Attachment 1: Clearing assessment report, Leeuwin Road reconstruction

File reference: RDS/0010

BACKGROUND

It is proposed to reconstruct and widen a section of Leeuwin Road in Augusta, as shown in the accompanying maps. This 2 km section of road extends from the Matthew Flinders lookout in the east to the Cape Leeuwin lighthouse carpark in the west, and is the final stage of the Shire's broader reconstruction project for the Leeuwin Road Reserve. The northern and eastern sections of this road have previously been reconstructed without requiring any disturbance to native vegetation.

Leeuwin Road provides access from Augusta townsite to beaches south of Augusta, Cape Leeuwin Lighthouse, and the Leeuwin Naturaliste National Park. The road is approximately 5-6 metres wide, which is insufficient given the type and volumes of traffic the road receives. It is proposed to reconstruct and widen the existing sealed road to 6.5 metres, with 1 metre unsealed shoulders on either side, and associated drainage and erosion control works. This will improve driver visibility and overall road safety, consistent with the earlier reconstructed sections of the road.

The road reserve adjoins Shire 'Recreation' Reserve R25141 on its south side, and Leeuwin Naturaliste National Park on its north side.

The road reconstruction will result in the clearing of no more than 0.4 hectares of native vegetation within the larger area shown in shapefile 'Leeuwin Rd purpose permit area' (attached). Supporting shapefile 'Leeuwin Rd clearing' (attached) demonstrates the Shire of Augusta Margaret River's intended clearing area, based on the existing design of the road reconstruction. There may be minor changes to the intended clearing area due to site conditions, hence the reason for applying for a purpose permit to provide this flexibility.

BIODIVERSITY VALUES

A desktop assessment, followed by site inspections by Shire Environment and Landcare Officers, has been undertaken for the road reserve. Biological surveys have also been undertaken, as outlined below.

Flora and fauna assessments, including field surveys, were undertaken in the Shire Reserve to the immediate south of the road reserve by Litoria Ecoservices in September to November 2019. These surveys were undertaken for a separate Shire proposal, but provide valuable information on the values of the surrounding vegetation and to assist in the assessment of this clearing permit. Copies of the survey reports are attached to the application.

Further to the above survey and assessments, it was identified that the clearing area may contain or occur in proximity to habitat for the Leeuwin Freshwater Snail (*Austroassiminea*

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letha), which is a Threatened (Vulnerable) species under the Biodiversity *Conservation Act WA 2016*, and is also listed as Specially Protected fauna (Schedule 3). On advice from DBCA (Blackwood District) the Shire commissioned a targeted survey for *A. letha* in and adjacent to the proposed clearing areas. A copy of the targeted snail survey is attached to the application.

Flora and Vegetation

The vegetation along the road reserve is dominated by coastal native vegetation with the majority of the site forming closed heath, closed scrub and low closed Peppermint (*Agonis flexuosa*) forest.

Broadscale vegetation mapping identifies two vegetation complexes within the road reserve:

- Wilyabrup WE: Mosaic of coastal heath and low woodland to woodland of *Corymbia calophylla-Eucalyptus marginata* subsp*. marginata-Banksia* spp. on westward slope in hyperhumid to humid zones.
- Gracetown GE: Closed heath of *Olearia axillaris-Rhagodia baccata-Agonis flexuosa* on seaward slopes in hyperhumid to humid zones.

The remaining percentage of the pre-European extent of these complexes is 69.7% for the Wilyabrup WE, and 97.5% of the Gracetown GE vegetation complexes, which is well above the criteria of less than 30% remaining.

Based on the report by Litoria (2019b), the following vegetation units occur on the south side of the road. From observations, the same vegetation units are generally reflected on the north side of the road.

- **Veg Unit 1:** Very Good Condition Low Closed Forest of *Agonis flexuosa* over open grassland/ sedgeland/herbland of *Lepidosperma gladiatum, Rhagodia baccata, Dichondra repens, Microlaena stipoides, Pteridium esculentum, Muehlenbeckia adpressa* and *Acanthocarpus preissii*.
- **Veg Unit 2:** Very Good Condition Closed Heath of *Spyridium globulosum, Olearia axillaris, Scaevola crassifolia, Agonis flexuosa* and *Leucopogon parviflorus* over a predominantly sedgeland/herbland of *Lepidosperma gladiatum, Rhagodia baccata, Muehlenbeckia adpressa*, *Acanthocarpus preissii*, *Senecio elegans, Phyllanthus calycinus, Ficinia nodosa, Lagurus ovatus* and *Carpobrotus viresecens*.
- **Veg Unit 6:** Very Good condition Low Closed Forest of *Melaleuca lanceolata* over sparse *Rhagodia baccata, Lepidosperma gladiatum, Spyridium globulosum*

In addition, Wetland vegetation associated with the Leeuwin Swamp occurs on the north side of the road between Skippy Rock Road and the Leeuwin Lighthouse carpark (Slack-Smith, 2006). This vegetation unit is known to provide habitat for the Leeuwin Freshwater Snail, and was the subject of the targeted fauna survey for this species (Otelia Ecology, 2000b). This vegetation is outside the flora survey area by Litoria (2019b).

Based on the survey by Litoria (2019b), a desktop assessment, and additional site observations, the significant flora and vegetation values within or near the road reserve include the following:

1. Priority 2 Ecological Community (PEC) '*Melaleuca lanceolata* forests, Leeuwin Naturaliste Ridge'; occurs in the southwestern extent of the road reserve on both sides of Leeuwin Rd. Litoria (2019b) maps this occurrence on the southern/eastern side of the road, and a site inspection by Shire officers identified the community continued on the north side of Leeuwin Road from the water wheel turnoff to the lighthouse carpark.
2. Priority 1 Ecological Community 'Sedgelands of the Cape Leeuwin Spring'; occurs to the north of Leeuwin Road, from the Skippy Rock turnoff to the water wheel carpark turnoff. Native vegetation will not be cleared in the vicinity of this PEC.
3. Priority 4 species *Banksia sessilis var. cordata*; occurs to the far south-east of the project area, and potentially occurs in other locations within and outside the road reserve.

4. Threatened Ecological Community (TEC) 'Rimstone Pools and Cave structures formed by microbial activity on the marine shoreline: Augusta Microbial – (Aquatic rootmat community Number 1 in caves of the Leeuwin – Naturalist Ridge)'; occurs approximately 180 metres to the south of the road reserve near Ringbolt Bay (Litoria, 2019a) and approximately 350m north of the project site on the shore of Quarry Bay.
5. Granite outcrop vegetation of the Margaret River plateau occurs in the south-west section of the road reserve, and whilst not listed as a PEC or TEC, it is considered to be 'regionally significant' vegetation.

Fauna and habitat

Based on a database search and the fauna and habitat assessment by Litoria Ecoservices (2019a), the following threatened or priority species potentially occur within or near the road reserve:

- *Austroassiminea letha* (Leeuwin Freshwater Snail);
- *Pseudocheirus occidentalis* (Western Ringtail Possum);
- *Isoodon obesulus subsp. Fusciventer* (Quenda);
- *Calyptorhynchus baudinii* (Baudin's Cockatoo);
- *Calyptorhynchus banksii subsp. Naso* (Forest Red-tailed Black-Cockatoo);
- *Calyptorhynchus latirostris* (Carnaby's Cockatoo);
- *Phascogale tapoatafa ssp. (WAM M434) (*Brush-tailed Phascogale);
- *Dasyurus geoffroii* (Chuditch);
- *Macropus irma* (Western brush wallaby);
- *Tyto novaehollandiae subsp. Novaehollandiae* (Masked Owl);
- *Thinornis rubricollis* (Hooded Plover); and
- *Morelia spilota imbricata* (South-west Carpet Python).

Vegetation Unit 1, Low Closed Forest of *Agonis flexuosa*, which occurs along the majority of the road reserve, is considered to represent good habitat for the critically endangered Western Ringtail Possum (WRP). WRP occurrence to the south of the road reserve was confirmed by Litoria Ecoservices (2019) by observation of dreys, scat and spotlighting records, and this is likely to be similar in this habitat on the north side of the road.

Other significant fauna species, including quenda, black cockatoo species, and brush-tailed phascogale are likely to use habitat within the road reserve.

Leeuwin Freshwater Snail

The Leeuwin Freshwater Snail (Vulnerable) had previously been recorded within a wetland approximately 30 metres to the north of the Leeuwin Road Reserve near the Skippy Rock Road intersection (Slack-Smith, 2006), and most recently within a dampland area of coastal vegetation just east of Ringbolt Bay (approx. 200m to the south), (Litoria Ecoservices, 2019a).

On advice from DBCA (Blackwood District), the Shire commissioned a targeted survey for Leeuwin Freshwater Snail to identify presence/absence of the species in the clearing area, and to determine whether the proposed clearing will have any direct or indirect impacts to the species or its habitat. The survey comprised a Preliminary Risk Assessment (Ottelia Ecology, 2020a), followed by a Targeted Fauna Survey (Ottelia Ecology, 2020b). The survey component involved searching in 'likely' and 'possible' habitat for *A. letha* along the road reserve, and in proposed culverts.

DBCA was consulted on survey methodology, and it was determined that the presence of dead *A. letha* shells was considered indicative of the potential presence of this species and therefore in need of habitat protection. Although soil sieving and microscope inspection is normally necessary to locate live specimens, this technique was considered to be too invasive for this proposal, given the fragility of the population, and the low level of overall risk posed by the

clearing. It was agreed that hand searching was the most appropriate method to determine presence/absence of shells to avoid any unnecessary impacts to the *A. letha* population.

It was advised by DBCA that the survey was only necessary on the north side of Leeuwin Road and east of the Skippy Rock Road intersection, as the landform and vegetation in the remainder of the road reserve is highly unlikely to provide habitat for *A. letha*.

The outcomes of the targeted Leeuwin Freshwater Snail survey were that no live snails were located, however dead shells were found in seven sites that were searched. Dead shells at six of the sites were located >6 metres from the edge of the road, with the survey of remaining site (site 6) finding shells within 1 metre of the road edge located in dense kikuyu and other weeds.

It is noted that a bushfire impacted the area in April 2019, and the impacts to the local *A. letha* population as a result of that fire are not known.

POTENTIAL IMPACTS

Flora and Vegetation

Most of the clearing for this project will occur within Vegetation Units 1 and 2 – Low Closed Forest of *Agonis flexuosa*, and the Closed Heath, which are well represented in the local area, including in the adjoining National Park and Shire Reserve. It is not considered that the small amount of clearing for the road reconstruction will have a significant impact to the conservation value of these vegetation units (discussion around impacts to WRP habitat in these vegetation units is below).

The clearing will result in the removal of up to 0.01 ha of the *Melaleuca lanceolata* forests PEC in the south-western extent of the project area. The vegetation to be impacted occurs along both sides of the road verge, and immediately adjacent to the carpark in the southern section. Some of the vegetation is degraded in this section, particularly on the south/east side of the road.

As this PEC occurs on both sides of Leeuwin Road, it is not possible to avoid impacts to this community altogether. The road upgrade has been designed to minimise clearing within the PEC as much as possible by widening the road in this section on the south side where the roadside vegetation is more degraded, and to avoid higher quality vegetation on the north side of the road. Where possible, branches will be pruned as an alternative to tree removal.

The width of clearing along the existing verge within the *Melaleuca lanceolata* PEC has been be minimised as much as possible, with the widest section unlikely to exceed 2.5 metres. The clearing area will be temporarily demarcated on the ground to ensure there is no disturbance outside the approved clearing boundaries.

This PEC extends well outside the clearing area on both sides of Leeuwin Road, including within the adjoining National Park as well as other locations within the region, and it is not considered that the clearing will have an impact on its conservation significance.

The PEC ‘Sedgelands of the Cape Leeuwin Spring’ occurs to the north of Leeuwin Road, from the Skippy Rock turnoff to the waterwheel carpark turnoff. This PEC is associated with the occurrence of the Leeuwin Freshwater Snail, and based on the targeted fauna survey results by Ottelia Ecology (2020b), the road has been designed to avoid any clearing in the vicinity of this PEC.

A population of the Priority 4 species *Banksia sessilis var. cordata* occurs to the south-east of the project area, which is not within the project area. There is potential for other individuals to occur within the proposed clearing areas, however surveys and site inspections undertaken to

date have not specifically identified any plants that will be disturbed. As recommended by DBCA, if any plants of *Banksia sessilis var. cordata* require removal or pruning, all seed present will be collected and stored at DBCA's Threatened Seed Centre, in accordance with DBCA-approved procedures and licensing requirements.

Weeds occur along the road, particularly in disturbed areas around turn-offs to roads, carparks and tracks. These include dense kikuyu grass (particularly in the western section and around the Skippy Rock Rd intersection), *Sonchus* sp. and other weeds. It will be ensured that best practice weed and disease hygiene practices will be adhered to during road reconstruction works to avoid the spread of weeds, with all machinery cleaned down prior to entering the site.

Fauna and habitat

Western Ringtail Possum

The road reconstruction will result in the clearing of Low Closed Forest of *Agonis flexuosa*, which is considered good habitat for western ringtail possums. Clearing of a wider section of roadside vegetation is needed here, as the ground is elevated approx. 2 metres above the road surface, and wider banks are required past the road shoulders to minimise erosion. At its widest point, clearing in this area is potentially up to 8 metres wide, and the total area of clearing within this vegetation unit is unlikely to exceed 0.25 ha. These values provide the maximum amount of clearing that could potentially be required. All endeavours will be made to minimise clearing in WRP habitat as much as practically possible.

The removal of this section of vegetation along the existing verge is unlikely to have a significant impact to WRPs or their habitat. The roadside clearing will not break or fragment any continuous canopy cover, and the habitat is well represented in the local area including the adjoining National Park and Shire Reserve.

The Shire will ensure that vegetation clearing and road construction is managed to the highest standard to ensure risks to WRP and WRP are minimised. DBCA's *Procedures to Minimise the Risk to Western Ringtail Possums during Vegetation Clearing and Building Demolition* will be adhered to, with the presence of a qualified fauna spotter and handler on site to manage any disturbed animals immediately prior to and during clearing.

The Shire has an ongoing committed to the protection of WRPs and their habitat in the Region, and has a strong history of implementing recovery actions for ringtails, including the following:

- Implementation of an annual revegetation program on Shire-managed reserves to enhance habitat values and habitat connectivity. The Shire planted over 12,000 and 8,000 local native seedlings in Shire-managed reserves in 2018-19 and 2019-20 respectively.
- Supporting on ground works and long-term management of native vegetation through the formation of Friends Groups that undertake revegetation and weed control projects in Shire-managed reserves.
- Requiring WA Peppermint (*Agonis flexuosa*) as the predominant street tree in new developments, and undertaking active planting of WA Peppermint in urban parklands with over 400 trees planted in winter 2020.
- Contribution of over $130,000 of funding between 2019-2022 to local NRM group Nature Conservation Margaret River Region via the Shire of Augusta Margaret River's Environmental Management Fund, to collaboratively implement projects involving WRP recovery, including possum surveys, revegetation, and education programs.
- Membership on the Capes Region WRP Steering Committee.

The Shire of Augusta Margaret River will continue to actively implement measures to support the ongoing protection and recovery of WRP in the Capes Region.

Leeuwin Freshwater Snail

Habitat for the Leeuwin Freshwater Snail occurs on the north side of Leeuwin Road, with one survey site having dead shells within 1 metre from the road edge. The Shire has subsequently designed the western section of the road upgrade to avoid any clearing within potential habitat for Leeuwin Freshwater Snail. Earlier designs of the road reconstruction involved some clearing on the northern side of the road within potential or likely habitat for *A. letha* (as identified in the Ottelia Ecology reports), however based on the survey results the road upgrade was redesigned to ensure widening occurred on the southern side of the road where possible (where *A. letha* habitat is absent), and within already disturbed areas.

In addition to designing the road reconstruction around *A. letha* habitat, the Shire has consulted with DBCA and is committed to implementing the following strategies to mitigate any potential impacts to this species during road construction.

- Areas of known *A. letha* habitat within and adjacent to the Leeuwin Road Reserve will be excluded from clearing.
- Installation of low-impact, temporary fencing along the road verge adjacent to snail habitat to prevent any inadvertent access or disturbance to this area during road works.
- Implement weed and dieback hygiene measures during clearing and construction (e.g. clean vehicles and machinery prior to entering the site).
- Maintain existing drainage patterns and ensure there is no movement or runoff of water or sediment into snail habitat
- Undertake pH testing of road material and lime-dose the material used in road shoulders, if required.

Tufa Community

The Threatened Ecological Community (TEC) 'Rimstone Pools and Cave structures formed by microbial activity on the marine shoreline: Augusta Microbial – (Aquatic rootmat community Number 1 in caves of the Leeuwin – Naturalist Ridge)'; occurs approximately 180 metres to the south of the road reserve near Ringbolt Bay (Litoria, 2019a) and approximately 350m north of the project site on the shore of Quarry Bay.

Neither location will be directly or indirectly affected by this proposal as there is no clearing in the vicinity and there will be no hydrological changes.

Leeuwin Naturaliste National Park

Road works in the eastern section will require a wider amount of clearing of roadside vegetation on the north side of the road, due to the slope and elevation of the ground in this location, requiring wider banks and additional erosion management works. As mentioned above, at its widest point, clearing in this area is potentially up to 8 metres wide.

Leeuwin Naturaliste National Park occurs on the northern boundary of the road reserve, and the Shire has committed to not undertaking any clearing within the national park. Prior to clearing, the boundary between the road reserve and national park in this location will be surveyed and pegged out to ensure that all clearing occurs within the approved clearing area, and that there will be no inadvertent access or disturbance to the national park. Debris and soil will remain within the clearing boundaries and will not be pushed into the national park. As mentioned earlier, best practice hygiene management will be adhered to to minimise the risk of spreading weeds and disease.

DBCA has been consulted on the project, and the Shire will maintain close contact with the District office in Busselton regarding any specific requirements, and to provide advance notice of when works will be undertaken.

CONCLUSION AND MANAGEMENT ACTIONS

The clearing of 0.4 hectares of roadside vegetation within the Leeuwin Road Reserve to allow for road reconstruction and widening is unlikely to be at variance with the 10 clearing principles.

The Shire of Augusta Margaret River will implement the following measures to ensure that impacts of clearing native vegetation are minimised. These mitigation strategies will be incorporated into a Construction Environmental Management Plan, which will be prepared by the Shire prior to commencement of construction.

- Clearing of native vegetation will be minimised wherever possible. The road reconstruction has been designed to minimise disturbance to native vegetation, particularly in conservation-sensitive areas such as threatened species habitat (Leeuwin Freshwater Snail, Western Ringtail Possum), and in the *Melaleuca lanceolata* PEC.
- In order to ensure that access and disturbance is restricted to the approved clearing areas and does not extend into conservation-significant areas, prior to clearing the Shire will survey and temporarily demarcate the following boundaries in the field:
    - Clearing boundaries within the *Melaleuca lanceolata* PEC
    - Edge of roadside vegetation between the water wheel carpark and Skippy Rock Road intersection to protect Leeuwin Freshwater Snail habitat and the Sedgelands of the Cape Leeuwin Spring PEC.
    - Boundary between the Leeuwin Road Reserve and the Leeuwin Naturaliste National Park along the eastern extent of the project area.
- If any plants of *Banksia sessilis var. cordata* require removal or pruning, all seed present will be collected and stored at DBCA's Threatened Seed Centre, in accordance with DBCA-approved procedures and licensing requirements.
- Existing surface drainage patterns will be maintained during road reconstruction, with no runoff of water or sediment into the surrounding environment.
- Retrenchment pruning of large branches will be undertaken as an alternative to tree removal where branches pose a safety hazard.
- Implement best practice weed and dieback hygiene measures during clearing and construction (clean vehicles and machinery prior to entering the site).
- Early contact will be made with the DBCA District Office regarding the scheduling of road reconstruction works.
- Clearing will be implemented in strict accordance with DBCA's *Procedures to Minimise the Risk to Western Ringtail Possums during Vegetation Clearing and Building Demolition* (DBCA, 2015), including the presence of a fauna spotter and handler on site prior to and during construction in order to manage any disturbed animals.
- Undertake pH testing of road material and lime-dose the material used in road shoulders, if required.

COMMENTS ON THE PROPOSED CLEARING AGAINST THE CLEARING PRINCIPLES

Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity

It is not anticipated that the proposed clearing of 0.4 ha will have a significant impact on vegetation that is of a high level of biodiversity. It is recognised that the project area contains some significant conservation values, including the P2 listed PEC *Melaleuca lanceolata* forests, and habitat for threatened fauna. The road has been designed to avoid as much disturbance to these values as possible. These biodiversity values are represented outside the clearing area, including within the adjoining Leeuwin Naturaliste National Park, and in consideration of the avoidance strategies the Shire has employed, and the proposed mitigation strategies, it is not expected that the clearing will have an impact on their conservation significance.

Principle (b) – Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

Significant fauna species that potentially use habitat within the road reserve include the western ringtail possum, quenda, black cockatoo species, brush-tailed phascogale, western brush wallaby, and chuditch.

The road reconstruction will result in the clearing of up to 0.25 ha of Low Closed Forest of *Agonis flexuosa*, which is considered good habitat for western ringtail possums. The clearing along the road verge is not considered to have a significant impact to WRP habitat, given that there will be no fragmentation or loss of connectivity of this habitat, and the extent of this habitat type remaining in the local area, including the adjoining national park. It will be ensured that DBCA's clearing protocols are adhered to, with the presence of a fauna spotter and handler on site to manage any disturbed animals immediately prior to and during clearing.

The road has been designed to avoid clearing on the north side of the road where there is known habitat for the Leeuwin Freshwater Snail, or the 'Sedgelands of the Cape Leeuwin Spring' PEC that is associated with the snail. Mitigation strategies will be implemented to minimise any indirect impacts to this species or its habitat including temporary demarcation of potential habitat areas in the field using low impact fencing/flagging, maintenance of existing drainage patterns and flows, implementation of weed and disease hygiene measures, and pH testing of road material.

While black cockatoo species are likely to use the site seasonally for feeding, the road reserve is not likely to represent a significant habitat for these species. The site does not contain habitat suitable for roosting or nesting, and it unlikely to represent a significant food resource (Litoria, 2019a).

Given the small amount of clearing proposed, proposed mitigation strategies, and wider representation of habitats in the local area including the national park, it is unlikely that the clearing will have an impact on any other fauna species of conservation significance, or their habitat.

Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

There are no known occurrences of rare flora within the project area. There are records of the Priority 4 species, *Banksia sessilis var*. *cordata*, at the eastern extent of the clearing area. A very small portion of this area may be impacted by the proposed clearing, and there is potential for individuals to be located in other sections of the project area. In accordance with DBCA's advice, the Shire will collect all seed present from any individuals that require removal or pruning for storage at DBCA's Threatened Seed Centre

In addition, the Shire will implement mitigation strategies to minimise indirect risks to this species, including best practice hygiene protocols (clean machinery on entry to the site) to avoid introducing or spreading weeds and disease, and implementing pH testing of road material and lime-dosing of the material used in road shoulders, if required. It is not considered that the proposed road construction will have a significant impact on this species.

Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.

There are no known threatened ecological communities (TEC) within the road reserve. The road falls within the buffer zone of one TEC – Rimstone pools and cave structures formed by microbial activity on marine shorelines. There will be no impacts to this community. Two Priority Ecological Communities occur within the road reserve - Priority 1 PEC - 'Sedgelands of the Cape Leeuwin Spring', and Priority 2 PEC – 'Melaleuca lanceolata forests, Leeuwin Naturaliste Ridge'. The road reconstruction has been designed to minimise impacts to these communities. There will be no clearing or road works undertaken in vicinity to the Sedgelands of the Cape

Leeuwin Spring PEC, as works have been moved to the south side of the road to avoid this area.

The Priority 2 PEC, *Melaleuca lanceolata* forest occurs within a small section in the south-western extent of the clearing area. The clearing will result in the loss of up to 0.009 hectares of this community. Clearing of a small portion of this PEC is unavoidable as it occurs on both sides of the road. The Shire will implement measures to ensure disturbance to this community is minimised, including marking the clearing boundaries in the field to ensure there is no disturbance outside the clearing area pruning branches as an alternative to tree removal where possible, and managing drainage to ensure there will be no flooding, sediment build up or erosion within the PEC. It is not considered that the proposed clearing will have a significant impact on the *Melaleuca lanceolata* PEC.

Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The native vegetation in the Leeuwin Road Reserve is unlikely to be significant as a remnant of native vegetation. The two vegetation complexes impacted by the proposed clearing, Wilyabrup WE and Gracetown GE, are well represented in the local area, and the remaining percentage of the pre-European extent of these complexes is 69.7% and 97.5% respectively.

The Cape Leeuwin area has not been extensively cleared, and contains largely undisturbed native vegetation, much of which is contained within the Leeuwin Naturaliste National Park. The vegetation in Leeuwin Road Reserve is therefore contiguous with extensive areas of native vegetation on both the north and south sides of the road, including in the adjoining National Park and Shire Reserve.

Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland

This section of the Leeuwin Road is not associated a watercourse or wetland. A series of wetlands fed by a freshwater spring occur to the north of the road alignment within Leeuwin Naturaliste National Park. These wetlands are also associated with habitat for the Leeuwin Freshwater Snail. These are separated from the road reserve by coastal heath vegetation and dense stands of kikuyu and other weeds, and will not be affected by the road reconstruction.

A wetland occurs near the Skippy Rock Road intersection, which is habitat for the Vulnerable Leeuwin Freshwater Snail, *Austroassiminea letha*. The road reconstruction will avoid any clearing within and adjacent this wetland. One culvert will be constructed near the Skippy Rock Road intersection to improve drainage in this area, which will require a small amount of clearing in the kikuyu that has established between the wetland and the road. This area will be temporarily marked in the field to ensure that clearing is restricted to the approved clearing boundaries, and it will be ensured that there is no movement of soil or water into the wetland.

Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation

The proposed clearing is not likely to cause appreciable land degradation. The road widening and associated drainage will be designed to ensure that surface water patterns will be maintained, and that there will be no erosion or runoff of sediment into the environment.

Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Leeuwin Naturaliste National Park adjoins the road reserve on its northern boundary. The road reconstruction has been designed to avoid the need for any clearing within the national park. In the eastern section, the clearing corridor is wider due to the slope and height of the ground and

subsequent need for larger batters for erosion control. Prior to clearing, the Shire will survey and peg out the boundary between the road reserve and national park to ensure that there will be no inadvertent disturbance or access to the national park. Ground disturbance activities will be managed to ensure that there will be no movement of debris or soil into the national park.

Best practice hygiene measures will be employed to avoid the spread of weeds and disease. The Shire will maintain contact with the DBCA District office regarding any specific requirements, and on the scheduling of works.

Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

The proposed clearing is not likely to cause deterioration in the quality of surface or underground water. The road reconstruction has been designed to maintain existing surface water flows, with no runoff of water or sediment into the surrounding environment. Underground water will not be intercepted.

Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

The proposed clearing is not likely to cause, or exacerbate, the incidence of flooding.

REFERENCES

Litoria Ecoservices (2019a). Fauna and Habitat Assessment, Cape Leeuwin Trail: Dead Finish to Cape Leeuwin. Unpublished report prepared for the Shire of Augusta Margaret River.

Litoria Ecoservices (2019b). Flora and Vegetation Assessment, Cape Leeuwin Trail: Dead Finish to Cape Leeuwin. Unpublished report prepared for the Shire of Augusta Margaret River.

Ottelia Ecology (2020a). Survey for Threatened Fauna – Road Upgrade, Leeuwin Road, Augusta. Stage 1: Preliminary Risk Assessment. Unpublished report prepared for the Shire of Augusta Margaret River.

Ottelia Ecology (2020b). Targeted fauna survey for Leeuwin Road upgrade works – Cape Leeuwin Freshwater Snail Austroassiminea letha. Unpublished report prepared for the Shire of Augusta Margaret River.

Slack-Smith, S (2006). Report on a survey of the molluscan fauna of the Cape Leeuwin Swamp, Western Australia, particularly the endangered species, *Austroassiminea letha*. Western Australian Museum, Perth.

ATTACHMENT 2: LIST OF PHOTOS AND DESCRIPTIONS

Photo #	Comment	Side of road
Leeuwin1 - Leeuwin5	Low Closed Forest of *Agonis flexuosa*	South
Leeuwin6 - Leeuwin18	Low Closed Forest of *Agonis flexuosa*	North
Leeuwin19 – Leeuwin20	Culvert, approx. 5m x 3m	North
Leeuwin21 – Leeuwin22	Culvert, approx. 5m x 3m	South
Leeuwin19 - Leeuwin20	Culvert, approx 5m x 3m	South
Leeuwin25 – Leeuwin26	Introduced grasses and weeds adjacent to wetland. Clearing for culvert.	North
Leeuwin29, Leeuwin30, Leeuwin31, Leeuwin38, Leeuwin39	Vegetation adjoining 'Sedgelands of Cape Leeuwin Spring' PEC, and Leeuwin Freshwater Snail habitat. No clearing in this area.	North
Leeuwin33, Leeuwin35	Clearing into a hill.	South
Leeuwin36, Leeuwin37	View from hill, looking at alignment west (Leeuwin36) and east (Leeuwin37)	South
Leeuwin42	*Melaleuca lanceolata* forest PEC at water wheel carpark intersection. No clearing in this location.	North/West
Leeuwin45 – Leeuwin50	*Melaleuca lanceolata* forest PEC, heading into carpark. Clearing along roadside in this area.	West

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