vegetation (particularly vegetation of less biodiversity conservation value), as is the case on the subject site at South West Rocks.

2.7.2 Biological Diversity and ESD

As noted above, the proposed development has been designed to retain and protect (as well as to enhance) those portions of the subject site which contain the greatest “*biological diversity*” values. Much of the area to be developed has been significantly disturbed in the past, and the areas of highest biodiversity conservation value (located along the northern parts of the subject site) have been retained and are to be managed and rehabilitated where necessary.

The proposed development achieves the goals of *Ecologically Sustainable Development* (ESD) to a reasonable and appropriate level *inter alia* by:

- retaining the most valuable biodiversity vegetation and habitats on the subject site (occupying approximately 14.9ha or 37% of the site);
- dedicating those lands for biodiversity conservation purposes in perpetuity;
- providing for the preparation and implementation of a *Vegetation Management Plan* (VMP) for those conservation lands;
- incorporating appropriate design features (such as peripheral roads and ‘best practice’ stormwater quality and quantity control measures) to minimise the potential for adverse impacts upon retained vegetation;
- providing residential development in an appropriate location which will *inter alia* reduce development pressures at other locations in the general locality; and
- involving the application and implementation of relevant and appropriate sustainability design features (eg by the application of BASIX in any subsequent development of the site) to achieve ESD goals and outcomes.

2.7.3 Areas of High Conservation Value or Critical Habitat

There are no areas of “*critical habitat*”, as defined in the *Threatened Species Conservation Act 1995* (TSC), on the subject site at South West Rocks.

As noted in detail above, those “*areas of high conservation value*” on the subject site are incorporated into the *Conservation Area* along the northern parts of the site. The *Conservation Area* occupies a total area of 14.9ha (which represents 37% of the subject site) and contains a number of valuable plant communities and fauna habitats, including most or all of the key resources for the Squirrel Glider, Wallum Froglet, microchiropteran bats, nocturnal birds and other threatened species.

By contrast, the areas of the subject site proposed for development activities are of considerably less value or potential significance with respect to biodiversity conservation. In this regard:

- there are few hollow-bearing trees present in the proposed development area (and those to be removed for development purposes will be either salvaged and relocated into the *Conservation Area* or will be replaced, in the *Conservation Area*, by artificial nest boxes);

- much of that area has been slashed and/or cleared of native forest vegetation;
- there are no unique or special features in the area proposed for development activities; and
- threatened species records are largely confined to the proposed *Conservation Area*.

It is not anticipated that any threatened biota would be dependent or reliant on those portions of the site proposed for development activities. Indeed, it is considered that there would be little activity by most threatened biota over most of those portions of the site. The habitats and resources present in that part of the site are not critical to the survival of any of the threatened known or likely to occur on the site.

Further, the development area does not provide important connectivity or 'movement corridors' for any relevant biota. Land to the southwest has recently been developed for residential purposes, and land to the southeast is currently cleared agricultural grassland, which is also intended for residential development (in the *Mid-North Coast Regional Strategy*). Land to the west is existing residential development and golf course, and provides no connectivity for any native biota.

No threatened biota would be subjected to a "*significant effect*" as a result of the proposed development of the subject site, noting particularly the retention and on-going management of the *Conservation Area* as proposed.

2.7.4 Prevent the Extinction of Threatened Species

As noted above, the overwhelming majority of important or significant habitats and resources for those threatened biota known or likely to occur on the subject site are located within the open forest communities and/or the swamp and heathland in the northern parts of the subject site. These areas are to be retained in the *Conservation Area* on the site, and are to be dedicated for biodiversity conservation purposes in perpetuity.

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

2.7.5 Long-Term Viability

As noted above, the majority of important or significant vegetation and/or habitats on the subject site are to be retained in the considerable *Conservation Area* which occupies the northern part of the subject site. That area (approximately 14.9ha of native vegetation) is to be protected and managed in the long-term for biodiversity conservation purposes, and will thus "*protect the long-term viability of local*

populations of [all] species, populations or ecological communities” of relevance.

It is to be noted that the *Conservation Area* provides protection for Saltwater Creek and Saltwater Lagoon, and increases the level of protection for the SEPP 14 wetland. As the *Conservation Area* is contiguous with dedicated conservation lands around and including Saltwater Lagoon, the proposal contributes in a positive manner to the extension of biodiversity conservation values at this location and to ensuring that the “*long-term viability*” of local biota is ensured. Dedication of the *Conservation Area* to the DECCW or to Council will also ensure the “*long-term viability*” of that land.

2.7.6 Matters of National Environmental Significance

The relevant *Matters of National Environmental Significance* (MNES) were considered in the original *Ecological Issues Report* prepared for the project (InSites 2009).

As is the case with respect to threatened biota listed on the TSC Act, the relevant portions of the subject site are located along the northern parts of the land, and these areas are contained within the proposed *Conservation Area* on the site.

With respect to the listed MNES (see Appendix F of the original InSites 2009 EIAR):

- there will be no impact with respect to nuclear activities;
- there will be no impact with respect to Commonwealth lands or the Commonwealth marine environment;
- there will be no impact with respect to World Heritage Properties;
- there will be no impact with respect to Ramsar Wetlands; and
- there will be no “*significant impact*” on any listed threatened species or “*migratory*” species listed in the EPBC Act.

With respect to threatened and/or migratory species, it has been noted that the Grey-headed Flying Fox has been recorded foraging on the subject site (particularly within the *Conservation Area*) and that sixteen species listed as “*migratory*” on the EPBC Act have been recorded on the site (InSites 2009). As also noted in that *Report*, none of those species would reside on the subject site, particularly in those areas which are proposed for development activities. In the event that any species listed in the EPBC Act as either threatened or migratory occur or utilise the subject site, such species will be satisfactorily accommodated within the *Conservation Area* on the subject site, as well as in conserved lands to the immediate north and northwest.

No MNES will be adversely affected to any significant or relevant extent as a result of the proposed development of the subject site at South West Rocks. The proposal does not constitute a “*controlled action*” as defined in the EPBC Act, as there is no requirement for “*referral*” of the proposal to the Commonwealth or for an approval by the Commonwealth Minister for the Environment.

2.8 Hollow-bearing Trees

The hollow-bearing trees located within the proposed residential area have been accurately surveyed and mapped (Appendix C). Just six hollow-bearing trees are located in the development area, whilst a substantial number of hollow-bearing trees are located within the *Conservation Area*, particularly in the western half within the Northern Scribbly Gum and the Needlebark Stringybark vegetation community types. All hollow-bearing trees within the *Conservation Area* will be retained.

As noted in Appendix C, there are only six hollow-bearing trees within the proposed development area, of which three are paperbarks which usually produce only small and generally shallow tree-hollows, other than when in decay (see Appendix D). Conversely, the Scribbly Gums on the subject site produce relatively abundant tree-hollows of various sizes (Appendix D). However, only three individuals of the Scribbly Gum within the proposed development area were identified with tree-hollows, whereas there are a substantial number of hollow-bearing trees (including Scribbly Gums and Needlebark Stringybarks) within the *Conservation Area*. Several of the six hollow-bearing located within the development footprint are in a state of serious decay or decline, and are not likely to survive, even in the short-term.

It is also noted that the proposal includes a commitment to the collection and re-use of any tree-hollows which must be removed and/or the deployment of artificial nest boxes to replace hollows lost for development purposes (InSites 2009).

Furthermore, the retention of hollow-bearing trees as isolated individuals within parks or other areas within residential development is not regarded as a particularly appropriate or valid approach from an ecological or biodiversity conservation perspective. Many native (including threatened) species would be unlikely to use hollow-bearing trees within dense urban residential areas, and such hollows are often usurped by introduced and/or aggressive native species typical of urban environments (eg the Indian Mynah and the Rainbow Lorikeet) and/or are often used by introduced honey bees.

The retention of individual hollow-bearing trees within parks or reserves amongst dense urban environments is not regarded as an appropriate or efficacious conservation approach.

A more appropriate and efficacious approach is to salvage and re-use tree-hollows which need to be removed for urban development by segmental dismantling of hollow-bearing trees, and by subsequently attaching the salvaged hollows in trees within the *Conservation Area*. Where tree-hollows from the residential area cannot be salvaged and re-used, those trees should be used as logs within the *Conservation Area*, and replacement artificial nest boxes installed in their place.

Furthermore, the loss of six hollow-bearing trees from the development portion of the site is not regarded as of any significance or concern, because:

- there is a substantial hollow-bearing tree resource retained within the *Conservation Area* on the site;
- the surrounding landscape contains very substantial numbers of hollow-bearing trees, not least within the extensive area of Hat Head National Park;
- those species likely to be dependent on hollow-bearing trees are wide-ranging and highly mobile, in any case; and
- the retention of hollow-bearing trees within a dense residential is not efficacious because of disturbance and/or competition from native and introduced species.

It is recommended that the *Hollow-bearing Tree Protocol* contained in the amended *Statement of Commitments* for the *Preferred Project Plan* (PPP) for the subject site at South West Rocks be adopted as a *Condition* of the approval.

2.9 Public Submissions

The Department of Planning (in *Attachment 3* to its correspondence of the 19th of November 2009) provides a “*Summary of Issues Raised in Public Submissions for MP08_0167*”.

Matters raised in public submissions include *inter alia* cumulative effects, the *Precautionary Principle*, Wallum Froglets and other threatened species, introduced species (pests and weeds), alleged “*large-scale ancillary development*” in the *Conservation Area*, increases in “*nutrients and effluent run-off*” and mosquitoes.

All of these matters have been addressed in the responses provided in this *Report* to issues raised by the DoP, the DECCW, Council and/or the Northern Rivers CMA.

With respect to the *Precautionary Principle*², the proposed development of the subject site at South West Rocks has employed a range of measures (including elements of the development design, as well as specific impact amelioration and environmental management measures) to avoid any “*threats of serious or irreversible environmental damage*” in those parts of the subject site to be retained. Similarly, the environmental management measures associated with the project, including *inter alia* stormwater treatment and water quality control measures, are intended to avoid the imposition of “*serious or irreversible environmental damage*” on adjoining habitats and resources, including those along Saltwater Creek and in Saltwater Lagoon.

² The *Precautionary Principle*, as defined in the *Protection of the Environment Administration Act 1991*, states that “*if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation*”.

Thus, the proposed development of the subject site at South West Rocks, including the retention of 37% of the subject site for biodiversity conservation purposes and the implementation of an array of measures to minimise or avoid damage to the adjoining environment, has:

- avoided “*threats of serious or irreversible environmental damage*” in the first instance; and
- applied relevant “*measures to prevent environmental degradation*” in any case.

The issue of introduced pests and weeds has been addressed in some detail elsewhere in this *Response Report* (Chapters 3.4.2 and 3.5.3). Additional measures have also been identified for the control and management of domestic pets in order to minimise the potential for adverse impacts to be imposed upon native biota as a result of predation by these species (Chapter 3.5.3).

With respect to introduced weed species, detailed consideration of that issue is provided below (Chapter 3.2.4). Implementation of the VMP within the *Conservation Area* is intended *inter alia* to detect any weed species and to provide for the ongoing control and management of weeds to avoid adverse impacts upon that area. Similar considerations apply with respect to pest species, including domestic pets.

3 DECCW ISSUES

3.1 Introduction

The Department of Environment, Climate Change & Water (DECCW) had responded to the DoP in respect of the *Environmental Assessment Report* (EAR) and associated *Ecological Issues & Assessment Report* (EIAR) for the proposed residential subdivision on the subject site at Belle O'Connor Street, South West Rocks, in a letter received by the DoP on the 4th of November 2009.

The DECCW reviewed the EAR and the accompanying documentation (including the EIAR), and provides two *Attachments* containing an array of issues and recommendations, being:

- the “assessment” by the DECCW of the proposal regarding an array of matters, relevantly including biodiversity conservation; and
- an *Attachment* containing recommended amendments to the *Statement of Commitments* for the project.

The DECCW identifies a number of “*key concerns*” which (relevantly) include:

- an assertion that there is “*Inadequate detail provided in regard to flora and fauna assessment*”;
- a claim that the “*Director General’s Requirements in regard to wildlife and riparian corridors and offsets are not adequately addressed*”;
- “*Inadequate consideration to potential impacts of Climate Change including sea level rise, flooding and ground water management*”; and
- the potential for “*Impacts on Hat Head National Park*”.

These issues and concerns are addressed in the following parts of this Chapter in the order and under the headings provided by the DECCW.

3.2 Flora & Fauna Assessment

The DECCW asserts that the “*information provided in the EA is considered inadequate in regard to flora and fauna in that the Director General’s Requirements (DGR’s 9.1 to 9.4) have not been adequately addressed*”. The DECCW assessment proceeds to detail the alleged inadequacies, which are addressed in the subsequent parts of Chapter 3.2 of this *Report*.

3.2.1 Flora Issues

The DECCW states that the “*methods described by Fanning (2009) that were used to survey flora on the site appear to be inconsistent with the DEC 2004a Survey Guidelines*”.

The Guidelines

It is **crucial** in this discussion to note that the “*DEC 2004a Survey Guidelines*” are, as indicated by their title, “*Guidelines*”.

They are **not** a statutory requirement. They are **not** ‘mandatory’. They are **not** a ‘standard’. They are **just** “*Guidelines*”.

In any case, the subject site and surrounding lands have been surveyed by at least seven different consulting organisations over a period of at least eight years (Parker 2002; Kendall & Kendall 2003; Umwelt 2004; ERM 2006; Connell Wagner 2005, 2008; Cumberland Ecology 2008; Environmental InSites 2009).

The data provided in the InSites 2009 *Report*, on which the conclusions contained therein are based, are an accumulation of all of those data and investigations. Importantly, the data on which the conclusions with respect to flora on the subject site, contained in the InSites *Report*, are **not** confined to those obtained by Environmental InSites on the subject site in 2008/9, but include reference to other investigations. It is to be noted that none of those studies have revealed the presence of any threatened plant species on the subject site or any other EECs than that identified by Environmental InSites.

Given those circumstances, and the substantial amount of information which has been obtained on the subject site over an extensive period by a number of consultants, a ‘non-consistency’ with every detail of the *DEC 2004a Draft Survey Guidelines* is not of relevance or concern.

It should also be noted that the *Guidelines* themselves state that “*not all the survey methods .. will be appropriate or necessary in all situations*”. No further flora surveys of the subject site at South West Rocks are necessary or warranted.

Vegetation Community Surveys

The DECCW indicates that there is “*no evidence that communities 4 and 9 were surveyed*”.

However, the DECCW also “*notes that these communities will not be directly impacted upon by the development as they are to be retained [in their entirety] in the 7(b) Environmental Protection Zone (EPZ)*”. On that basis, there is no need to undertake detailed survey quadrats in those communities, although general observations were made during general walked surveys of the site and locality.

The DECCW indicates that the “*Environmental Assessment refers to their [ie communities 4 and 9] higher biodiversity values relative to the other areas within the development without providing supporting evidence*”.

The statement in the EIAR regarding relative “*biodiversity value*” is made on the basis of:

- walked surveys of the whole of the subject site, and inspection of other adjoining lands;
- the observations of other ecologists with respect to relative conservation values in the vicinity;
- the considerable experience of the relevant ecological consultants, including the principal author of the *InSites 2009 Report*, with ecosystems, habitats and threatened biota in NSW, including on this part of the NSW coast; and
- the designation of “*endangered ecological communities*” in NSW, which include some of the relevant vegetation in the *Conservation Area*.

As also noted by the DECCW, the proposed *Environmental Protection Zone* on the subject site does “*appear to contain a sample of all the vegetation communities apart from the open forest woodland broad-leaved paperbark sand plain variant*”. Again, it would appear that the DECCW believes that the *Environmental Protection Zone* (ie the *Conservation Area*) is appropriate.

The DECCW makes further comments regarding the sampling intensity for vegetation communities on the subject site, and indicates that the *DEC 2004a Draft Guidelines* document “*recommends a species area curve to determine adequate survey effort*”. It is noted that:

- this is **merely** a ‘recommendation’. It is **not** even a ‘requirement’ of the *Guidelines*;
- furthermore, it is **not** a statutory ‘requirement’, in any form; and
- this “*recommendation*” is **rarely** applied in any Part 3A (or any other) application, and was not applied for example in the Rosarii project at South West Rocks, recently approved by the DoP.

The substantial array of detailed flora surveys, including transects, quadrats and Random Meander surveys, which have been undertaken on the subject site are regarded as more than adequate to have fully sampled the vegetation and the plant species present.

Random Meander Surveys

The DECCW provides further criticisms regarding:

- the use of “*random meanders .. to search for targeted threatened flora species*”;
- the non-provision of a “*list of the targeted threatened flora species*”;
- the lack of “*a location and duration of these targeted searches*”; and
- the lack of any “*additional species recorded from the random meanders*”.

The 'Random Meander' search technique is a standard survey technique which is used widely by the ecological consulting industry, and (incidentally) by the DECCW, in order to search *inter alia* for threatened flora species.

Given the substantial investigations which have been undertaken on the subject site and immediately adjoining lands by a number of environmental consultants over a number of years, it can be stated that:

- Random Meander searches have been conducted over a very substantial portion of the subject site, and virtually all of the proposed development area;
- the “*targeted surveys*” for threatened plant species involved surveys for **all** possible threatened flora species which could conceivably occur on the subject site or on the locality; and
- **all** flora surveys (including so-called 'Random Meander' surveys) are 'targetted' surveys for potentially relevant threatened species.

Further, the “*additional species recorded from the random meanders*” are in fact identified in Appendix E of the original 2009 EIAR. Those plant species listed in that table which have no annotation in any of the quadrat columns were recorded elsewhere (*ie* during the Random Meander surveys).

The Biobanking Calculator

The *Threatened Species Survey & Assessment Guidelines* “*recommend using the biobanking credit calculator to determine the threatened species possibly occurring on the site*”.

Use of the *Biobanking Calculator* for this purpose:

- is not a standard 'requirement' or practice;
- is not usual; and
- is not necessary.

The DECCW Wildlife Atlas was used to identify threatened species known or previously recorded on the subject site and in the locality. The *Biobanking Calculator* does not provide any additional relevant information on threatened biota that could potentially be present. Further, the surveys which have been undertaken by Environmental InSites and other ecological consultants at this locality have involved consideration of **any** possible threatened species which could potentially occur on the site.

3.2.2 Fauna Issues

The DECCW commentary asserts that for a “*number of fauna groups, the survey does not comply with DECC 2004a Survey Guidelines*”.

The implied 'requirement' of the DECCW for the conduct of further surveys for native (including threatened) biota is not appropriate given:

- the substantial number of investigations which have been undertaken on the subject site and nearby lands by a range of ecological consultants over a number of years (Parker 2002; Kendall & Kendall 2003; Umwelt 2004; ERM 2006; Connell Wagner 2005, 2008; Cumberland Ecology 2008; Environmental InSites 2009);
- the nature and condition of vegetation on the subject site, particularly within the proposed development area;
- the protection of nearly 15ha of high quality and valuable habitat within the *Conservation Area* on the site; and
- the distribution of threatened biota predominantly within the *Conservation Area* on the site.

Further, strict and full 'compliance' with the *Guidelines* is **not** a statutory requirement, and is not even a 'requirement' of the *Guidelines* themselves. Individual fauna groups are considered in some further detail below.

3.2.3 Microchiropteran Bats

The DECCW indicates that the "required surveyed methodology for microchiropteran bats" (emphasis added) has not been undertaken on the subject site. In this regard,

- microchiropteran bat surveys were undertaken using Anabat detectors on four different nights under appropriate weather conditions. That satisfies the *Guidelines* given the nature and condition of the proposed development area. Details are provided in the original InSites 2009 *Report*.
- the majority of land proposed for development activities is likely to be of little relevance for any of the potential threatened microchiropteran bats which could occur in the locality. The area to be developed are potentially only a small part of a substantially greater foraging 'home range' for such species (noting that most of this area is heath in any case);
- there are no significant resources or habitat present on the proposed development area that would be of particular relevance for any other threatened microchiropteran bat species, even if present; and
- the overwhelming majority of relevant or even potentially relevant habitat for any potential threatened microchiropteran bats is to be retained on the subject site in any case in the woodland habitats which characterise much of the *Conservation Area*.

Further, it is not considered likely that any additional threatened microchiropteran bats would be recorded within the development footprint on the subject site, given the nature and condition of the development portion of the subject site. Certainly, no such species could conceivably be reliant or dependent on the vegetation present within the development footprint.

3.2.4 Reptiles

The DECCW again indicates that the “*Survey Guidelines indicate a range of survey methods are required for reptiles*”.

However, as discussed in the InSites 2009 *Report*:

- there are no relevant threatened reptile species known from this immediate locality or in the habitats which could conceivably be affected by the proposed development on the subject site at South West Rocks; and
- appropriate surveys were undertaken on the site in any case, including Elliott trapping and widely dispersed diurnal habitat searches, over several years by a number of ecologists.

Diurnal fauna field surveys were undertaken by ecologists Cumberland Ecology and Environmental InSites on a total of 12 days (see Chapter 2 of the original EIAR) in November and December 2007 and April and May 2008. Notwithstanding that level of field investigations, no reptiles have been recorded on the site.

Further, other than the sand plain variant of the Broad-leaved Paperbark open forest/woodland community, the proposed *Conservation Area* on the subject site contains samples of all of the vegetation communities present on the subject site, and all of the important or significant communities. On that basis, habitat and resources for all reptiles species which could potentially occur on the subject site will be retained and protected in perpetuity within the 14.9ha of conserved land in the northern part of the site.

As noted elsewhere in this *Report*, that area of conserved land adjoins a similar area of land to be conserved for biodiversity conservation purposes on the southern side of development on the land to the immediate north, thus resulting in a substantial band of conserved habitats and resources *inter alia* for native reptile species.

3.2.5 Nocturnal Birds

The DECCW provides further criticism of the EAR and the EIAR with respect to the surveys conducted for nocturnal birds.

Again, however, the DECCW does not appear to take into account either:

- the full array of investigations which have been undertaken by an array of consultants over a number of years on the subject site and in the vicinity (Parker 2002; Kendall & Kendall 2003; Umwelt 2004; ERM 2006; Connell Wagner 2005, 2008; Cumberland Ecology 2008; Environmental InSites 2009); or

- the nature and condition of the subject site or the distribution of potentially relevant habitats.

No surveys have identified individuals of any of the potentially relevant threatened nocturnal bird species on the subject site or in the immediate vicinity. There is no evidence for the presence of species such as the Powerful or Masked Owls, and the Sooty Owl is not likely to be present given the nature of the subject site.

In any case, the overwhelming majority of potentially relevant habitat for most of the potential nocturnal threatened birds identified by the DECCW is located in the vegetation which is to be retained within the *Conservation Area* on the subject site. None of the vegetation to be affected by the proposed development is considered of significance or potential relevance for any threatened bird species, and the *Conservation Area* in any case retains and protects the best quality and potentially most important habitat types.

With respect to the Eastern Grass Owl, this species has not been recorded in the locality (DECCW Wildlife Atlas; other investigations). In any case, the overwhelming majority of even potential habitat for this species is located within the proposed *Conservation Area*. Similar considerations apply to the other threatened nocturnal species, particularly the Powerful and Masked Owls.

3.2.6 Wildlife Corridors

The DECCW criticisms state *inter alia* at the “*proposed development area has been identified as both a regional corridor and key habitat (Scotts 2003)*”, and then asserts that the “*EA does not adequately address these regional linkages or other connective importance*”.

The EAR and the EIAR by Environmental InSites (2009) considered the matter of wildlife corridors in general, and the alleged “*regional wildlife corridor*” in particular at some length. In this regard:

- the alleged “*regional corridor*” identified over the subject site by Scotts (2003) is hypothetical and idealistic;
- the alleged “*wildlife corridor*” traverses the adjoining golf course and the existing residential areas of South West Rocks (Figure 4). It cannot reasonably be regarded as a “*corridor*” for any native biota not capable of crossing highly developed areas in any case (for which it is, by definition, not required);
- the existing extent of residential development in the alleged ‘corridor’, as well as the extent of cleared land and land identified in the LEP and the *Regional Strategy* (Figure 4) for “*future urban growth*”, clearly preclude any real ‘corridor’ functionality; and
- the proposed development area on the subject site does not contain any “*key habitat*” of any relevance or significance. In any case, the relevant areas of valuable habitat on the subject site are to be retained and protected within the substantial *Conservation Area* on the land.

As discussed elsewhere in this *Report*, and as indicated in Figure 4, the purported “*regional corridor*” which *inter alia* incorporates the subject site (Scotts 2003) is highly fragmented, and traverses extensive areas of existing and some proposed future residential land. There is, in fact, no contiguous east-west wildlife corridor in the location identified by Scotts, and development of the subject site (and indeed of other land in the vicinity) will not result in any relevant fragmentation to or severance of any such “*wildlife corridor*”.

Furthermore, as also discussed elsewhere in this *Report* and in the original EIAR and EAR, the northern part of the subject site is to be retained for biodiversity conservation purposes. That land (occupying approximately 14.9ha or 37% of the site) constitutes the southern half of a broad (approximately 300m wide) tract of land along Saltwater Creek. That band of native vegetation and habitats will be dedicated for biodiversity conservation purposes in perpetuity, and constitutes a local east-west “*wildlife corridor*” connecting the open space of the golf course (at its western end) with Saltwater Lagoon (at its eastern end). This approach will provide both *in situ* habitat for a range of native biota (including many of the species identified within the subject site), as well as the resources and habitats necessary for any east-west movements which may occur at this location.

3.3 Cumulative Impacts

The proposed development doubtless contributes to “*cumulative impacts*” in this general vicinity. It is, as noted by the DECCW, one of several large residential developments currently under consideration in this locality, including those on lands to the immediate north and south. As noted in Chapter 2, such impacts are inevitable given that an increase in residential development is necessary, inevitable and also in accordance with the *Mid-North Coast Regional Strategy*.

The ‘contribution’ of each individual development in an area such as South West Rocks needs to be, and appropriately is, minimised within the project to the greatest extent reasonably practicable:

- by the implementation of appropriate high standard environmental management and protection measures; and
- by the use of appropriate development design elements in the project.

The proposal on the subject site at South West Rocks has sought to limit the potential for adverse impacts, as discussed in detail in the EAR, EIAR and other relevant documentation:

- by appropriate design of the residential area and its relationship to the *Conservation Area*, in accordance with the principles embodied in the rezoning of the subject site by Council and the DoP in 2008, pursuant to an LES process that *inter alia* specifically addressed ecological issues and values;
- by the retention of a substantial area of land (14.9ha or 37% of the site) in the *Conservation Area*;

- by the employment of current ‘best practice’ water management and treatment measures;
- by the protection and enhancement of vegetation and habitats in the *Conservation Area*; and
- the provision of supplementary habitats and resources for the use of native (including threatened) biota, including tree-hollows and/or artificial nest boxes for arboreal hollow-dependent fauna, and artificial wetlands for Wallum Froglets.

The proposals for “*developments within the protection zone (bike paths, BBQ areas and playgrounds)*” (other than bike and pedestrian paths on existing tracks outside of the wetlands areas) have mostly been removed from the *Conservation Area* on the site to satisfy the various agencies. This approach has been adopted notwithstanding that these activities are permissible under the zoning, and despite the proponent’s belief that such low-impact activities are both appropriate and desirable.

3.4 Potential Impacts on Hat Head National Park

The DECCW identifies concerns with respect to potential impacts on Hat Head National Park as a result of the proposal, noting that Hat Head National Park “*is recognised as having high conservation values*” and that the Reserve “*needs to be managed to conserve these values*”.

The DECCW notes specific concerns including inter alia:

- increased risk of bush fires “*both from illegal activity and demand for increased asset protection*”;
- an increase in the risk of impacts from “*pests and weeds*”; and
- “*An increased demand for access to the park including illegal activity such as trail bikes, rubbish dumping and encroachment*”.

The DECCW also notes that “*other impacts such as ground water and stormwater contamination, wildlife movements, discussed elsewhere, have the potential to impact on HHNP*”.

Detailed consideration of the principal “*concerns*” expressed by the DECCW is provided below. In general terms, however, it is noted that whilst the northeastern boundary of the subject site adjoins that part of Hat Head National Park which encompasses Saltwater Lagoon, there is NO residential development proposed in the immediate vicinity of the National Park. The closest that development on the subject site comes to Hat Head National Park is over 300 metres. All of the northeastern corner, and the other northern parts of the subject site, are contained within the proposed *Conservation Area*, which will afford a further level of protection for Hat Head National Park at this location.

Hat Head National Park itself occupies an area of 7,458ha, predominantly along the coast south from South West Rocks. Whilst very substantial portions of Hat Head National Park are essentially inaccessible, those portions of the National Park which abut the existing (including newly proposed)

residential areas of South West Rocks, Hat Head and Crescent Head, will obviously be exposed to some “*edge effects*” at least, and potentially to increases in human access to the Park.

Whilst this circumstance is essentially inevitable:

- it is a matter which needs to be addressed by the DECCW and the by general community at these locations, in any case;
- such impacts would not be significantly exacerbated by the proposed development, although it is accepted that additional residents on the subject site are likely to contribute, to some very limited extent at least, to some of the impacts raised by the DECCW;
- it needs to be acknowledged that National Parks are not created exclusively for biodiversity conservation. These are public lands, owned by the people of New South Wales, and they should be expected to accommodate human activities, including *inter alia* adjacent or nearby development; and
- the *Mid-North Coast Regional Strategy*, to which the DECCW is a ‘partner’, anticipates the increase in population at South West Rocks, and therefore has ‘accepted’ the additional (‘cumulative’) impacts on Hat Head National Park.

3.4.1 Risk of Bushfire

The proposed development at South West Rocks has been designed to ensure that **all** *Asset Protection Zones* are contained within the development area. Relevant measures in this regard include:

- the use of a peripheral road system along the whole of the northern boundary;
- inclusion of the APZ within the peripheral road reserve and the adjoining residential property boundaries; and
- the provision of facilities for fire-fighting so that incursions into the *Conservation Area* for the purposes of fire-fighting should be extremely limited, if necessary at all.

Importantly, **no** management of **any** vegetation adjacent to Saltwater Lagoon and/or Hat Head National Park will be required, **nor** will any of the *Conservation Area* be managed in a manner designed or intended to reduce bushfire risk.

The proposal has been designed and developed in accordance with the *Planning for Bushfire Protection 2006 Guidelines* (PBP 2006) promulgated by the Rural Fire Service (RFS). These are the current requirements pursuant to the *Rural Fires Act 1997*, and provide the appropriate guidelines and standards for APZs and building design in ‘bushfire prone’ areas. There is NO requirement to “ameliorate extreme and catastrophic fire events which are predicted to become more common due to *Climate Change*” (emphasis added), as suggested by the DECCW. There is, in fact, no standard or guideline in this regard, and no manner of predicting what purported “*extreme and catastrophic fire events*” may (or may not) occur.

That requirement of the DECCW to deal with hypothetical “*extreme and catastrophic fire events*” is **not** mandated by any statute and is **not** appropriate.

It is also to be noted that it is not a requirement to take into account “*illegal*” activities when dealing with a development proposal. To the contrary, case law has established that it must be assumed that persons will act in accordance with the law. Further, there is essentially no sensible means of dealing in a pre-emptive way with illegal activities other than, perhaps, by way of education.

3.4.2 Pests and Weeds

The DECCW expresses concern regarding the “*likely*” impact of “*dogs, cats and other pest species*” and “*recommends that covenants regarding pet ownership or control are included to ameliorate potential impacts*” which may arise.

In the first instance, it is relevant to note that:

- feral pests are an existing problem in National Parks, and need to be managed by the DECCW in any case;
- the proposed development at South West Rocks is NOT likely to exacerbate the feral pest problem in Hat Head National Park to any relevant or notable extent, if at all; and
- the problems with domestic pets arise predominantly because of the failure of many pet owners to properly manage their pets in accordance with the *Companion Animals Act 1998*, and because of the failure of relevant authorities to enforce the *Companion Animals Act*.

Notwithstanding the above, relevant and appropriate measures which would or should be implemented within the development could include:

- a requirement that cats be constrained inside during the evenings and/or confined to a ‘cattery’ or ‘cat-run’ adjacent to dwellings;
- controls on dogs, including a requirement for fencing to prevent any possibility of roaming, and the constraint of dogs on leads at all times within the development area and/or in proximity to the *Conservation Area*;
- educational signage, particularly around the *Conservation Area*, reminding pet owners of their responsibilities pursuant to the *Companion Animals Act 1998*, including that it is an offence pursuant to that Act for domestic pets to harass native wildlife;
- implementation of a campaign by Council and the DECCW to educate pet owners regarding their responsibilities pursuant to the *Companion Animals Act 1998*, and regarding the potentially seriously adverse impacts of actions such as the release of birds, fish or other pets into the natural environment; and
- if necessary, implementation of a trapping regime within the *Conservation Area* to catch and remove introduced pest species (including domestic dogs and cats).

It should be noted that these measures are all of no relevance whatsoever unless similar actions are undertaken on all new developments around South West Rocks and, indeed, throughout the whole of the existing South West Rocks residential area. Domestic pets (particularly cats and dogs) are not confined to the proposed development, and could readily roam around Saltwater Lagoon from any part of the existing residential and rural-residential areas of South West Rocks. It is the responsibility of Council and the DECCW, as well as the community generally, to ensure that domestic pets do not adversely affect native wildlife or biodiversity conservation values.

With respect to introduced weeds or potential weed species, the *Landscape Plan* for the proposed development and the VMP to be prepared for the *Conservation Area* will incorporate measures designed to limit the possibility of weed escapees entering the *Conservation Area* or Hat Head National Park. Amongst the management regimes for the *Conservation Area*, the VMP will identify a monitoring regime for weed species and a protocol for the removal of any weeds which are subsequently identified.

With respect to the potential for increased nutrient discharges from the subject site to impose adverse impact upon Hat Head National Park, the proposal has considered that matter, and provides measures to minimise any such risks including *inter alia*:

- 'best practice' water quality and volume control measures and features which are incorporated into the proposal design;
- the use of drainage swales and detention basins with appropriate vegetation to remove nutrients prior to the discharge of stormwater into the *Conservation Area* downslope; and
- *de facto* use of part of the *Conservation Area* as a 'buffer' to Hat Head National Park, including Saltwater Creek and Saltwater Lagoon, to the limited extent that might be necessary.

3.4.3 Access to Hat Head National Park

This is a matter for the DECCW to properly manage, as it does not refer solely (or even significantly) to the subject proposal. The increased number of residents in South West Rocks as a result of the subject proposal is only a small part of the total increase likely over the next decade or so. And that generated by the proposal on the subject site is smaller still.

An increased human population at South West Rocks is also not only anticipated, it is being actively promoted by the DoP, and indeed the whole of the state government through the *Mid-North Coast Regional Strategy*. That *Strategy*, it should be noted, is a 'whole of government' approach to development in the region, to which the DECCW has contributed. As noted in the *Regional Strategy*, it (the *Strategy*) "*is the **pre-eminent** planning document*" for the region.

Further, the activities about which the DECCW is concerned cannot relevantly be addressed by the subject proposal in isolation or within the subject proposal *per se*. This issue needs to be addressed on a community scale.

In terms of access by humans to Saltwater Creek and Saltwater Lagoon, the use of 'man-proof' exclusion fencing is not regarded as appropriate. Rather, it is proposed that more subtle and low-key measures be deployed within the project area including the use of appropriate educational signage, limited fencing at appropriate locations, education of local residents and other suitable measures.

It is also relevant to note that the swampy nature of much of the *Conservation Area* and of the vegetation around Saltwater Creek and Saltwater Lagoon are not particularly conducive to human access. It is not anticipated therefore that significant access into those areas would be sought.

3.5 Statement of Commitments

The DECCW provides (in Attachment 2) a series of "*recommended amendments*" to the *Statement of Commitments* which is part of the *Environmental Assessment Report* (EAR) for the proposal at South West Rocks. Those amendments by the DECCW include *inter alia* recommendations with respect to:

- biodiversity values (noting that the DECCW provides no detail with respect to what that issue actually involves);
- issues relating *inter alia* to climate change and ground water; and
- recommended amendments with respect to potential impacts on Hat Head National Park.

3.5.1 Biodiversity Values

The DECCW in Attachment 2 of its response to the EAR "*recommends that the following issues are addressed in the SOC*" (ie the *Statement of Commitments*):

- "*Inadequate flora and fauna assessment*";
- "*Cumulative impact of the development*"; and
- the "*Long term management of the riparian corridor and SEPP14 area*".

Flora and Fauna Assessment

With respect to the claimed "*Inadequate flora and fauna assessment*", as documented in some detail above (Chapter 3.2), the author of this *Report* **does not accept** the assertions made by the DECCW.

The proposed development has been assessed on the basis of an array of investigations by several ecological consultants over a number of years on the subject site itself and in the immediate vicinity (Parker 2002; Kendall & Kendall 2003; Umwelt 2004; ERM 2006; Connell Wagner 2005, 2008; Cumberland Ecology 2008; Environmental InSites 2009). The proposed development was designed in **full cognisance** of the nature and condition of the vegetation across the subject site and of the context of the subject land within the South West Rocks development area.

Further, and significantly; the proposed development of this land, amongst other lands in this immediate locality, has been addressed by a substantial number of other investigations, studies and *Reports*, including *inter alia*:

- the LES and the approved LEP (with input from the DECCW) which resulted in the land being zoned in 2009 for a mix of residential uses and conservation purposes, essentially in the form which is proposed in the EAR;
- the *Mid-North Coast Regional Strategy* (which was also considered by the DECCW); and
- studies on the subject site and in the immediate vicinity by Parker (2002), Kendall & Kendall (2003), Umwelt (2004), ERM (2006), Connell Wagner (2005, 2008), Cumberland Ecology (2008) and Environmental InSites.

Further, the project has been assessed (appropriately) not simply on the basis of the biota which have actually been recorded, but also on the basis of other biota (particularly threatened species) that could potentially occur, and on the presence and distribution of potential habitat and/or resources. Thus, the proposal has taken into account threatened biota and their habitat requirements on the basis of their **potential** presence. That approach would apply subsequent to any further investigations (which **cannot** be guaranteed to locate any additional threatened biota in any case).

It is **not** a reasonable or appropriate position that **yet further** studies be required as part of the *Statement of Commitments* for the project.

Cumulative Impacts

With respect to the “*cumulative impacts*” of the proposal at South West Rocks, this issue has been addressed in detail above. Whilst the proposed development will undoubtedly contribute to the “*cumulative impacts*” of urban and residential development at South West Rocks:

- this outcome is anticipated (and presumably accepted) as an inevitable outcome of the *Mid-North Coast Regional Strategy* (to which the DECCW is a ‘signatory’ given that the *Strategy* is the “*government’s agreed position*” on development in the region);
- this outcome is anticipated as a consequence of the rezoning in 2009 of the subject site and adjoining lands *inter alia* for residential purposes; and
- the proposal on the subject site incorporates appropriate environmental management and impact amelioration measures designed *inter alia* to limit the imposition of adverse impacts

on the natural environment as a consequence of the development itself and of the increase in human population (as detailed throughout this *Response Report*).

Riparian Corridor and SEPP 14 Wetland

The long-term management of the riparian corridor along Saltwater Creek and the SEPP 14 wetland, were considered in considerable detail in the original EAR and associated *Reports*. In addition, an 'In Principle' *Vegetation Management Plan* (VMP) was prepared and submitted with the EAR, and the full development of a final VMP for the *Conversation Area* (and its implementation) to the satisfaction of the DECCW and Council is a commitment of the project.

It is also noted that the project has been designed specifically *inter alia* to protect vegetation, habitats and resources along Saltwater Creek and around Saltwater Lagoon, within the *Conversation Area* on the subject site. The *Conversation Area* includes:

- a broad band of riparian and other vegetation along Saltwater Creek (plus an additional broad band of vegetation in the proposed development to the immediate north);
- a minimum separation of more than 300m between any development activities and Saltwater Lagoon; and
- wet heath vegetation (in the eastern half of the *Conversation Area*) which will 'filter' the treated stormwater before it reaches Saltwater Creek or the Lagoon (noting that the stormwater will have already been treated prior to discharge).

It is further noted that the proposed development to the immediate north (which is the subject of a *Part 3A Major Project Application*) has also retained a substantial riparian corridor along Saltwater Creek. The total width of the riparian corridor along Saltwater Creek will be at least 300 metres (Figure 5).

It is proposed in the *Statement of Commitments* that the *Conversation Area* be fully established and rehabilitated (weed removal, fencing, repair of any damage) through implementation of the VMP. It is further anticipated that the *Conversation Area* will then be dedicated either to Council or to the DECCW in order to further those long-term biodiversity conservation outcomes.

Additional elements which could be incorporated into the *Statement of Commitments* in this regard (beyond those which have already been proposed) could include:

- a commitment to a consultative process with Council and the DECCW in the formulation of the final VMP; and
- the establishment of an appropriate monitoring regime and program for dealing with any issues which may arise (such as outbreaks of weed infestation, predation by domestic pets, uncontrolled access by people into the *Conversation Area* etc).

3.5.2 Climate Change and Ground Water

The DECCW in Attachment 2 “*recommend*” that the *Statement of Commitments* be amended to:

- “*Implement the precautionary principle when mitigating the impact of climate change such increased sea level rise, intense storm events and flooding*”; and
- “*utilise best practice and technology for the design, construction and maintenance of storm water and groundwater management*”

The issues of climate change (and the associated predicted or postulated “*increased sea level rise, intense storm events and flooding*”) have been addressed in the EAR. In this regard:

- the proposed development provides substantial ‘buffers’ to relevant vegetation types and habitats;
- is located above the required levels, including those imposed by the state government’s ‘*Climate Change and Sea Level Rise Policy*’;
- incorporates a ‘best practice’ stormwater management and discharge concept which takes into account both existing climatic conditions and potential future circumstances; and
- incorporates specific measures designed to manage stormwater quality and discharges, including:
 - bio-retention swales to both treat stormwater and facilitate its infiltration into the groundwater table;
 - detention basins to treat stormwater and to manage discharge rates; and
 - the use of a broad swale system at the bottom of the eastern half of the development to facilitate the infiltration of stormwater into the groundwater table and to mimic overland flow discharges during major rainfall events.

In this regard, the *Precautionary Principle* has been satisfied in full. Appropriate and relevant measures to limit environmental damage have been incorporated into the project from its inception, and the proposal is intended to avoid the imposition of “*significant or irreversible environmental harm*”.

Further details in this respect are supplied in the *Stormwater Report* by Martens Consulting Services.

3.5.3 Potential Impacts on Hat Head National Park

The DECCW recommends a number of “*amendments to the SOC*” with respect to potential impacts on Hat Head National Park, including *inter alia*:

- the provision of “*suitably wide APZ’s [sic] and other bushfire management strategies to enable fire control during extreme and catastrophic fire conditions*”;
- the provision of “*Covenants regarding pet ownership or control to ameliorate potential impacts on HHNP*”;

- the provision in the VMP of “*specific strategies to minimise weed invasion into the Environmental Protection Zone and HHNP*”; and
- the construction of a physical barrier “*to limit access to HHNP, especially the foreshores of Saltwater Lake*”.

Asset Protection Zones

The *Asset Protection Zones* (APZs) provided in the current design are appropriately sized and located, and satisfy the requirements of the *Rural Fires Act 1997* and PBP 2006. The DECCW is not in a position to require any greater APZs than are required under the current legislative and planning framework of the *Rural Fires Act 1997*.

In particular, there is no requirement to “*ameliorate extreme and catastrophic fire events [whatever they might be] which are predicted to become more common due to Climate Change*” (emphasis added), as suggested by the DECCW. There is, in fact:

- **no** standard, *Policy* or *Guideline* in this regard; and
- **no** manner of predicting what purported “*extreme and catastrophic fire events*” may (or may not) occur.

The latest project design has located the APZs entirely outside of the *Conservation Area*, thus avoiding any impacts on matters of biodiversity conservation value. In any case, Hat Head National Park is located approximately 100m or more from any development area on the subject site and, indeed, is more likely to create a fire hazard for the development rather than the other way around. In this regard, it is also a requirement, pursuant to the *Rural Fires Act 1997*, that the DECCW prevent bushfires emanating from its land (*ie* Hat Head National Park) and adversely affecting adjoining landowners.

Pets

The imposition of appropriate and reasonable covenants or other controls on domestic pets is accepted by the proponent to control the potential for adverse impacts by pets on native wildlife. A range of measures to this end are provided in Chapter 4.2.2 (above), and should be included in the *Statement of Commitments*.

With respect to domestic pets, it is noted that:

- appropriate covenants and controls on pets within the subject site is accepted as an appropriate and reasonable approach;
- pet owners are required, in any case, to conform to the *Companion Animals Act 1998*; and

- any issues relating to pet ownership and the potential impacts of domestic pets on Hat Head National Park MUST be a community-wide approach involving co-operation between residents, the Council and the DECCW. Any alternative (particularly single site) approach is inappropriate and doomed to failure.

As is virtually always the case, it is inappropriate to impose controls and conditions on pet ownership upon a single development in isolation. Community-wide acceptance of the need for controls is required, and Council management of that issue is necessary.

Weeds

The *Landscape Plan* for the project is the most appropriate vehicle to address the issue of and controls on introduced and invasive species within the development footprint on the subject site.

However, the *Vegetation Management Plan* (VMP) for the *Conservation Area* will identify a range of appropriate weed control measures and strategies to be implemented within the *Conservation Area*, including ongoing weed removal and a targeted monitoring program to identify issues before they become problems. This issue has been addressed in the 'In Principles' VMP provided with the EIAR (Appendix G of that document).

Ongoing vigilance and management of weeds within the *Conservation Area* will be addressed in the final detailed VMP.

Physical Barrier

The DECCW requests that “a physical barrier to limit human access to the HHNP, especially the foreshores of Saltwater Lake” be provided.

However, as discussed above, physical barriers are likely to be of limited value and should only possibly be used at a few selected locations. In this regard:

- physical barriers will alienate residents and/or are unlikely to remain in place in the long-term;
- educational signage and indicative barriers (bollards) are a better (more 'inclusive' rather than 'exclusive') approach in most instances;
- the swampy nature of much of the *Conservation Area* and of the vegetation around Saltwater Creek and Saltwater Lagoon are not particularly conducive to human access in any case; and

- Saltwater Lake is approximately 100m or more from the residential area. It is not particularly likely the people would attempt to gain access to the Lake from the subject site, when more ready access is available from other locations in the vicinity.

Nevertheless, some 'exclusion' fencing may be appropriate at some locations, particularly to the east of the northern access road.

4 CATCHMENT MANAGEMENT AUTHORITY

The *Northern Rivers Catchment Management Authority* (CMA) provides a number of comments with respect to the proposed development on the subject site, and in respect of the *Environmental Assessment Report* (EAR). The comments from the CMA relate *inter alia* to:

- activities within the *Conservation Area*;
- the proximity of the development to an SEPP 14 wetland;
- the proposed *Vegetation Management Plan* (VMP); and
- the stormwater drainage system proposed.

4.1 Conservation Area

The *Conservation Area* on the subject site at South West Rocks occupies approximately 14.9ha (or 37% of the site).

The CMA notes the location of the northern access road (connecting northwards to Phillip Drive) and “two proposed bike paths, all of which are located in the conservation area”. It is noted, however, that:

- the northern access road has been specifically located and designed to utilise an existing track which traverses Saltwater Creek (to the north of the site);
- the proposed northern access road (upgraded and properly engineered) would provide an environmental benefit by reducing sediment discharges (by virtue of sealing the road and by the use of sedimentation ponds);
- the proposed footpaths and bicycle tracks through the wetlands in the *Conservation Area* have been removed from the current design for the subject site; and
- the proposed bicycle path and pedestrian track which remain as part of the proposal are located on existing dirt tracks. Consequently, there would be little (if any) need for construction works or any other significant physical activities, and better engineering can also provide an environmental benefit. It is recommended that these paths be maintained to ensure controlled pedestrian and bicycle access through that part of the *Conservation Area* rather than the uncontrolled and unmanaged access which would be anticipated in the absence of any formal pathway.

Notwithstanding the ‘requirements’ of the *Native Vegetation Act 2003*, the imposition of yet another management plan (*ie* the *Property Vegetation Plan* identified by the CMA) is regarded as inappropriate and superfluous. This is particularly the case given that the *Conservation Area*:

- is to be maintained in perpetuity for biodiversity conservation purposes;
- is ultimately to be dedicated either to Council or the DECCW; and
- will be the subject of a *Vegetation Management Plan* (VMP) in any case.

If, indeed, a *Property Vegetation Plan* (PVP) is required pursuant to the Native Vegetation Act, it is recommended that it contain a single sentence viz – “*The Conservation Area, including the northern access road and the pedestrian and bicycle pathways, is to be managed accordingly to the attached Vegetation Management Plan (VMP)*”. Nothing more is required.

4.2 SEPP 14 Wetlands

Both the rezoning of the subject site in 2009 and the current development proposal have taken into account a number of matters including *inter alia* the presence of the SEPP 14 wetland in the northeastern corner of the subject site and extending northeasterly therefrom (see attached Zoning plan). Further, the land which is zoned 7(b) – *Environmental Protection (Habitat)*, which surrounds the SEPP 14 wetland, is designed *inter alia* to provide protection for the wetland habitats present within the 7(a) – *Wetlands Protection Zone*, including the SEPP 14 wetland.

It is noted that the 100 metre “*recommendation for buffer between residential areas and wetlands*” by the CMA, contained in the *Living and Working in Rural Areas Handbook*, is just that – a “*recommendation*”. It is noted in this regard that:

- the recommended 100m setback or “*buffer*” is **not** a statutory requirement;
- there is, in fact, **no** setback or “*buffer*” at all identified in SEPP 14 itself;
- there is, as noted by the CMA, **at least a 50m separation** between the SEPP 14 wetland and the residential area, all of which is vegetated. That vegetated ‘buffer’, and the stormwater management regime for the Project (see below), constitute an adequate “*buffer*” (to the extent that any such “*buffer*” is necessary);
- the development contains an “*innovative stormwater drainage system*” (which the Northern Rivers CMA “*commends*”), which is intended specifically to avoid or minimise adverse impacts on water quality or water quantity discharges. This, therefore represents an **appropriate** management approach to protection of the SEPP 14 wetland and associated ecosystems; and
- the recent rezoning of the subject site and the *Mid-North Coast Regional Strategy*, which were approved by the DoP in consultation with a variety of government agencies and authorities (including presumably the Northern Rivers CMA), have identified the appropriate extent of residential development on the subject site.

Given all of those considerations, the extent of residential development proposed on the subject site, in association with the ‘best practice’ stormwater management and control measures proposed, is regarded as **an appropriate response** to protection of the SEPP 14 wetland and its associated habitats.

4.3 Vegetation Management Plan

The *Statement of Commitments* (SoC) for the proposal includes *inter alia* the preparation of a detailed *Vegetation Management Plan* (VMP) in accordance with a set of principles provided in the EAR (Appendix G to the InSites 2009 Report). It is noted that the Northern Rivers CMA states that “*the principles [of that document] adequately address the issues relevant to the management of flora at the site*”, and notes also that “*it is important that the final plan adheres to these principles*”.

It is a firm commitment of the proponent that the final VMP will be prepared in accordance with the principles provided in the EAR. Further, the VMP is to be prepared in consultation with and to the satisfaction of Council and the DECCW.

It is also to be noted that the *Conservation Area* on the subject land is proposed to be dedicated to Council or the DECCW for the long-term protection of biodiversity conservation values at this location. The SoC also provides for a financial commitment (to Council) for management of the *Conservation Area*, as well as preparation and the initial implementation of the VMP.

4.4 Stormwater Drainage System

As noted above, the Northern Rivers CMA “*commends the proponent for the development of an innovative stormwater drainage system*” which is designed to protect habitats and ecosystems in the *conservation area* and to maintain soil ground water conditions.

The long-term management and maintenance of that stormwater drainage system will ultimately be the responsibility of Council.

5 COUNCIL ISSUES

5.1 Introduction

Kempsey Council has provided a response to the EAR which includes *inter alia* consideration of some issues associated with landscaping, stormwater management and mosquito control.

5.2 Landscaping Strategy

Council asserts that the EA are “*fails to identify an overall landscaping strategy to protect remnant and riparian vegetation, including the relationship to adjoining vegetation and a consistent approach across the remaining undeveloped part of the catchment*”.

To the contrary, the EAR and the whole development design has incorporated measures specifically designed *inter alia* to “*protect remnant and riparian vegetation*”. The proposal is designed with appropriate stormwater management measures (which are commended by the Northern Rivers CMA) to protect vegetation within the adjoining *Conservation Area* on the subject site. Those measures are also intended *inter alia* to protect Saltwater Creek and Saltwater Lagoon, and to provide supplementary habitat for species such as the Wallum Froglet.

In addition, the proposal utilises a peripheral road system along its northern boundary to provide an appropriate management interface between the development footprint and the *Conservation Area*, and provides a commitment to both dedication of the *Conservation Area* for biodiversity conservation purposes (either to Council or the DECCW) and the implementation of a *Vegetation Management Plan* (VMP) to protect and enhance that vegetation.

The subject site is to be managed (with respect to vegetation) according to two different *Management Plans* dealing with the different parts of the project:

- the development footprint (occupying approximately 25.13ha or 63% of the site) which will be the subject of a *Landscape Plan*, dealing predominantly with introduced plantings and landscaped portions of the site; and
- the *Conservation Area* (occupying approximately 14.9ha or 37% of the site) which is to be retained native vegetation and will be managed according to a detailed *Vegetation Management Plan* (VMP). That final VMP (to be prepared in accordance with the existing VMP ‘Principles’ document) will focus on native vegetation in the *Conservation Area*, weed removal and control, and ongoing management.

The current *Landscape Plan* for the development area (prepared by EDAW/AECOM) will be amended to include specific additional measures to prevent or minimise the potential for invasive or noxious weed species to escape from the development footprint into the *Conservation Area*. The VMP for the

Conservation Area includes a monitoring regime (*inter alia* to identify any new weed incursions) and measures to respond to any such incursions.

5.3 Integrated Water Cycle Management

The stormwater drainage system and regime has been commended by the Northern Rivers CMA. The proponent is committed to maintaining the discharge of appropriate volumes of stormwater into the *Conservation Area* and to ensuring that any stormwater discharged into that area is of high quality.

A detailed response to Council's concern regarding the stormwater management system is provided by Martens Consulting Engineers.

5.4 Mosquito Control

Given that mosquitoes can travel up to 10km, an individual development such as that proposed on the subject site at South West Rocks can only provide limited 'control' of mosquitoes.

Appropriate measures have been incorporated into the *Statement of Commitments* for the project, and additional measures on individual dwelling sites will be the responsibility of those landowners. It is recommended that the documents regarding mosquitoes and the risk of disease from mosquitoes prepared by NSW Health (the "*Mosquitoes are a Health Hazard*" *Warning Sheet* and *Information Sheet*) be provided to all residents.

In addition, the proponent would commit to participating in any LGA-wide or local mosquito control management regime. In particular, subsequent monitoring of the stormwater control system which has been designed for the proposed development (particularly the drainage swales and detention basins) should be undertaken to identify any potential increase in mosquito breeding opportunities, and to appropriately deal with the risk of mosquito activities.

5.5 Traffic and Access

Council raises an issue with regard to the proposed collector road through the *Conservation Area*, extending northwards from the proposed development subdivision.

This issue can readily be addressed either by *Conditions of Consent* requiring that the road be designed and constructed in an environmentally responsible manner or by the insertion of a further commitment into the *Statement of Commitments* with respect to the design standards required (*eg* minimum width, a bridge structure or large culverts to permit animal movements, fencing to protect habitats and vegetation to be retained, silt fences and/or sediment traps *etc*).

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	<i>Development Application</i> 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	<i>Director-General's Requirements</i> .
Director-General	the Director-General of the Department of Planning.
Endangered Ecological Community	<i>"an ecological community specified in Part 3 of Schedule 1" of the TSC Act.</i>
Endangered Population	<i>"a population specified in Part 2 of Schedule 1" of the TSC Act.</i> <i>EP&A Act Environmental Planning & Assessment Act 1979.</i>
Key Threatening Process	<i>"a threatening process specified in Schedule 3" of the TSC Act.</i>
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	<i>"a plan prepared and approved under Part 4" of the TSC Act.</i>
Region	<i>"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).</i>
SIS	<i>Species Impact Statement</i> prepared pursuant to Sections 109, 110 and 111 of the TSC Act.
Threatening Process	<i>"a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities" (TSC Act).</i>
Threatened Species	<i>"a species specified in Part 1 or 4 of Schedule 1 or in Schedule 2" of the TSC Act.</i>
TSC Act	<i>Threatened Species Conservation Act 1995.</i>

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Figure 1

The modified development area and design



NOTES:

1. Subdivision Plan © AECOM 2010
2. Bike paths in Conservation Zone are indicative positions only. Bike paths in this area are to follow existing paths to minimise disturbance to natural vegetation. Path positions to be confirmed by VPA (AECOM 2010)
3. Longterm/future site access is indicative only and will be the subject of subsequent approval. Configuration and design will be undertaken in accordance with Council specifications (AECOM 2010)
4. All features are approximate only and subject to detailed survey

LEGEND

- Subject site
- Zone Boundary
- 10-20m Asset Protection Zone (APZ)
- Swale/Vegetated Corridor
- Treatment Wetland Park/Wedge
- 2m Wide Bike Paths
- Playground
- Public Open Space with facilities
- SEPP 14 Wetland Area
- Fire Access Trail
- Conservation Area
- Potential future occupancy lots subject to council consent

No.	Date	Revisions Details

SCALE:	1:3,000 @ A3
CO-ORDS:	MGA
DATUM:	N/A
DATE OF PLAN:	06-07-2010
CHECKED BY/DATE:	DF/06-07-2010
APPROVED BY/DATE:	DF/06-07-2010
JOB REF:	D927 EV
GIS REF:	D927 EV-M-017



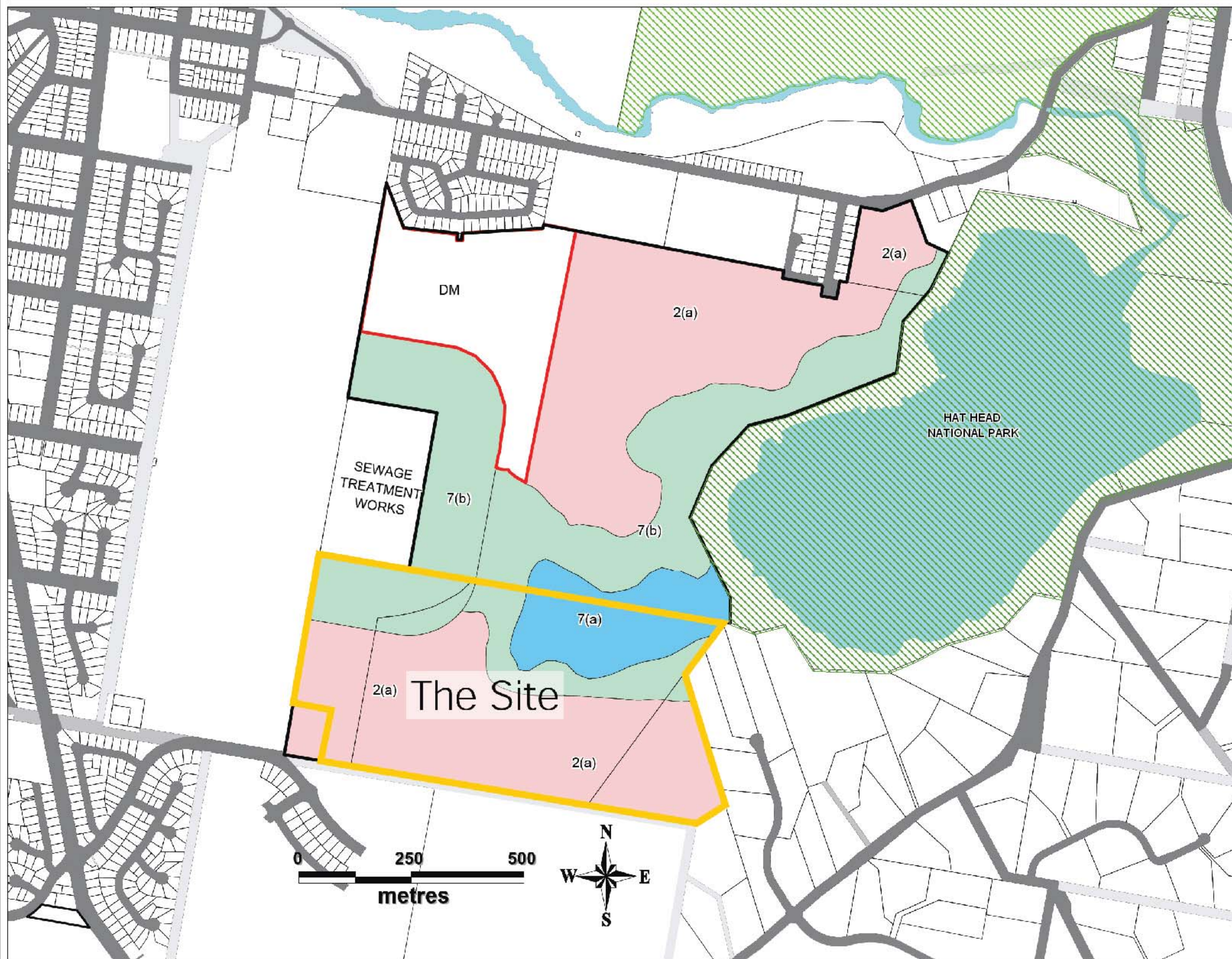
PREPARED FOR:

MALBEC PROPERTIES

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Figure 2

The 2008 Local Environmental Plan illustrating the subject site and adjoining lands



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1:8,000 @ A3

NOTES:

- 1.0 Aerial photography © 2002 Land and Property Information
- 2.0 Zoning © ACOM 2010
- 3.0 All features are approximate only and subject to detailed survey

LEGEND

- Subject Site
- DCDB
- Conservation Areas
- Zone 2(a)
(Residential "A" Zone)
- Zone 7(a)
(Wetlands Protection Zone)
- Zone 7(b)
(Environmental Protection, (Habitat) Zone)
- Zone DM
Deferred Matter

No.	Date	Revision Details

SCALE: 1:8,000 @ A3

CO-ORDS: MGA

DATUM: N/A

DATE OF PLAN: 06-07-2010

CHECKED BY/DATE: DF/06-07-2010

APPROVED BY/DATE: DF/06-07-2010

JOB REF: D927EV

GIS REF: D927EV-M-016

Figure 3

The Mid-North Coast Regional Strategy and 'Future Urban Release Areas'



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1:25,000 @ A3

NOTES:

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- 2.0 STREETPRO © 2006 MapInfo
- 3.0 All features are approximate only and subject to detailed survey

LEGEND

- Subject site
- DCDB
- Conservation Areas

Mid North Coast Regional Strat

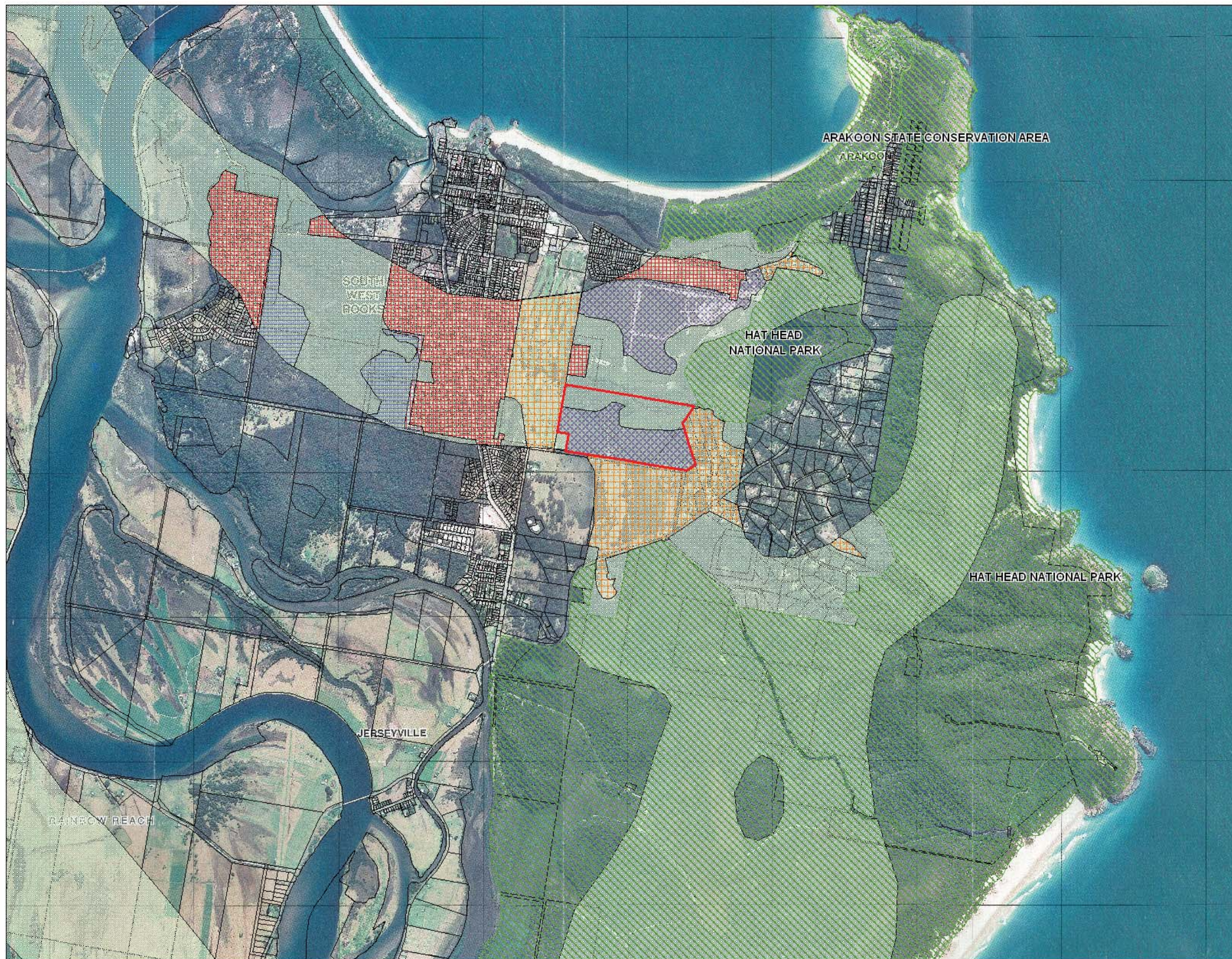
- Proposed Urban Areas 270907

No.	Date	Revision Details

SCALE:	1:25,000 @ A3	
CO-ORDS:	MGA	
DATUM:	N/A	
DATE OF PLAN:	06-07-2010	
CHECKED BY/DATE:	DF/06-07-2010	
APPROVED BY/DATE:	DF/06-07-2010	
JOB REF:	D927EV	
GIS REF:	D927EV-M-015	

Figure 4

The reality of the DECCW alleged "Wildlife Corridor"



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NOTES:

- 1.0 Aerial photography © 2002 Land and Property Information
- 2.0 STREETPRO © 2006 MapInfo
- 3.0 All features are approximate only and subject to detailed survey

LEGEND

- Subject site
- DCDB
- Conservation Areas
- DECCW Regional Wildlife Corridor

Corridor Barriers

- Current proposed developments
- Existing residential
- Future Urban Release Area - Regional Strategy
- Golf Course, rural residential or rural

No.	Date	Revision Details

SCALE: 1:25,000 @ A3

CO-ORDS: MGA

DATUM: N/A

DATE OF PLAN: 06-07-2010

CHECKED BY/DATE: DF/06-07-2010

APPROVED BY/DATE: DF/06-07-2010

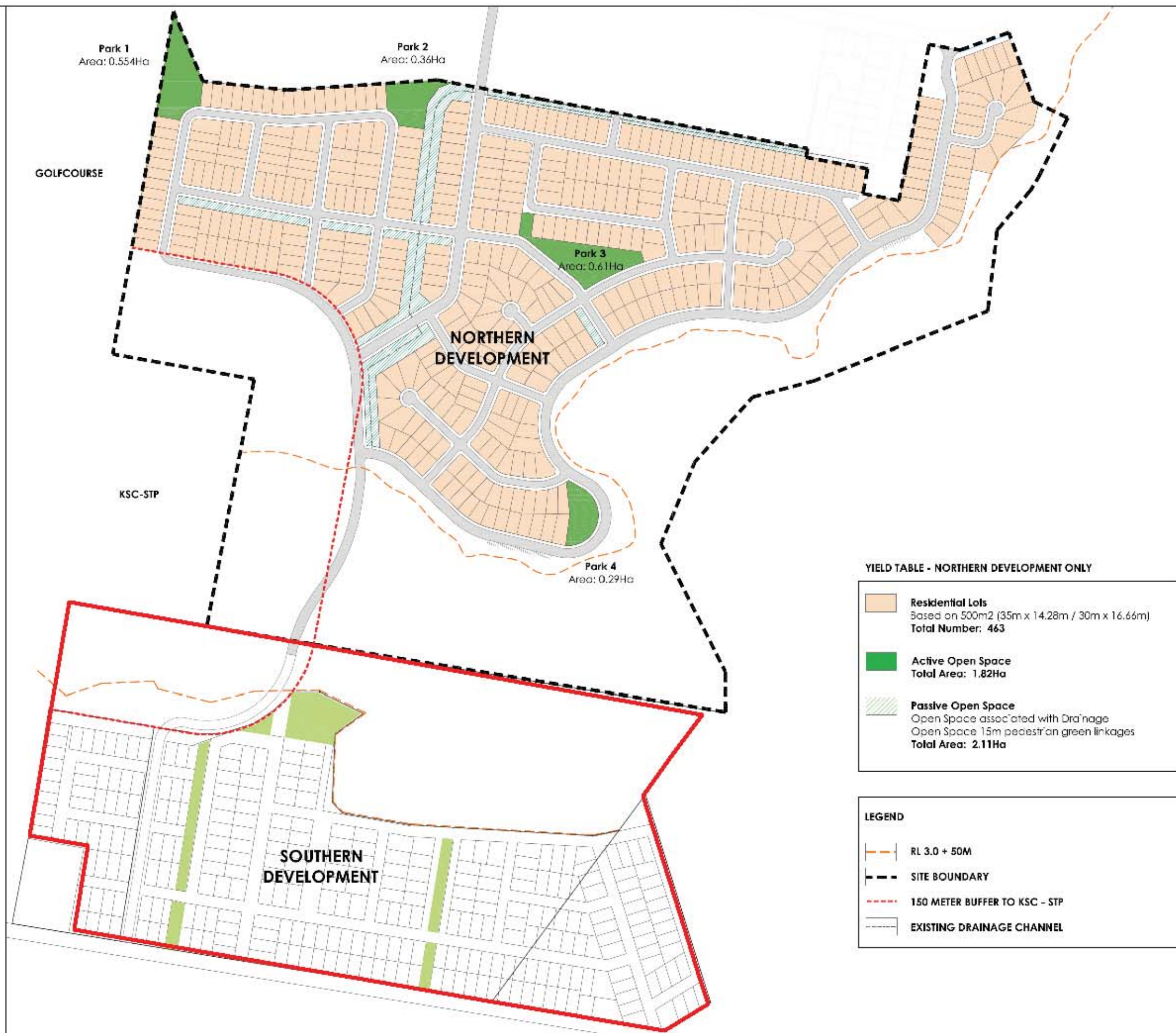
JOB REF: D927EV

GIS REF: D927EV-M-014



Figure 5

The two current Part 3A Applications at South West Rocks



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F: 02 211 1111

1:5,500 @ A3

- NOTES:
1. Masterplan Concept © XXX 2010
 2. All features are approximate only and subject to detailed survey

LEGEND

Subject site

No.	Date	Revisions Details

SCALE:	1:5,500 @ A3	N
CO-ORDS:	MGA	
DATUM:	N/A	
DATE OF PLAN:	05-08-2010	
CHECKED BY/DATE:	DF/05-08-2010	
APPROVED BY/DATE:	DF/05-08-2010	
JOB REF:	D927 EV	
GIS REF:	D927 EV-M-018	

Lot 52 in DP 831284 and Lot 84 in DP 792945
Belle O'Connor Street, South West Rocks

Proposed Residential Development
Major Project MP 08_0167

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Appendix A
Extracts from the Amended Water Cycle Management Plan

30 July 2010



Whelans InSites Pty Ltd

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10 Conclusions and Recommendations

10.1 Overview

The water cycle management plan developed for the site brings together the results of the stormwater quantity and quality assessment, hydrogeological assessment and flood analysis to form an overall water management plan which satisfies performance standards adopted for the site being a neutral or beneficial impact on the downslope receiving environment.

The recommendations made below are considered best practice sustainable engineering solutions and satisfy the principles of Water Sensitive Urban Design and specific performance standards of Council.

10.2 Components of Site Water Management System

From modelling results the following treatment structures have been recommended to sustainably manage stormwater at the site:

1. Road side drainage swales - included on the site to safely and effectively convey flows to downstream receiving waters and to provide water quality treatment of flows.
2. Two main drainage swales (Swales 2 and 6) are proposed to direct drainage from upslope catchments and site catchments through the site and to receiving waters. Swales shall be designed at a later stage to direct low flows to site wetlands for additional water quality treatment, with high flows bypassing site wetlands and continuing along swales to receiving waters. As with road side swales, these also provide water quality treatment.
3. Site wetlands – included on the site to provide treatment of stormwater flows from the site prior to discharge to receiving waters.
4. Site swale outlet structures – proposed to be included on all site stormwater outlets. These structures will provide energy dissipation and erosion control measures for site stormwater discharging to downstream receiving waters.
5. Sub-soil drains – provided to manage episodically shallow groundwater and protection road pavements and other assets from adverse impact.

10.3 Conclusion and Management Outcomes

Outcomes of flooding, stormwater quantity and water quality results together form the water cycle management plan for the site. Assessment of the performance of these components of the water cycle management plan conclude that:

- Hydrological analysis of the existing site has shown that the shallow groundwater table is a site constraint that requires to be managed. The proposed development shall, by design, impact on site groundwater levels. The development also has potential to impact on surface runoff volumes and water quality if not appropriately managed.
- To mitigate the impact on the downstream hydrological regime water management systems are proposed to achieve a regime which maintains or improves that of the existing environment.
- Two (2) 'major' grass swales shall divert upslope catchment drainage to downstream receiving waters whilst also providing water quality treatment.
- Road side swales of varying sizes will collect stormwater from road and pavement areas and divert these flows to downstream wetlands and receiving waters and sensitive habitats. Both roadside and major swales have been sized to appropriately convey the 20% AEP (swale plus gutter flow) and 1% AEP (flow within road reserve) events.
- Assessment of peak flow depths and velocities within site swales and over road reserves indicates that proposed swales comply with the design and safety objectives outlined in the Kempsey Shire Council DCP 36 (2005) and the NSW Floodplain Management Manual (2005) for existing conditions, existing conditions including backwater effects and climate change conditions assuming a 30% increase in rainfall intensity.
- Assessment of lot access culverts indicates that the inclusion of lot access culverts within the drainage swales results in a design outcome complying with the design requirements outlined in the Kempsey Shire Council DCP 36 (2005) and the NSW Floodplain Management Manual (2005).
- A 22% increase in surface flow (as indicated in MUSIC result) as a result of the development shall be directed to the downslope receiving environment. As local surface and groundwater systems are intrinsically linked, this change in surface water hydrology is not expected to detrimentally affect water supply

to downstream environments and vegetation and, as such, the impact from increased flows is considered acceptable.

- Modelling results indicate that the provision of grassed drainage swales and wetlands will treat stormwater flows from the site prior to discharge, thus achieving a total site outcome which satisfies the 'neutral or beneficial' pollution reduction objectives.
- The addition of the outlet structures at each outlet from site swales shall also serve to reduce potential impacts that may arise from the concentration of flows at outlets. These shall be designed at a later stage of the development.
- Results indicate a net improvement in post-development water quality (compared to existing conditions) when site swales and wetlands are provided. This treatment train therefore effectively manages stormwater at the site in a sustainable fashion to ensure the underlying aquifer and surrounding water-dependant ecosystems are not negatively impacted or degraded.
- Assessment of WBM (2005) flooding information indicates a design 1 in 100 yr ARI flood inundation level of 3.2 mAHD applies to the site. FPL's have been set at 1% AEP level plus 0.5 mAHD (3.7 mAHD) to place the entire development footprint outside the flood zone.
- Assessment of the potential effects of climate change (for storm surge and increased rainfall intensity) on flood levels immediately downslope of the site conducted by WBM (2010) confirms that the development would have sufficient adaptive capacity to accommodate the most severe predicted climate change induced hydrological conditions and confirms that the proposed site FPL of 3.7 mAHD is appropriate.
- Modelling conducted by WBM (2010) for developed site conditions, when compared to previous WBM (2005) modelling for undeveloped site conditions, indicates that no on-site detention of stormwater is required for the site.
- The Estuary Management Plan recommended a development extent of 50 m from the 3.0 mAHD contour. This extent has been adopted for development planning.
- Incorporation of the recommended water cycle management plan and its components into the site design, will satisfy relevant Council requirements and objectives with the proposed site development constituting ecologically sustainable development.

This investigation determined that intermittent groundwater levels beneath the site are sufficiently high to mean that drainage swale structures on the site shall, at times, not function as infiltration systems but rather as groundwater drains.

Details of the hydrogeological assessment and design implications for the project are provided in a separate report.

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Appendix B
The Preferred Project Plan

30 July 2010

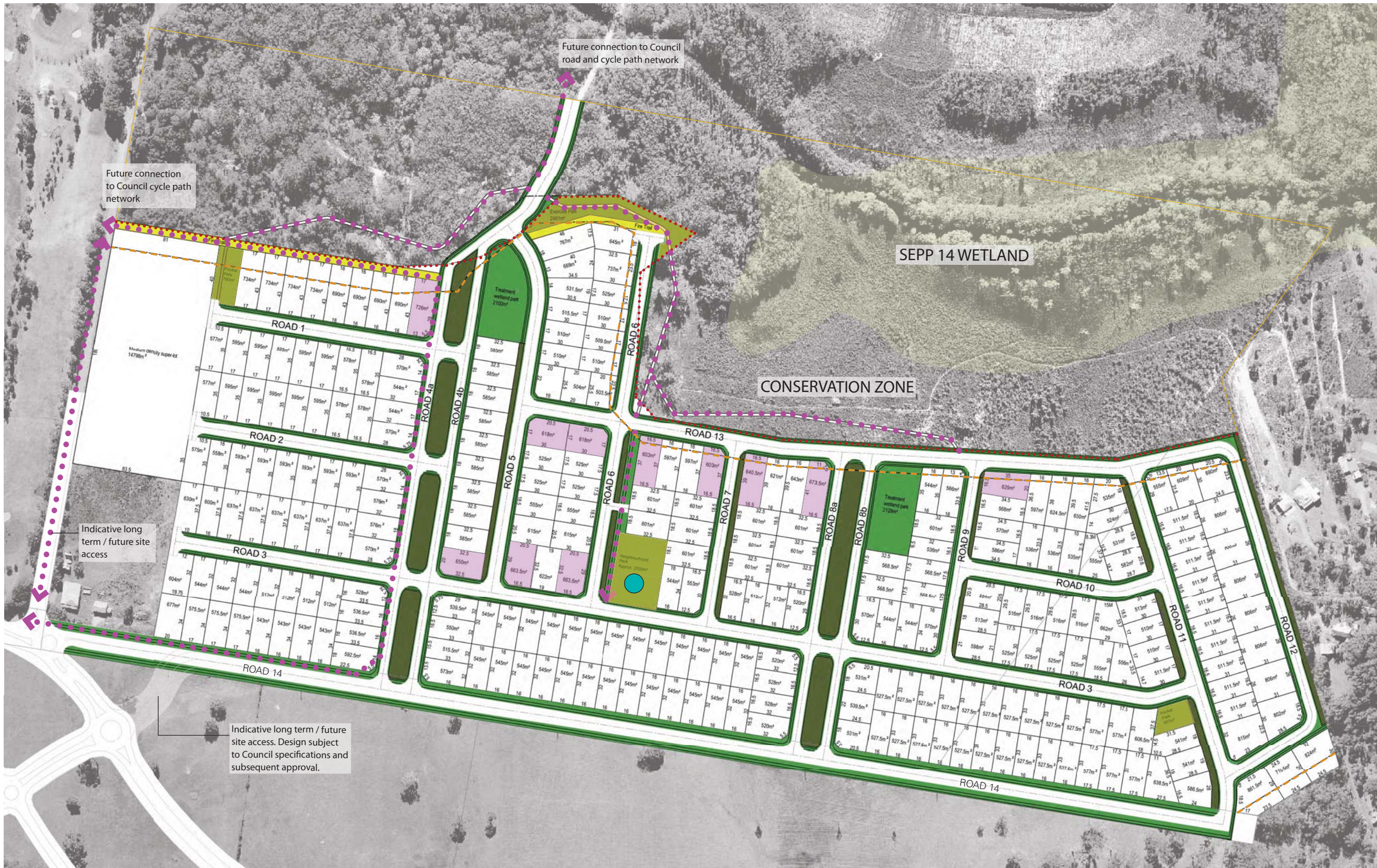


Whelans InSites Pty Ltd

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LEGEND

- Zone Boundary
- 10-20m Asset Protection Zone (APZ)
- Swale / Vegetated Corridor
- Treatment Wetland Park / Verge
- 2m Wide Bike Paths
- Playground
- Public Open Space with Facilities
- SEPP 14 Wetland Area
- Fire Access Trail
- Conservation Area
- Potential dual occupancy lots, subject to site constraints

Notes

- Bike paths in Conservation Zone are indicative positions only. Bike paths in this area to follow existing tracks, to minimise disturbance to natural vegetation. Path positions to be confirmed within voluntary planning agreement.
- Long term / future site access is indicative only and will be the subject of subsequent approval. Configuration and design will be undertaken in accordance with Council specifications.

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Appendix C
Plan of hollow-bearing trees within the development footprint

30 July 2010



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LEGEND

-  Zone Boundary
-  10-20m Asset Protection Zone (APZ)
-  Swale / Vegetated Corridor
-  Treatment Wetland Park / Verge
-  Public Open Space with Facilities
-  SEPP 14 Wetland Area
-  Fire Access Trail
-  Conservation Area
-  Hollow Bearing Tree

Notes

1. Bike paths in Conservation Zone are indicative positions only. Bike paths in this area to follow existing tracks, to minimise disturbance to natural vegetation. Path positions to be confirmed within voluntary planning agreement.
2. Long term / future site access is indicative only and will be the subject of subsequent approval. Configuration and design will be undertaken in accordance with Council specifications.

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Appendix D
Photographs of hollow-bearing trees

30 July 2010



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Photo 1 The few small patches of woodland within the development area are mostly dominated by the Broad-leaved Paperbark which generally have little hollow-forming potential, unless in decline.



Photo 2 Hollows in Broad-leaved Paperbarks were generally visible or present only in large old dead or dying specimens.



Photo 3 Hollows became more prevalent within the Open Forest/Woodland of Northern Scribbly Gum within the *Conservation Area*, with only a few specimens in the central northern part of the development area (see Figure 1).