Our ref: 6052EA-JT/MSR 25108

25 January 2008

Paulina Hon
Senior Environmental Officer
Planning Officer
Department of Planning
GPO Box 39
23-33 Bridge Street
SYDNEY NSW 2000

Cc Murray Offord – MARSIM

Dear Paulina

Re: Proposed Residential Subdivision, George Bass Drive, Rosedale (MP05_0199)
DECC Comments on Environmental Assessment

In response to comments from the Department of Environment and Climate Changes, (Correspondence dated 8 January 2008 DECC Ref: FIL06/1793) *Travers Environmental* provides the following comments.

The Environmental Assessment undertaken by Kass-Hermes 2007 is the application document for statutory planning of the Bevian Road Concept Application. Where as the Ecological Assessment is the overriding ecological document that should be reviewed by DECC in terms of adequacy, along with the Conservation Land Use Management Plan (CLUMP) and the Ecological Site Management Plan (ESMP).

The Client, Marsim, seeks approval for a concept application which we have demonstrated can achieve appropriate ecological outcomes. There will be further detailed design and detailed development applications which will consider detailed design issues, such as hollow bearing trees which can be properly assessed at that time.

By way of introduction it was vital that the biodiversity considerations for this project were considered from the outset. Marsim followed our advice to ensure protection of the existing biodiversity on-site and in particular the Bevian Wetland.

To that end we prepared a Conservation Land Use Management Planning (CLUMP) that sought to define the land use capabilities of the site based on extensive ecological and environmental analysis. The CLUMP specifically dealt with the following matters;

- Conservation values of the site including vegetation communities, threatened species, natural wildlife corridors, and other natural features of the site,
- Scale of any development and its integration with the existing landscape,
- Implementation of the various obligations for conservation, maintenance and protection of the environment,

- Future environmental validation of the development applications,

- Verification that requirements, obligations and environmental targets and outcomes are achieved and maintained.

The CLUMP principally relates to ecological, conservation and bushfire values relevant to the proposed development and the local environs. Consideration of all these issues has been addressed within the *Statement of Commitments* which is proposed to be finalised at the DA stage where greater detail and surety can be provided for environmental protection.

This CLUMP combines the expertise of ecology, stormwater, water quality, wetland management, bushfire etc' and aims to protect the existing environment and the proposed restored environment by using the CLUMP approach as the guiding influence for any development on the site. It aims to provide a set of clear planning controls that gave protection to the identified values of the site.

The CLUMP was supplied as part of the document set for the project and should be read as the definitive statement for biodiversity protection for the site to which the *Statement of Commitments* can only attempt to summarise at best.

We also prepared an Ecological Site Management Plan (ESMP). This aims to identify the detail of 'how to manage' the site given the directions raised in the CLUMP.

Together, the CLUMP and the ESMP provide a formidable set of management planning tools that enable government authorities and future land owners to manage the landscape challenges of this site at Rosedale while providing protection and conservation to threatened species, significant species, endangered ecological communities and other less threatened wildlife.

Indeed the concept planning by Roberts Day illustrate a very clear message that biodiversity was the key to this project, with existing grazing paddocks turned into potential living spaces and returning native landscapes in both terrestrial and aquatic environments.

I believe that an aerial photograph showing the Rosedale Site with an overlay of the concept and the proposed conserved landscape may clarify matters further. We have now prepared this plan which is attached as Figure 6.

It is from this perspective that we, also in hindsight, believe that the Environmental Assessment volume (Kass – Hermes, 2007) including the CLUMP might have provided more explanation of the role of the CLUMP and the extent to which ecology was paramount in this projects direction.

Indeed the Environmental Assessment's role was to condense the myriad of reports and attachments (some 46 in all) provided with the application. It was not designed, in its own right, to be the principal conservation planning documentation. Clearly that is very well enunciated within the CLUMP and the ESMP.

For this reason I query whether the DECC response may have confined itself to the assessment documents only and not considered the management regime as controlled by the CLUMP and ESMP.

In addition to the above, we would like to provide a more specific response to the issues raised by DECC in their letter of the 8th January 2008 to DOP.

No documented assessment of matters of national significance has been provided.

DECC is correct in pointing out that the Flora and Fauna Assessment did not fully consider the impact on the EPBC Scheduled species - Latham's Snipe, White Bellied Sea Eagle and White-throated Needletail.

The Latham's Snipe, White Bellied Sea Eagle and White-throated Needletail are, however, not listed as threatened species under the EPBC Act but rather are listed as migratory and marine species.

Migratory and marine listed species are matters of National Environmental Significance and the impact of the proposed action is required to be assessed in accordance with the EPBC Act Significant Impact Guidelines for NES matters.

In accordance with the requirements of Commonwealth EBPC legislation an assessment is required to be undertaken for 'actions' that have a <u>significant impact</u> on matters of national environmental significance (NES). These may include:

- Wetlands protected by international treaty (the Ramsar Convention)
- Nationally listed threatened species and ecological communities
- Nationally listed migratory species

By way of explanation 'actions' are projects, developments, undertakings, activities, series of activities or alteration of any of these. An action that needs Commonwealth approval then becomes a "controlled action" and this type of action requires a more detailed assessment to be considered by the Commonwealth when they determine if the proposed action would have a significant effect on a NES matter.

Where a proposed activity is located in an area identified to be of NES, or such that it is likely to significantly affect threatened species, ecological communities, migratory species or their habitats, the matter needs to be referred to *Department of Environment & Water Resources*.

The initial assessment by our fauna ecologists has assessed whether the proposed development and ecological restoration works would have a <u>significant</u> impact on Latham's Snipe, White Bellied Sea Eagle and White-throated Needletail. The assessment concluded that there was not possible for the development to have any significant impact upon those species.

Indeed no habitat is being removed that could possibly be considered to impact upon these species such that we concluded that all potential foraging and breeding habitat for these three species will be fully conserved as part of the restoration works.

Notwithstanding this opinion…

<u>Assessment of NES Matters (EPBC Act)</u>

Latham's Snipe & White Throated Needle-Tail are migratory species that breed outside of Australia and will forage or temporarily reside in appropriate habitat.

The White Throated Needle-tail spends most of its time flying foraging on the wind and will roost overnight on land. There is no breeding habitat onsite and it has a very extensive foraging habitat. There are no direct or indirect impacts as a result of the proposed action

that will impact on this species. It is considered that as there will not be a significant impact on the White Throated Needle-tail by either direct or indirect impacts and the proposed action does not need to be referred for assessment under the EPBC Act.

Latham's Snipe utilises areas such as the Bevian Wetland and other temporarily inundated areas for foraging and roosting, however, these areas have been conserved in most locations onsite and its foraging and roosting habitat will not be significantly affected. It is considered that as there will not be a significant impact on the Latham's Snipe by either direct or indirect impacts then the proposed action does not need to be referred for assessment under the EPBC Act.

White Bellied Sea Eagle has been observed in the local area. There is potential nesting and breeding habitat onsite associated with the Bevian Wetland, but we stress that no nests have been observed. The most likely breeding and roosting habitat onsite occurs in tall living trees adjacent to water bodies in which they forage such as Bevian Wetland. As the nests are very large and obvious under survey, and a complete search has been recently completed over the entire site (14 -18th January 2008), it is considered that no nests have been built in recent years. As the main foraging area is already being conserved within the Bevian Wetland and its surrounding buffer, it is considered that as there will not be a significant impact on the White Bellied Sea Eagle by either direct or indirect impacts and the proposed action does not need to be referred for assessment under the EPBC Act.

It is concluded that as all potential foraging and breeding habitat on this site is being conserved as part of the restoration works for all three species, the proposed development will not have any direct or indirect significant impact on Latham's Snipe, White Bellied Sea Eagle and White-throated Needletail and the conclusion that a referral under the EPBC Act will not be required remains the same.

Action: An addendum, if required, can be provided to the Flora and Fauna Report and Ecological Assessment Report.

The draft statement of commitments does not clearly stipulate the retention and protection of Endangered Ecological Communities and habitats of threatened hollow fauna.

The draft *Statement of Commitments* should have identified these as commitments; however they have been clearly detailed in the concept planning graphics as well as in the detail of the CLUMP and the ESMP.

In respect of these two issues raised we can attest that

- The Bevian Wetland will be fully protected from both direct and indirect impacts from upslope stormwater and other possible environmental impacts. We also understand that a report was submitted by Geoff Sainty who assisted the Department in respect of the aquatic environment assessment in the Bevian Wetland.

- Riparian restoration will be undertaken as displayed on **Schedule 3** attached.

- The Knoll vegetation is being conserved – see The Knoll **Schedule 3**.

- Connectivity is provided with adjacent vegetation and habitat resources – see Schedule 3.

- Our fauna ecologist has recently completed a habitat tree surveys that has indicated the presence of 168 hollow bearing trees on the site the majority 80 % of which are located in the proposed conservation areas (**Table 1**)**.**

- Of 33 Habitat Trees within the development footprint, only 2 are of medium or high value (**Figure 10**)**.**

- Hollow bearing trees onsite are severely degraded and have been significantly impacted by clearing onsite (**Table 2** – 94.5% reduction onsite compared with control sites).

- No threatened species has been observed within the high or medium value trees.

- No migratory species will be significantly affected.

- All endangered ecological communities will be maintained or expanded as a result of the proposed protection and restoration works.

We also note that there has been concern raised by the CMA in relation to the loss of native vegetation on the site and we believe that this is an ill conceived assessment and not reflective of an accurate assessment of vegetation retention and hollow bearing trees being retained onsite. Table 1 and 2 below provide an accurate census of the habitat trees onsite and those being impacted by the development footprint.

Notwithstanding the above we recognise that the draft statement of commitments may need expanding to fully explain and document the very clear intentions of retaining and protecting the endangered ecological communities (EEC) and habitats of threatened hollow fauna.

Action: Amend the draft Statement of Commitments to stipulate retention and protection of EEC's and hollow dependent fauna. The amended draft SOC will replace the existing document in Marsim's concept application.

Assessment of impacts on Hollow Dependent Fauna

The ecological assessment undertaken by *Conacher Travers Sept 2007* has already fully considered the impacts of the development on threatened flora and fauna by a comparison of the area of suitable habitat for endangered ecological communities and threatened flora and fauna species.

Given that the proposal seeks a concept application approval only, the full extent of tree removal cannot, and has not been assessed at this stage. The specific survey and assessment of hollows is considered a DA specific matter when development footprints have been defined. Despite this we have undertaken site survey over the last four days by three staff of *Travers Environmental*. As mentioned, this survey revealed the presence of approximately 168 hollow bearing trees on the site, the majority of which are located in the proposed conservation areas.

The habitat tree assessment audits the standing stock of hollows that are potentially used by fauna. The aim of the habitat tree assessment being to maximise the retention of hollow bearing trees, identify the hollow dimensions (5cm increments), and to identify the relative habitat value (class 1 – high value, class 2 – medium value or class 3 – low value) of these trees based on knowledge of recorded and potential threatened species (**Table 1 & 2**)**.** The field survey method adopted is consistent with the biometric field methodology used by the PVP Developer (CMA Assessment method).

This data is consequently used to define building footprints with the aim of maximising the retention of the hollow bearing trees (**Figure 10**)**.** This forces the lot and building layouts to respond to the presence of habitat trees. The end result is a development design that minimises the impacts on hollow dependent threatened fauna and to provide a standing stock of good quality and diverse hollow habitat.

As micro-chiropteran bats use a wide range of hollows, splits, bark fissures and dense vegetation for roosting, it is assumed that the needs of bats are addressed by retaining a wide range of trees and hollow bearing trees. However, microbat boxes will be installed in securely conserved areas to offset the potential losses of small hollows in the development area.

Normally we would recommend target surveys of habitat trees for breeding hollow dependent threatened fauna be undertaken prior to submission of a detailed DA at which time the detailed lot and infrastructure layouts are defined and surveys have been undertaken during the appropriate breeding season. Trees that contain breeding threatened fauna are retained as a high priority and may attract a buffer if appropriate to that threatened species e.g. Powerful Owl. However it is generally recognised by DECC that retention of hollows within high density developments is ecologically unsustainable in the long term.

Action: Undertake detailed field assessment during DA assessment ensuring offset at a ratio of 2 artificial boxes to 1 hollow removed (2:1).

Evidence of breeding Owls and Cockatoos

Targeted survey for breeding hollow dependent fauna will be undertaken in the appropriate season if the existing hollow bearing trees have the potential to house breeding fauna. Our fauna ecologists have made an expert judgement as to the likelihood of breeding fauna usage as per DECC guidelines.

Studies undertaken this week have allowed a more expert assessment of the likelihood of fauna being present. Notwithstanding these results, there will need to be increased surveillance of these hollows during breeding periods to complete the necessary ecological assessment.

However, the potential presence of threatened birds can be assessed based on assessment of the habitat tree attributes namely hollow size and quality. **Figure 10** presents the results of this assessment which has rated the habitat value of each habitat tree into low, medium and high. Based on hollow dimensions, Class 1 - high value and Class 2 – medium value trees provide suitable habitat for Owls and Cockatoos. With the exception of 2 habitat trees, figure 10 generally demonstrates the retention of these trees within riparian zones or conservation areas.

Action: Undertake target survey for breeding hollow dependent fauna for DA assessment during the appropriate breeding season.

Evidence of breeding Micro-chiropteran Bats

Stag watching of Habitat trees was selectively undertaken from 15th to 17th January 2008 to identify the presence of any potential roosting or breeding locations within habitat trees. Habitat trees that were considered by the fauna ecologist to have the most likely roosting habitat for micro-chiropteran bats were stag-watched and ultrasonic “Anabat” recordings were also undertaken. **Figure 10** identifies those habitat trees that were stag-watched and were considered to have the best roosting habitat. Whilst the Anabat recordings

demonstrated high levels of microbat activity, there was no evidence of roosting on the trees that were stag-watched.

The habitat tree analysis and the current findings of the stag-watching, logically indicate that whilst there is significant micro-chiropteran bat activity on site, it is likely the bat population is roosting in nearby vegetated areas but using the site as part of their extended foraging habitat.

Action: None

Assessment of trees at the Concept Stage

As the application is a Concept Application it is considered unnecessary to provide a high level of detail on tree removal and retention at such a broad level. Sufficient survey has been undertaken onsite to demonstrate the lack of impact on existing trees and that the proposed concept has generally retained the majority of existing trees.

Action: None required

Adequacy of Vegetation Offsets for Threatened Hollow-dependent Fauna

The *maintain or improve tests* for threatened hollow-dependent fauna is based on a breakdown of vegetation types that also reflect the general presence or absence of hollow bearing trees. During general fauna surveys, our fauna ecologists have also maintained an open eye for hollow bearing trees for the purposes of setting up trap lines, spot lighting runs and Anabat ultrasonic recordings.

Visual observations during survey have confirmed the potential for 'presence or absence' of threatened hollow dependent fauna within each vegetation type. Based on the hollow forming potential of tree species which takes into account the age of trees, formation and visible evidence of hollow formation, our ecologists are able to capably predict the likelihood of fauna usage.

Given that the majority of hollow bearing trees have been observed within vegetated areas that are to be retained (**Figure 10**), it is reasonable to conclude that vegetation type is a reasonable indicator of habitat resources. This is based on detailed site knowledge.

The following habitat tree data has recently been generated which demonstrates that the above assumption is reasonable. The data also demonstrates that hollow bearing habitat within the site is severely degraded. This outcome is based on a comparison on hollow densities within adjoining parcels of land (**Figure 10 – refer to control 20x50m quadrats**) that closely resemble natural conditions.

The average number of hollows per hectare within the control sites is 65 hollows per ha. The average number of hollows per hectare within the subject site is 3.6 hollows per ha. Consequently there has been 94.5 % reduction in hollow densities due to tree clearance within the subject site.

20 % of the hollows detected onsite (total of 55 out of 270 hollows found onsite) are within the development area. These 55 hollows are found within 33 trees within the development footprint. As the building envelopes are yet to be finalised the number of hollows impacted by the development can be further reduced.

Table 1: Summary of Hollow Survey Data within Site

	Total No of Hollow Bearing Trees	Total No of Hollows & Splits	Total Small Hollows	Total Medium Hollows	Total Large Hollows	Total Splits	Class 1 Trees (High value)	Class 2 Trees (Medium Value)	Class 3 Trees (Low Value)	0-5cm Hollows/Splits	5-10cm Hollows/Splits	10-15cm Hollows/Splits	15-20cm Hollows/Splits	20-25cm Hollows/Splits	25-30cm Hollows/Splits	30cm+ Hollows/Splits
All of Site	168	270	163	67	10	30	12	8	148	21	163	48	19	9	0	10
Within Development	33	55	35	16	0	4	1	1	31	5	32	13	4	1	0	0
Within Conserved Areas	135	215	128	51	10	26	11	7	117	16	131	35	15	8	0	10

Table 2: Natural Hollow Data within Control Sites

	Data for 0.1 ha Quadrats				AVG per ha
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	
No. Hollow Bearing Trees	3	2	3	2	32.5
No. of hollows	7	6	8	2	65
No. Small hollows	6	1	1	0	20
No. Medium hollows	1	5	4	1	31.25
No. Large hollows	0	0	3	1	13.75
Length of fallen trees/logs	32	19	53	91	830

Of the hollows found within the site only one Class 1 and one Class 2 tree are potentially impacted by the proposed development. With minor adjustments to the development design at the appropriate DA, both of these trees could be retained. The remaining 31 hollow bearing trees within the development footprint are of low value and, subject to targeted stag watching, are likely to be removed.

Action: Reconsider retention of hollows at DA 'design' stage in line with advice above.

Justification of the Artificial Nest Box Offset Ratio

The identification of an offset ratio for the replacement of lost hollows is currently a very inaccurate science and while various offset ratios have been generally proposed by experts ranging from 1 to 50 for every hollow removed, there is limited evidence that high replacement ratios provide any significant ecological benefit.

At present the aim is to achieve a 'maintain or improve' outcome compared with the current site condition and this can certainly be achieved by the adoption of a 2:1 offset ratio (2 nest boxes for every hollow removed) with an appropriate range of nest box size and types. Based on the hollow data above (potentially 55 hollows within the development footprint), this would equate to installation of a maximum of 110 artificial nest boxes.

In addition the natural occurrence of hollows in the local area has been assessed to provide an indication of natural hollow regeneration in restored areas which is typically far higher than can be achieved through artificial nest box installation. For this reason *Travers Environmental* has undertaken hollow assessment in 4 separate locations (control sites) in accordance with the CMA field assessment methodology in natural communities surrounding the Bevian Road site (**Figure 10**). The analysed results indicate an average natural hollow density of 65 hollows per hectare.

At an average of 65 hollows per hectare (derived from table 2), and based on 45 hectares of proposed restored forest it is expected that the restored areas will generate approximately 2600 hollows in the long term. Whilst this will occur gradually as the vegetation matures, the significance of the restoration works for this site's ecology including threatened species cannot be underestimated. An artificial nest box program in this context is insignificant in the long term.

Given that artificial nest boxes can be designed to have a 30 year lifespan with low levels of maintenance, the nest box program, as documented, will in our view provide a significant stop gap measure until further natural hollows start to develop.

Travers Environmental considers that the level of restoration works and the replacement of hollow habitat onsite, as recommended, will more than adequately compensate for impacts on endangered ecological communities and any potential threatened hollow dependent fauna.

Action: None at present. Further assessment to be undertaken at DA stage.

The EA has not adequately addressed measures to be undertaken to conserve threatened fauna and their habitat.

As previously mentioned the Environmental Assessment's role is to condense the myriad of reports provided with the application. It was not to act as the entire set of 'conservancy' documentation. Clearly that was very well enunciated within the CLUMP, Ecological Assessment, ESMP and will later translate during the detailed DA phase into the final *statement of commitments*.

For this reason it appears to us that the DECC assessment contained itself to the Environmental Assessment volume only and for that reason we take the view that there is a lack of understanding regarding the ecological management process to be adopted onsite.

For clarity it is worth explaining that the proposed development will not remove any areas of vegetation which have connectivity to surrounding areas of native vegetation. At present, the majority of the vegetation within the site has been cleared for agricultural purposes. Isolated remnants occur along the eastern boundary, north-western and north-eastern corners of the site. All habitats in these areas have been almost wholly maintained.

More particularly the concept application has been designed to;

- To increase the connectivity within the site by linking these remnants through revegetation works along rehabilitated riparian zones and through areas of open space.

- Revegetation works, as documented in full, will create linkages from vegetation in the north western and north eastern corners of the site to the vegetation within the adjacent Mogo State Forest. The Mogo State Forest extends to the north and west of the site and encompasses an area of approximately 15,500 ha.

- Revegetation of the major riparian zone traversing the site in an east-west direction will, in our view, create connectivity from the remnants along the eastern boundary of the site to the western boundary of the site extending into Mogo State Forest (**Schedule 3**).

- Vegetation to the east of the site is partially fragmented and interrupted by both rural and urban development. For example the Tomakin sewerage treatment plant adjoins the south eastern boundary of the site.

- Habitat linkages have been planned to provide connectivity via habitat corridors, public parks and street trees.

- 80% of hollow bearing trees found onsite and significant foraging resources will be retained and restored within the post development landscape as part of the Conservation and Open Space Precincts within the site. These areas will create connectivity across the site to habitat within the adjacent Mogo State Forest. This connectivity will maintain the ecological functioning of the post development landscape.

- All habitat trees found onsite will be retained in order of priority in accordance with the quality, quantity and size of hollows found in each tree. Given that the current Concept plan is a 'concept only', specific survey and assessment on the impact on hollow trees will only need to be undertaken at the DA stage.

- Seasonal foraging resources within the site provide year round food sources for native fauna. The Spotted Gum/Ironbark Open Forest vegetation community provides an important winter foraging resource, while the Blackbutt Woodland vegetation community provides an important summer foraging resource.

- These foraging resources will be protected within the conservation zones throughout the site. In addition, all landscaping works will utilise locally occurring native species to further enhance foraging habitat.

Action: None. The ESMP ensures protection of these important ecological values.

The EA has not adequately addressed measures to conserve endangered ecological communities.

The proposed measures to conserve endangered ecological communities are enunciated within the CLUMP and ESMP in detail. The EA encompasses these documents.

The proposal is to increase the total area of EEC's from 19.29 hectares to 22.83 ha.

In addition, the proposed native vegetation enhancement will provide linkages for the benefit of the site's EEC's and other terrestrial and or aquatic EEC's. The additional lands include an additional 23 hectares of restored Spotted Gum, Banksia Scrub and Blackbutt Forest.

In respect of the DECC *maintain and improve* requirements there is no requirement to provide a specified offset ratio as required under the *maintain & improve test* (DECC Draft Threatened Species Assessment Guidelines 2005).

Indeed the project has demonstrated that the development will have a significant net improvement for EEC's.

There is also no requirement to provide offset lands when there is no net loss of EEC's.

The Draft Threatened Species Assessment Guidelines (2005) for a part 3A project, Section 1.2, states:

The objective of the assessment process is to provide information to enable decision makers to ensure that developments deliver the following environmental outcomes:

1. Maintain or improve biodiversity 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.
6. Protect aspects of the environment that are matters of national environmental significance.

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.

The assessment documentation has clearly met all the above objectives.

Notwithstanding the Maintain or Improve test being achieved, *Conacher Travers* Flora and Fauna Assessment report (2007) has provided statistical information on EEC restoration via the provision of a *ratio of restoration* (not including existing EEC's to be retained) versus the *removal of endangered ecological communities.* See Table 3 & 4 'EEC Maintain & Improve Assessment'; Section 6 Conclusions - within *Conacher Travers Flora and Fauna Report September 2007*; and Section 3.1.2.1 *Ecological Assessment Conacher Travers December 2007.*

Action: None

Impact of proposed landscape works within protected conservation areas.

DECC has raised the concern (verbal confirmation with Dimitri Young DECC 23.1.08) that formal planting and the proposed pathways in the Bevian Wetland Conservation Zone will negatively impact on the wetland and proposed regeneration works. More specifically DECC discussed the option of placing a footpath adjacent to Bevian Road along the western boundary of the Bevian Wetland as well as the exclusion of formal landscaped areas in the regeneration zone.

The alignment of the proposed boardwalk sensitively miandering through the EEC was considered the best ecological outcome in light of the existing EEC and the limited room for further road construction in particular to accommodate a formal pedestrian footpath on the eastern side. Construction of a boardwalk along the road was not preferred as there is limited space adjacent to the first 200m of access road. Installation of a 1.8 m pathway would result in the loss of significant Casuarina Trees that are part of the EEC which visually filter views of the main access drive from the eastern approach along George Bass Drive. The preferred alternative, a sensitively design boardwalk initially over the water, eg a floating boardwalk, would result in no soil disturbance or loss of significant vegetation. As the boardwalk approaches the Swamp Oak Forest, a raised boardwalk that weaves between the trees would not result in any tree removal. Consequently the boardwalk sensitively constructed in a low key manner along the western edge of the wetland would be able to be installed without the removal of canopy vegetation.

The Concept Landscape Plan also shows "mass planting" with the proposed restoration zones to the northern and eastern aspects of Bevian Wetland. These areas are in fact "Regeneration Zones" that will involve supplementary planting to ensure that the dominant species for the respective endangered ecological communities are rehabilitated onsite. The

"Mass Planting" will be relabelled on the Concept Landscape Plan as "Regeneration Zones with Supplementary Planting".

The Concept Landscape Plan also showed the installation of a new pathway along the current Bevian Road alignment on the northern edge of Bevian Wetland. The intention of the Landscape Plan was to provide a connected pathway/boardwalk that provided a relaxing and scenic walk through the conservation area where trees are already cleared. As the path would be slimmer than the existing road, it was envisaged that regeneration would occur along the boundaries.

An alternative has been proposed by DECC which will see the removal of this northern pathway, requiring the proposed board walk to rejoin the proposed main access road prior to crossing the northern aspects of the wetland. The proposed path from the community lands immediately to the north of Bevian Wetland leading to a viewing platform with views across Bevian Wetland will be retained. This proposal has been accepted and is supported ecologically as it allows the regeneration of the existing Bevian Road back to Swamp Oak Forest. This proposal will marginally increase the offset for the endangered ecological Community - *Swamp Oak Forest on Coastal Floodplains*.

The other area proposed for formal planting and a pathway is noted on the Landscape Plan on the eastern tongue of the wetland. This area is currently land cleared beneath a transmission line easement. It has been agreed that this will also be deleted from the Landscape Plan as discussed with Dimitri.

The concept Landscape Plan submitted with the Concept Application will therefore require further amendment to accurately reflect the conservation and restoration strategies raised by DECC. The landscape plan will be amended to reflect the regeneration of natural vegetation in the wetland conservation zone.

Action: Submit a revised Concept Landscape Plan in accordance with the above supported changes.

Habitat Corridors are not provided for connectivity of Endangered Ecological Communities

Existing wildlife corridor values have been maintained onsite and are significantly enhanced by the proposed restoration works. Vegetation on private lands on the south west and south east boundaries currently provide partial connectivity for endangered ecological communities.

DECC has queried the need for connectivity to the west from the western tongue of SOFF associated with Bevian Wetland to Mogo State Forest. In addition DECC suggested that connectivity should also be established to the east through the restoration of existing cleared lands within the Rosedale STP Buffer Zone.

In preparing the design of the restoration areas, existing site constraints such as transmissions lines, waterlogged soils, existing regenerating vegetation and topography were considered to design the proposed restoration works.

<u>Habitat Connectivity to the East</u>

A 50 m corridor has been provided to the east along the southern boundary of the site. A vegetated riparian corridor varying between 30-110m of mainly SOFF, also exists on the

Rosedale STP site on the same boundary. The total habitat corridor width as proposed including vegetation on STP lands will vary between 80 to 160 m in width.

Given the existing level of connectivity onsite to the east, *Travers Environmental* consider it unnecessary to re-establish further connectivity to the east. However the Concept Landscape Plan shows significant revegetation works on the south eastern boundaries which should be retained to enhance connectivity on the eastern boundary.

Habitat Connectivity to the West

It appears that DECC may have assumed that Mogo State Forest extends the full length of the western boundary of the site. Mogo State Forest in fact stops immediately adjacent to the proposed Ecological Corridor passing through The Knoll. In addition an existing high voltage transmission line exists on the south western boundary on adjacent lands which are kept cleared for maintenance of vegetation under the transmission line (**Constraints Map – Bevian Road Concept Application & Figure 10**). With this existing infrastructure in place it will not be possible to establish vegetation connectivity from the SOFF across the transmission line easement and adjoining lands into the Mogo Forest.

Given the presence of this transmission line, the lack of security in protecting vegetation on private lands, *Travers Environmental* consider it unnecessary to establish further connectivity to the west. The current proposed Ecological Corridor through the Knoll provides direct habitat connectivity to Mogo State Forest.

Action: None required.

I hope the above advice provides substantial assistance in your deliberations, given the urgency of this matter and the tightness of the time frames; I look forward to be in a position to discuss these matters as soon as possible.

In the mean time if you have any queries, please do not hesitate to contact John Travers on 4340 5331 or ecology@traversenvironmental.com.au

Yours faithfully,

John Travers
Director
Travers environmental

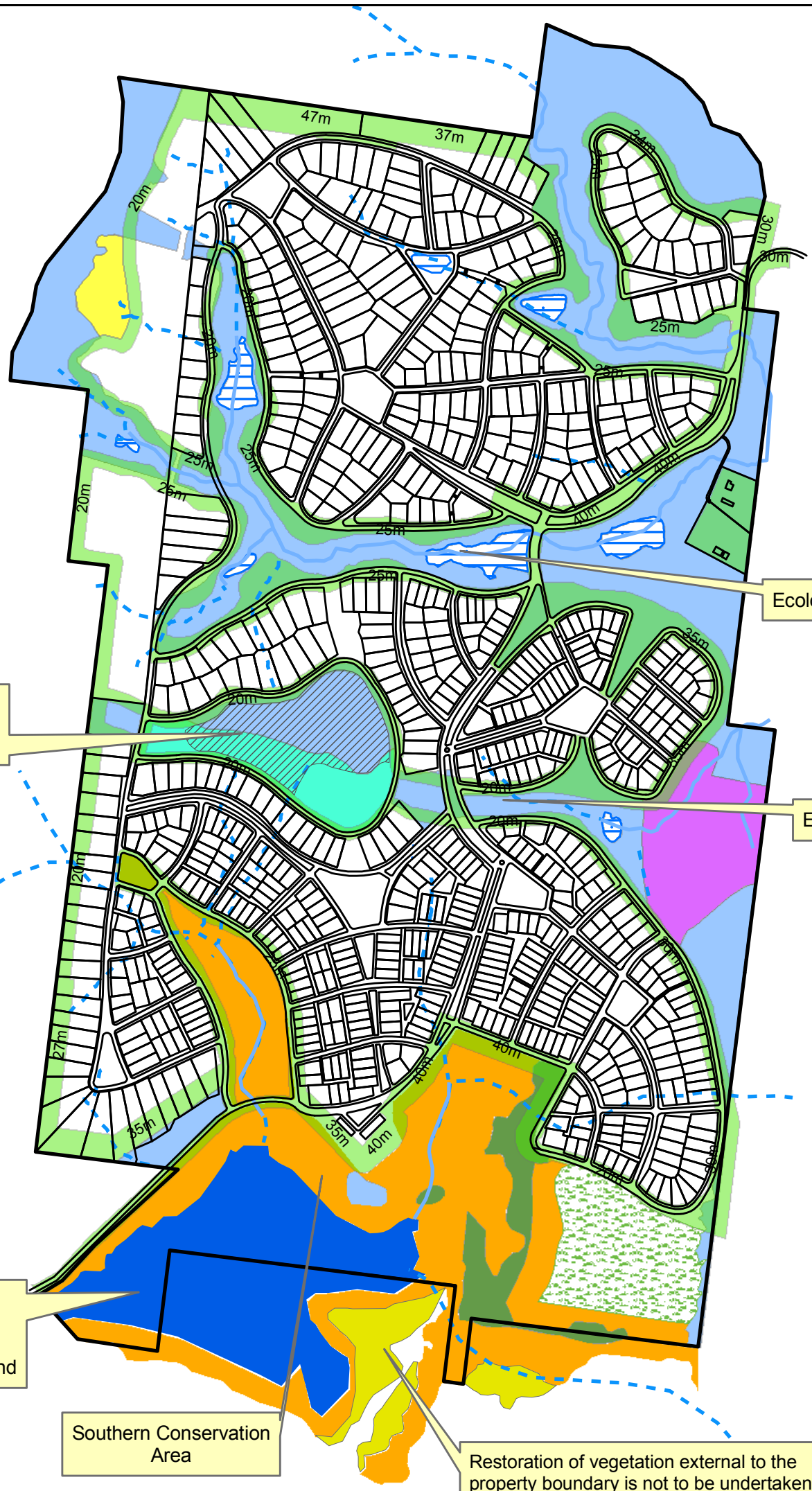
Attachments:
- ***Figure 6***
- ***Figure 10***
- ***Schedule 3***
- ***Amended Landscape plan***

Note - *Travers environmental* has taken over the respective business of *Conacher Travers Pty Ltd* – effective November 2007.

Restoration Specifications

Restoration is to be achieved through a combination of regeneration, revegetation and formal landscaping. The following specifications apply to the restoration of the target communities.

1. Open space areas within ecological corridors are to planted with locally occuring native plant species.
2. Revegetation within the riparian zones are to be in accordance with the General Terms of Approval to be issued by DWE.
3. Rehabilitation of EEC vegetation is to be fully structured vegetation endemic to that EEC.



Legend

Target Regeneration / Restoration Communities

- Bangalay Sand Forest
- Freshwater Wetland Vegetation (TSC Act EEC)
- Asset Protection Zone
- Grassland
- Swamp Oak Open Forest
- Spotted Gum / Ironbark Open Forest
- Banksia Scrub
- Blackbutt Woodland
- Dry Gully Rainforest (Preliminary EEC)
- Disturbed Redgum Open Woodland (TSC Act EEC)
- Aquatic Herbs/Macrophytes
- Passive Recreation Area
- Category 3 Water Courses
- Drainage Lines
- Property Boundary

Note: Open space areas are to be provided within ecological corridors in accordance with the Landscape Concept Plan.

0 100 200 300 400 500 m

1:8,000

Original plan produced in A3 colour

N

All features located by Trimble GPS have been modified
All mapped features are approximate and require land survey to confirm the location of Asset Protection Zones relative to developement footprint
Property boundary subject to final survey

CONACHER TRAVERS

Bushfire & Environmental Consultants
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Central Coast Highway, Kariong NSW 2250
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Schedule 3 -
Restoration Management
Bevian Road, Rosedale

Ver.S3 By.TM 11/02/07 Ref.No.6052

Source: Dept. of Lands 1:25,000 Aerial Photograph,

Remainder of the vegetation within the site and outside of those vegetation communities indentified in the legend forms Vegetation Community 7 - Grassland with Scattered trees

Freshwater Wetland Vegetation is not representative of the SEPP 14 Bevian Wetland

Legend

- Property Boundary
- 1 Spotted Gum/Ironbark Open Forest
- 2 Blackbutt Woodland
- 4 Banksia Scrub
- 3 Dry Gully Rainforest (Preliminary EEC - EPBC Act)
- 5 Swamp Oak Open Forest (Core Quality Swamp Oak Floodplain Forest - EEC - TSC Act)
- 5a Disturbed Swamp Oak Open Heath (Low Quality Swamp Oak Floodplain Forest - EEC - TSC Act)
- 6 Aquatic Herbfield
- 6a Freshwater Wetland Vegetation (Core Quality Freshwater Wetlands on Coastal Floodplains - EEC - TSC Act)
- 8 Disturbed Redgum Open Woodland (Low Quality Riverflat Eucalypt Forest on Coastal Floodplains - EEC - TSC Act)
- 9 Swamp Paperbark Closed Scrub (Core Quality Swamp Oak Floodplain Forest - EEC - TSC Act)
- 9a Disturbed Swamp Paperbark Open Heath (Low Quality Swamp Oak Floodplain Forest - EEC - TSC Act)
- Bangalay Sand Forest
- Category 3 Water Courses
- Drainage Lines

N

0 90 180 270 360 m

1:8,000

Original plan produced in A3 colour

Flora and fauna survey locations are approximate and have not been fixed by land survey

*Subject Site boundary subject to final survey

CONACHER TRAVERS

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Figure 6 -
Vegetation Communites
Bevian Road, Rosedale

Ver.F6 By.TM
17/10/07
Ref.No.6052

Source: Dept. of Lands 1:25,000 Aerial Photograph,

*Subject Site boundary subject to final survey

0 100 200 300 400 500

Metres

N

1:8,000

Original plan produced in A3 colour

Legend

Habitat Tree Classification

- Class 1 (High Value)
- Class 2 (Medium Value)
- Class 3 (Low Value)

Property Boundary

Stag Watch Locations

Control Quadrat Locations (50x20m)

TRAVERS environmental consultants

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Figure 10 -
Hollow Bearing Tree Survey
Bevian Road, Rosedale

Ver.F10
21/01/08
Ref.No.6052

Source: DLWC 1:25,000 Aerial Photograph,

LEGEND

1 The Centre Square
Stairs overlooking an active square with sculptures and water feature using recycled rain water. The Centre Square becomes a weekend market or summer outdoor theatre

2 Neighbourhood Green
Small park with community facility, feature trees and seating area

3 Green Link
Connecting The Knoll Parkland to the Bevian Wetland open space with feature flowering trees along the corridor. At a designated season of the year the unobstructed view through the green link to the ocean is highlighted by a burst of bloom

4 The Knoll Parkland
Large Open Space with open views of the valley below and ocean beyond encompassing remnants Banksia Scrub, look out platform, BBQ shelters and picnic area

5 Ecological Zone
Regenerated and newl buffer planting along the creek corridor and Wetland buffer. Pockets of look out areas, interpretive signs and sculptures dot along the pedestrian and/or cycle trail

6 Detention Basin

7 Playground

8 Rain Garden

9 Detention Basin

10 Open Space Area With Potential
Future Community and Tourist Facilities

11 Light Weight Timber Shared Path Towards Edge Of Wetland To Minimise Southern Access Road Footprint. Final Location To Be Determined Subject To Detailed Wetland Egde And Tree Survey

Existing Trees Retained

Feature Trees
Colour varies on plan to indicate different feature tree species in different neighbourhoods/place to generate a sense of a neighbourhood/space

Formal Tree Planting (Allee or Alternative)

Informal Tree Planting (Scattered or Clustered)

Mass Tree Planting

Pedestrian and/or Cycle Path

Timber Deck

Aquatic Herbal Field / Wetlands Planting

Minimum Asset Protection Setback

Conservation Area

Ecological Zone

Creek Corridor

SEPP14 Bevian Wetland Boundary

NOTE:
- Final community facility to be decided through community consultation
- Indigenous species to be used in Conservation Area and Ecological Zone in accordance with ESMP Restoration Schedule

RD drawing number : RDSK-CA-005 revF | dated: 23/11/07 | issue: concept issue for part 3A Application

BEVIAN ROAD - CONCEPT APPLICATION

LANDSCAPE CONCEPT PLAN

Drawing: CA-005 | Issued for: Approval | Dated: 23.11.2007 | Drawing Issued for Approval

MARSIM

robertsday
From vision to venture >